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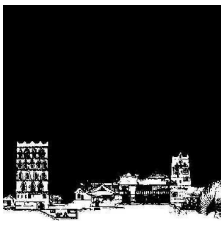

TRADITIONAL DWELLINGS AND SETTLEMENTS WORKING PAPER SERIES

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Traditional Dwellings and Settlements
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ON WHAT MATERIAL DO YOU WANT IT TO BE MADE...? NEGOTIATIONS AND COLONIAL BUILDING SITES IN AFRICAN TERRITORIES UNDER LATE PORTUGUESE RULE

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This paper examines the concept of "community development" in the construction of single-family homes in former Portuguese colonial territories in Africa during the Cold War to gain insight into the strategies of self-production housing. It traces a narrative of the colonial building sites of these residential landscapes through three processes of optimization: how technicians described the core tasks of domestic scale works, identifying local agents with the "right skills"; how they tested the capacity for self-construction; how they managed the interplay between local labor, traditional techniques and industrialized materials. Finally, the paper questions how the building sites' dynamics impacted project design.

1. INTRODUCTION

In 2000, in Cidade Velha, the capital of Cape Verde during the Portuguese colonial period until 1769 and today a semi-ruined settlement, the architect Álvaro Siza (b. 1933) was queried by a former emigrant who was building his house regarding the design of the roof: "It is not good here, the straw. If it catches fire, this whole part will burn. It would be better to let me use tiles". The episode is taken from the documentary "*O Arquitecto e a Cidade Velha*", by director Catarina Alves Costa[1]. It illustrates the clash between the expectations of the people and the wishes of the architects. In another house, also thatched according to local tradition, the female resident complained about the difficulty of finding materials: "I have fought many wars, and I did not accept the thatch". The dweller wanted a tile roof, associated with economy, low maintenance and cosmopolitanism. By the end of the movie, however, she seems to have come to terms with the obligation to maintain the roof, which, early on, appears to be a gamble won by the architect. But the "fight" is still in its early stages, and replacing the roof with corrugated metal or tiles will be inevitable in the future.

Siza marvels at the beauty he sees in the craftsmanship on the roof of one of the residences. His perception is filtered through the architectural culture in which he was trained, geared towards admiring vernacular forms. This sensitivity to the "*tectonic* rather than the *scenographic*"[2] would bring him into contact with "critical regionalism" through Kenneth Frampton (b. 1930)[3], from 1982 onwards. The British historian and critic, a former student of the first Tropical Architecture course at the Architectural Association (AA) in the 1950s[4], had been exposed to ancestral African and Asian cultures during his training, albeit through Western culture. Frampton would explain that "resisting to the domain technology" suggested a "tactile resilience", embodying a perceptual condition, which involved "the intensity of light; darkness; heat and cold; the feeling of humidity; the aroma of the material..."[5] . Siza's body language in the documentary suggests the same hypothesis (Fig. 1).

These considerations led Frampton to conclude in 1983 that overcoming the Western experience of perspective (which had shaped architectural culture since the Renaissance) entailed the use of more local materials and tectonics. This view pointed the way to overcoming "global modernization"[6], even before post-colonial thought had spread its effects on newly colonized landscapes[7].

Fig. 1: Álvaro Siza observing the roof of a house in Cidade Velha, Cape Verde, c. 2000 (Source: Catarina Alves Costa, *O Arquitecto e a Cidade Velha*. Laranja Azul, 2003).

How can these reflections and an episode that took place 25 years after African independence help us to understand colonial history and, more specifically, to analyze the relationship between architects and local communities under dictatorial regimes? In the absence of direct testimonies of experiences that took place during the final years of Portuguese colonization, this article argues that more recent examples can provide insight into these collective *stories*. This period was significant in placing local communities at the heart of the so-called "welfare policies"[8], as it corresponded to the Colonial War (1961-1975) that pitted the Portuguese army against independence groups in Angola (1961), present-day Guinea-Bissau (1963) and Mozambique (1964). These policies, reinforced by the so-called "psychosocial action" – which appealed directly to the "hearts and minds" of the colonized communities –, were directly related to housing and were fundamentally reflected in the production of so-called "native housing".

Based on self-built systems, the construction of houses by the local population was accompanied by conflicts between dwellers and technicians. These divergences resulted in the combination of multiple construction techniques with different cultural and ethnic origins. The phenomenon was documented by colonial bureaucrats and officials since the 1960s[9]. In response to the colonial government's decision to promote self-built dwellings as a strategy to address the housing shortage of the local population, debates about the potential of combining vernacular and industrialized techniques began to emerge within the architectural culture[10]. Thus, during modern colonization, several Western design proposals were put forward to integrate

solutions perceived by the Colonial Public Works (CPW) experts to be expressions of local culture. These proposals assumed that the inherited knowledge of the labor force could be used to facilitate this integration.

This paper examines the application of the concept of "community development" in the context of the single-family housing construction in former Portuguese colonial territories in Africa during the Cold War era[11] to gain insight into the strategies of self-production housing promoted by the Portuguese authorities. It intersects the "omnicompetence" of pre-colonial societies, a concept borrowed from the analysis of manual labor[12], as a latent civilizational dynamic, with a "new vernacular" construction promoted by industrialization, through the lens of "creole technologies"[13]. The aim is to trace a narrative of the colonial building sites of these residential landscapes through three processes of (alleged) optimization: how technicians described the core tasks of domestic-scale works and identified local agents with the "right skills"; how they tested the receptivity and capacity for self-production of housing through demonstrations (such as model houses); how they managed the interplay between local labor, traditional techniques and industrialized materials to achieve a greater number of units. To question how the building sites' dynamics impacted project design, the paper discusses three case studies from the perspective of different actors: the dweller in the role of the builder; the agency positioning itself as a promoter and developer; the architect as the designer.

2. THE DWELLER-BUILDER

Seeing the dweller as the inherent builder of his own house was a direct result of the colonial interpretation of the "community development" thesis, in which African populations were described as the main receivers of the ongoing infrastructural "modernization". In a rural setting, the aim was to enable the dweller to "farm the land, build his home and improve the village"[14]. The concept spread globally as "the set of processes by which the inhabitants of a country [join] their efforts with the public authorities in order to improve their economic, social and cultural condition" with the aim of "progress"[15]. Developed during the Cold War[16], the idea would be integrated into Portuguese colonial circuits based on the definition given by the United Nations (UN) and equally influential international institutions, as can be seen in the bibliography cited both among technicians based in the metropolis and among CPW and military agencies operating on the ground[17] (Fig. 2).

In most local African traditions, it was up to the landowner to build his house, spontaneously organized in family groups or with the help of his "neighbors"[18]. Towards the end of the 1950s, the Portuguese state began to exert systematic and compulsory pressure on the colonized populations to play an active role in improving their own living conditions. In the context of the construction of the house, labor was coerced, and no compensation was provided, since the resident was seen as the "main beneficiary"[19]. In many

operations that dealt with forced redevelopment during the Colonial War, the cost of "the participation of the population in the construction of infrastructure and houses" was explicitly considered to be zero[20].

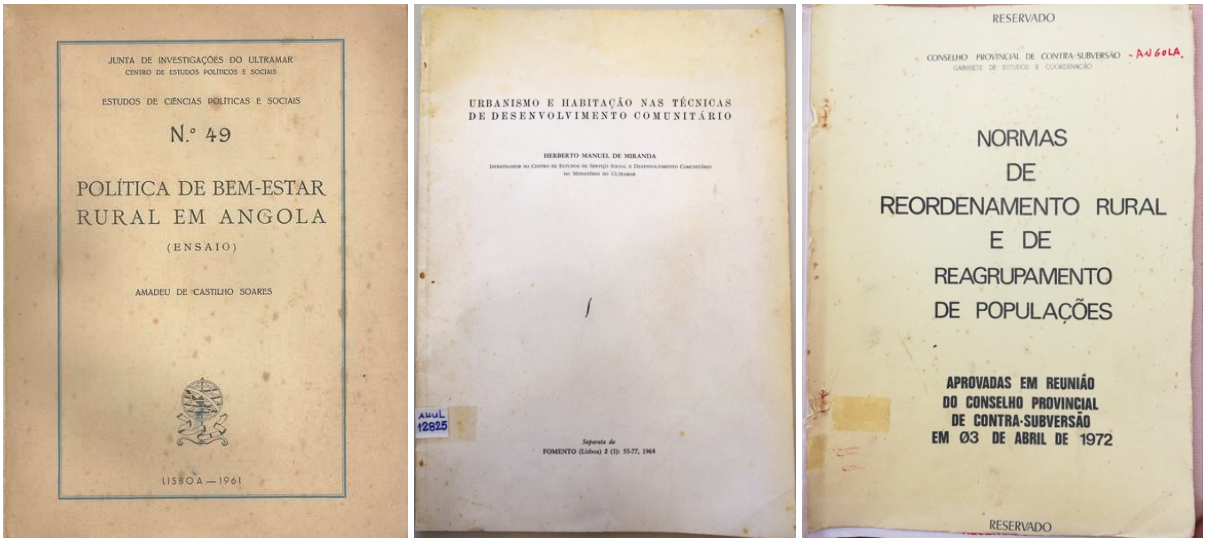

Fig. 2: Portuguese authors and agencies that directly cited the UN concept of "community development": 1961, Soares, *Política de Bem-Estar Rural em Angola;* 1964, Miranda, *Urbanismo e Habitação nas técnicas* de *desenvolvimento comunitário*; 1972, Conselho Provincial de Contra-Subversão [Angola], *Normas de Reordenamento Rural e de Reagrupamento de Populações.*

During this period, the agencies that accumulated responsibility for promoting the residential program demonstrated a profound understanding of the issue at hand. The military was at the forefront of institutions that undertook this obligation. The most significant example was the 447th Guinea Engineering Battalion (BENG)[21], created in 1964, which coordinated rural military resettlements until the eve of the country's independence in 1974[22]. As part of this program, 8313 "zinc houses" were built[23], 110 new villages[24] and around 150,000 people were displaced[25] – of the 584,402 Guineans who constituted the population of the future country[26]. Once land was cleared by the villagers, their participation in the construction of the houses was organized by gender. Women carried water to make adobes, while men dug the earth for the adobes, transported materials and built the walls. Because they were paid in food, people often preferred to work on improving roads and other territorial infrastructure, where they received monetary payments. Most of the housing plans were designed by the military themselves, using optimized layouts to minimize costs and maximize the number of buildings. The tradition of the circular house, studied in the early 1930s by the anthropologist Landerset Simões (?-?)[27] among twelve Guinean ethnic groups, was hardly reflected in the square design of the new dwellings. These houses had a central corridor and four rooms[28]. Not all typologies had *verandas* along their perimeter. Each house built corresponded to the daily work of ten men[29], and the collaboration of women was not accounted (Fig. 3).

Fig. 3: Population and soldiers involved in the construction of Nhabijões, Bambadinca, present-day Guinea-Bissau. Population Resettlements Services, c. 1969 (Source and courtesy: João António Leitão Simões Santos).

The materials were both locally and industrially produced. Among the former were the logs of *cibe*, a palm tree native to Guinea (*Borassus aethiopum)*, used as pillars embedded in the walls of *verandas* or to frame traditional roofs.[30] They were collected by workers recruited from the local population, stored at BENG's headquarters and then distributed to the various construction sites. The industrial materials ranged from the popular zinc sheets to galvanized nails or lead washers[31]. In the new houses, the presence of industrial materials and more refined finishes – such as plastered walls or paved floors – was linked to the hierarchical position of their occupants within the community. However, the existence of these imported materials was combined with local techniques, suggesting the formation of hybrid combinations that "also themselves became new creole technologies"[32], as argued by David Edgerton (b. 1959) elsewhere. This is evident in the continuity of some of these procedures today. The local production of adobes was probably the technology that best illustrated this reality. They were made from clay soil suitably kneaded with straw, shaped[33], and dried in the sun for at least two days[34]. Although they were made from a resource that was abundant in "many African countries", as the UN reports pointed out, they were transformed into building elements that were part of a tectonics dominated by the colonizers. The adaptability of this raw material "for the manufacture of all kinds of bricks ... and other ceramics"[35] allowed for variations in its dimensions – ranging from the standard 0.20x0.20x0.40 to 0.10x0.17x0.30 meters – thus influencing the number used in the construction of each house, but also its overall configuration.

Given the context of the homogenization of design and construction systems, the number of ancestral–traditional skills used by the residents as builders was relatively small. At the time, there were no reports of elaborated finishes such as the mural paintings created by the women of the Bijagós islands inside their

"palhotas", as described by Landerset Simões more than three decades earlier[36]. It was a question of promoting a typology, with few variations, executed by populations trained by teams of militiamen duly trained by BENG. They were recruited *en masse*, not because of their hereditary skills, but because of the serial nature of the construction process. The operation ended up resulting in an "acculturated" landscape, due to the presence of "a type of housing with the characteristic mark of European colonizations in Africa"[37]. Teams composed of an ensign, a *furriel* [sergeant] and two corporals with previous knowledge of carpentry and masonry learned the construction process in five stages using life-size models located at the battalion's headquarters: laying the foundations; building the exterior walls; interior partitioning; roof framing; finishing. The existence of these teams was limited to military deployment cycles (between two and three years)[38], which required the constant training of new men. Since the cost of the work was zero, both for the population and for the military, the funds were spent mainly on materials.

Images of the building sites during the resettlement operations showed soldiers engaged in the completion of roofs or other finishes and the construction of collective facilities associated with more "permanent" technologies[39]. This procedural standardization, based mainly on imported materials and "foreign–alien" technical knowledge, reduced the use of vernacular systems. However, these were still evident whenever the material was local, such as in the houses entirely covered in thatch, intended for most of the population; or in details, such as the roof lining. Regarding the latter, the militia ensign J.A. Leitão Simões Santos (19??), responsible for the resettlement of Nhabijões (1969), proposed buildings to be inspired by the *Casa Balanta*, one of the dominant ethnic groups in the region[40]. According to him, "in addition to its extraordinary freshness, this ceiling [protects] the occupants and their possessions from the danger of fire caused by the grass cover on the outside"[41]. There were four stages to the construction: the placement of sticks forming an orthogonal mesh and resting on the walls; their covering with a uniform layer of grass; the placement of rice straw; and finally, the introduction of an aggregating layer of slightly fluid mud.

The occupation of rural populations with the construction of equipment and houses was also intended to keep them away from guerrilla activities while promoting regional planning that would reduce the exodus to the cities, which were under great demographic pressure. This strategy not only reduced the financial burden on the colonial state but also led rural communities to create "ordered" areas based on security and control imposed by the conflict.[42]

3. THE PROMOTER-DEVELOPER

Populations in urban and peri-urban areas were also considered crucial resources for reducing the colonial state's substantial expenses on mass housing initiatives. The effectiveness of the principles of "community

development" was assessed through the management of these workers, whose skills were indistinguishable in the eyes of the colonial authorities. It was up to the agencies that coordinated the funds for the construction of the "native neighborhoods" to manage them in relation to their stated objectives. In Angola, one of these agencies, the future *Comissão Administrativa do Fundo dos Bairros Populares* (Administrative Commission of the Popular Neighbourhoods Fund, CAFBP), was established in 1956[43] and consolidated its activities in 1961. In less than a decade it would be replaced by the *Junta Provincial de Habitação* (Provincial Housing Board, JPH). [44]

In 1962, the CAFBP was tasked with presenting a proposal for Luanda Island that would reposition the *sanzalas* of Ponta (26 hectares), Lelu-Lunda (5 hectares) and Sarga (including the future expansion area). These constituted three informal Axiluanda settlements, with an estimated population of 2,485 inhabitants[45]. A first project was rejected because it did not consider the traditional "habitat" and proposed buildings that were unsuitable, especially for the climate. The rejection reflected the technical and social demands that were beginning to take hold among political decision-makers, social workers and planners, forcing them to catalog elements of human geography that would inform the proposals[46].

A total of 49% of the male population was engaged in fishing, and 43% of the women were also involved in the same economic sector. The strong social, economic and cultural cohesion of the Axiluanda meant that the decision-makers did not move them. A survey of construction technologies would reveal not only the configuration of the self-built houses, but also the materials used to maintain them or build new ones[47]. These were rectangular buildings, housing families of up to ten elements[48], with "one door with one or two leaves" and "small windows ... open" on the front and back facades[49]. They ranged from one-bedroom to two-bedroom houses and had a hall/corridor leading from the street to the courtyard. They had no sanitary facilities. The roof could be either hipped or gabled.

Photographs taken as part of the survey revealed the coexistence of different recycled materials, "from roofs made of old drum skins, canvas coverings, patios enclosed by barrel vaults, to zinc sheets, mats..."[50]. Used for repairs, they did not correspond to the true nature of the original materials. For each new construction project, materials of exclusively vegetable origin were collected to form a "type" set: *jitungu* ("pacos"); coconut palm slats; white "tola"; *kibaba*; mulberry tree; *luando* (mats made from a water plant); *mateba* (matebeira leaf); and *kisalala* (local coconut palm leaf).[51] The construction work involved an experienced master builder and teams of up to 20 men, including friends and family, in a spirit of mutual aid (Fig. 4).

Fig. 4: Stages in the construction of *Casa Axiluanda*: ceremony of pouring wine into the jitungu; building walls with luandos; framing the roof with coconut tree slats. (Source: Fernão Lopes Simões de Carvalho, *Contribution à l'étude du renouvellement des groupes d'habitations des pêcheurs de l'Île* de *Luanda-Angola*, c. 1965, p. 46 and 53. Courtesy Inês Lima Rodrigues).

Based on this survey, a new preliminary project was approved by the Luanda City Council in 1963, proposing four typologies, adding the three- and four-bedroom versions to those already familiar to the population. It included a bathroom and a kitchen per housing unit. What would remain of the lessons learned from the Axiluanda building tradition in the new design? The architects involved, Fernão Lopes Simões de Carvalho (b. 1929) and José Pinto da Cunha (1921-1985), confirmed the "respect [for] proportions, aesthetic sense and even [some] layouts" in the plan followed in the new residences. They stated, however, that the "traditional materials" would only be kept "insofar as they [did] not impair the habitability of the new buildings"[52]. This meant translating a vernacular system into a global technology. Faced with the demands of a system that was "unusual" among the population, how could a local workforce specialized in artisanal methods be employed?

To halt the advance of unregulated occupations, the CAFBP tried to get the population on board through psychosocial interventions. Colonial authorities, representatives of social welfare agencies[53] and architects met with male members of each of the three *sanzalas*. The low turnout at the meetings, however, illustrated the limited experience of participation of these almost illiterate populations[54], partly due to the dictatorial structure of the regime. Questions concerning urban strategies, such as the location of school facilities or social centers, met with the silence of the majority[55]. The opposite, as this paper later shows, happened in areas that involved the private sphere of housing, such as materials or functional accommodation[56]. The answers could also be the result of gendered experiences of the participants in the surveys[57].

As part of the process, the agency supervised the execution of two model houses of the larger typologies that corresponded to the three- and four-bedroom additions. At first, "social workers were given the opportunity ... to assess the ecological and human conditions of the [new] houses and to evaluate the inhabitants' appreciation of the new environment"[58]. Less openly, it was also anticipated that the implementation of the projects would provide the population with the fundamental tools to move forward with semi-autonomous construction. The positive reception of the initiative by the residents raised expectations about the success of the operation. However, given that only 3% of the population were

carpenters, painters or bricklayers[59], CAFBP officials realized that "the number of people ... who possessed some [of the] basic skills [needed] was very small"[60]. With the chance for dwellers to build their own homes having failed, reactions to the design were expected. Among the most problematic decisions was the technical choice of roof. To the question: "Are you in favor of a coconut leaf roof?", 68% of respondents expressed their disapproval. The following question, which inspired the title of this article, already implied negotiation: *What material would you like it to be made of?*... "Zinc because it's more resistant; tile because it's cooler. [68% to 32%]" (Fig. 5)

Fig. 5: Model Houses: typologies: three- and four-bedroom, c. July 1965. (Source: Carvalho, *Contribution à l'étude du renouvellement des groupes d'habitations des pêcheurs de l'Île de Luanda-Angola*, c. 1965. Courtesy Inês Lima Rodrigues).

The final housing plans from the CAFBP confirmed the confrontation between the resistance of ancestral forms and the innovations brought about by globalization. The designs retained the same "scale practiced in the existing traditional houses [and identical] internal layout", contrasting with the use of "lusalite over wood"[61] on the roofs. It was not easy for the design team to choose a material to replace the vernacular roof, such as fiber cement[62]. Unlike bureaucrats, the architects understood the traditional roof as representing one of the many skills of the Axiluanda[63] that were disappearing. However, by orienting the design towards Western construction methodologies, the design team effectively distanced the local population from the construction site. This solution also compromised the initial economic viability projections, which relied on a *close to* zero-cost workforce.

In the meantime, international agencies were monitoring the increasing predominance of "l'amiante-ciment" (fiber cement) in Africa, while concurrently noting a decline in the utilization of plant-based raw materials[64]. This shift also represented a threat on people's autonomy in the production of their own houses. However, these communities rapidly adapted to industrially manufactured materials, which although "not invented in the poor world", had been "first exported to it, and then locally produced", as evidenced by the expanding construction industry in Angola. This resulted in new landscapes described by new terms such as "self-help housing" or "self-construction"[65].

AXILUANDA HOUSE			**"NEW" HOUSE**	
Material	**Plant Taxonomy**	**Construction Elements**	**Construction Elements**	**Materials**
Jitungu	*Ptaeroxylon obliquum Thub. Radik*	Stakes	Foundations	Stone masonry or cyclopean concrete
Coconut slats	*Raphia textilis Welw*	Roof structure	Flooring	Smoothed and spoon-fired screed with 2cm joints filled with asphalt bitumen
White "tola" [wood]	*Gossweibrodendron balsamiferum Harnes*	Doors and windows	Pillars, beams, belt lintels	Raw stripping concrete
Kibaba	*Khaya anthotheda welw*	Doors and windows	Roofs	Living space: Lusalite over timber; Kitchen, sanitary facilities and passageway: lightweight reinforced concrete slabs
Amoreira	*Chlorophora excelse welw.*	Doors and windows	Doors and windows	Angolan wood painted with oil paint; Metal Hardware
Luando	*Cyperus Papirus L.*	Walls and ceilings	Windows	0.002 m thick glass
Mateba	*Hyphaene luandeusis Gossw.*	Roofs	Walls	Solid terracota brick masonry Plaster painted with water-based paints
Kisalala	*Cocos Romanzoffiana Cham*	Roofs	Fences	Bamboo Solid terracota brick grills

Table 1: Comparison between materials and construction elements of the Axiluanda House and "New House". Carvalho, *Contribution à l'étude du renouvellement des groupes d'habitations des pêcheurs de l'Île de Luanda-Angola*, c. 1965, p. 45/53; Carvalho and Cunha, "Memória Descritiva e Justificativa Geral", CAFBP. *Housing Type A*, 30/06/1965, 3-5. PT/IPAD/MU/DGOPC/DSUH/1973/01458 (Source: Author/ArchLabour).

According to colonial experts, the materiality of the new houses had the advantage of being "permanent", in contrast to the ephemerality associated with the existing buildings. Comparisons between vegetable and industrial materials made this argument more eloquent, and it was decisive in the population's acceptance of the operation set up by the CAFBP (Table 1). The commitment of the Portuguese authorities to rehabilitate the areas inhabited by the fishermen involved the organization of an area whose informality was detrimental to the identified tourist and economic potential. Its sophisticated design would echo in recent historiography

as a paradigm of integration between the so-called "native" cultures and the globalization brought about by modern colonization[66]. However, walls contained the few details that allowed them to communicate with the materiality of the old Axiluanda houses, by using "bamboo", commonly called *bordão* or *luando*. These finishes can still exceptionally be found today[67]. Paradoxically, the new fishermen's houses also reveal their vulnerability in the search for a cosmopolitan attribute given by industrial materiality. In the end, this was not enough to save them from contemporary demolition.

4. THE ARCHITECT-DESIGNER

For architects working in the late colonial period, the service to architectural culture that "community development" could provide depended on the ability of the dweller-builder to follow their guidelines. The architect Francisco Castro Rodrigues (1920-2015), head of Urbanization Services at Lobito Municipal Council (SUA-CML), a port city in Angola, considered self-construction to be an efficient device in large-scale urban reordering actions. This perspective was made evident in his participation in the "*Operação Alto Liro"* [Alto Liro Operation]. The plan was designed to contain the growth of the *sanzalas* [settlements] built by former rural populations, which had since been "detribalized"[68]. After Angolan independence, Rodrigues described the system used in Alto Liro as the construction of houses by "the people ... studied in dignified projects and in perfect technical conditions of health, hygiene, aesthetics and durability, compatible with human needs"[69]. It associated "self-construction" with qualified design, pursuing the UN in suggesting that "the use of a method [involving] the construction of houses by the interested parties themselves [would be] combined with the provision of technical assistance under the community development scheme"[70].

The program, launched in 1971[71], was the result of a series of experiments that the municipality had been trying since recognizing the lack of housing on Lobito's outskirts in 1959, two years before the start of the liberation war in Angola[72]. The proposal also involved a public intervention calling for social peace. In the words of the municipality's public relations department, "without workers housed in hygienic conditions, the wealth of ... everyone will not [grow]"[73]. Gathering patronage required propaganda through radio programs and the written press. Private institutions assisting in the construction of low-income housing and corporations willing to fund houses for their employees were among the supports[74]. In the *sanzalas*, where the mass of domestic, industrial and commercial workers was based, intensive campaigns were carried out.

The call of the population not only justified "welfare policies", but also prevented the housing developed for the so-called "economically weak" communities, composed mainly of Africans, from being diverted to the colonial middle classes. This was the fate of many public-funded developments, which had since been transformed into "developed neighborhoods", whose construction costs prevented them from achieving

reasonable results[75]. As recent studies have argued, these "welfare policies" also sought "to mold and westernize colonized subjects into docile citizens through paternalistic state loan criteria and construction guidelines"[76] – thus describing the incentives for self-construction in colonial environments through the subalternity to which the residents were subjected, even if they exclude other narratives. Nevertheless, Castro Rodrigues's personal belief in the process, even if *distorted* by his privileged position, should not be dissociated from his later biography and his confidence in the independent Angolan nation[77]. In his opinion, even if the *Operation* provided for an elementary residential unit and was essentially based on labor that could not be quantified in terms of costs, its success was measured in the high number of units completed. In two years, 7500 houses were announced.[78]

The strategy was remarkable for its apparent simplicity. It began with the division of plots in the Liro Valley, extending to the upper areas of the plateau at an average altitude of 120 meters and initially covering 68 hectares[79]. Access to the plots was by application to the administrative offices in the Caponte district, close to the industrial zones[80]. The beneficiaries – described as "concessionaires"[81] – were subject to income limitations. Population surveys were not carried out to reduce the duration of the project's implementation.

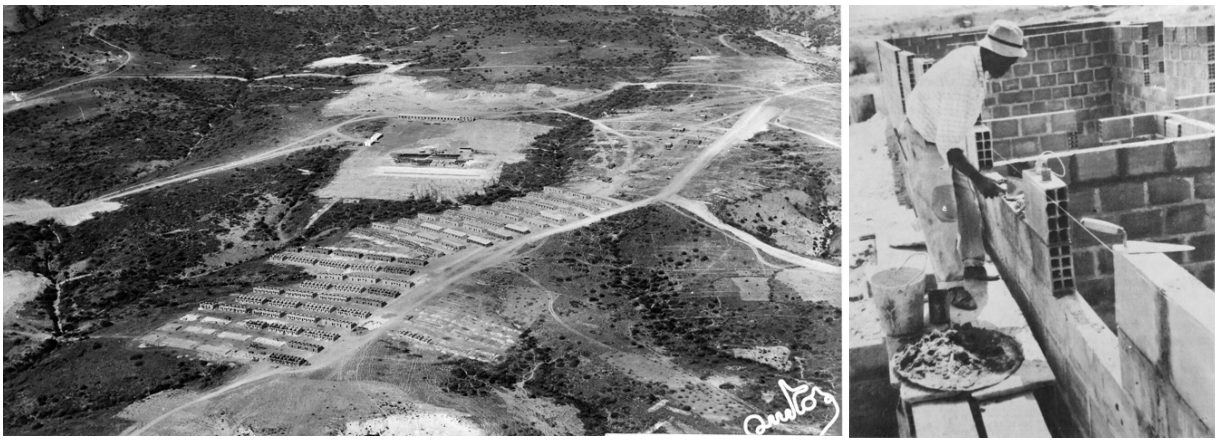

Fig. 6: View of the new neighborhood and construction of houses, "Operação Alto Liro", c. 1971-1973. (Sources: Francisco Castro Rodrigues/José Marques Leandro, "Programa do Fomento e Reordenamento Urbano no Lobito", *Boletim*, Lobito Municipality, [1973], Year II, n. 15, p. 19).

The single-story houses were characterized by three materials that corresponded to the same number of building elements: "masonry foundations, brick elevation walls and fiber cement roofs"[82]. They often rivaled in appearance the "*palhotas*" [huts] made of wattle and daub, which were condemned for demolition by the municipal inspection services[83]. Critics pointed to their precarious layout, the result of not following "the best rules of construction". In response, the "Alto Liro Operation" supporters believed in "future improvements" resulting from "acculturation" processes[84].

The "concessionaires" were shown a model housing project, presented as a guideline, and were required to follow the alignments and yards. The house would grow up to three bedrooms. In the first phase, the "council provided free land and water for the adobes"[85]. With steady bank financing, a new period in the Alto Liro project resulted in materials with more industrial profiles. An office and a materials depot were set up locally to support the different domestic building sites that sprang up with each new allotment of land. It was accepted that it would be impossible for all dwellers to become builders, since the systems used, although routine, were based on Westernized methods. This created an opportunity for the proliferation of specialist skills related to each stage of construction, giving rise to "small contractors"[86]. The inadequate technical preparation of many ended up having an impact on the lack of quality in construction. To overcome the difficulties of becoming "builders", the "concessionaires" could choose between two possibilities: an empty plot or a partially completed plot, corresponding to the "foundations and walls in elevation"[87]. Since the use of grass was allowed, the roofs were left unfinished, relying on the hereditary skills of these people.

The supply of materials was centralized. The promoters provided bricks, cement, fiber cement sheets, doors, windows, ironwork, stone and sand. These materials were purchased by the municipality from factories in the region. The ceramic factories were in Catumbela, Benguela and the former Sá da Bandeira (now Lubango)[88]. Disruptions in supply meant that a local construction site had to be set up to produce cement blocks. Around 1973, the authorities calculated that the enterprise was using "151,000 bricks or blocks, 400 kilos of explosives, 2640 m3 of stone and 1300 m3 of sand" every month[89]. In Alto Liro there were "entire families working tirelessly, building their future home with their own hands"[90], suggesting that the *Operação* was rooted as a collaborative network based on mutual aid. For Castro Rodrigues, this was a model to be replicated. In the city's master plan, he would not only describe it as a "Neighborhood Unit typical of future development"[91], but also maintain "the criterion of assigning a plot to each household and making them its definitive concessionaire"[92] (Fig. 7).

Fig. 7: Men and women working at the cement block production site, "Alto Liro Operation", c. 1973 (Source: José Marques Leandro, "Programa do Fomento e Reordenamento Urbano no Lobito", *Boletim*, Câmara Municipal do Lobito, [1973], Ano II, n. 15).

Setting the house in the plan remained the architect's only instrument of control. Acquiring almost vernacular contours in the simplicity of the form, it eventually allowed for "construction according to traditional techniques", still subject to planning translated into "alignments and densities"[93]. Castro Rodrigues called it "para-urbanism"[94], a transitional state that would allow populations formerly settled in *sanzalas* to have a quasi-urban experience. For him, the Alto Liro Operation showed how individual effort, managed through technically supported self-construction, could serve a disadvantaged population and provide it with a minimum level of urbanity.

5. CONCLUSION

From a colonial perspective, the three case studies in this paper shared the same socio-economic profile of the populations for whom these mass housing programs were designed, despite their different geographies (settlements in former Portuguese Guinea; and the cities of Luanda and Lobito in Angola) and spatial settings (rural, urban, peri-urban). The focus of these housing programs was on the *transformation* and *translation* of these populations into "labor", as endorsed by the UN's recommendations for "community development". This strategy anticipated social peace – since people were expected to see participation as a "benefit" in their own interest, distancing themselves from political opposition and independence struggles –; while reducing financial support from the state – as the labor spent on construction was registered as "unpaid", essentially

accounting for the cost of materials and possibly land. The system of "self-construction" crossed all three cases, despite different strategies on design, tectonics, participation and "workers-beneficiaries".

Fig. 8: Houses in the former military resettlements (Ingorezinho Guinea-Bissau), in Bairro dos Pescadores (Fishermen's neighborhood, Luanda, Angola), and in Alto Liro (Lobito, Angola) (Source: Author, 2022, 2023).

In the context of the new strategic villages promoted by the BENG in Guinea-Bissau, it was assumed that the population would cooperate in the construction of their new houses. Local people were organized into teams supervised by the military on a single construction site. Although women were involved in the process, the teams were usually referred to as male. The dweller participated indirectly in the construction of his house, as the building would be assigned to him afterward. It is not (yet) possible to establish the mobility patterns of the "builders" between the different resettlements. This was a highly regulated and centralized system, carried out on site by military personnel limited by the length of their own deployments. These facts suggest that (most likely) a local workforce was allocated to each new settlement.

As for the Fishermen's neighborhood in Luanda Island, the population's participation was evident in the final settlement of some (few) project decisions. Communication and negotiation platforms were tested by the CAFBP, the promoter-developer agency, through different strategies. These ranged from meetings with the populations of the three former *sanzalas*, conducted by agents of colonial institutes linked to social action, to the exemplification of the materialities, functionalities and construction methods of the residence designed by the architects, using the assembly of two model houses. As far as the archival documentation shows, the construction of the houses did not make full use of the human resources of the Axiluanda community. It can be speculated that the construction systems inherent in the design used may not have been within the skills of this population. However, the occasional use of ancestral techniques such as *bordão* or *luando* on ceilings and fences revealed an approach to ancestral tectonics in its more immersive aspects, which would later be highlighted in international architectural culture by critics such as Frampton.

Finally, in the Alto Liro Operation, the "concessionaires" represented an unpaid workforce. It was up to each individual to build their future home. The implementation of the program was based on the skills of the dwellers and their support networks. The "Neighborhood Unit" envisioned by the architect resulted from the

sum of the different domestic building sites, comprising families and "neighbors". The use of construction systems rooted on materials of a more industrial nature, which were frequently beyond the scope and capacity of individual skills, resulted in the creation of business opportunities for small contractors. As a developer, the City Council acted as the major supplier of land and materials, in addition to "design", which was executed through the technical expertise and skills of municipal professionals, including the architect. Employers and private institutions of public utility were among the agencies that supported the program by directly financing some housing units.

The roof, the construction element that opened this article, provides insights into the relationships between the architects-designers and the residents-builders. The technologies employed by the latter, drawn from a vernacular lexicon, were tolerated on the condition that they were framed by the "design"; or, in other words, if they were "technically aided". In this context, the progressive adoption of solutions with industrial materials and global construction systems by the local population had a significant impact on the built landscapes of late Portuguese colonialism. The architect was an intermediary, acknowledging and reviving the quality of traditional local technologies while accelerating the implementation of housing programs in alignment with the expectations of the population.

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Traditional Dwellings and Settlements
Working Paper Series

MINING LABOR, HOUSING, AND BUILDING SITES ACROSS CENTRAL AFRICA

Beatriz Serrazina

MINING LABOR, HOUSING, AND BUILDING SITES ACROSS CENTRAL AFRICA

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This paper will critically analyze the intersections and interactions between African labor, skills, tasks, building materials and methods in the construction of mining camps in Angola and the Belgian Congo during the 20th century. It argues that camps are a fruitful environment in which to explore multiple dimensions of cosmopolitanism within the colonial context. The construction processes and the influence of construction methods and training are examined. The paper concludes that workers played a pivotal role in shaping their dwellings and camps, and their involvement in construction resulted in cosmopolitan relations and spaces.

1. INTRODUCTION

Mining camps for workers were a central space of the extractive business of European colonialism in Africa during the 20th century. Thousands of African men and their families were needed by the companies to support the mining operations and were settled, often forcibly, in quarters and villages around mines, under the guise of "paternalism". The provision of housing was a major issue for mining companies, as they were legally obliged by the colonial governments to house each "contract worker", and had to meet particular standards, such as minimum surface area, height, and ventilation. This paper focuses on the construction of mining camps in Central Africa, spanning the operations of the Union Minière du Haut Katanga (UMHK) in the Belgian Congo and the Diamond Company of Angola (Diamang) in Angola. Research has shown the evolving material conditions of these camps over time.[1] The straw huts from the late 1910s were gradually replaced by mud and adobe brick houses. Single-family housing typologies, with rectangular floor plans, two or three rooms, doors, windows and a veranda, were favored by companies over workers hostels or collective blocks, firstly due to health concerns and later to promote a Western-type nuclear family environment. However, little is known about the intersections and interactions between companies' policies, African laborers, construction *savoir-faire*, tasks, building materials and methods.

By focusing on the building process rather than the building object, this article engages with an insightful body of scholarship that has shed light on the pivotal role of construction sites and labor skills in architectural history, as well as the connections between them. The conceptualization of construction yards as "trading zones" – with an emphasis on the need to consider the historical contexts, the multiple participants, and the specific nature of their communication – has shed light on the mutual influences of those involved, implying the simultaneous use of different tools, construction systems, materials, and techniques.[2] Additionally, migration studies have stressed that every mobile worker – as those in mining camps in colonial Africa – is a "knowledge learner, carrier and potential transferrer."[3] These perspectives emphasize *interaction* rather than

diffusion as a critical framework for expansive architectural histories and challenge previous studies of omnipotent technology transfers from Europe to Africa.[4]

African workers in Lunda and the Copperbelt were pivotal to the construction of mining camps (Fig. 1), yet their contributions remain overshadowed by the broader narrative of colonial expertise, "modernization," and "development". Despite challenging conditions under colonial rule, laborers revealed significant skill in their construction efforts. Traditional artisans, with expertise in masonry, carpentry, and other crafts, played a significant role alongside large groups of still "invisible" men, women and children. They were often tasked with building their own houses, using a combination of traditional construction techniques and new methods introduced through colonial influence. This self-construction not only mitigated the (often) inadequate housing provided by the companies but also reflected – to some extent – the laborers' adaptation to and interaction with new materials such as brick, corrugated iron sheets, and imported cement. The use of local materials – like mud, straw, and wood – overlapped with the incorporation of Western architectural elements and led to the emergence of hybrid forms of housing that were practical and culturally significant.

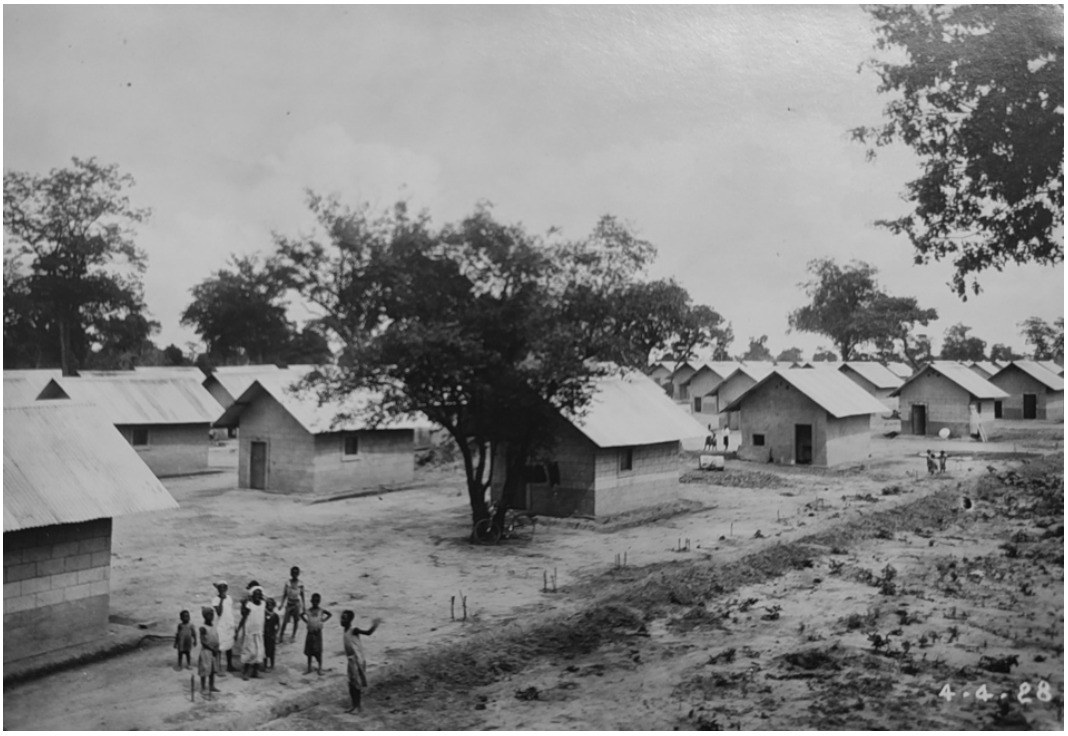

Fig. 1: "Union Minière, Lubumbashi Camp, Katanga, April 4, 1928" [Elisabethville] (Source: AGR, Sibeka, 530).

These interactions resulted from and led to mining camps as highly cosmopolitan sites. Mining areas were, in fact, shaped by multiple mobility flows and became "hubs" of international connections and cross-cultural exchanges.[5] Against this backdrop, this article responds to the need to focus on marginalized actors at the

crossroads between cosmopolitanism and architectural history, as recalled by Eunice Seng and Jiat-Hwee Chang.[6] By pulling the companies together, it aims to highlight the role of business ventures in planning and designing space in Africa as well as the flows of spatial practices and cross-fertilized knowledge between Angola and the Belgian Congo. These two colonial powers persist as marginal and understudied contexts, yet the intersections between them provide fertile ground to explore colonial architectural practices and surpass the narrowness of national boundaries and identities.

The article expands on previous research and is mostly based on archival material collected in the companies' archives in Portugal and Belgium.[7] These records evidently offer a limited perspective on the construction processes and require a critical view of the accounts produced by colonial officials. Nevertheless, they remain a fundamental source for analysis. The role of photographs is particularly relevant, as they provide additional layers and show information that is missing from the written narratives. The following section provides a brief historical overview of mining camps and their cosmopolitan nature. The third part questions the agendas and roles of African laborers in the construction of camps. The fourth section focuses on the multitude of construction methods and the significance of training.

2. INTERSECTIONS: MINING AREAS AND COSMOPOLITANISM

UMHK and Diamang were closely connected since their inception. The Belgian mining company was established in 1906 and had its main center in Elisabethville, in Southern Belgian Congo (today's Lubumbashi, Democratic Republic of Congo). The town was considered the "heart" of the Copperbelt, a large mining region between Belgian Congo and Northern Rhodesia.[8] The Portuguese mining business was set up in 1917 in the Lunda region, in the north-eastern border of Angola, following the survey work of Belgian prospectors.[9] The company's headquarters were in Dundo, a small settlement a few kilometers away from the border. Both companies were funded by the *Societè Genèrale de Belgique*, under the rule of Jean Jadot, a Belgian engineer, and were part of a larger "Cape to Katanga" team of African "Miners".[10] Managers and technicians traveled between mining sites across South Africa, the Belgian Congo and Angola, leading to transnational networks in the creation of "little Americas" that supported extractive exploitation.[11]

Elisabethville and Dundo were both noticed for their "cosmopolitan character" during colonial rule. The building environment was simultaneously a pre-condition and a result of such cosmopolitanism. The construction of "foreign" red brick bungalows and the use of electric lighting was highly praised by colonial narratives since it represented the "taming" of wilderness in remote places in Africa.[12] Studies on "colonial" or "tropical" housing pointed to the companies' dwellings as "references" and "case studies", which stood out by crossing local and international realities.[13] Houses for the white personnel, with large verandas, were

seen as highly contrasting with "small and always white houses" of Portuguese colonialism elsewhere in Angola.[14] Similarly, the labor camps were the subject of extensive studies by doctors and scientists, particularly in Katanga, and served to illustrate "best practices" for other colonial businesses.

Notwithstanding this shared background, significant geographical and social differences were also observed between the mining sites. Elisabethville grew around UMHK's factories, white staff hub and workers' camp, but it also welcomed plenty of other commercial and leisure activities. These included Italian, Jewish, Portuguese, Greek and Asian traders, who were collectively referred to "*petit blancs*", as well as a significant African population who resided in segregated quarters.[15] In contrast, Dundo was exclusively inhabited by Diamang's personnel and any entrance in the mining concession had to be authorized – even if the numerous renowned visitors and colonial officials were invited in and participated in cosmopolitan exchanges. African villages surrounding the town center were exclusively occupied by mining workers and families (Fig. 2). Transport systems played a role in shaping these realities. Elisabethville was connected to the railway line from Southern Africa to the Lobito port, while Dundo was only accessible by road. The perception about these locations was also contrasting: the Copperbelt was considered to be at the "crossroads" of Central Africa and a "portal of globalization",[16] whereas Dundo was regarded (even if mistakenly) as a "fringe" of Angola.

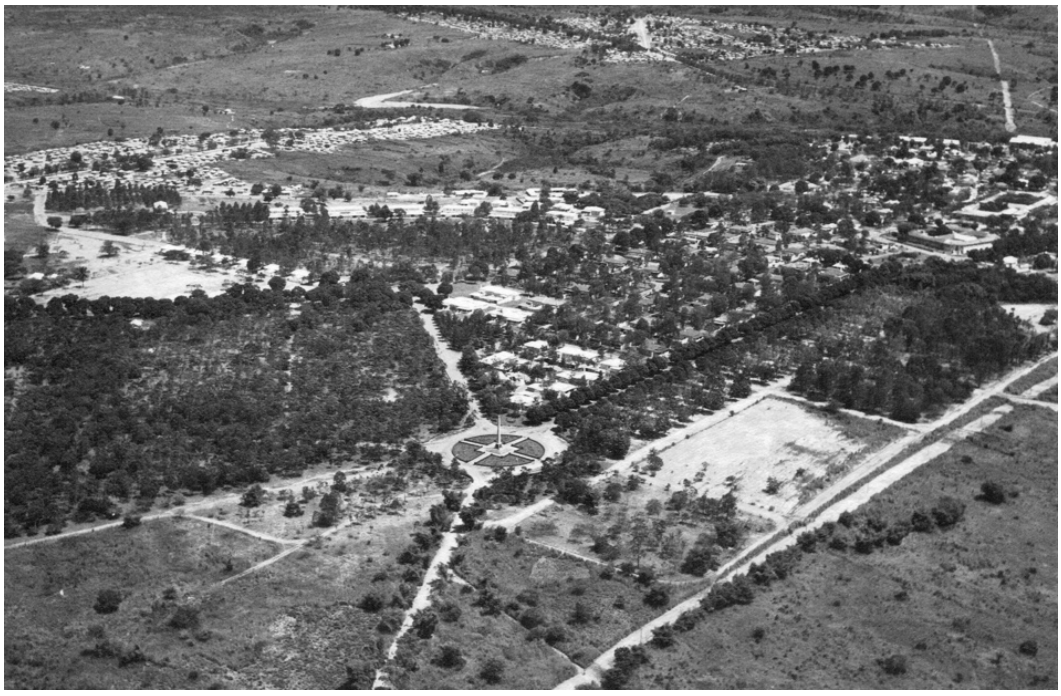

Fig. 2: Aerial view of Diamang's headquarters in Dundo, Angola: on the right, the workers camps; on the left, the town center (Source: Júlio Pedro's personal archive, circa 1960s).

Drawing on Amanda Achmadi and Brendan Josey's conceptualization of cosmopolitanism as "a form of subalternity and spatial agency emerging out of the intersectional nature of living and operating within the multifaceted social landscape of built environments",[17] this paper argues that mining camps for workers were also fruitful settings in which to explore other dimensions of cosmopolitanism and architectural practices within the colonial context. Not only in everyday life socio-spatial dimensions, but also during the processes of their construction, which involved complex interactions between builders, housing experiences and expectations, and building technologies. Company officials recognized early on the central role of construction tasks in shaping a "modern" and "skilled" workforce, as well as the role of workers in shaping construction methods. This recognition took several directions, which together reveal the importance of African housing and building and crafting techniques in mining contexts, as well as the strong connections between the spatial approaches of UMHK and Diamang.

The first strategy involved the construction of "Native Museums" in Elisabethville and Dundo in the early 1940s, both managed by the companies and with purposes of "observation" and "education".[18] In this context, Diamang also developed "Native Folklore Village", coordinated by José Redinha (1905-1983), a Portuguese ethnographer, who was considered a "profound expert" on the Lunda region and its inhabitants.[19] The "folklore sanzala" played a crucial role in everyday life in Dundo – and perhaps in later "welfare policies" of the Portuguese colonial state, to be explored by future research.[20] Local artisans were invited to stay for short periods of time and show their crafting skills. The material resulting from their activities was displayed in the museum and used by Diamang to support a "scientific narrative" within the mining venture.[21] The construction of the village was carefully planned. It was located in a central area in the company's headquarters and described in reports as a "chokwe *sanzala* [village], with 16 houses of different types, following the construction methods of indigenous dwellings".[22] The layout and construction of the site was said to have complied with local traditions, including building techniques. Among the "customs of the ancient Africans" were the use of "good wood" and grass, the superficial burning of the props in contact with the ground as a conservation strategy, the construction of a veranda at the front, the internal and external cladding of the walls with red mud, and their painting in white. It was also common practice to adorn the walls with clay and charcoal paintings. Meaningfully, most of these practices were used in the building methods promoted by the company's labor service in the following years across workers villages. This approach shows that "colonial knowledge" on the construction of the house was also rooted in local practices, giving rise to "creole technologies" that were neither necessarily modern nor simply traditional.[23]

The second strategy entailed competitions for the "most beautiful houses" (Fig. 3). These were initially promoted by the UMHK in the late 1930s, and were included in the company's guidelines for "stabilization" of labor.[24] The competition was intended to "encourage builders and occupants alike", emphasizing the

autonomy and important role given by companies to those involved in construction.[25] The scarcity of records suggests that this plan did not have much impact in the Katanga camps, but by contrast, a similar competition was used by Diamang in Angola to promote a "Western-type house" and lasted for nearly two decades. Photographs from the first editions show that African families made an effort to comply with the company standards. The winning houses had front doors, windows, verandas, and painted walls. Until 1955, participation remained consistent, boosting other prizes or mid-term versions, such as the "Contest for the best indigenous houses". Women's role in supporting a steady and clean household was emphasized. By the late 1950s, however, SPAMOI's reports began to assert that the department would have to "direct and even carry out" most of the construction work. The inhabitants expected Diamang to supply materials, mainly adobe blocks and aluminum sheets, because they recognized that this was the winning model, not because they were abandoning their traditional construction methods. It was also noted that the competition was being used for the social advancement of certain groups. In this regard, the service wrote that "the workers who want this type of house [made of brick and zinc roofs] want to elevate themselves above the rest, creating a pseudo-prestige. The traditional villages where the big house in the center belonged to the soba are becoming rare".[26]

Fig. 3: Diamang's Best Village Contest, "Winning village", Lunda, 1960 (Source DCV-UC/AD).

These plans and outcomes show that the construction of the house was a crucial process in which the white and African communities worked together from an early stage, often embedded in multi-layered cosmopolitan flows, merging large "scientific" networks with local yards. While the house as a finished project undoubtedly had a great impact on everyday life and on the transmission of specific perceptions and

standards of living, the building processes also required complex processes of communication, negotiation and learning, as different materials and systems were involved.

3. BUILDING WORKERS CAMPS: PLANS, TASKS AND SKILLS

The first plans for mining camps were based on hygiene and health concerns. Guidelines by Belgian doctors employed by UMHK, namely Arthur Pearson and R. Mouchet, René Van Nitsen, and Leopold Mottoulle, circulated between the Belgian Congo and Angola's mining areas.[27] These books, published between 1922 and 1946, presented numerous plans, notes on building materials, housing typologies and layouts, but did not consider the tasks and roles of those involved in construction. As previously mentioned, companies were legally obliged to "provide" housing for workers, but it was the workers themselves who built the houses.

During the initial decades of operations, the construction of housing for workers and their families was overseen by the companies' labor services. A substantial search for a "house-type" and "model villages" was documented in reports and publications. However, photographs of the mining camps reveal a variety of building techniques, thereby undermining the effectiveness of colonial realizations and "homogenizations", and emphasizing the role of different communities, builders, and construction backgrounds – including women, who were not mentioned by colonial officials, but could be seen actively engaged in maintaining the villages (Fig. 4). The labor services claimed to have supervising teams with "European experts" in construction, but their tasks could be considered rather minimal, as there were hardly any mentions of them. In contrast, subsequent "work prizes" bestowed by companies on their senior employees reveal that Africans played a prolonged role in the construction of houses and were commended for their dedication. For instance, in 1958, Diamang honored five African men who had been employed by the company for 25 to 36 years, specifically in roles related to building teams, metalwork, and carpentry.[28]

In the companies' view, housing should first and foremost echo the workers' position within the company and be used as a "social ladder". "Western-type" houses built with "durable" materials – bricks, zinc, doors – were taken as a model. Yet, African construction systems were also noted. The Balubas, for instance, were praised not only for their "hard work" in the mines, but also for their "finer villages and huts (…), with beautifully thatched roofs, and verandas", revealing an outstanding technical capacity.[29]

After the Second World War, social, political, economic and technological changes led to a greater awareness of construction techniques and materials in mining areas. In 1946, the *Centre d'Étude des Problèmes Sociaux Indigènes* (Center for the Study of Indigenous Social Problems, hereafter CEPSI) was founded in Elisabethville with the support of UMHK. One of CEPSI's main focuses was labor housing and it was responsible for implementing a fund of 200 million set up in 1956 by the UMHK to "aid" the rural areas surrounding the

major centers of Haut-Katanga. This fund was endowed with another 100 million in 1961. In 1950, the institution's bulletin issued a number "consacré aux maisons indigènes au Congo", including plans and materials' tables of UMHK' houses.[30] In contrast with previous publications, each house typology had its construction carefully quantified. The drawings were less schematic and included floor plans, façades and sections. Every constructive element was measured, and materials were detailed in their composition, quantity and price (Fig. 5).

Diamang considered CEPSI's bulletin and UMHK's plans to be key "models" to be followed in Central Africa, and a series of shared construction experiments were carried out in the following years, including new housing typologies, construction materials and technologies. New villages in main locations were chosen so that the "innovative" building processes could be easily seen by everyone. In the village of Chilupuca, in Lunda, Diamang tested a new "quadruple house type" to be built with earth blocks dosed with cement made with machines imported from England (Fig. 6). Following the CEPSI's plans, the focus also shifted towards the *quantification* of the construction process: a team of 120 African workers led by a European employee was able to build a house in 44 hours, setting a new "record".

Fig. 4: "SPAMOI works: African village with cassia trees in the background, 1945" (Source: Report of Simões Neves' trip to Africa, ANTT/AOS, UL-8A4, cx. 118).

UNION MINIERE DU HAUT KATANGA
DEPARTEMENT DES ETUDES ET CONSTRUCTIONS

Groupe 4 cuisines avec abri à bois type 1946.
N.B. Tous les travaux seront exécutés au mortier de 300 kg de ciment ou ciment amaigri par m³ de sable.

A. **Maçonneries**

N° Désignation	Unité	Quantité	Prix	Sommes
1. Fouilles pour fondations	m³	5,788	6,50	37,62
2. Fondations en béton cyclopéen 300 kg C.A. par m³ sable	m³	7,239	55	398,14
3. Maçonnerie en élévation 300 kg C.A. par m³ sable	m³	22,380	65	1454,70
4. Filière en béton hauteur 0,08 — 250 kg C.P., 0,5 sable, 0,8 pierraille	m³	0,984	110	108,24
5. Soubassement enduit 300 kg C.P. par m³ sable	m²	6,34	9	57,06
6. Joints plats extérieur 300 kg C.P. par m³ sable	m²	44,75	3,50	156,62
7. Joints plats intérieur 300 kg C.A. par m³ sable	m²	150,79	3,50	527,76
8. Dalle en B.A. 300 kg C.P. 0,5 sable, 0,8 pierraille	m²	1,29	25	32,25
9. Pose taque de foyer	P.	4	10	40,00
				2812,39

B. **Menuiseries**

1. Toiture en fibro-ciment	m²	56,40	13,50	761,40
2. Pose faitières ½ rondes	met	9,40	1	9,40
				770,80

Fig. 5: "Union Minière du Haut Katanga, Department des Études et Constructions: Groupe 4 cuisines avec abri à bois type 1946" (Source: *Bulletin du CEPSI* 12, 1950).

However, accounts on qualifications, tasks and skills remained ambiguous and conflicting. The volume on the "Social Implications of Industrialization and Urbanization in Africa South of the Sahara", published by the International African Institute and UNESCO in 1956, stated that "technical skills and managerial experience of Europeans continue to be indispensable in the modem economic development of Africa", while acknowledging that the number of skilled African workers was nevertheless highly significant. In fact, the data collected in Elisabethville showed that the number of "skilled" Africans was higher than the total number of European employees.[31]

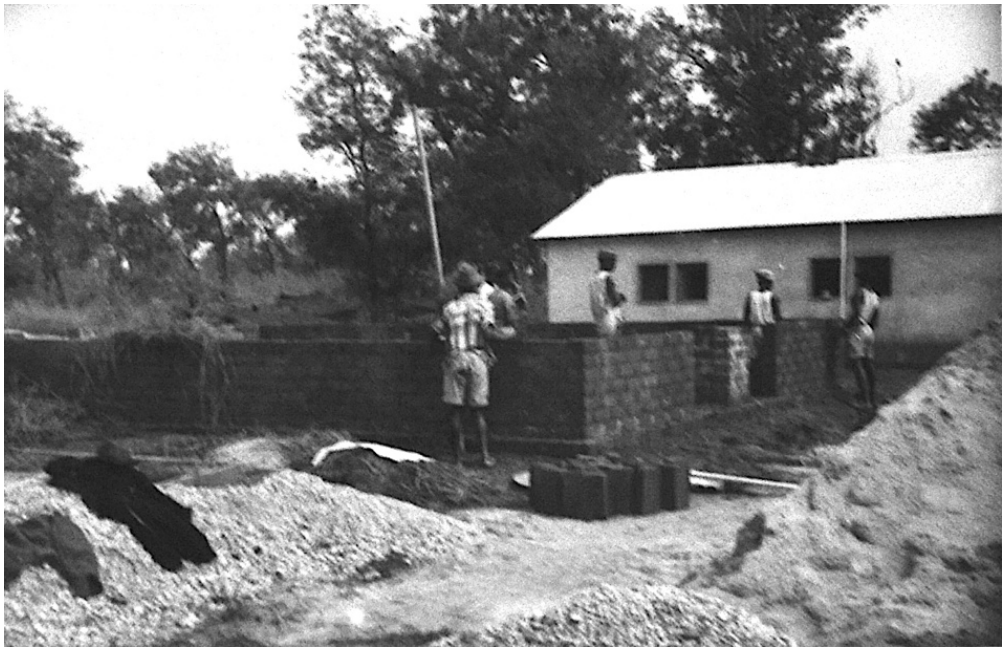

Fig. 6: "Experiments with earth blocks in the village of Chilupuca", Lunda, 1954 (Source: DCV-UC/AD).

By then, several housing construction strategies were also tried in Elisabethville with the critical participation of African workers. According to a later account by Fernand Grévisse, a Belgian colonial administrator, the first attempt was to provide the "builders" with materials: adobe bricks, galvanized sheet metal and wood, metal doors and windows, cement, and sand for paving. It failed, however, because of the poor quality of the bricks, which were not sufficiently waterproof. The second trial focused on mass-producing foundations in concrete and cement brick. Later, a "set of interior plans and façade improvement projects", with a minimum surface area of 50m^2, was distributed among laborers. Grévisse acknowledged that these experiences did not meet the standards of the Metropolitan Housing Commission or the concerns of the directors of the *Office des Cités Africaines* (OCA); but since the colonial apparatus was said to lack qualified personnel to supervise the construction processes, Africans became crucial agents in improving about 8000 houses and experiment with new building materials and techniques.[32] Grévisse himself was the promoter of a renowned "system" for the construction of housing in Elisabethville, published in 1951.[33] The "Système Grévisse" claimed for dwellings to be built by African themselves, following a strict set of rules under the close supervision of colonial officials. As summarized by Jacques Maquet,

> "Under this plan, African heads of families who so desired were to be supplied with the foundations, windows and doors of three-room house, on condition that they themselves built the house. Only part of the cost was paid (about 1/10), the remainder being liquidated by means of the housing allowance granted by the employer. This system was successful, for by 1954 more than 6,000 workers in Elisabethville had become owners of their own homes.".[34]

Photographs at the time show the versatility of African builders across both mining areas, who were employed in multiple construction tasks and phases of work, from brick manufacturing to carpentry work and road paving (Fig. 7). However, written information on construction teams remained scarce. Most documents focused on the completed buildings, including the numbers of dwellings, construction materials and types, emphasizing the companies' concerns about the results, not the processes.

Fig. 7: Urbanization works in Dundo, 1962 (Source: DCV-UC/AD).

This absence of notes about construction activities and workers also echoed the multitude of different building systems in use, making it difficult to present an overview of the construction scene. Some construction tasks were assigned to local "contractors", who oversaw recruiting and managing labor, while others were directly performed by the companies' building teams. Diamang briefly mentioned the differentiated roles of outsourced "taskers" and "contractors" within the mining area. The former were responsible for sawing wood, cutting grass to cover houses, cutting sticks for walls, and transporting stones, while the latter were in charge of molding and transporting bricks, maintaining roads, building houses for workers, weeding and sanitation work. Unlike "specialized" workers, included in the company's group of "volunteers" – locksmiths, carpenters, bricklayers and electricians –, taskers and contractors were outsourced, and their position depended on the seasonality of the construction work.[35] Likewise, the construction scene in Elisabethville involved multiple actors, such as independent African workers known as *artisans libres*.[36]

According to Diamang's labor service, in 1962 there were 1300 men – both adults and children – in charge of urban and sanitation works in central Dundo, as well as collecting grass and maintaining the workers camps. In 1964, the number of workers engaged in Diamang's "construction and maintenance of buildings" was significantly higher, involving around 2300 men, totaling almost 10% of the company's workforce. A further 1,300 were employed in road construction, while 1,200 were engaged in urbanization and sanitation services. In total, almost 20% of the company's African personnel was dedicated to construction-related tasks, showing the importance of this sector within the company structure and activities. These services employed a mere 48 European workers.[37]

In the villages inhabited by local families, workers reported numerous "challenges" in transitioning to brick houses. This could be interpreted as a subtle form of resistance related to this specific "house type". They mentioned the high price of materials, the troubles in sourcing wood and transportation, the abuse by craftsmen, and the lack of cooperation from family members. Grévisse's account in 1962 also revealed the negotiation carried out in Elisabethville by local men engaged in construction. In the face of the colonial state plans, the African houseowners and self-builders would argue:

> "I would like to be able to borrow money to improve my house. But I insist that no one imposes on me any plans that do not please me. Furthermore, I don't want to burden myself for too long and create moral concerns for myself that would be a heavy counterpart to the material progress I aspire to. This, for me, consists of covering my house with durable materials, providing it with metal doors and windows and making the floor with solid brick or cement paving. The rest is up to me".[38]

4. INTERACTIONS: CONSTRUCTION METHODS AND TRAINING

Mining camps were key sites of experimentation on urban planning, housing typologies and materials. The construction scene in Elisabethville has been analyzed skillfully from a variety of perspectives, some already cited earlier in this paper. Sofie Boonen and Johan Lagae examined the role of the OCA in providing housing Elisabethville.[39] Igor Bloch and Simon de Nys-Ketels showed the contrast between official guidelines and the everyday use of multiple building materials and methods, the existence of an informal African construction market, and the crucial role of African artisans.[40] The role of UMHK in shaping the housing policies and planning in the city was insightfully explored by Donatien Dibwe dia Mwembu and Daniela Waldburger.[41] This paper aims to intersect these studies, adding new layers from the intersections between the construction site and the workers, while also providing a trans-imperial and cosmopolitan perspective by bringing UMHK and Diamang together.

In the early 1920s, UMHK set up the *Compagnie Foncière du Katanga* (COFOKA) as one of its subsidiaries. This company oversaw the construction and management of houses for the European personnel in Katanga. In 1930, COFOKA had 50 white men on its teams, presented as "specialists" with experience in architecture and construction. It also employed 700 African workers, who were said to "benefit from apprenticeship in various building tasks". The company built its own brick factory in 1924 (fully mechanized in 1927) near Elizabethville, meaning that laborers were early on familiarized with Western construction materials and techniques. Around the same time, the first brick houses were tried in workers camps, further implying the use of this material by African laborers. COFOKA's brochure was found in Diamang's archives, suggesting that its work was carefully considered in Lunda.

At the same time, other construction materials were tested in Katanga. The Belgian company *Travaux en Béton au Katanga* (TRABEKA) was established in Elisabethville and operated workshops for the production of prefabricated concrete and fibrocement elements.[42] UMHK was one of its main industrial clients and in 1929 it had about 100 concrete Trabeka houses in local workers' camps.[43] This building solution was not endorsed in the following years, revealing its inappropriateness for this context – probably due to a mix of high cost and high specialization required – but photographs show that many African workers were still engaged with this building material and construction system.

In the following decades, companies continued to search for and test new housing typologies and construction methods. Although the geopolitical and technological contexts were different and evolved over time, the goal remained the same: to find a fast and low-cost construction system to build housing for African workers and families. The persistent search by mining companies for faster construction systems was not only a consequence of the need to find more cost-effective solutions to meet growing scrutiny and concern about industrial living conditions and workers accommodation, particularly after the Second World War, as previously mentioned. Inside notes reveal that the agendas of Africans involved in construction also played an important role. On the ground, there was an urgent need to find alternatives to "traditional" straw and timber construction systems. This material was becoming scarce and its use in construction required a specific technical knowledge that was being lost among local communities.

Ultimately, adobe and cement bricks remain the dominant building material in mining camps (Fig. 8). The brochure *A Chacun de Sa Maison*, published in the Belgian Congo in 1953, emphasized different building techniques using adobe.[44] The publication did not attribute to the Congolese "an active role",[45] yet it played a key role in shaping the architectural imaginaries and building scene in Elisabethville. According to Block and Nys-Ketels, it "served as a manual for lay self-builders" as well as "as an educational resource for the many black contractors within the African informal market".[46] In a similar vein, Diamang expanded its brick

factories as new "neighborhoods" were built with electricity, running water and sanitation. These facilities were precisely the prevailing demand of African families engaged with mining activities, although the negotiation process is hard to grasp in colonial sources.[47] Some of the building materials were produced by the workers and families themselves directly on the site of the house, showing that the construction know-how extended beyond the workshops. However, company officials recognized that most people would prefer to "invest in other things", unless the materials were provided by the company, even if they were told that "houses with metal roofs and cement floors were very good".[48]

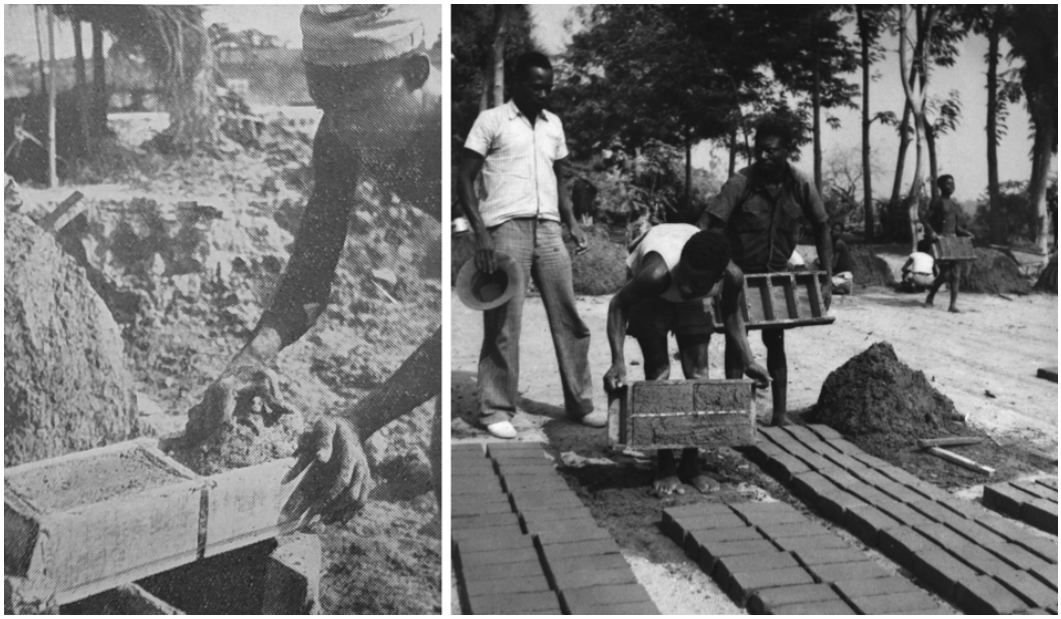

Fig. 8: "This brickmaker has already filled and scraped one half of his mold", Belgian Congo (Source: *A Chachun sa Maison*, 1953, 28); "Dundo brickworks [Lunda]. Brick molding using quadruple forms", 1955 (Source: DCV-UC/AD).

In parallel, constructive know-how became a crucial issue in defining housing typologies. In Lunda, for example, the replacement of wattle and dub houses with brick houses only turned substantial in the early 1960s when Diamang recognized it would take "a lot of persistence for women to harvest the straw". On the one hand, the company was willing to accept that "*we do not know* whether the workers show a preference for permanent settlements because of the comfort or because it frees the women from picking the grass".[49] On the other hand, as previously mentioned, it became clear that fewer and fewer people knew how to build with this constructive method. In 1972, a "special temporary team" was organized to repair the grass roofs across the company's camps, revealing the increasingly "exceptional nature" of the task.[50] Technological changes thus altered the region's building knowledge, while reinforcing the abandonment of the so-called "traditional" housing typologies. In this context, it also must be recognized that the perception of building materials changed over time and was highly instilled with value judgments, as shown by Robby Fivez.[51]

Other prefabricated systems were tried out by both companies – and, consequently, by African workers engaged in construction tasks. In 1953, Union Minière and Diamang experimented with a small number of "airform houses" in Elisabethville and Dundo.[52] These structures, created by architect Wallace Neff in 1941, could be built in a few hours using an air balloon and shotcrete. Their impact in Africa was substantial, especially in Dakar, Senegal, where thousands of these structures had been built in the previous decade.[53] Plans and photographs of this building system were published in 1952 by Marcel Bruyère, a Belgian engineer, in the book *Contribution à l'étude des habitations pour indigénes au Congo Belge*. Bruyère advocated for the implementation of prefabricated construction methods as a means of reducing manual labor and circumventing the challenges associated with recruiting qualified workers. The volume presented other alternative construction techniques, used in Europe and Africa, from the use of concrete formwork to the "Landcrete" press machine for producing blocks.[54] However, according to Diamang's records, the "balloon houses" were too expensive and offered less space than the adobe-brick typologies, and were therefore discarded as a prospective housing solution. A similar conclusion must have been reached by the UMHK, as there are only a few of these houses to be seen in Lubumbashi today.

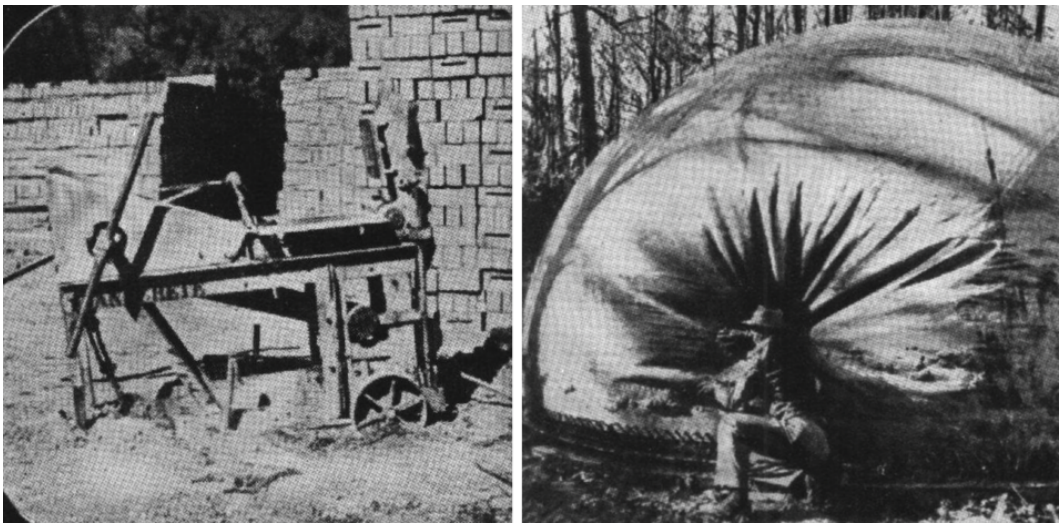

Fig. 9: "Landcrete" press making cement-stabilized earthen blocks; Inflated cover used as formwork in place on the foundation (Source: Bruyère, *Contribution à l'étude des habitations pour indigénes au Congo Belge*, 1952, n.p.).

In this context, the training of workers for construction tasks was considered crucial. Both UMHK and Diamang established professional schools and workshops for African workers, yet these had a more substantial impact in the Belgian Congo than in Angola. The different approaches to "specialization" were underpinned by distinct colonial visions and chronologies, and the UMHK was more flexible in promoting African labor to higher positions than its counterparts, namely Diamang and the Rhodesian companies.[55] As emphasized by Bruyére:

> "Whatever processes are used, the key issue will remain the training of the indigenous workforce: masons, carpenters and joiners. Every company must train a competent core of good craftsmen; there's only one way to achieve this: supervise the indigenous labor by technicians in sufficient numbers".[56]

In Angola, it was not until a decade later that a report by Diamang's Labor Service was the first to address the issue of construction in a significant and open manner:

> "We have fallen far short due to the lack of transportation and the unsuitability of our staff. Since the beginning of the year, we have been striving to set up a construction team – bricklayers, carpenters and painters – capable of building houses with definitive materials for contract workers. We chose apprentice bricklayers from our local teams. We took on all the arms that came our way for careful selection to train these professionals. We managed to train craftsmen who built house after house, of a definitive type, in the villages of Catongula, Luxilo and Chambuage. Our workers found it very difficult to adapt to the new type of construction".[57]

Fig. 10: "Definitive housing for workers: a detail of the Tshibaba village made up of twenty blocks of houses", Lunda, 1962 (Source: DCV-UC/AD).

By then, Diamang sponsored a sort of "training camp" for potential construction workers. A group of men was established in the new village of Tshibaba with a European foreman who had experience in construction (Fig. 10). Block-molding machines and circular saws for wood were taken from the company's workshops. The training included "producing thousands of brick blocks, learning how to mark out building's foundations and building walls".[58] However, the labor service swiftly transferred the construction tasks to the company's civil construction service. It was said that SPAMOI's white employees "can do little to help because building

permanent homes requires a construction plan and technical knowledge that not everyone has". These notes recognized that "skill" was not a dichotomy between Westerns and Africans, even if colonial narratives supported such a biased view.

5. CONCLUSIONS

This paper aimed to critically re-analyze the reports and photographs of UMHK and Diamang to examine the role(s) of African labor in the construction of housing. Despite the companies' efforts to change the "house" of local communities, through the design and promotion of different "types" and following goals of productivity and control, these were highly negotiated processes. While reports presented numerous "models" and "type-plans", they were rather images, often not compliant with reality on the ground. Companies could trace seeming linear processes from "wattle and dub huts" to "modern brick houses", but these were never opposing models or contrasting experiences. In this context, mining camps can be considered significant areas of cosmopolitanism from their construction processes. Builders, both African and "European", had to deal with multiple construction materials and systems, learn new techniques, and exchange building experience. They were therefore participants in expansive flows of construction knowledge, as mining areas were themselves spaces of encounter and negotiation that crossed local, transnational and international scales.

Future research must still explore the entanglements between private corporations' housing plans and those built by the public bodies in Angola and the Belgian Congo, since proposals were often striking similar. In this way, the socio-spatial operations of mining companies also shed light on key networks and entanglements between colonial powers in Africa, whose architectural impact has yet to be fully recognized. This approach should include a cross-fertilization between official guidelines and the influence of workers, informal builders and local contractors in the construction process.

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'FROM PEN TO STONE': NAWAB SHAHJAHAN BEGUM'S (1868-1901) PRINCELY COSMOPOLITANISM IN THE CITY OF BHOPAL IN COLONIAL INDIA

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'FROM PEN TO STONE': NAWAB SHAJAHAN BEGUM'S (1868-1901) PRINCELY COSMOPOLITANISM IN THE CITY OF BHOPAL IN COLONIA LINDIA

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The princely state of Bhopal (1819–1926) was unique for its matriarchal succession, with Nawab Shahjahan Begum (r. 1868–1901) emerging as a key patron of art, architecture, and literature. This study examines how her architectural and literary patronage embodied princely cosmopolitanism, negotiating her identities as a woman, Pashtun, and modern ruler. Using architectural analysis, archival research, and her writings, it explores her urban and architectural interventions—Shahjahanabad, Taj-ul-Masajid, and the Taj Mahal Palace Complex—as strategic tools of diplomacy. The paper re-evaluates architectural history to highlight women's role in shaping princely cosmopolitanism and expanding the discourse on modern patronage in South Asia.

1. INTRODUCTION

As one of the many princely states that collectively comprised nearly a third of British India, Bhopal operated under British suzerainty, maintaining internal autonomy in exchange for allegiance to the British crown. Defying the patriarchal norms of Afghan Pathan (Pashtun) traditions, British imperial authority, and the broader princely order, Bhopal remains unique as the only princely state ruled by four successive female sovereigns for a period of 107 years beginning in 1819.[1] While chance played a role in Qudsia Begum's (1801–81; r.1819–37) rise to power following her husband's accidental death,[2] it was strategic governance that cemented the rule of her successors—Sikandar Begum (1816–68; r.1844–68), Shahjahan Begum (1838–1901; r.1868–1901), and Sultan Jahan Begum (r.1901–1926). Their leadership ensured over a century of female sovereignty in Bhopal, challenging prevailing gender norms in princely India. Among them, Nawab Shahjahan Begum (r.1868–1901) emerged as a particularly formidable ruler, leaving an indelible mark on Bhopal's architectural and urban landscape. As the most influential architectural patron of the Bhopal dynasty, she shaped the city's built environment and reflected her vision of cosmopolitan modernity.[3]

This research employs a qualitative, interdisciplinary approach that integrates architectural history, urban studies, and gender analysis to examine Shahjahan Begum's patronage within the broader socio-political landscape of colonial princely India. This paper critically examines Shahjahan Begum's dual journey as an architectural and literary patron, where she navigated the realms of *pen* and *paper* to assert her sovereignty for posterity. This study is primarily historical and interpretive, drawing on archival sources, textual analysis, and spatial examinations of key architectural sites. The paper adopts a biographical approach to Shahjahan Begum, analyzing her most ambitious architectural projects—Shahjahanabad, the Taj-ul-Masajid, and the Taj Mahal Palace Complex—as expressions of her cosmopolitan vision and sovereign identity. The paper also

explores her literary patronage through her writings and publications, primarily Taj-ul-Iqbal Tarikh-e-Riyasat-e-Bhopal, highlighting how she strategically engaged with the discourse of cosmopolitanism and architecture to position Bhopal as both a modern and culturally rooted princely state.

Additionally, secondary sources—including scholarly works on princely states, gendered patronage, and South Asian architectural history—provide critical historiographical perspectives. The research also includes a visual analysis of architectural evidence from the standpoint of plans, photographs, and site visits to examine how Shahjahan Begum's vision was expressed through spatial design and material form. By employing a multi-method approach, the study interrogates how built spaces and textual narratives intersected to reinforce the Begum's sovereignty, offering a nuanced understanding of cosmopolitan modernity in a princely state under colonial rule.

2. COSMOPOLITANISM AND TRADITION: A NEGOTIATION

The evolution of "cosmopolitanism" began with the Stoics,[4] where a cosmopolitan was defined as a "citizen of the world". The Oxford English Dictionary[5] refers to the idea that all human beings belong to a single community, based on shared morality and values, transcending national, cultural, and ethnic boundaries. Rajagopalan argues that 'cosmopolitanism' is not merely an elite male privilege as professed by Immanuel Kant in 18th-century Europe.[4] Modern scholars have challenged this elitist and Eurocentric notion of cosmopolitanism to include subaltern subjects- women, migrants, refugees, children, and laborers.

Cosmopolitanism thus becomes a negotiated process shaped by power, mobility, and cultural exchange. It manifests in architectural patronage when rulers strategically blend diverse artistic traditions to assert political legitimacy and engage with global modernity. This paper is largely based on Rajagopalan's conception of cosmopolitanism as inhabiting multiple worlds—negotiating cultural, racial, aesthetic, and social differences while being shaped by power dynamics.[4] The paper adopts this framework to examine the architectural works of Nawab Shahjahan Begum.

Taking the example of Hamid Ali Khan (1889-1930 r.) in princely Rampur,[6] propounds that the fusion of 'Mughal tradition', and 'colonial modern', produced a princely urban culture in British India, a hybrid cultural narrative shaped by the interaction of diverse actors and global influences, leading to a unique form of princely cosmopolitanism. While Rajagopalan, in her work,[4] asserts that Begum Samru (1778-1836 r.) was not the only Indian ruler to employ cosmopolitan aesthetics to secure favor with European powers, her unique position as both a ruler and a patron of architecture calls for deeper examination. She argues that cosmopolitanism was a crucial strategy for diplomacy, negotiation, and political maneuvering for Begum

Samru, allowing her to assert sovereignty while navigating relationships with colonial authorities and indigenous elites. The concept of 'princely cosmopolitanism' has been further developed based on [4,6], framing it as a political and cultural dynamic in which princely states and rulers blended local traditions with global influences. This fusion fostered a cosmopolitan environment—one that embraced diverse cultures, ideas, and practices from across the world while preserving a distinct local identity. Similarly, Shahjahan Begum's (1868-1901 r.) dual role as both a female ruler and a patron of architecture and literature warrants closer scrutiny as a strategic tool for diplomacy and negotiation, especially as a case of princely cosmopolitanism in British India.

According to Oxford Learner's Dictionaries, "tradition" is a belief, a custom, or a way of doing something that has existed for a long time among a particular group of people, or a set of these beliefs or customs.[7] At the beginning of the nineteenth century, the Bhopal state was a small Afghan principality deeply entangled in its internal politics and the factional struggles of local Maratha states. Some sixty years later, Bhopal was able to situate itself as a viable refuge for a broadly North Indian 'Indo-Muslim' culture in the aftermath of the 1857 Rebellion. In the context of British dominance, the construction of a powerful Bhopal following the 'settlement' of central India necessitated the successful appropriation of history, aesthetics, and culture that extended far beyond the geographical and historical bounds of the Bhopal state.

Bhopal's adoption of Mughal architectural and courtly practices as traditions mirrored the legitimizing strategies of 18th-century successor states, where Mughal symbolic authority persisted despite military decline. However, regional powers adapted these practices to fit their evolving political and social contexts.[8] The colonial administration in India often justified the retention of princely states to preserve "traditional patterns" in the cultural sphere. However, while these "traditions" appeared to be upheld, they were simultaneously reshaped under the influence of colonial paramountcy. Recent scholarship contests that Princely states did not function as static, isolated entities with fixed structures; rather, they must be situated within the evolving discourses and practices of the British Empire to understand their complex and ambiguous political spaces.[6]

The relationship between 'tradition,' British colonial influence, and the princely states was inherently complex. Contemporary discourse argues that princely states should not be viewed as isolated entities but as ambiguous political spaces. They functioned as semi-autonomous indigenous governments that operated alongside British authority and maintained dynamic interactions with other princely states. According to Hobsbawm, 'tradition'—including invented traditions—is characterized by invariance and formalized repetition. It refers to a constructed or real past that imposes fixed practices and rituals to create a sense of continuity and legitimacy.[9] Archambault in her work,[8] refers to princely states as much more complex than

mere domains of tradition, the author cites scholarship that challenges the idea of the princely state as solely a bastion of tradition and highlights how princely states served as platforms for modernizing initiatives that transcended the limits of nationalist frameworks.

Princely states interacted with colonial authorities, undertook modernization efforts like infrastructure development and administrative reforms, and positioned themselves within global trade and knowledge networks.[8] This allowed them to adopt modern practices and assert political agency in ways not strictly aligned with nationalist goals, reflecting a more fluid and cosmopolitan approach to governance and modernization. In this paper, we position Shahjahan Begum's architectural and literary patronage in princely India as a negotiation between cosmopolitanism and tradition—an exchange shaped by power dynamics.

3. WOMEN, POWER, AND ARCHITECTURAL PATRONAGE

Patronage studies have historically marginalized women patrons, often overlooking their architectural influence. However, increasing scholarship has challenged this exclusion. For instance,[10] examines women's architectural patronage from the Safavid dynasty to the 20th century, highlighting queens, courtesans, and artists and their role in shaping urban landscapes across Islamic and South Asian cities. Similarly,[11] reinterprets historical narratives by showcasing women's agency in pre-modern Islamic societies, emphasizing their contributions to cultural and architectural landscapes. Meanwhile,[12] explores women's patronage of art, crafts, and architecture in late 19th- and 20th-century South Asia. Ruggles underscores the importance of modern patronage, often overshadowed by studies on Mughal and colonial-era architecture.[12]

This expanding body of research reveals that contrary to common perceptions of passive female roles, women—particularly Muslim women—have played a pivotal role in commissioning architectural projects, literary works, and religious institutions. Scholarly interest in investigating the intersection of women, power, and architecture in the European and Islamic contexts has grown significantly, especially since the late 20th century, with a notable surge from the 1990s onward.[13–19] This shift underscores the need for a more inclusive architectural history, acknowledging women's agency in shaping built environments.

Baumgartner proposes that most of the scholarly literature begins from the premise that a woman's patronage is an assertion of her agency and visibility.[20] Ruggles, in her introduction,[21] describes 'agency' and 'visibility' as one of the themes alongside 'power'; essays demonstrate that 'vision' is 'power', and seeing implies possession. In recent decades, several art historians have explored how power is expressed through the patronage of precious objects and the appropriation of urban space.[21] The examination of the Grand Duchess of Tuscany by Modesti[22] highlights the increasing use of a gender lens in art history, which has

reshaped the study of rulers' patronage strategies and cultural practices. Furthermore, the essays in 'Women, Patronage, and Self-Representation in Islamic Societies' examine how women in positions of power shaped their surroundings, influencing both masculine and feminine domains—whether public or private, enclosed or open—while also analysing the motivations, strategies, and spaces through which they exerted their impact.[23] The essays in 'Women in the Medieval Islamic World: Power, Patronage, and Piety' challenge conventional assumptions by presenting women, especially Muslim women, as active political figures who wielded significant influence, allocated substantial resources for public architecture, and directly supported mystics, saints, and scholars through patronage.[11] Their involvement spanned a remarkably diverse array of activities.

Peirce argues that 'female' is not a fixed or uniform identity; women's opportunities were shaped by a complex interplay of historical, geographical, legal, racial, ethnic, and social factors. While financial resources played a huge role, they were just one of many elements influencing women's agency and empowerment.[24] Women across the Islamic world played a significant role in shaping and influencing urban landscapes through their architectural patronage. Thys-Senocak emphasizes that through the commissioning of buildings, religious institutions, and public spaces, women actively shaped the built environment while asserting their presence within the socio-political fabric of their cities. Their patronage often challenged or redefined traditional gendered spatial dynamics, influencing how urban spaces were used and perceived.[25]

In this context of women, power, and patronage, we situate the architectural and cultural contributions of the Bhopal Begums. Bhopal offers a compelling case study within this discourse, as its women rulers (r.1819-1926) exercised unprecedented political authority, using architectural patronage as a mode of self-representation and governance.[3] Art critic Gayatri Sinha, as referenced in Metcalf's essay on the architecture of the Begums of Bhopal,[3] recognizes them as among the most influential female patrons in Indian history. She highlights their patronage as transcending dichotomies—sacred and secular, public and private—demonstrating their far-reaching impact on the built environment, traversing beyond the personal or the familial patronage. From the more than a century of women rule in Bhopal, Sobti[26] refers to Shahjahan's 33-year reign as the 'golden period of city building' in the dynasty. Metcalf judges Nawab Shahjahan Begum as the dynasty's greatest builder.[3] Within this broader framework of women, power, patronage, and a dialogue between cosmopolitanism and tradition, we examine the architectural and literary patronage of Shahjahan Begum of princely Bhopal in colonial modern India.

4. THE MAKING OF SHAHJAHAN BEGUM: BETWEEN TRADITION AND POWER

Shahjahan Begum's succession at 30 in 1868 was Bhopal's first uncontested and legally recognized transition.

With Bhopal stable under Sikandar's reformist reign and Queen Victoria firmly ruling the British Empire, prior British reservations about female leadership in India were quietly set aside.[27] Bhopal's court was traditionally simple and austere, with occasional princely indulgence under Nawabs like Hayat and Ghous. However, Qudsia Begum and Sikandar Begum reinstated a disciplined, pious rule. Shahjahan Begum's reign, in contrast, ushered in a bold and dynamic era.[27]

Unlike the other Begums of Bhopal, Shahryar Khan (Historian and family descendant)[27] describes Shahjahan Begum as vivacious, indulgent in life's pleasures, and distinctly feminine in her outlook and habits. Her reign marked a departure from the austere traditions of her predecessors. She introduced "colour, gaiety, and panache" to Bhopal's cultural landscape, counterbalancing the sobriety of earlier rulers.[27] Her life offers a striking lens into the complexities of colonial-era princely rule, where the illusion of equality masked the stark realities of imperial power. Despite her royal status and prestigious honors, she remained vulnerable to colonial authority. At the same time, British policies upheld social hierarchies, privileging rulers like her while reinforcing systemic inequalities.[1] The Bhopal crisis in the 1880s occurred during Shahjahan's reign when her beloved husband Nawab Siddiq Hassan was charged with sedition and was unceremoniously deposed and humiliated.

A portrait of Shahjahan Begum from the early 1870s, created soon after her accession, as described by Metcalf[1] reflects the evolving and complex world she navigated. She is depicted wearing the characteristic unisex attire of the court—fitted pants, a long tunic, an angled cap, and a flowing robe. Notably, the outer robe prominently displays the newly instituted colonial honor, *The Star of India*, symbolizing her engagement with British imperial structures. Her choice of English-style leather boots further underscores the intersection of indigenous regal traditions with colonial modernity, highlighting the dual identities she balanced as both a princely ruler and a subject of the British Empire.

4.1. Shahjahan Begum's Political Positioning in Colonial Modern India

Shahjahan Begum's political strategy was deeply embedded within the shifting power structures of colonial modern India. Having toured Northern India extensively with her mother, she developed a keen understanding of political and cultural landscapes beyond Bhopal. Her rule strategically balanced indigenous legitimacy with colonial imperatives, allowing her to reinforce Bhopal's position within the broader framework of Indian and imperial politics. As Archambault[8] notes, Shahjahan Begum, like her predecessors, skillfully appropriated Mughal symbols of authority, particularly during the writing of Taj-ul-Ikbal, the first organized history of the State. However, rather than claiming direct genealogical descent from the Mughals, she adopted their symbolic language, leveraging it as a marker of legitimacy within a recognizable imperial

framework—one that had lost its political core following the deposition of the last Mughal emperor in 1858. This strategic invocation of Mughal prestige enabled the Begums to assert their sovereignty while simultaneously aligning with colonial expectations of princely governance.

The ruling Begums, including Shahjahan Begum and her successor Sultan Jahan, capitalized on the stability afforded by their treaty-based alliance with the British, formalized in 1818.[28] This alliance granted Bhopal territorial security and protection from external threats, particularly from the Marathas, while also reshaping governance structures. The British presence, paradoxically, created an environment where the Begums could challenge patriarchal customs and expand their cultural and architectural patronage. Shahjahan Begum leveraged her political autonomy to transform Bhopal into a structured capital, commissioning mosques, palaces, markets, and administrative centers that reflected both political assertion and adaptation to colonial rule.[3] This balancing act—between tradition and colonial modernity—allowed Shahjahan Begum to consolidate her power, positioning herself as both an enlightened reformist and a custodian of Indo-Islamic traditions.

4.2. Shahjahan Begum's Diplomatic and Cultural Expeditions

The travel narratives in *Taj-ul Ikbal Tarikh Bhopal* did not conform to European travelogue conventions, nor did they articulate an overt sense of Indian national identity. Instead, these journeys were politically motivated, reinforcing princely authority and statehood in the post-1857 colonial landscape.[8] As Archambault observes in her analysis of *Taj-ul Ikbal Tarikh Bhopal*, travel in the mid-to-late nineteenth century served both as a means of asserting authority and as a tool for challenging or reshaping existing power structures.[8]

For the Begums of Bhopal, travel became a key instrument of princely cosmopolitanism. Following Sikandar Begum's investiture with the Star of India at the Allahabad Durbar in 1861, she and the then Princess Shahjahan Begum embarked on an extensive tour of ten North Indian cities, including Benares, Lucknow, Agra, and Delhi. These visits reinforced Bhopal's political presence within imperial and regional networks. Sikandar Begum's later travels included a pilgrimage to Mecca (1863–64), a visit to Fatehpur Sikri, and another North Indian tour (1866–67) before her passing in 1868.[29] Shahjahan Begum continued this diplomatic legacy, traveling to Calcutta in 1869 and to Bombay in 1872, where she too was invested with the Star of India. Her subsequent visits to Surat and Ahmedabad further embedded Bhopal within imperial circuits.[8]

Beyond ceremonial recognition, these expeditions functioned as strategic acts of political diplomacy. Archambault highlights how the Begums' tours facilitated engagements with both North Indian elites and

British authorities, consolidating Bhopal's influence in the colonial order.[8] Meetings with prominent figures—such as the Raja of Benares, the Maharaja of Jaipur, scholars from Firangi Mahal in Lucknow, and the head of the Matba'-i Nizami printing house in Kanpur—served to strengthen political alliances and reinforce Princely Bhopal's cosmopolitan status. These interactions not only bolstered diplomatic ties but also affirmed Bhopal's privileged position within the evolving geopolitical landscape of modern colonial India.

4.3. Shahjahan Begum's Literary Patronage

Shahjahan Begum's reign marked a flourishing period for literary culture in Bhopal, solidifying the state's reputation as Baghdad-al-Hind, a rival to the literary centers of Delhi and Lucknow.[8] While Bhopal had long attracted poets and scholars—including Shahjahan Begum's father, Jahangir Muhammad Khan, himself a poet—Begum's patronage after 1857 accelerated literary production in unprecedented ways.[8] A poetess in her own right, writing under the pen names 'Shirin' for Persian poetry and 'Tajwar' for her Urdu works,[27] Shahjahan Begum promoted intellectual engagement by commissioning historical texts, dictionaries, religious treatises, and reformist writings. Under her reign, there was an aroused interest among Bhopal women for poetry, and she even commissioned a male poet to compile the works of female poets.[30] Her approach to literary patronage reflected her strategic cosmopolitanism, engaging with multiple linguistic, cultural, and ideological frameworks to assert Bhopal's identity on both an indigenous and colonial stage.

A defining example of her literary vision was the *Taj-ul-Iqbal Tarikh-i-Riyasat-i-Bhopal*, published in Persian and Urdu in 1873 and translated into English by 1877. This history of Bhopal, which she largely authored, was an act of self-representation, framing her rule as a continuation of the state's legacy while signaling her political agency.[8] The text not only documented Bhopal's history but also actively shaped its narrative, influencing colonial records like the *1908 Imperial Gazetteer of India*.[8] Beyond state history, Shahjahan Begum also produced an array of publications that revealed her intellectual breadth—ranging from a compendium of Hadith[31], establishment of 'Shahjahani Press', a women's manual (*Tahzibun Niswan wa Tarbiyatul Insan, 1873/74*), and even a multilingual dictionary (*Khizanat-ul-Lughat, 1886–1887*), which listed Urdu terms alongside Persian, Arabic, Sanskrit, English, and Turkish.[1,32] These works reflected both her engagement with transregional knowledge systems and her reformist aspirations, particularly within a princely framework.

Her literary pursuits were deeply intertwined with her political strategies. At a time when her authority was challenged—particularly during British scrutiny of her second husband's influence—she turned to print as a means of self-fashioning and political advocacy. She compiled a collection of documents defending her rule and launched an extensive letter-writing campaign to British officials,[33] positioning herself as a cultivated and informed sovereign.[3] Shahjahan Begum in her 1893 publication, 'Sidq-ul-Bayan', devotes a section praising

her Mughal namesake Emperor Shahjahan in '*Bayan Sultan Badshah Shahjahan'*, describing his court as open-minded and generous;[34] while she devotes a subsequent section on ' *Taareef Imarat'*, where she monumentalises the glory and the splendor of the Mughals.[35] This prolific textual production, more extensive than any predecessor in Bhopal's ruling lineage, was a means of asserting power and constructing a narrative of legitimacy. Her writings and patronage shaped Bhopal's intellectual landscape while reinforcing her image as a cosmopolitan ruler who skillfully navigated the intersections of culture, politics, and gender in colonial India. As Bhopal state acquired the status of being the second most important princely state of the British Raj, Shahjahan Begum's writings contributed to positioning Bhopal state as a claimant of the illustrious north Indian Muslim imperial legacy.[8]

5. SHAHJAHAN BEGUM'S ARCHITECTURAL PATRONAGE: AS A POLITICAL AND CULTURAL STRATEGY

Shahjahan Begum's architectural patronage was a deliberate exercise in political and cultural strategy, reinforcing her legitimacy as a sovereign while shaping Bhopal into a princely center of cosmopolitanism. Her architectural vision blended Indo-Islamic traditions with colonial modernity, a synthesis that not only reflected her authority but also functioned as a response to the political and social expectations of the time.[3] Drawing inspiration from Mughal grandeur, she strategically named the newly developed district Shahjahanabad to assert her symbolic lineage, despite Bhopal's lack of a direct Mughal past.[1] Her ambitious projects, including the Taj-ul Masajid and the Taj Mahal Palace Complex, embodied this fusion, incorporating Mughal Revival, Indo-Saracenic, and Orientalist architectural styles.[3] Simultaneously, her investment in modern public infrastructure—such as railways, hospitals, and a central jail—signified progress, mirroring similar strategies adopted by other princely rulers like Hamid Ali Khan of Rampur, who used architecture to position his state as a center of Indo-Muslim and global cosmopolitan culture.[6] These efforts were actively publicized, serving as tangible demonstrations of cultural preservation and modernization in the so-called "stereotyped" princely states.[6]

Beyond their aesthetic and functional roles, these architectural projects operated as "structures of legitimacy," strategically deployed to counter colonial narratives of princely stagnation and assert Bhopal's place within Indian and global urban traditions.[6] The construction of the Taj-ul Masajid, the largest mosque in India, was particularly significant in this regard, as it not only echoed Mughal imperial ambitions but also reflected Shahjahan Begum's engagement with Ahl-i Hadith reformist thought through unprecedented spatial inclusivity, such as dedicated prayer areas for women (See Fig. 3).[3,36] Her architectural choices were similarly evident in the Taj Mahal Palace Complex, which synthesized French, English, and Indo-Islamic aesthetics,

underscoring Bhopal's engagement with transregional networks of influence.[3] These architectural and urban interventions, much like the visual strategies adopted in the Rampur Album,[6] were showcased to colonial officials as markers of progress, reinforcing Bhopal's cultural sophistication while strengthening Shahjahan Begum's political standing within the British imperial framework. Through these strategic architectural endeavors, the Begum not only shaped the physical and symbolic identity of Bhopal but also navigated the complex interplay of tradition, reform, and colonial modernity, securing her place as one of the most significant female patrons in South Asian history.[3] The architectural vision of Shahjahan Begum was shaped by a confluence of Pathan, French, and English aesthetics, reflecting the broader cultural and political currents of the time.[37] This synthesis of influences not only reinforced Bhopal's cosmopolitan identity but also positioned Shahjahanabad as a statement of princely authority and modernity within the colonial landscape.

In 1887, Shah Jahan also established the first Public Works Department and undertook a vigorous program of building roads, digging wells, and establishing camping grounds. She built jails, schools, hospitals, and railroad lines. She connected the State to the National Railway, which reached the city in 1890, along with the mosques, administrative buildings, and palaces noted above.[38] In 1889, the Begum commissioned the Shahjahan Mosque in Woking, Surrey—Britain's first purpose-built mosque—reflecting her vision of global connectivity and cosmopolitanism. This architectural initiative demonstrated her connection to the wider Muslim world and elevated Bhopal's stature in the global arena, as it continues to be the center of Muslim engagement with British society since 1889.[39]

Regarding the Begum's architectural style, she embraced the Mughal Revival and Late Mughal Eclectic styles, incorporating Mughal-inspired designs and features into her palaces and mosques. However, Metcalf claims that Shah Jahan Begum utilized a third style beyond the aforementioned styles, which can be described simply as unadorned, utilitarian colonial.[3] With no interest in the Indo Saracenic style as prescribed by the British officials for the Princely states,[40] modern buildings such as the railway station, Ladies' hospital, and Lal Kothi (Begum's Guest House for the colonial officials) were built in the utilitarian colonial style. Metcalf,[41] in her lecture titled '*Princely Independence and Innovation in Nawab Shahjahan Begum's Bhopal*', contends that "the public buildings of the Begum make a very clean architectural statement, placing Bhopal in the present, with their purely utilitarian style."

5.1. Shahjahanabad

The historic core of Bhopal (southeast of Shahjahanabad suburb) underwent significant renewal under Shahjahan Begum's patronage, marked by the construction of new buildings, restoration efforts, and selective

demolitions.[42] Urban regulations were introduced, prohibiting the use of mud construction, while certain occupational groups, such as tanners who had settled in other parts of the city, were relocated to its outskirts. However, Shahjahan Begum's most ambitious architectural endeavor was the development of an entirely new city to the northeast of the historic core, initiated in 1874 (See Fig. 1).

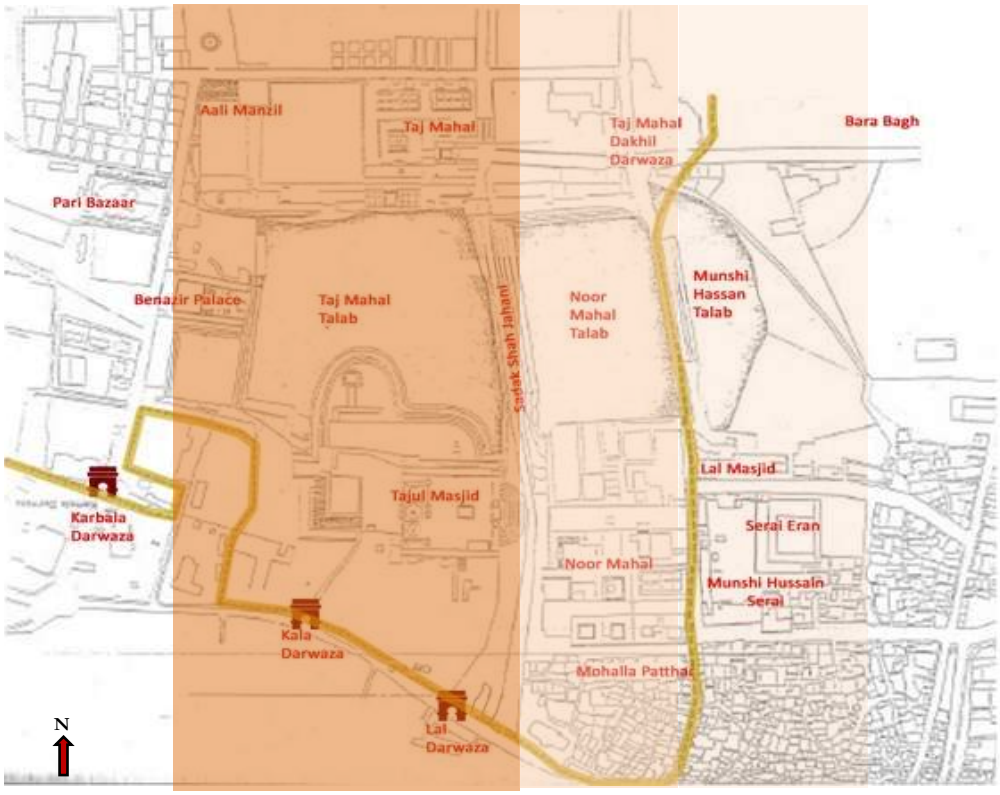

Fig. 1: The Plan of the central area of the Shahjahanabad suburb (Source: Reproduced from Sobti, M. P. (1993). *Urban form & space in the Islamic city: a study of morphology & formal structures in the city of Bhopal (central India).* Ahmedabad, India)

Unlike other colonial-era cities, the Begum's Shahjahanabad was encased within its city wall, deliberately evoking the fortified urban landscapes of earlier times.[3] Shahjahanabad, the walled city, exemplifies the complex interplay of architectural influences that shaped colonial Bhopal. Any analysis of its built environment must consider the city's unique topography and historical patterns of urban development, which were informed by diverse stylistic traditions. The entire spatial ensemble was planned around three water bodies: Munshi Hussain Talab, Noor Mahal Talab, and Motia Talab (earlier Taj Mahal Tank),[36] as (shown in Fig.1). Named Shahjahanabad—echoing the Mughal Emperor Shah Jahan's imperial city—the new settlement was anchored by two defining structures: a grand mosque (Taj-ul-Masajid), and a palace complex (Taj Mahal Palace Complex). The cityscape also included serais, mosques, schools, bazaars, and other essential urban components. A notable addition was the Mina Bazaar, a unique masonry market space exclusively for women

shopkeepers and customers, reflecting a gendered approach to commercial spaces.[3] Shah Jahan Begum also commissioned Bhopal's first Idgah, strategically positioned on an elevated site for congregational prayers on major Islamic festivals.[3] Metcalf describes the layout of Shahjahanabad in the words of Sobti[26] as,

> "The layout of Shahjahanabad was a dramatic contrast to the densely built-up character of the Bhopal old city or even Delhi's Shahjahanabad. This openness he suggests, was a reflection of the urban planning of the late 19th century, where you have parks, gardens, open spaces, as well as markets, housing, and governing buildings."41

Unlike the dense fabric of the older city, Shahjahanabad incorporated expansive open spaces, aligning with contemporary urban planning trends of the late 19th century. This spatial contrast underscored the city's modernity while maintaining symbolic continuities with Mughal urban traditions and architectural vocabulary.

5.2. Taj-ul-Masajid

Shahjahan Begum's architectural patronage in Bhopal culminated in the construction of Taj-ul-Masajid, an aspirational mosque complex (See Fig. 2) that underscored both her imperial aspirations and religious reawakening. Initiated in the late 19th century, the mosque was strategically positioned in Shahjahanabad, the newly planned suburb of Bhopal (See Fig. 1), designed as an assertion of power and legitimacy akin to Mughal precedents. While the exact commencement date remains uncertain, sources suggest that the mosque's construction began after 1871, aligning with Shahjahan Begum's increasing engagement with Islamic patronage, influenced by her second husband's religious fervor.[36]

Taj-ul-Masajid was envisioned to be one of the largest mosques in the Indian subcontinent, built atop a hillock at the highest elevation in the city. This strategic placement, along with its high plinth and towering minarets, ensured that the mosque remained a dominant visual landmark across Bhopal's skyline.[36] Unlike Moti Masjid by Shahjahan Begum's predecessor, Sikander Begum,[36] which served as an urban pivot, Taj-ul-Masajid was conceived as a monumental sacred precinct that reflected the intersection of imperial ambition and Islamic revivalism, especially in the post-1858 context.[1]

The mosque's architecture was deeply rooted in Mughal traditions, with design elements that echoed the Jama Masjid in Delhi, the Badshahi Mosque in Lahore, and the Buland Darwaza of Fatehpur Sikri. Constructed primarily of marbled, pinkish-red sandstone, the mosque's three-bay façade featured a large central arch flanked by two smaller sets of three arches, with an undecorated muqarnas adorning the main arch.[43] The structure included zenana galleries (See Fig. 3)[44] at the north and south ends of the mezzanine floor, accessed through jaali doorways—an uncommon provision for women worshippers in mosques at the time, attesting to Shahjahan Begum's inclusive vision and emerging Ahl-i-Hadith reformist teachings.[3]

Gordon Sanderson, Superintendent, ASI (Archaeological Survey of India), referred to Taj-ul-Masajid as the '*largest modern mosque'* in India, and a '*close rival to the Jama Masjid at Delhi*'.[44] A significant innovation in Taj-ul-Masajid's construction was the use of reinforced concrete in its twin minarets, an architectural first in South Asian mosque construction.[44] Further, Sultan Jahan Begum, Shahjahan's successor, noted that the mosque's flooring was initially planned with crystal slabs imported from England for seven lakhs of rupees, though their use was later prohibited as they would have reflected the worshippers.[45] The mosque complex also housed an Arabic school, a library, a research center, and lodging for scholars and students, reinforcing its role as a center for Islamic learning and dissemination.[36]

However, the mosque remained incomplete following Shahjahan Begum's death in 1901 due to a likely paucity of funds.[46] Muhammad Raushan, a draftsman from Delhi, designed the mosque's plan and elevation.[44] For much of the 20th century, Taj-ul-Masajid remained an unfinished architectural endeavor, with successive rulers of Bhopal unable to complete its construction. The final phase of construction commenced in 1971, led by Allama Mohammad Imran Khan Nadwi Azhari and Maulana Sayed Hashmat Ali Khan, and culminating in its completion in 1985. Until 2004, the mosque also served as the site for the Aalmi Tablighi Ijtima, an annual three-day congregation for theological discussions.[43] Today, it stands not only as the largest modern mosque in India but also as an enduring testament to Shahjahan Begum's grand vision—one that fused architectural magnificence with a profound religious legacy.[3]

Fig. 2: Taj-ul-Masajid View from Shahjahani Sadak. (Source: Author, June 2024).

Fig. 3: View of Zenana Gallery in Taj-ul-Masajid (Source: Author, June 2024).

5.3. Taj Mahal Palace Complex

The Taj Mahal Palace Complex in Bhopal, commissioned by Nawab Shah Jahan Begum, stands as a striking testament to her architectural vision and grandeur. Named after Emperor Shah Jahan's iconic mausoleum, the

Taj Mahal of Agra, the palace symbolized both imperial grandeur and personal ambition.[3] Among the structures within the palace complex was the Benazir Palace, a pleasure retreat adorned with enclosed gardens, fountains, and an elegant hammam, and Aali Manzil.

Architecturally, the palace displayed an eclectic style, incorporating tiers of arches, grand cusped entryways, balustrades, and domed chhatris, alongside vast water tanks, embodying the rich artistic synthesis of the period.[3] By this era, Victorian elements had also begun influencing Bhopal's built environment. These features were evident in frescoes and furnishings, which blended European decorative traditions with local artistic expressions.[26] The interior of the Taj Mahal Palace, as described by Sultan Jahan Begum, was a spectacle of opulence:

> "The *frescoed* gateways of the Taj Mahal Palace are so wide and spacious that a four-in-hand could be easily driven about within its portico. There are hundreds of rooms in this palace. Every room was differently colored, and artistically furnished in colors to match. The carpets, chandeliers, chairs and sofas, divans together with their coverings, even the punkhas and the curtains were of the same color as the ceiling and the walls of their respective rooms. Each door was painted the color of the theme of the room behind." [45]

Shahjahan's affinity for courtly magnificence, aristocratic patronage, and lavish festivities was epitomized in the Taj Mahal Palace Complex. Sultan Jahan Begum, Shahjahan's successor, in her biography, describes the festivities at Taj Mahal in the honor of Viceroy's Lord Lansdowne's 1891 visit.

> "The guests were accommodated on the roof of that part of the palace called the 'Dilkusha,' which is situated on the bank of the adjoining tank. On this occasion, golden, silver, and cut-glass chairs were provided for the guests. Thousands of colored lamps flashed from every part of the great palace; thousands more illuminated the margin of the tank, varied at intervals with cascades and fountains of fire."47

Through its monumentality, architectural ingenuity, and social vibrancy, the Taj Mahal Palace Complex remains one of Shah Jahan Begum's most remarkable legacies, embodying the fusion of Mughal, Victorian, and indigenous Indian elements that defined the built environment of Princely Bhopal.

Fig. 4. Entrance to Taj Mahal Palace (Source: Author, April 2024).

Fig. 5. View of the present-day Taj Mahal Palace (Source: Author, April 2024).

6. CONCLUSION

During her 33-year reign, Shahjahan Begum infused Bhopal with a new liberal spirit, bringing vibrancy, elegance, and charm to the once-austere landscape shaped by her predecessors, along with a stable, and well-governed state.[27] Shahjahan Begum's patronage of architecture and urban projects became a platform for asserting princely power and legitimizing it before the colonial state and the broader public. At the same time, it allowed for the creation of a grand princely city that balanced opulence with concerns for public welfare. Princely Bhopal, just like Rampur[6] integrated the discourses and practices of an 'Islamic moral city'[36], with a 'colonial modern city'.

With substantial wealth and a degree of autonomy from traditional familial restrictions, Shahjahan Begum strategically crafted her cultural and ideological identity. Navigating the peripheries of both Indian and colonial spheres while remaining materially secure,[1] she actively shaped her legacy through architectural, literary, and religious patronage. Her endeavors not only reflected her distinct vision but also reinforced her authority, positioning her as a pivotal figure in the negotiation between tradition and modernity in Princely India.

Shahjahan Begum was a complex and influential ruler—an observant Muslim and a reformer who, like many of her Indian contemporaries, transcended simplistic labels of progress or tradition. Her legacy reflects the dynamic interplay between cosmopolitan influences and deep-rooted traditions, showcasing how historical figures navigated multiple identities, negotiated power, and shaped cultural landscapes in colonial India.

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Traditional Dwellings and Settlements
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NATION-BUILDING WITH CLIMATE RESILIENCE: A CASE OF KAMALAPUR RAILWAY STATION

Mohona Tahsin Reza

NATION-BUILDING WITH CLIMATE RESILIENCE: A CASE OF KAMALAPUR RAILWAY STATION

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The paper examines design and construction history of Kamalapur Railway Station situated in Dhaka within a decolonized setting of East Pakistan (presently Bangladesh) focusing on geopolitical tensions, socio-economic issues, and cultural and religious perplexities. Alongside Daniel C. Dunham's climatic approach in the design of the transportation hub, the paper explores religious symbolism transformed into a representation of nation-building after the independence of Bangladesh. Through the study of power and architecture, this paper aims to analyze how nationalism had parallel influence on Bengali and Islamic identity and how political events and global funding impacted the spatial design of Kamalapur Railway Station.

1. INTRODUCTION

Throughout its existence, Bangladesh has been known by several names – the Bengal Delta, Bengal, East Bengal and East Pakistan according to different periods.[1] The territory became East Pakistan unified with Wast Pakistan as a part of the new nation of Pakistan, segregating itself from India in 1947. After the partition, India succeeded the old administrations of colonial power and Pakistan had to establish itself from the scratch in terms of government formation, administrations, armed forces, roads, railways and the urban planning of the cities. The two wings – separating from each other by thousands of miles of India in between, East and West Pakistan was faced with a massive task of building the nation in which the 'quest for an identity was both Islamic and national.'[2]

Alongside forming governing bodies for the two provinces, urban planning and the construction of public buildings became the utmost priority for Pakistan's development. This brought opportunities for locals to be trained as architects and expatriate architects were invited through funded development schemes in the country. The arrival of foreign architects became a part of globally funded projects during the presidency of Ayub Khan between 1959 and 1969 as he established a strong alliance with the USA and other foreign countries through his visionary development schemes of Basic Democracies and Second Five-Year Plan.

As a result, this became an era when Pakistan embarked on colossal development projects by receiving huge amounts of foreign funding from the Harvard Advisory Group (HAG) and the Ford Foundation. The USA funded over 100 million dollars per year to Pakistan through the Ford Foundation and the UN Technical Assistance Administration. Furthermore, through the Colombo Plan, other foreign countries, such as the UK, Canada and Australia provided 20 million US dollars per year.[3] Subsequently, the government was assisted by UN consultants and the Ford Foundation to develop schemes and prototype models for schools, institutions,

rural settlements and agricultural systems. These schemes were designed to be effective and swift in order to accelerate self-mobilization in the country for future development programs.

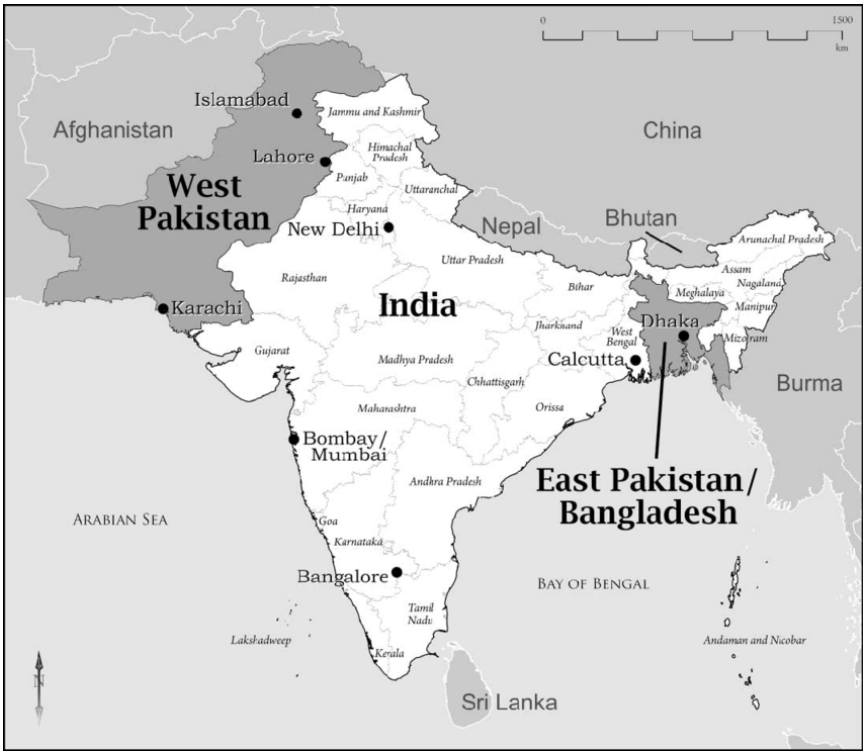


Fig 1: Map of the Indian Subcontinent showing the geo-placement of East and West Pakistan. (Source: Heritage Archive of Bangladesh History)

Fig 2: American President John F. Kennedy receiving President of Pakistan Ayub Khan at the White House in Washington D.C., 11 July 1961. (Source: Bridgeman Art Gallery)

The United States Agency for International Development (USAID) assisted in the set-up of an architectural department to train locals as architects and to be self-sufficient in the technical sectors. In order to fulfil these programs, many international architects were invited, and the priority was given to West Pakistan. Some international architectural firms were assigned to projects in West Pakistan and later they would be requested to work in the East such as Greece based architectural firm of Constantinos A. Doxiadis. Albeit combined works to be accomplished for both wings of Pakistan, there were a number of architects who were specifically recruited to work in East Pakistan. Amongst them, USAID collaborated with Texas Agriculture and Mechanical (A&M) University to establish architectural education in East Pakistan which brought Richard Vrooman and his colleagues to the region. Consequently, a branch of the Louis Berger Associate & Consulting Engineering firm was established in East Pakistan in which Daniel C. Dunham was assigned as the chief architect and later replaced by Robert Boughey. During 1960s, apart from Muzharul Islam, there were no native architects practicing in East Pakistan. Therefore, by collaborating with US-based institutions, these opportunities brought foreign architects to work in a country which required a great deal of modernization as well as an articulated system for a growing industry.

Most of these architects were known for their site-specific architectural language. Through their designs, Doxiadis Associates (DA) sought to establish educational curriculums and training centers, Vrooman with his team established a formal institution for architectural studies (EPUET now known as BUET) and Dunham's architectural endeavors included number of diverse governmental and institutional projects who later focused on teaching with Vrooman at EPUET.[4]

2. LITERATURE REVIEW

The architectural research of Bangladesh between 1947 and 1971 remains vastly relied on building readings and the philosophy behind the designers' perspective with little attention to the context the built environments were being constructed. Scholars have been doing extensive research on architecture of Muzharul Islam and Louis I. Kahn since the 1980s until now.[5] In contrast, the architecture of other expatriate architects who practiced in East Pakistan remains largely overlooked. There is few research conducted on Doxiadis by Bayezid Ismail Choudhury and Farhan Sirajul Karim.[6] However, analysis of Dunham's architecture covers through a small range of descriptive narrative published by his wife and few articles written by Rafique Islam.

Daniel C. Dunham, the chief architect of Berger Associate of East Pakistan branch spent almost seven years (1960 – 67) in Dhaka with his family. Within this period, Dunham not only contributed to important architectural projects but also engaged himself with the Bengali culture and maintained a cultural community

amongst his other American peers. The life of Dunham and his family in Dhaka is very well documented in a five-volume book edited by his wife Mary Frances Dunham and his daughter Katherine Dunham entitled *Some Weep, Some Laugh: Memoirs of an American Family in Dacca 1960-1967* (2018).[7] Alongside, the chronological details of Dunham's architectural journey in East Pakistan, this five-volume book also provides with instances of the difficult situations the Dunham family had to face during the political turbulences and how they were transported to India during the civil war. Bangladeshi scholar Rafique Islam's research provides more analytical studies of Dunham's architecture by drawing attention upon his architectural education at Harvard University and his work is studied as a combination of Western and regional approaches to architecture.[8]

These resources demonstrate contextual information and photographs; however, the architectural analysis is not sufficient for examining Dunham's critical approach to nation building through his design of Kamalapur Railway Station. Therefore, this paper refers to the supportive texts of the resources above and sought a clear understanding of the transportation hub from other methods of research outlined in the next section.

3. METHODOLOGY

Majority of the analysis provided in this paper has been collected from five years of research conducted for my PhD thesis. In the case of Dunham's work specifically Kamalapur Railway Station, the study relies on site visits, reports, oral histories and interviews. Completed in 1968, the structure is still active as a central station of Dhaka and has several connections within the city through the Metro Rail Terminal (MRT). The site visits assisted with recent photographs and conversation with the daily users who acknowledges the long-term success of the design and how the shading device keeps the interior cool in the hot and humid conditions of Dhaka.

Several reports were published during the 1960s to analyze the feasibility of Ayub Khan's Second Five-Year Plan. Two reports – Gant's review of the Ford Foundation program in 1959 and Bjur's USAID survey on Pakistan in 1968 provides with budgets for central stations in Pakistan in which the economic discrepancy for the East wing is evident.[9] Kamalapur Railway Station is not only the central station but also a heritage of Bangladesh. Therefore, in many architectural and historical seminars, Bangladeshi scholars mention the station's architectural significance as it enlightens the independence history of the country. These discussions became oral evidence as well as interviews conducted with architects for my PhD thesis provide also valuable information to support the analysis.[10]

The study on Dunham's work would remain incomplete if his daughter Katherine Dunham would not provide me with architectural drawings, newspaper report and other relevant information in relation to her father. The research was also enriched by Katherine's feedback who kindly reviewed my documents through

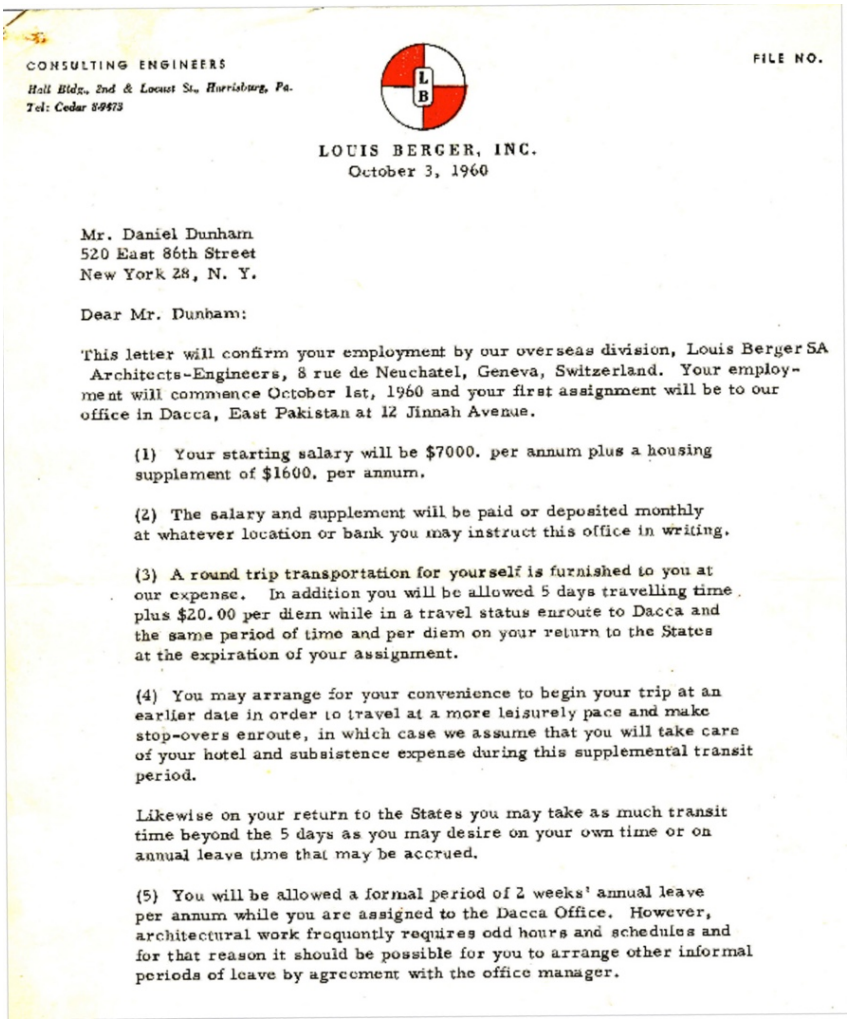
various e-mails in July 2022. Alongside the published resources and other relevant materials, this paper aims to study Kamlapur Railway Station not only as an architecture appropriate for tropical region but also argues the structure provides contextual significance through its design by creating a dialogue with the ongoing political and cultural circumstances.

4. THE TRANSPORTATION HUB

Although DA was given responsibilities for several projects in both provinces of Pakistan, nevertheless, the firm mostly required to focus on the larger projects in the West wing such as to producing an urban planning scheme for the capital city Islamabad. Therefore, in order to bring equal attention to both provinces, USAID offered the private firm - Louis Berger Associate & Consulting Engineering – the establishment of a subsidiary branch in East Pakistan.[11] This American based private firm was well recognized for its international architectural and engineering endeavors. The private firm was also involved in a major commission in the taking on of the Meghna Bridge project at Bhairab located in East Pakistan.

The firm was actively seeking opportunities for more projects in the region. Thus, in 1960, by accepting offer from the USAID, Louis Berger Associates opened their first local private architectural office at Jinnah Avenue located in Dhaka and appointed Daniel C. Dunham – an American architect - as the new head of the division.[12] Dunham actively worked as the chief architect for almost three years until he accepted to teach as a professor in the department of architecture at EPUET. During his time working at Louis Berger Associates, Dunham worked on a number of government projects which was part of the development scheme funded by foreign organizations such as the masterplans and buildings of universities located in Rajshahi, Mymensingh and Barisal. The World Bank also commissioned Paul Rudolph in developing a masterplan for the Agricultural University in Mymensingh in which Dunham and Stanley Tigerman collaborated to design several university buildings.[13]

One of the most important projects of Dunham was the Kamalapur Railway Station which was his last work before he decided to teach at EPUET in late 1962. Louis Berger Associates hired Boughey as the chief architect who continued the architectural projects of the firm and completed the construction of Kamalapur Railway Station. After Boughey was given the responsibility to supervise the completion of the construction, Dunham continued to advise on the project.



CONSULTING ENGINEERS
Hall Bldg., 2nd & Locust Sts., Harrisburg, Pa.
Tel: Cedar 8-9473

FILE NO.

LOUIS BERGER, INC.
October 3, 1960

Mr. Daniel Dunham
520 East 86th Street
New York 28, N. Y.

Dear Mr. Dunham:

This letter will confirm your employment by our overseas division, Louis Berger SA Architects-Engineers, 8 rue de Neuchatel, Geneva, Switzerland. Your employment will commence October 1st, 1960 and your first assignment will be to our office in Dacca, East Pakistan at 12 Jinnah Avenue.

(1) Your starting salary will be $7000. per annum plus a housing supplement of $1600. per annum.

(2) The salary and supplement will be paid or deposited monthly at whatever location or bank you may instruct this office in writing.

(3) A round trip transportation for yourself is furnished to you at our expense. In addition you will be allowed 5 days travelling time plus $20.00 per diem while in a travel status enroute to Dacca and the same period of time and per diem on your return to the States at the expiration of your assignment.

(4) You may arrange for your convenience to begin your trip at an earlier date in order to travel at a more leisurely pace and make stop-overs enroute, in which case we assume that you will take care of your hotel and subsistence expense during this supplemental transit period.

Likewise on your return to the States you may take as much transit time beyond the 5 days as you may desire on your own time or on annual leave time that may be accrued.

(5) You will be allowed a formal period of 2 weeks' annual leave per annum while you are assigned to the Dacca Office. However, architectural work frequently requires odd hours and schedules and for that reason it should be possible for you to arrange other informal periods of leave by agreement with the office manager.

Fig 3: Dunham's employment letter from Berger Associates. (Source: Katherine Dunham)

The station project offered an opportunity to design a grand structure that would symbolize a gateway to the capital city. The government provided land previously occupied by an abandoned old brick building which would be replaced by this transportation hub. During the design phase, Dunham introduced a new concept based on requirement and conditions rather than referring to past railway stations such as the Victoria Terminus of Mumbai (now known as Chhatrapati Shivaji Terminus) or Howrah Railway Station in Kolkata.[14] Although Rafique Islam states that Dunham's first proposal for the idea of a grand railway station followed European layouts with a two-storied arrival hall, sunken courtyard, and an administrative building with a Victorian style clock tower, nevertheless, this is denied by Katherine Dunham who stated that Dunham always intended to design an open-air structure with no exterior walls for ventilation.[15] Dunham proposed a design with a vast canopied structure supported by tall columns positioned in a grid. Dunham had expertise in this construction technique as he had worked on thin concrete shell design in a workshop during his study at Harvard University.[16]

Fig 4: Kamalapur Railway Station, Dhaka, Daniel C. Dunham. (Source: Katherine Dunham)

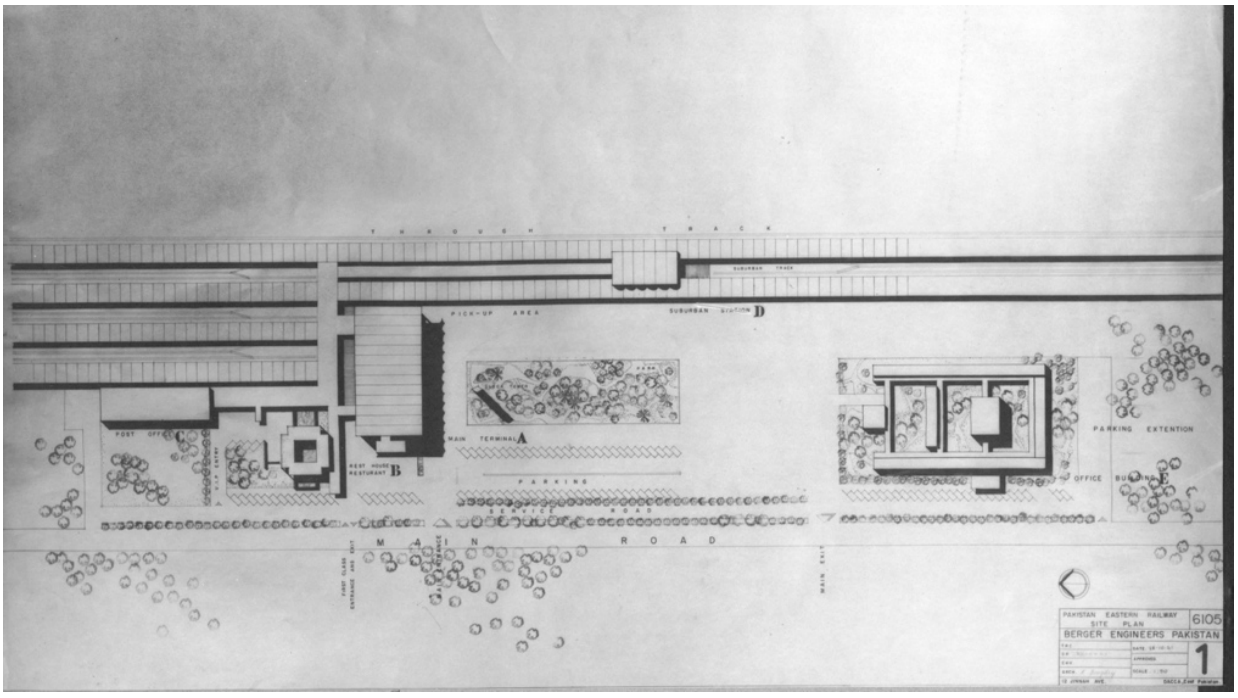
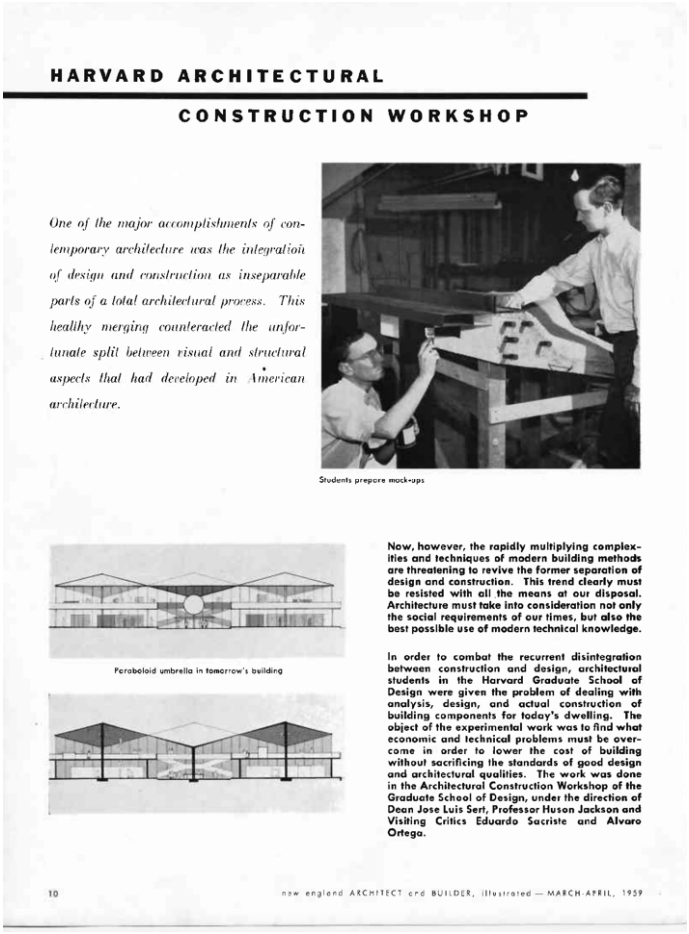


Fig 5: Masterplan of Kamalapur Railway Station. (Source: Katherine Dunham)



HARVARD ARCHITECTURAL

CONSTRUCTION WORKSHOP

One of the major accomplishments of contemporary architecture was the integration of design and construction as inseparable parts of a total architectural process. This healthy merging counteracted the unfortunate split between visual and structural aspects that had developed in American architecture.

Students prepare mock-ups

Paraboloid umbrella in tomorrow's building

Now, however, the rapidly multiplying complexities and techniques of modern building methods are threatening to revive the former separation of design and construction. This trend clearly must be resisted with all the means at our disposal. Architecture must take into consideration not only the social requirements of our times, but also the best possible use of modern technical knowledge.

In order to combat the recurrent disintegration between construction and design, architectural students in the Harvard Graduate School of Design were given the problem of dealing with analysis, design, and actual construction of building components for today's dwelling. The object of the experimental work was to find what economic and technical problems must be overcame in order to lower the cost of building without sacrificing the standards of good design and architectural qualities. The work was done in the Architectural Construction Workshop of the Graduate School of Design, under the direction of Dean Jose Luis Sert, Professor Huson Jackson and Visiting Critics Eduardo Sacriste and Alvaro Ortega.

10 new england ARCHITECT and BUILDER, illustrated — MARCH-APRIL, 1959

Fig 6: Workshop attended by Dunham in GSD at Harvard University. (Source: Katherine Dunham)

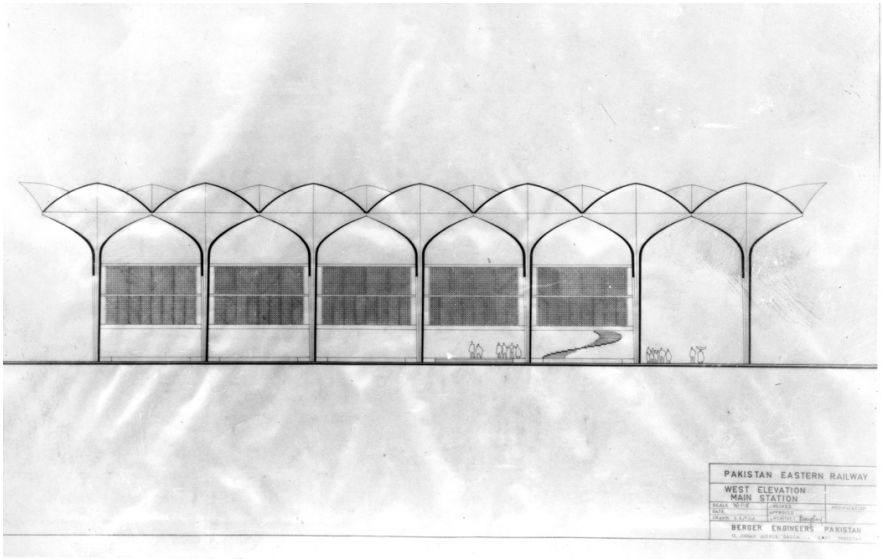


Fig 7: Pointed Arches for the Canopy, Kamalapur Railway Station, Dhaka, Daniel C. Dunham. (Source: Katherine Dunham)

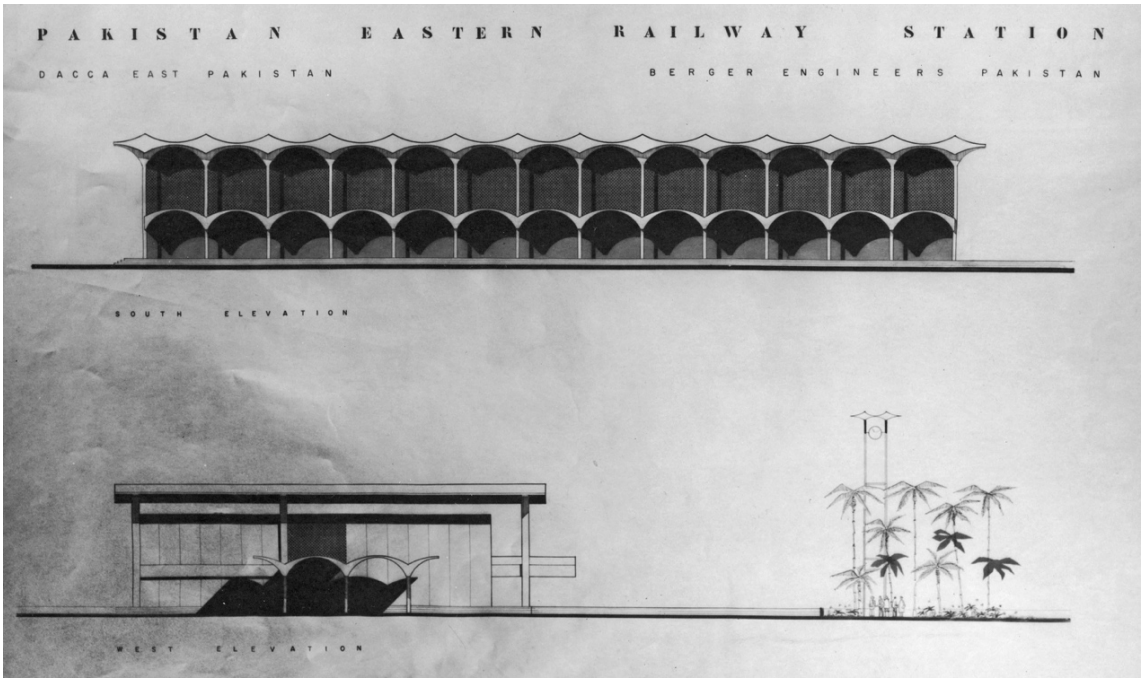
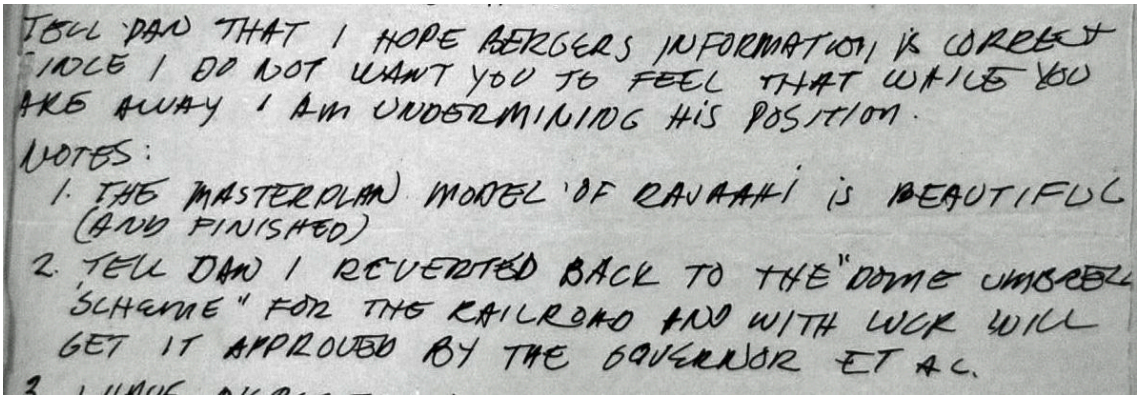


Fig 8: Vaulted Roof, Elevation of the Kamalapur Railway Station. (Source: Katherine Dunham)


TELL DAN THAT I HOPE BERGERS INFORMATION IS CORRECT SINCE I DO NOT WANT YOU TO FEEL THAT WHILE YOU ARE AWAY I AM UNDERMINING HIS POSITION.

NOTES:

1. THE MASTERPLAN MODEL OF RAWAHI IS BEAUTIFUL (AND FINISHED)
2. TELL DAN I REVERTED BACK TO THE "DOME UMBRELLA SCHEME" FOR THE RAILROAD AND WITH LUCK WILL GET IT APPROVED BY THE GOVERNOR ET AL.

Fig 9: Boughey's letter to Mary Frances about Dunham's 'dome umbrella scheme.' (Source: Katherine Dunham)

The railway authorities required some alteration to the building in order to convey an Islamic image, such as requesting to use vaults. Dunham knew that it was a common practice in Pakistan to express Islamic identity through the application of symbolic shapes to facades. Therefore, with several cases of trial and error, he modified his design in which the roof was shaped to a pointed arch and which he described as the 'dome umbrella scheme.' This shape was inspired by Mughal mosques and mausoleums and was accepted by the railway authorities. Dunham abstracted Islamic features and incorporated these into his technical structure which allowed maximum ventilation during the summer and provided protection from heavy rain during the monsoon.

Upon Dunham's leaving, the designs were changed by the authorities to cut costs. However, since Boughey was in charge of supervision, he assured that the 'dome umbrella scheme' would remain unchanged. This was evident in a letter sent from Boughey to Mary Frances,

> I do not want you [to] feel that while you are away, I am undermining his position. Tell Dan, I reverted back to the Dome umbrella scheme […] and with luck will get it approved by the governor.17

Kamalapur Railway Station reflects how limited available resources can still produce great buildings. However, it is assumed that the railway authorities further intervened during the supervision resulting in the lack of important solutions such as water penetration during heavy rainfall.

5. CONCLUSION

Daniel C. Dunham spent seven years with his family in East Pakistan which led him to experience the culture deeply and it helped him to understand the requirements the natives needed. Alongside the central station, Dunham designed other buildings with simple forms and rational functions which was economically sustainable. Indeed, his engagement with the dwellers and his students in the designs for EPUET Faculty Housing or for Thana Housing that reveal a sincere concern for the opinion of the natives. The authorities required the Kamalapur Railway Station to be highly Islamic in form, however Dunham abstracted the required Islamic features and designed the roof with his 'dome umbrella scheme.' The architecture of Dunham offers real and rational experience in which modernism is used as a tool for sensible design.

The design of the station was begun in 1962 and it opened for service in 1968 when Dunham had already left the country. During his time at Dhaka, Dunham witnessed many of his students attending the protest for independence which not only interrupted the continuity of his job but also provided with realization on the historical and cultural aspects of Bengal. The construction techniques of shell design which Dunham studied in the Harvard University was altered as dome umbrella roof became an example of climatic success during the 1960s. Kamalapur Railway Station is celebrated as a national landmark as well as an icon of pre-independent architecture of Bangladesh.[18]

NOTES AND REFERENCES

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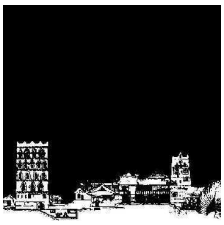

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