Evelyne N. Tegomoh

From thatched to corrugated roofs: Technological development of houses within the Papiakum landscape

Introduction

The United Nations recognizes shelter — in common with food and clothing — as a basic human need. However, while the need for shelter is universal, the form it takes varies significantly across people and cultures in terms of appearance, material, and construction techniques. While it is common to view shelter as a basic dwelling for humans and animals alike, shelter is never purely functional but deeply embedded with meanings and values shaped by the norms and beliefs of those who create and inhabit it. These symbolic dimensions are clearly illustrated among the Papiakum people of the western Grassfields of Cameroon. For the Papiakum, like others in the Grassfields, the house is not merely a place of shelter to satisfy a human need, but is culturally coded, layered with different meanings from its very inception. Within any society, the socialness of things makes them actors in a web of social practices and cultural values. They become nodes in a web of knowledge. Eghosa Noel Ekhaese, Bayo Amole, and Oladunni Izobo-Martins, in their study of housing types and characteristics in Benin, Nigeria, affirm that "house mean different things to different people."[1] The "house could be a dwelling, home, hut, place for; entertainment, rest, sleeping, receiving guest, and a palace." This is corroborated by Tomas Ariztia, who argues that investing in a home is not just about an idea or a space but an active cultural process in which home-making practices allow inhabitants to embed personal and social meanings into their new residences.[2]

1 Eghosa Noel Ekhaese, Bayo Amole, and Oladunni Izobo-Martins, "Prefiguring houses in a traditional city: a case for Benin house types and characteristics," *Journal of Architecture and Urbanism* 1, no.2 (2017): 1–15.

2 Tomas Ariztia, "Decorating the New House: The Material Culture of Social Mobility," in *Consumer Culture in Latin America*, ed. J. Sinclair and A.C. Pertierra (New York: Palgrave Macmillan, 2012), 95.

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The range of roofs found in various parts of Africa fall into different categories. The technology of terrace roofs was very common in Mauritania and the Upper Niger region. These were achieved by laying mating or short poles in a herringbone pattern on top of roof beams and plastering huts with mud. The houses of the Bamileke of the Grassfields in Cameroon have conical roofs resting on square walls. The conical roof was constructed of two circular platforms built on a pyramid structure, which rested on the house walls. In the Western African region, houses with thatched roofs varied greatly in shape, materials used, and construction techniques. Some roofs rested on pillars independent of the walls below them, while saddleback roofs nearly always rested on wall plates supported on forked uprights within the walls. The ridge pole was sometimes supported by upright poles but usually rested between the gable ends. Beams were occasionally used. The shape of the roof usually adhered to the shape of the walls. Roofs above round walls could be conical, and roofs above rectangular walls could be saddle-backed, and heaped on a pyramid, debunking T.O. Odeyale and T. O. Adekunle's generalization that thatched roofs in Africa were just conical.[3]

In this chapter, I will discuss the technological advancement of houses with a focus on their roofs, revealing the techniques, materials, and meanings they embody with reference to lived experiences and their centrality to the changing architectural landscape. In more recent times, imported building materials have lent prestige and status to houses and their inhabitants, and reflect how increased mobility has led to "an intensified exposure to urban and 'western' housing styles, be it in design, ground maps, materials, or interior objects."[4] This chapter goes beyond a simplistic westernization narrative as it allows the voices and the thought processes of people in the community to be heard.

Experience

When I began my doctorate in 2009, I settled with the Papiakum people of Baba I on the Ndop plain. I found it intriguing how little had been written about them.

3 T. O. Odeyale and T. O. Adekunle, "Innovative and sustainable local material in traditional African architecture–Socio cultural dimension," in *Structural Analysis of Historic Construction: Preserving Safety and Significance*, vol. 2, ed. Dina D'Ayala and Enrico Fodde (Florida: CRC Press, 2008), 991–998.

4 Ann Cassiman, 'Home and Away: Mental Geographies of Young Migrant Workers and their Belonging to the Family House in Northern Ghana', *Housing, Theory and Society* 25, no.1 (2008):14–30; Evelyne Tegomoh, "The story of houses in the grassfields: mobility, belonging and hierarchies in urbanising North-West Cameroon" (PhD diss., Leiden University, 2022).

The village was already familiar to me; as a child, I stopped at it on my way to boarding school in Kumbo or during the return trip home for the holidays. Although stopping at the main market told me little about the people, it did spark my curiosity. Almost twenty years later, my interest in houses brought me back as I wanted to research a place that had been little studied in the Grassfields. I had the opportunity to travel through the hills, cross the rivers and take long walks across the plains. These undulating landscapes revealed the settlement patterns of the Papiakum people. Understanding their settlement style led me to explore various issues within the community, such as hierarchical structures, land management, identity, material culture, and gender dynamics. I eventually ended up writing a thesis titled "The story of houses in the grassfields: mobility, belonging and hierarchies in urbanizing North-West Cameroon." This edition of the *Yearbook* on environment, technology and development presented an opportunity me to write on an often overlooked subject: the roof of houses and the environment.

What type of roof did people have over their heads, and how did it affect the environment? These are the central questions of this chapter. At some point, most of us have thought not only about the ways in which architecture has changed but also about transformations in roof designs. The English saying "a roof over one's head" is very apt because of the types and attributes of roofs in this context. The history of roofs is long and multifaceted, shaped by time, place and cultural context. Broadly speaking, the narrative begins with mammals, and especially humans, emerging from caves into open environments, where they started to use plants in the natural environment, such as leaves, grass, straw, sticks, wood, and earth, to construct houses. This impulse is as natural and enduring as the instinct to cover one's head from rain, snow, or sun.

People depended on their natural environment to fulfil their basic need for shelter. In doing so, they developed techniques for adopting and adapting to the natural resources that their environment provided. Beautiful structures were constructed with materials gathered from or around settlement areas. This also led to specialization within the construction business. Roofs have evolved over decades and centuries at a varied pace with different levels of impact on the environment. The craftsmanship involved in thatching is highly regarded, with skilled artisans often passing their knowledge down generations. This transfer of traditional knowledge not only ensures the structural integrity of the roofs but also contributes to the aesthetic appeal of the buildings, as thatched roofs can be shaped and styled in various ways to reflect cultural identities.[5]

5 A. Ngwa, "The Aesthetic Value of Traditional Architecture in Contemporary Africa," *International Journal of Architectural Heritage* 15, no.3 (2021): 345–360.

This chapter takes us into a hybrid society, where thatched roofs have been gradually phased out in favor of corrugated zinc/metal roofs, and reintroduce them back into the society. This evolution has been closely tied to ascribed or acquired social status and class. In a hierarchical society where everything new was expected to originate from the palace, roofs evolved along with the buildings. The durability and risks involved prompted the gradual movement away from environmentally friendly materials that could not disintegrate.

Thatched roofs and African architecture

Odeyale and Adekunle, in their exploration of the sociocultural dimensions of innovation and sustainability in traditional African architecture, not only critically evaluate various local building materials available in south-west Nigeria but also give historical examples of structures built using readily available local resources. This includes the ziggurat built from mud and stones (2640 – 2621 BCE); the Bight of Benin (17th C) made from stabilized mud brick and plaster, thatch, timber, shingles; Kofa Buka 10th C), the Kano wall, made from mud and vegetable mat; Centenary Hall in Ake (1930), Abeokuta, made from stone, mud, timber; and Tomb, Places in Egypt – The Zoster's stepped pyramid at Saggara (2686 and 2181 BCE).[6] They additionally highlight how fragmented the historic accounts of African art and architecture have been. Notable exceptions include the sixteenth and seventeenth century accounts of the kingdoms of Benin and Congo provided by traders and missionaries from Portugal. Arab scholars documented the medieval African empires of Ghana, Mali and Songhai, and the East African coast. Yet the interpretations of early foreign adventurers to the continent often varied considerably. There is still a persistent misconception that precolonial Africans lived almost exclusively in circular mud and thatch dwellings. Since the mid-nineteenth century, publications have associated most traditional Africans with round, thatched-roof and mud-walled huts. However, historical research indicates that square and rectangular forms of housing can be traced back to antiquity and have existed in diverse geographical regions.

Thatched roofs have a long history worldwide, across Africa and Cameroon in particular, serving as a traditional roofing material for many communities. The origin of thatched roofs can be traced back to the need for shelter that is both functional and adapted to the local environment. According to Oppong, the use of thatch for roofing goes back as far as the Bronze Age. Thatched cottages and

6 Odeyale and Adekunle, "Innovative and sustainable," 991.

farm buildings were the norm in rural Britain for more than a millennium. Theatres were even built and roofed with thatch. In Africa, thatched roofs have been used since the earliest times, but have not been perfected from generation to generation thus far.[7] Thatched roofs, if properly constructed, can last for over half a century depending on the climatic conditions. Thatched roofs are typically made from locally available materials such as grass, reeds, palm leaves, or other vegetation. The choice of material often depends on the local climate, availability of resources, and cultural practices.

In countries like Nigeria, Ghana, and Senegal, thatched roofs are also prevalent, with variations in style and material based on local customs and available resources. In regions like Kenya and Tanzania, traditional huts often feature thatched roofs, with designs reflecting the local culture and environment. In Cameroon, like in many other African countries, thatched roofs are commonly found in rural areas, particularly among the Bantu and other ethnic groups. The roofs are often conical or sloped, designed to shed rainwater effectively.

In some parts of the world, thatched roofs are seen as exotic, while in others, they are the norm. In many African cultures, the style and construction of thatched roofs can signify social status, community identity, and cultural heritage. Different ethnic groups may have unique styles of thatching, which can reflect their traditions and craftsmanship. Thatched roofs are particularly well-suited to the tropical and subtropical climates found in many parts of Africa. They provide excellent insulation, keeping homes cool in hot weather and warm during cooler nights. The natural materials used in thatching also allow for good ventilation. Thatched roofs are often seen as an environmentally friendly building practice. The materials are renewable, and the construction techniques are generally low impact, making them sustainable options for housing.

While modern building materials such as metal and concrete have become more common and even politicized, as seen in Tanzania, thatched roofs continue to be used in many rural areas and are sometimes incorporated into eco-tourism projects.[8] They are valued for their aesthetic appeal and cultural significance, as well as their environmental benefits. In summary, the origin of thatched roofs in Cameroon and Africa is deeply rooted in the region's history, culture, and environmental conditions. Their use reflects a blend of practicality, sustainability, and cultural identity—elements that have persisted across generations. Thatched roofs

7 R. A Oppong, "'Loosing the Sense of Thatch' (A Trio Sub-Saharan African Compendium)," 2009, accessed 22 July, 2025, https://dev.ecoguineafoundation.com/uploads/5/4/1/5/5415260/thatched_roofs.pdf.

8 E. Brownell, *Gone to Ground: A History of Environment and Infrastructure in Dar es Salaam* (Pittsburgh: University of Pittsburgh Press, 2020)

have been a significant architectural feature in many cultures worldwide, and Cameroon is no exception. The use of thatch in roofing is deeply rooted in the country's historical, cultural, and architectural landscape, made possible by its prevailing environmental conditions. This chapter explores the development of thatched roofs in Cameroon, examining the materials used, cultural significance, and the reasons behind its continued use despite the advent of modern roofing materials. The tradition of thatching in Cameroon can be traced back to the indigenous communities that have inhabited the region for centuries. Historically, thatched roofs were constructed using locally sourced grass, palm leaves, and reeds. These materials were not only abundant but also provided excellent insulation against the tropical climate, which is characterized by high temperatures and heavy rainfall. The use of thatch can be seen in various ethnic groups across Cameroon, including the Bantu, the Fulani, and the Sawa, each employing unique techniques and styles that reflect their cultural heritage.[9]

The primary materials used for thatching in Cameroon include grass species such as elephant grass (*Pennisetum purpureum*) and palm fronds from the oil palm tree (*Elaeis guineensis*). These materials are chosen for their durability, availability, and insulating properties. The thatching process entails several steps, including harvesting, drying, and bundling the materials before they are applied to the roof structure. Traditional constructions often involve a framework made of wooden poles, which is then covered with layers of thatch, creating a waterproof and insulated barrier.[10] The craftsmanship involved in thatching is highly regarded, with skilled artisans often passing down their knowledge through generations within family circles or through apprenticeship. Apprenticeship is not unique to Africa, as Sarah Vickerstaff, reflecting upon the historical evolution of the apprenticeship model in Britain between 1944 and 1982, showed how young people gained skills over time depending on their masters.[11] This traditional knowledge transfer not only ensured the structural integrity of the roofs, but also contributed to the aesthetic appeal of the buildings, as thatched roofs can be shaped and styled in various ways to reflect cultural identity.[12]

9 Martin Zachary Njeuma, "William F.S. Miles. Hausaland Divided: Colonialism and Independence in Nigeria and Niger. Ithaca, NY and London: Cornell University Press, 1994. Xviii+368pp. Appendices. Bibliography. Figures. Glossary. Illustrations. Maps. Tables. $49.95. Cloth," *African Studies Review* 39, no.2 (1996): 194–196.

10 Tegomoh, "The story of houses in the grassfields."

11 Sarah Vickerstaff, "'I was just the boy around the place': What made apprenticeships successful?," *Journal of Vocational Education and Training* 59, no.3 (2007): 331–347.

12 A. Ngwa, "The Aesthetic Value of Traditional Architecture in Contemporary Africa," *International Journal of Architectural Heritage* 15, no.3 (2021): 345–360.

In Cameroon, like in other African countries, thatched roofs are more than just functional elements of architecture; they are symbols of cultural identity and heritage. Many communities view thatched roofs as representative of their way of life, connecting them to their ancestors and traditions. For instance, in the Western Highlands, thatched roofs are often associated with traditional houses known as "bantu huts," which are integral to the communities' cultural practices and social structures.[13] Moreover, thatched roofs play a role in social gatherings and community events. In many villages, communal spaces with thatched roofs serve as venues for celebrations, meetings, and rituals, reinforcing social bonds and cultural continuity.

The social meaning of houses among the Papiakum people

The Papiakum people of Baba I village belong to one of the thirteen villages that make up the Ndop plain of Ngoketunjia Division of the Bamenda Grassfields of the North West Region of Cameroon. Their settlement in this present area is recent compared to the other ethnic groups of the Ndop plain.[14] Like most of the peoples of the Bamenda Grassfields, they claim a Tikar origin from Rifum.[15] Elisabeth Chilver states the Papiakum were found in central Bamum in today's West Region of Cameroon in the eighteenth century.[16] They eventually migrated and settled on the Nso-Oku foothills, between 1850 and 1880, during the reign of Kemshi III. During Zintgraff's passage through the Ndop Plain in 1889, Kemshi III was still on the throne. As M. Muafue-Mbarem has highlighted, Menkaki, who was very unpopular, ascended the throne after Kemshi III.[17] Thereafter, Nkanggaper III, Shanghamagia IV, and Kemshi IV were enthroned in 1989. Nkanggaper IV ascended the throne in 2023.[18]

13 Njeuma, "William F.S. Miles. Hausaland Divided," 194–196.

14 Elisabeth Chilver and Phyllis Kaberry, *Traditional Bamenda: The Pre-colonial History and Ethnography of the Bamenda Grassfields* (Buea: Government Printers, 1967), 20.

15 Chilver and Kaberry, *Traditional Bamenda*, 2.

16 Elisabeth Chilver, "Chronological Synthesis: The Western Region, Comprising the Western Grassfields, Bamum, the Bamileke Chiefdoms and the Central Mbam," in *The Contribution of Ethnological Research to the History of Cameroon Cultures*, ed. Claude Tardits (Paris: Editions de Centra National de la Recherche Scientifique, 1981), 464–472.

17 M. Muafue-Mbarem, *Baba I History and Culture 1394–2011*(Mimeo, 2012), 69.

18 Tegomoh, "The story of houses in the grassfields," 24–33.

The topography of Baba 1 is rugged. It consists of undulating hills, valleys and plains. As one drives along the Bamenda ring road towards Kumbo, the capital of Bui Division, the road splits the Baba I village into two parts (upper and lower). The upper section of the village to the north covers about 60 % of the surface area, and is where the palace, the seat of traditional authority, is situated. The lower section comprises 40 % of the total area and contains the majority of the rice fields on the plain. The Papiakum people are known on the Ndop plain for their engagement in trade and their mobility, which has brought about changes to the architectural landscape. Although the area is in the process of urbanizing with modern state structures and urban amenities, it has kept its traditional socio-political organisation centered on its chiefdoms with the Fons as paramount rulers. Today, the Fons are auxiliaries of state administration and still command authority among the people.

Like other peoples of the Grassfields, the people of Baba were not spared from the trading activities that took place in the middle of the nineteenth century, when there were already specialised production and trade centers linking various peoples. The Papiakum people created alliances in the Grassfields between chiefdoms to maintain their hegemony over smaller or weaker chiefdoms. Trade routes were usually means through "which commercial, religious and cultural contacts were established and formed, with the Fon and notables acting as patrons and young able bodied men serving as carriers or distributors in the supply chain'. From Baba I, carrier boys moved merchandise to Nigeria via Nso or Oku, an established trade center, or from Nigeria via Nso to Baba I. These traders and their carrier boys eventually created connections and friendships in the trade centers where some Papiakum people have settled. In the various urban trading centers in Cameroon, it is not uncommon to find pockets of Papiakum people, as they are known for being mobile. Their involvement in commercial activities also opened opportunities for educational and professional growth that led to the establishment of state and private social institutions and the installation of urban amenities. The results of this are seen in the various constructions dotted across the Papiakum architectural landscape in Baba I.

According to the Papiakum people, houses are masculine as they qualify and represent a person's place in society. Ownership is considered masculine in that it is traditionally attributed to men and regarded as the first visible sign that qualifies men as mature adults. Having a house also represents a young man's independence and serves as a physical and symbolic marker of his place within his people.[19] As pointed out by Dominique Malaquais, "human beings and their dwell-

19 Chilver and Kaberry, *Traditional Bamenda*; Elisabeth Chilver, "Chronological Synthesis: The

ings are linked in a symbiotic relation, at the heart of which stands one fundamental concern: the acquisition of status."[20] Responsibility, in this context, centers on managing and maintaining the smooth running of the household. When taken at face value, the association of masculinity with houses can obscure many underlying dynamics. One such example is women's capability and participation in land acquisition and house construction negotiations.[21] Women's contribution in these processes is pivotal in the successful completion of housing projects, whether for their husbands or their sons, because they till the land and gain deep knowledge about its history.

Houses are also a sign of wealth and social status. Investments in houses (zinc roofs) have given men a social standing which is much admired and talked about. "The use of these materials (imported iron sheets and cement) adds to the prestige and status of the house and its inhabitants" and reflect how increased mobility has led to "an intensified exposure to urban and 'western' housing styles, be it in design, ground maps, materials, or interior objects."[22] This has been embedded into the Papiakum social system, a people well known for their mobility, especially when it comes to trade. Long-distance trade involving the peoples of the Grassfields has been one of the oldest means of accumulation of capital in this region of the country.[23]

From pre-colonial times until the 1940s, houses were mostly built using readily available local materials like bamboo sticks, brown earthen mortar, soft grass straw and fiber ropes. They started as single room dwellings, partitioned or demarcated into sleeping and sitting spaces. At first, houses were hidden and

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Western Region, Comprising the Western Grassfields, Bamum, the Bamileke Chiefdoms and the Central Mbam," in *The Contribution of Ethnological Research to the History of Cameroon Cultures*, ed. Claude Tardits (Paris: Editions de Centra National de la Recherche Scientifique, 1981), 453–473.

20 Dominique Malaquais, "You are what you build: architecture as identity among the Bamileke of west Cameroon," *Traditional Dwellings and Settlements Review* 5, no.2 (1994): 22–36.

21 Tegomoh, "The story of houses in the grassfields," 34.

22 Cassiman, "Home and Away," 20.

23 Francis Nyamnjoh, "A Child is One Person's only in the Womb': Domestication, Agency and Subjectivity in the Cameroonian Grassfields," in *Postcolonial subjectivities in Africa*, ed. R. Werbner (London: Zed Books, 2002), 111–38; Michael Rowlands, "The Material Culture of Success: Households and consumption in Bamaenda," in *Conference on the Political Economy of Cameroon: Historical Perspectives*, ed. P. Geschiere and P. Konings (Leiden: African Studies Center,1989), 503–523; Michael Rowlands, "Accumulation and the Cultural Politics of Identity in the Grassfield," in *Itineraire accumulation au Cameroun:Pathways to accumulation in Cameroon*, ed. P. Geschiere and P. Konings (Paris: Karthala, 1993), 71–99; Jean Pierre Warnier, *Echanges, développement et hiérarchies dan le Bamenda précolonial (Cameroun)* (Stuttgart: Steiner 1985); Jean Pierre Warnier, "The transfer of young people's working ethos from the Grassfields to the Atlantic Coast," *Social Anthropology* 14, no.1 (2006): 93–98.

were close to water sources, so they had to be constructed on raised molds to avoid floods. Bigger and stronger sticks were strategically placed as pillars to form and hold the rectangular structures. Then, smaller or bigger bamboos were split and interlaced on the form with the aid of fiber from wet bamboo. After the pegging and lacing of the structure, the owner invited the community to assist him with the plastering. Earth mortar was then prepared and used to build the walls, wedging the pegged structure, and leaving space for a door.[24]

There were no windows, just a single door leading into the house. When windows were eventually introduced, they were so tiny that not even a baby could pass. Permission had to be sought from the palace to have more than one door or window in a house, and this was controlled by titled women of the palace, *Na'ah*, and palace servants, *Tchinda.* Payments of door and window taxes were made by all those who wanted to have more than one window. Limited permission was granted to those who wanted a back door. After consideration, only highly placed notables were allowed to have more than one door in their house. This is illustrated by the story of Moh Tanghongho's grandfather, whose house mysteriously crumbled to the ground after a visit by notables who claimed they could not find their way out by hitting themselves against the walls of the house. Either he had not obtained proper permission to have a back door, or the house was considered superior to the palace.[25]

A rectangular ceiling made of closely laced bamboo sticks was then mounted on the constructed form of the house. The ceiling was not completely sealed off. A rectangular opening was left on one side providing access to the attic or garret, which served as the main storage room or space for the most valuable possessions. While the majority of the space was reserved for grains and dried vegetables, prestigious and ostentatious items, including household utensils especially for women, occupied a place of honor. This practice echoes Michael Rowlands' (1989) observations about the consumption and placement of prestigious household goods in conspicuous locations in the houses in Bamenda.[26] Additionally, a bamboo shelf was attached just below the ceiling along the room's walls to store other items. Interestingly, this main storage place was also used as sleeping space in highly infested mosquito areas with bamboo ladders used to gain access.

If not capable of constructing it themselves, the house owner could hire someone to do the formwork for them. The roof, typically shaped like a triangular prism, was made using wet bamboos laced in a way that left small gaps for insert-

24 Muafue-Mbarem, *Baba I*; Brownell, *Gone to Ground.*
25 Tegomoh, "The story of houses in the grassfields," 36.
26 Rowlands, "The Material Culture of Success."

ing straw. Each side of the roof was constructed separately but assembled at the end using fiber ropes. Soft straws were collected from the hills and tied in bundles before being transported on the head to the building site. Each bundle was then taken up onto the roof one at a time and wedged with the aid of a bamboo stick to prevent it from rolling off. Starting from the base of the roof, handfuls of straw were fitted in between the laced bamboo. This tight knit assembly continued to the top to prevent any leakages. At the top ridge, wet bamboo spikes were used to hold the folded straw in place, protecting it from being lifted by wind. The roof edges were trimmed using a piece of wood and a cutlass to give it a nice shape. Over time, rain would further compact and smooth the straw, producing a smoother and more cohesive appearance. The door was fashioned from an alignment of bamboo sticks reinforced with an additional stick to secure the house, particularly during nighttime. The house was not immediately inhabited upon completion. The head of the family had to come in and light the first fire inside. This symbolic act, referred to as the "opening of the house," signified the planting of the household in the land among the people, and invited peace and prosperity to prevail.[27]

Figure 1: One of the few compounds with thatched roofs. Photograph by the author, Baba I, 2011.

As illustrated in Figure 2, building practices evolved from plastered huts to sun-dried brick houses and stone houses for a few wealthy people. The introduction of cement houses marked a new phase, though builders eventually reverted to

27 Tegomoh, "The story of houses in the grassfields,"67.

using sun-dried bricks with cement mortar. Stone foundations were introduced during the period when stone houses were under construction.

Changes to walls and roofs after 1940

However, the typical house structures before 1940 were built using local materials like bamboo sticks, brown earthen mortar, soft grass straw and fiber ropes as mentioned above. By 1970, construction had progressed to fully sun-dried brick houses, although still with thatched roofs. The production of sun-dried bricks involved the community who was invited to help with molding the bricks using a form, while a designated person carried out the construction works. Emily Brownell similarly observed this communal approach in her analysis of building materials in Tanzania during the 1970s and 1980s, noting how communities rallied together to build houses.[28] By this time, houses were constructed in more visible and accessible places as raids had come to an end and village boundaries were defined. Eventually, in men's houses, the surface and floor of the bamboo attic were plastered with mud mortar—forming a kind of decking that acted as fire barrier for the house.

The corrugated or zinc house in the palace stuck in the minds of all my research partners aged above seventy (Figure 3). It was a source of inspiration for the villagers more generally. There were, however, several reasons for the changes in materials used from around 1950. Raids were less common, the risk of fires was high, and trade and prosperity increased. Those who were involved in trade and coffee farming spearheaded the construction of houses with zinc roofs. Through their trade routes and economic transactions, they became exposed to new building materials that were not yet common at home but available in trading centers, like the neighboring country of Nigeria. Acquiring this building material for construction was an outward sign of prosperity, which quickly became a status symbol and something many aspired to own. This was especially so as fire used to cause untold pains and sufferings by razing houses down to dust. Many of my research partners recounted the havoc caused by fire to these thatched houses and personal possessions. The experiences they gained through their mobility in the service of trade and commerce opened up new ways of addressing their housing challenges.

The acquisition of valuable manufactured goods had risen. The zeal for acquiring and safeguarding these possessions precipitated the move from thatched

28 Brownell, *Gone to Ground.*

to zinc roofs to prevent losses from fire incidents. Additionally, people preferred more permanent rather than temporary roofs, which in the long run were more expensive. Thatched roofs required constant maintenance to avoid leakages and decomposition of the straw, the weight of which could eventually bring down a roof or house. Transitioning from thatched to corrugated zinc roof became an source of social pride and way to elevate one's social status. For parents who could not afford corrugated iron sheets for their roofs, it became a priority for their children to help secure this upgrade, as they wanted to avoid their parents being mocked for having thatched roofs.[29]

Figure 2: Thatched houses beside houses with aluminum sheet roofs. Photograph by the author, Baba I, 2011.

However, only a few thatched grass houses are dotted around the village today. Nearly everyone wants their roofs to be covered with zinc sheets. Thus, they must work hard to save money and view it as a sign of achievement that allows them to progress within the community's social hierarchy. These days, having a thatched roof house in the village is associated with misfortune and poverty (Figures 1 and 2). This situation can be embarrassing to friends and family, leading to either abuse or empathy. However, in urban centers, thatched roofs are making a

29 Tegomoh, "The story of houses in the grassfields," 37; Warnier, *Echanges*; Lamtur Tanlaka Kilian, "We are all one. Kola, the nut which brings peace, joy and life in Nso'society, Cameroon" (Master's thesis, Universitetet I Tromsø, 2013).

comeback as a sign of wealth and prestige. These roofs are constructed in *Boukarou* forms, using bamboo, bricks and cement, as an exterior unit for the entertainment of special guests or as relaxation spaces. In urban areas, such thatched-roof buildings also serve as tourist sites.

As roofing styles evolved, so did the main body of the house in terms of design, material, and size. There was a brief period when stone houses, or as they were called, half concrete houses, were in vogue despite the availability of this material, especially in the upper part of the village on the hills where the *Ntoh* palace is situated. Interestingly, stones were a common natural resource readily available but very few stone houses were constructed. These houses were built around the same time that corrugated roofing sheets were introduced. However, this trend did not catch on and was restricted to the affluent of the village who were mostly involved in trading, coffee farming and animal husbandry. Later, a few urbanites also constructed similar homes, but very few can still be seen today.

Figure 3: Nda Tarsah or Nda Woh (Stone House) at the palace. Photograph by the author, Baba I, 2009.

These half-concrete houses introduced stone foundations, which are now widely used. The mud brick houses have stood the test of time, although they now compete with cement brick houses. These sun-dried brick houses have become bigger, especially for women who now have separate sleeping rooms from children, along with cooking, eating and sitting space.

Figure 4: New Guest House replacing demolished Nda Tarsah. Photograph by the author, Baba I, 2012.

As the sun-dried brick houses became more common, cement bricks were introduced to further distinguish between urbanites and villagers. Like the half-concrete structures, cement brick houses are limited. Instead, there is a move towards what is known as *semi-dure* houses. These are constructed from sun-dried bricks and cement mortar, built on solid dug-in stone foundations with concrete pillars, and completely plastered with cement (Figures 4 and 6). Over time, these houses have evolved from single-room designs to two- and three-room houses with external kitchens and toilets attached. Most of the recent houses built by urbanites are self-contained, as well as having external kitchens and toilets. In polygamous homes, each wife had her own apartment, and children took turns to share the husband's space. In all the houses that I went into, owned by those living in the village, the kitchens were separated from the sleeping rooms. The toilets are closer to the houses, although some people still prefer to use the bushes. It should be mentioned that until the 1970s, toilets were not common. Nearby bushes were used, while the back part of the house was used for bathing. It was surprising to discover that not all the compounds in the village have a pit toilet, although the sanitary service is now mounting pressure for every household to have a toilet.

Architects and builders

The construction and design of these houses began very simplistically and have evolved into the more complicated structures we find today. The architects/builders behind the houses initially relied on individual creativity and effort. Then local guilds were formed to manage various stages of house construction. This further shifted with the introduction of half concrete houses, which led to the importation of architects/builders, especially from Nso, where these types of houses were already commonplace. The Nso had historically developed expertise in this field due to their engagement in trade, education and dynamism as an ethnic group. The roles of architect and builder were often merged, with the same individual fulfilling both functions. Local architects, mostly from the neighboring village of Nso, came with a team and negotiated their contracts with their employers depending on the size of the house. They had relative freedom in choosing the design although most chose simple designs according to the norms of the time. Their exposure to different architectural designs through travel influenced their work, and employers would sometimes reference previous houses they had seen when describing their preferences. With the advent of formal education this would change, although Nso architects continued to dominate the trade, as schools were introduced to them earlier than to the Papiakum people.

Depending on the source of inspiration for the design of the houses, workers would come from neighboring villages, towns or cities and stayed a week, fortnight or a month to do their job according to their contract. They were provided with sleeping and cooking space, or arrangements were made to supply them with meals. In either case, they received cooked meals from family members/relatives as a gesture of support for the job being done. In most cases when work was going on close to the main compound, the mothers (stepmothers inclusive), siblings, wife (*ves*) and friends sometimes provided food for the workers. Generally, since constructing a house at home is considered as a significant life milestone and a source of family pride, support for the project is usually offered at various stages by family, friends and the community as a whole. The level of assistance one receives usually reflects prior social investments. The communal effort witnessed during the decking of storey buildings, in particular, highlights the group's sense of conviviality and strong social bonds that define these undertakings.

We got to the Baba I when storey buildings were in vogue and teams of builders were still largely dominated by those from Nso, Bamenda and even Douala. Architects from Bamenda or Douala handled specific aspects of projects, like roofing and furnishing. Historically, the migration routes of the Nso people of Kumbo and the Papiakum people have been linked as they are from the same stock. They

did not just cross paths but are tied socio-culturally as the author experienced during her fieldwork amongst the Papiakum when emissaries came to perform rites/rituals at the *Nikwa* shrine.[30] According to historic accounts, the Nso and Papiakum people assisted and hosted each other during their migrations. Their eventual separation might had been promoted by population pressure and the desire for expansion as it was a common phenomenon during the period (1850 and 1880). There was however an exchange of sacred objects that can somehow explain their ties to each other. It should also be noted that these two ethnic groups, Nso and Papia belong to two distinct linguistic groups.

The Nso people have been long settled in their current location where they have established their built environment by drawing inspiration from their trade routes and partners. Quoting Jean-Pierre Warnier (1985), Lamtur Tanlakka Kilian noted that the Hausa kola nut traders from northern Nigeria had identified the Nso region as a kola forest in 1860.[31] Before the 1920s, the Nso were apparently known as the largest producer, originally marketing kola through the intermediate market at Nkor and insisting on doma and salt in exchange, which was the most important source of income in Nso.[32] The Papiakum would inevitably get involved in the trade directly bringing home new material objects as well as new knowledge. The Nso people were also influenced by white missionaries, who settled among them building churches, hospitals and schools, and later the government through the lobbying efforts of their elites who were now serving the state in various institutions/capacities. As a result, their craftmanship in architectural development would be older and more advanced than those of the surrounding ethnic groups. Giving the dynamic nature of the Nso people, labor migration for construction become another source income, especially for younger individuals who sought to establish themselves.

It was only natural for the Papiakum people to turn to Kumbo—the divisional headquarter of Bui, and predominately inhabited by those of Nso descent—for health care, education and also access to specialist craftsmen/professionals for house construction, due to its geographic proximity. The design of many houses were simply copied from Kumbo or drew inspiration from its more advanced construction practices. Similarly, migrant workers were often brought in from urban centers for specific jobs on various construction sites.

With increasingly complex designs, migrant workers are often brought in just to handle the construction of the roofs/ceilings, doors/windows and floors/walls.

30 Tegomoh, "The story of houses in the grassfields," 32.

31 Kilian, "We are all one," 7.

32 Warnier, *Echanges,* développement et hiérarchies dan le Bamenda précolonial (Cameroun); Kilian, "We are all one," 23.

These houses, with their roofing materials, do not only introduce foreign elements into the architectural landscape but also incorporate material that can impact the environment. A closer examination of several of these houses, as illustrated by Figure 5, reveal their physical and socio-cultural impacts (new architectural designs with building materials on the landscape).

Impact on the environment

The various constructions opened up access roads, which makes getting around easier. These access roads also saw the introduction of more motorbikes and cars into the landscape. Though seen as visible indices of development and growth, these vehicles also introduced environmental challenges in terms of atmospheric and physical pollution. The emissions and waste material left behind meant that people had to learn to deal with new types of inorganic and non-biodegradable properties and objects (Figures 9 and 10).

The houses, according to estate and urban developers, undoubtedly add aesthetic and economic value to the place (Baba I), particularly when one looks at the position of these structures in the undulating landscape. It should be noted that social structures and housing layout are entangled within this community, just like in other parts of the Grassfields. However, these developments infringe on the traditional architectural landscape. Traditionally, family compounds featured clusters of interconnected houses, often linked by footpaths within a walkable distance, making it easy to send children on errands between the houses (Figure 7). The social structures and housing layout are entangled in everyday lives.

With a growing population, the demand for land has become very high. This has, in turn, changed the socio-cultural dynamics of land management. Farmlands are being converted into residential areas. People are acquiring land outside their designated family property for construction. This shift has not only led to a reduction in green space—with home gardens reducing in size or disappearing—but has also affected the socio-cultural hierarchy of the village. Figure 8 illustrates a common pattern in which a family successor, having lived in the city, returns to erect modern structures within the family compound, disturbing or distorting the traditional layout. These structures push older buildings in the background as they are usually positioned in strategic locations that overshadow them. Economic affluence is allowing some community members to enter spheres they were formerly excluded from.

These new architectural structures often incorporate imported material that are foreign to the environment. In the northern parts of Cameroon, especially among the Fulani people, as Odeyale and Adekunle have pointed out, Africans'

Figure 5: Collage of pictures from author's collection showing the evolution of houses/roofs. Photograph by the author, Baba I, 2009 to 2016.

Figure 6: A blend of local and imported construction material within the palace, 2009 and 2010, Baba I. Photograph by the author.

Figure 7: Cluster of houses linked with foot paths representing a family compound. Photograph by the author, Baba I, 2011.

have traditionally used natural clays as paints. Today brightly colored acrylic paints have become popular. Most of their floors are either polished with cement or tiled (Figures 9 and 10).[33] One would argue it is to facilitate cleaning, but on the other hand, it has rendered the traditional techniques of cleaning and polishing the walls and floor obsolete. Improper management of waste from these structures has become an issue and wanting in the method of disposal. This, in the long run, adversely affects the environment. As pointed out by Bjørn Berge, "in a time when environmental labelling is becoming increasingly popular and the producers of building materials are urged to be more environmentally aware, it is obviously important that we are acquainted with these alternatives."[34]

33 Odeyale and Adekunle, "Innovative and sustainable local material in traditional African," 993.
34 Bjørn Berge, *Ecology of building materials* (London: Routledge, 2007).

Figure 8: Modern structures in the family compound (showing new building materials) relegating the old buildings to the background. Photograph by the author, Baba I, 2011.

Thatch is a natural, renewable resource and, when sourced sustainably, has a lower environmental impact compared to synthetic materials. Thatch roofing is often made from locally sourced materials, making it a more sustainable option compared to metal or synthetic roofing materials. As awareness of environmental issues grows, many people are opting for eco-friendly building practices. Thatch is biodegradable and has a lower carbon footprint, appealing to those concerned about sustainability. This calls for an in-depth analysis of the advantages and disadvantages of sustainable building materials, weighing their benefits in terms of environmental health and sustainability against potential challenges such as cost and availability.[35] Thatch roofing is often perceived as more aesthet-

35 George Baird, *Energy performance buildings* (Boca Raton: CRC Press, 1984); Chong Lin, "The role of sustainable building materials in advancing ecological construction," *Journal of Energy and Environmental Policy Options* 4, no.1 (2021): 15–21.

Figure 9: Interior design elucidating paint, tiles, staff, iron rail, vanished balusters. Photograph by the author, Baba I, 2016.

ically pleasing and harmonious with the natural environment. As urban areas become more homogenized with the use of modern materials, some individuals and communities seek to differentiate their homes through traditional designs that reflect local character and beauty.[36]

In some regions, thatch roofing has been found to perform better in specific climatic conditions, such as in heavy rainfall or extreme heat. Traditional roofing methods can offer better insulation and ventilation, making them more suitable for local environmental conditions compared to modern materials.[37] The process of building with thatch often involves community participation, fostering social ties and cooperation among residents. This communal aspect can be a significant

36 Rachel Charlotte Smith et al., "Decolonizing design practices: Towards pluriversality," in *Extended abstracts of the 2021 CHI conference on human factors in computing systems*, ed. Yoshifumi Kitamura et al. (New York: Association for Computer Machinery, 2021), 1–5.

37 Cara Steger, "A roof of one's own: choice and access in global thatch sustainability," *World Development Sustainability* 3 (2023): 100088.

factor in the choice to revert to traditional methods, as it strengthens community bonds and promotes collective identity.[38]

The shift from corrugated roofing back to thatch methods is a multifaceted phenomenon influenced by cultural, economic, environmental, aesthetic, and social factors. As communities navigate the challenges of modernity and urbanization, many are finding value in traditional practices that resonate with their identity and sustainability goals.

Figure 10: Retaining walls, paved spaces with greeneries and water fountains. Photographs by the author, Baba I. 2012 and 2016.

Conclusion

If we consider roofs as not just mere objects or a part of a house, but, like Steger, dwell on the human-plant relationships related to the provisioning of roof thatch for human housing, we encourage a greater understanding of the basic material and social conditions that support human well-being.[39] Roof thatch is both a subsistence and commercial product, and is often considered an ecosystem service of secondary importance. As such, thatch has played a hidden role in the global economy to this point, and its cultural importance has been obscured. When African societies, in their quest for "modernity," relegate these roofs because they now represent a symbol of poverty, then we undermine local knowledge on ecology and environment.

Thatched roof is critical to human well-being, inextricably linked to the identities and sovereignty of rural and indigenous communities. A long-term, place-

38 Brownell, *Gone to Ground*; Tegomoh, "The story of houses in the grassfields," 37.
39 Steger, "A roof of one's own," 100088.

based transdisciplinary work that seeks to understand and foster human-thatch relationships in specific contexts holds great potential for promoting future roof thatch sustainability in equitable ways. Though these thatched roofs and mud houses are quickly fading away in the Papiakum architectural landscape, they are gaining renewed attention elsewhere in the world. This resurgence is driven by several factors, including the growing emphasis on sustainability within global development discourses and researchers' enthusiasm to explore low-energy, sustainable building techniques. Eco-friendly vernacular housing methods are making a comeback. These traditional techniques are applied to develop eco-friendly modern housing. According to Heon Song, they are no longer recognized as outdated products.[40] In our part of the world, they are seen as a 'new' social symbol for a new elite class.

Mud has a number of properties which make it a perfectly suitable material for construction aimed at achieving thermal comfort at a low cost. Just like mud blocks, rammed earth walls have a very high capacity to store heat energy—commonly referred to as "thermal mass." The high thermal mass of rammed earth walls means they naturally regulate the internal temperature of a building. They do not readily prevent the flow of heat energy, but, owing to their high density, can absorb and store it. The energy required to both heat and cool the building can be greatly reduced, which further reduces the carbon dioxide emissions of the building. Rammed earth naturally regulates the internal relative humidity of the building, producing an improved air quality. Rammed earth is perfectly able to act as load-bearing element within a structural system. As an ancient building method, rammed earth has experienced a revival in recent years as people seek more sustainable building materials and natural building methods. Such alternative construction techniques can be widely used in all types of construction. Traditionally in rammed earth wall construction, the earth is mixed thoroughly with water to produce a homogeneous humid mix. According to A. Madhumathi, J. Vish-

40 Heon Song, "Analysis of the Thermal Environment Characteristics of Thatched Roof for Eco-friendly Rural Housing Development-Focused on the Neolithic Thatched Roof Dugout Hut," *Journal of the Korean Institute of Rural Architecture* 16, no.1 (2014): 35–42; Smaranda Bica, Liliana Roşiu, Radu Radoslav, "What characteristics define ecological building materials," in *Proceedings of the 7th IASME/WSEAS International Conference on Heat Transfer Thermal Engineering and Environment*, ed. Siavash H. Sohrab, Haris J. Catrakis and Nikolai Kobasko (Moscow: WSEAS Press, 2009), 159–164.

nupriya and S. Vignesh this humid earth is poured into a form in thin layers and then rammed to increase its density.[41]

Thatch is a natural insulator, and air pockets within the straw thatch insulate a building in both warm and cold weather. A thatched roof ensures that a building will be cool in summer and warm in winter. The thermal insulation value is high, so thatch roofs are comfortable in warm climates. In the past, the biggest disadvantage of thatch roofing was its flammability, but today's thatched roofs include a fireproof barrier base, such as rockwool, that protects the underside of the roof from spreading fire. The thatch itself is sprayed with a fireproof material to resist flames. Modern-day thatch, when treated and industrially improved, can be used on a large scale in rural areas, due to its low-cost and excellent thermal properties.[42]

Just like in other parts of the world where these roofs are experience a resurgence, it might not be too long before the Papiakum community return to their old architectural materials and forms. The Papiakum community is facing significant pressure on land, and energy resources are dwindling, creating fertile ground for a future shift towards more sustainable, eco-friendly houses, especially as conversations around sustainability gain momentum and practical application. However, it is necessary to reiterate that the changes we see among the Papiakum are not linear or merely driven from the outside. This chapter has elucidated how 'local technological landscapes and material cultures' are intertwined with the everyday lives of people.[43] In alignment with Clapperton Mavhunga's work (2017), it fundamentally challenges the idea of African countries as recipients of technological innovation and insists that we place technological change within a longer context of indigenous or vernacular material culture.[44]

41 A. Madhumathi, J. Vishnupriya, and S. Vignesh, "Sustainability of traditional rural mud houses in Tamilnadu, India: An analysis related to thermal comfort," *Journal of Multidisciplinary Engineering Science and Technology* 1, no.5 (2014): 302–311.

42 Madhumathi, Vishnupriya, and Vignesh, "Sustainability"; Mikael Hård, *Microhistories of Technology: Making the World* (Cham: Palgrave Macmillan, 2023); Clapperton Mavhunga, *What do science, technology, and innovation mean from Africa?* (Cambridge, Mass.: The MIT Press, 2017).

43 Hård, *Microhistories of Technology*, 5.

44 Mavhunga, *What do science, technology, and innovation mean from Africa?*