



*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

**Give to AgEcon Search**

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

## ON CULTIVATING AFRICAN ARCHITECTURE FOR THE AFRICA, WE NEED

<sup>1</sup>Patrick Kabanda

<sup>1</sup>Musician / Author / Consultant  
 pkabanda@musikaba.net<sup>1</sup>, Washington,  
 DC Metro Area, USA; Kampala, Uganda.

### ***ABSTRACT (Cambria 10, UPPERCASE, ITALIC)***

#### **Context and background**

Africa's age-old architectural knowledge is replete with diverse design techniques that satisfy not only aesthetic but also functional purposes. Nevertheless, as is normally the case with many African creative endeavors, this knowledge is not fully harvested. Yet from the COVID-19 pandemic, which demands rethinking of how space is used, to climate change, which questions how structures are designed and made, the need to consider how African architecture can shape the Africa we need, not to mention its contribution to global architecture, is pressing.

#### **Goal and Objectives:**

This paper aims to showcase African architecture, and how local materials and design can help mitigate issues running from climate change and affordability to public health and communal living. Since modernization is normally equated with Westernization, such architecture has often been seen as 'uncivilized'. As that needs to change, to what extent can African architecture be fully utilized to meet the demands on land in a culturally and environmentally sound manner?

#### **Methodology:**

To highlight how African architectural richness can be harvested for better land governance in tandem with safeguarding arts, culture and heritage, this paper employs three case studies. They include Demas Nwoko's sustainable African design; the M'Zab Valley's locally adapted vernacular architecture; and Washington's African American Museum exhibition of African architectural influence on the global stage.

#### **Results:**

A compelling body of historical and contemporary evidence confirms that African architecture is full of innovative ideas. But except for a few isolated cases, it has yet to be fully cultivated and harvested. Nonetheless, if land usage is paramount, and if the arts, culture and heritage are needed to build the Africa we need, then there is a need to take African architecture seriously in land policy.

#### **Keywords**

*Architecture, African Architecture, Land usage, Sustainable  
 Architecture, Arts, Culture and Heritage, Natural Synthesis*

## 1. INTRODUCTION

As one African proverb goes, *Knowledge is like a garden: If it is not cultivated, it cannot be harvested*. When it comes to African architecture, what is unequivocal is that the knowledge is there. But, as is often the case with many African creative endeavors, it is not fully cultivated, and thus not fully harvested. Yet given the challenges such as COVID-19, which has highlighted the usage of space, and climate change, which raises questions on how structures are designed and made, there is a pressing need to consider how African architecture can play a meaningful role in shaping the Africa we need, not to mention contributing to inclusive and sustainable global architecture.

Land around the world is increasingly becoming a matter of life and death, and in Africa this problem is no stranger. Conflicts often crop up because of land. Who is the owner? What should it be used for? And why? These are common land queries. In this quarrel, what is often missed is that land is not needed for its own sake; it is often needed for something else. Whether it is to build a house, a place of worship, or a cemetery, that is the case. Moreover, from extractive activities to agriculture and city planning, land hosts a whole variety of ventures — and indeed, even for those who might choose to keep or acquire land as a sign of wealth (or for that matter prestige), as Aristotle argued, “wealth is evidently not the good we are seeking; for wealth is merely useful for the sake of something else” (Aristotle, trans. by Doss 2009). It then becomes clear that land usage is at the center of challenges. Upon careful consideration, this is where architecture is crucial. For it could help us better manage land and reduce the burden on such resources as water. And since architecture is a form of art, culture and heritage, it carries immense power in shaping our minds and the kind of world we want to live in.

The aim of this paper is to showcase African architecture, and how local materials and design can help mitigate issues running from climate change and affordability to public health and communal living. But, first of all, what is architecture? While the definitions are infinite as architecture itself, consider the following take: “Like *history*, the term *architecture* has both broad and strict meanings. In the widest sense, architecture is everything built or constructed or dug out for human occupation or use. A more restricted definition would emphasize the artistic and aesthetic aspects of construction. A third, and still more limited, definition would say that architecture is what specially trained architects do or make” (Crouch and Johnson 2001, 1).

Such definitions are useful, but the tendency to have specific definitions, as often espoused in the West, sometimes renders unintended consequences. For example, when one defines music as “organized sound” from a Western sense, the might mean that for music that is not ‘organized’ in certain ways, ways that are highly subjective, is not music. Hence compounding the unfortunate tendency to look down on local arts like traditional music from Africa, or even music from nature. The same is true with architecture. If vernacular architecture is seen as amateur, and thus not architecture, then that might mean it is less likely to be taken seriously. Moreover, since even birds and ants for instance make spectacular architecture that can inspire human imagination, a definition that suggests the architecture is just a human experience may overlook the role of nature in inspiring design. So, while this paper

considers the sum of the above, it also keeps definitions like the following in mind: “Architecture is a discipline where you can have multivalent interests. You could be a philosopher, a geographer, a scientist, an artist, an engineer; you can be poetic about it,” as Toshiko Mori suggests. And as Diébédó Francis Kéré concluded, “Architecture is not just about building. It's a means of improving people's quality of life.” (Quintal 2019).

The rest of this paper is structured as follows. After the next section, it delves into three case studies to highlight how African architectural richness can be harvested for better land governance in tandem with safeguarding arts, culture and heritage. The first site is in Nigeria where Demas Nwoko is championing the use of local architecture to meet local needs. The second is in Algeria where the M’Zab valley exemplifies how African community-oriented architecture, which, from ages past, has used organic materials, including papyrus, grass, wood, clay, soil and stone, may have answers to some of the pressing problems facing land usage in Africa. All the while promoting Africa’s identity.

The third considers the African American Museum in Washington, the world’s largest dedicated to African-American history and culture, bears witness to the influence of African architecture on the global stage — the building’s corona is inspired by the three-tiered crowns used in West Africa’s Yoruba art to not only evoke profound aesthetic experience, but to also tell the project’s history, present, and future. In that trio, if the building is meant to “ ‘sing for us all’ ” as Lonnie G. Bunch III proclaimed (Aden 2018), then it sings Ada Louise Huxtable’s rendition of architecture to also remind us that: “Architecture is a form-maker, problem-solver and environment-creator, and the international exposition is its laboratory” (Quintal 2019).

## **2. METHODOLOGY/ APPROACH**

This discussion uses the above-mentioned case studies, starting with an individual, then to the community and global levels, to render relatable, real life examples, as if by crescendo or inverted pyramid or ziggurat. Demas Nwoko, highlighted in the first, is a Nigerian painter, sculptor, architect and designer, among other things. Born in 1935 in Idumuje-Ugboko town, Nigeria, Nwoko exhibits the architecture of social responsibility steeped in cultural and environmental factors to meet local needs. He does this via *natural synthesis*, a methodological approach anchored in African arts even as it incorporates outside influences.

To consider the second case, the M’Zab Valley, is to consider how culturally sensitive architecture has allowed this natural region to adapt and flourish in one of the most harshest of environments. Founded between 1012 and 1350, in present day Algeria, this valley of more than 350,000 residents is located in the heart of the Sahara Desert at a latitude of 32° 29’ 8.39” N and longitude of 3° 40’ 31.79” E. Its perimeter is some 665.03 hectares (latitude.to n.d.; UNESCO n.d.). The main objective is not to determine what the valley needs to do to ‘modernize’ or delve into the conflicts it has endured, but rather, what can be learned from this ‘open-air museum’ (Mosaic North Africa n.d.) vis-à-vis African architecture and land policy.

The study of the African American Museum in America's capital, Washington, DC, is to examine how African architecture can contribute to global architecture in matters running from aesthetics and sustainability, to inclusion and functionality. The research involved archival materials, encyclopedias, books, journal and newspaper articles, websites (notably those of UNESCO and the Smithsonian) as well as secondary interviews, videos and images. The geographical distances (where provided) were derived using Google Maps and Latitude.to.

### **3. CASE STUDIES / ANALYSIS**

#### **3.1 Demas Nwoko: From the Zaira Arts Society to the New Culture Studios**

In 1958, a group of art students at the University of Zaria and the Nigerian College of Arts, Science and Technology, now called Ahmadu Bello University, formed a group called the Zaira Arts Society. What motivated these students, including Demas Nwoko, Simon Okeke, Bruce Onobrakpeya, and Uche Okeke to form a cultural society at a centre of higher learning was not so much about forming an arts group for the sake of it. It was about mobilizing a collective of conscience to ignite the pedagogical and practical value of their vision. As one of the legendary members of the group, the Nigerian artist and architect Demas Nwoko, remembers, when he arrived at Zaira, "there was a complete absence" of Africa's traditional knowledge in the syllabus. Europeans tried not to teach modern art, because, according to Nwoko, this would reveal the presence of the African influence (Sijuwade 2020).

Hence, for Nwoko et al., this was fertile ground to start "a collective committed to the independent study of Nigerian artistic heritage as a means of forming the foundation for their curriculum." The Zaira Arts Society's action was again more than simply filling a void; it was an onus to present things as they ought to be on the cusp of Nigeria's independence. This move went against the grain where many African arts have normally been seen as primitive and hence relegated to the backburner of Africa's progress, and for that matter, global civilization. This mode of thought caught on like a wildfire across Africa to the point that, even after the corrupting forces of colonization were no longer in charge, many Africans were not so excited about their own architecture, languages, music and other art forms.

But not all was lost. From architecture to music, in all its manifestations, "African art as we understand it has not been distilled or purified and refined to the point where it has lost all traces of real life, lost the vitality of the street, like art from some advanced societies and academic art tend to be," as Chinua Achebe said. "In Africa the tendency is to keep art involved with the people." Among the Igbo, for instance, this concept is clearly emphasized: "art must never be allowed to escape into the rarefied atmosphere, but must remain active in the lives of the members of society" (Achebe, 2013, 56). As active members of society, the founders of the Zaira Arts Society were putting into practice what Achebe was talking about. Moreover, as Achebe would see a good phrase in the Western canon and get influenced by it (Achebe, 2013, 54), so did they when they adopted Western influences where germane.

Accordingly, they developed a methodology called 'Natural Synthesis.' If "Music is liquid architecture; Architecture is frozen music," as one saying normally attributed to Goethe goes, *natural synthesis*, in a way, is like jazz. For it is anchored in the African arts traditions of drawing, painting, printmaking, and



sculpture, yet it borrows from Western innovations where useful (Sijuwade 2020); and if jazz emancipates improvisation and freedom of thought, so does *natural synthesis*. Consider this statement from Uche Okeke's manifesto on Natural Synthesis, a process that was Zaira Arts Society's creative linchpin: "The key work is synthesis, and I am often tempted to describe it as *natural synthesis*, for it should be unconscious not forced" (Okeke 1960).

Nwoko has taken this approach and formed the concept of 'New Culture,' a philosophical guide that describes his architecture and other creative endeavors. He draws from his ancestral legacy, his roots, to render culturally relevant innovation in development. For he believes that heritage is the foundation of our very existence, which grounds everything, and that culture is a constant, which continues to evolve (Sijuwade 2020) — and here it must be noted that African architecture itself has been evolving. For, as is often the case with other endeavors, it has been influenced by outside ideas in as much as it has also influenced them as though by *natural synthesis*. The key aim therefore is to consider how the philosophy behind 'African architecture' can be applied to meet a sustainable future, even if the materials themselves may not be purely 'African'.

At any rate, if knowledge is a garden that must be cultivated to be harvested, Nwoko has done the cultivation by embracing traditional methods to harvest in his architectural practice. But this has been an anomaly. Although Nigeria's independence in 1960 brought new energy, any boost in national pride did not readily translate into meaningful application of local knowledge. It was as if Nigeria was allergic to its own knowledge, a trend common across Africa. According to Nwoko, the country did not want to pursue its own knowledge, because the idea, as even palpable in today's digital age and consumerism, was to follow the modish global trend whether it served Nigeria or not (Sijuwade 2020). It as if Uche Okeke saw all this coming when he wrote: "Young artists in a new nation, that is what we are! We must grow with the new Nigeria and work to satisfy her traditional love for art or perish with our colonial past. Our new nation places huge responsibilities upon men and women in all walks of life and places, much heavier burden on the shoulders of contemporary artists" (Okeke 1960).

These contemporary artists are also contemporary architects. With climate change, coupled with challenges like the COVID-19 pandemic and the ever-present land issues, the "very fabric of our social life is deeply affected by this inevitable change," as Okeke said. "Therefore the great work of building up new art culture for a new society in the second half of this century must be tackled by us in a very realistic manner." That realistic manner can be seen in Nwoko's New Culture Studios and African Designs Development Centre.

The African Designs Development Centre can be seen as a tinkerer's office. But apparently, it is the only industrial enterprise in Idumuje-Ugboko, a rural town in Aniocha North, Delta State, southern Nigeria. It is at this centre that Nwoko and his family build custom parts for his building commissions. (These include a government commission to design Nigeria's National Gallery in Abuja.) For Nwoko, who grew up as a prince in a mud palace designed to resemble palaces of Oba in Benin where his royal family descends, architecture has been a close up fascination since childhood. And if this fascination is artistic, it is also functional. As these royal grounds featured "spaces for public gatherings, private meetings, and

secret rituals, all constructed from laterite” (a reddish clayey soil) to Nwoko, this was a signal to design not only for design’s sake, but also with social responsibility, environment, and culture in mind. (Sijuwade 2020; *THISDAY* 2001). And this touches on Samuel Mockbee’s definition of architecture: “Architecture is a social art. And as a social art, it is our social responsibility to make sure that we are delivering architecture that meets not only functional and creature comforts, but also spiritual comfort” (Quintal 2019).

What is more, the usage of clay laterite, timber, and other natural resources lying around building sites has been a hallmark of Nwoko’s work. “Echoing the practical elements of traditional Nigerian design,” Nwoko’s own home and studio was moreover built with few windows to curb intense light and heat. “Ventilation portals create pathways for breezes to enter from the floor and for hot air to escape at ceiling level. With this passive cooling system, as well as the natural temperature regulation provided by the mud walls, no air conditioning is needed, year-round” (Sijuwade 2020).

As climate change propels extreme and unpredictable weather, some places in Africa and elsewhere are bearing the brunt of punishing heat. Yet air conditioning is not a reality for millions of people, nor is it particularly sustainable. This means the African design sensibilities such as those by Nwoko which can curb heat building in our ever-warming planet cannot be underestimated. This is particularly crucial, because if it is to be believed that climate change is increasingly going to become a driving force for migration (IOM 2017), we can expect to see more land battles as people seek to occupy land in places that are perceived more desirable to live.

Whatever the case, in this moment of COVID-19, if research that suggests that air conditioning can in all likelihood circulate the transmission of the Covid virus (Lu et al. 2020; Shukman 2021), that surely means that natural means to improve ventilation are equally important. In addition, recommended approaches like social distancing also mean better usage of space. And this means better application of architecture that meets current social needs and the “inevitable change” Okeke discussed, and which Nwoko has tackled with a touch of African design even in a modern sense.

But since modernization is too often erroneously equated with Westernization, Africa has been subject to the concept of ‘imported problems, imported solutions,’ as Nwoko, whose structures are “a model of culturally relevant and sustainable African design,” has argued. The problem, however, is perhaps not so much about the usage of imported ideas; for cultural practices do certainly pollinate. The problem is that these ideas, like the British materials and styles of building imported in Nigeria and elsewhere, were designed not only to reflect different cultural aesthetics and values, but also to meet different social and environmental needs (Sijuwade 2020).

The temptation to keep up with the times may be one reason why the usage of ideas that disregard local social and environmental needs is so wide spread. For “an essential part of being modern is thinking you are modern,” as the great British historian C. A. Bayly put it. “Modernity is an aspiration to be ‘up with the times’” (Bayly 2014, 10). Structures made with sand and imported cement bricks are arguably seen as a sign of progress, even though they raise cost and many people in Africa are unlikely to afford a house that costs \$100,000 or more (Sijuwade 2020). The cost notwithstanding, and while this may not

be an issue for large-scale government buildings and corporate construction, materials such as sand are running out. Sand and its cousin gravel “represent the highest volume of raw material used on earth after water.” They “are now being extracted at a rate far greater than their renewal,” as the United Nations Environment Programme has warned. “Furthermore, the volume being extracted is having a major impact on rivers, deltas and coastal and marine ecosystems, results in loss of land through river or coastal erosion, lowering of the water table and decreases in the amount of sediment supply” (UNEP 2014; see also Edwards 2015).

Given such a warning, the work of architects like Nwoko who have championed the use of local materials is timely as it can get. Thankfully, the world over, books have been written about the goodness of indigenous, local or traditional design. Consider Julia Watson’s *Lo-Tek: Design by Radical Indigenism*. “In an era of high-tech and climate extremes” where “we are drowning in information while starving for wisdom,” the book builds “on indigenous philosophy and vernacular infrastructure to generate sustainable, resilient, nature-based technology.” As if to echo Nwoko, the title “explores millennia-old human ingenuity on how to live in symbiosis with nature” (Watson 2020). By embracing vernacular architecture to tackle challenges of land usage, Africa will just be doing that.

### **3.2 The M’zab Valley, Algeria**

About 2200 kilometers from Nigeria, in Algeria, the largest African nation exceeding 2.38 million square kilometers (it is 4.3 times bigger than France and 10 times bigger than the UK), lies a region called the M’zab Valley. The valley exemplifies humanity’s millennia-old “ingenuity on how to live in symbiosis with nature,” which Watson talks about. Founded in the early 11th century by the M’zabite Berbers, the M’zab region, or the M’zab confederation, has been a case study for scholars, geographers, anthropologists, architects and many others for its vernacular architecture and urban planning that has stood the test of time. As UNESCO, which inscribed the valley as a World Heritage Site in 1982 for its *outstanding universal value* put it, for today’s urban planners, the place is a source of inspiration, or perhaps, more fittingly, an oasis of inspiration: “A traditional human habitat, created in the 10th century by the Ibadites around their five *ksour* (fortified cities), has been preserved intact in the M’Zab Valley. Simple, functional and perfectly adapted to the environment, the architecture of M’Zab was designed for community living, while respecting the structure of the family” (UNESCO n.d.).

The M’Zab Valley or M’zab Oasis is located in Ghardaïa Province (also called Wilaya) in north-central Algeria, roughly 600 kilometers from Algiers, the nations capital. The province lies along the left bank of the Wadi M’zab, “a partially dry riverbed whose waters rise just once every three to five years,” in the Sahara Desert (BBC). Ghardaïa Province’s chief settlement or chief town is also called Ghardaïa. Notwithstanding if the settlers wanted to found Ghardaïa in Ghardaïa is another matter. But if the architecture of the name suggests anything, the place was built around a cave (*ghār* in Arabic) which was supposedly inhabited by the female Berber saint Daïa, a saint that the M’zabite women still venerate. At any rate, Ghardaïa, which has also been called the ‘Cave of Daïa’ (Everett-Heath 2020) is a fortified town, for reasons the will later be explained, with red and white clay dwellings — “houses that rise in terraces and arcades toward the pyramid-style mosque at its centre.”



But if the usage of clay to build suggests anything, it can perhaps first of all tell us that this was a natural material, which could be found in a cave and round a somewhat dry riverbed. This goes back to Nwoko's philosophy of using local materials readily available. In any case, the second use of clay is about practicality, which brings us to one of Algeria's celebrated architectural marvels — the Clay Palace of Ghardaïa (See Figure 1). Such places as Clay Palace of Ghardaïa, which was built some 1000 years ago with just clay, stone, and wood, exhibit what can be achieved with the application of culturally pertinent and sustainable architecture. For one thing, at the time of its construction, there was no electricity in the Algerian desert to air condition the palace. In considering the theme of "Land governance for safeguarding art, culture and heritage towards the Africa we Want" a major question then arises: How can the usage of materials like clay, which handle high temperatures well, inspire modern structures in our increasingly warming world while also maintaining cultural vitality?



**Fig. 1. The Clay Palace of Ghardaïa** The structure has not needed painting and other major repairs since it making some 1000 years ago. Source: Natalia Milko, aka Sun\_Shine via Shutterstock: [www.shutterstock.com/image-photo/ghardaia-algeria-april-3-2017-sidi-619980887](https://www.shutterstock.com/image-photo/ghardaia-algeria-april-3-2017-sidi-619980887).

Since clay can also keep buildings warm in colder times, that question can be reversed. Yet perhaps what is more vital to learn from M'zab is what Nwoko and others have been preaching, and what UNESCO also recognized: At the start of the first millennium, the Ibadis, an offshoot of the Khawarij in early Islam (B.C. 2018), "created in the M'Zab, with local materials, a vernacular architecture which, with its perfect adaptation to the environment and the simplicity of its forms, is an example and an influence for contemporary architecture and town-planning" (UNESCO n.d.). Whether it was the town planning which informed the architecture, or the other way around, in terms of land usage, culture and heritage, there was arguably a much bigger purpose: Given that the Ibadis were fleeing persecution — they originally came from Southwest Asia, according to UNESCO, and were forced into exile to escape prosecution in the 7th century (UNESCO/NHK 2015) — defensive mechanisms were also at play.

If the valley's five villages (ksour) and palm groves, namely, El-Atteuf, Bounoura, Melika, Ghardaïa and Beni-Isguen have conserved the same way of life, this has also meant the conservation of the same architecture and building techniques — elements "ordered as much by a specific social and cultural

context, as by the need for adaptation to a hostile environment.” This choice responds to not only a “historic need for withdrawal,” but also a “defensive imperative.” In this pentapolis, each of the village is a miniature citadel encircled by walls with a mosque at the center. The mosque is not only a house of prayer; it is also a fortress. As this was conceived as the last bastion of resistance in case of a siege, it comprises both an arsenal and a grain store. The mosque is essential for communal life, and around it, up to the defensive walls, are bosom structures, houses constructed in concentric cycles. “Each house constitutes a cubic cell of standard type, illustrating an egalitarian society founded on the respect for the family structure, aiming at the preservation of its intimacy and autonomy”(UNESCO n.d.). Ultimately, as UNESCO saw, the case study of M’zab can teach us the following points:

First, under criterion ii, The M’Zab Valley, a compendium of “anthropic ensembles” on a limestone plateau, bears witness to original architecture dating from the dawn of the 11<sup>th</sup> century. It portrays the central Sahara’s cultural area of human settlements in outstanding ways, ways that could only be explained by a synthesis of “rigour and organization,” imbued in heritage, creativity, and practicality. As a model settlement, the valley has considerably influenced Arab architecture and town-planning for ages as if by *natural synthesis*. Among those influenced, as UNESCO notes, are towering architects and town-planners of the 20th century. These include Charles-Édouard Jeanneret, aka Le Corbusier, a Swiss-French architect, who, as a polymath like Nwoko, was a designer, painter, urban planner and writer; and the French architect André Ravéreau. Ravéreau, who was utterly spellbound by the composition of M’Zab, could not help but call it “une lesson d’architecture,” *a lesson of architecture*. (UNESCO n.d.; Jānī 2011). That lesson in architecture has also inspired a plethora of scholarship. For example, consider *Towards a Socio-Cultural Approach for the Design of the House/Settlement System: A Case Study of Ghardaiä*, a PhD thesis by Naima Chabbi-Chemrouk, an architect, urban planner, and professor at the Ecole Polytechnique d’architecture et d’urbanisme in Algiers.

Second, under criterion iii, The three M’Zab elements — ksar (fortified village), cemetery, and palm grove with its summer citadel — which constitute the valley’s “urban ensembles” and settlements are exceptional not just because of their creativity: They are “testimony of the Ibadis culture at its height and the egalitarian principle that was meticulously applied by the Mozabite society.” Indeed, the Ibadis, who, perhaps as a matter of convenience have been said to take a liberal line in a modern Western sense, have accommodated not only other Muslims, but also Christians and Jews (UNESCO n.d.; B.C. 2018). In a world where sometimes land quarrels are fueled by religious conflicts, the point is vital, as it is informed by a culture of respect and a heritage of mutual welfare. It also curbs the tendency to stereotype *all* Muslims as dangerous beings.

The third point, under criterion v, which touches on water, could not be more apropos. This is because water, the world’s most utilized resource, may be the next battle frontline, as climate change catches up on the world’s unsustainable water consumption. According to UNESCO: “The elements constituting the M’Zab Valley are an outstanding example of a traditional human settlement, representative of the Ibadis culture that, through the ingenious system for the capture and distribution of water and the creation of

palm groves, demonstrates the extremely efficient human interaction with a semi-desert environment” (UNESCO n.d.).

Indeed, in this valley where a river used to flow until several thousand years ago, the settlers created a green oasis. As sources of water still exist underground, moreover, there are more than 7000 wells in the area. Digging one is nonetheless a laborious effort, which can take several years to “strike water” (UNESCO/NHK 2013). In any case, although the valley is hyper arid — its average rainfall does not exceed 100 millimeters per year — when it occasionally floods it floods. The rare floods that channel in the M’zab River drain volumes and volumes of surface water. “Thanks to the genius of the local population, traditional dams were made for artificial recharge of groundwater, as Ouled and Remini (2016) put it. “Grace of traditional wells drilled in the valley, farmers irrigate their palm groves and gardens.” It has been said that date-palm groves, which are watered from the river dams, are of “legendary lushness” and that the pulleys’ of over 4000 wells are called the ‘Song of M’zab’. Indeed, although the M’zab Valley is in a desert, its local market is verdant. It is full of fresh fruits and vegetables, produce grown beneath the palms (Encyclopedia Britannica 2014; UNESCO/NHK 2013). All thanks to sound vernacular architecture that celebrates culture and heritage in tandem with land management that calls for greater celebration and promotion.

### **3.3 African Architecture Beyond Africa**

The noetic feats of African architecture are not limited to promotion in Africa. In the United States, for example, the Smithsonian National Museum of African American History and Culture in Washington is a testament to how African cultural ideas can powerfully shape how we come to see and understand our world. As the story of this museum’s African connection unfolds, it is worthy taking a step back and consider its location and how the major pieces fit together.

In terms of land usage, the museum is located in a prime location not only in the United States capital, but also in the world. Located just a few blocks from The White House, it is in the company of various art galleries, cultural institutions, memorials, sculptures, and statues within and around the National Mall, a place that pre COVID-19 would attract more than 20 million visitors each year. It sits on what was once Tiber Creek’s south bank. The creek, which was filled in later in the 19th century, had been known as Goose Creek before 1790 upon the layout and designation of Washington, DC as the nation’s capital (Histories of the National Mall n.d.). “Architects and engineers came up with a solution — erecting a kind of giant underground bathtub around the museum to help divert water — but it was just one of many instances that required improvisation, no small feat for a massive team of architects, curators, exhibit designers, engineers and building contractors” (Shin 2016).

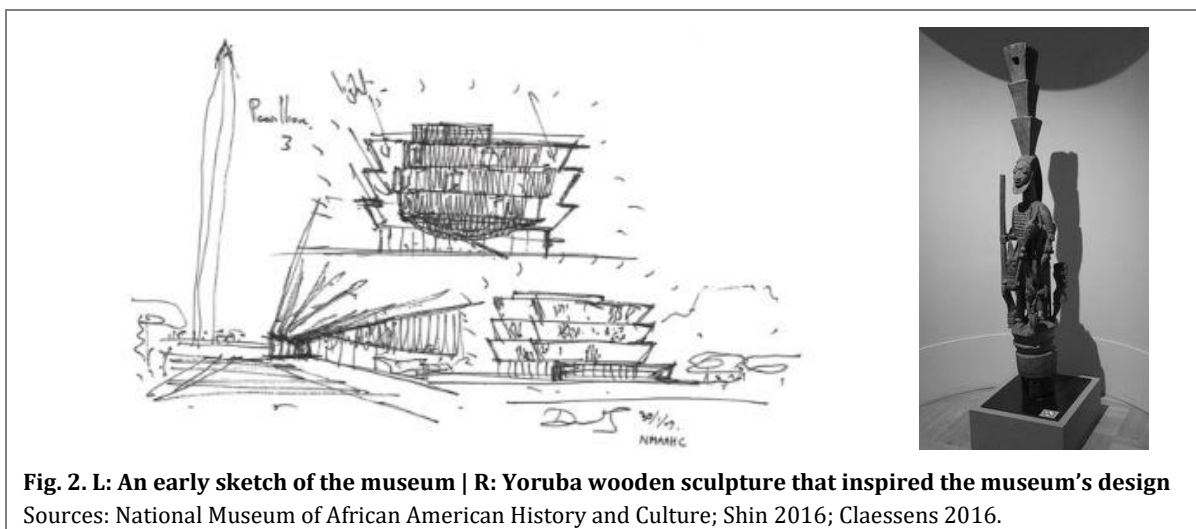
If this massive team of players were an orchestra, the architects, who comprised of the Freelon Group (now part of Perkins and Will), SmithGroupJJR, Davis Brody Bond, and Adjaye Associates, were like conductors possessed with sound judgment on aesthetic and technical matters. They had to detect anything out of tune and anything out of rhythm. And to them, although the museum’s location at first glance seems logical, as it sits between the Washington Monument and the Mall’s museum core, it was nothing but a headache. Indeed, as the Freelon Group’s groundbreaking architect Zena Howard, who

was tasked to coordinate the work of the architectural firms and the Smithsonian said, the museum's site " 'has always had an identity crisis' " (Shin 2016). On the theme of land quarrels, politics and public policy, efforts for the museum's inception, which was established in 2003 and opened in 2016, and can be traced back to 1915, were not a breeze. When the US Congressmen John Lewis and Mickey Leland introduced legislation for a stand-alone Smithsonian African American history museum, the project received immediate pushback due to its cost.

But the issues were not just about cost. How should it look like? How tall should it be? What would its relationship with other nearby structures be? These were some of the questions that were in many ways architectural alongside land policy. As Howard explained, while some people saw the museum as part of Mall's "formal rhythm and geometry," others saw it as part of the adjacent Washington Monument with a rolling landscape. Moreover, "the museum could not overwhelm the monument" as some government officials said. It also could not be taller than the adjacent museums and Depression-era office buildings in the so-called Federal Triangle. Yet, as Howard said, everyone had always agreed on one thing: " 'the building should be distinct' ". It should have " 'its own place and own time and not the time of some of its adjacent neighbors' " (Shin 2016) — though, as if to echo Lincoln, whose memorial is an eyeshot away, it would be a museum of the people, by the people, and for the people. This is where the work of the Adjaye Associates comes in, which brings us to the African connection.

Adjaye Associates is the firm of the Ghanaian-British architect David Frank Adjaye, who was knighted in 2017 for his services to architecture. Adjaye's services to architecture played a major role in what the museum would become. As a master known for his fusion of artisanal detail, with simple yet powerful shapes Adjaye wanted to render a 'punch.' That punch would be at the end of the row of other museums or the 'row of palaces,' as he put it, and it would be delivered with a kind of royal African ancestral power. As he concluded: The architecture needed to speak the museum's story, its African origins, it could "not be another 'stone box with things in it' " (Shin 2016).

In his investigations, Adjaye, a Ghanaian diplomat's son who has visited all 54 independent nations of Africa, found a wooden African sculpture of a man wearing a crown. The top portion of that sculpture would inspire the museum's trapezoidal, stacked shape (see Figure 2). And that came about because as the architect Hal Davis, one of the designers responsible for the museum's look and feel, thought that the sculpture captured everyone involved. Indeed, people associated the sculpture's raised arms shape with "a sense of uplift" that Lonnie G. Bunch III, the museum's founding director, had envisioned.



In his memoir *A Fool's Errand: Creating the National Museum of African American History and Culture in the Age of Bush, Obama, and Trump*, Bunch “delves into his personal struggles — especially the stress of a high-profile undertaking — and the triumph of establishing such an institution without mentors or guidebooks to light the way” (Bunch 2019). Yet, in the aforementioned African sculpture, the museum’s vision of uplift, in away, had a guidebook to light the way. The sculpture was the work of the Ọlówẹ of Ise. An early 20th-century Yoruba craftsman, Olowe was a master innovator in the African design style called *oju-ona*. Born in the town of Efon-Alaiye, a major artistic center in Yorubaland, he spent most of his life in Ise, also known as Ẹ̀ṣẹ-Èkítì, a city in Ekiti State, Nigeria. Though Olowe was first engaged as a messenger at the court of the Arinjale — the King of Ise — where his work as a sculptor is thought have begun (NMAfA n.d.) he was in many ways a messenger of art in people’s lives.

In line with Achebe’s reflection that art must remain active in people’s lives, Olowe’s fame spread throughout eastern Yorubaland. From Akure to Idanre, Ikere to Ilesa, in towns located within 60-miles, even rulers and wealthy families of Ise understood the value of Olowe’s work inasmuch as they valued art in their lives: They summoned him to carve elaborately sculpted personal and ritual objects as well as doors and veranda posts for them. These items were not just art for art’s sake as some strong voices in the West have tended to proclaim. From Nigeria, where Olowe’s sculptures were a staple, to Benin, where Adjaye saw similar forms in fragments of doors as well as posts and pillars (NMAfA n.d; Shin 2016), they were also functional insofar as they were aesthetic. Indeed, though many Western art collectors and art historians consider Olowe as the 20th century’s most important Yoruba artist, it is equally important to note that his own people recognized his artistic genius (NMAfA n.d.).

“Olowe’s art, if not his name, reached overseas in 1924,” according to the Smithsonian National Museum of African Art (n.d.), “when a door and lintel ensemble he carved for the royal palace at Ikere was selected for the Nigerian Pavilion at the British Empire Exhibition at Wembley, London.” Though that might have marked the first step of the master’s work on the global stage, its manifestation at the African American Museum in Washington propelled it farther. For in finding the guidebook that Bunch needed to light the way, for the architects, Olowe’s sculpture was a major source of inspiration, a mental vade mecum, as



they sought to synthesize into the building's design various distinctive elements from Africa and the Americas. And they did this with their own kind of *natural synthesis*.

As the art historian Àngels Ferrer Ballester has argued, "From one perspective, the building's architecture follows classical Greco-Roman form in its use of a square base and shaft, topped by a capital or corona." Nevertheless, the structure also appears like a ziggurat (Ballester 2017), a massive structure in the form of a terraced compound of successively receding levels built in ancient Mesopotamia. So, from another perspective, since the word ziggurat comes from *ziqqurratu*, which can be translated as 'rising building,' or *zaqâru*, which in Akkadian can mean 'to rise high' (Lendering 2004), the synthesis blends naturally with Olowe's sculpture as it lights a sense of uplift.

That sense of uplift was also synthesized with architecture that radiates history and meaning. As Olowe's art is steeped in the catalog of Yoruba art of West Africa, the connection with the Yoruba people (one of the largest African ethnic groups) was also palpable. "A 2015 Oxford University study found the majority of African Americans and modern-day Yoruba people in West Africa have a similar ancestry, confirming that the region was a major source of African slaves" (Shin 2016). The story of slavery is a story of pain everywhere. Yet, besides its super capitalist overtures, overwhelming inequality, and increasingly confrontational politics, there is perhaps nothing that haunts America's psyche than its history of slave trade and racial tension. Whether these factors are inter-related is another story. But the sense of uplift in Yoruba art's three-tiered crowns echo what Robert Farris Thompson observed in *African Art and Leadership*: The crown "symbolizes the aspirations of a civilization at the highest level of authority." It "incarnates the intuition of royal ancestral force, the revelation of great moral insight in the person of the king, and the glitter of aesthetic experience" (Thompson 1972, 227).

As architecture can reveal great moral insight in society, 'the royal ancestral force' again is like the punch Adjaye suggested. For the three-tiered crowns incarnate the three elements that organize the building: Its history, present, and future (Ballester 2017). Most of all, however, the dark history it chronicles in that trio cannot enslave the present and the future it radiates. As Adjaye put it:

The form of the building suggests a very upward mobility. It's a ziggurat that moves upward into the sky, rather than downward into the ground. And it hovers above the ground. When you see this building, the opaque parts look like they're being levitated above this light space, so you get the sense of an upward mobility in the building. And when you look at the way the circulation works, everything lifts you up into the light. This is not a story about past trauma. For me, the story is one that's extremely uplifting, as a kind of world story. It's not a story of a people that were taken down, but actually a people that overcame and transformed an entire superpower into what it is today (Stromberg 2012).

The African influences of the museum, which serves as the Smithsonian's 'Green Flag' — it is the first on the Mall designed to meet sustainability standards — do not stop with quoting Olowe's sculpture. The structure's main entrance is a welcoming porch with African architectural roots across the African Diaspora, particularly the American South and the Caribbean. Moreover, "by wrapping the entire building in an ornamental bronze-colored metal lattice, Adjaye pays homage to the intricate ironwork crafted by enslaved and free African Americans in Louisiana, South Carolina, and elsewhere" (Smithsonian 2016).

The history of ironwork in Africa is longstanding, even though Africa's Iron Age (traditionally marked as between about 200 BCE–1000 CE) is not prefaced by a Bronze or Copper Age, as is the case in Europe and Asia. All the metals, according to the archaeologists K. Kris Hirst (2020), were brought together. At any rate, though metals appear across Africa, Nigeria's of cast 'bronzes' (often brass) are particularly noteworthy (Sieber n.d.). Therefore, the architectural homage to the intricate ironwork of African Americans cannot but highlight another craft already embedded in their roots.

But as it happens, in the monument for their first president, Americans were already paying homage to Africa (Ballester 2017). Whether that was accidental or not, the Washington Monument is an obelisk, a large upright stone column with four sides with a pyramidal top of Egyptian origin. The ancient Egyptians called obelisks *tekhenû*, which means "to pierce." And they tightly connected these 'piercing' structures to their beliefs: The tekhenus "rose high into the Egyptian sky as symbols of the sun god, Ra [also Re], and of sun worship, as well as of the power of the pharaoh and his relationship to the gods." When the Greeks visited Egypt they referred the tekhenus to obelisks, from *obeliskos*, their word meaning "a small spit" or "skewer." The Romans adopted the word, and so did the English (AIA n.d.; Baker and Baker 2001). And if the word has been adopted across the world so has the architecture. As the Washington Monument, the tallest obelisk in the world, rises high into the American sky side by side the African American Museum, which lifts people into the light, we should never forget how African architecture can powerfully shape how we come to see and understand our world.

#### **4. POLICY RECOMMENDATIONS**

If it is to be believed that the Greek philosopher Eratosthenes used an obelisk to calculate the Earth's circumference around 250 B.C., then African architecture has presumably had a role in 'calculating' land for millennia. But that position has to be reclaimed. The first policy therefore has to do with appreciating Africa's past as we shape its future. For, even in what might be seen as abstract modes of thought, here is the thing: philosophers, like those who might have come after Eratosthenes, "almost always knew the work, the ideas, the theories, of at least some of the philosophers who came before them." It is certainly well to recall that. "They built on predecessors' ideas, or rejected them, or enriched or circumvented them with new insights; but whichever of these they did, their work is related to a continuing conversation" (Grayling 2020, 132).

That statement is germane in continuing the conversation of how African architecture can benefit land policy practically speaking. But to get to the gist of this, is where the role of arts, culture and heritage come in. And the foundational approach here is to do what the Zaira Arts Society did: Elevate African arts in the curriculum. Since many students are often discouraged to study the arts on the premise that there is no money there, even those who would like to study architecture have no better chance.

Yet creativity and innovation that draws on African heritage can play a meaningful role in confronting a variety of land uses, ranging from satisfying the political and cultural, to the practical and sustainable. So, in our contemporary society, what can ancient African innovations like the obelisk, the M'Zab Valley's 'anthropic ensembles,' and Yoruba art teach us in building on Africa's architectural ideas instead of often simply rejecting or circumventing them?

First, while the private sector has a role to play, African governments have a responsibility in shaping a curriculum that promotes African architecture, providing architectural scholarships, and much more. Also, there is a need for government agencies to work in an integrated manner. Ministries of education for instance could work with those of culture, urban planning, and lands and survey, to determine how best to integrate African architecture into the education system. This can be done at the pedagogical level and also be translated into land policy at the practical level. Meanwhile, schools themselves have much to offer. For as custodians of knowledge, they can offer rigorous training in African architecture in conjunction with African arts, culture and heritage. And this can be embedded in subjects running from African history and sustainability to cultural studies and natural resource management.

Second, if Zena Howard, who was involved in building the African American Museum in Washington, is one of the Black women who in the United States make up less than 1 percent of licensed architects, that certainly suggests that the problem of gender inequality is not just an African problem. It is a global problem. Yet if we talk about art and leadership, Africa can lead the way in having more women represented in such a critical area that can immensely shape our minds and the kind of world we want live in. After all, as Sarah Wigglesworth said, "Architecture is too important to be left to men alone" (Quintal 2019). Also, given Africa's burgeoning youth population, young people are also needed. They are needed at the table not only as architects of their own lives, but also as architects of the world they will inherit, one that is battered with climate change and scarce resources running from water to sand. But how can women and young people be effectively recruited and retained?

Besides supporting them through ways and means like architectural fellowships, another crucial area is mentorship. Architects such as Demas Nwoko, Zena Howard, and David Adjaye could be part of a consortium that mentors African women and young people in architecture. Others names include Diébédo Francis Kéré, Victoria Heilman, and Naima Chabbi-Chemrouk. The last of these was deeply inspired when she met André Ravéreau. Chabbi-Chemrouk was fascinated by Ravéreau's "commitment to penetrate the very deep structure of traditional design in search for contemporary solutions. At a time when the elite, avid for glossy images with technological and international overtones, was engaged in prestigious development," Ravéreau "pleaded that even more than in other societies, perhaps," countries like those in Africa "needed to base the qualities of their built environment on the recovery of age-old principles adapted to the local environment" (Chabbi-Chemrouk 1988, 1). Is that message not still relevant for African women and young people (and indeed others) today? If teachers can teach it, mentors can reinforce it.

Finally, and perhaps most important, there is a need to jettison the idea of seeing African architecture as 'uncivilized.' This must be done in order to build environments based on of age-old principles suitable for the local environment. From Algeria to Nigeria, Africa is full of historic innovations that await to be fully harvested. Ironically, while this is hard it is also easy: It is mindsets that need to be shifted. For as Westernization is equated with modernization, knowledge such as that from Africa has dealt a fatal blow. But modernity was and is "a *process* of emulation and borrowing" (Bayly 2014, 10).

That process can no doubt work like *natural synthesis* the Zaria Arts Society championed. But in places like Africa, it is as if it is one-sided, saddled with elimination and circumvention. Indeed as Bayly (2014, 10) noted, “It seems difficult to deny that, between about 1780 to 1914, increasing numbers of people decided that they were modern, or that they were living in a modern world, whether they like it or not.” This echoes Nwoko’s observation that, in Nigeria (and surely elsewhere), the idea was to follow the global trend, whether it served the people or not (Sijuwade 2020). Moreover, as they still do today, the icons of technical modernization were everywhere to “dramatize this sensibility” by the end of the 19th century. Indeed, by the 1900 many elites from Asia to Africa were convinced that this was an age where cultural customs and community should not only erode, but erode further (Bayly 2014 10).

It is hardly true that there is a perfect culture with unquestionable traditions, which should erode further. But one would think that modernity can be many things, including adapting local ideas with new insights. Yet even in the M’zab Valley, an oasis of local genius that can continue to inspire, what is seemingly seen as modern is captured in such statements: “A small industrial zone and natural gas piped from Hassi R’Mel are helping to modernize the area” (Encyclopaedia Britannica 2014). While the industrial zone may be warranted, this comes off as if anything the came before was primitive. But is everything ‘modern’ useful? Nwoko might think otherwise: “The contribution of new techniques of water harvesting (boreholes and pumps) has unbalanced the M’zab Valley” (Ouled and Remini 2016, 1; Benguergoura Laradj & Remini 2014). The question may then be: How can the previous local knowledge, which has inspired so many, work in tandem with new techniques as if by *natural synthesis* — synthesis that does not unbalance, but balance and sustain the needs of society?

## 5. CONCLUSION

African architecture is like a garden that can feed Africa and the world with ideas. But except for a few isolated cases, it has yet to be fully cultivated and harvested. Nonetheless, if land usage is paramount, and if the arts, culture and heritage are needed to build the Africa we need, then there is a need to take African architecture seriously in land policy. This is especially important because, as land increasingly becomes a matter of life and death, particular attention needs to be paid to its usage. For land is often not needed for its own sake; it is needed for something else. How then should this resource, which continues to become scarcer and scarcer, sometimes leaving bloody battles in its wake, be used? This is where architecture is fundamental. For it could help inform better land policies and reduce the burden on resources like sand, gravel, and water, items that “represent the highest volume of raw material used on earth” (UNEP 2014).

Now, to talk about resources and land usage is to consider that, besides climate change, which challenges the way structures are designed and made, new challenges such as COVID-19 have also highlighted how space should be used. Innovations like those found in African architecture may have answers to the present land challenges. This is because, from Nigeria, where Demas Nwoko’s work exhibits culturally relevant and sustainable design, to the M’zab Valley that inspires simple, functional, and environmentally sensitive planning, Africa is rich with vital architectural innovations. There is therefore an urgent need to consider how these architectural feats can help shape land policies that inform the

Africa we need, one that is prosperous not only for the very few, but sustainable and inclusive for everyone.

What is more, African architecture is not limited to Africa. It can make a difference on the global stage, as the African American Museum in Washington shows. To harvest all these benefits, however, demands a shift in mindsets. And this, among other things, would mean having African governments invest in African architecture; having African institutions offer rigorous training in African architecture; supporting Africans, especially women and young people, to study African architecture; and jettisoning the idea of seeing African architecture as ‘uncivilized.’

## **6. ACKNOWLEDGEMENT**

The author is very grateful for the CLPA 2021 organizers that has enable us to share its thought through this journal.

## **7. FUNDING:**

No Funding.

## **8. AUTHOR CONTRIBUTIONS:**

Patrick Kabanda: Researcher and writer.

## **9. REFERENCES**

- Achebe, C. (2013). *There Was a Country: A Memoir*. London: Penguin Books.
- Aden, R. C. (Ed.). (2018). *US public memory, rhetoric, and the National Mall*. Lanham, MD, USA: Lexington Books.
- Alport, E. A. (1954). The Mزاب. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 84(1/2), 34. <https://doi.org/10.2307/2843999>.
- Archaeological Institute of America (AIA) (n.d.). The Obelisks of Heliopolis. *Archaeology Magazine*. Retrieved October 6, 2021, from [www.archaeology.org/slideshow/7396-heliopolis-egypt-obelisks](http://www.archaeology.org/slideshow/7396-heliopolis-egypt-obelisks).
- Aristotle. (2009). *The Nicomachean ethics* (L. Brown, Ed.; W. D. Ross, Trans.). Oxford University Press.
- Baker, R. F, & Baker III, C. F (2001). *Ancient Egyptians: People of the pyramids*. Oxford and New York: Oxford University Press.
- Ballester, À. F (2017). *A Yoruba crown inspires the National African American Museum design*. Retrieved July 27, 2021, from <https://angelsferrerballester.wordpress.com/2017/10/20/a-yoruba-crown-inspires-the-national-african-american-design/>.
- Bayly, C. A. (2004). *The Birth of the Modern World, 1780-1914: Global Connections and Comparisons*. Malden, MA, USA; Oxford, UK; Carlton, AU: Blackwell Publishers.
- Benguergoura Laradj, S, & Remini, B (2014). The releases of wastewater in the Oued Righ valley: The palm groves in decline. *Desalination and Water Treatment*, 52(10–12), 2187–2192. <https://doi.org/10.1080/19443994.2013.823351>.
- B.C. (2018). Who are the Ibadis? *The Economist*. Retrieved September 3, 2021, from [www.economist.com/the-economist-explains/2018/12/18/who-are-the-ibadis](http://www.economist.com/the-economist-explains/2018/12/18/who-are-the-ibadis).



- Brown, D. W. (2016). 7 Fascinating Facts About Obelisks. *Mental Floss*. Retrieved October 6, 2021, from [www.mentalfloss.com/article/73935/7-fascinating-facts-about-obelisks](http://www.mentalfloss.com/article/73935/7-fascinating-facts-about-obelisks).
- Bunch, L. G (2019). *A fool's errand: Creating the National Museum of African American History and Culture in the age of Bush, Obama, and Trump*. Washington, DC: Smithsonian Books.
- Chabbi-Chemrouk, N. (1988). *Towards a socio-cultural approach for the design of the house/settlement system: a case study in Ghardaia, Algeria*. PhD thesis. University of Newcastle Upon Tyne, UK. Retrieved October 1, 2021, from <https://theses.ncl.ac.uk/jspui/handle/10443/357>.
- Claessens, B. (2016). The African art that inspired the new African American History Museum's building. Retrieved October 12, 2021, from <https://brunoclaessens.com/2016/12/the-african-art-that-inspired-the-new-african-american-history-museums-building/>.
- Encyclopaedia Britannica, The Editors (2014). M'zab. In *Encyclopedia Britannica*. Retrieved September 28, 2021, from [www.britannica.com/place/Mzab](http://www.britannica.com/place/Mzab).
- Edwards, B. (2015). "The Insatiable Demand for Sand." *Finance & Development*, Vol. 52 (No. 4). Retrieved September 27, 2021, from [www.imf.org/external/pubs/ft/fandd/2015/12/edwards.htm](http://www.imf.org/external/pubs/ft/fandd/2015/12/edwards.htm).
- Everett-Heath, J (2020). The concise Oxford dictionary of world place names. Retrieved September 29, 2021, from [www.oxfordreference.com/view/10.1093/acref/9780191905636.001.0001/acref-9780191905636](http://www.oxfordreference.com/view/10.1093/acref/9780191905636.001.0001/acref-9780191905636).
- Grayling, A. C. (2020). *The history of philosophy*. UK. Penguin Books.
- Hirst, K. K. (2009). *The Archaeologist's Book of Quotations*. Walnut Creek: CA, USA, (1st Edition), Routledge.
- Histories of the National Mall (n.d.). *Tiber Creek*. Retrieved October 2, 2021, from <http://mallhistory.org/items/show/40>.
- International Organization for Migration (IOM) (2017). *Extreme Heat and Migration*. Retrieved September 27, 2021, from <https://environmentalmigration.iom.int/extreme-heat-and-migration>.
- Jāni, V. (2011). *Diversity in design: Perspectives from the non-Western world*. Fairchild Books.
- Lathrop, P. (n.d.). *Uche Okeke*. Khan Academy. Retrieved September 23, 2021, from [www.khanacademy.org/humanities/art-1010/global-vanguards/global-vanguards-nigeria/a/uche-okeke](http://www.khanacademy.org/humanities/art-1010/global-vanguards/global-vanguards-nigeria/a/uche-okeke).
- Latitude.to. (n.d.). *GPS coordinates of M'zab, Algeria*. Retrieved October 11, 2021, from <http://latitude.to:8080/articles-by-country/dz/algeria/22849/mzab>.
- Lendering, J (2004). Ziggurat. Livius.org [Articles on ancient history]. Last modified October 12, 2020. Retrieved from October 5, 2021, [www.livius.org/articles/concept/ziggurat/](http://www.livius.org/articles/concept/ziggurat/).
- Lu, J., Gu, J., Li, K., Xu, C., Su, W., Lai, Z., Zhou, D., Yu, C., Xu, B., & Yang, Z. (2020). "COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020." *Emerging Infectious Diseases*, 26(7), 1628–1631. <https://doi.org/10.3201/eid2607.200764>.
- Mosaic North Africa. (n.d.). M'zab Valley—Places to Visit in Algeria with Mosaic North Africa. Mosaic North Africa. Retrieved October 11, 2021, from [www.mosaicnorthafrica.com/portfolio/mzab-valley/](http://www.mosaicnorthafrica.com/portfolio/mzab-valley/).
- Okeke, U. (1960). *Natural Synthesis*. Retrieved September 23, 2021, from [www.csus.edu/indiv/o/obriene/art116/readings/final%20okeke%20natural%20synthesis%20ma](http://www.csus.edu/indiv/o/obriene/art116/readings/final%20okeke%20natural%20synthesis%20ma)

- nifesto%201960.doc.
- Ouled Belkhir, C.n & Remini, B. (2016). Cleanup and valuation of waters of the aquifer of M'zab Valley (Algeria). *Journal of Water and Land Development*, 29(1), 23–29. <https://doi.org/10.1515/jwld-2016-0009>.
- Quintal, B. (2019, January 12). 121 Definitions of Architecture. *ArchDaily*. Retrieved October 6, 2021, from [www.archdaily.com/773971/architecture-is-121-definitions-of-architecture](http://www.archdaily.com/773971/architecture-is-121-definitions-of-architecture).
- Shin, A. (2016). The story behind the design of the African American history museum. *Washington Post Magazine*. Retrieved July 27, 2021, from [www.washingtonpost.com/lifestyle/magazine/the-story-behind-the-design-of-the-african-american-history-museum/2016/09/14/e08b1b4e-4ddb-11e6-a422-83ab49ed5e6a\\_story.html](http://www.washingtonpost.com/lifestyle/magazine/the-story-behind-the-design-of-the-african-american-history-museum/2016/09/14/e08b1b4e-4ddb-11e6-a422-83ab49ed5e6a_story.html).
- Shukman, D. (2021). "Covid-19: Five ways to avoid catching the virus indoors." *BBC*. Retrieved September 27, 2021, from [www.bbc.com/news/explainers-53917432](http://www.bbc.com/news/explainers-53917432).
- Sieber R. (n.d.). Africa -Metalwork. In *Encyclopedia Britannica*. Retrieved October 6, 2021, from [www.britannica.com/topic/metalwork/Africa](http://www.britannica.com/topic/metalwork/Africa).
- Sijuwade, Amber C. (2020). "A New Master's House: The Architect Decolonising Nigerian Design." *Al Jazeera*, August 10. Retrieved September 23, 2021, from [www.aljazeera.com/features/2020/8/10/a-new-masters-house-the-architect-decolonising-nigerian-design](http://www.aljazeera.com/features/2020/8/10/a-new-masters-house-the-architect-decolonising-nigerian-design).
- Smithsonian Institution (2016 ). *The Building*. National Museum of African American History and Culture. Retrieved October 4, 2021, from <https://nmaahc.si.edu/explore/building>.
- Smithsonian National Museum of African Art (NMAfA)(n.d.). *Ọlówẹ of Ise*. Retrieved October 4, 2021 from, <https://africa.si.edu/collections/people/798/olowe-of-ise/objects?ctx=a95d0a57017833f55e7d6d4efbba437d18d119ca&idx=32>.
- Stromberg, J. (2012). Q&A: Architect David Adjaye On His Vision for the New Museum. *Smithsonian Magazine*. Retrieved October 5, 2021, from [www.smithsonianmag.com/arts-culture/q-and-a-with-architect-david-adjaye-18968512/](http://www.smithsonianmag.com/arts-culture/q-and-a-with-architect-david-adjaye-18968512/).
- THISDAY. (2001). "Demas Nwoko Makes a Case for Critical Design." Retrieved from September 27, 2021, from <https://allafrica.com/stories/200112240317.html>.
- Thompson, R. F (1972). The sign of the divine king: Yoruba bead-embroidered crowns with veil and bird decorations. In *African art & leadership* (p. 227). Madison: University of Wisconsin Press.
- UNESCO. (n.d.). *M'Zab Valley*. UNESCO World Heritage Centre. Retrieved September 28, 2021, from <https://whc.unesco.org/en/list/188/>.
- UNESCO/NHK. (2013). *M'Zab Valley*. Retrieved October 1, 2021, from <https://youtu.be/qa-NrgpHogk>.
- United Nations Environment Programme (UNEP). (2014). *Sand, Rarer Than One Thinks*. Retrieved September 27, 2021, from [https://wedocs.unep.org/bitstream/handle/20.500.11822/8665/GEAS\\_Mar2014\\_Sand\\_Mining.pdf](https://wedocs.unep.org/bitstream/handle/20.500.11822/8665/GEAS_Mar2014_Sand_Mining.pdf).
- Urwin, S. (2021). *The fortified cities on the fringes of the Sahara*. Retrieved September 29, 2021, from [www.bbc.com/travel/article/20210415-the-fortified-cities-on-the-fringes-of-the-sahara](http://www.bbc.com/travel/article/20210415-the-fortified-cities-on-the-fringes-of-the-sahara).
- Watson, J. (2020). *Lo-TEK: Design by Radical Indigenism*. Cologne: Taschen.

## 10. ADDITIONAL READING

- Deliss, C., Havell, J., Whitechapel Art Gallery, Malmö konsthall, & Guggenheim Museum Soho (Eds.). (1995). *Seven stories about modern art in Africa*. London: Whitechapel. Esp. The Zaira Arts Society (pp.195-197) by Onobrakpeya, B: <https://faculty.risd.edu/bcampbel/thezariaartsociety.pdf>.
- Enwezor, O., Ryan, Z., Adjaye, D., Art Institute of Chicago, & Haus der Kunst München (Eds.). (2015). *David Adjaye: Form, heft, material* (First edition). Chicago: The Art Institute of Chicago.
- Fehrenbacher, J. (2012). *Biomimetic Architecture: Green Building in Zimbabwe Modeled After Termite Mounds*. Inhabitat. <https://inhabitat.com/building-modelled-on-termites-eastgate-centre-in-zimbabwe/>.
- Garlake, P. S. (2002). *Early art and architecture of Africa*. Oxford: Oxford University Press.
- Goodfellow, P., & Hansell, M. H. (2011). *Avian architecture: How birds design, engineer & build*. Princeton: Princeton University Press.
- Lepik, A., & Beygo, A. (Eds.). (2016). *Francis Kéré: Radically simple* (J. Wheelwright & M. Wolfson, Trans.). Berlin: Hatje Cantz.
- Meier, P. (2016). *Swahili port cities: The architecture of elsewhere*. Bloomington: Indiana University Press.
- Rethinking The Future. (2020). The Humanitarian Architecture of Yasmeen Lari- Pakistan's first female architect. [www.re-thinkingthefuture.com/know-your-architects/a2505-the-humanitarian-architecture-of-yasmeen-lari-pakistans-first-female-architect/](http://www.re-thinkingthefuture.com/know-your-architects/a2505-the-humanitarian-architecture-of-yasmeen-lari-pakistans-first-female-architect/).
- Rocca, A. (2007). *Natural architecture*. New York: Princeton Architectural Press.
- Walker, A. (2021, March 27). *African Women in Architecture*. Design233. [www.design233.com/articles/african-women-in-architecture](http://www.design233.com/articles/african-women-in-architecture)
- World Policy Journal. (2016). African Vernacular Architecture. <http://worldpolicy.org/2016/03/01/african-vernacular-architecture/>.

## 11. KEY TERMS AND DEFINITIONS

**Lo—TEK:** A growing body of multigenerational knowledge as well as practices and beliefs derived from Traditional Ecological Knowledge. It seeks to counter the notion that indigenous or native innovations are isolated from technology, and thus primitive (Watson 2020).

**Natural Synthesis:** The merging of the best of traditional art forms and ideas with Western influences deemed useful to create a distinctive Nigerian aesthetic outlook. The concept was developed by the Art Society at Zaria, an arts group formed in the late 1950s by Uche Okeke, Demas Nwoko, Simon Okeke, Bruce Onobrakpeya and other art students at the University of Zaria and the Nigerian College of Arts, Science and Technology (now Ahmadu Bello University) at Zaria in northern Nigeria (Lathrop n.d.).