"Multi-Dimensionalism in Sculpture: Imperative for Socio-cultural and Technological Integration in emerging Economies"

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Abstract

Sculpture and architecture have historically served as interconnected disciplines, contributing to socio-cultural and technological integration throughout human history. Before their distinction as separate fields, both were widely regarded as art forms rooted in design and aesthetics. While their functions differ to some degree, they are united in providing aesthetic experiences, and, particularly with advancements in technology, have significantly impacted global economies over time. Africa possesses a rich and diverse history of art and architecture that spans centuries. Architecture, as a discipline, is not autonomous; it relies on social applications and is influenced by various external factors. Throughout history, humanity has utilized art and architecture as functional and aesthetic tools to define status and organize society. Consequently, both have evolved to become integral components of a continent's cultural identity. This paper advocates for greater investment in the arts, architecture, and technology as interrelated drivers of economic growth. It concludes that when effectively harnessed, art and architecture can serve as powerful catalysts for economic development, generating significant economic benefits.

Key words*: economy, socio-cultural, sculptures, architecture, technology, formal and contextual analysis.*

Introduction

Sculpture traditionally implies as statues, statuettes, figures, figurines, monuments, busts, effigies and heads in plastic medium. It is the practice of producing three-dimensional works by reshaping materials such as stone, clay, or metal (Gove, 2002). However, modern sculptures with their three defining areas in modeling, carving and construction as a result of modern technology do not seem to have boundaries. Some sculptors now have dedicated their creativity in what is called architectural sculpture and it has become a branch of study. Architecture itself relies on models as a translation of abstract architecture into a concrete form, complementing further the interrelations of both disciplines (Christian, 2017). Architectural sculpture therefore is the use of sculptural techniques by an architect and/or sculptor in the design of a building, bridge, mausoleum or other such projects (Brie, 2022). Interdisciplinary exigencies, therefore, have plunged sculpture and other art forms, including architecture, into a plethora of variegated definitions for their functions and modes in society with none as an acceptable standard as they all continue to evolve with technology. Architecture is not an autonomous art, it involves social application, it depends on the conditions, the materials, and techniques to be employed, conditioned and evolves from a dialog between the existing conditions, the ideals and models of the architecture involved (Gerkan 2010). Very impactful in this regard, too, is technology, all of which has become the culture of societies.

Remarkably, society and culture intrinsically are inseparable from daily activities and operations for their huge impact though they have their "limitations and can in some cases be too rigid to adapt to the demand of the modern World" (Masovic, 2018) while technology, on the other hand, "revolutionize the way we live, work and communicate from a general perspective and makes our lives easier and more efficient" (Shaheer, 2023). Since it continues to evolve and improve and has no particular limitation, technology forms an integral part of daily lives and, as a result, it has brought about several advancements in various fields, enhancing sculpture and architecture, thus making life much better.

As part of the enhancement, sculpture and architecture have become, among other things, tools for nonverbal but symbolic communication/information, which is a great societal need. Communication intrinsically seeks to keep people abreast of societal occurrences. In this vein, communication informs and reminds society of its failures and successes. Among the nonverbal but symbolic channels and tools architecture and sculptures play important roles. African sculptures and architecture are great media of communication in this respect as they are sometimes dual in character; the duality of aesthetics and of status determinant being a veritable tool in the conduct of communication. African traditional (and modern) sculpture functions very dynamically in full grandeur with absolute or authoritative power over the people's socio-cultural experiences, adding that, in fact, sculpture, among the people, was (is) the most conceptually beautiful object to life existence (Ozokeraha, 2020). There are two primary contexts of creativity today, the traditional and the contemporary (modern) context; while established practices based on ethnicity, kinship, language and social institutions define the traditional art, contemporary context of creativity lends itself to the cultural life of new social bodies established by affinity beyond ethnicity and kinship (Ozokeraha, 2020). Ozokeraha, (2020), also makes a case for the two contexts: that while each cultural area accepts unconsciously a distinct body of practices that creates and maintains its own art forms, arts supported by political parties, churches or mosques, educational institutions, sport clubs, and professional formations comment on issues nationally or internationally.

At this juncture, the direction of the paper becomes critical, as outlined by Brie (2022), who defines architectural sculpture as the application of architectural techniques by an architect and/or sculptor in the design of structures such as buildings, bridges, or mausoleums. Architectural sculpture often involves freestanding works that are integrated into the structural design, though standalone pieces that are part of the original design. These shared characteristics—particularly their multidimensionality—underscore the potential of sculpture and architecture to foster socio-cultural and technological integration in emerging economies, which forms the central focus of this paper. The paper is organized into four sections: introduction, conceptual framework, literature review, and conclusion.

Conceptual Frame Work

Although sculpture and architecture are now distinct disciplines, they function as interrelated elements in promoting socio-cultural sustainability, particularly through physical settings that enhance the well-being and quality of life of diverse groups—an essential requirement for any economy. Sculptural elements are deeply embedded in architectural designs, enriching buildings by adding aesthetic and ornamental value. Palagia (2012) identifies eleven sculptural components integrated into Greek architecture, including polychromy, pediments, friezes, metopes, acroteria, sculptured column drums, sculptured ceiling coffers, caryatids and telamons, parapets, medallion busts, and testimonia. These architectural sculptures, which first emerged in the mid-7th century B.C., were inspired by Egyptian and Near Eastern prototypes and remain in use today, continuing to influence modern architectural designs. Palagia's perspective on the correlation between sculpture and architecture is shared by Kozłowski, who further emphasizes the impact of expressionist sculpture on architectural form. Kozłowski highlights the German architect Hermann Finsterlin, whose buildings resemble sculptural models, and the German-British architect Erich Mendelsohn, whose design of the Einsteinturm (The Einstein Tower) is more akin to an independent sculpture than a traditional architectural model (Kozłowski, 2013). Furthermore, he notes that the works of Iraqi-British architect Zaha Hadid and Canadian-American architect Frank Gehry exemplify contemporary architecture as monumental expressionist sculptures, characterized by their scale rather than their form. The views of Palagia and Kozłowski align with those of Ulldemolins regarding Walter Gropius' *Denkmal der Märzgefallenen* (The Monument to the Casualties of the Kapp Putsch) in 1921. Ulldemolins observes that the monument, shaped like an overturned obelisk topped with a pyramid, represents a thunderbolt and symbolizes life. He argues that this structure embodies a hybrid form, blending elements of a sculpture and a building (Ulldemolins, 2009). The interplay between sculpture and architecture can also be seen in minimalist works like Barnett Newman's *The Broken Obelisk* (1967) in Houston (Curtis, 2007). Kozłowski points out that this works, influenced by abstract expressionism, features a sophisticated arrangement of elementary volumes against a modernist backdrop. Despite its seemingly precarious form, the sculpture achieves a harmonious balance, underscoring the intricate relationship between sculptural and architectural design (Kozłowski, 2013).

Study Area and Methodology

Ozoro serves as the current headquarters of the Isoko North Local Government Area in Delta State, located within the South-South geopolitical zone of Nigeria. It is one of the two administrative divisions of Isoko in Delta State. According to the Council of Edio, the people of Ozoro are believed to have migrated from Benin, situated in present-day Edo State. With an estimated population of approximately 186,000 residents (Okpevra, 2015), Ozoro is home to a diverse demography, including civil servants, industrialists, real estate and construction consultants, traders, farmers, and educationists from various ethnic and cultural backgrounds.

The town's urban layout is marked by a major expressway that traverses it, linking the Ughelli axis through Ellu to the Asaba axis. Five main roads connect the town's five quarters, all converging at a central location known as Ala Square. This square is distinguished by a large sculpture situated on an elevated platform on a roundabout, enclosed by a highly decorated cast iron fence. From this central point, three key roads extend to neighboring communities: the road from the Urude quarters connects to Ogwelogbo, while two roads from the Erovie quarters lead to Idheze and Oleh, respectively. The road from the Oruamudhu quarters links to Okpaile.

Historically, Ozoro has been incorrectly labeled as "Usoro" on some older Nigerian maps. During the colonial era, it served as an administrative headquarters for the Roman Catholic Mission, although it now falls under the Oleh Diocese. The town is home to the Roman Catholic Church and the Church Mission Society (CMS) as its primary religious institutions, alongside a growing number of Pentecostal churches. Beyond its religious significance, Ozoro is a rapidly developing community known for its remarkable architectural and artistic heritage. This cultural and architectural legacy serves as a foundation for current and future developments.

The objective of this study is to analyze major architectural sculptures in Ozoro, focusing on their role in fostering a sense of place, place attachment, dignity, and identity among residents, while also contributing to the economy. The research design adopts a formal and contextual analysis within the framework of art history. The spatial distribution of public and private buildings in the town's urban structure is documented using street guides and geographic information system (GIS) techniques, complemented by photographic documentation. The selection of buildings and sculptures for the study is based on the integration of architectural and environmental sculpture in the design and construction of these structures.

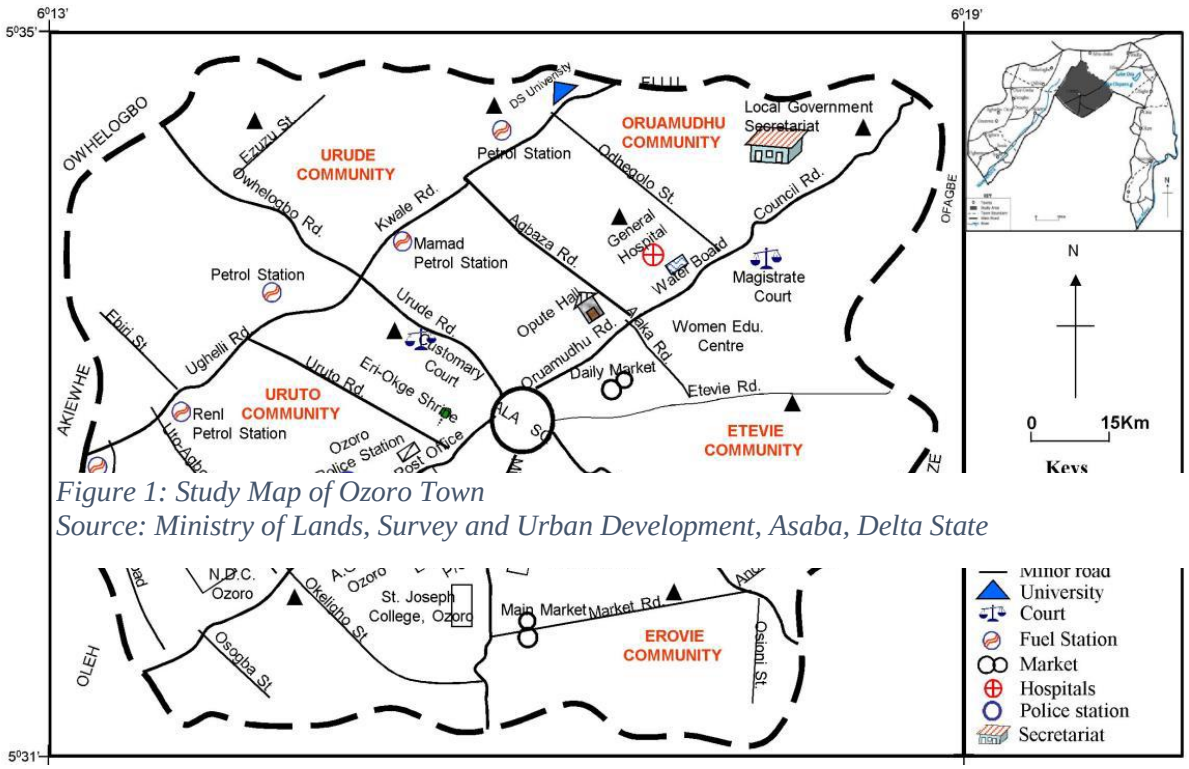

Figure 1: Study Map of Ozoro Town
Source: Ministry of Lands, Survey and Urban Development, Asaba, Delta State

architecture.

(a) Architectural Sculpture - Saint Paul's Anglican Church:

The Church is located at the heart of Ozoro at No. 19, Mission Road, very close to Alah Square (Fig. 2a). This church building sits comfortable on an acre of land measuring over 44,000 square feet. It is an assembly building designed for Christian religious worship. Its floor plan is shaped like a cross and oriented in such a way that one end faces the north-east axis while the other end faces the south-west axis. Its most distinct architectural feature is the Eastern tower; an architectural sculpture housing the Church's main entrance at the ground floor, choir stand at the first floor, with offices and robe room at the second floor. The tower has 4 main components; a cylindrical structure, a dodecahedron (12 sided pyramid), a pentagonal prism and a cross at the very top. These components are connected, supported and decorated by a few design elements between them. The cylindrical structure, is surrounded by sixteen circular columns, having the main entrance at its base towards the east. At the top it is covered by a hexadecagonal (sixteen sided) slab which forms a concrete fascia at its end measuring 8 metres in diameter. The hexadecagonal slab carries a total of 15 square columns (5 columns measuring 300mm x 300mm having two smaller columns measuring 100mm x 100mm between them). These columns carries the dodecahedron that points upwards and is covered by a dodecagonal (twelve sided) slab. On the slab sits 4 distinct columns shaped like an *opia*, a traditional cutlass held by high ranking officers in Ozoro Kingdom. These 4 columns supports a circular concrete plate that carries a pentagonal (five sided) prism. And finally this prism supports another circular plate which acts as base to carry the cross at its peak.

Figs. 2b and 2c emphasizes the nature of the sculptural structure in geometry, trapping, enfolding and penetrating into space but not losing firmness, the sense of commodity and delight. The tower combines solid geometric object to form a structure that shows solidity, firmness and spirituality. The cylindrical structure forms a circle in plan, symbolizing God's love, the heavens and the earth. The sixteen columns placed around the cylinder could possibly represent the sixteen distinct qualities of love recorded in Paul's letter to the Corinthians in the bible. In the Christian faith, the number sixteen is said to represent love and it is no coincidence that it was used a couple of times for some of the shapes around the building. The sculptor/architect deploys form and space as the primary concern of the architectural sculpture, assigning shape and scale in the design of a habitable structure. As a result, the building, like the human frame, grasps the concepts of connectivity, cohesion and changeability as second to none in the dialectics of aesthetics – every aspect of this structure obeys and applies itself to the concepts. The interplay of solids and voids are held in place by flat shooting-out concrete facial, symbolizing the solidity and firmness the Christian faith portrays, which is comparable to the hardness of a solid rock. The cross on the crown (the dodecahedronal structure) is a symmetrical tool that deploys visually equally shared forms, shapes or angles across the vertical axis of the main structure. The composition of the structure symmetrically assigns forms to mirror themselves on the other side of the visual divide. It is a sculptural and architectural device to achieve unity, coherence and compact feel. The cross also symbolizes Christ and the Christian faith, it recall the crucifixion of Christ and the redemption from his passion and death for mankind.

(b) **Commercial Architecture – Frenchies And Fries**

Frenchies and Fries (Fig. 3a and b) is a mixed-use building situated at No. 3 Agbaza/Winners Road, off the Ozoro-Kwale Express Road, Ozoro. The three-story commercial structure comprises a restaurant on the ground floor, hotel suites on the first and second floors, and a rooftop lounge on the third floor. Its exterior façade is adorned with both mounted and unmounted sculptural artworks, contributing to its aesthetic appeal. At the building's entrance, two life-sized, freestanding statues of a chef and a waiter welcome patrons with warm smiles and a waving gesture. Additionally, two equine statues with wings are mounted on cantilevered slabs on the second floor. These sculptures depict horses rearing majestically on their hind legs, their forelegs thrusting upward in a mirrored stance. The intricate detailing of their muscular forms, with visible sinews beneath their smooth concrete surfaces, adds to their realism. Their wings extend upwards, enhancing their balance, while their heads are held high with flared nostrils and alert ears, suggesting a defensive posture in response to an unseen presence. The flowing manes further accentuate a sense of movement despite their static form. These statues, positioned seven meters above ground level, enhance the visual prominence of the structure and contribute to its commanding architectural presence. Horses hold significant cultural and historical value in the Ozoro Kingdom, symbolizing strength, freedom, and majesty.

(c) Landscape architecture – Delta State University of Science and Technology

The Administrative Building, Delta State University of Science and Technology, Ozoro (Fig. 4a and b), is at the heart of the school. The building features a striking architectural design, characterized by two gracefully curved vehicular ramps at the front, symmetrically flanking the entrance and leading seamlessly to the first floor. These ramps, elegantly integrated into the structure, provide both functional accessibility and a sense of grandeur, allowing vehicles to ascend

smoothly while enhancing the building's visual appeal. At the forefront of the property, the landscape is dominated by a meticulously designed circular roundabout with the statue of a professor inside it, serving as both a traffic control feature and an aesthetic centerpiece. The roundabout is also adorned with lush greenery, ornamental plants, a fountain and other water feature around it, creating a welcoming and dynamic entrance. The curvature of the ramps, coupled with the circular form of the roundabout, establishes a harmonious flow in both movement and design, reinforcing the architectural sophistication of the building.

The Globe (Fig. 5a) is a large, spherical steel sculpture situated at the Faculty of Engineering, Delta State University of Science and Technology, Ozoro. Measuring 5 meters in height with a diameter of 3 meters, it is among the most prominent sculptures within the university landscape. The structure features an open-grid framework that accurately represents the continents in relief against a steel lattice symbolizing lines of longitude and latitude. It is supported by a circular hollow pipe with a diameter of 75mm and is securely mounted on a robust pedestal. *The Globe* presents a striking visual against the skyline, reinforcing its significance as an enduring symbol of unity, peace, and human advancement.

The Growth (Fig. 5a) sculpture holds distinct significance in a different dimension. It is firmly anchored on a concrete base that emerges from a lawn opposite the former library at Delta State University of Science and Technology, Ozoro. The sculpture is composed of metal elements that extensively utilize flat planes and cylindrical rods, creating a structural and conceptual link to historical artistic traditions. Rising from a circular concrete base, a cylindrical pipe extends through and beyond the flat planes, elevating them into space and providing structural stability. Despite the planar composition, the sculpture maintains a strong spatial presence, effectively employing space, area, direction, and distance as fundamental artistic elements. *Growth* embodies a profound conceptual approach, seamlessly transitioning from two-dimensional density to a graph-like structure. Both *The Growth* and *The Globe* sculptures remain significant landmarks within the university, attracting students and visitors while also serving as a backdrop for various institutional events.

d) Residential Architecture – Sir Sandy's Lodge

Sir Sandy's Lodge (Fig. 6a and b) is an exquisite five-bedroom, single-family, one-story residence that seamlessly integrates architectural elegance with structural prominence. The façade is distinguished by four ornately decorated pillars, symmetrically arranged at the entrance porch—two on either side. These intricately designed pillars contribute to the overall grandeur and sophistication of the exterior. A prominent feature of the structure is a bust positioned on the balcony above the entrance porch, serving as both a focal point and a tribute to cultural heritage. Designed as an integral part of the building, the bust is securely mounted on a reinforced concrete base and is composed of reinforced glass fiber and polypropylene. Positioned centrally on the balcony, it symbolizes honor and reverence. The distinctive elements of the bust, including the traditional headgear (*gele*), coral beads (*ivie-iru*), and native attire, suggest that the figure represents a woman of high societal status. The architectural design of the building seamlessly merges classical and contemporary elements, ensuring both functionality and aesthetic refinement. The exterior is punctuated by large windows, allowing for ample natural light to illuminate the interior spaces. An elegantly sloped roof enhances the structural harmony, while decorative cornices and balustrades further elevate the visual appeal. Situated in Ozoro town, this residence, with its stately pillars and commemorative bust, stands as a testament to elegance, resilience, and historical significance.

Figure 2a: Anglican Church Building, at Ala Square, Ozoro

Figure 2b: Anglican Church Building, at Ala Square, Ozoro

Figure 2c: Anglican Church Building, at Ala Square, Ozoro

Figure 3a: Frenches and Fries (F&F) Building, Odus Hotel Rd, Ozoro

Figure 3b: Frenches and Fries (F&F) Building, Odus Hotel Rd, Ozoro

Figure 2a: Administrative Building, Delta State University of Science and Technology, Ozoro

Figure 4b: Administrative Building, Delta State University of Science and Technology, Ozoro

Figure 3a: Growth, Delta State University of Science and Technology, Ozoro

Figure 5b: Globe, Delta State University of Science and Technology, Ozoro

Figure 6a: Private Residence

Figure 6b: Private Residence

Conclusion

This study examines the integration of sculpture and architecture across various building typologies in Ozoro. Saint Paul's Anglican Church exemplifies architectural sculpture through its geometrically intricate tower, symbolizing Christian values. Similarly, *Frenchies and Fries* enhances commercial architecture with life-sized statues, reinforcing cultural significance and historical heritage. At Delta State University of Science and Technology, landscape architecture strengthens the relationship between built form and the environment. The Administrative Building's curved ramps and sculptural roundabout enhance both movement and design, while the *Globe* and *Growth* sculptures symbolize unity and artistic innovation. In residential architecture, *Sir Sandy's Lodge* incorporates sculptural elements to reflect cultural identity and historical reverence. The bust on the balcony serves as both a commemorative piece and an architectural feature, emphasizing heritage.

Overall, these structures illustrate how sculpture enriches architecture, transforming buildings into artistic and cultural landmarks. Buildings in Ozoro extend beyond functionality to embody cultural identity, symbolism, and artistic ingenuity. These elements not only enhance aesthetic appeal but also create meaningful spatial experiences, solidifying the town's architectural landscape as a fusion of tradition, creativity, and structural excellence.

Recommendation

From a broader perspective, architects and sculptors should take deliberate measures to ensure the preservation and transmission of cultural heritage through their designs, allowing it to be passed down across generations. Further studies should be conducted to identify key imperatives that integrate society, culture, and technology, fostering a harmonious relationship between tradition and modern advancements. Additionally, architectural and sculptural models should be developed to effectively incorporate cultural heritage while embracing technological innovations. These models should balance the richness of socio-cultural experiences with the evolving nature of contemporary

design and construction techniques. By doing so, architects and sculptors can create structures that not only serve functional purposes but also reflect and sustain the cultural identity of the communities they serve.

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