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CREATIVITY THROUGH CONCEPT AND CONCEPTUAL ANALOGIES IN LANDMARK ARCHITECTURE

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ABSTRACT

Purpose: The study investigated the role of concepts and conceptual analogies in landmark architecture, with an emphasis on their potential to enhance creativity in architectural design.

Design/methodology/approach: A qualitative case study approach was employed to analyse three distinct student architectural projects: the Niger Delta Development Commission (NDDC) Headquarters Building, the University of Uyo (Uniuyo) Indoor Sports Complex, and the Cassava Processing Factory. These projects, selected for their varied conceptual analogies and cultural significance, underwent scrutiny. Data collection methods included in-depth interviews with BSc. Final year student-architects, a thorough analysis of design documents, and an extensive review of site analyses. Thematic analysis was applied to uncover recurring patterns and insights.

Findings: The study highlighted key findings revealing that, concept integration drives sustainable design, cultural symbolism enhances user experience, conceptual thinking enables adaptability, concepts challenge conventional design boundaries, potential for broader adoption and need for further exploration.

Research limitations/Implications: While acknowledging potential limitations in project scope and contextual specificity, future research could explore a wider array of architectural projects and perspectives. Nonetheless, the implications are substantial, advocating for curriculum enhancements that integrate concept evolution modules and conceptual analogies into architectural design education. Promoting sustainable design principles and interdisciplinary collaboration within curriculum structures are seen as imperative steps. Furthermore, disseminating exemplary student projects as architectural case studies can inspire future generations.

Practical implications: The study has practical implications for architectural education, urging curriculum improvements to cultivate innovative and culturally relevant designs. It underscores sustainability and interdisciplinary collaboration as essential components in addressing complex societal challenges.

Originality/value – The study revealed that the expression of iconic (symbolic) forms and analogical metaphors are instrumental to public engagement and user experience.

Keywords: Concept-driven design, conceptual analogies, landmark architecture, creativity, architectural education, sustainability, interdisciplinary collaboration.

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1. INTRODUCTION

Architecture transcends the mere creation of functional structures; it stands as a canvas where designers weave narratives that resonate with their surroundings and challenge conventional design boundaries. Concepts and conceptual analogies in architecture play an instrumental role in elevating projects to the realm of iconic landmarks, infusing them with deeper meanings, cultural relevance, and profound symbolism (Klingmann, 2010). This study delves into the profound significance of concept-driven designs in landmark architecture, particularly in the context of architectural education.

The importance of concepts in architecture has been widely acknowledged. A strong conceptual design serves as the guiding force that unifies the form, function, and meaning of a building (Suwa *et al.*, 2022). Concepts provide architects with a clear vision and a strategic approach to transform their ideas into tangible structures. Iconic architectural marvels such as the Sydney Opera House and the Guggenheim Museum Bilbao exemplify the profound impact of strong conceptual foundations, transcending time and leaving indelible marks on society (Chiu *et al.*, 2019; Zulaika, 2003).

Conceptual analogies possess the power to infuse architectural designs with rich cultural narratives and symbolic representations. Drawing inspiration from diverse sources, such as historical events, natural elements, or cultural heritage, architects create buildings that connect meaningfully with their context (Eilouti, 2018). These analogies provide layers of significance to architectural forms, harmonizing with the context and serving as enduring symbols of identity and heritage.

In the realm of architectural education, final year students face the challenge of pushing the boundaries of design and innovation. This pivotal stage demands a demonstration of their comprehension of architectural principles and their capacity to craft projects rooted in strong concepts. The incorporation of conceptual analogies in final year designs offers students an opportunity to showcase their creative acumen, cultural sensitivity, and forward-thinking design philosophies.

This research article delves into three remarkable final year design studio projects from the 2020/2021 session at the University of Uyo's Department of Architecture: the Niger Delta Development Commission (NDDC) Headquarters Building, the University of Uyo (Uniuyo) Indoor Sports Complex, and the Cassava Processing Factory. Through the examination of these projects, the study illuminates how architecture students and professionals employ conceptual analogies to excel in their final projects. By investigating the thought processes and the integration of concepts into these landmark projects, the study aims to uncover the transformative impact of concept-driven designs on architectural excellence.

The utilization of concepts and conceptual analogies in architecture extends beyond aesthetics; they serve as powerful tools enabling architects to push the boundaries of creativity, forging meaningful connections with users and cultural contexts.

1.1. Aim and Objectives of the Study

The study seeks to comprehensively study the influence of conceptual thinking, analogies, and cultural narratives on architectural design in the context of final year projects at the University of Uyo's Department of Architecture, with a focus on specific case studies from the 2020/2021 session. In order to achieve the aim of this study, the under listed objectives were set:

i. Investigate how concepts guide and shape the design process in student architectural projects.
ii. Explore the role of conceptual analogies in infusing architectural designs with rich cultural narratives and symbolic representations.
iii. Examine how architectural students utilize conceptual thinking and analogies in their final year projects.
iv. Analyse three notable final year design studio projects from the 2020/2021 session at the University of Uyo's Department of Architecture: the Niger Delta Development Commission (NDDC) Headquarters Building, the University of Uyo (Uniuyo) Indoor Sports Complex, and the Cassava Processing Factory.

2. LITERATURE REVIEW

2.1. Concepts in Architecture as a Guiding Force

The concept in architectural design is recognized as a guiding force that shapes the entire creative process, unifying form, function, and meaning. Klingmann (2010) underscores its significance, highlighting how concepts elevate architectural projects beyond the realm of functional structures into iconic landmarks with profound cultural resonance. This notion aligns with the perspective put forth by Suwa et al. (2022), emphasizing that a strong conceptual design unifies architectural elements and guides the design process, ensuring that each component contributes cohesively to the overall narrative of the building. Furthermore, previous studies have corroborated the transformative power of concepts in architecture, drawing attention to iconic projects such as the Sydney Opera House and the Guggenheim Museum Bilbao as embodiments of this principles (Chiu, Goad, Myers, & Kılınçer, 2019; Zulaika, 2003). These architectural marvels not only demonstrate the profound impact of strong conceptual foundations but also serve as testament to the enduring legacy of concept-driven designs in the architectural world.

2.2. Conceptual Analogies towards Cultural Richness and Symbolism

Conceptual analogies in architecture offer a unique avenue to infuse designs with rich cultural narratives and symbolic representations. Eilouti (2018) highlights the power of drawing inspiration from diverse sources, including historical events, natural elements, and cultural heritage. By doing so, architects can create buildings that connect deeply with their context, fostering a sense of identity and cultural continuity. This perspective resonates with the idea that architecture is not merely about functional utility but about weaving narratives that resonate with the community it serves. Dahabreh (2019) using a grounded theory method postulates an ontological framework that recasts the Vitruvian trinity of *utilitas*, *venustas*, and *firmitas* into three forms namely; space, intelligence and structure. Such analogies provide depth and significance to architectural forms, harmonizing with the analysis of local community and becoming enduring symbols of identity and heritage.

Moreover, the utilization of conceptual analogies aligns with broader discussions on architectural symbolism and cultural identity. Scholars such as Smith and Bugni (2006) explored how architectural designs can serve as powerful symbols of cultural identity and heritage through symbolic interaction which helps in understanding and the creation of physical environment, and how these symbols play a crucial role in shaping the cultural narratives of societies. On the other hand, Naomie and Alnaim (2023), highlights that symbolic objects can exert substantial influence on a city's cultural, economic, and political dynamics, underscoring the importance of urban planners and policymakers leveraging this potential to foster vibrant, inclusive, and sustainable urban environments aligned with the residents' desires and needs.

As Dean (2017) posit, buildings that evoke cultural references and contextual meanings garner positive public reception and foster a sense of belonging. This positive reception is crucial in establishing landmark projects that stand the test of time and remain ingrained in the collective memory.

2.3. Architectural Education and Concept-Driven Designs

Within the context of architectural education, the final year of study represents a critical juncture where students are challenged to showcase their understanding of architectural principles and their ability to craft projects rooted in strong concepts. This phase is pivotal in shaping the future architects who will contribute to the built environment. However, the literature on architectural education often emphasizes the importance of incorporating conceptual thinking into the curriculum. Scholars like Kampylis (2010) argue that fostering creativity and critical thinking through the integration of conceptual design exercises is essential in nurturing well-rounded designers. This notion resonates with the idea that students need opportunities to experiment with and develop their conceptual thinking skills, particularly in their final year projects.

In architectural education, the incorporation of concepts and conceptual analogies plays a crucial role in nurturing creativity and fostering innovative thinking among students. Fidanci (2022) avows that, exposing architecture students to the power of concepts enables them to transcend conventional design constraints and think outside the box. This emphasis on conceptual thinking is capable of cultivating a generation of architects who can create visionary and impactful designs. Concept-driven

designs also find their significance in sustainable architecture. Researchers like Mensah (2019) argue that concepts rooted in sustainable principles can drive eco-friendly and socially responsible architectural solutions. Such designs are not only aesthetically pleasing but also address pressing environmental challenges and foster a harmonious relationship between the built environment and nature.

2.4. Gap in Existing Literature

While literature acknowledges the importance of concepts and conceptual analogies in architecture, there is a noticeable gap in the exploration of how architectural students utilize these concepts, particularly in their final year projects. Though studies have highlighted iconic architectural landmarks and emphasized the role of concepts in design, there is a need to explore the practical application of conceptual thinking in architectural education. Specifically, there is paucity of comprehensive research that examines how architecture students employ conceptual analogies to excel in their final year projects, demonstrating creativity, cultural sensitivity, and design innovation. This gap in existing literature necessitates this study, which seeks to shed light on the transformative impact of concept-driven designs on architectural excellence, particularly within the context of architectural education.

3. METHODOLOGY

This study utilised a qualitative multiple-case study approach to explore the utilization of concept-driven designs in architectural projects. Three significant architectural projects, the Niger Delta Development Commission (NDDC) Headquarters Building, the University of Uyo (Uniuyo) Indoor Sports Complex, and the Cassava Processing Factory, were selected. These projects were chosen based on their significance as final year design studio projects completed during the 2020/2021 session at the University of Uyo's Department of Architecture. Data collection involved: (i) In-depth Interviews in which semi-structured interviews were conducted with the architecture student designers of the selected projects to uncover their thought processes and creative strategies related to the use of conceptual analogies; (ii) Document analysis involving comprehensive analysis of design documents, including architectural plans, sketches, design notes, and project reports, was undertaken to understand the integration of concepts into the architectural forms; (iii) Site analyses conducted during the design process provided insights into how contextual factors influenced the choice of conceptual analogies; (iv) Data Analysis with thematic analysis was applied to the collected data to identify recurring patterns, themes, and insights related to the use of conceptual analogies in architectural projects.

To enhance validity and reliability, member checking allowed participants to confirm the accuracy of their interview transcripts, and triangulation was used to cross-verify findings from multiple data sources. This methodology facilitated a comprehensive exploration of how architectural students applied conceptual analogies in their final year projects, contributing to a deeper understanding of the transformative impact of concept-driven designs on architectural excellence in the context of architectural education.

4. PRESENTATION AND DISCUSSION OF RESULTS

4.1. Concept and Conceptual Analogy Presentation of Projects

A. NDDC Headquarters:

Conceptual Framework: The student conceptualized the NDDC Headquarters with a vision to promote inter-communal development within the Niger Delta region. This is as shown in Figure 1. The project's concept was inspired by the sailing boat, symbolizing connectivity and progress in the riverine areas.

Design Implementation: The sailing boat form was replicated in the building's elevation and the first four floors, creating a visually striking architectural language.

Sustainable design features, such as rainwater harvesting and natural ventilation, were incorporated, aligning with the concept of environmentally conscious development. Results of design implementation are as shown in Figures 2 and 3.

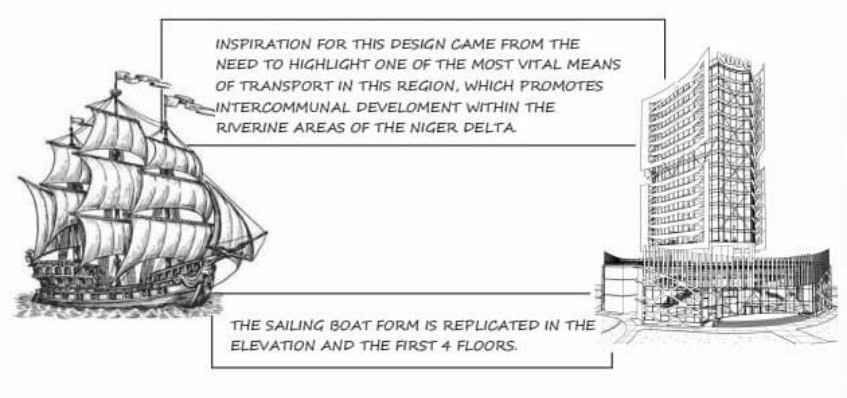


Figure 1: Sailing Boat Concept as a Metaphor of Most Vital Means of Transport Promoting Inter-communal Development in Niger Delta
Source: Udoubak, Israel



Figure 2: Approach View of the Proposed NDDC Head Quarters
Source: Udoubak, Israel



Figure 3: Aerial View of the Proposed NDDC Head Quarters
Source: Udoubak, Israel

B. Uniuyo Indoor Sports Complex:

Conceptual Framework: The student drew inspiration from the Great Eagle in Greek and Latin mythology, representing strength, victory, and prosperity. The complex aimed to embody these qualities and inspire the university community. This concept is as described in Figure 4.

Design Implementation: Architectural elements represented the Great Eagle's characteristics, with the entrance resembling its head and mouth. These are as shown in Figures 5 and 6. Impactful sporting activities were strategically placed on both sides, mirroring the Eagle's wings. The complex also housed recreational centres and areas for recollection, akin to the Eagle's tail, enhancing the user experience.



Figure 4: Concept Development of Proposed Uniuyo Indoor Sports Complex
Source: Agba, Paul



Figure 5: Approach View of the Proposed Uniuyo Indoor Sports Complex Symbolising the Great Eagle
Source: Agba, Paul



Figure 6: Aerial View of Proposed Uniuyo Indoor Sports Complex Symbolising the Landing of the Great Eagle
Source: Agba, Paul

C. Cassava Processing Factory

Conceptual Framework: The student sought to achieve a modular plan configuration and a flexible layout for the factory. The cassava leaf provided the conceptual analogy, symbolizing adaptability and growth. This is as described in Figure 7.

Design Implementation: The cassava leaf's rib structure was simulated to optimize day lighting and natural ventilation, creating an energy-efficient design. This is as depicted in Figures 8 and 9. The cassava stem analogy was incorporated into the structural system, providing stable support. The flexible design allowed for future expansions and changes in functionality. Sustainability and Adaptability Features in the Concept and Conceptual Analogies.

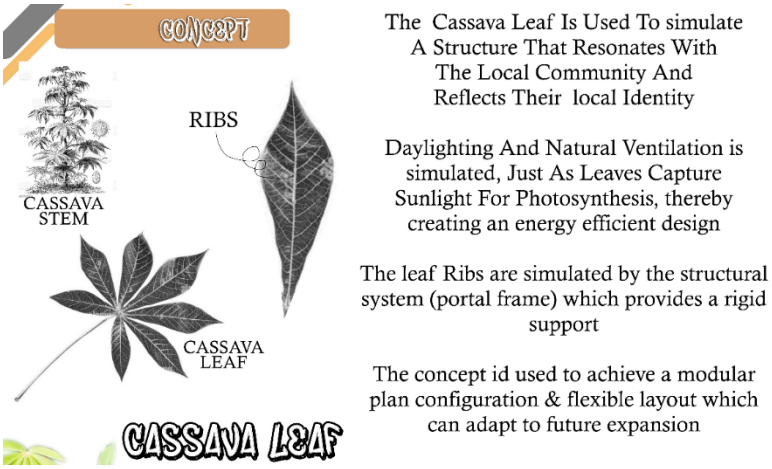


Figure 7: Cassava Leaf Concept
Source: Akpan, Wisdom



Figure 8: Side View of the Proposed Cassava Processing Factory
Source: Akpan, Wisdom



Figure 9: Interior of Proposed Cassava Processing Factory Showing Roof System
Source: Akpan, Wisdom

4.2. Discussion / Analysis of Project Outcomes

The presentation of these three projects demonstrates the diverse and creative ways in which architecture students employed concepts and conceptual analogies to shape their final year designs. Each project reflects a unique conceptual framework that goes beyond functional considerations to embrace deeper narratives, cultural symbolism, and sustainable principles.

Sustainable Design and Concept Integration

In the case of the NDDC Headquarters, the sailing boat concept not only provided a visual identity but also served as a catalyst for sustainable design features, aligning with the concept of environmentally conscious development. This integration showcases how concepts can drive sustainable practices and shape architectural projects that are more environmentally responsible.

Cultural Symbolism and User Experience

The Uniuyo Indoor Sports Complex's use of the Great Eagle as a conceptual framework not only created a visually striking design but also enhanced the user experience by incorporating symbolic elements and creating a dynamic and functional layout. This highlights how conceptual analogies can enrich the cultural relevance of architectural designs and contribute to a meaningful connection with users.

Adaptability and Growth

The Cassava Processing Factory's focus on adaptability and growth, inspired by the cassava leaf, demonstrates how conceptual thinking can result in flexible and future-proof designs. The integration of the cassava leaf's rib structure and stem analogy into the building's layout and structure underscores the potential for concepts to drive innovative solutions in architecture.

4.3. Findings

The analysis of the three architectural projects, namely the NDDC Headquarters, Uniuyo Indoor Sports Complex, and Cassava Processing Factory, yielded several key findings:

Concept Integration Drives Sustainable Design

This study reveals that the integration of strong conceptual frameworks in architectural design, as emphasized by Klingmann (2010) and Suwa et al. (2022), indeed drives the incorporation of sustainable design features. For instance, in the case of the NDDC Headquarters project, the sailing boat concept not only provided a unique visual identity but also inspired environmentally conscious practices, aligning with the literature's perspective.

Cultural Symbolism Enhances User Experience

The study’s analysis of the Uniuyo Indoor Sports Complex project corroborates Eilouti's (2018) notion that drawing inspiration from diverse cultural sources enriches the user experience. The use of the Great Eagle as a conceptual framework not only created a dynamic and functional layout but also fostered a deeper connection between the architecture and its users, as discussed in the literature.

Conceptual Thinking Enables Adaptability

The Cassava Processing Factory project showcased the power of conceptual thinking, in line with Fidanci's (2022) argument. The use of the cassava leaf analogy resulted in a layout optimized for natural lighting and ventilation while maintaining structural stability, demonstrating how concepts foster innovative and adaptable solutions.

Concepts Challenge Conventional Design Boundaries

The study's overarching theme aligns with the literature's perspective that concepts challenge conventional design boundaries. Concepts transcend mere functionality, allowing architects to explore innovative architectural solutions with deeper cultural and sustainable meanings, as seen in the three projects analysed.

Potential for Broader Adoption

The findings of the study suggest the potential for broader adoption of concept-driven designs in architectural education and practice, consistent with the literature's emphasis on the importance of incorporating conceptual thinking into architectural education (Kampylis, 2010) and its potential to drive eco-friendly and socially responsible architectural solutions (Mensah, 2019).

Need for Further Exploration

Our study also highlights the need for further research, addressing the gap in the existing literature regarding the practical application of conceptual thinking in architectural education, particularly in final year projects. This gap necessitates further investigation into how architecture students employ conceptual analogies to excel in their projects, demonstrating creativity, cultural sensitivity, and design innovation, as outlined in the literature.

5. CONCLUSION AND RECOMMENDATIONS

In conclusion, this study has delved into the innate significance of concept-driven designs in landmark architecture, particularly within the context of architectural education. The analysis of three remarkable architectural projects, namely the NDDC Headquarters, Uniuyo Indoor Sports Complex, and Cassava Processing Factory, revealed the transformative impact of conceptual thinking and analogies on architectural excellence. The findings therefore, demonstrates that concepts and conceptual analogies are not mere aesthetic choices; they are powerful drivers of sustainable design practices, cultural enrichment, user experience enhancement, and innovative architectural solutions. These projects have challenged conventional design boundaries, showcasing the potential for architects in training to deign structures that go beyond functionality and become enduring symbols of human creativity and expression. Based on the findings of this study, several recommendations emerge as follows:

Enhanced Curriculum Emphasis: Architectural education programs should place greater emphasis on teaching and nurturing conceptual thinking skills. Incorporating modules that specifically focus on concept development and analogical thinking can help students develop these essential skills from the early stages of their education.

Interdisciplinary Collaboration: Encourage interdisciplinary collaboration within architectural education. Collaborative projects with experts from fields such as environmental science, cultural studies, and engineering can further enrich the conceptualization and execution of architectural designs.

Design Studios: Design studios should provide a supportive environment for students to experiment with and develop their conceptual thinking. Faculty members should guide students in translating their concepts into tangible architectural solutions.

Dissemination of Best Practices: Architectural institutions and professional organizations should actively promote and disseminate best practices in concept-driven design. Highlighting exemplary projects as case studies can inspire future generations of architects.

Research Continuation: Further research is needed to explore the challenges and limitations faced by students in integrating concepts into their designs. Understanding these barriers can inform strategies to better support students in their conceptual journey.

Professional Development: Architects in practice should continuously invest in their professional development, including refining their conceptual thinking skills. This can be achieved through workshops, seminars, and exposure to diverse design philosophies.

6. LIMITATION OF THE STUDY

This study's scope is limited to three specific architectural projects at the University of Uyo's Department of Architecture. As a result, the findings may not be fully representative of the broader architectural landscape in Nigeria or other educational institutions. Further research is needed to explore a wider range of projects, institutions, and cultural contexts for a more comprehensive understanding of the impact of conceptual thinking in architectural education and practice.

REFERENCES

Chiu, C.-Y., Goad, P., Myers, P., & Kılınçer, N. Y. (2019). My Country and My People and Sydney Opera House: The missing link. *Frontiers of Architectural Research, 8*(2), 136-153. doi:10.1016/j.foar.2019.03.002.

Dahabreh, S. M. (2019). Understanding architectural form: a conceptual. *5th International Conference On Modern Approaches in SCIENCE, TECHNOLOGY & ENGINEERING* (pp. 48-61). Berlin: STECONF.

Dean, L. (2017). *The Social Roles of Buildings.* Stockholm: US - AB.

Eilouti, B. (2018). Concept Evolution in Architectural Design: An Octonary Framework. *Frontiers of Architectural Research, 7*(2), 180-196. doi:10.1016/j.foar.2018.01.003

Fidanci, E. A. (2022, February 28). *Understanding Architectural Concept.* Retrieved from illustrarch: https://illustrarch.com/articles/9525-understanding-architectural-concept.html#:~:text=An%20architectural%20concept%20is%20a,regularly%20consulted%20at%20all%20stages.

Kampylis, P. (2010). *Fostering creative thinking: The role of primary teachers.* University of Jyväskylä.

Klingmann, A. (2010). *Brandscapes: Architecture in the experience economy.* Massachusetts: Mit Press.

Mensah, J. (2019, September 08). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences, 5*(1), 1-21. doi:0.1080/23311886.2019.1653531

Noaime, E., & Alnaim, M. M. (2023). Examining the symbolic dimension of Aleppo's historical landmarks. *Alexandria Engineering Journal, 78*, 292-305. doi:10.1016/j.aej.2023.07.054

Smith, R. W., & Bugni, V. (2006). Symbolic Interaction Theory and Architecture. *Symbolic Interaction, 29*(2), 123-155. doi:10.1525/si.2006.29.2.123

Suwa, M., Gero, J. S., & Purcell, T. A. (2022, May 13). The Roles of Sketches in Early Conceptual Design Processes. In M. A. Gernsbacher, & S. J. Derry (Ed.), *Proceedings of the Twentieth Annual Conference of the Cognitive Science Society* (p. 1304). New York: Routledge. doi:10.4324/9781315782416

Zulaika, J. (2003). *Guggenheim Bilbao Museoa.* Reno, Nevada: Center for Basque Studies, University of Nevada.