Semiotics and Learning Spaces: The African Cultural and Contemporary Experience

[1]Ajibade A. Adeyemo; [1]Olasunmbo Adhuze, [2]Tajudeen O. Ajayi, and [3]Isidore C. Ezema

Department of Architecture, Lagos State University of Science and Technology, Ikorodu.

Department of Architectural Technology, The Federal Polytechnic, Ado-Ekiti, Ekiti State.

Department of Architecture, Lagos State University, Ojo.

Corresponding Author: sunmboadhuze@gmail.com

Abstract

Learning is a timeless fundamental human phenomenon that is important for sustenance and advancement. Learning takes place in spaces that can both be functional and symbolic as a design and build product of architecture, which lexically influences human behaviour, part of which learning is. Built-form could be either iconic, lexical, or symbolic as typologies of Semiotics, which is simply a language of signs and symbols that links architecture and culture. This study explores the intersection of semiotics and architectural learning environments through the lens of African cultural experience, particularly Yoruba spatial typologies. It argues that traditional African buildings are not only functional enclosures but also systems of signs that embody symbolic, indexical, and iconic meaning. Using the "archaeological" method of reinterpreting overlooked spatial forms and building on the triple heritage of African architecture (Indigenous, Islamic, and Western), the study identifies how meaning is constructed, preserved, and sometimes transformed in learning spaces. The paper set out to determine the symbolic space in identified cultural built-forms that are significant as learning spaces alongside such and similar contemporary spaces in the present-day context. African cultural learning spaces are discussed in line with the African architecture triple heritage concept, consisting of the Indigenous, the Islamic, and the Western.   It proposes that integrating semiotic awareness in architectural design can foster culturally resonant and sustainable educational environments. This work calls for a reconceptualisation of learning environments, one that is rooted not in imported blueprints but in cultural semiotics, sustainable design, and ancestral wisdom. Architects, educators, and policymakers must look inward to build forward.

Keywords: Architectural Built Forms; Learning environment; Heritage studies; Semiotics.

1.0 Introduction

The rapid development in semiotics, the study of signs and symbols and their use or interpretation, in the recent past has made it important for multi-disciplinary applications. Semiotics is not just a tool for architecture, but also for philosophy, linguistics, psychology, transportation, and information (Chen et al., 2025). Its possible use in learning spaces by the visually impaired and the potential use of touch for texture and smell to appreciate them make semiotics relevant. More so, there is the context of sustainability because learning, especially regarding the environment, would remain through generations as much as semiotic appreciation learning spaces' functional, symbolic, and overall significance relevance (Campbell et al., 2021). However, it is the consideration of function along with extrinsic meaning that makes semiotics practically relevant to society. Semiotics is a way to present and appreciate architecture in a more comprehensive way than just drawings. Semiotics is necessary for proper meaning for architectural built-forms, as it may be the way out of the present pressure of building places without concern for the environmental, cultural, and social impact of the buildings on the city (Huang & Zhou, 2020; Pane et al., 2020). The societal codes of people must be known to be able to appreciate the meaning of their traditionally built forms and the inherent processes of their interpretations. "Semiotics as a science of signs or sign systems, deals with all cultural phenomena as a sign system, identifying culture as communication, that expression – architecture – is a relevant object of analysis" (Uluğ, 2020). Architecture is a kind of specific spatial semiotics in that it refers to buildings and how their meanings gain form that appeal to our senses.

Man has, however, been said to be first and foremost symbolic. The word "symbol" as used by Pierce for signs is, as it is in a foreign language, the relationship between the signifier, the signified, and the referent must be learnt (Elimam & Chilton, 2017; Steiner, 2018). The fact that the meaning of symbols or the symbolic values of objects (cultural built-forms and spaces) do change, and the need to understand the changing meaning, is part of this study's challenge. An example was the change in reusing Greek orders for cultural buildings (representing

freedom and democracy) by the fascists and the communists in the 1930s for their totalitarian states' power (Fadda, 2021). A symbol could be abstractive, unlike an icon, which may be a more direct visual representation of an object or an index, which still follows a pattern of something leading to another, as with smoke being an index of fire and steam an index of heat. The abstract and changing nature of symbolic signs may make it seem unreliable, especially with built forms. However, buildings play the role of an indexical sign better by indicating lines of movement through floor plans, stairs, canopies, etc (Cascone et al., 2021). Herein, the built-form as an indexical sign is known in the way the physical form indicates and not by learning. People across cultures can follow the route suggested by a building but may not necessarily have an idea of what a church building symbolises, except that he has been taught (Guirguis et al., 2020). It is thus important to place forms in cultural contexts to know what they symbolise and how people interpret them. Relevantly, indexical signs are apt here, as those usable to represent the object, to which it occurs in close relation to another; the way spaces influence human behaviour, one of which is learning. There is a contiguous relationship between an indexical sign and its referent. Indexical signs can also, by virtue of their relationship, point to another thing. There is the example of 'the smoke' being an index of 'fire' and 'dark cloud' an index of the likelihood of rainfall (Fan et al., 2023; Luan et al., 2023).

This study seeks to identify buildings and architectural elements that reflect cultural iconic, lexical, and symbolic significance. It also examines their socio-physical characteristics while drawing on Yoruba architectural lexicons, distinct linguistic tools that reveal the artistic and symbolic meanings embedded in these forms. The goal is to trace their original conceptual foundations and enhance their contemporary relevance and appreciation.

2.0 Methodology

The study adopts an "archaeological method" not in the conventional sense of excavation, but as a tool for re-evaluating culturally familiar spaces that have become conceptually neglected through overfamiliarity. This involves intentionally articulating the overlooked aspects of indigenous forms, reading them with fresh eyes to uncover new social and educational values embedded in architecture.

To achieve this, the research opted to elaborate on the generic over the specific to find the extraordinary in the ordinary. Taking a more than cursory look at objects and functions as if for the first time, decidedly to envisage fresh possibilities in communal values, to start with what is known, and find new ways to express this within and through the objects. This entails reconfiguring familiar, archetypical products that are regarded as "mature typologies" and defined as objects with a generally agreed-upon consensus on basic form and application (Lenart-Gansiniec, 2022). The study is further structured on Elleh's triple heritage concept for African architecture history, which highlights the Indigenous, Islamic, and Western, respectively, of which sadly, the indigenous is the most relegated. This is against the backdrop of the Nigerian situation, having suffered from colonialism, religious strife, and a cultural inferiority complex. Within this framework, Yoruba traditional spatial vocabulary becomes a key analytical tool. The Mutual Contextual Belief (MCB) principle, as used by Aremu (2013), was adopted in the use of Yoruba traditional building terms (Adeyemo 2019) to interpret these spatial lexicons, enabling a culturally specific understanding of how meaning is both designed and perceived.

Field data is drawn from case studies of historical buildings in Southwest Nigeria, including palace architecture in Old Oyo, the Olorunsogo House in Ijebu-Ode, and early Western-influenced buildings like the First and Second Storey Buildings in Badagry and Ota. These sites are analysed for their semiotic properties, spatial configurations, and sociocultural functions, particularly their roles in traditional and modern education.

3.0   Findings and discussions

The research reveals that traditional Yoruba architecture embeds a semiotic framework of learning, particularly through spatial typologies that blend functionality, social structure, and cultural symbolism. These spaces, though often informal, served as early educational platforms long before formal classroom models were introduced. Their enduring relevance provides a counterpoint to homogenised, Western-inspired learning environments. The communal and open landscape living nature of indigenous Africans' settlements has made their learning spaces and informal methods a precursor of contemporary home schools. These include such open or semi-opened and covered Yoruba forecourt spaces, as *ojude* (forecourt)*, aterigbawole* (entrance porch or veranda)*,* as seen in Figure 1 and Plate 1, typically used as gathering places for male elders and apprentices; these transitional spaces symbolised mentorship and community discourse. Their contemporary counterparts—verandas and balconies—retain some of their communal and observational roles. The *oruwa* (a central large family hall, connected from the entrance sometimes a veranda through a narrower corridor) has sleeping rooms from the sides opening into it, as recorded in Figure 2. This typology encouraged intergenerational exchange, fostering storytelling, rites of passage, and cooperative learning.

There is the *agbala* (courtyard) as seen in Plate 2, more particularly (the impluvium courtyard), which was referred to as *akodi* (family meeting place) in one of the case studies. The a*kodi* were also found as small independent family meeting buildings, usually in the centre of the extended family compound. These were spaces where knowledge, cultural values, and practical or vocational chores were passed down across the generational line. Internal furnishing helped achieve adaptability and functionality that allowed them to be used for various activities like meetings, cooking, lounging, pet rearing, entertainment, and relaxation (Adeyemo et al., 2022; Adedokun, 2014; Adeokun, 2013).

discoement, social interaction, and behaviour, Regardless of prior symbolic knowledge.
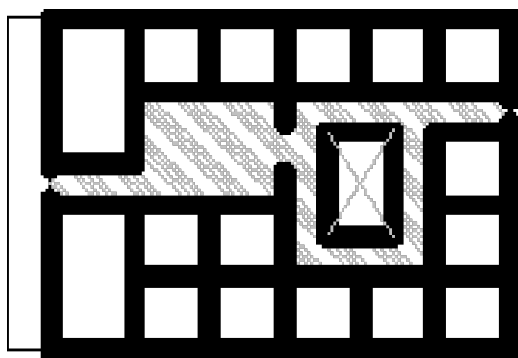

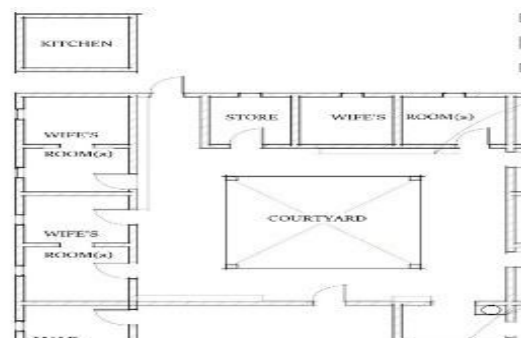Figure 1*: Sketch showing the oruwa and agbala corridor house type*

Figure 2*: A sketch of a typical floor plan design*

Plate 1: Showing the aterigbawole (entrance porch).
Source: Author's fieldwork

Plate 2: *Showing the agbala (courtyard)*

Source: Author's fieldwork

3.1   The Old Oyo Palace

There has been, from the past, an illustration of the interesting indigenous roof-scape of the *aafin* (palace) of *Oyo*, which traditionally had characteristic projected porches as front verandas, high pyramidal steeples called *"aberes"* or *"kobi"*. The Old *Oyo* palace roof gables *(Kobi)* illustrated in Plate 3, as adopted from Abiola (2015), and their continuity and reuse in the present *Oyo* palace frontage with royal gables *(Kobi)*, Pyramidal roofs over the forecourt as shown in Plate 4, with the latter alluding to the former. The prominent *kòbí* gables acted as both iconic royal signifiers and indexical cues, drawing attention to entrances and ceremonial spaces. This is the communal version of the *Ojude* (forecourt), as now even elaborately represented in the annual Ojude-Oba festival and grand pavilion in Ijebu-Ode. Spatial forms like pyramidal gables *(kòbí)* at the Oyo palace signal the iconic value of continuity, visually echoing ancestral designs and forms.

Plate 3: People in front of Old *Oyo* palace with royal gables *(Kobi)*. Source: Abiola 2015

Plate 4: Present *Oyo* palace frontage with royal gables *(Kobi)*, Pyramidal roofs.

Source: Author's fieldwork

3.2   Olorunsogo House (Balogun Kuku House, Ijebu-Ode)

The Olorunsogo House is the first brick private residence in Ijebu Ode, Southwest Nigeria, constructed between 1897 and 1900. The house was designed by the Portuguese architectural firm Arc. Balthazar Reis & Co. remains a significant architectural landmark in the region. The features of this structure are also a semblance of the palace as seen in Plates 3 and 4. The *agbala* flows into the *ojude*, suggesting a continuity of communal learning. The adjacent mosque exemplifies the Islamic heritage's pedagogical role, mirroring the Christian missionary function of the First and Second Storey Buildings as seen in figure 3 and plate 5.

Beyond its architectural significance, the house symbolized the prosperity and modernization of the region, a shift from the original in the old palaces by the materials used for construction, but the cultural part in the communal spaces was preserved, which served as a venue for political gatherings, community meetings, and Islamic religious activities.
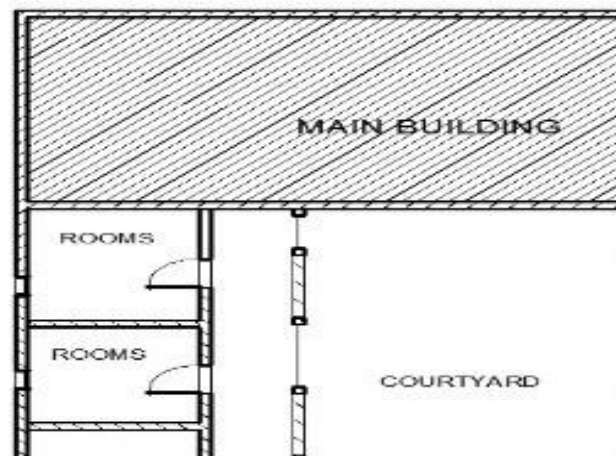
Figure 3: Floor plan of the courtyard section of Olorunsogo house.

Source: Author's fieldwork

Plate 5: Front elevation of the Olorunsogo house**.**

Source: Author's fieldwork

Plate 6: Adjoining Mosque for Islamic rote learning.

Source: Author's fieldwork

Dominant Islamic heritage influence is seen in the adjoining house Mosque in plate 6, which.

Apart from the family compound, the forecourt serves as an Islamic learning space, inculcating.

Learning.

In the residential context, the introduction of formal learning spaces began with Christian missionaries through the construction of the first and second-storey buildings. Structures like the Olorunsogo House exemplify colonial hybridity while also representing a shift towards modernisation and religious coexistence. The adjoining mosque, as shown in Plate 6, further affirms the role of the space as a hub for community-based learning, all while preserving the symbolic essence of traditional Yoruba architectural design.

3.3   Western Heritage Influences (1st and 2nd residential storey buildings)

As the first and second storey buildings of Western heritage, these colonial-era structures introduced formal interior spaces for reading and writing. However, the adaptation of porches and large rooms for communal learning demonstrates the blending of Western architectural function with local traditions.

Figure 4: Sketch of the second-storey building in Nigerian social patterns.
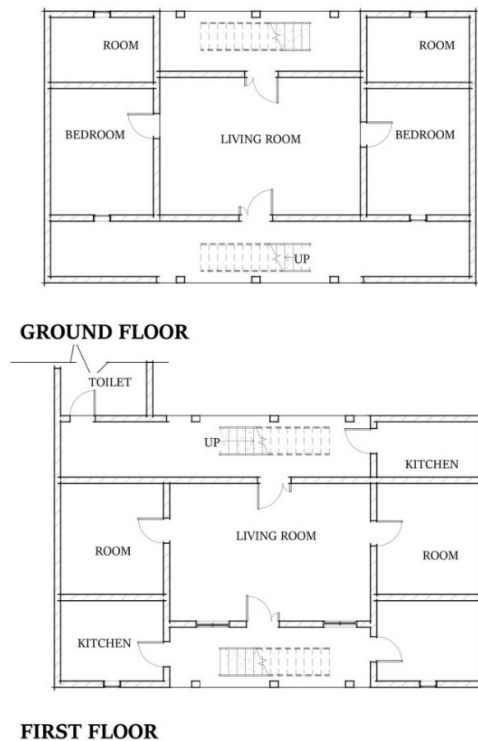
Source: Author's sketch

There were changes in the functions of the houses' spaces, such as reading, writing, and learning. Spaces such as balconies evolved to be used for learning, bigger rooms whose interior furniture became partly a writing table and chairs.

Plate 7: First-storey building in Nigeria.

Source: nigeriareposit.nln.gov.ng

Plate 8: Second-storey building in Nigeria.

Source: Author's field work

Bishop Ajayi Crowther was said to have symbolically done the Yoruba alphabet and the Bible. translations in the 1st and 2nd storey buildings, respectively. Formal education and classrooms as learning spaces started therefrom. This suggests a conceptual lineage from the *Akodi* to the classroom, from the *Aterigbawole* to the school corridor. Each holds an interpretive key to how communities teach, learn, and remember. These findings support the argument that learning spaces evolve while retaining semiotic DNA from their cultural origins. The symbolic reinterpretation of space, such as the transformation of gendered courtyards into modern-day balconies or verandas, shows both resilience and adaptability.

4.0 Recommendations and Conclusion

This study has illuminated the depth of meaning embedded within traditional African learning spaces, particularly within Yoruba architecture, through the lens of semiotics. These spaces, such as Ojude, Aterigbawole, Oruwa, Agbala, Akodi, and others, served not only functional needs but also reinforced social structure, intergenerational learning, and cultural identity. Their semiotic significance lies in their ability to communicate values, guide behaviours, and foster collective memory.

As the tide of urbanisation and modernisation continues, the symbolic DNA of these indigenous forms risks erasure through the uncritical adoption of foreign architectural templates. Yet, these traditional spatial typologies offer valuable insights for designing culturally grounded, resilient, and inclusive educational environments.

In light of the findings, the following recommendations are proposed:

i. **Reintegrating Indigenous Spatial Concepts into Design Education:** Architectural curricula should actively include the study of local spatial typologies as a core part of design thinking. This approach would promote cultural literacy and foster a greater understanding of the semiotic richness of indigenous architecture among future professionals.

ii. **Policy Frameworks to Promote Cultural Continuity:** Policymakers should support planning regulations and building codes that encourage the adaptation and reinterpretation of culturally significant forms. This includes incentivising designs that integrate indigenous typologies into public institutions, especially educational facilities.

iii. **Community-Centred Architectural Practice:** Architects should prioritise participatory design approaches that engage local communities, drawing on their collective memory and lived experiences. This would help ensure that learning spaces remain socially relevant and symbolically resonant.

iv. **Preservation and Adaptive Reuse of Heritage Structures:** Historical buildings with significant semiotic value, such as the Old Oyo Palace and Olorunsogo House, should be preserved and adaptively reused as active learning environments. These structures can serve as physical archives that continue to teach through their form and function.

v. **Development of Cultural Lexicons in Spatial Design:** The use of indigenous linguistic tools, like Yoruba architectural terminologies, should be encouraged in architectural discourse and design documentation. This linguistic grounding reinforces cultural identity and ensures continuity in spatial meaning.

vi. **Promotion of Interdisciplinary Research:** Further studies should bridge architecture, anthropology, linguistics, and education to deepen understanding of space as a communicative medium. This will help articulate new, context-sensitive models of learning environments that transcend the limitations of imported systems.

4.1   Conclusion

Architecture in African contexts is not merely a matter of shelter or aesthetics; it is a vessel of memory, pedagogy, and identity. Learning, in traditional Yoruba settings, unfolded organically within symbolically charged spaces that nurtured not just the intellect but also communal values and belonging.

Rather than erasing these cultural scripts, contemporary design must read and rewrite them with clarity and respect. The enduring relevance of semiotically significant forms, like the kobi, akodi, and ojude, demonstrates that African spatial heritage is not obsolete but offers timeless lessons for building inclusive, meaningful learning environments. As stewards of space, architects and planners must listen to what these forms still whisper: that learning begins not only with content but also with context, and that every built form is a potential classroom when it speaks the language of its people.

Referrences

Adedokun, A. (2014). Incorporating Traditional Architecture into Modern Architecture: Case Study of Yoruba Traditional Architecture. *British Journal of Humanities and Social Sciences, 1*, 30-45.

Adeokun, C. O. (2013). The Orowa House: A Typology of Traditional Yoruba Architecture in Ile-Ife, Nigeria. *West Africa Building Environment Research* (p. ?). Accra, Ghana: WABER.

Adeyemo, A. (2020). The Awotiku House: A3/ Archives of African Architecture and the Aga

Adeyemo, A. A., Ezema, I. C., Adeyemi, E. A., & Obaleye, O. J. (2022, September). A Semiotic Perspective of the House Concept in Yoruba Architecture. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1054, No. 1, p. 012016). IOP Publishing. https://doi.org/10.1088/1755-1315/1054/1/012016

Adeyemo, A., Hassan, Y.O., & Awotungase, S. (2019). Yoruba Language; Semiotics and Meaning in the Southwest Nigeria Built Environment. YSAN national *conference of Egbe Onimo Yoruba Naijiria (Yoruba Studies Association of Nigeria) in conjunction with the Department of Linguistics and Nigerian Languages*. Proceedings of the 10th Conference of Olabisi Onabanjo   University (pp.34). Ago-Iwoye, Ogun State, Nigeria

Aremu, M. A. (2015). Proverbs as cultural semiotics in Soyinka's Death and the King's Horseman. The Journal of Pan African Studies, 8(5), 115-125.

Askar, R., Bragança, L., & Gervásio, H. (2021). Adaptability of buildings: a critical review on the concept evolution. *Applied sciences*, *11*(10), 4483. https://doi.org/10.3390/APP11104483

Campbell, C., Lacković, N., & Olteanu, A. (2021). A "strong" approach to sustainability literacy: Embodied ecology and media. *Philosophies*, *6*(1), 14. https://doi.org/10.3390/PHILOSOPHIES6010014

Cascone, F., Faiella, D., Tomei, V., & Mele, E. (2021). Stress lines inspired structural patterns for tall buildings. *Engineering Structures*, 229, 111546. https://doi.org/10.1016/j.engstruct.2020.111546.

Chen, D., Ding, Y., Wu, H., Jia, Q., Zeng, H., Wei, L., Hua, C., Liu, J., & Song, A. (2025). Visually Impaired People Learning Virtual Textures Through Multimodal Feedback Combining Vibrotactile and Voice. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 33, 453-465. https://doi.org/10.1109/TNSRE.2025.3528048.

Dare-Abel, O. A., Obaleye, A. J., Oyesode, A. S., & Adeyemo, A. (2018). Art, Culture, Architecture and Urbanization Convergence: Case of Two Centers. *Caleb International Journal of Development Studies*, *2*(1), 1-11. http//www.researchgate.net/332563175

Elimam, A., & Chilton, P. (2017). The paradoxical hybridity of words. *Language and Cognition*, 10, 208 - 233. https://doi.org/10.1017/langcog.2017.20.

Fadda, S. (2021). The refiguring of Ancient Rome in Fascist Italy's national imagination. *Nations and Nationalism*, *27*(3), 721-733. https://doi.org/10.1111/nana.12651

Fan, C., Luan, D., Bu, R., Sheng, Z., Wang, F., & Huang, X. (2023). Can heavy rainfall affect the burning and smoke spreading characteristics of fire in tunnels? *International Journal of Heat and Mass Transfer*, *207*, 123972. https://doi.org/10.1016/j.ijheatmasstransfer.2023.123972

Guirguis, M., Dewidar, K., Kamel, S., & Iscandar, M. (2020). Categorisation of symbolism in religious architecture: a case study of the Coptic Orthodox church architecture. *Alexandria Engineering Journal*, 59, 533-545. https://doi.org/10.1016/j.aej.2020.01.031.

Huang, J., & Zhou, H. J. (2020, June). Analysis of the application of architectural semiotics in design. In *IOP Conference Series: Earth and Environmental Science* (Vol. 510, No. 5, p. 052023). IOP Publishing. https://doi.org/10.1088/1755-1315/510/5/052023

Khan Documentation Centre, MIT. *http://libraries.mit.edu/akdc/a3-archnet-prize-for-writing-about-african-architecture/*

Kuku, O. (2024). Olorunsogo: The Timeless Masterpiece of Ijebu-Ode. Balogun Kuku – Balogn Kuku Foundation

Luan, D., Bu, R., Sheng, Z., Fan, C., & Huang, X. (2023). Experimental study on the impact of asymmetric heavy rainfall on the smoke spread and stratification dynamics in tunnel fires. *Tunnelling and Underground Space Technology*, *134*, 104992. https://doi.org/10.1016/j.tust.2023.104992

Osasona, C. (2016). *Vernacularizing Nigeria's Contemporary Residential Architecture: You Can Eat Your Cake and Have It.* Ile-Ife: Inaugural Lecture Series 228; Obafemi Awolowo University, Ile-Ife.

Pane, I. F., Fachrudin, H. T., Fibriasari, H., & Lubis, A. S. (2020, April). Architecture as a communication system with semiotic theory (case study: Tjong A Fie's house). In *IOP Conference Series: Earth and Environmental Science* (Vol. 452, No. 1, p. 012013). IOP Publishing. https://doi.org/10.1088/1755-1315/452/1/012013.

Saidi, U. (2018). Heritage Semiotics and Innovations; Architectural Space; Object Designs, Meanings and Implications in Sustainable Developments. *Routledge Taylor and Francis Group) (Social Semiotics 2018*. doi:http://doi.org/10.1080/10350330.2018.1443584

Steiner, R. (2018). Does Pierce's semiotic model, based on index, icon, and symbol, have anything to do with psychoanalysis? 1. In *Language, Symbolization, and Psychosis* (pp. 219-272). Routledge. https://doi.org/10.4324/9780429476570-14

Uluğ, E. (2020). An investigation into the connotations of iconic buildings by using a semiotic model of architecture. *Social Semiotics*, 32, 279 - 300. https://doi.org/10.1080/10350330.2020.1756590.

Lenart-Gansiniec, R. (2022). Towards a typology development of crowdsourcing in science. *Journal of Information Science*, 50, 1345 - 1367. https://doi.org/10.1177/01655515221118045.