

## TYPOLOGICAL ANALYSIS OF STUDENTS' RESIDENCES

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### Abstract

*This paper describes the typological characteristics of students' residences in Nigerian Universities. It asserts that this approach is useful because it provides insight into the architect's thought processes, design culture and because it provides a typological dimension to the evaluation of buildings-in-use. Based on the concept of type as an abstraction and a logical principle guiding design, a morphological approach to typological analysis was conducted using twenty selected halls of residence in Nigeria. The results of the analysis revealed the general characteristics and five typologies of halls of residence. The analysis showed that students' residential facilities could be aptly described as low-rise structures comprising corridor-accessed bedrooms organized hierarchically around service cores. The five typologies, which emerged, gave insight to the design culture of the architects by revealing the elements, which they manipulated in the design of these facilities. Finally the paper discussed the importance of examining typological characteristics of these residences.*

### Key words

Students' housing, typology, architecture, design, evaluation.

### Introduction

The study of architecture has often been confronted with a number of problems. One of the most important of these is the problem of understanding, describing and classifying buildings. Understanding the characteristics of buildings is important because buildings constitute points of historical reference as well as the context for training future architects. Understanding the differences between the architecture of buildings which serve different functions may not be so difficult. The problem comes when trying to understand and describe the architecture of buildings which serve the same functions. It is often said that it is easier to describe an object by what it is not than by what it is. Many questions need to be answered when trying to understand the architecture of a group of buildings, which serve the same functions. What are the spatial elements which constitute the class of buildings? What relationships do these elements have with each other? What are the common characteristics of this class of buildings? Are the elements manipulated differently by different architects to define different typologies? If so, which

typologies are defined and what are the characteristics of these typologies? Do these typologies bear regional and cultural marks? Understanding the design of buildings is therefore not so simple. The basic principles, which underlie design, have to be identified. To do this, buildings have to be analyzed and then classified using tools of description and concepts which are relevant and appropriate. Analyzing buildings is the primary way of gaining an understanding of buildings. Hence this paper focuses on the analysis of a class of buildings. Analysis allows us to understand not only the buildings, but also the way architects think and how they design. In addition, it helps to clearly identify and recognize the regional and cultural influences, if any, in the design of buildings.

This paper examines the characteristics of students' residences through a typological analysis. A typological analysis in this context is considered worthwhile because while the characteristics of these residences have been examined in the western and developed worlds, there is very little or no study about them in Africa and especially Nigeria, even though the university is a universal idea. Furthermore, students' residences constitute an important form of residential accommodation for most university students in Nigeria. They are important because in each institution, they form a significant proportion of the built environment and constitute one of the largest capital investments. Although they are not being designed and constructed at a pace that matches the high demand, it is most probable that in the near future private and probably foreign entrepreneurs should build more of these facilities. Hence, a typological analysis is

worthwhile because it would provide a wealth of understanding about the architecture of the existing residences, which would become historical precedents and springboards for the design of students' residences in the future.

Buildings have been analyzed and categorized from various perspectives. These perspectives have depended on the purposes the analyses were expected to serve. The most common and widely used basis for analyzing and classifying buildings is the *functions* that the buildings serve. Pervsner, who in his book, 'A History of Building Types' classified and described buildings on the basis of functions such as schools, churches and offices (Pervsner, 1976), is a good example of this category. Since then, it has become common to classify buildings according to the functions they serve. Pervsner's classifications are also sometimes referred to as *building classes* (Demiri, 1983:131). This is the functionalist approach. It is the more prevalent notion of type used by architectural historians who classify buildings according to historical periods or to their social functions. However, this approach has its limitations. The major limitation is that it is unable to account for or explain why specific functions are housed in very different kinds of buildings in different societies (Lawrence, 1987).

The most accepted basis by architectural theorists for analyzing, classifying and describing buildings is the notion of "typology" as defined by Quatremere de Quincy. They conceived typology as a valid theory of form and defined it as an abstract, basic, generic, indivisible principle of form. It is considered a very useful analytical approach because it reveals the generic characteristics of the 'type'. This paper

adopts Quatremere's notion of typology as the basis for analyzing and describing students' residences in Nigeria.

### The Notion of Typology in Architecture

The main aim of treatises on typology has been to find the conceptual basis by which buildings can be described and categorized into types. The first notable treatise on the notion of typology was that of a French theorist, Quatremere de Quincy (Vilder, 1997). His concept of typology is based on the fact that all existing forms have antecedents and that it is possible to find and explain their common generic sources. He describes the 'type' as a suggestive and generative interpretation of form, which cannot be reconstructed thereby making a distinction between 'type' and 'model'. The 'type', by this definition suggests a principle, which cannot be further reduced. He also noted that the 'type' is rooted in culture and in history. For these theorists, typology is about the formal and spatial characteristics of buildings. Other attributes of typology are that it is the result of a long tradition, it is subject to change, it is culturally specific and it is not a model to be copied (Demiri, 1983). Typology has been used either as a basis for analyzing buildings and cities (analytical typology) or as a basis for designing buildings (generative typology) (Leupen et al., 1997:134). Based on this explanation, Golgonen and Laisney (1982) asserted that "type" is an abstract object created by the one who undertakes the activity and that it is characterized by a class of objects with similar peculiarities. In the same vein, Petruccioli (1996:11) stated that,

*"The birth of a type is conditioned by the fact*

*that a series of buildings share an obvious functional and formal analogy among themselves. In the process of comparing or selectively superimposing individual forms for the determination of the type, the identifying characteristics of specific buildings is eliminated and only the common elements remain which then appear in the whole series. Type is depicted as a scheme deduced through a process of distillation from a group of formal variants to a basic form or common scheme".*  
- Petruccioli (1996:11)

This notion of type has commonly been interpreted for the purposes of analysis and classification in architecture especially of the spatial and morphological characteristics of buildings. This is the typo-morphological approach (Petruccioli, 1996). The morphological approach usually adopts a process of deducing the "type" referred to as the reductionist process (Bandini, 1983). It is an approach in which the basic and common morphological characteristics are distilled from a group of characteristics. It is a process of eliminating the specific qualities and retaining all other elements that make up the unity of the series (Leupen et al., 1997:138; Argan, 1958). This process may yield a typological diagram called the type, which suggests the basic design principles of the group of buildings as well as the basic heuristics used by the architects in designing. What this produces is the 'generic type' for the class of buildings in question. However, in addition to this, the different typologies within the class also need to be identified in order to fully comprehend and describe the building class. Hence, a second level of typological analysis which involves categorizing the buildings within the same

class on the basis of their differences usually needs to be performed. It should be noted that each of the emerging typologies would subsume in itself the generic type. It is this two-level morphological approach to typological analysis that this paper adopts in examining the characteristics and the types of students' residences in Nigeria.

### Typological Analysis of Students' Residences

Twenty halls of residence, most of which were the oldest in the country were selected from the population of formally designed students' residences in Southwestern Nigeria. This sample represented about 70% and 90% of the total population of formally designed halls of residence in Nigeria and in the Southwestern region of the country respectively. The geographical restriction of the population of halls of residence to Southwestern Nigeria was due to the fact that most of the facilities were concentrated in this region. With the exception of about 5 halls of residences, all the halls were designed by Nigerian architectural firms and were constructed between 1958 and 1990.

The data used in this study were the architectural drawings of all the selected residences. The plans and the sections were the main drawings used because they were the most basic architectural devices that could reveal the morphology of the buildings and also provide the framework of how architects' ideas were formed and organized. The drawings were analyzed by graphically reducing them to their most basic elements, which were: the bedrooms, the circulation, the services, the facilities and the organizational themes.

This typological analysis was preceded by a detailed analysis of the morphological characteristics of all the buildings. The characteristics examined were purely spatial and morphological. They were related to the organization and form of the basic spatial elements which were constituted in halls of residences, namely in the bedrooms, circulation and services and facilities. They did not include any socio-physical, symbolic or external aspects of the halls of residence. This was because most of these had been altered and modified from the original intentions of the designer whereas the spatial, organization and formal qualities have remained unchanged. The typological analysis, which followed was conducted at two levels. The first involved eliminating the specific qualities of all the buildings and identifying their common morphological characteristics. This yielded the generic type. The second analysis involved identifying the major morphological characteristics which differentiated the buildings and using these as the bases for categorization into typologies.

### The Generic Type of Students Residences

An examination of the twenty halls of residence revealed the peculiar characteristics which defined the generic type of these buildings. The main characteristics are as follows.

#### 1. Low-Rise Structures

All the residences were low-rise structures. None of them exceeded four floors. With the exception of three halls, which had four floors and two halls which were two floors, the remaining fifteen halls had three floors only.

## 2. Corridor Accessed Bedrooms

All the residences were characterized by a series of rooms accessed from the corridors. This form of access was a strong characteristic of these residences because it was pervasive, distinct.

## 3. The Service Core

Another characteristic worth noting is the service core. The service core comprised the vertical accesses, the kitchen and the sanitary facilities, all designed as a unit. The service core was a consistent characteristic of these halls although its location, size and form varied.

## 4. Hierarchies of Spatial Organization

Hierarchies of spatial organization were identified in each of the halls of residences. These were the floor, the block and the hall. Specific facilities were shared at each of these levels. The bedroom was the first level of spatial composition because it comprised a number of bed spaces. The floor, which comprised the bedroom, the service core and the corridor access, was the second level of spatial composition. The floors were organized into blocks and the blocks defined the whole hall. The blocks and the hall represented the third and the final levels of spatial organization.

These characteristics distinguished students' residences as a distinct buildings class and they provided an understanding of the architecture of students' residences in Nigeria. The results of this analysis show that these residences comprise three distinct spatial elements namely the bedroom, the corridor access and the service core. These elements were found on every floor. They also had a form of socio-spatial organization, which was hierarchical

and structures which were low-rise. No diagram is used to depict this generic type because it may be easily misinterpreted.

Indeed, the students' residences in Nigeria differ from those in Europe and the United States in a number of ways. First of all, the dormitories in many universities in western countries are not usually low-rise structures. In addition the *suite-type plans* or the *house-type plans* are more common in Europe and North America and this is significantly different from the corridor accessed bedrooms found in this study (Gaskie, 1982; Sweetland, 1992; Amole, 1997). Furthermore, the staircase or the central lift which is a strong characteristic in western dormitories does not appear so significant here because it is infused in the service core. However, there are also similarities. The hierarchical form of spatial organization appears to be a common characteristic between the halls in this study and those in western contexts.

The generic type of the halls of residences in this study suggest that for the architects who designed these facilities, the problem of design was best solved using low-rise structures, service cores, corridor accesses and hierarchical organizations. It is possible that these solutions were the best responses to the technological, regional and cultural context in which the architects operated. Indeed, evidence suggests that it was a low level of technological development as well as the advocacy for appropriate technology (during the period when these facilities were being constructed) influenced the decision to build low-rise structures (Fry & Drew, 1964:25; Stagno, 2001). Furthermore, it is also probable that the *corridor accessed* form was in response to the

tropical conditions of the region (Fry & Drew, 1964). More important, however, is that these characteristics have become part of the spatial repertoire that architects and students would use in the process of designing students' residences.

### Typologies of Students' Residences

The second typological analysis conducted revealed some striking differences in the morphological characteristics of the halls of residence. These differences formed the basis of the criteria for division into typologies. These differences were:

*(i) The length of the corridor (or horizontal access).* Lengths of the horizontal access were characterized as short or long. Short-corridor hall types were defined as those which had about five bedrooms, or less between service cores while long-corridor hall types were those with about ten bedrooms or more between the service cores.

*(ii) The form of the service core.* The service core, which was a common design feature on each floor, is the combined unit of sanitary facilities, kitchenette, laundry and oftentimes, vertical accesses. Three forms of service cores were identified. These were, the single and end located service core; the single and centrally located service core; and the decentralized form of service core (more than 2 service cores evenly distributed along the floor).

*(iii) The loading on the horizontal access.* This characteristic distinguished the halls of

residence as either single or double loaded horizontal accesses implying that the horizontal access had bedrooms on either one side only or on both sides.

*(iv) Overall spatial structure.* The previous two characteristics captured the floor level of the building. The following characteristics differentiated the halls of residence.

(a) The plan form of each block: The formal structure of the single building was completely linear, partially enclosed or completely enclosed.

(b) Overall formal organization: This characteristic defined the spatial composition of the buildings in the hall with respect to the links between them. The residences were either a series of structures linked at ground level only or structures linked at all floor levels forming complete entities.

Five typologies were identified based on all the above criteria. These are shown in Figure 1 (typology A), Figure 2 (typology B), Figure 3 (typology C), Figure 4 (typology D), and Figure 5 (typology E). Examples of these typologies are presented in Figure 6, Figure 7, Figure 8, Figure 9, Figure 10, Figure 11, Figure 12, Figure 13, Figure 14 and Figure 15 respectively. What these typologies revealed were the different ways in which architects manipulated the basic elements of these halls of residences. They indicated that what was being manipulated was the generic type because it appeared that the architects defined or interpreted the elements of the generic type in different ways.



Figure 1: Type A

- long horizontal access
- end located main access
- single loading on corridor
- hall comprises a series of
- separate linear structures linked at ground level only

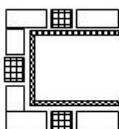


Figure 2: Type B

- short horizontal access
- two or more vertical accesses located intermittently along the floor
- single loading on horizontal access
- linear structures linked together at all levels to form a single and partially enclosed structure.

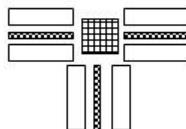


Figure 3: Type C

- short horizontal access
- centrally loaded main access
- double loading on horizontal access
- hall comprises separate linear structures linked at ground level only

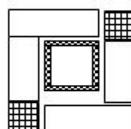


Figure 4: Type D

- short horizontal corridor
- centrally located main vertical access
- single loading on horizontal access
- hall comprises a series of fully enclosed courtyard structures linked at ground level only

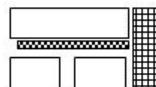


Figure 5: Type E

- long horizontal access
- single main end located vertical access
- partial double loading on horizontal access

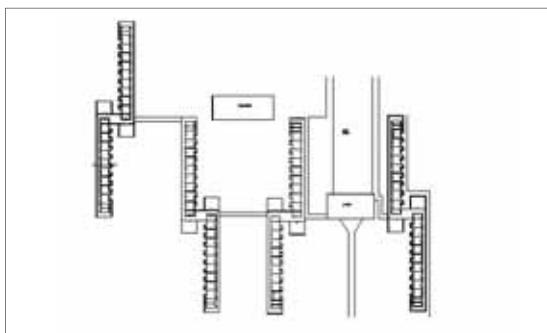


Figure 6: Plan of Moremi hall, Obafemi Awolowo University, Ile-Ife. (Typology A)

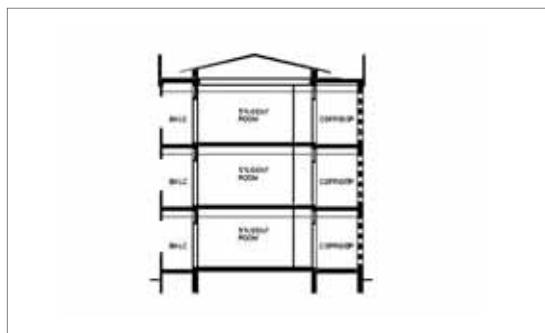


Figure 7: Section of Moremi hall, Obafemi Awolowo University, Ile-Ife. (Typology A)

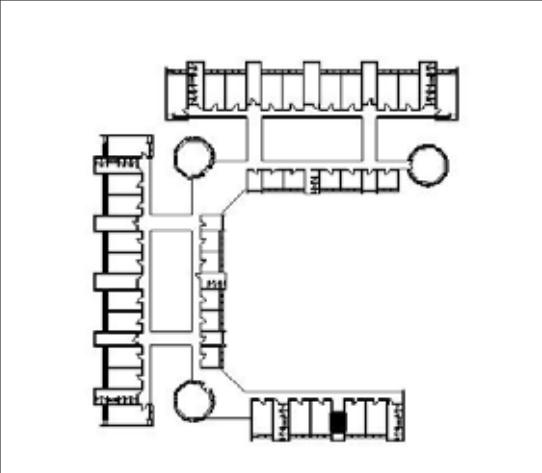


Figure 8: Plan of Moremi hall, University of Lagos. (Typology B)



Figure 9: Section of Moremi hall, University of Lagos. (Typology B)

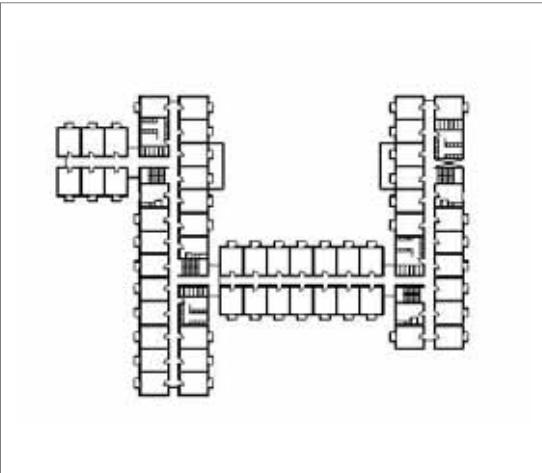


Figure 10: Plan of New halls, University of Lagos. (Typology C)

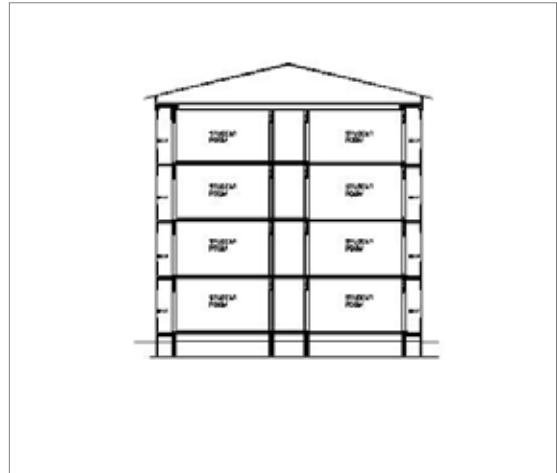


Figure 11: Section of New halls, University of Lagos. (Typology C)

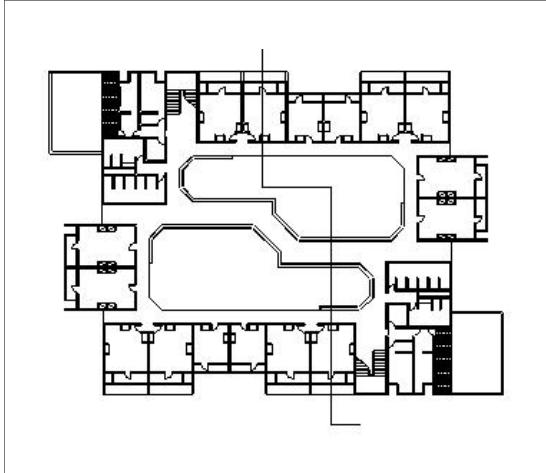


Figure 12: Plan of Male Hall, University of Ilorin. (Typology D)



Figure 13: Section of Male Hall, University of Ilorin. (Typology D)

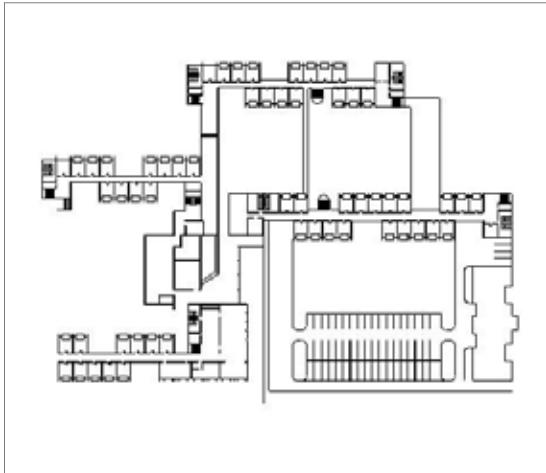


Figure 14: Plan of Idia hall, University of Ibadan. (Typology E)

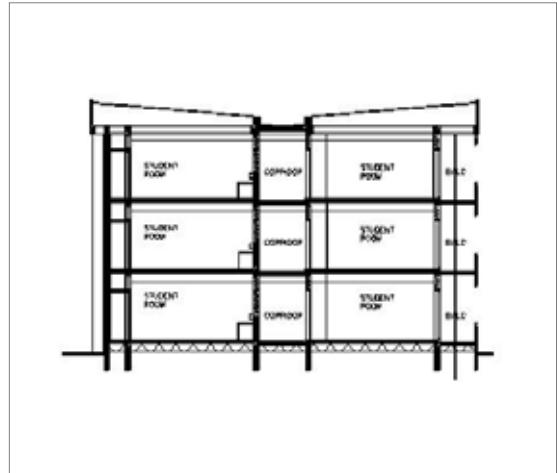


Figure 15: Section of Idia hall, University of Ibadan. (Typology E)

An instructive finding which emerged from this typological analysis was that each typology of halls of residence appeared to have created different social group sizes. In other words, these typologies seemed to have had implicit consequences for social organizations. While some created small group sizes for living, others had large groups of students having to interact together. Hence, the relationship between architecture and social experience is actually made very clear by this typological analysis.

The analysis also showed that the primary spatial elements by which different social units were defined was the service core. This finding is quite instructive for designers and evaluators of students' residences because it means that the service cores are important elements in defining group living sizes in halls of residence.

The emergence of different typologies of residence from this analysis suggested that as Colquhoun (1967) asserted, there is an area of free choice in the mental process of design and that a number of factors influence the choices that the architect makes at this point. These factors, he stated, may be the historical precedents before him or the aim to attribute specific meanings or an intention to influence behavior. In this situation, since the historical precedents confronting the architects were limited (because most of the facilities used in this study were the earliest in the country), it is probable that the architects in the process of design expressed divergent intentions in manipulating form. One of these intentions is most probably that they were each making a statement of the 'right' social size for students' living.

The results of the analysis further showed that majority (60%) of the halls of residences were typology A. In addition, most of the older residences were also typology A (Fig. 16). Two explanations may be proffered for this result. The first is that since many of the earliest residences were in this category, they became historical precedents and strong influences for the design of many of the later facilities. The other plausible explanation is that the prevalence of this type in the initial years might have arisen from the programs presented to architects at the briefing stage. These programs might have implicitly limited the design options to this typology.

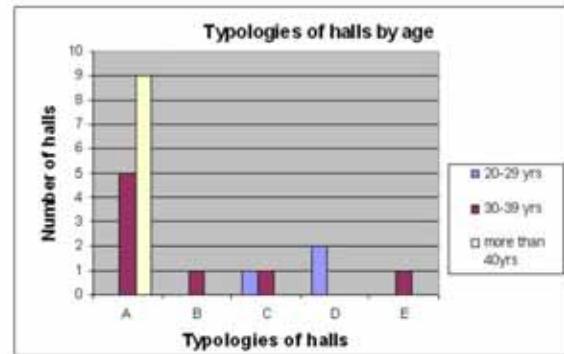


Figure 16: Typology of Hall by Age

## Conclusion

In this paper, an attempt has been made to understand the architecture of students' residences in Nigerian universities through a typological analysis. Indeed, the buildings have some characteristics which define them as a type. They appear to be responding to contextual demands made on them. It is possible to describe the architecture of these

buildings as low-rise structures characterized by service cores, corridor accesses and hierarchies of spatial organization. This study has also shown the significance and usefulness of the idea of type in architecture. The paper showed that the typologies of students' residences should be abstracted to enhance our understanding of the architecture of these facilities. The typological characteristics used in defining the types represent the features that architects manipulate during the design process. Five types were identified. The results of these manipulations are redolent of what is usually described as "architect's intentions." These intentions are rarely made explicit but the results of the analysis showed that the architects' intentions were to suggest, through design, what they thought were appropriate social unit sizes. A typological analysis is therefore a useful technique for understanding architects' intentions and thus the design process.

Finally, each of the types of halls identified in the analysis conducted in this study also represents a form of index useful in the evaluations of building-in-use. This implies that instead of evaluating students' residences along their singular morphological characteristics, the type would be a more reliable and useful criterion more closely associated with "architects' intentions". Certainly, users would respond differently to the types, probably not only because of their implicit social consequences but also for other reasons. It is possible to identify the most preferred type. Hence, a typological analysis represents a link between evaluation and architecture culture. Quite often, little or no use is made of research findings in evaluation studies because architects find it difficult to

relate research findings to those issues that they often manipulate in design. However, typological analyses represent a useful link in this context.

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