

Qualitative, historical, spatial, stylistic, and social assessment of heritage buildings in Arequipa for Cultural Heritage teaching in Schools of Architecture

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Abstract

The old town of Arequipa - Peru was declared a World Heritage Site by UNESCO in 2000. The architectural style of the buildings in the city of Arequipa has evolved, adapting to the prevailing architectural trends over time, and to the constant earthquakes that have marked the pattern of its transformation through history. Some of the main identified styles are Andean baroque, neo-colonial, historicist, modernist, and postmodernist. This project proposes a qualitative, historical, spatial, and stylistic analysis of the buildings built in the city according to academic criteria and the collective memory of the inhabitants of Arequipa. The applied method consists of a stage-by-stage evaluation of the main representative buildings in the city using mapping and matrix tabulations from graphic documentation, in situ surveys, academic criteria according to the categories of antiquity, historicity, instrumentality and artistic value. In addition, the study aims to reflect the point of view of the buildings' inhabitants, whilst becoming a useful tool for them. It will result in the development of a catalog of relevant buildings that will help to understand their representativeness in society.

Keywords: Teaching, catalog, Arequipa, Heritage, local memory.

1. Introduction

The city of Arequipa is the second most important in the Republic of Peru. It is characterized by its Historic Center declared World Cultural Heritage by UNESCO in the year 2000. The city rises at the foot of the Andean Mountain range, adjoining three volcanoes, of which the closest and most representative is El Misti (5,825 m.a.s.l.). This proximity of the volcanic mountain range, added to the subduction of tectonic plates along the Peruvian

coast, has caused the city to be cyclically subjected to the occurrence of strong earthquakes, leading to successive reconstructions of the old town buildings since its Spanish foundation in 1540 until the mid-twentieth century, a situation that has conditioned and characterized the evolution of the construction processes of its historic buildings (Gutiérrez, 1992). (Fig.1)

These processes are distinguished by the use of white and pinkish ignimbrite stone (volcanic

material known locally as *sillar* -ashlar-) in robust walls, arches and vaults, resulting in a type of architecture that represents the integrated response of the native workforce with European construction techniques and stylistic characteristics (Huamán, 2018).

The emergence of such a particular architecture was one of the main criteria that determined the declaration of the Historic Center as a World Heritage Site, a fact that had a considerable impact on urban development and heritage protection policies in the central area promoting a series of actions aimed at its conservation which have involved the entire society, including the academic sector.

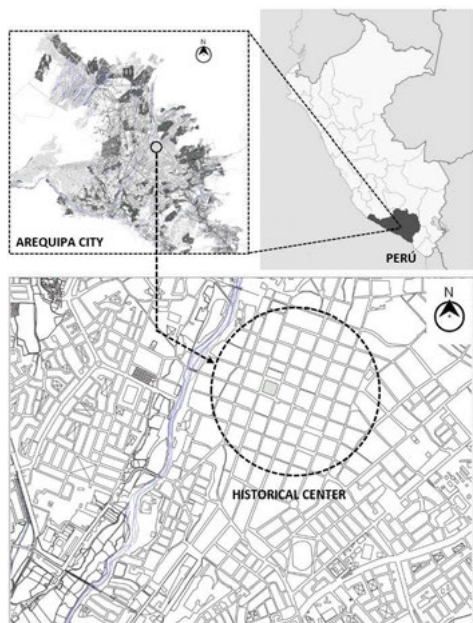


Fig. 1. Arequipa location

In general, heritage protection policies must be constantly reviewed from an academic field point of view, aiming to promote a debate that incorporates both technological aspects and empirical values (Quiroz, E. 1991), reflecting on what attitudes are harmful to monuments. In historical centers such as Arequipa, the protection of blocks declared heritage must be reconciled with their habitability conditions.

However, current policies are not adapted to the real context and are restrictive and outdated, leading to illegal alterations of heritage buildings. Likewise, it is symptomatic that many of the applied solutions consist of emptying and keeping the buildings in an unaltered state, omitting the adaptation to the new paradigms of urban living.

This research seeks to develop a reference document through a parametric methodology for the study of buildings, which will serve as an instrument for analysis and assessment of heritage for Schools of Architecture in Arequipa, through which it is possible to participate in the debate on the relevance of public policies for the protection of heritage. The analysis methodology is based on multivariable indicators, which include technological, academic and housing aspects. It is in the latter where a comprehensive view of the traits that qualify the building is obtained, as well as the level of balance based on the indicators and variables studied.

2. Reference studies

In methodological development, the opinions expressed by Colin Lankshear and Michele Knobel, referring to the verification of interpretations in qualitative research, have been taken into consideration (Lankshear C., Knobel M., 2000). They address the issue of validity as a criterion for effective research and try to show that the findings of the studies are true and justified, in the sense that they have been supported by evidence. Moreover, the broader purpose of qualitative research to study people, events, etc., in their real-life context, automatically precludes considerations such as "external validity" or "reliability" due to the unique and unrepeatable nature of such studies. Rather, "good" research from this angle focuses on verifying the findings of a given study for credibility and plausibility, rather than attempting to apply quantitative research concepts and practices to qualitative research assumptions and practices. The results of this verification largely depend on the validity of the arguments developed in the research report.

An architectural space is an arrangement that each individual makes to build and inhabit. Understanding the architectural and existential space requires "abstracting objects" (schemas, rules, categories, representations, etc.) in the minds of its own inhabitants, but it also implies determining when a methodological framework should be established to take these objects into account (Fuentes Farias, 2012). The spatial approach consists of the study of spatiality from the understanding of space itself "in situ" or from massive data capture techniques such as photogrammetry or laser scanning. The characteristics of this research make it impossible to compare volumes, so the study is chosen based on the "in situ" experience.

For the historical study of the buildings, we shall take the methodological proposal of historical study on built heritage by Jorge Rolando García Perdigón (2015) in which he proposes to divide the process into 4 parts: definition of the object, knowledge of the state of information on the object of study, process of chronological organization and preparation of the report.

Due to the lack of knowledge concerning the construction of certain buildings, stylistic affinity is used, depending on the case. Insight into the styles and direct observation allow to detect the different stylistic categories of the buildings (Rodríguez et al., 2005).

3. Methodology

This methodology includes the approach of Garcia Perdigón, being also based on the principles of analysis of Aloïs Riegl in "The modern cult of monuments: its character and origin", which are aesthetic, instrumental, age and historical values (Riegl, 2017).

3.1 Study Variables explanation

(i) compiling the representative buildings of the main architectural currents developed in the city according to the list of buildings declared as national heritage.

(ii) Establish the main variables that qualify the buildings studied; these must contemplate the technological, academic, and habitability aspects.

(iii) Design and apply a questionnaire sheet to evaluate existing heritage buildings.

(iv) Develop analysis graphs by building, evidencing the level of balance between variables.

3.2 Developed questionnaire

The developed questionnaire sheet is divided into eight sections: A- Degree of originality, B- Degree of Originality in space, form and construction, C- Use/Disuse, D- structural deficiencies, E- Aesthetic deficiencies, F- conservation deficiencies of the material, G- index of living conditions and H- academic criteria. (Fig.2)

A- For the Degree of originality, two classification criteria were used: if the building is unique in its type and if it is the only one standing in architectural criteria.

B- For the Degree of Originality in space, form and construction there were three classification levels. The first classification is for those that preserve their original elements, the second classification is for those buildings that have had their elements modified for reasons of adaptation to their use, and the third classification is for those buildings that have had their elements altered.

C- For the evaluation of the Use/Disuse, the current uses were taken into consideration in relation to the uses that originated the building, with the highest evaluation being those that maintain their use to the detriment of those that have seen their use altered.

D- Structural deficiencies refer to the limit states of buildings. It classifies the study of buildings themselves as being in perfect condition, if they have lost their performance due to degradation, or if they are in ruins.

E- Aesthetic deficiencies refer to pathologies that do not physically or chemically affect the material, in this case dealing with differential washes or environmental dirt.

F- The material conservation deficiencies according to the type of origin of the pathology can be chemical, physical or mechanical, referring to the vulnerability of the materials that is the manifestation of the pathological origin (Monjó Carrió, 2014)

A.- GRADO DE ORIGINALIDAD								
Úni. const. en su tipo								
Único en pie								
B.- G.DE ORIGINALIDAD ESPACIO, FORMA Y CONSTRUCCIÓN.								
Mantiene Estilo, Original								
Estado Alterado Parcial								
Estado Alterado								
C.- USO/DESUSO								
religio milit Educ Civic Reside								
Uso tradicional								
Uso actual								
Sin uso								
D.- DEF. ESTRUCTURA								
Alt. estructura								
Tip. de la est.								
Estado estr.								
E.-DEFICIENCIAS ESTÉTICAS								
INTERIC Sala 1	Sala 2	Sala 3	Sala 4	Sala 5	Sala 6	Sala 7	Sala 8	Sala 9
% det. estado								
EXTERIK Fach 1	Fach 2	Fach 3	Fach 4	Fach 5	Fach 6	Fach 7	Fach 8	Fach 9
% det. estado								
F.- DEFICIENCIAS DE CONSERVACIÓN DEL MATERIAL								
1 tipo estado								
2 tipo estado								
3 tipo estado								
4 tipo estado								
G. Índice de condiciones de Habitar								
Dimensiones		Índices parciales			Valoración			
Disponibilidad de un espacio de público		Índice de personas por ambiente (área)			0 a 25 %			
					25 a 50 %			
					50 a 75 %			
Seguridad y uso		Índice de incidencias delictivas			0 a 25 %			
					25 a 50 %			
					50 a 75 %			
Impacto social		Índice de representatividad social del edificio en función al uso (frecuencia de uso)			0 a 25 %			
					25 a 50 %			
					50 a 75 %			
Valor de reversibilidad a la sociedad		Índice de reversibilidad de usos del edificio a la sociedad			0 a 25 %			
					25 a 50 %			
					50 a 75 %			
Confort del edificio		Comodidad y condiciones de estancia			0 a 25 %			
					25 a 50 %			
					50 a 75 %			
		1. Acceso a servicios 2. Iluminación 3. Ventilación			75 a 100 %			
H. Criterios académicos								

Fig. 2. Study survey

G- The living conditions index section allows the current use conditions of the buildings studied to be measured and validated based on five dimensions of living: (i) the availability of

public space considering accessibility and number of people; (ii) the level of security of the building based on its location in the urban area and the crime rate; (iii) the social and representative impact that the buildings have for the population; (iv) the reversibility value of the building to society, that is, its current usefulness; (v) the comfort of the building, observing the conditions of stay, access to basic services, lighting and ventilation. This section will be put into percentages that will later be translated into numerical values between 1 and 4 to be added to the total sum of the card.

H- The academic criteria focuses on the evaluation of values, we have those of antiquity, historical, instrumental and aesthetic. The value of antiquity consists of the value of the signs of the passage of time. The historical value has to do with knowledge, with the representation of a stage. The instrumental value has to do with the value given to the needs of its use and the aesthetic value has to do with whether it satisfies the aesthetic canons of the style it represents.

The questionnaire sheets were applied in situ, with the collaboration of members of civil society, architecture students and teachers who are members of the team.

The preliminary results gave total scores and by type of variable, these preliminary values are then weighted according to percentages.

4. Study objects

The first lists of buildings to study were based on buildings declared as national cultural heritage by the city council in the area that is part of the UNESCO declaration. The architectural styles studied are: Andean Baroque (XVII-XVIII centuries), Neoclassical (early XIX century), Neo-Renaissance (late XIX century), Neo-Gothic (early XX century), Neo-Colonial (early XX century), Eclectic (early XX century) and Modern style (mid XX century).

(i) Andean Baroque (XVII-XVIII centuries). In Andean Baroque architecture, its main characteristic is the union of the Spanish ideological and technical contribution with the workforce and the interpretation of the Andean man for the construction of civil, religious, and public buildings, in which the ornamentation on the covers of said buildings stands out with pre-Columbian motifs, of Renaissance descent of American flora and fauna as well as Christian symbols.

(ii) Neoclassical (early XIX century). Neoclassical architecture responds to an academic vision, based on compositional principles of proportions and aesthetics, devoid of ornamentation. It uses pilasters attached to the great ashlar walls to impose a rhythm, as well as entablatures to finish off the buildings.

(iii) Neo-Renaissance (late XIX century). The Neo-Renaissance style in Arequipa was introduced in 1881 and incorporates characteristic elements of the Renaissance such as curved lintels, cornices, keystones, and corbels. It also brings with it the addition of second floors on neoclassical buildings. The most characteristic building is the train station.

(iv) Neo-Gothic (early XX century). Neo-Gothic architecture in Arequipa developed at the beginning of the 20th century and stands out for the use of carved stone in the decoration of its buildings, mainly of a religious nature, its details reflected in elongated windows, spires and towers.

(v) Neo-Colonial (early XX century). The neocolonial style in Arequipa uses colonial historical elements of Andean Baroque architecture. The construction systems and structural solutions respond to the times, such as the use of reinforced concrete or ashlar veneer.

(vi) Eclectic (early XX century). The eclectic style fuses different styles that lose their essence until becoming undefined, it also

brings with it the change of materials since concrete begins to be used. It uses styles from the past in an eccentric way, it takes Eastern and Nordic criteria; basically, it does not have a clear base.

(vii) Modern (mid XX century). Modern architecture in Arequipa developed mainly in the mid-20th century and is characterized by its rationalist character, where buildings with compositions generally based on simple lines, planes and volumes stand out, combining discrete colors with exposed concrete, stained glass windows and curtain walls.

The variables applied to the study are obtained from the criteria applied in the analysis and assessment of heritage buildings in the city's Schools of Architecture that concurrently appeal to the historical character and to a lesser extent to the technological character.

In addition, variables linked to the current inhabitation of the buildings are inserted, emphasizing the criteria of comfort, use, representativeness, among others, to identify the presence of these buildings in the local collective memory.

5. Results

After applying the evaluation to more than 300 buildings, the following results were obtained:

With respect to the study parameter on living conditions, 13% of the buildings are in very bad living conditions, 21% are in poor conditions, 26% are in fair conditions, 23% are in good conditions and 17% are in very good conditions (Table 1).

Regarding the material conservation study parameter, 1% of the buildings are in ruins, 1% are in very poor condition, 20% are in fair condition, 50% are in good condition and 28% are in excellent condition (Table 2).

Regarding the use/disuse parameter, 24% of the buildings are in their original use and 76% are in a modified use (Table 3).

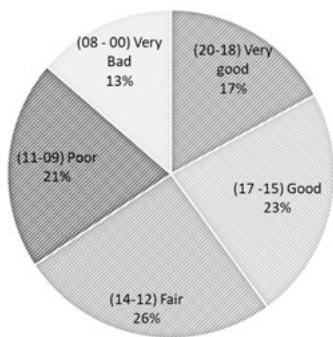


Table 1. Index of living conditions

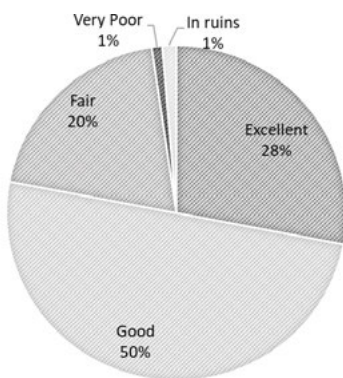


Table 2. Material conservation

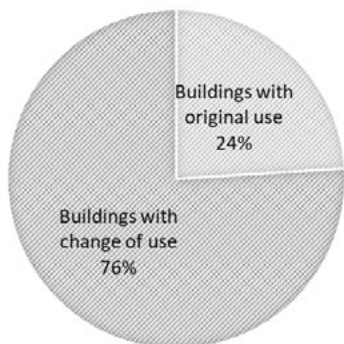


Table 3. Use/ Disuse parameter

Of the 300 buildings analyzed, the buildings with a score equal or higher than 50 points were selected, corresponding to 114 buildings, which are 38% of all the buildings analyzed (Table 4).

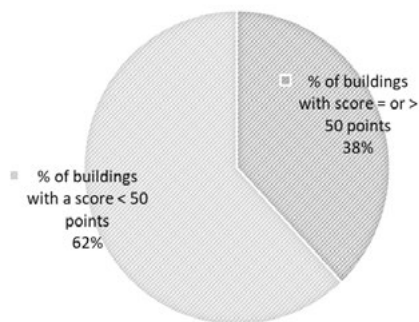


Table 4. Percentage of buildings according to the score obtained

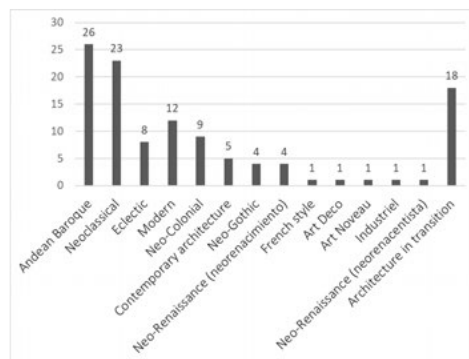


Table 5a. Number of buildings of each style

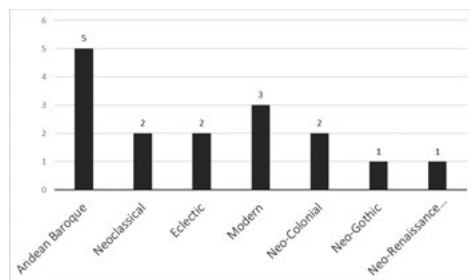


Table 5b. More relevant styles analyzed

Based on the results of the application of the study sheet to more than 300 buildings in the city of Arequipa, we obtain 16 representative buildings of all styles (Table 5 a-b).

The buildings belonging to the Andean Baroque style are Chiguata Church, Yrriberry Mansion, San Francisco Church, Cloisters of Society of Jesus and Old Santa Catalina water mill (Molino Blanco). The buildings belonging to the Neo-Classical style are the Cathedral of Arequipa and the Andean Sanctuaries Museum UCSM. The building belonging to the Neo-Renaissance style is the house-museum José Villalobos, a late 19th century house. The building belonging to the Neo-Gothic style is the Archbishop's Palace. The buildings belonging to the Neo-Colonial style are the Municipal Theater and the former Tourists Hotel. The buildings belonging to the Eclectic style are those belonging to the English neighborhood.



Fig. 3. Images of the buildings that exemplify the styles studied: (a) Andean Baroque (Tristán del Pozo mansion), (b) Neoclassical (Cathedral of Arequipa), (c) Neo-Renaissance (house from late 19th), (d) Neo-Gothic (Archbishop's Palace), (e) Neo-Colonial (Municipal Theater) (f) Eclectic (Museum of Contemporary Art), (g) Modern (housing building El virrey)

The buildings belonging to the Modern style are the Courthouse, the Chapel of the Handmaids of the Sacred Heart of Jesus and housing building El Virrey (Fig.3).

All of them mostly belong to the UNESCO declaration area, meaning this area as one of the most emblematic of the city of Arequipa (Fig.4).

It is necessary to point out that, although the architectural styles were identified according to the common stylistic elements of European origin, their own regional characteristics were found in them as a result of adaptation to the context.

6. Conclusions

In conclusion, the style of the buildings is not a mere copy of all the styles that came from Europe, one can see the adaptations that took place on the construction systems, materials, and knowledge of the area in order to shape the architecture of Arequipa.

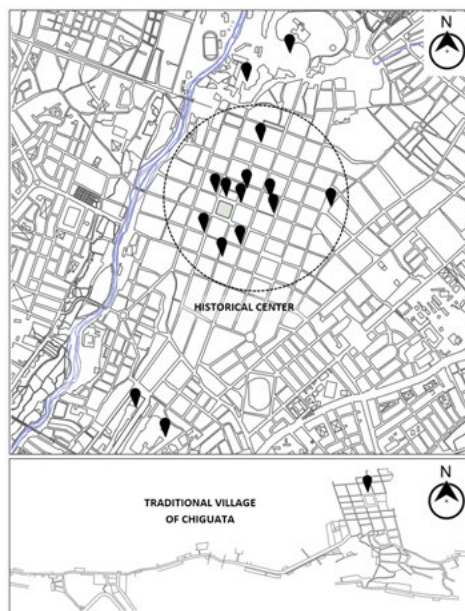


Fig. 4. Location plan (selected buildings marked)

The applied method allows a comprehensive assessment that did not occur before in Arequipa's heritage architecture. It involves the inhabitant within social parameters. From the method used, the representativeness of the architectural fact studied in society can be found.

This study seeks to generate an impact on teaching, specifically in the educational understanding of society; it seeks to contribute to the understanding of the concept of heritage and its relationship with current habitat paradigms.

Finally, the study concludes that the current heritage policies are not taking into account what is related to living as a criterion. This is evidenced in the results referring to the change of use of the analyzed buildings, as shown in table number 3.

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