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MANUELINE STYLE BUILDINGS; TECHNOLOGICAL AND SYMBOLIC CHARACTERISTICS

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INTRODUCTION

Historical Background

The contemporary world was built in the framework of a highly demanding expertise of knowledge. Such demand may lower the importance of the study and the understanding of a building that has been conceptualised and built five centuries ago.

Although expert knowledge leads to excellence in its field, it may diminish the synthesis' views that are necessary to achieve an overall knowledge, which is of prime importance, when one needs to discover and understand the monumental characteristics of a particular background era of a building, of a country and also of mankind. A general overview shows that the breaking up of common knowledge into scientific disciplines (engineering), arts and architecture, and operational technicians (building and construction) leads, in many cases, to derogatory remarks, excessive zeal and over independence (detachment) from all those involved in these expertise fields. This situation, which has no parallel at the end of the Middle Ages in Portugal, meant that the thought and the knowledge of those that conceptualised buildings in the Middle Ages, relied on the synthesis of the three disciplines referred above.

The country's religious background until the Age of Discoveries

Portugal is an ancient country that was erected from a mixture of peoples, separated and distant from the power of Rome.

Under Celtic Pagan culture, Lusitanian and Roman, later came with three structural religious cults, Jewish from the Fenicians and the Greeks, Christianity under Roman rule and as main religion after the re-conquest, and Islam from the 7th until the 12th century.

As Portugal is a 'Finisterre', it later embraced some heterodox religious orders, such as, the Order of the Temple after it had been condemned by Rome.

This Religious order was welcomed by king D. Diniz and named The Order of Christ, also the Joachimite Franciscan spirituality that spread the message of the Fifth Empire or of the Holy Spirit were welcomed.

Taking into account such a context, we propose a comparative analysis of different places of worship: synagogue, Mosque and Gothic Cathedral with Manueline Church, by identifying the differences and common aspects, as far as, symbolic space structure as to express a religious idea is concerned.

Main Scholastics studies and the influence of Aristotelianism in the Portuguese Society

THE BUILDER, THE ARCHITECT AND THE ENGINEER

To draw a profile

To try to draw the profile of the builder, architect and engineer that gathers the biographical features on Diogo Boytac and, at the same time, with his contemporaries Mateus Fernandes, his father-in-law, André Pires os Arrudas, os Castilhos, os Torralvas.

The development of Rules and Analysis Methods

The architect's and engineer's development of mathematical structural analyses, technical and industrial, took place in the beginning of the 18th century (in France) and in the remaining countries on the second half of 19th century, according to Pfammatter (2000) and Ferguson (1992). Until then, the difference between what we nowadays refer to as Architecture and Engineering was faint. As far as, Cultural Heritage was concerned it was clear that the two were not separate disciplines. Troyes and Milan's



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cathedrals are excellent examples of this, where the initial design suffered many changes in structure and proportion during their construction, Coldstream (1900). Based on these, we will discuss the rules used by medieval builders along with the initial theoretical grounds from the Renaissance, Leonardo da Vinci and Simon Stevinus.

Masonry and Static Methods

To study graphic statics, developed in the 19th century and still in use nowadays, is a clear objective. In order to achieve such understanding, a review of the basic structural principles will be carried out (action and reaction principles, balance, materials and flexibility/stiffness).

Later these concepts will be applied to the masonry, structure, frame walls, ribbed vaults of the case study.

Building technology (Equipment, Transport and Building Method)

A building structure uses wood and carpentry for the foundations, stakes for scaffolding, elevation towers, floors and carts. To be able to imagine all the necessary preparations and developments of the works, by evaluating the use of levers and rollers, ruler and triangle, besides other tools used in the works on wood or stone. The number of workers and their skills.

THE MANUELINE STYLE AND ITS SYMBOLIC CHARACTERISTICS IN ARCHITECTURE

Manueline Style

This style occurs during the reign of king D. João the second and D. Manuel. At the end of the 16th century, during the reign of D. João the third, it was no longer in use. Although the ceiling of the Main Chapels of the Manuelines churches is considered to be built on a gothic structure, known as late gothic, such understanding diminishes its true architectural importance and lowers its particular character.

The Symbolic and Functional Influence

The Manueline space is of common knowledge, that what one achieves in the domain of space and shapes is somehow entailed from elsewhere. Nevertheless, the

way it is entailed has a close relationship to the cultural and social context of its geographical location and how its people express themselves. This is also demonstrated in the Portuguese language.

Space Isotropy - When taking into account the balance of the three space directions, not very high, low, long, short, wide and narrow, which refers to the overlapping of the three space directions, known as the standpoint, as the individual. Paulo Pereira e Sílvia Leite.

THE CHURCH OF 'CONVENTO DE JESUS' IN SETÚBAL: CONSTRUCTION AND STABILITY

Taking this church as an example for this case study, to analyze its different stages in structural design, problems found in connecting its different spaces, metrics, building site, materials used and working procedures, in order to evaluate the convent's stability during construction and through the centuries.

THE CHURCH OF 'CONVENTO DE JESUS' IN SETÚBAL: ARCHITECTURE AND SYMBOLISM

This church is considered to be the first example of the Manueline style by Boytac. Nowadays, it is also looked at as the outline sketch for the 'Mosteiro dos Jerónimos' (Monastery of Jerónimos). This study will look at the early beginnings of this style, and will identify the authenticity and concerns of those that were involved in its design.

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