Chapter 15

Geometry, Shape, and Typological Adaptation of Lighthouses Within the Italian Environment

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ABSTRACT

The chapter starts from the analysis of several buildings designed as lighthouses for the Italian network or adapted to host lights from existing heritage. The graphic study of shapes, internal staircases, and also architecture creates an important reference for morphogenesis studies. The chapter presents the evolution that lighthouses have undergone during the centuries in order to assume geometrical layouts; while the outward appearance of the tower has always been designed according to their visibility during the day hours, shape and construction’s technology evolved through geometrical forms which would resist to the conditions of exposure and to critical state of the site. The interior staircase represents the living core starting from stone design and cutting, according to the stereotomic design. The chapter presents a parallel of cases, highlighting geometric principles, shapes, and solutions according to architectural typology.

INTRODUCTION

The chapter analyzes the typology of several buildings designed as lighthouses for the Italian network or adapted to host lights from existing heritage. The graphic study of shapes, internal staircases and also architecture creates an important reference for morphogenesis studies. The chapter presents the evolution that lighthouses have undergone during the centuries in order to assume their effective geometrical layouts; while the outward appearance of the tower has always been designed according to their visibility during the day hours, shape and construction’s technology evolved through geometrical forms which would resist to the conditions of exposure and to critical state of the site. The interior staircase
represents the living core starting from stone design and cutting, according to stereotomic design. The chapter presents a parallel of cases, highlighting geometric principles, shapes, and solutions according to architectural and building typology.

BACKGROUND

Lighthouses are most popular architectures designed according to technical and functional issues for navigation, orientation and safety of sea travelers. They are the result of a long and slow process of adaptation to natural site and diverse weather and landscape conditions taking advantage of local materials and exposure; their typological character combines construction technologies, proportions among their parts, details and lighting requirements. Their construction deals with weight and lightness, with gravity and combination of several stresses and forces which inform their geometry and shape.

Lucien Steil in the *Metaphysical archaology of lighthouses or a phenomenology of lighthouses* argues that:

*they are not simply built into the landscape but the landscape exists because of them... They are catalysts of their context: they invent the patterns of their immediate and larger environment, and in the same time they result from the inspirational sources of the genius loci.* (Steil, 2005, 26)

Free standing architectures designed to be operated both during day that night: by day appear clearly in their entire silhouette and engage attention through their solidity, color texture, domination and strength. They mark a strong presence to preserve landscape and built environment, witnesses of the challenge of the man on the nature; by night architecture loses its material appearance and yields the step to the light, an intermittent, escaping, contrasted bundle.

Modern navigation technology advances have largely rendered obsolete the functional retrofitting of lighthouses in Italy but their extraordinary typological and symbolical connotations resume highly valuable potentials to justify their analysis.

Lighthouses are built obviously in appropriate and significant locations, on coastal heights, islands, rocks and eventually right into the sea onto artificial islands. They guide, warn, mark, alert, lighten and highlight dangerous areas, complex obstacles and entrances to harbors, city ports and shallow estuaries, etc. their expressed purpose is to carry light in the most remarkable and visible manner so that even distant ships can be warned or guided, and that even, throughout the darkest nights, through the most opaque and starless universe, heavy storms and fogs, the lighthouse’s warm and familiar signals can be perceived. (Steil, 2005, 32)

THE GENESIS OF THE ITALIAN NETWORK AND THE EVOLUTION OF ARCHITECTURAL TYPES

The analysis of the ancient iconographic sources allows to highlight the evolution that lighthouses undergone during the centuries in order to assume geometrical configurations or to adopt technological solutions which made them more resisting to wind, sea, and above all, time actions. While the outward appearance of the towers has always been conditioned by the improvement of their visibility during the
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