

## Bio-Inspired Design Approach Analysis: A Case Study of Antoni Gaudi and Santiago Calatrava

**Authors :** Marzieh Imani

**Abstract :** Antoni Gaudi and Santiago Calatrava have reputation for designing bio-inspired creative and technical buildings. Even though they have followed different independent approaches towards design, the source of bio-inspiration seems to be common. Taking a closer look at their projects reveals that Calatrava has been influenced by Gaudi in terms of interpreting nature and applying natural principles into the design process. This research firstly discusses the dialogue between Biomimicry and architecture. This review also explores human/nature discourse during the history by focusing on how nature revealed itself to the fine arts. This is explained by introducing naturalism and romantic style in architecture as the outcome of designers' inclination towards nature. Reviewing the literature, theoretical background and practical illustration of nature have been included. The most dominant practical aspects of imitating nature are form and function. Nature has been reflected in architectural science resulted in shaping different architectural styles such as organic, green, sustainable, bionic, and biomorphic. By defining a set of common aspects of Gaudi and Calatrava's design approach and by considering biomimetic design categories (organism, ecosystem, and behaviour as the main division and form, function, process, material, and construction as subdivisions), Gaudi's and Calatrava's project have been analysed. This analysis explores if their design approaches are equivalent or different. Based on this analysis, Gaudi's architecture can be recognised as biomorphic while Calatrava's projects are literally biomimetic. Referring to these architects, this review suggests a new set of principles by which a bio-inspired project can be determined either biomorphic or biomimetic.

**Keywords :** biomimicry, Calatrava, Gaudi, nature

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