



## An Analysis of the Development of Architecture in a Dry, Hot Climate Using Building Circularity as a Metric of Sustainability

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### Abstract

The present article has examined both the advantages and disadvantages of the architectural development process because the construction industry today has shifted to extensive natural resource consumption in response to the increase in world population. This has caused a shortage of resources and, as a result, increased construction debris. The findings showed that the evolution of architecture reduced energy usage by 78% when compared to the prior architecture. Thus, based on the Life Cycle Assessment, the diminishing availability of virgin resources and resulting rise in environmental consequences like Global Warming Potential (GWP) have been quantified (LCA). The environmental impact of new materials has been shown to be five times greater than that of old ones due to the architecture trend.

**Keywords:** Building; Modern architecture; Development

### Introduction

The complex relationship between people and locations in notions of place has been investigated and theorised by a variety of academic fields. According to one interpretation, this relationship is the result of a process in which the body, the object, and its surroundings, the things, have been interacting continuously over time. The result is a collection of feelings about places as a result of how the built environment affects human impressions and senses inside of it. Some environments foster a sense of comfort, security, assurance, and tranquilly by offering a positive meaning based on pleasurable experiences. Others have nasty and unfavourable implications that make people furious, afraid, and worried, etc. It could be challenging to link all of these feelings to certain characteristics of a place, though. Realizing that there is a lot of ethnic diversity in architecture. [1, 2].

### Materials and Method

#### Peripheral style

New constructions must be compatible with their surroundings in order to achieve contextual design, a strategy to creating a harmonious architectural setting. It takes thought and prudence to integrate architecture with its surroundings so that it responds to a shared identity rather than personal preferences.

According to Amirshkari and Pourmand, any new design or development in a particular area needs to be related to the context. Usually, contexts are developed at various scales that fit the scope of architectural design. Examples of settings include topography, vegetation, urban conditions such as building density, street and sidewalk linkages, and types of materials used, building distances, regional geography conditions, urban traffic density, and population. Architecture must be situated in a place with historical and cultural contexts, blend the past and present, and look ahead to the future, according to Thomas and Garnham. New designs must be congruent with regional architectural trends, according to Marc Antonio [3, 4].

With the growing development and concern for the search for an identity, there is a need to revive the traditional qualities to meet the modern needs of society. The peculiarities of the architecture, in terms of spatial characters, elements used, and behavioural patterns, give a sense of place and identity to these areas. The core of the contextual design

approach is comprehending the basic essence of the built environment and responding to it appropriately. The theoretical framework for this book is provided by Lefebvre and Tzonis's study of contextualise in the twenty-first century, which is based on context theory as defined by Frampton [5, 6].

### Characteristics of residential buildings in Amman

Amman has three main characteristics that distinguish it from other cities which have greatly influenced its development over time: firstly, while Amman is a relatively recent city, the land on which it was built has a lengthy history. Secondly, the diversity of the city's population, which has been and still to be formed by numerous waves of displacement and asylum movements as a result of regional wars, as illustrated by Palestinian refugees who arrived in 1948 and 1967. Followed by the Gulf War of 1991 and the return of most Jordanian employees from Kuwait and Iraq. The Iraqi migration in 2003, and the migration of Syrian refugees in 2011, this has formed the city's identity more than any other dynamic feature. Finally, the Lack of social and urban cohesion as a result of failed planning attempts due to the city's rapid expansion. These three characteristics played a crucial role in forming the architectural identity in the city of Amman [7, 8].

### Conclusion

To develop principles and elements that would help create a harmonious setting, the contextual design approach requires a deeper understanding of the physical surroundings and an investigation of the existing architectural patterns. In an effort to begin the process of achieving spatial congruence, this research proposed a basic framework for developing designs that are appropriate for their surroundings by

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fusing procedural modelling and augmented reality. Shape grammar-based procedural modelling was used to study the architectural design of residential buildings. A methodological approach called procedural modelling serves as an analytical tool for researching existing architectural styles and creating new ones. [9, 10].

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### Potential Conflicts of Interest

The publication of this material is free of any conflicts or rival interests.

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