

# SUSTAINABLE REGIONALISM IN ARCHITECTURE: A FRAMEWORK OF PRINCIPLES AND COMPONENTS

## Abstract

The current perspective essay highlights the underpinnings of sustainable architecture and addresses the assumption that regional architecture theory has entered a new stage of its evolutionary trend. In this view, instead of being affected by globalization, the regions should, in a local-global interactive system, comply with the complicated interdependencies which are physical, social, cultural, and more importantly, ecological. This study aims to propose and categorize principles and components of a theoretical framework based on current thinking and approaches underlined by both sustainability and regionalism studies in architecture. Also, framework and thematic analysis guided the analysis stage. By employing the qualitative content analysis and based on the logic of inductive reasoning, the textual data and the architectural experiences mentioned in the study are analyzed, and by eliciting the concepts hidden inside them, we gradually could reach to the more abstract levels of sustainable regionalism, the result of which is obtaining a theoretical framework which show the interior disciplines and the frequent patterns of the regionalism as well as sustainable architecture. The best practices of contemporary architecture indicate that the current approaches to regionalism are to moderate the biased and limiting previous thoughts and empower the environmental attitude and the use of sustainable development's privileges, and brings in conclusion "Sustainable Regionalism."

## Authors

Elahe Zoghi Hosseini  
*Islamic Azad University of Mashhad*  
Mahsa Hashemi  
*Pennsylvania State University*  
Saeed Hajikazemi  
*Tarbiat Modares University*

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Sustainable regionalism, regional architecture, local culture, globalization, typology

## Introduction

In the last chapter of their book *Architecture of Regionalism in the Age of Globalization, Peaks and Valleys in the Flat World*, Lefaivre and Tzonis (2012) provide a platform to understand new trends in regionalism, as well as practical examples of projects designed worldwide. Most of these projects, which began in the years leading up to the new millennium and continue to the present, were designed and implemented after the emergence of the sustainable development movement; as like other sciences, architecture and consequently regionalism have expanded under the sustainability umbrella and have been able to attain new achievements and patterns.

Yet, most research in regional architecture focuses on the cultural and traditional aspects of regional architecture (Carlson-Reddig, 2011; Nguyen et al., 2019). Other significant research such as Haggerty (2017) and Le (2018) regarded the climatic feature and studies like Norouzi and Khademi (2021) focused on geographical and spatial dimensions. In this framework, a few recent studies have demonstrated the sustainable principles inherent in the conception and design of regional architecture (Guy & Farmer, 2000; Kohler, 2003; McMinn & Polo, 2005; Lefaivre & Tzonis, 2012; Abdelsalam & Rihan, 2013; Nolan, 2014; Hammad & Hammad, 2017; Zoghi et al., 2018). However, a coherent understanding of the principles and components that inform this regional-inspired sustainable architecture is also still lacking. Hence, the study presents a retrospect of the basic ideas of regionalism afresh, which in turn would provide insights towards the “Sustainable Regionalism” concept from a wider inclusive framework. Therefore, the parts of the article are cross-linked with each other. We discuss issues related to the emergence of the sustainability in architecture, specifying and representing the principles and components, and expand them in regionalism, which are followed by the best practices and motivating examples as guidance for future research. For this purpose, a content analysis method has been used to expand and develop our criteria and then extract the principles of “Sustainable Regionalism.”

Hence, the further application of inductive logic is accepted (Elo & Kyngas, 2008; Dayaratne, 2018). Here, the purpose of inductive logic is to help generate research findings in the form of a framework by paying attention to the dominant and objective themes in the projects mentioned by Lefaivre and Tzonis (2012) in the last chapter of their book, “Regionalism Now” or as we extend it as “Sustainable Regionalism” and also, other worthy and worldwide awards and practices.

## The Typology of Approaches Corresponding to Regionalist Architecture

Regionalism is a theory that advocates resistance to various forms of superiority, globalization, or standardized structures that reduce indigenous differences. This theory proposes methods and criteria for protection, revitalization, and reconstruction of life within the framework of the characteristics of the region (Canizaro, 2007). Regionalism in architecture represents the latest outcome of a process of modernization and can no longer be seen as a reactionary attitude (Botz-Bornstein, 2010). It reflects local characteristics related to place, culture, climate, and technology in a particular geographical area (Curtis, 1986; Mozaffari & Westbrook, 2015; Norouzi & Khademi, 2021).

Typology	Indices	Manifestations corresponding to regional architecture
Physical-Formal	Motif, form, geometry, presentation, style, rhythm, symmetry, contradiction, order, color, surface, type	Adaptation of architectural motifs and historical regeneration
		Minimizing and summarizing past architectural forms
		A kind of facade with reference to the vernacular architecture
Historical-Temporal	Authenticity, culture, beliefs, local identity, cultural heritage, historical meanings	Historical appendages on modern shells
		Revival of certain periods of the past
		Revive the cultural values of the past
Climatic	Energy, radiation environmental compatibility, local materials and resources, topography, temperature, wind, moisture	Reflection of the historical culture of the region
		Attention to the region and climatic characteristics
		Proper use of bioregional ecosystems
Technologic	Construction methods, materials, technology, climate alignment techniques, indigenous technology	Adaptation to climatic conditions
		Using materials and methods of local construction with respect to new technologies
		Using modern technology to adapt to the region's climate
Phenomenological-Semantic	The spirit of place, avoiding superficiality, special concepts of place, symbol, sign, meaning, light	Metaphorical use of indigenous technology in the form of modern technology
		Symbolic use of cultural signs
		Formation of settings and places to reproducing various social relations
Social-Cultural	Human, culture, social relations, quality of life, social behaviors, collective life, human communication	Attention to the connection between culture and life in real conditions in place
		Assigning identity to behavior and action in place, not merely appearance
		Developing activities that influence quality of life improvement
		Connection between place and human communication
		Man-environment interaction in the socio-cultural context
		Intellectual encounter to understand cultural behaviors

Table 1: Typology of Approaches Corresponding to Regional Architecture. (Source: Author.)

The kind of interpretation of the type and approach specified for regional architecture has indicated the categorization of different varieties in different ways in the studies of the scholars. The dependency of architectural regionalist to cross-linked pattern might be a criterion for categorizing them, and, finally, the typology of approaches corresponding to regional architecture. Therefore, part of the function of the patterns might be related to explaining the typology criteria of the architectural forms and spaces (Norberg-Schulz, 2000). The extent and type of commonalities resulted from complying with the common pattern is proportionate to the

scale and type of the pattern interfering with the creation of the evaluable plan. So far, various studies have been done regarding typology in architecture and have pursued different goals, and shaped their structure accordingly (Zevi, 1974; Rossi, 1982; Bandini, 1993; Memariyan & Tabarsa, 2014; Zoghi et al., 2020). Speaking of these, we categorized typology of approaches corresponding to regionalist architecture including climatic, formal, historical, temporal, spatial, cultural, and social approaches, as well as semantics described briefly in Table 1.

### **Expanding Sustainability in Regional Scale**

The new trends in regionalism architecture were raised coinciding with the sustainability paradigm. At this point it is important to indicate that this essay will not concentrate on debating and analyzing the sustainability concept, as the main concern is to discuss the sustainability trends at the scale of regional design. This trend needs to express a kind of culture for sustainability, and not merely a functionalist or technological understanding of that. Regarding this current need, Frampton's (1983) essay started a discussion about a broader discourse for regional sustainable architecture. The critical rereading of Frampton's essay, especially its fifth section Culture Versus Nature: Topography, Context, Climate, Light, and Tectonic Form, made possible a kind of discourse in the regional sustainable architecture which goes beyond the limits of traditional energy efficiency. While Frampton sees this topic as a subcategory of phenomenological concerns regarding place-making, the implicit understanding of his architecture includes a kind of sustainability appropriate to the context in different levels, which tends to be in relation to the local traditions of the regional material culture. Many of the elements described by Frampton conform to a kind of architecture that its accountability to local conditions, not only leads to more efficiency of building materials and energy, but also considers the local culture and tectonic traditions. On the one hand, it leads to being greener. And on the other hand, it sets the ground for the regional meaningful architecture.

To date, the experiences of sustainable architecture, from a scientific analysis viewpoint, have had a tendency towards the understanding of customary methods of classifying, perceiving, and evaluating how much the buildings are green (Zhou & Lowe, 2003; Halliday, 2008; Danesh et al., 2019). To challenge such dominance of quantitative evaluation, Guy and Farmer (2000) considered six competitive reasoning of the green buildings (describing the relationship between technical design strategies and ecological place making) some of which paid attention more to the qualitative aspects than quantitative ones. Among what they call idiomatically "Symbolic Logic," the topics of regional and local cultures are considered as an important aspect of sustainability: "instead of assuming a global view, a radical change in the attitudes and the symbolic reasoning about the reorientation of the values are emphasized to involve the local and environmental concerns."

This view is supported more by this belief that buildings need to remain functional to their region in order to reach real sustainability. Williamson (2003) proposes that a building might foster one or more of these fundamental logics. He presents three "caricatured images" of sustainable buildings, concentrating on the horizon of the regional architect: the natural, the cultural, and the technical. The explanation of this sustainability pattern, as a regional discourse, points to a more comprehensive foundation for the architecture which includes and expands the criteria of the existent sustainable experimental models. Such an approach tends to show that sustainability and regionalism are not two exclusive concepts, but the existence of each of them is necessary for the other (Guy & Farmer, 2000; Kohler, 2003; McMinn & Polo, 2005; Nolan, 2014). In this regard, some used local climatic and geographical conditions as a tool to enter the critical dialectic for sustainable architecture (Nolan, 2014) and others to understand the conditions of sustainability in the context of indigenous architecture (Dayaratne, 2018; Nguyen et al., 2019). A number of scholars have also emphasized on providing the practical knowledge to enable sustainable architecture in the regional scale (Abdelsalam & Rihan, 2013; Mortada, 2016).

Hammad and Hammad (2017) also pointed out that in the line with sustainability, architecture should be regionally responsive, adaptive, and resilient. They consider regional architecture as a tool to explain the alignment of current sustainable architectural experiences. This view is further supported by the notion that Paul Reitan proposed: "Successfully sustainable human societies must ... be as attuned as possible to their local and regional environments, their geo-ecological support systems; lifestyles must be adapted to the ecosystems in which societies live and which support them with cultures, practices, economic systems, and governing policies each adjusted to fit their area, not a single dominant culture or way of living spread across the globe. This would be a world of multiple, diverse societies with their numbers also adjusted to what regional geo-ecological support systems can sustain" (Reitan, 2005).

### **A Framework Towards "Sustainable Regionalism"**

By employing qualitative content analysis based on the logic of inductive reasoning, the textual data and the architectural experiences mentioned in the study are analyzed, and by eliciting the concepts hidden inside them, we gradually could reach to the more abstract levels of "Sustainable Regionalism." To do so, we need to elaborate the main sustainability principles in architecture. After summarizing the principles of sustainable architecture from the perspective of various studies (Vale & Vale, 1991; Van Der Ryn & Cowan, 1996; Hill & Bowen, 1997; McDonough, 1998; Wilhide, 2002; Zhou & Lowe, 2003; McLennan, 2004; Milosevic, 2004; Roaf et al., 2004; Sassi, 2006; Asif et al., 2007; Bradley, 2007; Edgar, 2007; Guy & Moore, 2007; Lanyi, 2007; Almansuri et al., 2008; Halliday, 2008; Akadiri et al., 2012; Sanya, 2012; Abdelsalam & Rihan, 2013; Esmaeili & Litkouhi, 2013; Bahauddin et al., 2014; Mortada, 2016; Khademi et al., 2019; Philokyprou & Michael, 2020), according to what is given in Figure 1, sustainable architecture is categorized into three main approaches of economic, environmental, and socio-cultural.

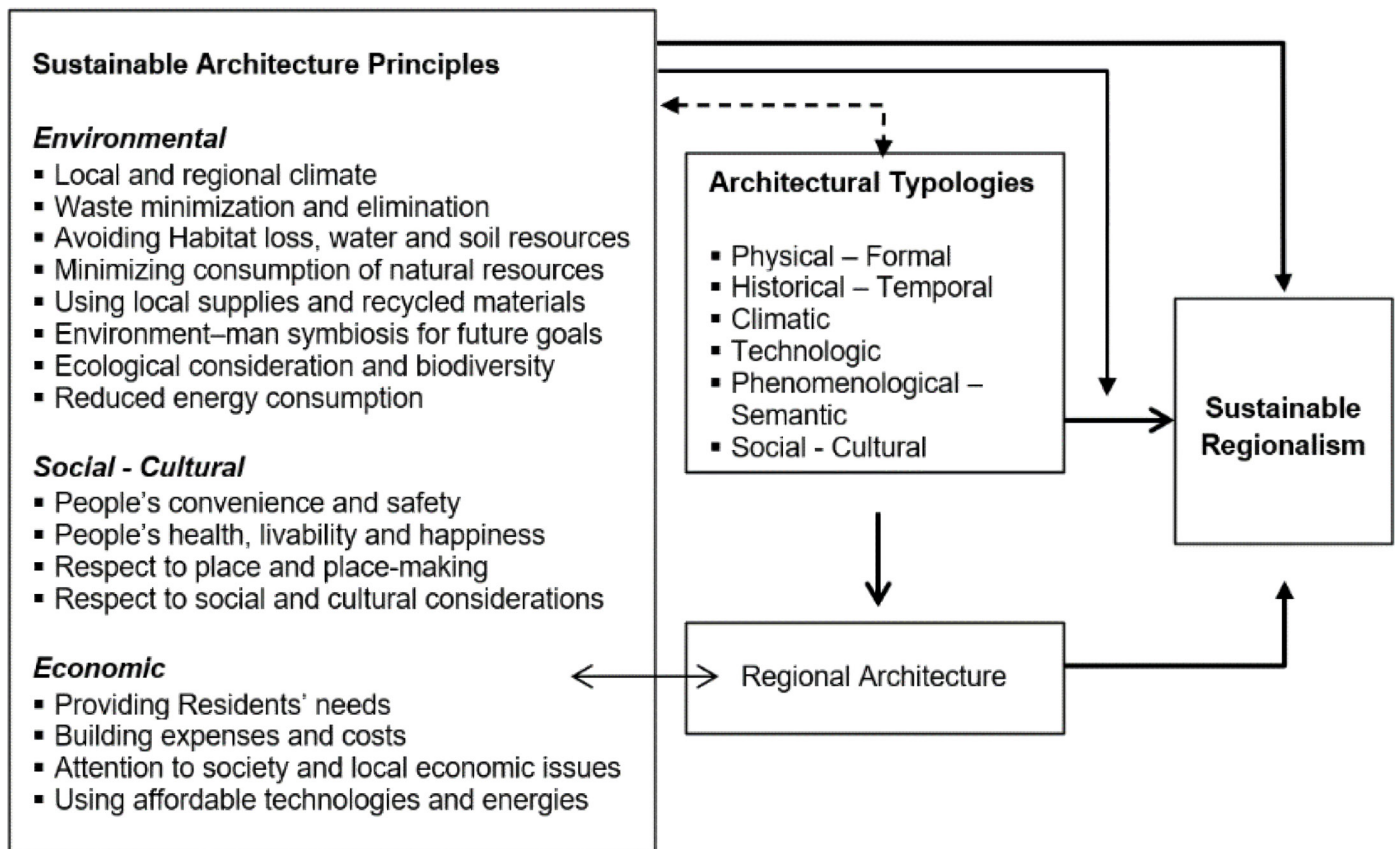


Figure 1: The Conceptual Framework of Sustainable Regionalism in Architecture. (Source: Author.)

Moreover, the study develops an overview of sustainable regionalism using the latest architectural works selected by Lefaivre and Tzonis (2012), awards and competitions. The selection practices include stunning designs from the most sought-after architects and talented up-and-coming companies, demonstrating new interpretations of sustainable forms through the lens of regional architecture to suit anticipated future demands. In this vein, there are examples of different implemented projects in different countries around the world. Due to limited space, the explanation of the projects can be seen in Figure 2: Red Ribbon Park in Qinhuangdao City, Hebei Province, China (Turenscape, 2009; Lefaivre & Tzonis, 2012; ArchDaily, 2013). Other examples that reflect current emerging regional and sustainable practices are: Houtan Park in Shanghai, China (ArchDaily, 2011; Yu, 2015), Jean-Marie Tjibaou Cultural Center in Numea, New Caledonia (Frosten, 2002; Lefaivre & Tzonis, 2012; Langdon, 2015), School Bridge in Fujian, China (Slessor, 2009; Aga Khan Development Network, 2010, ArchDaily, 2010a), METI Handmade School in Rudrapur, Bangladesh (Aga Khan Development Network, 2007; ArchDaily, 2010b), Tabiat Pedestrian Bridge in Tehran, Iran (ArchDaily, 2014; Aga Khan Development Network, 2016), Sai Mandir Temple in a rural area, India (Rethinking The Future, 2016; Srivathsan, 2016a), Rong Cultural Center on Hormoz Island, Iran (Contemporary Architecture of Iran, 2019; ArchDaily, 2020), and Studios 18 apartments in Rajasthan, India (ArchDaily, 2016; Srivathsan, 2016b).

Then using representations in common approaches of architectural typology (refer to Table 1) with the aim of achieving maximum comprehensiveness in regional architecture, formulates criteria and indicators corresponding to the concept of sustainable regionalism. The result of which is obtaining a framework which shows the interior disciplines and the frequent patterns of the regionalism and sustainable architecture (Figure 1).

The link between regional architecture and sustainable development, in addition to the economic, social, and especially ecologic aspects, has been imperceptible at the center of theoretical discussions and methods of “Sustainable Regionalism.” This framework is used as a manifestation of regional architecture development which pays attention to various features belonging to the local culture, environmental concerns, and economic and technological crises. Sustainable regionalism also pays attention to its definition regarding the explicit or implicit results between the society and architecture statement in a wide range of resemblance, economic, semantic, temporal, cultural, technological, and environmental considerations.



Figure 2: The 500-meter Red Ribbon Park is a wonderful solution that was presented by the designers as to the protection of natural habitats and creating recreational and educational places along a river on the east side of Qinhuangdao, Hebei Province, China. Since its completion in 2008, its 20-hectare green space which was made in place of the unavailable previous river shores is used by a large urban population, without jeopardizing the environmental protection goals. The ribbon is a key part of this success because it is actually a spinal cord that makes a structure for the existing space and alludes to the Myths of China's ancestral land regarding the energy flow. This fact makes it possible for people to get acquainted with the environment through their cultural heritage. (Source: Turenscape, 2009; Lefavre & Tzonis, 2012; ArchDaily, 2013.)

This framework has employed effective concepts for a style of contemporary architecture and adapted the sustainability strategies relevant to geographic conditions, local climate, and cultural experiences. This is while it could participate in a broader critical discourse by employing the factor of sustainability, not only as a technique or method, but also as a cultural paradigm. This concept considers the negative environmental effects and the social structure, using the design methods, geographical context, materials and technology, energy, and development spaces which are not detrimental to the region's ecosystem and the local communities.

### Final Remarks

It argues that the regionalism architecture has entered a new stage of its evolutionary trend, which is called "Sustainable Regionalism." This new approach ensures that today's regional practices do not have negative consequences for future generations. Despite the extreme need for this approach, the lack of a coherent theory or theoretical framework in its analysis is evident. Sustainability principles were implied in most of these resources rather than being explicit. So, this kind of architecture should be relevant to the constantly changing modern world. As we recognize contemporary architecture's share in increasing global warming and the unsustainable consumption of natural resources, it is required to develop alternatives for these factors.

In the regionalism approach, in the long run, the effect of architecture might be considered sustainable and unique. This is something notable in protecting the local culture, encouraging creativity and innovation, and at the same time, employing the principles and indexes of the sustainable development of global agenda for the 2030 goal. The concept of sustainable regionalism is essential for such an approach because the last part of architecture should be both practical and aesthetical. Meanwhile, it attempts to protect the environmental aspects and the local culture in addition to including the technological aspects, so that it could be able to define the contemporary dynamic community.

In order to achieve this, a balance between the various values of sustainable regionalism, all pillars of sustainable architecture, namely, environmental, economic, social, and cultural, should be taken into consideration, as these parameters are not independent, but rather complementary to each other. Lastly, for scholars who are interested in the interrelations and interdependencies of sustainability, environmental design, and regional architecture, sustainable regionalism offers a rich space of analysis. The research encourages an awareness of how relevant this subject is to present-day design. It highlights some vital gaps in our knowledge of regional architecture and the pressing need for sustainability features.

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