



CRITICAL REGIONALISM APPROACH FOR DJAMI MOSQUE DESIGN TOWARDS THE AESTHETICS OF SUSTAINABILITY

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ABSTRACT

Sustainable architecture seeks to minimize the negative environmental impact of buildings by efficiency and moderation in the use of materials, energy, development space and the ecosystem at large. It adopts a conscious approach to energy and ecological conservation in designing the built environment. In this sense, the aesthetics of sustainable architecture may be accomplished when three factors (the visual perception of space, spatial, experiential perceptions, and the cognition of the natural environment) are incorporated together. This paper aims to identify and unveil how the critical regionalism approach contributes to mosque architectural elements based upon five critical regionalism determinants – local form and place, genius loci and local context, sensory phenomenology, climatic and environment responsiveness, and humanity and society tectonic. In Malaysia, the critical regionalism approach is not widely explored and defined due to a lack of value application and awareness amongst local designers in public building design. Hence, it resulted in public building design like Mosque that emphasizes only superficial aesthetics, which lacks importance on the user's needs. The study will utilize the hermeneutic method through the interpretivism paradigm to achieve this. Direct observational insight into the subject and an interview session with the Architect were conducted. For the case study, the two indicators of mosque architectural elements (prayer hall, minaret, dome, mihrab, minbar, open site (Sahn), wudhu space and geometric elements) and the determinants are analyzed to document the value of critical Regionalism that embraces adaptability, reinterpretation and realization of reality. The triangulation of this data is then synthesized to establish a Critical Regionalism principal framework for sustainable mosque design. This study will benefit many parties in providing recommendations for mosque design, referring to the critical regionalism approach toward sustainable architecture. This critical regionalism approach can foster the formation of a national identity architecture that can contribute to the unity of society and strengthen the sentiment of nationalism in the present Muslim and multi-racial society. In addition, by having a better-quality design, the built form can readily be accepted and adopted in terms of functions for the benefit of the entire community.

KEYWORDS:

Critical Regionalism, Mosque, sustainable architecture, Interpretivism, hermeneutics

INTRODUCTION

Critical Regionalism is a modern architectural approach that refers to the spirit of a culture that encompasses the human life system, including the historical region, sociocultural society, climate and local topography, and technological capability achievement in contemporary contexts. In detail, this critical regionalism approach was introduced by Liane Lefaivre and Alexander Tzonis [1] and supported by Kenneth Frampton [2] based on the three main principles of championing architecture as a driving force - to portray the indigenous culture of the community based on a particular region; responding to

the local climate and weather as well as the use of technological capability achievements in contemporary contexts. This critical expression of Regionalism is necessary through honest interpretation from the visual and sensory approach of the human being. Hartoonian [3] interprets the idea of Liane Lefaivre and Alexander Tzonis and Frampton as an emphasis on specific elements where the building needs to reflect its own identity and deliver clear (explicit) messages, as well as implicit messages (implicit) capable of being interpreted by users and providing information to user's local identity. This critical regionalism approach is essential as it can foster the formation of a national identity architecture that can contribute to the unity of

the community and foster the sentiment of nationalism in the multi-racial society today. Scholars also state that, with a critical regionalism architecture, the effect will shape the values of unity or unification, including strengthening community relations among the local community. In addition, architecture needs to feature a critical regionalism approach as it can shape the community's life and the environment of better quality and produce an architecture that is readily accepted and adopted in terms of functionality and consumerism by today's society. This study focuses on the ideological documentation of post-independence Malaysian architects that led to applying the approach of critical Regionalism through the built environment, the late-year 2010 till the present was chosen because it was the culmination of the development of critical regionalism ideology in the local Malaysian scene. The era also reflects the dynamic perspective in Malaysia's architectural development, especially in the construction sector of public buildings featuring the birth and assimilation of various approaches and mixing of architectural styles in Malaysia. Since architecture is seen and often referred to as a symbol of national identity and contributes to the formation of human life, it is essential to refer to the approach of critical Regionalism in all categories of building typology, including public and government buildings. The typology of this building consists of educational, commercial, religious, health and housing institutions.

However, for the benefit of this study, religious buildings such as mosques are seen as essential to have a critical regionalism distinctive approach as it will create a religious architecture that is not monumental, not characterized as a house of God and is seen as not isolated from the life of the community through the appearance of eclectic style or middle eastern revivalism [4], [5]. It is important because the Mosque is seen as an entity that can fulfil two essential things. First, the critical regionalism approach of the Mosque will reflect a more community-friendly and sustainable feature in terms of its space and design. It can be the centre to strengthen the fraternity cords that build the spirit between Muslims and the multi-racial community. Hence, mosques can be houses of worship that strengthen the spiritual values of the individual and the Muslim community and the universal race for the development of the community [6], [7]. As a result, the Mosque can symbolize unity for the Muslims and the presence of a multi-racial community. Therefore, the critical regionalism approach discussed in this study is critical as it can contribute to the Mosque as the center of community development. To understand this aspect, the Architect's ideology of Razin Mahmood, who is seen as successful in adopting a critical regionalism approach in the architectural design of his Mosque, which features community development, will be studied in detail. This study is critical because, until now, there have been no studies on the ideology of leading Malaysia's architects focusing on the critical regionalism approach that contributes to the construction of mosques as a center

for sustainable community development. The scope of this study will focus on the Daeng Mosque, which falls under the *djami'* category. This Mosque is located in Malaysia and portrays several criteria reflecting the ideology of Critical Regionalism. The choice of the *djami'* Mosque as a case study is crucial for reference as this type belongs to the local community, so the design of the *djami'* Mosque should have the characteristics or wants of the local community, which is one of the dominant determinants that influence that shaped the role of Critical Regionalism. For the benefit of the study and to fulfil the objectives, section two is divided into three parts. The first part will define the description of the development of the characteristics of critical Regionalism. This section will comment on the scientific study of critical Regionalism, covering its functions, approaches and role in forming sustainable architecture. The second part discusses architects' ideology and philosophy in shaping the values of critical Regionalism in Malaysian architecture after independence. Then, Architect Razin Mahmood and his role as a pioneer in propagating critical Regionalism in building design will be discussed. The third part elucidates the study's methodology in detail on how the data collection and the way of data are analyzed. Data on the *djami'* Mosque designed by Architect Razin Mahmood and his ideology were analyzed using hermeneutic methods. The following section provides the discovery of data from the dominant and prominent *djami'* Mosque designed by the Architect Razin Mahmood, whose selection is based on pre-determined criteria. The description of the selected Mosque is discussed, followed by the analysis of the variables that make up the characteristics of critical Regionalism. This variable is then divided into designs to find its link to the ideology of Architect Razin Mahmood towards Malaysia's critical regionalism architecture and its impact on the architecture of the *djami'* Mosque in Malaysia as a center of sustainable community development.

CONCEPT AND DEFINITION OF REGIONALISM IN ARCHITECTURE

Regionalism, from the general definition of scholars, can be defined as awareness and loyalty to different regions with the same population, where it attaches importance to the spirit of statehood. According to Rasdi and Mursib [8], the spirit of the state encompasses the system of human life, including political, economic and sociocultural values. However, the sociocultural aspect is more critical as it closely relates to architecture. In this regard, architecture needs to present a regionalism approach as it can shape the life of society and a better-quality built environment [8], [9]. Based on the views of scholars, the definition of Regionalism from an architectural perspective is defined as a regional identity born by human consciousness in researching the traditions of a place or society based on the changing times [10] [8], [11], [12]. This regional identity is vital because it can free up the local architectural approach from being

ethnocentric, which is to glorify the culture or identity of the foreign country more than the value of the sense of belonging [13] [8]. A regionalism approach is needed because it will promise a built environment featuring a national identity architecture that respects politics, economics, socio-culture, climate and local topography and adopts the latest technology [14].

Scholars underline that the approach of Regionalism through the appearance of architecture is necessary because architecture is a favoured object and is utilized as a medium of conveying a desire and meaning [4]. Architecture is also a static object that remains throughout the ages. Architecture is often seen as a compelling symbol as it can be interpreted, observed and used for ages [15]. Architecture is also linked to human life and social activities as it involves various processes involving specific individuals [16]. For example, during the preparation and construction phase, the patron and architect's ideology influenced the building's design. However, during the habitable phase, the culture of the community's life formed the architecture of the building. It makes architecture an object, and a cultural symbol and closely relates to man's social and historical context [17]. In this regard, it can also be an agent that can influence the views and emotions of society.

In addition, architecture indirectly exists as a *sign* system because there is distinctive grammar and syntax. Due to this, scholars state that architecture can be read as a text capable of relating to language analogues [18]. In other words, architecture is read as a code that conveys specific meanings, such as patrons' wishes to observers and building users. This code system can be manifested through the architectural elements discussed in the following sections [18]. Based on the above understanding, these elements of architecture are often used as mediums and symbols to convey meaning. Scholars argue that an architectural element can be an object and a medium of symbolism because it has its code [18]. This code can reveal the implied and expressed meaning behind a construct.

Moreover, according to Harisah and Masiming [18], these codes are formed when the user translates the building's physical elements. The physical principles of this building can also communicate with users directly and indirectly because architecture serves as a medium and symbol that can symbolize and display this regionalism approach. Therefore, fostering a regionalism approach through this architecture is necessary and contributes significantly to the development of a nation, especially in the context of Malaysia for three main stages; first, at the professional level; second, for the development of society and the third for the sake of the progress of the country. Rasdi [19] and Mursib [20] argue that the architectural flow of Regionalism is categorized into three, based on the theory of Jadhav and Powel to form the vernacular stream of Kenneth Frampton's tradition to devise the flow of modern Regionalism followed by the postmodern trends outlined by

Alexander Tzonis and Leani Lefavre [1], [21]. Based on the above thinkers, it is formulated that there are three trends of Regionalism which are- Vernacularism; which is based on tradition; modern Regionalism (transformation); which is based on modern thinking and postmodern Regionalism; which is based on postmodern thinking (criticism) or critical Regionalism.

FACTORS AND FEATURES THAT INFLUENCE THE CRITICAL REGIONALISM ARCHITECTURE

The philosophy of postmodern Regionalism, or critical Regionalism, based on the Rasdi & Mursib [8], [20] and Mursib [22] beliefs, is divided into realism and criticism. The 'Realism' developed by Mursib [20] has three approaches: 'focal realism', 'patient rigorism' and 'ecological sustainability'. Focal realism is the continuation of the current practice, 'patient rigorism' is to take advantage of the existing reality even though it looks bad, while 'ecological sustainability' is to preserve the ecological system of life [23]. Criticism, in turn, is divided into issues and strategies. Under the branch of issue, Mursib [20] allocate critical thinking on postmodern issues such as homogenization, Western technological myths, the paradox of the clash of values, the flow of world history and culture, issues of non-authentic architecture, marginalization of humanitarian ideology, the extinction of earth resources and ecological sustainability. For the 'strategy', Mursib and Rasdi [22] combine the thinking strategies of Critical Regionalism by Frampton (Architect, site building, local form, phenomenology, visual experience, tactile and climatic experience) and vision of Critical Regionalism by Tzonis and Lefavre (build a place, environmentalism, Regionalism, humanity, community and defamiliarization) [20], [24], [25].

The term 'critical regionalism' was first introduced by Alexander Tzonis and Liene Lefavre in 1981 when they published an essay entitled "The Grid and the Pathway" and later by Kenneth Frampton in his writing entitled "Six Points for an Architectural Resistance." which was also published in the same year [20]. The two writings talk about the problem of territorial identity in architecture that is threatened by the tide of modernity and globalization. They saw that the architectural direction at that time was on the track of borderless internationalization, creating an architectural language that was similar, similar, and not diverse despite the backdrop of a different context [26]. The architecture of critical Regionalism is fiercely opposed to the production of a universal architectural image masked by the advancement of building technology shared by the world internationally. Their criticism of postmodern architecture, in particular, is seen as increasingly 'self-forgotten' and mimics the architectural approach of the modern era at the end of its time [20], [27]. Thinkers in critical Regionalism have repeatedly emphasized the importance of the concept of 'local and 'contemporary spirit' in the proposed architectural approach to designing a building to meet

the local community's needs [1], [27]. This critical Regionalism thought proposed by Tzonis & Lefaivre [21] opens up the question of the importance of territorial identity in the face of the drastic expansion of international architectural language contributed by the globalization of the world. The essence that exists as an element of context in any proposed locality must be first identified before any design process begins. The variables that make up the image and identity of a regionality should be researched, studied and understood in more detail in advance to avoid any problems in interpreting them into the language of architecture. It is to ensure that the elements of 'local and 'contemporary spirit' in the design of the building will be able to represent the variables that exist in a context [21].

Table 1. Elements that influence the formation of the concepts of 'local and contemporary spirit' [27]

The concept of 'Spirit of Place.'	The concept of 'Spirit of Time'
Safety factor	Climate factors
Current economics factor	Environmental factors
Current political factor	Historical & Heritage factors
The existence of building materials	Topographic existence
The existence of construction technology	Sustainability factors
Philosophy & ideology of architecture	
Municipal process	
Currents regulations & requirements	

FACTORS AND FEATURES THAT INFLUENCE THE CRITICAL REGIONALISM ARCHITECTURE

Eggenger [28] states that the emergence of critical Regionalism as an architectural approach is a spontaneous response to the eruption of global modernization that limits the role of all forms of traditional heritage cultural practices. The rapid development of construction technology at the international level managed to create a construction industry capable of developing construction quickly and in a short period, leading to the production of construction in bulk regardless of the response to the regional context. It is this situation that critical Regionalism tries to prevent from happening by serving as an insulation to the universality of architecture [2].

With this in mind, critical Regionalism is seen as capable of being adopted in diverse situations. It can be applied to different localities independently due to its non-binding nature to any fixed variable [28]. Indirectly, this critical Regionalism is seen as a connector to the legacy of modern Regionalism because, according to Mursib [20], the thinking behind critical Regionalism, to some extent, is in response to

the weaknesses inherent in modern Regionalism. As a stream of postmodern architecture, the primary thinking that targets criticism by critical Regionalism is the universal movement of modernism, unplaced architecture, reactionary populism, and the culture of capitalist consumption [28]. This opens the space for critical Regionalism to prioritize the height of local and humanitarian values in line with current needs in territoriality. Mursib [20] also pointed out that through this approach, critical Regionalism further demonstrates a firm hold on the struggle against the architectural approach of humanitarian democracy and, at the same time, still champions a progressive and inventive architectural image. Indirectly, critical Regionalism demonstrates a unique architectural language style that is dialectic and distinctive [28]. Mursib [20] try to evoke thoughts of critical Regionalism that address many issues related to local identity based on the variables that make up the composition of the territorial identity. Among the issues raised is the problem of the architectural homogenization movement with the accepted influence based on the universal approach. Critical Regionalism will also look to the myths inherent in western technology and, at the same time, try to avoid the influence of foreign architecture. Critical Regionalism is also seen as trying to answer the question of paradoxes resulting from the clash of different values generated by architecture, thus showing the historical and cultural trends of the world in avoiding the question of the authenticity of an architectural product that has been produced. Next, bring critical Regionalism to examine the problems behind the humanitarian issues that exist in society at this time, and at the same time, also highlight matters relating to the impact on the built environment and natural resources in ensuring the sustainability of self-sustaining ecosystems.

With an emphasis on territorial identity in architecture, critical Regionalism insists on its five primary principles, which should not be classified on the purely architectural style of appearance. Still, the approach should be judged as a process. These five principles involve place form and placemaking, which proposes the importance of local image and identity, reliance on *genius loci*, the phenomenology of utilizing human senses to promote humane architectural expression: responsiveness to local climate and context, and the architectonics of social order that values and highlight the identity of local societies. For the benefit of this study, these five principles will be referred to as determinants in understanding how mosque architectural form and space with a critical regionalism approach can showcase the aesthetics of sustainability in design. Meanwhile, throughout centuries, mosque evolution in Malaysia has been influenced by the elements and features of modern Regionalism in its design and building space.

Table 2. Principles in critical Regionalism in architecture, [2], [20]

Postmodern Regionalism > Critical Regionalism
Principles of Critical Regionalism
Local form and Local Space
'Genius Loci' and Local Context
Sensory Phenomenology
Climate and Environment Responsiveness
Humanity and Society Tectonic

ROLE OF CRITICAL REGIONALISM IN MALAYSIA MOSQUES ARCHITECTURE

The word 'masjid' is derived from the French word 'mosque' taken from the Spanish word 'Mezquita' [7]. At the same time, Jairazbhoy [17] explained that the term derived from the Spanish word is a translation of the Arabic word 'masdjid', which is derived from Arabic called 'masgedha'. Gazalaba opines that the grassroots of the Arabic word 'masjid' is 'sajd', meaning 'prostrate'. The uniqueness of the Mosque's architecture is formed by several essential elements those Islamic scholars have highlighted. According to Islamic scholars like Holod & Khan [29], L. Jones [30] and Ismail [31], eight elements make up the Mosque's architecture. These elements of architecture differ depending on their use, either private or congregational [19]. These eight elements are prayer hall, minaret, dome, pulpit (direction of Qibla), mihrab, open site (Sahn), wudhu space and geometric elements to convey the message of Islam to the community.

These eight main elements serve as symbols of Islamic messages to provide specific meaning to the environmental community. However, the appearance of the eight architectural elements of the Mosque depends on the current needs and time passage. In other words, there are variations in these eight elements as they are subject to the needs of the local environment and the sociocultural conditions of the community in the area. Based on the above statement, it is clear that the Mosque's architecture depicted through these eight elements is displayed as a symbol of dawah that integrates Muslims with the surrounding community to create sustainable architecture.

Malaysia's Town and Country Planning Unit (2002) outlined the two common typologies of Muslim religious buildings: the Mosque and *musolla*. The Mosque and *musolla* are categorized according to the hierarchy of Islamic places of worship at the national, state, district and neighbourhood to private levels. Each of these mosques and *musolla* has facilities according to its interests. However, for this study's focus, the area of interest will be the *Djami'* Mosque, also dubbed a community mosque within a neighbourhood with a sizeable Muslim population. The function of *Djami'* Mosque is usually a place to perform congregational prayers such as Eid prayers, a gathering place also known as a mosque to perform Friday prayers. The *Djami'* Mosque is also known as an active

mosque with community activities involving the local community and was the centre of a city in ancient times. It was built from the funds and efforts of residents or villagers for the convenience of the local community [32]. In addition, it is also funded by local governments, private individuals or organizations who are aware of the importance of a mosque to a community [6]. However, for the benefit of this study, the Mosque that will be discussed belongs to the *Djami'* mosques category.

The *D'jami* Mosque in Malaysia is traditionally influenced by the Malay house architectural features that are topped with a multi-tiered roof resembling the Malay vernacular style [15]. During the pre-colonial colonial era (16th-century 19th century), this community-featured Mosque also still exists in the same appearance as the early days of Islamic propagation during the era of the Malacca sultanate, which is in the scale and size of domestic squares or precisely in medium size to conduct religious activities only for the local community. However, the outlook is different as it assimilates modern materials such as concrete and brick due to replace timber due to the new technological capabilities and construction methods brought in by the Dutch and Portuguese [5].

Similar approaches were adopted during British colonialism in the late 18th and early 19th centuries. The arrival of the British did little to change the structure of the Mosque's architectural appearance for the community. Still, their interest was much in building mosques for the Malay rulers to gain their acceptance and influence. According to Utaberta and Rasdi [5], in this case, the Mosque built for the Malay monarchs at the state level is more large-scale and majestic, with appearances imported from western styles such as neo-gothic, Classic Baroque and European Classics but assimilated with the local climate context [33]. The architecture of the Mosque under the British ruled out the fundamental role of the Mosque. It was more about safeguarding the British reputation in Malaya to gain the trust of the Malay rulers. Generally, during these three eras, no critical regionalism approach was applied to the architecture of *djami'* mosques in Malaysia, and the style of mosques is pastiche and diverse. Starting from the colonial era, the architectural appearance of the Mosque, especially the *Djami'* Mosque began to change the pattern from the original role of the Mosque to worship, dawah and knowledge began to diminish its function when the importance was only given to the external construction and aesthetics of the role of consumerism[8]. The late 1990s shows that the *Djami'* Mosque is more or less similar to the early independence era, displaying postmodern revivalism adapted from the Middle East's architecture to fulfil the ruling government's political agenda for making Malaysia the center of Islamic civilization[6].

The late 1990s and early 20th century saw a symbolic twist to the *djami* mosque function in which many were utilized as tourism economic entities rather than as a centre of worship. An example is the Islamic

Civilization Park in Terengganu, which stands for the Crystal Mosque. Most of the *djami* Mosque was built on a monumental scale, emphasizing aesthetic expression. However, in the late 20th century, the *djami* mosque appearance in Malaysia underwent rapid change in which the sense critical regionalism approach surfaced. Examples of contemporary mosques with a critical regionalism approach, like the Raja Haji Fi Sabilillah Mosque designed by the ATSA Architect, appear amidst the Malaysian architectural landscape. The Mosque portrays climatic sensitivity that highlights the principles of critical Regionalism in its primary design form and space-making. It can be seen in its design of many geometric carving applications in the form of air vents on the façade and the roof of the mosque building to allow air and natural lighting to flow into the mosque space. The critical regionalism approach during the late 20th century was explored further and experimented with by many local architects in mosque design throughout Malaysia.

Overall, the Malaysian architectural landscape shows that the architecture of the *Djami'* Mosque in Malaysia is heavily influenced by the elements and features of critical Regionalism in its design and building space. However, no specific documentation has been made regarding the architecture of the *Djami'* Mosque and the influence of critical Regionalism in detail and comprehensively. Thus, the following section will explain the methodological framework. It is vital to elucidate how the architectural design of the *djami* Mosque reflects the critical regionalism approach involving the indicated five determinants: placemaking, genius loci, the phenomenology of senses, climatic and environment responsiveness, and communal and humanity tectonic. Using a singular case study as a research strategy under the interpretive paradigm, the role and ideology of architects in Malaysia like Ar. Razin Mahmood, active in promoting critical Regionalism over the architecture of the *Djami'* Mosque (Daeng Abdul Rahman Mosque), will be studied because he was seen as one of the foremost pioneers in developing the critical regionalism approach to mosque design in Malaysia.

METHODS

The study used a qualitative research strategy under the interpretivism paradigm as an approach to research. As the primary data collection method, direct observation is utilized to gain insight into the case study. This method is essential to fulfilling the research objectives in developing design strategies or guidelines for the architectural approach of critical Regionalism in the Mosque. On the other hand, information from the literature review will be used to outline the indicators for critical Regionalism based on hermeneutics as a research methodology [34], [35].

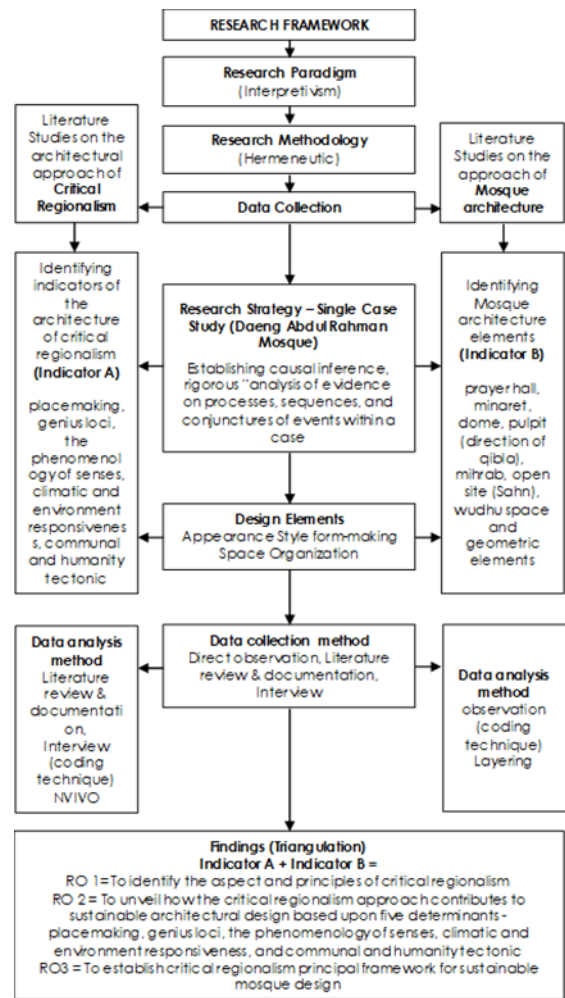


Figure 1. Research Framework [Author]

These indicators will then be used to analyze the Mosque's form and space-making based on the eight architectural elements of the Mosque: prayer hall, minaret, dome, mihrab, minbar, open site (Sahn), wudhu space and geometric elements. The analysis was based on an explanation built by Yin [36]. This analysis can explain the phenomenon based on specific causes and effects.

Therefore, the analysis of the Daeng Abdul Rahman Mosque is divided into two phases: The first phase analysis is done separately, based on the observational analysis of the Mosque, followed by documentation analysis related to mosques and interviews. The analysis also includes the study of the Architect's ideology and philosophical beliefs. This phase requires a physical visit to the Mosque to identify the eight architectural elements present within the design and examine the Architect's approach. A comparative analysis is then conducted with observational data from the literature review and interview session with the Architect.

The second phase of analysis identifies the Mosque's similarities and differences to underline the Mosque's architectural elements. Later, the critical

regionalism determinants were linked and explored to identify the factors that shaped the Mosque composition. Each of the eight mosque architectural elements will be cross-examined with the five critical regionalism determinants to determine the degree of integration between these variables. Finally, all findings from critical regionalism indicators and mosque architectural elements will be triangulated to answer the research objectives. The research outcome is then formulated as a proposition or recommendation on strategies that can be adapted to produce a sustainable mosque design that integrates the architectural approach of critical Regionalism to benefit mosque architecture design in the Malaysian context.

As a case study, the Daeng Abdul Rahman Mosque is selected based on three main criteria. The first criterion emphasizes the importance of selecting buildings from the typology of mosques as a medium in showing the architectural approach based on Islam. The second criterion is the selection based on the construction of mosques that have received recognition and awards from the national and international levels to ensure the credibility of the selected case studies. The third criterion is selected based on the ideology and thinking of the architects involved in the design process, where the Architect should make critical Regionalism the primary approach in producing the style of the Mosque's appearance.

DISCUSSION

Mosque architectural elements can be a translation for communicating with users and their environment. In this sense, the mosques' form-making and spatial arrangement can convey the local community's message. Previous researchers have stated that mosque symbols such as prayer halls, towers, domes, minbar (Qibla direction), mihrab, Sahn, dikka, ablution space, and geometric elements convey Islamic messages, ideology and values to society. For this Daeng Abdul Rahman Mosque, the critical regionalism approach is widely implemented throughout the Mosque's design features to express how the Mosque's architecture is seen as a symbol of the Islamic religion as well as indicating the value of sustainability in its design aspects.

BACKGROUND OF DAENG ABDUL RAHMAN MOSQUE

The Mosque is located in Nusa Idaman, Johor and was completed in 2019. The construction of this Mosque is to accommodate the growing load of worshippers whose existing surau can no longer accommodate the locals' needs. The design and architecture of the Daeng mosque were recognized by the Malaysian Association of Architects, PAM (Malaysian Institute of Architects) by winning the PAM Gold Awards under a particular category and was also nominated as the recipient of the Abdullatif Alfozan Mosque Architecture Award (AFAMA) in 2019.

In determining the relevance of the critical regionalism approach towards the mosque design, the

next section will focus on the analysis of each of the architectural elements of the Mosque that has been previously extracted by verifying the presence of the critical Regionalism identified determinants based on the live observation and responses from the interview session.

PRAYER HALL

A simple geometrical form, without any unnecessary elements, the prayer hall is shaped in parallel towards the direction of prayer (Qibla) so that each prayer line (saf) can be fully accommodated by worshippers. The main hall has a segregated praying area for male and female worshippers, with separate entrances. However, in the event of a significant congregation, the main prayer hall will be fully equipped by male worshippers, while female worshippers will be located on the second level. Even though the main hall can only accommodate around 300 worshippers, the spillover area and additional hall on the second and third floors can fit up to two thousand worshippers at a time.

Table 3. Critical Regionalism in Prayer Hall [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	<ul style="list-style-type: none"> Surrounded by greeneries, the prayer hall inside the main structure was enveloped by foliage like a façade designed abstractly to imitate the surrounding context. By introducing trees within the spill area of the prayer hall, the 'outside' was successfully integrated into the structure.
Sensory phenomenology	<ul style="list-style-type: none"> The front wall of the main hall uses a patterned wood panel that can catch a glimpse of the worshipper and act as an indicator for the direction of the Qibla.
Climate and the Environment Responsiveness	<ul style="list-style-type: none"> The main hall was designed as a small area to prevent energy waste from cooling down. The spill area was covered with an extended roof. The spill area is an open space. Trees were planted surrounding and inside the prayer hall to provide shade. Building envelope inspired by foliage and mashrabiya to provide natural lighting during the day.
Humanity and Society Tectonic	<ul style="list-style-type: none"> The spaces inside were shaped to maximize the number of worshippers. A spill area and additional hall were provided for any societal function.



Figure 2. View over main prayer hall [Author]

SAHN (OPEN COURT)

Two different areas can be recognized as a Sahn. One is on the main entrances (figure 3, orange shades), while the other is on the left side of the prayer hall (figure 3, green shades).

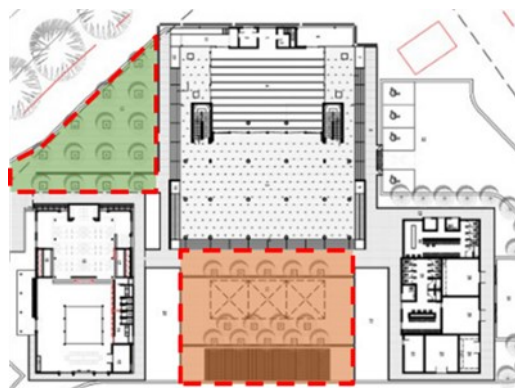


Figure 3. A floor plan that shows a Sahn through plan composition [30]

Table 4. Critical Regionalism in Sahn [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	<ul style="list-style-type: none"> The sahn was composed as an intermediary space between the surrounding outside towards the
Sensory phenomenology	
Climate And The Environment Responsiveness	<ul style="list-style-type: none"> The open area on each side of the structure provides the Mosque with air circulation and natural lighting. Due to the tropical climate of the site, the sahn were planted with
Humanity and Society Tectonic	<ul style="list-style-type: none"> Convertible to communal spaces during the festive season. Sitting area for worshippers

MIMBAR

The minbar was a platform for a khatib to convey their sermons. In most mosques, minbar is a separated element placed together inside the prayer hall, while some will be integrated directly into the wall. In the case of the Daeng Abdul Rahman Mosque, it was the latter.

The minbar was composed with simplicity in mind. It can be accessed through a door inside the mihrab, with a staircase leading to the platform. The minbar was covered in a wood finish and attached to the front wall of the main prayer hall. With the platform elevated about 2 meters above the floor level, the whole congregation of worshippers could see the khatib giving the sermon.

Table 5. Critical Regionalism in Minbar [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	
Sensory phenomenology	
Climate and the Environment Responsiveness	
Humanity and Society Tectonic	The minbar was elevated to be seen from various locations within the prayer hall.



Figure 4. Minbar integrated into the front wall of the prayer hall [Author]

MIHRAB

The mihrab was built with a simple rectangular design. Its main purpose was to be an indicator of Qibla's direction. The minbar and the mihrab are also situated on the front wall of the main prayer hall.



Figure 5. Mihrab on the front wall of the prayer hall. [Author]

Table 6. Critical Regionalism in Mihrab [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	
Sensory phenomenology	<ul style="list-style-type: none"> It was built using dual tones finishes. The outermost part was enveloped with a wooden panel that connected to the front wall of the main prayer hall. The innermost part was left with a brickwork finish to symbolize the mosque design's humbleness.
Climate and the Environment Responsiveness	
Humanity and Society Tectonic	<ul style="list-style-type: none"> The worshipper can quickly identify the direction of the Qibla.

MINARET

With a height of 100 feet, the minaret can be a landmark for anyone trying to locate this Mosque. The minaret's design also takes on a more contemporary approach with a squarish shape with two different finishes. One top half of the minaret comprises fibreglass panels of the same motifs that can be found on the main structure. At the same time, the lower part of it utilizes a white fibreglass panel. Fibreglass was chosen as a material for the minaret due to its secondary function as a telecommunication cell tower, where fibreglass does not interfere with the radio signal.

Table 7. Critical Regionalism in Minaret [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	<ul style="list-style-type: none"> Act as a landmark for the Mosque. Provide a cell service to surrounding communities.
Sensory phenomenology	
Climate and the Environment Responsiveness	
Humanity and Society Tectonic	

DOME

The Daeng Abdul Rahman Mosque does not include any dome elements. Razin, the Architect, insists that the structure does not require a dome to be identified as a mosque [1]. Meanwhile, adding the Mosque may increase the construction cost of the complex.

ABLUTION AREA

The ablutation area of male and female worshippers was separated into different areas to protect their modesty. While the specific ablutation area for males is a little open, the female counterpart was more concealed from the public eye.

The ablutation area was designed with the same concept of 'down to earth, with the same architectural language as a medium to convey the idea. The structure used exposed brickwork, with tile finishes on the surfaces that connect with water.

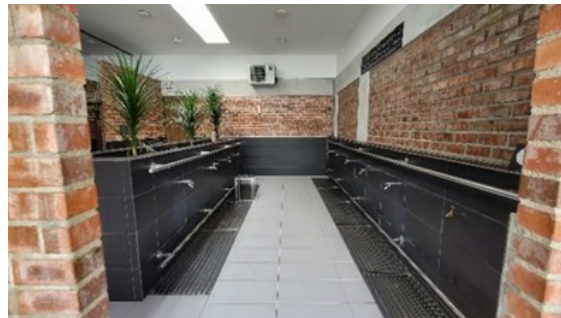


Figure 6. The façade and extended roof become an obstacle to direct sunlight. [Author]

Table 8. Critical Regionalism in Ablution Area [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	<ul style="list-style-type: none"> Using the same architectural language as the main structure to ensure continuity. The plant was introduced in the area to connect to the outside.
Sensory phenomenology	<ul style="list-style-type: none"> Exposed brick on the wall brings a texture to the space bringing in the tactile experiences. The skylight allowed the light to penetrate deep inside the spaces.
Climate and the Environment Responsiveness	<ul style="list-style-type: none"> An open-air space that does not require mechanical ventilation. Skylights provide the necessary lighting during the day.
Humanity and Society Tectonic	<ul style="list-style-type: none"> Provide an additional ablutation area with an additional fixture for those requiring it.

GEOMETRY & CALLIGRAPHY

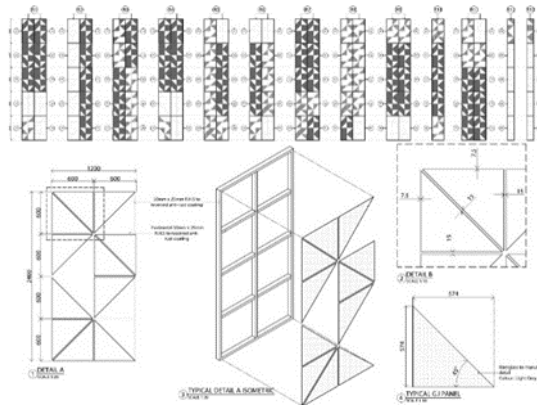


Figure 7. Metal screen panel that was used as building envelope. [30]

This Mosque does not have as many intricate decorations as we usually see in other mosques on the same scale. The only geometrical pattern that can be identified is on the building envelope, that act as a shading device arranged in a random pattern using a triangle of galvanized metal sheets surrounding the main building structure. According to Razin [24], [25], this pattern on the building envelope was inspired by tree foliage and mashrabiya.

Table 8. Critical Regionalism in Geometry & Calligraphy [Author]

Determinants	Description
Local Form & Place Form	
'Genius Loci' & Local Context	<ul style="list-style-type: none"> Trees and plants surrounded the site. The leaf foliage was adapted into the building envelope composition.
Sensory phenomenology	<ul style="list-style-type: none"> When the sun shines on the envelope, it will produce a shadow resembling leaf foliage.
Climate and the Environment Responsiveness	<ul style="list-style-type: none"> The building envelope act as an aesthetic element and shading device. Providing shades into the prayer halls.
Humanity and Society Tectonic	<ul style="list-style-type: none"> As a shading device, the screens play a vital role in reducing the temperature inside the structure.

Based on the discussion above, the critical regionalism approaches based on the five determinants of the Mosque architectural elements of

Daeng Abdul Rahman Mosque are elaborated in table 9.

Table 9. Critical Regionalism in Daeng Abdul Rahman Mosque Design [Author]

Architectural Elements	Prayer Hall	Sahn	Minaret	Minbar	Mihrab	Dome	Ablution Area	Geometry & Calligraphy
Local Form & Place Form								
'Genius Loci' & Local Context	✓	✓	✓				✓	✓
Sensory phenomenology	✓				✓		✓	✓
Climate and The Environment Responsiveness	✓	✓					✓	✓
Humanity and Society Tectonic	✓	✓		✓	✓		✓	✓

From all of the mosque elements' presence, the prayer hall, ablution area and geometry & calligraphy elements show a high implementation of critical Regionalism, followed by sahn, mihrab and minbar. At the same time, there is no data on the dome. These elements with the higher implementation of the determinants might indicate a higher approach toward the aesthetics of sustainability.

Additionally, from the five determinants, the humanity and society tectonic show a higher integration. This element is in line with the Architect's intention of [24] focusing on the local community and their activity when designing the Mosque. Meanwhile, there is no correlation between the mosque design and local form & place form determinant due to the site's locality being developed in a new residential area.

Overall, the Mosque reflects the sense of uniqueness and values that promote a modest mosque architectural design that can universalize Islam's values, which has a sense of inviting and welcoming rather than initiating the construction of monumental and luxurious mosques that focus on aesthetical aspects, which evokes a feeling of intimidating or seclusion. From this, a critical regionalism approach framework that considers the value of sustainability can be outlined as shown in Table 10.

Table 10. Propose Design Principles of Critical Regionalism in Mosque Design [Author]

Architectural Elements	Propose Design Principles of Critical Regionalism in Mosque Design
Local Form & Place Form	<ul style="list-style-type: none"> • The identity of the building's style of appearance should reference the local context and surrounding environment. • Building forms should not be immersed in homogenization and not be hostile toward existing architectural images [37]. • The form-making must have a balance reflecting universal design that merges the global architectural approach and territorial identity [2].
'Genius Loci' & Local Context	<ul style="list-style-type: none"> • Create a sense of place within the building space [10]. • Enhancement of local distinctiveness by empowering the needs of the local's people. • Emphasis on the essence of interiority by creating meaningful places and spaces to make people belong to the place
Sensory phenomenology	<ul style="list-style-type: none"> • Promote a three-dimensional experience. The aspects of architecture can be experienced from a three-dimensional angle using natural materials[2]. • Emphasize the aspect of the senses and visuals, such as touch, smell, and sound, to enhance the experience of appreciating a building structure [2].
Climate and the Environment Responsiveness	<ul style="list-style-type: none"> • Highlight the ecological aspect by interpreting the elements on the site by analyzing the relationship between humans, construction structures, and the environment. • Through the interpretation of climate and weather elements, topography, landscaping and sustainability, locality-responsive architecture is expected to be produced, thus creating a unique regional identity building [38].
Humanity and Society Tectonic	<ul style="list-style-type: none"> • Emphasis on the needs and wants of the target user. Every element of architecture introduced must meet reasonable and logical demands. Take into account the structure of society, the position of the social hierarchy, cultural elements, identity and even the language of the local community group. • Maximize the use of more advanced technologies [2]. • It is leveraging existing building technologies and optimizing the advances in simplifying design and construction processes.

CONCLUSION

The findings show that the proposed design method as an architectural approach is based on Mosque architectural elements while referring to a critical regionalism approach in developing community-oriented mosque institutions. The critical architecture approach of Regionalism based on the basic principles of sustainability is seen as being able to meet all the demands of human life in carrying out their responsibilities as Muslims. From this paper, it can be confirmed that the Daeng Abdul Rahman Mosque was designed with the approach of critical Regionalism in mind. By doing so, the design indicates a way forward for Malaysia's aesthetically sustainable mosque design. The architecture of critical Regionalism plays a role in mediating the global language of Islamic architecture by injecting a regional architectural image to produce architecture responsive to larger architectural ecosystems. By identifying the essential architectural elements of the Mosque, it is more proficient for the Architect to regulate the necessary architectural approach or determinants that are more befitting of the overall design idea. This study is seen as assisting in formulating a community mosque development scheme based on the community's needs with a more sustainable approach. Through a deeper understanding of the needs of humanity, based on these principles of sustainable architecture and critical

Regionalism, future developed results on the built environment will be able to deliver more effective decisions rather than simply taking the easy way by taking the design of mosques available in a global context. In addition, local authorities and architectural practitioners should work with religious institutions and developers in contributing to the design of mosques that work towards improving the quality of life of the community while at the same time contributing to the development of Malaysia's architectural approach in the future.

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