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Summaries

CHALLENGES IN SUSTAINING RESILIENCE IN THE COASTAL SETTLEMENTS OF SOUTH-EASTERN BANGLADESH: ACHIEVING SELF-SUSTENANCE THROUGH ARCHITECTURAL SYNTHESIS

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Keywords: climate resilience, self-sustainability, cyclone-resilient homestead, housing clusters, planned landscape, community development

Climate change has adversely impacted the occurrence and frequency of natural hazards, which is currently a prime global concern, particularly in low-lying countries. Bangladesh's coastal communities are historically and geographically vulnerable because of periodical cyclones and storm surges associated with salinity intrusion, flash-flooding, and water-logging. Moreover, due to adverse climate change, the vulnerability of the coastal zones is anticipated to be even higher in the future. Despite improved evacuation management and adequate cyclone shelters patronized by donors, lately resulting in a reduced mortality rate, the property and economic losses are still substantial due to the vulnerability of the settlements. Alarmingly, psychological damages caused by those disasters are immeasurable and it would take a long time to recover from the post-trauma. Even a single disaster could make the entire life of the community miserable. As an immediate initiative for disaster risk reduction, numerous cyclone shelters were constructed in the coastal region of Bangladesh.

Nevertheless, lately, the inhabitants have been reluctant to leave their possessions at risk and transfer themselves to the shelters. As a consequence, several researchers and professionals insisted on and prioritized the construction of cyclone-resistant homesteads. Unfortunately, their proposed structures, selection of materials, and construction techniques proved expensive for the economically vulnerable inhabitants. Besides, studies on synthesizing culture, technique, and affordability to achieve a sustainable cyclone resilient model were also limited in the particular context. As the short-term adaptative approaches such as migrating to the closest cyclone shelters have failed to sustain resilience, comprehensive and inclusive mitigation planning should be implemented to achieve more resilience in the long term.

This research is focused on the architectural interventions to encounter the critical challenges faced by the south-eastern coastal communities. The aim was to develop a cyclone-resilient settlement by providing them with the resisting and recovering capacity from the prolonged impacts of cyclone-induced disasters. The beneficiaries would adapt to a life with disasters. To encounter the catastrophe, they would have to reshape their lifestyles accordingly. The research was primarily designed in two phases to attain the research objectives: (i) vulnerability assessment and settlement analysis, and (ii) architectural synthesis for achieving a cyclone-resilient settlement.

A physical survey was conducted during 2020-2021 in an extremely remote coastal village in Bangladesh for settlement and vulnerability analysis. Three predominant communities with varying occupations were identified: the fisher-

men, farming, and salt-producer community. The vulnerability in their settlements was assessed at two scales – macro (collective) and micro (individual) scale. The settlement and vulnerability analysis identified fundamental design issues, and architectural interventions were proposed accordingly. The design issues were categorized by three broader aspects of sustainability: environmental, social, and economic challenges. The adopted framework for the architectural synthesis incorporated the resilient homestead, cluster development, and landscape master plan to achieve self-sustainability.

The architectural synthesis followed a participatory and polythetic approach through integrating technical innovations with community engagement, ecological interventions, and traditional practices. The proposed resilient homesteads would serve the basic functional demands in ordinary times and survive during moderate to regular cyclones. Even if the built forms might get partially damaged during severe to super cyclones, the houses could be repaired rapidly and easily because of lightweight and low-cost materials. Unlike the south-western and central coastal regions, the protection with mangrove forests was absent in the south-eastern coast, making it more vulnerable to high wind and tidal surges. A defensive landscape plan was developed through coastal afforestation with windbreaker trees at a safer distance from the housing clusters to reduce high wind impact. The financially stable households in the community were encouraged to provide shelter during emergencies. As disasters should be encountered collectively, increasing community interactions with shared activities and functions was highly appreciated. Consequently, through cyclone-resilient built form design, defensive landscape planning, and community development, the coastal communities of south-eastern Bangladesh would be able to reduce vulnerability, enhance their resilient capabilities, and induce self-sustenance. This inclusive design process could also be implemented by similar vulnerable communities in other contexts to adapt to the changing climate.

IRANIAN INNOVATIONS IN MOSQUE LIGHTING TECHNIQUES: A HISTORICAL SURVEY

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Keywords: mosque, Iranian architecture, lighting, hot and dry climate, Islam

The genius of the Iranians in developing environmentally friendly architectural techniques created works of architecture in the deserts of the country which are masterpieces not only from an aesthetic point of view but also from an engineering point of view, and, centuries later, are still highly valued by researchers in various scientific and artistic fields. Directing light into the interior spaces of mosques has always been one of the concerns of Iranian mosque architects. In addition, in Iran's hot and dry climate, the long hours of sunshine during the day have been one of the motivations for innovations in the natural lighting of mosques. Therefore, the main focus of this article is "the role of light and the use of each of the lighting elements in the shaping of the interior of mosques in the hot and dry climate of Iran during the four historical periods of Islamic architecture." This issue is explored through theoretical and case studies.

Since the advent of Islam to the plateau of Iran, there have been many mosques in the country's desert areas that were destroyed or have undergone fundamental changes. So, the selection of eighteen examples studied in this case study was made based on the following criteria: Firstly, adequate information should be available (mainly sufficient images and plans); Secondly, the mosque's construction should reflect the salient features of the architecture of the relevant historical period. Among the various lighting methods, the most common of all the lighting elements are described in the theoretical foundations of the research. Then, in the case study section, based on plans and visual information of mosques of each period, the application frequency of each element has been measured and evaluated at four levels. The results of the case studies are presented in the form of tables and graphs. Finally, after trend diagrams connecting the points were created, the tendency to apply each method can be seen, and in the interpreta-

tion of the diagram, the causes and factors that shaped the trend are addressed. This method has also been combined with the other descriptive methods in similar researches.

Since this research studies mosques located in Iran's hot and dry climate, naturally, the geographical area studied in Iran is often the country's central region. On the one hand, there is no information on the buildings of all mosques located in the area. On the other hand, during the relevant historical period (from the beginning of the Islamic period to the middle of the Qajar period) which covers more than a thousand years, many of these buildings fell into ruin or underwent significant changes. In view of this fact, the best surviving examples have been selected based on the available images, documents, plans, and building information and classified based on the historical periods of Islamic architecture. According to the classification of Iranian Islamic Architecture Historians, Islamic architecture in Iran can be divided into four main styles: Khorasani, Raazi, Azeri, and Isfahani, corresponding to critical historical periods: early history, Buyid and Seljuks, Ilkhanate, Timurids and Muzaffarids, Safavid, Zand and Qajar.

Innovations of techniques and methods of providing natural light in the design of the interiors of mosques in hot and dry climates led to the creation and evolution of elements that the Muslim architect can combine to create a spiritual atmosphere emphasizing the dignity of the owner of the building; an environment that, while protecting from the glare of the desert sun, is a refuge for the worshipers, with mosques as houses of God on earth. In order to abide by this obligation, Muslim architects tried to draw all the attention to Allah by creating centrality in the building and the connection between the outer and inner space through natural light.

It is worth noting that daylight has been used to meet human beings' basic needs, but these methods have been intensely used to induce the sense of sincerity, innocence, insight, and spiritual purity in the interior spaces. To achieve that, elements such as Iwan, Shabaak, window, Rowzan, and Horno were implemented. Furthermore, some elements, such as windows, could balance ventilation and provide light at different hours of the day. In different seasons of the year, other elements, such as Shabaak, ventilated and filtered light at different times of the day so that it could shine in the heart of darkness with eye-catching forms. One of the factors considered by Iranian architects, especially during the Safavid era, is the observance of the hierarchy of light. For example, a person who enters Sheikh Lotfollah Mosque, while being impressed by the whole space and the way the lighting inside the building is filtered with natural light, also realizes the presence of God. The design of the space with changes in respect to the proportion of space, light, colour, and other elements involved in the architectural space encourage the visitor to feel spirituality and attain divinity. Thus, in addition to their material function against light, lattice walls, openings, and apertures in the architecture of mosques in hot and dry climates create a unique situation for the Muslims who realise their mortality before the Almighty God.

OVERVIEW OF PAST AND PRESENT DISCOURSE ON VAL

Gabriela Smetanová

Keywords: prospective architecture, conceptual art, utopia, visionary architecture, modernism, late modernism

The paper is an introduction to my thesis entitled "Author's Conceptions in the European Architecture of the 20th Century". Specifically, the objective of my study is monographic research into the Slovak artistic-architectural group VAL, which was active from the 1970s to the 1990s. The group consists of the artist Alex Mlynárčik and architects Viera Mecková and Ľudovít Kupkovič, who gradually began to develop their visions together. During the years 1968 (1970) – 1994 they produced eight projects illustrating possibilities for our environment of tomorrow.

The 1960s were accompanied by a discussion critically thematizing the main ideas of modernism. Visionary, utopian or dystopian trends, which presented

various scenarios for the near future, were an integral part of this discussion. Their subject was the relationship between man and the environment, man and the society, architecture and landscape, or man and the cosmos. These visionaries have generated a whole series of architectural concepts, which even today are an inspiration for thinking about architecture and the environment. VAL was a valuable part of this global movement, and thus an important phenomenon from the point of view of local architectural discourse.

The VAL group is quite ambivalent when looking at individual projects, its theoretical and practical background, and its position in the local and global context. The basic ambivalence concerns the classification of their work. On the one hand, the group's work extends in many directions, works in many contexts, interprets numerous historical and modern artworks, personalities and responds to many socio-cultural issues. On the other hand, it wants to be a distinctive and free artistic play.

In addition to Pierre Restany, a French art critic, personal friend and biographer of Alex Mlynárčik, VAL is related to the concept of prospective architecture formulated by French critic and art and architecture theorist Michel Ragon in the 1960s. In the paper, I pursue many other views of experts from the local and international scene, who further developed or questioned the affiliation of VAL to prospective architecture. From the point of view of local art history, VAL's activities are attributable to the unofficial scene (Zuzana Bartošová), neoconstructivism (Viera Kuracinová Janečková), conceptual dematerialized art (Aurel Hrabušický), … From the point of view of the history of architecture, VAL is placed in the context of late modernity (Matúš Dulla, Henrieta Moravčíková). Their work is described as prospective, futuristic, visionary, utopian, radical, experimental, alternative, as another variant – elsewhere.

As early as the 1970s, when the first texts were written, there was a clear discussion of VAL's role of provoking, namely, to provoke "average" or "chaotic" period's construction to a better performance. Their projects were claimed to be a direct response to contemporary problems of architecture and urbanism, and last but not least, to lead to "new social perspectives". These ambitions existed even though they could not be made public. Paradoxically, after 1989, VAL's genre specificity and uniqueness was recognized as an "experiment" in the context of our architecture, but their affiliation with late-modern architecture was emphasized. It was this affiliation of VAL to late modernity, manifested in monumentality, that served as an argument to free this mode of expression from its direct connection with the political regime and its demands. What many texts meet is precisely the emphasis placed on freedom of creation, which makes their projects a good material for reflection of questions such as the political/apolitical nature of architecture.

Much more attention was paid to the work of VAL from the point of view of art history, where it has steadily established itself as a manifestation of conceptual art. The same body of work which on the one hand is considered a manifestation of monumentalism in architecture, is dematerialized art on the other hand, and non-objective architecture from the point of view of concept. The work of VAL is scientific, philosophical, and poetic. It is an intellectual escape elsewhere, where it formulates its own rules of the game, it is a syncretic variant of post-war modernity. VAL represents this unique relationship between architecture and art, multiplied in our local context by a totalitarian regime, where one medium can express itself more freely in the language of the other, on the basis of mutual escapes.

One of the possible reasons for this complex tangle of meanings and expectations, which to some extent contradict each other, is that the work of VAL is viewed mainly in summary, as a whole. Their work is either termed as a whole, or the whole is represented by its part—through several selected projects. However, VAL has produced eight projects over a period of almost thirty years. In addition, there is a significant disproportion between the time when the projects were created and when they were publicly presented in our country, and subsequently also reflected.

RESTORATIONS IN POST-WAR PERIOD

Martina Jelínková

Keywords: monument care, post-war restorations, modernist reconstruction, Chudomelka

The article deals with the issue of post-war monument care in the former Czechoslovakia and is a partial result of doctoral research, dedicated to the study of innovations in historical architecture in the second half of the 20th century.

After the Second World War, much of the architectural historical heritage in the territory of the former Czechoslovakia was devastated and the then professional society, in the context of cultural and social events, faced challenges of how to restore and preserve these destroyed buildings. The opinion background of how to approach the restoration of historic buildings was not uniform. The prevailing opinion was to re-establish the expression of the status quo the building had in the state before destruction. However, the resulting forms also bore the hallmarks of more creative approaches, for example in the form of a purist insertion of construction parts in a certain historical style (pseudo-style), which were not previously in the building or, on the contrary, examples with modernist inputs of authors appeared in the form of new creation. Such methodological diversity is noticeable in both countries, in Slovakia and in the Czech lands. For the purposes of this paper, we compare three selected war-torn churches of the former Czechoslovakia, which were built at approximately the same time, underwent a rather complex building development and their damage was also comparatively destructive. Specifically, it is the Church of St. Catherine of Alexandria in Handlová, where the final restoration project was designed by architect Karol Chudomelka, the Premonstratensian Church of the Assumption of the Virgin Mary in Bíňa, where the author of the restoration project was Professor Alfréd Piffl and the Church of the Virgin Mary and the Holy Slavic Patrons within the Benedictine monastery of Emmaus in Prague, whose current form is attributable to the architect František Maria Černý. Within our research, the starting points and the methodologies of post-war monument care of the mentioned buildings were mapped and analysed. To understand the context that had a direct influence on the choice of the methodology of monument restoration, we described the original character of churches, their disposition, morphological solution, and the style in which they were created. Subsequently, we monitored their construction development before the war damage. All identified rebuilding works are listed in a summary table, where we also classify them into two categories, as necessary rebuilding resulting from the need for repair, for example due to damage sustained in various uprisings, while not reducing their artistic and historical value, and rebuilding resulting from changes in aesthetic or religious opinion, which violated the original value and thus earned the status of being worthless. We also focused on the analysis of the monument restoration itself. Here we described the method of approach to each construction part of the churches so that it is evident which methodology of monument restoration was chosen for the selected part of the building. Although three similar cases were compared, the final appearance of the churches was always different. In the case of the Church of the Assumption of the Blessed Virgin Mary in Bíňa and the Church of Emmaus in Prague, it was mainly a reconstruction of the building to the state before destruction, but with significant deviations. The restoration of the church in Bíňa can be considered, given the implementation of neo-Romanesque windows, an example of a persisting opinion of purist reconstructions of the 19th century. In the case of the Church of Emmaus, it was also a reconstruction of the state before the war, but here we are witnessing an indicative reconstruction in the form of a distinctive artistically conceived western tower facade. Conversely, as regards the church in Handlová, the restoration of the state before destruction was completely abandoned. Here, the method of restitution of the original Gothic substance was chosen with the insertion of a new creation of the emporiums in the interiors of the church and an indicative reconstruction of the cross vault without any historicism. In the case of the church in Handlová, a significant capacity increase was required as part of the proposal of the church restoration. This could be considered as an argument why the restoration was done using a different methodology, but only until it becomes clear that the state of the church before the destruction had long been able to accommo-

date the required capacity, thanks to the rebuilding in 1942 – 1943. Due to this fact, violating the principle of restoring the state before destruction by Karol Chudomelka and inserting a new creation into the interior of the restituted Gothic substance, seems to be exceptional.

On the cases of selected monument restorations and research of their developmental background, not only the diverse opinions of the professional society on the methodology of monument restoration are noticeable, but also nascent ideas that speak of the possibility of contemporary intervention into the historical substance of the building with respect to its historical essence. This opinion is known to our society from the Venice Charter. However, at the time of carrying out these restorations, this charter was not in place yet. The only guidance in force at that time was the Athens Charter of the year 1931, and its principles for the use of modern technology and materials were observed in all the above-mentioned cases of restoration.

The article has the ambition to point out not only the diversity of opinion in monument care, which saw a paradigm shift in the post-war period and began to accept the author's contemporary inputs regarding the preservation of the historical essence of the building, but also outline possible unique methodological primacy of the architect Karol Chudomelka in Slovakia.

RIVER AS A FLOW IN A CITY OF ENGINEERS: THE REASONING BEHIND THE THIRD DANUBE REGULATION IN BRATISLAVA BY ENEA GRAZIOSO LANFRANCONI

Monika Bočková

Keywords: Danube regulation, Enea Grazioso Lanfranconi, flow map, Charles-Joseph Minard, Bratislava

We tend to perceive rivers flowing through cities as the presence of a natural element, although most of these rivers are far from their pristine condition. Similarly, the appearance of the Danube in Bratislava is the result of numerous human interventions that have modified its shape over centuries. Once we admit that the river is a human construct, we can look at the process of its formation as a project that influenced not only the shape of the river but also the city itself. The aim of the ongoing research is to look analytically at those moments of river change that have irreversibly affected the structure of the city and have defined its further development. This paper elaborates on the matter by further focusing on the transformation of the river into a canal.

The reasons for the individual interventions in the natural riverbed differed. The third regulation (1886 - 1896) was almost entirely subject to a single objective – to add the missing part of the canal on the route between the North and Black Seas, which would be fully adapted for the transport of goods by steamer.

In order to understand the motivations of certain actions, it is necessary to adopt the thinking of the environment of nascent capitalism. We cannot look at the river only as a flow of water, but primarily as a flow of goods that was necessary to ensure the prosperity in industry, imports and exports, trade in general. In the 19th century, a new paradigm was introduced in city planning. In the belief in technical innovation, the planning process was undertaken by engineers, which represented the opposite to the long-term effects of natural forces and uncoordinated human activities.

This paper places in confrontation the oeuvre of two engineers, Charles-Joseph Minard and Enea Grazioso Lanfranconi. While the former, a French civil engineer, brought a unique way of visualizing the flow of goods between territories, the latter, a Hungarian hydraulic engineer of Italian origins, is responsible for the third regulation of the Danube in the section between Devín and Hamuliakovo. Although their specialisation had a different focus and during their lives, they were not related to one another, their work illustrates well the idea of river as a flow, so characteristic for back then.

For the purpose of this paper, the original theoretical work of Enea Grazioso Lanfranconi was translated and analysed. The project that Lanfranconi finally presented had a clear goal – to definitively fix the main flow. In the proposal, he planned to achieve the fixation in three steps: 1. stabilization of the banks with stone embankments, 2. blocking of all side arms and 3. caving of several punctures.

Lanfranconi's arguments finally led to the implementation of the regulation according to his proposal. The fixation of the river corridor was performed through the elevation of the banks and the creation of bank-protecting structures. The stabilizing stone, provided by Lanfranconi's own quarry near Devín, has remained in major parts of the embankment until present day. The fixation of the mainstream has determined further development of the city of Bratislava in many ways. In this case, the act of the taming of nature has caused a disruption in the city-river relation and only recent projects and visions for the city aim to renew this lost connection.