

SONA

INTERNATIONAL CONVENTION ON THE ARCHITECTURAL RESPONSE TO GLOBAL CHALLENGES

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2021 Proceedings of the
SONA International Convention
The Architectural Response to Global Challenges

Editorial Support

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Message from the Convention Chair

Respected Rt. Hon. Nanda Bahadur Pun, Vice President of the Federal Democratic Republic of Nepal, respected architect, planner as well as Parliamentarian and former Prime Minister of the Federal Democratic Republic of Nepal, Hon. Dr. Baburam Bhattarai, Ar. Jose Luis Cortes, President International Union of Architects (UIA) Ar. Padma Mainalee, Jt. Secretary Ministry of Urban Development GoN, founding members & past presidents of SONA, presidents and representatives of professional societies/institutions, distinguished guests present here and participating online fellow member architects and students present here and participating online press and Media, my 14th EC Members, ladies and gentlemen present here and watching us virtually.



Indeed it is a pleasure to welcome you all to the 31st Anniversary of SONA which was established on 14th Kartik 2047 or 31st October 1990. I congratulate the founding members for their vision and the Past Presidents and their Executive Committees in uplifting and maintaining the image and status of this fraternity. Also, I must congratulate all the members in keeping this Society alive and vibrant. SONA has been actively involved in the capacity building, training, discussion/interaction, updating on new construction products, liaison and assisting the government and private clients on architecture and procurement of architects and working hand in hand with other professional Societies. Above all, moments like these give us an opportunity to be together. SONA hereby, also pledges in providing high quality of professional architectural services to the public & private sector.

The 14th EC was installed on 30th March 2021, obviously delayed due to the pandemic. I realized, we had a lot to do until the end of 2022. So we took down some of our priorities, viz.

- Training the youth on better professional service output
- Holding webinars, talk programs, seminars, workshops, conferences and conventions
- Creating opportunities for the younger generation to be able to lead the fraternity
- Enactment of the Council of the Architecture

But my dream was always to recognize architects & reward them for their good work

- This is through appreciating their professional services

But first we have to understand the architect:

World renowned Ar. Frank Lloyd Wright, speaking to the Taliesin Fellowship on November 30, 1958 had said- "What is architecture and who is an architect. Well, the word arch that is in the sense in architecture, means the archbishop, the top, the arch, the high one-one above all the others. The tech ofcourse you know the meaning of which is: technology, technique, like Toltecs. Tech means know-how, means how to put things together. So the proper translation of the word Architect is " Master of Know-how."

The architect, therefore, has a very special role in the society and carries a lot of responsibility. Cities and countries are often identified by masterpieces of the architects works. Economy,

tourism and opportunities are made available under this context. We believe that similar platforms are available for the architects, especially the younger ones, and enhance their capabilities and learn to play many roles befitting the profession. . The very nature of our work also offers architects leadership opportunities at the center of public life. Many successful architects have gone one step further and taken their professional expertise into roles as civic volunteers, community and cultural leaders, public service appointees and elected government officials. In our own country, architects have become leaders of the government, held ministries, representatives in the parliament, at the helm of the National Planning Commission and Academies, Secretaries in Ministries, Heads of Government Department, Academicians, Scholars, Consultants and Professional Architects.

SONA is a member of larger architectural networks viz.

- SAARCH South Asian Association for Regional Cooperation of Architects
- 2002 Conference (Chair)
- ARCASIA Architects Regional Council Asia
- 2013 Council Meeting & Forum (Vice President Region A)
- UIA International Union of Architects (Council Member Region 4)

This has given us prospects of exchanging ideas and eventually opportunities to work together: professionally and socially.

The COVID-19 pandemic in Nepal, is a part of the worldwide pandemic of coronavirus disease 2019 and affected all of us. A country-wide lockdown came into effect on 24 March, 2020, and lasted for four months. A second lock down of about two months was in early 2021, again. The country's economy was severely affected due to the pandemic's impact on tourism, remittance, manufacturing, construction, and trade.

SONA on our part contributed by collectively holding webinars and online meetings especially with the ARCASIA family in designing isolation centers and guidelines for precautionary measures in working/living environments and safeguard against the disease. A translation copy booklet in Nepali language has also been prepared. All the recommendations have been handed over to the Ministry of Health and a few municipalities: Bungamati/Kirtipur. "The enemy is in the street, in public spaces, in mass transit. The houses are presumably the safe space." This is the concept of being safe.

The SONA International Convention 2021 with the theme of "Architectural Response to Global Challenges", has been organized to add new perspectives to global challenges like pandemic, climate change, disasters and social inequality, and looking for alternatives to the 'status quo' through the discourse of architectural practice, research and academics. The themes of the convention under this wide topic are open for interpretation and shall comprehend the wider discourse of architecture practice and theory.

There are

- 2 Plenary Session with 4 panelists in each to discuss on their experiences
- 2 technical sessions where nearly 19 papers will be presented and discussed

A conclusion remark with a resolution is expected to be summarized at the SONA Day Celebration and Awards evening. Awards have been listed for, mainly

- Essay Competition for Students: Science in Architecture

- Children Center for Differently Abled (under Spinal Cord Injury Network Nepal)
- SONA Award for Architectural Excellence 2021

On the 31st evening we will have an interaction session and special remarks by world renowned and Pritzker Prize Laureate Ar. Balkrishna Vithaldas Doshi. We expect you all to be able to participate actively. The two days that we are together will be very fruitful and well spent.

Welcome again,

- Rt. Hon. Nanda Bahadur Pun Vice President of the Federal Democratic Republic of Nepal
- Architect Planner Hon. Dr. Baburam Bhattarai Parliamentarian & Former Prime Minister of the Federal Democratic Republic of Nepal
- Ar. Jose Luis Cortes, President International Union of Architects (UIA)
- Ar. Padma Mainalee, Jt. Secretary Ministry of Urban Development GoN
- Founding Members & Past Presidents of SONA
- Presidents and Representatives of Professional Societies
- Distinguished Guests present here and participating online
- Fellow Architects / Students present here and participating online
- Press & Media
- My 14th EC Members
- Ladies and Gentlemen present here and watching us virtually

ENJOY the CONVENTION.

Ar. Rajesh Thapa

Conference Chair

President, 14th Executive Committee

Society of Nepalese Architects (SONA)

Saturday, October 30 2021

Message from the Convention Secretary

With great privilege and utmost proud, I am writing on behalf of Society of Nepalese Architects congratulating all our fraternity members in successful closing of SONA International Convention 2021 and 31st Annual SONA Day.

The convention started with the gracious presence and remarks from Rt. Honorable Nanda Bahadur Pun, Vice President of Nepal and Former Prime Minister Rt. Honorable Dr. Baburam Bhattarai. Further, presence of founding members and past presidents of SONA, members and leaders of professional societies, and dignitaries from respective fields made the sessions significant and historic.



We took over the executive committee only 7 months back, and when we were deciding to celebrate the SONA day and international convention on October 30-31, what seemed impossible then, was of course a very daunting task within limited time. However, it's great joy to witness it getting concluded now with great success. We are grateful for all the constructive comments and suggestions from our senior architects and past presidents and deeply extend our gratitude towards all the helping hands that made this convention successful in this short period of time.

As American cultural Anthropologist Margarete Mead said "Never doubt that a small group of committed people can change; indeed, it's the only thing that ever has". Something very similar happened to SONA, and this small group of committed Executive Committee was no different. Thank you, all the EC members, for walking on this difficult task to witness this success.

Of course, it goes without saying that, Society of Nepalese Architects is proud of its members who have contributed and led in various sectors of academics, bureaucracy, research and even national development, taking the extent of architecture knowledge beyond architecture practice. All these contributions and leadership by our respective members have paved pathway for this success of this event.

At our Inauguration program, we had honorable guests- Rt. Honorable Nanda Bahadur Pun, Vice-President of Nepal and Former Prime Minister Honorable Dr. Baburam Bhattarai. One could easily weigh their exclusive understanding and compassion towards architecture fraternity and architects from their speech and more importantly the stress they've put on the formation of 'Architect's Council' can be considered as the great achievement of this program. The commitment of Architect's council was further reiterated by our guest, Joint Secretary of Ministry of Urban Development, Ar. Padma Kumar Mainaalee.

The theme of the convention "An Architectural Response to Global challenges" , was widely circulated amongst senior members of SONA and upon constructive comments, we were able to finalize it with a few changes. Architectural response towards global challenges was aptly

reflected by various speakers and presenters in the perspective of reconstruction, housing, heritage, health, climate change, disaster and many more.

The presentation of our valued international friends and friends from UIA and ARCASIA made the plenary session more noteworthy, diverse and inclusive. Further, about the technical session, we were overwhelmed on receiving almost 20 papers with thought provoking and diverse ideas in this short period of time. Technical papers presented by young researchers and senior practitioners were indeed a treat to attend.

I must thank Dr. Shital Babu Acharya and his small dedicated team for the tireless effort put by them. Due appreciation goes to Ar. Shubhi Goyal for her tireless effort through this entire period of pre-convention till the proceeding's publication. The event was distinguished to observe a brief interaction session and special note by a highly venerated architect of our region, and the Pritzker prize laureate Ar. Balkrishna Doshi. Expression of architecture beyond the practice as the reflection of lifestyle left many participants to think for the night or more. Special thanks goes to Ar. Sarosh Pradhan for his effort in making this happen in such a short notice.

At last, I'm grateful to the enthusiastic and dedicated team members of 14th executive committee, and I am fortunate to be a part of it. Pradeep, our office secretary who was always there to do complex administrative tasks and many more, deserves a big round of applause.

I'd like to thank all SONA members in uplifting the society each and every day through your practices and leadership. Special gratitude goes to all speakers, moderators and active as well as enthusiastic volunteers in coordinating this grand event. I'd like to thank all professional societies for walking with us along the path of national development and my hearty gratitude goes to our sponsors and partners, for gracefully supporting our cause.

Ar. Apil KC

Convention Secretary

General Secretary, 14th Executive Committee

Society of Nepalese Architects (SONA)

Saturday, October 30 2021

Message from the Technical Coordinator

Distinguished chief guest director general of DUDBC Mr. Navaraj Pyakurel, President of SONA Mr. Rajesh Thapa, SONA executives, professors, architects, dear colleagues, architecture students, online audiences and participants present in-person. I would like to thank the 14th SONA Executive Committee led by Ar Rajesh Thapa for successfully organising such a big event by bringing researchers and practicing architects as well as artists to discuss on this global topic “The Architectural Response to Global Challenges”.

Talking about the process of the convention, although, we had very little time to organize this convention. We decided to do it because it was necessary for the coming years to set a flawless process.



In this convention we had 10 different theme tracks and received proposals from following themes.

1. Inclusive society and equity
2. Social and economic shift of urban society
3. Architecture design for space and placemaking
4. Resilient community design, planning and policy
5. Economic development and policy
6. Participatory design strategies and community roles
7. Design and construction tools and technology
8. Education design and policy
9. Healthcare design and policy
10. Heritage conservation, policy and design strategies

It was intended to bring diversity in content as well as context in the discussion. Therefore, we hope that the “response” of architecture practice has indeed become an impactful theme in addressing the global context of change. Likewise, we focused on enhancing the research practices to communicate within our community.

We called for research summaries and abstracts. We received summaries as well as abstracts

and sent them for the review process. This year we had an 81% acceptance rate. Unfortunately, we were unable to conduct a poster presentation. However, we encourage researchers and architects especially students to submit posters in the coming year. We request all our researchers and professors to submit their research for the next year.

I would like to thank our 22 highly qualified reviewers for reviewing all the summaries and providing comments for improving the quality of papers. We are hoping for your contributions in the future as well.

As a resolution, this convention was thought to be an opportunity for our architecture community to discuss a desirable society and environment at the present day, in which pursuit of economic efficiency and rationality as well as preservation of the natural environment and conservation of historic and traditional culture is all required.

On the other hand, the effects of COVID-19 have changed our lives completely. New phrases have arisen in connection with the virus, including “social distancing” and “new normal,” which refers to the new lifestyles that emerged in response to the virus.

Therefore, how do we propose to live in an age characterized by both digital progress and the coronavirus pandemic? Despite the pandemic, daily life carries on. We still need to progress and keep pace with history, culture, diversity, inclusion, development, and so on. As a community of architects, our contribution towards these areas is significantly important.

In the two days of the convention, we were able to discuss global challenges of the present context. In the technical sessions, we discussed the mechanism of urban regeneration to bring life to the places, thereby, concluding that urban regeneration is an outcome of the catalytic effect of a series of urban interventions, for example- “tourism” and “sustainability”. Besides, the discussion of generative art and exploration through algorithms started a great conversation on the arrival of new technology in the architecture discourse. When humans work closely with machines influenced by the process of nature, the spaces of possibilities are vast and practically infinite. Whether we agree or not, the pace of technology is unstoppable.

Indeed, due to this pandemic, the change in pedagogy, living environment, and situation of mental health has left us with challenges as well as opportunities that we discussed and concluded in the presentations.

Hence, we can say that it was a fruitful event and I would like to thank all guest speakers, paper presenters, as well as online and in-person audiences who took part in the discussions.

Let's start getting ready for the next year taking the resolution of this convention ahead.

Dr. Shital Babu Acharya

Technical Coordinator

Co-chair, Architecture Research Committee

Society of Nepalese Architects (SONA)

Saturday, October 30 2021

Key Addresses

Address by the Chief Guest

Rt. Hon. Nanda Bahadur Pun

Vice President of Nepal

Saturday, October 30 2021

Thank you to the host of today's event, the President of the SONA, former Prime Minister Honourable Dr. Baburam Bhattarai, Chairman of the Union of International Architects, the officials and members of the organizing body, fellow architects, fellow journalists and ladies and gentlemen who are present physically and virtually. It is a great pleasure to attend the grand opening ceremony of the SONA International Convention organized on the occasion of the 31st founding day of the Society of Nepalese Architects (SONA), an umbrella organization of Nepalese architects. First of all, I would like to extend my best wishes to the SONA International Convention organized under the slogan "Architectural Response to Global Climate Challenges". Congratulations to the president, office bearers, members and all the fellow architects on the occasion of the 31st founding day of SONA.



Badadashain- the biggest festival of Nepalis has just ended. Our religious and cultural festivals like Tihar, Nepal Samvat, and Chhath are approaching. On the occasion of all these festivals, I would like to extend my heartfelt best wishes to the dignitaries present here and their families, Nepali brothers and sisters living in the country and abroad, as well as to the esteemed and awarded dignitaries on the occasion of this convention.

The field within which architects operate are extensive and it has vast areas such as architectural building, engineering construction and the construction of physical infrastructure. I want to focus on architecture to be specific.

The history of Nepalese architecture is very long. It may not be appropriate for me to discuss the origins of Nepali architecture, its development and current status among scholarly architects, but I can say one thing - while the geographical location of mountains, hills and plains, as well as the varied languages, cultures, and traditions have given Nepal a strong sense of identity, the architecture of the country has also added strength to this sense of identity. On this occasion, we must remember Emperor Ashoka who established stupa in Nepal in 2050 BC and Wang Huen of the Chinese Tang Dynasty who introduced the pride of Nepalese architecture in China and Korea around 657 BCE.

As I mentioned earlier, architecture is the identity of Nepal. The unique art found in architecture is rarely found in other art forms. Nepalese architecture also introduces civilization. At one time, Patan was a city listed for its unique architecture. Our ancestors spread architecture all over Nepal. Born in Patan, Araniko internationalized Nepalese architecture through China and Korea. The unique Nepalese architecture is far from what is available in other countries. Especially in the Kathmandu Valley, pagoda style temples, peak style temples and stupas, gumbas, chaityas, mixed style heritages as well as residential buildings, wells, streams,

chautaras and Patis-Pauwas are examples of Nepalese architecture. But what we have to accept is that our architecture is slowly disappearing into the abyss. The interest in it is waning in the new generations and it is becoming difficult for us to find new architects. There is a need today to impart architectural skills and knowledge to the new generation as it is the basis of Nepal's identity as well as prosperity. Even today, the attraction of tourists visiting Nepal is towards our architecture and we are feeling that the number of tourists is declining as our architecture is disappearing. We have no choice but to engage in the preservation and development of architecture by fully considering the issue of Nepal's identity, the important capital of the nation and the basis of prosperity.

The development of science and technology, the influence of modern science and the influence of modern technology of modern knowledge has definitely influenced Nepalese architecture. We should be able to preserve the architecture even by using modern technology. Our country is a multi-ethnic, multi-lingual, multi-religious, multi-cultural and geographically diverse secular nation. There is a lot of diversity in religion, language, culture and customs. These religious, social and cultural diversity are reflected in the architecture itself. Therefore, architecture is also the identity of different castes, languages, cultures and people of Nepal. It is also a symbol of unity among diversity and effective programs need to be developed at the state level for the protection, promotion and development of architecture. The development and protection of Nepalese architecture would have been possible if the training, reading and teaching institutions related to architecture and its preservation had been established and taught. I would like to draw the attention of governments at all levels to this issue.

Today, I am very happy that architects have been doing important work in the protection and development of architecture through their organization, even though the state is not making effective programs. And I would like to commend the work of SONA and all its affiliated architects for the development of architecture while protecting the rights and capacity of architects. With former Prime Minister and expert on the subject, Dr. Baburam Bhattarai here and with his support and patronage, I am confident that Nepalese architects will make significant progress in the development of architecture in the days to come. I would like to support the demand of the people here for the formation of Nepal Architects Council for the development of architecture and for the rights of architects. And I would also like to draw the government's attention to this.

Discussions at conferences point in a new direction. I hope that the working papers presented in this convention and the discussions on the working papers and the conclusions drawn by them will become a historical guide for the study, research and preservation and development of Nepalese architecture. I expect the government to assimilate the findings of these people and include them in its programs. Similarly, here we all know that Nepal is on the path of prosperity and for prosperity, of course, physical infrastructure, art, culture and traditions are very important. Especially in the field of physical infrastructure development, I expect this organization to make a significant contribution in the future. And last but not least, I would like to thank the organizers for inviting me to this important event. On the occasion of this event, I would like to urge the friends of various friendly countries to visit and enjoy the various tourist areas of Nepal. Thank you very much. Namaskar!

Keynote Address



Dr. Baburam Bhattarai

Former Prime Minister of Nepal (2011-13)

Chairman, Federal Council

Janata Samajwadi Party

Dr. Baburam Bhattarai (born June 18, 1954, Belbas, Nepal), is a Nepalese politician and the Chairman of the Federal Council of the Janata Samajbadi Party, Nepal who served as the 36th Prime Minister of Nepal. Prior to forming a new political force, Nayashakti, Bhattarai was a Senior Standing Committee member of the Politburo of the Unified Communist Party of Nepal (Maoist) which started the Nepalese Civil War, and brought about a transformation in the political framework of Nepal from a monarchy into a republic. Bhattarai holds a BA in architecture, MA in Planning and PhD in Regional Development Planning. During his tenure as the Prime Minister, he took measures to respond to the problem of urbanization by initiating a number of urban infrastructure projects and continues advocating the importance of retrofitting and construction of traditional vernacular architecture using local sustainable methods.

Saturday, October 30 2021

Chief Guest, Rt. Honorable Vice-President, Mr. President, distinguished speakers, esteemed members of the fraternity, ladies and gentlemen,

I am truly humbled to be with you at the opening of the SONA Annual Convention 2021. At the outset, let me congratulate all of you, members of the Society of Nepalese Architects (SONA) and the entire architecture fraternity of Nepal on the 30th anniversary of SONA. Established in 1991, SONA has indeed grown from a small group of architects, concentrated in Kathmandu Valley to a nationwide organization relentlessly working to establish architectural value in the society. The presence of scholars, academicians, officials, and prominent as well as budding architects from various regions across the world in this international convention is a testimony to SONA's outreach. I am of the view that along with discussions on burning global and local issues by adhering to the theme, the convention shall also provide an opportunity to review the progress of past commitments, share experiences and set resolutions for the future.

The convention, this year aims to critically review the architectural practice as a reflection of global challenges, question the status quo and bring about a radical change by assuming greater responsibility as individuals, all of which I am passionately pursuing as a politician and

also a trained architect and planner. In this context, please allow me to present a few relevant points.

We live in a world which is far more inequitable than the one which we inherited. Contrary to popular belief, proliferation of knowledge, revolution brought about by science and technology and the increase in global capital, often termed as defining characteristics of the 'modern progressive world' have not contributed to make our planet any safer or more livable. On the contrary, the growth of the population at an alarming rate, which is characterized by urbanization and transformation of global land use, is resulting in a loss of identity. Furthermore, it is associated with a high level of population exposure, especially, the lower income groups to chronic stresses and shocks, both environmental (e.g. landslides, earthquakes and floods) and social (e.g. violence and crime). Homelessness affects a portion of the poor and vulnerable who live in the most exposed areas, often in informal settlements on the outskirts of the cities with little or no access to basic amenities.

The impact of climate change is eminent, and newer, infectious and fatal diseases such as Covid-19 have become entrenched in the population. Given these rapidly emerging global issues, it is imperative that we act now and embrace more progressive and innovative strategies to deliver solutions for a prosperous future. The conference shall surely present systematically investigated theories and ideas to deliver solutions for afore mentioned problems. However, what I would like to emphasize on is the need to test all these theories in real life scenarios. Practice and theory are dialectically interrelated, however, practice is primary. I would like to request all of you to take roles of 'leaders' and address the global challenges, explore the abundance of architectural research and ideas put forward by our speakers today and develop a new architecture- one which is ethical and sustainable.

In the context of Nepal, given the diverse rich historical and cultural background and geographical terrain, our architects, engineers and planners should look beyond building just a house, and, design strategies suited to our context. In the process, I urge you to not forget our age old vernacular architecture. Despite the paradox that the old fabric and its characteristics belong to its old roots, various aspects of the traditional settlements can respond to and fare against various urban challenges. So, why not develop an architecture that is a symbiotic case of old and new? Why not reap the benefits of technological growth and develop inclusive, green, sustainable and smarter cities and homes?

The attention of the architect-planners in Nepal must be particularly drawn to a very distorted form of urbanization marked by 'ruralization of the city' rather than to 'urbanization of the countryside', which is the manifestation of an underdeveloped and transitional socio-economic process. Also, the recent federal restructuring of a traditional unitary state into seven provinces and 753 urban and rural municipalities, has led to emergence of new quasi-urban places which are mostly unplanned and haphazard. This demands for active and creative role of architect-planners for the planned and orderly development of emerging new urban places. The government must deploy relevant technical manpower in those places in time.

Moving ahead, I would like to applaud all of us for coming a long way. In the case of Nepal, the profession of architecture came into light and became formalized post quasi-democracy in 1951. It has undergone gradual growth through these years. With newer architecture schools getting established every year and an ever-increasing number of vibrant and creative minds entering into the field every year, I cannot stress more on the importance of a separate legal entity, a Council for Architects of Nepal now, more than ever. I urge SONA to take necessary steps to coordinate with the legislative organization related to the architectural practice and request involved stakeholders to provide their support. Furthermore, I request the government, private sector, experts, academicians and other stakeholders to pen down and promulgate new relevant policies to safeguard the profession of architecture in the country.

As I stand here at the podium, I see both challenges and opportunities. The profession of architecture in Nepal as well as outside is undergoing massive change. Changes may look like challenges, but they can be turned into opportunities, if taken in the right manner. I take this initiative by SONA to be in exactly in this spirit. Here, I would like to emphasize again that to face these challenges, and tap on the opportunities, our creative and individual potentials have to be fully utilized. This convention has brought all important stakeholders together. I look forward to stimulating sessions and discussions, which would certainly contribute towards generating new ideas and insights. I once again would like to congratulate SONA for taking a lead in this endeavor.

Thank You!

Closing Address

Er. Navraj Pyakurel

Director General

Department of Urban Development and Building Construction (DUDBC)

Sunday, October 31 2021

I would like to extend my gratitude to the President of SONA, the general secretary, the executive committee members, volunteers and all participants attending, both virtually and physically present. Huge respect to all of you for the contributions that you have made in your respective fields.



I would like to express myself in three different phases. First of all, I will show appreciation, second, I will point out some of the issues that I think are important and lastly, I will make some commitments individually as well as on behalf of my organization. I think SONA has done a commendable job since its establishment over thirty one years ago. As an organization, it is difficult to ensure growth and to make an influence during the first few years but SONA has honestly outdone itself in that department. This became evident in this convention itself which was attained by popular international architects for demonstrating their own appreciation for the work that the organization has been doing since its establishment. The crowd today is varied and there is beauty in this crowd of people tied together by the same field of interest but differences in terms of expertise. The presence of international architects, national architects, graduates and architecture students in this convention is representative of the sustained efforts of the organization.

Likewise, the role of architecture and architects in the civilization process has been crucial. Nature has taught us how to practice architecture. From caves to high-rise towers, we have come a long way. National architects have contributed significantly to the growth of architecture in our country. Architecture should be economic and architects should be provided with a room for innovation. We must respect the field of architecture- from building design to city development, in cities as well as villages. Additional interventions and innovative approaches are required in architecture to tackle challenges, as it was demonstrated by the recent Covid-19 pandemic. We must also focus on green technologies and construction due to sustainability concerns. Moving on to commitments, first and foremost, I am proposing the development of an architectural review system consisting of excellent architects associated with this organization to review national projects. As we are moving towards the development of smart cities, we propose the involvement of SONA and its architects on various levels, particularly in the policy-reviewing and formulation process. This is my commitment and I will keep you informed about future developments in this area. Finally, I would like to congratulate everyone who won different categories and those who participated as well. You demonstrated amazing coordination and discipline. Good luck on your future endeavors.

Address by Ar. Padma Mainali

Ar. Padma Mainali

Joint Secretary

Ministry of Urban Development (GoN)

Saturday, October 30 2021

Chief Guest Honorable Vice President of Nepal, President of UIA and the officials, delegates of the attending physically and virtual media, President and officials of the Society of Nepalese Architects, fellow Architects, my seniors and colleagues. I am honored to speak in the opening ceremony of this international convention organized by the Society of Nepalese Architects. I extend my appreciation on behalf of the Ministry of Urban Development to the entire SONA family for completing three decades. I appreciate SONA's efforts to protect and promote the architectural profession in the country. The Ministry of Urban Development and SONA are working together for the excellence of the field of architecture and have always been supportive to each other. The ministry is forever committed to contributing to the further upliftment of the society, and for the betterment of the entire architectural profession here in Nepal.



Let me flag it off that we are globally celebrating “The Urban October” for the whole month. The government has already celebrated the World Habitat Day program and has planned to celebrate World Cities Day tomorrow with all the urban stakeholders in the country. This international convention was also organized in the same category and deserves similar importance. Therefore I hope for the successful completion of this convention.

I would also like to extend my gratitude to the distinguished guests, participants and eminent personalities for making their time and thoughts available to the architectural profession and encouraging Nepalese architects to think about the global challenges of the time.

Architecture is evolutionary and the living story of the past, present and future of human civilization. Simply by the definition, we might recite it as the reflection of the past, the aspiration of the present and vision for the future. The theme of this convention captures all these dimensions of Architecture and how we determined the role of architecture in tackling global challenges. Please bear with me as I share a few thoughts on architectural responses to the global challenges that we faced and the way forward on it. This is to start with the aspiration of a person, for personal compatibility and satisfaction of the desired function. Secondly, for the community functions and compatibility with time and lifestyle. Thirdly, to encourage territorial and cultural innovation. And also for the morphological identities, making choices for the people for all segments of the society. This involves the

conservation of what people aspire during the time and to explore the issue of identity and the reason behind it. Manifestation of beliefs, customs, culture and artistic sensibilities involve as software inputs to these explorations integrating physics with emotions and defining the inclusion and heterogeneity. In addition to person-space relations, communities, territories and morphological identities, we must recognize that our efforts are required for networks among conceived communities and territories. Networks are not concerned only with physical dimensions, their importance to social and emotional networks have similar strengths and attract concentration. So this concept of sustainability and transport, market access and all other dimensions of city building and the need of strategic thought of investments.

If we move to extended contexts, we are again challenged to contribute to the economy of clusters of cities. urban corridors and economic corridors, the economic dimension never stops with boundaries, international economic dimensions and dynamics, trade and transit would also contribute to our city settlements, challenging the architects to take up these responsibilities. To tackle all these challenges, we must recognize the gaps between academic and practice. If we believe that these challenges are the responsibility of individual creativity, we may be wrong and we must redirect ourselves in research, innovation and coordination in practical actions. Also, we are facing three broad areas of professional challenges. They are climate change, technology and generation of challenges, and the possible implication of the recent pandemic.

Climate change compels us to revisit the norms, standards and mode of practices. Generational challenges include recognising the new moves of the newer generation with technology. Similarly, the implications of the recent pandemic Has to be reviewed as input to our next generation in the people-space interface. At last, the agenda of capitalizing vernacular experience in the context of same universal practice posed greater challenges back in time.

I propose to work together with the government for the co-production of the spaces and cities to take on these global changes in our day to day practice. The Government of Nepal, the Ministry of Urban Development is there for working at small scale contribution, at settlement level in himali towns with morphological containment exercises, Integrated Urban Development and planning in Municipal level An urban corridor and urban region planning and investment in regional level. These all are hinged with the national level policy, its strategy and proposed Strategies in Urban Development and planning. I feel humbled to be a part of this venture and Appreciate all who have directly and indirectly been associated with this profession. I would like to appreciate the contribution of SONA in this endeavor since its establishment.

Finally, I would like to extend my personal and institutional regards to SONA for organizing this convention and bringing together all the eminent professions for the upliftment of the Nepalese architecture and the rights of the Nepalese Architects. I know we still need to work together in all segments for the co-production of knowledge, skills and methods.

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Introduction

Introduction

The SONA Annual Convention is held every year by SONA, along with the Research Committee and other sub-committees under 14th Executive Committee of the Society of Nepalese Architects. This year's international convention focused on "The Architectural Response to Global Challenges", and technical papers related to the said theme were presented. All life members, general members, and non-members were invited and requested to register for the convention. At the Annual International Convention, the latest studies, findings and information were exchanged through panel discussions, technical sessions, poster presentations and exhibitions.

Theme

"The Architectural Response on Global Challenges"

The world is changing fast and unexpectedly. The new global challenges of today are complex than that of yesterdays and challenges of tomorrow are waiting with unprecedented actions. The recent pandemic has taught a global lesson and our priorities and societal edifices have changed a lot. Challenges of pandemics are coupled with impacts of disasters as landslide, flooding, and earthquakes. Being stuck inside a house for almost 2 years has given us more time to rethink our habitat and surroundings. In this background, architecture as the most dynamic and responsive entity of art and creativity, holds the pinnacle of responsibility and inevitability to the changing global scenarios.

The visible impact of climate change, social inequality, depleting resources on the economic and social structures of society is imminent. It is in this unparalleled scenario, architecture as a responsible practice is becoming more relevant than ever. From temporary shelters to isolation blocks, physical distancing in COVID to integrated housings for addressing global poverty, architecture as a creative art addresses many global problems.

The recent publication by UIA "An Architecture Guide to the UN 17 Sustainable Development Goals" in reflection to the responsibility of architects to address the global challenges, explores the abundance of already existing architectural solutions and guidance for new architecture, for the realization of the Sustainable Development Goals.

Through the historical timeline of Architecture as an evolutionary art in reflection to the social, economic, and environmental response, architects have proved their relevance through their creativity and ingenuity. Historical evolution of architecture practice has justified the response of the architecture of that period to its contextual challenges.

The Vitruvian tripodal description of architecture as utility, strength, and beauty was challenged by Eugène Viollet-le-Duc and later followed by the modern philosophy of "form follows function". The priorities of architecture response have changed over the evolution of society in its environmental and economical context. Be it the austere approach of modern architecture after the 1940s or socially conscious approach after the 1970s or climate-responsive architecture in the 21st century, architecture has evolved through the challenges. Even during the pandemic period, architecture in its most minimal form has evolved in interior spaces, acoustic isolations, or even creating a WFH (work from home) environment at residential spaces.

In the longer run, such impressions shall be reflected in architecture normalcy. It is in this perspective; SONA intended to put the theme of “Architectural Response to Global Challenges”, to take the discourse of architecture practice, research, and academics as a reflection to global challenges like pandemics, climate change, disasters, and social inequality. As they say- “Only creativity can save the world”, the role of social leadership through the architecture practice is the utmost need of today.

The conference aimed to take the lead through the discourse of architecture in its global context beyond general practice. The critical review of present-day architecture in its reference to past and point of departure was the axis of the conference. The themes of the conference under this wide topic were open for interpretation and fully comprehended the wider discourse of architecture practice and theory.

Theme Track

Response Towards:

1. Inclusive society and equity
2. Social and economic shift of urban society
3. Architecture design for space and placemaking
4. Resilient community design, planning and policy
5. Economic development and policy
6. Participatory design strategies and community roles
7. Design and construction tools and technology
8. Education design and policy
9. Health care design and policy
10. Heritage conservation, policy and design strategies

Venue

Hotel Himalaya, Lalitpur, Nepal

The SONA Annual Convention (SONA) was held in Kathmandu Valley— a Cultural Megacity. The convention was convened in hybrid system, the technical sessions were carried online as well as offline.

Theme Track

Abstracts from wide range of architecture fields were encouraged for submission. The conference theme tracks mentioned above intended to bring diversity in content as well as context in the discussion. The “response” of architecture practice was put forward as an impactful theme in addressing the global context of change. The authors were requested to choose at least one theme track. This could help us to identify the potential reviewer as well as group the conference schedule according to theme.

Session Types:

A. Conference Intensive Panels (30 minutes, Invited):

Panelists were decided by SONA and were invited from international platform.

Submission Requirements:

- i. Abstract of 800 words, and
- ii. Authors biography 200 words.

B. Individual Presentations (15 minutes, Summary):

Individual presentation included scholar and professional research that had not been published elsewhere. All individuals could submit their abstracts.

Submission Requirements:

- i. The abstract written in the given format of two pages must include but should not limited to; Introduction, Methods, Analysis, Discussion and Conclusion (refer. SONA Format.docx).
- iii. Summary which may include well labeled data, graphs, pictures and other information.
- iv. Authors' biography 200 words.
- v. Authors' submission form (Refer. SONAAuthorsubmission.docx)

C. Poster Session (60 minutes, Group Session, Abstracts):

The poster session was held for an hour long during the conference, intending to have a group discussion and exchange session.

Submission Requirements:

- i. Abstract of 500 words
- ii. Authors' biography 200 words.
- iii. Authors' submission form
- iv. Poster: A0 size, 1189mm x 841mm printed beforehand was to be brought along with during conference.
- iv. The digital poster should be submitted no later than October 20,2021.



2

Plenary Sessions

Session Moderator

Plenary Sessions



Ar. Sanjaya Uprety

Dr. Uprety, associate professor, at Department of Architecture, Institute of Engineering earned his PhD in Architecture (2017) and MSc degree in Urban Planning (2002) from TU and Bachelor's degree in Architecture from the School of Planning & Architecture, New Delhi, India in 1994. Currently, he serves as the program coordinator of the Master of Science Program in Energy Efficient Building in the Department of Architecture. Professionally, he has wide experience in energy efficient architecture, urban planning and DRR. He has worked in Nepal and Bhutan and served as visiting lecturer both in Nepal and abroad. He has several publications on his credit.



Plenary Session I

Dr. Qi Yingtao

Assistant Professor (Assistant to the Dean)

Department of Architecture, School of Human Settlements and Civil Engineering, Xi'an Jiaotong University

Research field: Rural Planning, Preservation and Development of Traditional Villages and Buildings

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Qi Yingtao (1989) got Ph.D. in architecture, Tokyo Institute of Technology, Japan (2019), and is a Committee member in the architectural anthropology of AIJ (Architectural Institute of Japan). He has presided over one project fund by the National Natural Science Foundation of China(Grant No.5210080641), participated in two national key research and development projects(Grant No.2020YFC1522304 and Grant No.2019YFD1100703), and three actual projects of rural planning and design of traditional residential style's improvement. He has published more than five papers in important academic journals and more than 16 national and international conference papers. And has won two academic paper awards in the field of Architectural planning in Japan and more than seven Architecture planning and design competitions.

Preservation and Development of Traditional Villages between Japan and China

Saturday, October 30 2021

Due to lifestyle changes, the rapid development of tourism and the unorganized development of urbanization, a large number of traditional buildings have rebuilt or decreased rapidly in rural areas of China. Some residents are even forced to move to new residential areas or other places due to excessive tourism development and over-protection. This method could indeed protect historical buildings and village space, but traditional culture would be lost, which is closely connected with people's normal life.

Belonging to the Asian region, there are amounts of traditional villages at the edge of decline both in Japan and China, but Japan's village renewal still have been developing into the mature system, which is the pioneer and expert in this area. Thus, the purpose of this speech is to explore that how the Japanese traditional village preservation system self-sustained, which also could become the reference of Chinese village preservation in the future.

The first part takes the kaneyamamachi in Japan as the object, and shows how the long history of preservation system is formed from three aspects which is industry, habitation and education. The second part takes takes the Nanniwan village in Yanan city of northwest China as the other object, and shows how the village space is quickly constructed with only two years from the same aspects by comparing Japan. And lastly, the preservation of sustainable system is talked that how the surface space and deep factors could be combined effectively.

Plenary Session I

Dr. Koichiro Aitani

Associate Professor, Texas A&M University, USA

Visiting Professor, Kyushu University, Japan

Dr. Aitani, a 1st Class Architect (Japan), was born in Japan and worked for Skidmore, Owings and Merrill, LLP for a decade, engaged in large mixed-use projects in North America, Europe, the Middle East and Asia, such as the NATO Headquarters (Belgium), and the Cathedral of Christ the Light (CA). He received a B.Eng. and a Ph.D. from Kyushu University and a M.Arch. from Virginia Tech.



He is a tenured professor of the Department of Architecture at Texas A&M University, as well as a Visiting Professor at Kyushu University for promoting international outreach and global education. His research interests range from Urban Regeneration, Japanese Architecture Theory, and architecture design, to the recently published "Urban Catalyst" from the recognized publisher. Additionally, he works with photographs to capture the embodiment of Light between Architecture and the City, maintaining a dialogue within scale and movement to allow the essence of the image to escape.

Mechanism of Urban Regeneration: Case of Benesse Art Site: Naoshima, Inujima and Teshima

Saturday, October 30 2021

"Benesse Art Site Naoshima" is the collective name for all art-related activities conducted by Benesse Holdings, Inc. and Fukutake-Foundation on the Naoshima Island and also extended to the Teshima Island in Kagawa Prefecture and the Inujima island in Okayama Prefecture. The Seto Inland Sea, with hundreds of islands, are now became the tourist destination triggered by the combination with ART, Architecture and Nature. My research will clarify a process of the Benesse's Strategy and its execution of interventions, impact to the neighborhood, and summarizing a mechanism of urban regeneration chronologically, and will discuss and theorize this urban regeneration as an outcome of catalytic effect of series of Urban Interventions."

Plenary Session I

Er. Sabin Timalsena

Independent Artist | Computer Engineer

Research field: 3D Geometry Processing

Sabin Timalsena is a generative artist and computer engineer with expertise in computational geometry and real-time computer graphics. He has a Masters in Computer Science with research published on the topic of 3D geometry processing, and 5 years of software development experience at Microsoft. Currently, he is involved in curiosity driven explorations of generative systems, emergent systems and interaction design.



Generative Art and Exploration through Algorithms

Saturday, October 30 2021

The advent of technology has opened up new forms of expressions, and generative art is one example of how technology can augment the human's ability to create. This is an artform that started in the 1960s, pioneered by artists like Vera Molnar, who used programming and algorithms to make drawings like never seen before. Generative art can be best defined as creating something that creates, i.e., designing a system that can operate under a set of rules and constraints in order to generate a wide variety of outputs. Wikipedia defines Generative Art as art that in whole or in part has been created with the use of an autonomous system. This system can be a simple algorithm that you can execute with pen on paper, or it can be a complex computer simulation that needs little to no human involvement. The key here is that the creator is not explicitly controlling every aspect of the output, but only guiding it with a limited set of parameters, and letting the system do the rest.

One of the most interesting things about the generative process is its utility as a device in deriving structure from chaos. As pattern-seeking animals, we humans are always searching for novel ways to make things. In this search for patterns however, the space of possibilities is often vast and practically infinite. Exploring such a vast space manually is mostly not feasible. The generative process is often deliberately random for this reason - as an exploratory aid. These systems can use chaos as an input, and use the chaos to derive structure. In the generative process, chaos can come in the form of random number generators, sensor readings, or human-input parameters. Depending on how the system is set up, small variations in input can produce a wild variety in outputs. Randomness is a very important topic in the study of algorithms, and by extension in the exploratory use of algorithms.

Various elements of mathematics and science can be a part of the generative process. One interesting application of the sciences in generative art is in the form of “emergent systems” - where a simulation is started with initial random conditions, and a natural pattern develops eventually through interaction between the elements that are simulated. One example is Reaction-Diffusion systems, that can be employed to generate organic, coral-like patterns. Physarum simulations can be used to construct optimized networks between a set of points, as seen in Toshiyuki Nakagaki’s physarum experiment: where seemingly brainless slime molds with limited local perception are able to construct a highly efficient nutrient transport network, which structurally resembles Tokyo’s railway system. Such behavior can be simulated digitally, as explained in Jeff Jone’s 2010 paper, and has been popularized by artists like Sage Jenson. There are many other examples of naturally inspired algorithms that have been used to generate forms: L-Systems, differential growth, space colonization, and cellular automata to name a few.

The discussion of generative art is not complete without talking about creative coding. Perhaps the most distinguishing feature of generative art is the fact that the artists are creating their own tools rather than being limited to the tools available to them. While there are dozens of software packages and mechanical devices available to the modern creator, they all come with their own set of limitations. The workflow in most of these software packages is enriched with various algorithms and tools, but the way they are used is still largely manual. In the cases where software packages include some tooling for generative design, such support is still limited to whatever the manufacturer implemented. Programming as a tool allows the artist to break free from the limitations of contemporary art devices, enabling the artist to make their own arbitrary tools. Creative coding is the art of using programming in imaginative ways, and while it is applicable in many other fields, it is especially valuable for the generative artist: it allows one to make their own hammer, when a suitable hammer is not available. This is one reason why so much variety is possible in generative art, as a result of artists coming up with their own algorithms and processes for individual works of art.

The generative process is not limited to artists, and can be incorporated into other disciplines as well. There are examples of generative design being introduced to CAD tools for mechanical design and manufacturing, to automatically “fill in the gaps”, to reduce material usage in 3D printing, etc. It is a relatively new movement that is gaining more ground lately, as technology has become more accessible in the form of cheaper, more capable computing devices and the rising popularity of open source software.

Plenary Session I

Dr. Valina Geropanta

Associate Professor in Urban Planning and New Technologies

Technical University of Crete, USA

Registered Architect and Engineer, Expert in the field of Smart City

Dr. Vasiliki (Valina) Geropanta is an Assistant Professor in Urban Planning and New Technologies at the Technical University of Crete, registered Architect Engineer, and expert in the field of Smart City. The last few years she has been building knowledge on the use of bottom-up smart city projects and open source technologies to augment urban health in cities as to meliorate the use and management of public space. In 2018 she founded Avrions, (<https://www.avrions.com/>) an initiative that aims at raising awareness and build per se projects in the trajectory of ICT, urban space, and participatory design.



Inclusive and Participatory Processes in City Functioning: New Trends in the Post-Pandemic Era *Saturday, October 30 2021*

The latest increased mobilization of digital tools to track and stop the spread of the coronavirus, have allowed several cities to provide basic services in an innovative way to their citizens, as well as to keep the spread of the virus under control. At the same time, the adoption of effective, rapid and clear legal, policy and governance measures have contributed to enhance trust in institutions, fostering compliance, and to protect citizens' rights (such as the right to privacy, endangered by the increased use of applications that use personal data), as well as to ensure that no one was left behind, enhancing, for example, support measures for specific vulnerable groups (like direct lines for women victims of domestic violence, or for the ageing groups). Even beyond the current pandemic, which has merely accelerated the evidence of the need for this transition, the evolution of cities towards smart structures that bust inclusive and participatory processes is crucial to address current and future challenges and adapt to current and future needs, and tackling the underlying issues of inequality and exclusion in cities is a precondition for the shared and universal enjoyment of the benefits brought by smart cities.

Based on these ideas, the objective of this speech is to raise awareness about the links between health and urban systems and the potential for smart cities to improve urban health and achieve the Sustainable Development Goals, especially SDG 3 and SDG 11, while ensuring equality, equity and a fruition of the positive results of smart cities, which are not always accessible to all segments of the population, usually discriminating for gender, age or income. It will offer firstly a set of definitions of the state of art, and then focus on building a concrete and valuable input stemming from case studies from different geographical areas. Specifically it will try to reveal exclusions in public space based on gender, status, class and age and will wander upon ideas and solutions documented in Europe and elsewhere.

Plenary Session II

Ar. Debatosh Sahu

*Principal Architect and Partner, ESPACE
Chairman, Fellowship Committee, ARCASIA*



“Let there be light”.....and there WILL be light!”

Sunday, October 31 2021

The Process of Globalization has allowed us to recognize the need of the hour. The idea of environmental capacity highlights the need to recognize the contradiction in human destiny that means we question the basis of our own & other lives while aiming to enhance quality of life.

Architecture develops alongside society and reflects contemporary thought. It is human nature that they always want to enhance quality of life, and inevitably this will put pressure on the environment. Here comes the Architect’s role: to find ways to bring an end to this dichotomy. We have the responsibility to find a balanced solution.

Buildings and built-environments play a major role in the human impact on natural environment and on the quality of life. Sustainable design integrates consideration of resources and energy efficiency, healthy buildings, etc. It significantly reduces adverse human impacts on the natural environment while simultaneously improving quality of life and economic well-being.

Plenary Session II

Ar. Rebecca Vanessa D. L. Rellosa

United Architect of Philippines (UAP), Philippines

Rebecca Vanessa Rellosa (Becca), is a registered and licensed architect in the Philippines. She obtained her Bachelor of Science in Architecture degree from the University of the Philippines in 2004, and her Diploma in Urban and Regional Planning from the School of Urban and Regional Planning at the same university in 2006. Becca actively serves the United Architects of the Philippines (UAP) since the start of her membership in 2008 and was awarded as Outstanding Chapter President in 2015. She has since held chairmanship and membership of various national committees in the organization, including the UAP Committee on Awards from 2016 to 2018, and held the position of the Chairperson of the UAP Committee on Young Architects in 2018 to 2019, and 2020 up to present. For her service to the organization, she has been bestowed the UAP Presidential Award for Leadership and Service in 2017 and 2018, and the Presidential Award of Merit in 2019.



Global Synergy: Architects in the Post Pandemic World

Sunday, October 31 2021

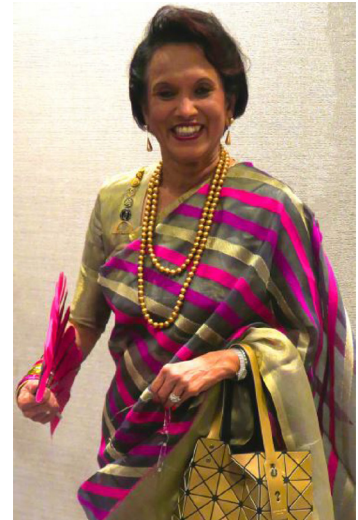
In this Anthropocene Era, environmental degradation has been at its fastest rate ever. According to the United Nations, the unprecedented economic growth, a culture of unsustainable consumption and wastage, and a propensity for natural disasters such as earthquakes, typhoons and tsunami, has made the Asia-Pacific the most vulnerable region in the entire planet. Compounding the worsening situation is the on-going pandemic, which has put so much physical, mental, emotional and social pressure on us humans. Architects need to appreciate the importance of becoming involved in the discussion and implementation of policies and strategies, more than ever, to address issues of global significance by taking a holistic and collaborative approach; but at the same time, engage in actions that are manageable and realistic. The pandemic has accelerated changes in our behavior, such as working from home, global economies and digitization. When data can be reached at the touch of our fingertips, architects can possibly use this to the advantage of our civilization and our profession, and change the way we think and design for people. New building technologies, materials and methods will most likely emerge, as well as new building typologies. We should help in establishing regulations and standards to the ability of architects in delivering quality services, thereby allowing maximum public interest and investment in the build environment. In the advent of the “new normal”, concerns about what happens to our built heritage and traditions are being raised. As trained problem-solving professionals, architects are inevitably at the forefront of helping humanity cope with this on-going forced evolution of architecture and city planning in these drastically changing times.

Plenary Session II

Ar. Nela De Zoysa

Chairman, Nela de Zoysa Design Corporation Pvt. Ltd., Sri Lanka

NELA DE ZOYSA is a practicing architect from Sri Lanka , an Honorary Fellow of the American Institute of Architects (Hon. FAIA), a Fellow of the Sri Lanka Institute of Architects (FIA (SL)), of the Royal Institute of British Architects (FRIBA) & of the Royal Institute of Australian Architects (FRAIA). An International Associate of the Royal Architectural Institute of Canada (Int'l. Assoc. RAIC), a Life Member of Indian Institute of Interior Designers (IIID) & holder of a Post Graduate Diploma in Architectural Conservation of Monuments & Sites: PG Dip Acomas. She has the distinction of being the only living Architect in Sri Lanka to be a Hon. FAIA and FRIBA, the first Sri Lankan to win the ARCASIA Gold Medal in 2000 and also the First Woman in Sri Lanka to win the South Asian Architects Award in the same year. She won the Geoffrey Bawa Commendation Award for Excellence in Architecture in 2008. Apart from the International Awards mentioned, she has won 18 National Awards.



Architectural Response to Global Challenges

..... With reference to teaching “ Colour ” to Year 1 Students through the Global Pandemic.

Sunday, October 31 2021

“The World today faces the Greatest Challenges of the decade, as a Global Pandemic threatens to isolate Communities, Disrupt Our Profession & Cripple our Economy.” “Painting & Sculpture was my Prelude to Architecture ! ” For this matter, I would consider myself as an Artist Architect ! With the training I received at Art School , Colour came naturally to me , more so by “ Instinct ” . It was certainly my “ Instinct ”. that guided me to win the belt of International & National Awards, for Architecture & Interior Design.

When a challenge was thrown at me to Teach “ Colour ” , I needed to rationalize my Instincts , especially because , I was no Teacher, but a practicing Architect , who was called upon to teach a subject that was never taught : Colour.

Having somehow other logically thought out the components of the subjects, I systematically approached the subjects via Physics, and I continued to teach physically , for many years. The greatest challenge was faced this year, with the Pandemic, when everything needed to go Virtual for someone who depended on Touch, Feel & See. This paper discusses the manner I disseminated the components of Colour to take up the challenge to teach virtually though the Pandemic, achieving phenomenal results. Were these results a mere coincidence or not, is discussed studying the advantages and disadvantages proving that it was not a mere coincidence but the bare fact, proving that Architectural responses to Global Challenges in this respect was advantageous to Architectural Education.

Plenary Session II

Ar. Tan Szue Hann

*Chair, Sustainability, Singapore Institute of Architects
Board Member of Singapore Green Building Council
Co-Founder IxSA (Innovation x Sustainability Alliance)*

Ar. Tan Szue Hann, M. Arch, is an award-winning Architect, strategist and thought leader in sustainability and sustainable development. Hann is currently Director of Sustainable Development at a leading global hospitality chain, and the Chairman of Sustainability, Singapore Institute of Architects, the professional body for Architects in Singapore. He has also been a Board Member of the Singapore Green Building Council since 2017. In 2021, he was an invited Co-Founder of IxSA (Innovation x Sustainability Alliance), a global non-profit think tank, with a group of global sustainability leaders.



Hann graduated with M Arch from the National University of Singapore (NUS), with a visiting fellowship to the University of California Los Angeles (UCLA) in 2007, and a BA Arch (First Class Honours) in 2006. On graduation, he was awarded the Lee Kuan Yew Medal, and the Board of Architects Prize. Hann is also an appointed World Cities Summit Young Leader, and BCA Built Environment Young Leader.

Hann was Singapore's 2015-16 BCA-SGBC Young Green Architect of the Year. His portfolio includes the award-winning ParkRoyal on Pickering with WOHA; and the BCA SkyLab, a rotatable test bed for new technologies, which won a Minister's Award on Singapore's National Day, 2017. He has spoken in numerous conferences including SWITCH, the Asia Pacific Urban Forum, and COP25 in Madrid.

The Seven Environmental Guidelines – and How We Can Live More Sustainably

Sunday, October 31 2021

This talk will look at the role of the built environment in the context of the global pandemic, through the lens of the Singapore Institute of Architect's 7 EDGs (Environmental Design Goals), its metrics and measurables, and how these would shift the levers of sustainability in the built environment. Aligning with Singapore's Green Plan 2030 pillars: City in Nature, Energy Reset, Sustainable Living, Green Economy and Resilient Future, it highlights how the built environment and its professionals can collaborate with other sustainability-related fields, and achieve the goals of a greener and healthier future, a safer built environment, and a more equitable mode of practice.

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3

Referred Summary

Session Moderators

Technical Sessions



Ar. Gyanendra Shakya

Gyanendra Shakya is an architect currently working with Options Consultancy Services, UK stationed at Nepal Health Sector Support Programme (NHSSP) as a Senior architect. He has completed M.Sc. in Urban Ecological Planning from the Norwegian Institute of Science and Technology (NTNU), Norway in 2011 and Bachelor of Architecture (B. Arch), Tribhuvan University, Institute of Engineering (I O E, T.U.), Nepal in 2002. He has served for the Government of Nepal as a gazetted engineer in the Department of Urban Development and Building Construction (DUDBC) from 2006 to 2015. Some notable projects he is involved with are Karnali Province Hospital, Surkhet; OPD block of Gangalal National Heart Centre; Retrofitting and Rehabilitation of Western Regional Hospital, Pokhara and Bhaktapur Hospital, Bhaktapur etc. Currently, he is a member of the UIA Work Programme on 'Public Health' for the period of 2021-2023. Also, he is serving as chairperson of the SONA committee for Professional Practice (SCPP).



Ar. Prativa Shakya

Prativa Shakya is an architect and lecturer since 2003 AD and a graduate from Institute of Engineering, Nepal. She completed her M. Urban Management and Development (2006) from IHS, Erasmus University, The Netherlands and EMBA from KUSOM (2019). She started her career with design of Tilganga Eye Hospital and among many other and has designed 15 hospitals and many health buildings throughout Nepal, thus, being known as 'Hospital Architect'. She is the Founder Director of Abhikalpa Consultancy (2010) and CEO of Prativa Architects and Associates Pvt. Ltd. (2014). She has been a lecturer of Nepalese Architecture, Building Science and Design Studio in different Colleges (Khwopa Engineering College, ACME and KIC) of Nepal between 2010 and 2015.



ROLE OF COLLAORATIVE PARTICIPATORY EFFORTS IN HOUSING THE LOW INCOME COMMUNITIES

A Case in Kalaiya

○ Lumanti Joshi*, Shristina Shrestha*, Basundhara Maharjan*

Abstract

Access to safe housing is the basic need of all human beings. But the low income and marginalized communities are still not getting access to it. This paper demonstrates the collaborative participatory efforts as a strategy for housing the low income families in small-scale neighbourhoods through the project "Housing the poor in Kalaiya". Ownership and sustainability is ensured through active participation of the community members in all the project activities. Also, the establishment of a revolving fund like Urban Community Support Fund at local government has ensured a significant space for urban poor communities in the city development process.

Background

Access to safe housing is the basic necessity for the wellbeing of all humankind. A "safe home" means one that can withstand extreme weather and other natural disasters, safeguarding the well-being of occupants of that house (OCHR, 2017). Till date, in Nepal the most important achievement in the housing sector is - the constitution issued in 2015 recognized housing as a fundamental right. Para 37 on Right to Housing states; 1) Every citizen shall have the right to an appropriate housing. 2) No citizen shall be evicted from the residence owned by him or her nor shall his or her residence be infringed except in accordance with law. Although the constitution guaranteed the right to housing, many low income, informal and marginalized communities are still being deprived of safe housing. They still have not been able to live carefree during extreme weather conditions like heavy rainfall and wind. Most of their houses are in dilapidated condition and need of urgent refurbishment. The principal reasons for this being 1) limited or no access to finances to these low families to improve their houses 2) top down approach of housing delivery targeting low income families, which does not cater to their needs and requirements.

The National Shelter Policy 2012 has projected that around 1,364,000 housing units are required in urban areas with around 900,000 new constructions required by 2023. The government initiatives in housing are only through land development programs like site and services, Guided land development and land pooling. In the last 20 years the private sector played an important role in providing housing units, mostly in Kathmandu valley. However, the demand for low income housing has not been addressed by the private sector. The Government of Nepal has implemented a special housing program called Janata Awash Karyakram targeted especially for the marginalized groups from the fiscal year 066/067 through which the government is providing financial support to the beneficiary meeting the ascertained criteria (Janata Awash Karyabidhi, 2016).

In case of housing the low income communities, collaborative participatory effort is one of the most accepted approaches worldwide. Housing the low income communities means securing their housing rights, increasing access to safe housing as well as improving housing conditions of people living in difficult, challenging and vulnerable situations. Dorit Fromm mentioned the three basic ways of collaborative housing, – (i) community group as the major decision maker for entire housing development process, – (ii) Future residents directly hire developers and – (iii) community group negotiates with a non-profit housing developer to help them develop the community (Fromm, Dorit. 1991). Collaborative housing can create a strong community, but

unlikely without a strong social process in place (Fromm, Dorit. 2012).

The objectives of the paper are to explore the role of local government and community in providing access to safe housing for the low income community and to highlight the significance of collaborative participatory efforts in succeeding housing projects with reference to "Housing the Poor in Kalaiya", an initiative of Lumanti Support Group for Shelter. The project is a joint effort of Bhaura Community (a mushar community), Kalaiya Sub Metropolitan City and Community based organizations along with the facilitation in different aspects by Lumanti, an NGO working for the housing rights of low income and marginalized communities since 1993.

The City

Kalaiya Sub-metropolitan City is located at Bara district in province 2 of south-eastern Nepal. Although the city has 27 wards, only 9 of them are located in urban areas with a high percentage of families living in deplorable conditions. Most of the communities in the city have inadequate basic services like improved water and sanitation facilities, health services, improved housing conditions and enough livelihood opportunities which has resulted in a higher number of youth being attracted for foreign employment in the gulf countries. People from the low income families in the city either work as agricultural labour or depend upon daily wages. These families, on the other hand, do not have access to commercial banks and financial institutions for housing loans as they are considered by these financial institutions "noncredit worthy". They are often denied access to credit and are left with no option but to live in poor conditions. In contrast, the city government, towards the development of the city infrastructures are more focused on road and drainage construction only without any specific programs regarding financing and improving the housing condition for low income families in their development plans.

The collaboration of Lumanti, Kalaiya Sub-metropolitan City, District Federation of Chamber of Commerce, Deepshikha Women Saving and Credit Cooperation (a cooperative managed by women of low income communities) and Urban Poor Alleviation Forum (UPAF) (a community based organization managed by youths) led to the establishment of Urban Community Support Fund in Kalaiya in 2012. This was initiated as a revolving fund to increase access to finance for poor and marginalized communities. This fund has supported the poor families in the targeted communities in accessing the soft loan to address their needs concerning housing improvement, toilets construction, water taps and hand pumps installations along with

Keywords: Collaboration, Community participation, Upgrading, Affordable Technology, Access to safe housing

*Lumanti Support Group For Shelter

investing for livelihood. Using this fund, the sub-metropolitan city in partnership with various stakeholders, has already initiated different housing projects targeting marginalized communities in their city. The project “Housing the poor in Kalaiya”, targeted for the Bhaura community specifically, has been discussed in detail below as a case to demonstrate the ideas of collaborative efforts.

Project Description

The Bhaura community located in ward 14 of Kalaiya, is one of the most marginalized communities with 30 households. They belong to the Musahar caste, who have been discriminated against for being “untouchables”. This deep-rooted tradition of untouchability in the city, as in cases of other cities in Terai, has deprived them of better livelihood opportunities. Most of the community members are totally dependent on agricultural labour for livelihood, working in the fields of others for four cultivating months a year, earning a meagre salary. For the rest of the period, they work as labour surviving on daily wages. An average family size of 6-8 members completely depends on a single person's earning. The condition of their houses was very poor.

The main objective of the project is to support 30 families in the Bhaura community to construct safe and resilient homes by providing access to finance and technical assistance. In the meantime, it also aims to link the community with the municipality's development budget for improvement of infrastructure and to define and strengthen a flexible finance mechanism for housing improvement for low income communities in the city.

Process

Prior to the implementation of the project, a number of community meetings were organized. These meetings assisted in clarifying the roles and responsibilities of each stakeholder engaged in the process. Social mapping and design workshops were organized in the community to cognise the needs and requirements of the families. The women in the community were oriented by cooperative leaders on the significance of saving and why it is the key for housing improvement. The participation of the community members is ensured by forming the Community User Committee (CUC). The committee consisted of the representatives from the households, including women, who are receiving support from the project to manage the construction process. They are responsible for linking the community with the larger stakeholders in the city and managing the finances for the project at the community level. They also ensured that one member from each household contributed labour during house construction for sweat equity. Lumanti and Buildup Nepal provided the socio-technical and financial assistance in part needed for the project. In addition to this, the Municipality also provided additional funds for housing, as well as financial and technical assistance for infrastructure development like road, open space management and drainage in the community area.

Since the cost of building with conventional materials such as brick was not affordable for the community, the technical team and community started exploring alternative, affordable yet sustainable construction technology. Compressed Stabilized Earth Block (CSEB), which is well accepted as low cost alternative material across the country, was selected for this construction of their houses. A group of active youth from UPAF were identified and 4 days long technical training was provided to them on CSEB brick production and its construction methodologies by the technical team of Buildup Nepal. To motivate the youth for CSEB production startup, the municipality

provided NRs 2,00,000 for purchasing the machine and setting up the brick production area. The production site was set up in close proximity to the Bhaura community so that transferring the materials would be easy. The process of mixing the ingredients (sand, soil and cement), their proportions, and curing methods were taught during the training. Two teams of masons were trained for the construction where the laying out of the reinforcement in the foundation, the construction of the plinth, then subsequently the Stabilized block layout for superstructure were also trained. Sample work was demonstrated in one of the houses in this community as a part of the training. The rate of production of CSEB significantly increased from 40 bricks per day to 400-500 bricks per day.

Before initiating the construction, identifying the land parcels of each family was done carefully so as to avoid conflicts. Surveyors from the Municipality were engaged in this process for the validation of the ownership with active participation of the community members. Each family had very small parcels of land. During the design workshop, everyone agreed to a simple two room design each room size of 9 feet by 11 feet with a verandah in front. The plinth was raised upto one foot to avoid flooding during monsoon. Around 10 families who did not have sufficient land parcels, agreed to go vertical and some agreed on sharing walls.

The total cost of building is estimated to be Nrs. 2,80,000. After adding the fund provided by Lumanti, Buildup Nepal, Local government, the remaining budget has to be arranged by the community themselves. For this, the subsidized loan is arranged by Urban Community Support Fund which is dispatched through Deepshikha Cooperative in installments. These loans, which have long term repayment period, can be repaid through the cooperative to the UCSF. With the collaborative effort of all stakeholders in the city throughout the process, 27 out of 30 of the houses are complete and CSEB production for all houses have been completed.

Discussion

The project “Housing the poor in Kalaiya ” demonstrates the significance of the collaborative effort on safe housing. This clearly establishes the role of community as the major decision maker in the entire housing development process and is the basic way for developing collaborative housing. In the project, the community through CUC had taken full ownership of the project from its start till the completion and beyond. This committee links the community with the larger stakeholders in the city and brings everyone together. Thus, the project has built their capacities on resilient house construction and future maintenance, Credit and Saving schemes management and community resilience towards future disaster.

In addition to this, the project also provides economic upliftment opportunities. This provides opportunities for the youth group to start their own block production enterprise with support from Kalaiya municipality and NGOs. The youths are very motivated and have taken this up as their improved livelihood. The CSEB is also being promoted in other communities to ensure the continuity of the production. Thus, together with a community driven approach in building houses, the project is also promoting use of local skills and resources.

Establishment of the urban community support fund at the city level has ensured a significant space for urban poor communities in the city development process. This process ensures that the city

will not create any dependency on other agencies like provincial, federal, NGOs or INGOs for leveraging funds for poor community upliftment programmes. But on the contrary, it will be self-sufficient to build the capacities of the communities further sustainably.

Conclusion

During community led projects, communities have been involved from the very start, they learn to collaborate better and work together to improve the living conditions of their own and the most vulnerable in their community. Through this process, their relationship with the other key city development authorities like municipalities will be enhanced and gradually they will be considered as the equal development partners in the development process, though they have limited amounts of resources and savings. This will be a significant step in negotiation for securing a better status for the poor settlements in the city. Here we can conclude that in cities, where the communities are organized and where they partnered with the civil society organisations, they will be able to get support from everywhere for improving living conditions.

PUBLIC PRIVATE PARTNERSHIP FOR NEW PLANNED SETTLEMENT

○ Nistha Nakarmi *, Sushil Bajracharya**, Sangeeta Singh***.

Abstract

With nearly 50% of its population living in urban area, Nepal now has a pressure to provide access to basic infrastructure and planned urban development (MOUD, 2017). Vision for 2030 for urban development strategy includes 50% of new residential area to be developed through land readjustment process and 15% of the total requirement of housing through organized housing (both private and public sector) and clearly mentioning Private/cooperative sector supplying housing for the poor in large towns. The strategy for which includes encouraging private sector by activities like review and developing relevant incentive and facility package like land / infrastructure so as to provide housing to economically weaker strata (MOUD, 2017). The vision is indicative of incorporating public private partnership (PPP), however, detailed strategies and activities to achieve it, appears to be worked on. The paper therefore, aims in presenting Public private partnership as a way to ensure new planned settlement.

Presentation

The Constitution of Nepal 2015 establishes a federal government structure with the vision of establishing strong local governments. This acts as a tool for effective decentralization of power, development and growth in general. The country now being vested with 293 urban municipalities and having nearly 50% of its population living in urban area, has a pressure to provide access to basic infrastructure and planned urban development (MOUD, 2017). The housing sector in Nepal has witnessed a series of trends both in built form and implementation practice over the last few decades, from government-subsidized housing production through the site and services programs in the 1970s to land pooling projects (i.e., consolidation, development, and redistribution) in the 1980s and private apartment construction in the 2000s. The contribution of the housing and real estate sector to the gross domestic product in Nepal is 8% (MOUD, 2016). Vision for 2030 for urban development strategy includes 50% of new residential area to be developed through land readjustment process and 15% of the total requirement of housing through organized housing (both private and public sector) and clearly mentioning Private/cooperative sector supplying housing for the poor in large towns. The strategy for which includes encouraging private sector by activities like review and developing relevant incentive and facility package like land / infrastructure so as to provide housing to economically weaker strata (MOUD, 2017).

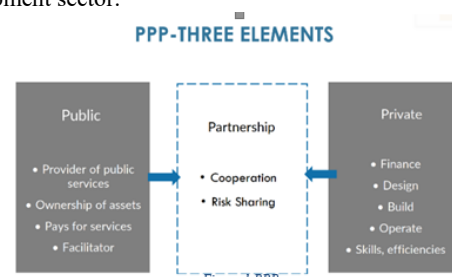
With new municipalities vested with authority are now responsible for the proper development. This has evidently given more opportunities for urban planners to explore, whether be its initiation in terms of making Integrated Urban Development Plan (IUDP) for municipalities. The bigger challenge, however, is the implementation of the developed plan. The infrastructure development being public sector role can be actively worked on by local government in partnership with its related infrastructure department. But, to attain a planned settlement and to ensure proper settlement is a harder part as majority of land is privately owned and the government does not have the financial resources to acquire huge parcels of land where planned urban development can be promoted.

The private real estate sector, on the other hand, have boomed in recent years. In Kathmandu, the driver of the growth being enormous rise in land prices i.e., growth of 300 % from 2003 to 2008 has been widely reported (Shrestha B. , 2011). As per MOUD report the number of families in urban area who cannot afford a house was increasing owing to rising real estate prices. While urban housing problem has directly linked with affordability as government has not been able to regulate the sector, the real estate bubble is growing. The skyrocketing land

prices have created a huge gap between elite groups and middle to the lower-income group to meet the housing demand leading to several questions even for macroeconomic stability. The fast growth without much value addition in the economy is indicative of the real estate bubble that adversely impacts an economy (NRB, 2011). But, since the economics of the real estate bubble is still in its infancy, enough knowledge to confidently recommend any policy action is needed (Glaeser & Nathanson, 2014).

As described by Derrington, Private Development is responsible for delivering the larger proportion of the global urban built environment. When unchecked, it can be responsible for the tragic displacement of communities, unaffordability of housing, controversial addition to city typography, and the increasing inequality of society (Derrington, 2021).

The paper therefore, attempts to explain Public private partnership as a way to ensure new planned settlement by carefully understanding pros and cons of both public and private sector in development sector.



The paper is based on the research of qualitative type, with ontological claim that public private partnership (PPP) when effectively worked on, has the potential to get the pros of each sector and present the best solution for the problem of urban planning through collaboration. The epistemological reasoning is based on literature review and direct interaction with the key players of the field. Research is based in inductive logic falling under interpretivism paradigm. The methodology used is case study and methods used are literature review, observation and interviews.

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Keywords: PPP, Planned settlement, Real estate development, Public sector, Private developers.

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HERITAGE CONSERVATION THROUGH COMMUNITY PARTICIPATION

A Case Study of Bungamati Reconstruction in Post-earthquake Period

o Bijaya K. Shrestha, Ph.D

Abstract

There is an urgent need of conservation of public infrastructure and individual private houses in Bungamati. This paper explores the heritage conservation through community participation taking two cases of public space revitalization and individual private house reconstruction in Bungamati in post-earthquake period. Formation of committees of beneficiaries and their capacity building along with active engagement in reconstruction process, and technical, financial and facilitation from external sources led successfully implemented public infrastructure projects. However, conservation of private houses was not realized due to social, financial and legal constraints. Identification of group value of individual houses and then formulation of architectural design guidelines linked with incentive mechanism can reverse the trend.

Introduction

Heritage of Bungamati, a historical 'newari' settlements comprises of urban built form, hierarchy of public open spaces and street network, unique architectural character of both public monuments and private houses as well as numerous socio-religious and cultural activities. The 'gorkha' earthquake (25th April 2015) and its subsequent aftershocks destroyed most of these social fabrics. Out of the 1351 houses in the town, 851 were completely destroyed and 315 were partially damaged. Delay in reconstruction has raised numerous issues: widening road with more commercial activities, selling of lands and buildings and displacement of native owners due to gentrification. Participatory planning and design tool along with an effective policy framework is urgently required for heritage conservation. UN Habitat, Nepal in collaboration with Central for Integrated Urban Development (CIUD), a local non-government organization and Bungamati Area Reconstruction and Development Council (BARDeC) implemented the project entitled 'Revitalizing public spaces in Kathmandu valley traditional settlements after Nepal earthquake: Bungamati' between 2016-'17. During that period, it also carried out various activities to support private house owners for reconstruction of their destroyed houses. Against such a backdrop, this paper aims to explore heritage conservation in Bungamati in post-earthquake reconstruction process. It has two objectives of examining implementation of revitalization of public open spaces (UN Habitat's project) and of analyzing reconstruction of individual private houses.

Methodology

Both qualitative and quantitative information collected from multiple sources were used in this paper. Literature review on heritage conservation in post-disaster period and earlier studies carried out on Bungamati by various agencies were critically reviewed. Numerous concerned stakeholders such as earthquake victims, ward and then Karyabinayak municipal staffs, technical experts were consulted. UN Habitat's agreement papers with CIUD for technical support and supervision of construction work and with BARDeC for implementation of two public space improvement pilot projects namely 'Reconstruction of public rest house (Ta falcha)' at Machchendra Bahal and 'Revitalization of Dey Pukhu (main pond)' were also studied. Experience gained from numerous post-earthquake housing reconstruction activities in the historical settlements of Kathmandu valley was also utilized.

Literature review and analytical framework

Policy makers need to respond quickly and effectively in post-disaster reconstruction thereby compressing the whole process against time and space (Olshansky et al., 2012). Conservation of public buildings/infrastructure and private houses in post-disaster

period required different approach and detailing. Public monuments are generally restored in the earlier form and shape through public funding with active engagement of public agencies. For private houses, finding out of group value, development of architectural design guidelines linked with incentive mechanism is required. Community-based post disaster housing reconstruction in Indonesia has revealed numerous benefits: creating sense of ownership, fit to local culture, customs, wisdom, build beneficiaries' confidence and minimize corruption. The success and failure of the recovery and reconstruction process mainly depend on the strategy adopted by the government (Unnati, 2006), regulation and code revisions formulated (Gioncu and Mazzolani 2011) and implementation techniques (Tafti and Tomlinson, 2015) developed in coordination and support with different concerned stakeholders.

Analysis and discussion

Planning, designing and implementation of public space revitalization

Various activities were coordinated and sequentially performed, complementing each other. First, numerous community organizations were formed at different levels. Within one year of period (July 2016-July 2017) eleven community committees were formed at different neighborhoods (tole) of Bungamati to engage them in public space improvement and management as well as in rebuilding the private houses in the core of Bungamati. BARDeC was also formed to look overall reconstruction of Bungamati area. Second, those communities were sensitized towards heritage conservation through orientations and field visit (about 30-40 persons from each tole) of conserved private houses in Lalitpur and Bhaktapur. Orientation on reconstruction of individual houses by combining small plots into a single one with sharing circulation space and foundation to individual households was also given. Some meetings with community especially with BARDeC and neighborhood committees carried out for simplification of building permit system and possible roles to be played by the community council. Discussion was also held with BARDeC members regarding demarcation of Heritage settlement of Bungamati. Third, capacity building (for architects and engineers) was accomplished through a two five-days training program entitled 'Training on Architectural and Structural Aspects of Traditional Buildings of Kathmandu valley' in collaboration with UNESCO, Nepal. Fourth, local youth was engaged in planning and designing of public space using Minecraft tool. Among various public space design, reconstruction of public rest house (Ta falcha) and revitalization of public space around De Pukhu including cleaning of the pond was selected through evaluation of various proposed design of public space. The concept developed by local youth was further worked out by CIUD in collaboration with UN Habitat, Nepal. In case of 'Ta falcha' traditional building materials (brick, mud, wooden flooring, and tiled roof) and

Keywords: Heritage conservation, community participation, private houses, Bungamati, Dye pukhu, Ta Falcha

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construction technology (load bearing brick masonry in mud mortar) with improved detailing were used in reconstruction (Fig. 1). However, the public space at the back was also incorporated to increase community spaces; part of the roof was kept flat for multiple activities. In revitalization of 'Dey pukhu' locally available stone masonry wall was used. With support from local people, the encroachment of water body of 'Dey pukhu' was recovered. Similarly, the encroachment of water body was recovered. New public spaces was created in designing of stepping supported with lighting and solar charge facility by replacing the earlier brick wall, which disconnected water body with surrounding spaces. The master plans for both cases were finalized after presenting and incorporating comments from local communities and ward and municipal staffs.

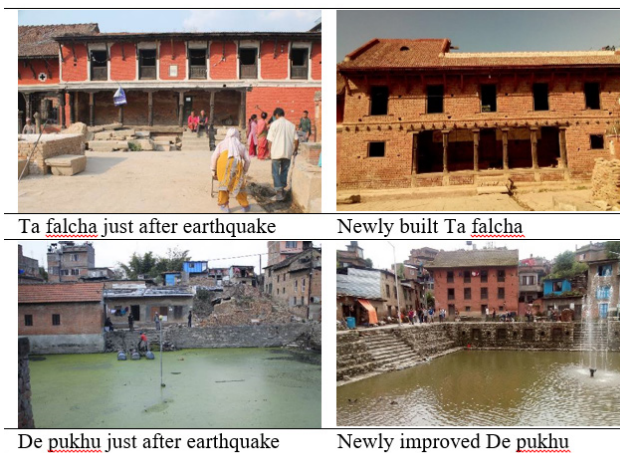


Fig. 1 Public space improvement projects

Fifth, the local communities not only actively participated in construction work but they also contributed in terms of wood carving, labor work and in searching clay tiles and yellow mud. For both projects, UN Habitat funded NRs7,831,648.84 (UN Habitat & CIUD, 2017) whereas local community's contribution accounted NRs 2,101,164.08 (21.16%) (Table 1). Management and operation committee for each site has already been in action. At present, both structures are being actively used for multipurpose not only in festival times but also on daily basis.

Table 1. Community's contribution in both projects

Particular	Public rest house (Ta falcha) (NRs)	Main pond (Dey pukhu) (NRs)	Both projects (NRs)
UN Habitat's contribution	5,539,413.84 (75%)	2,292,235.00 (90%)	7831,648.84 (78.84%)
Community's contribution	1,846,471.28 (25%)	254,692.80 (10%)	2,101,164.08 (21.16%)
Total	7,385,885.12 (100%)	2,546,928.00 (100%)	9,932,813.12 (100%)

Source: UN Habitat and CIUD, 2017

Reconstruction of private houses

Despite orientation, training and technical support in preparation of individual house, the post-earthquake housing in Bungamati is not only slow but also unable to achieve conservation of historical built form. The reasons are numerous. First, many households living in the historic core area of Bungamati do not have landownership certificate. Dismantling the damaged house is difficult due to common walls with neighbors. Due to joint ownership, consensus of all owners is required for reconstruction. Such social issues can not be addressed through National Reconstruction Authority's (NRA) approach of owner driven. Second, the proposed design solution – combining small plots for

a single house with sharing circulation space but occupying vertically all floors by different owners – for avoiding loss of habitable spaces, strong base and foundation, cost effectiveness and fast construction could not materialized mainly due to legal constrain and NRA's policy (Fig. 2). Newly revised building bylaws do not allow such construction whereas NRA needs each household a separate staircase (irrespective of plot size) for realizing grant money of NRs 300,000. Those individuals willing to rebuild their housing using brick in mud mortar and wood require to submit structural safety analysis for getting building permit but no one knows how to calculate structural safety of four story building with mud in mortar. Third, nobody is clear if the commercial banks accept such jointly built houses (part of that) as mortgage for taking loan and while selling such property by one owner. As a result, households are forced to reconstruct their houses using reinforced cement concrete (RCC) frame structure covering the column by bricks. Such houses do not represent traditional newari architecture of Bungamati especially in terms of scale and proportion, plinth height, door and window opening and balcony projection.



Fig. 2 Proposed housing in front of Machchendra Bahal with common foundation & partition wall

Fifth, private houses around Machchendra Bahal and major festival routes as well as public structures like Ta falcha and Dey pukhu are yet to be recognized as local heritage by municipality and Department of Archeology (DOA). No guidelines exist for renovation and reconstruction of such structures.

Conclusion and recommendations

The success of public space revitalization in Bungamati is mainly due to capacity building and active participation of local community, clear cut duties and responsibilities among various agencies, technical and financial support along with facilitation from external sources and localizing the reconstruction process using local materials and construction technology. However, absence of community led reconstruction strategy, inappropriate building regulations and NRA's policy and the concerned agencies' reluctant to acknowledge the group of houses as heritage fabric all have constrained the conservation of built form. To mitigate these weaknesses, identification of salient features of architectural characters of groups of buildings and then development of design guidelines linking to incentive mechanism are suggested.

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THE PERCEPTION OF SHARABLE URBAN SPACE THAT MADE NEPALESE RESILIENT COMMUNITIES THROUGH THE CASE OF THE EARTHQUAKE RESPONSE OF BHINCHE BAHAL IN PATAN

○Sinae Won*

When the massive earthquake hit Kathmandu in 2015, the spatial character of the traditional urban settlements decided the level of disaster resilience of the communities. From the case of Bhinche Bahal, it is obvious that the residents utilized their spacious courtyard and guthi building as emergency shelters. These spaces functioned as spaces of senses of safety, security, relief, solidarity and reciprocity for getting through disaster together. Even after the earthquake, the homogeneity of the clan in the community has been maintained against large movements happening for reconstruction in the valley. Conclusively, it shows that the cerebral urban space and the perception of common within the community build resilient communities.

Bhinche Bahal is one of the eighteen mahabahals in Patan that has a double-layered courtyard. The community is dominated by Vajracaryas and Sakyas who practice Buddhist priests and metalcraft of status as their traditional occupations. The community and settlement have been stayed in the same place since the 5th century according to available chronicle records (Locke 1985, 85). The settlements reflected the medieval society that was organized either on the principle of reciprocity or redistribution, or house-holdings (Polanyi 1957, 57). This research tries to examine the contribution of the spatial components such as open spaces and communal spaces to the level of resiliency through the case of the 2015 earthquake.

1. Spatial character of Bhinche Bahal

The current torana in Bhinche Bahal was donated in 1895 and the current shrine was reconstructed after the 1934 earthquake and consecrated in 1939. The main gate of the bahal is from the north which has a large, plastered gateway reconstructed after the 2015 earthquake surrounded by a finial in the shape of a chaitya followed the previous shape of the gate. Around 100m to the south from the gateway is the entrance to the bahal. Just outside of the gate, there is a well and a two-roofed temple of Ganesh. The original Bhinche Bahal is well preserved, consisting of an enclosed courtyard with the shrine and behind this a large enclosed inner courtyard with an array of chaityas and images. The shrine is a free-standing temple that has pathways to a larger outer courtyard of Bhinche Bahal (Locke 1985, 85). The outer courtyards of the bahal are just outside of the original bahal which is surrounded by residential houses. On the opposite side of the shrine is the community guthi building. The guthi building is a traditional-style modern building that was under construction when the earthquake hit the community. The outer courtyards used to have a garden before the earthquake, but the community renovated it to a big terrace afterward. A well and three big trees are placed on the other side of the terrace. This outer courtyard is an everyday gathering space for the community (Won 2019, 104–7).

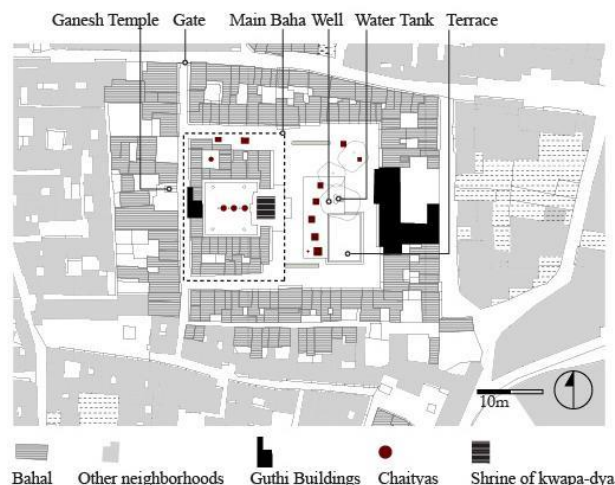


Fig. 1. Spatial components of Bhinche Bahal (Won 2019, fig. 4.7)

2. Immediate Response with common spaces

When the earthquake hit Kathmandu in 2015, people needed spacious open spaces to avoid further deaths and threats from possible destruction of buildings. People looked for fields wherever possible and stayed there for a while. In Bhinche Bahal, residents ran out to the courtyard and most community people gathered in the courtyard until the tremor stopped. Residents did not enter their houses again on the first day and stayed in the courtyard again. For the first few days, residents used leaf plates for eating before they were able to bring kitchen utensils from their kitchen. Guthi prepared foods for the community in the beginning but later people cooked in the morning together and ate together in the courtyard. They even played card games in small groups in the courtyard. Later, guthi organized a kitchen inside of the guthi building and served food in front of the building. During the first few days, people went to toilets in undamaged houses and put bamboo mats and carpets to sleep in the courtyard. People said they could not sleep altogether when there were heavy rainfalls after few days after the first earthquake. Later, people arranged courtyard and guthi building more systemically with the support from various donors. People arranged tarpaulins and bamboos to put tents on top of the terrace garden and made it a safe place for families whose houses were totally damaged and installed toilets for females and males respectively. They cleaned the courtyard together to avoid infections, prepared meals together, and helped each other. They even provided spaces for babies and sick people in the guthi building and special tents were prepared for old ladies. The perimeter of the courtyard also provided a physical fortification for the community where they felt safe and security (Won 2019, 120–23).

Keywords: Commoning, Resiliency, Disaster Response and Reconstruction, Bahal architecture, Nepali traditional architecture

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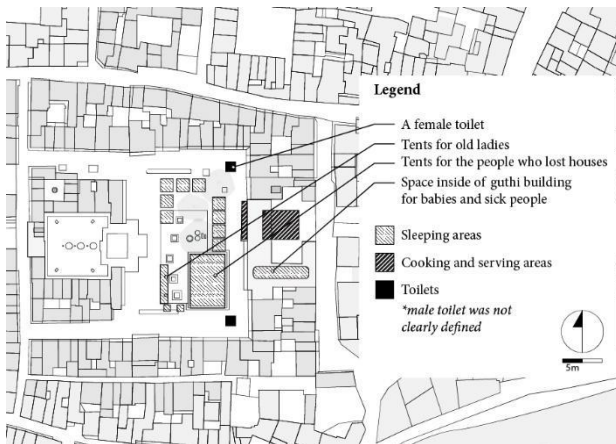


Fig. 2. Immediate response condition in Bhinche Bahal (Won 2019, fig. 4.29)

3. Movements for reconstruction

The reconstruction that widely happened in the Kathmandu Valley after the earthquake has caused large demographic changes. However, Bhinche Bahal is merely affected by the changes with the strong intention to stay within the community. After the earthquake, more than ten households and four tenants had already left in the studied area. However, most of the houses in Bhinche Bahal were re-bought by residents of the same community. There are several cases where one household purchases a house in the same community and made their family live there. It is notable that there were no households from other communities that moved or bought houses inside the bahal community. During the reconstruction, households also needed

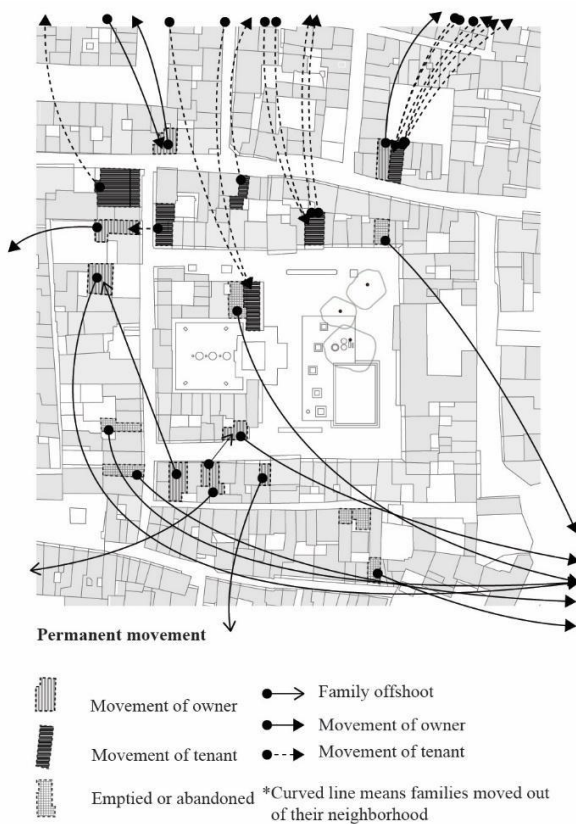
flats for temporary use. It shows the same pattern that household only moved to the same community even though houses in other communities are closer (Won 2019, 140–42). The homogeneity of the clan has been maintained even after wide reconstruction activities in the valley.

4. Conclusion

This research shows how the perception of community and communal space forms resilient communities. Communal and open spaces allowed the community to respond together by making temporary shelters outside their damaged houses. During the response, residents discovered the omnipotence of the social structure that they have which strengthened solidarity when they went through the devastating situation. It was the realization of the utopia of social engagement and community strength as Solnit mentioned (Solnit 2009, 135). Considering the increase of demographic diversity in Kathmandu, it is required to consider how to maintain community resiliency by maintaining spatial components of commoning in urban planning.

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IMPLEMENTING EXPERIENCE IN REVITALIZATION OF HISTORICAL PONDS IN KATHMANDU VALLEY

○ Sushamna Shrestha*, Bijaya K. Shrestha**

Abstract

Critical review of implementation of three historical ponds in Kathmandu valley in post-earthquake period through users' committees reveals different outcomes. The Rani pokhari project was not only delayed due to public protest but it has also lost the opportunity to integrate the site with surrounding areas for better public amenities and access. Despite better master plan with consultation with local communities from the beginning, implementation of Nhu pokhari in LMC has to be adjusted with available annual budget. Failure to provide special rate for laborers, earlier workers could not continue in the second phase work. Though the revitalization work of Bhaju pokhari took momentum after resuming the local level by elected representatives, the master plan basically has focused on the conservation of historical artefacts found during excavation rather than integration of the whole site with surrounding built form for contemporary uses and better facilities. Involvement of local communities, integration of site with surrounding areas for contemporary uses and consideration of special rate for workers are suggested for future revitalization work.

Introduction

Ponds (pokharis) of Kathmandu valley developed during Lichhavi and Malla periods are not only visible physical elements of settlements but they are also essential components of traditional water network system. These historical ponds collect water from 'rajkulos' (royal canals) were built to feed the sub surface aquifers of sunken stone spouts (hitis) and dug wells at all seasons (Pant, 2009). They are located at three different positions: upstream of settlements (large size), in the settlements (small size) and downstream for collecting grey water and prevention of flooding (small size). Historical ponds used to have religious and cultural significances in the past have added socio-economic and recreational values in present time. Cultural tradition, tangible and intangible - in the form of celebration of festivals and rituals with wide community participation - as well as the inhabitants' religious beliefs, social norms and spiritual values, causing attitudinal and behavioral changes, had helped to manage water infrastructures in the past. In the process of reconstruction of numerous damaged monuments in post-earthquake (Gorkha earthquake on April 2015) period, many municipalities of the valley have initiated revitalization of historical ponds. This paper explores the implementation experience of revitalization of upstream ponds taking cases of three namely Rani pokhari of Kathmandu metropolitan city (KMC), Nhu pokhari of Lalitpur metropolitan city (LMC) and Bhaju pokhari of Bhaktapur municipality (BM) focusing on the issues associated with planning, designing and implementation phases.

Methodology

The study adopted qualitative research technique combining information collected from three different sources. First, numerous literature associated with pond revitalization and users' committee were critically reviewed. Second, all the three sites were frequently visited before and during construction activities. Third, municipal and ward officials engaged in planning and monitoring activities, designers involved in preparation of master plan, members of users' committees, construction workers and local community including heritage experts were consulted and some of them were interviewed with semi-structured questionnaires.

Literature Review and Date Collection of Case Study Ponds

Ancient artefacts of tangible and intangible types represent cultural resources (Ross, 1996: Ashworth, 1997). Psychological reaction of human beings on spatial structures constitutes the 'memory of place' and 'time' dimension adds the experience of places (Lynch, 1960). Heritage is all the selected and interpreted remains from the past (Cantell, 1975) in various forms with different social, cultural, traditional and political significance

(Dobby, 1978). Change in different forms is inevitable and management of such change through retaining past 'collective memory and shared values' and including contemporary needs is conservation (Tiesdell, Oc and Heath, 1996). The trend of destroying historic fabrics and buildings in the name of modernization since the industrialization has been reversed from the mid-20th century especially after emergence of urban design profession.

Rani pokhari, located on the eastern side of the then city borders of Kathmandu was built during the reign of King Pratap Malla in 1670 AD to console his queen after the death of their son (Sharma, 2020). The centrally located temple dedicated to Balgopaleshwar was damaged by April 2015 earthquake. Nhu pokhari of LMC is believed to be built during the reign of King Siddhi Narsingh Malla in 16th century. This pond was linked with 'Tikabhairab rajkulo' serving to numerous wells and sunken stone spouts in the historic core of LMC. There was a legend of relationship of this pond to Machchendranath temple and chariot process: serpent god used to live at this pond to watch Machchendranath's bathing at Lagankhel chowk. The tradition of taking feast by local people around the pond during Machchendranath festival and washing their hands and mouths with pond's water still exists. This pond used to be a dumping site of the surrounding settlements. Bhaju pokhari of BM is considered to be constructed in 12th century and it had a Shikhara temple dedicated to Jaleshwar at the centre, which was damaged in 1681 earthquake (Shrestha, 2019). The pond water was later dried up due to leakage and destruction of 'rajkulo' (ibid). All the three ponds were revitalized through formation of users' committees after Gorkha earthquake and they are now in different stages. Numerous issues emerged during planning and implementing the projects. Experiences gained from the three pond revitalization help to draw many meaningful lessons.

Analysis and discussion

Smooth initiation of the project

All the three projects started smoothly at the beginning, as there has been a momentum of rebuilding public monuments in the post-earthquake period. Works carried out in the preparation phase included allocation of some budget, finalization of mode of implementation and decision for making master plan in all three cases. The centrally located 'Balgopaleshwar temple' was damaged by the Gorkha earthquake. The National Reconstruction Authority (NRA) commenced the preparation of master plan of Rani Pokhari with understanding of implementation by KMC. It allocated initial budget of NRs 110 million. The chairperson of ward 5 of LMC with support from local communities managed NRs 5 million for the fiscal year and decided to hire an expert for

Keywords: Historical ponds, revitalization, Kathmandu valley

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preparation of master plan. The cleaning campaign of Bhaju pokhari started with local volunteers back in 2001. Some archeological remains of the temple were discovered and the municipality obtained permission from Department of Archeology (DOA) for further excavation. The excavation work and reconstruction of the pond was regained only from 2017 after local election. Budget required was secured from BM and DUDBC. The municipality itself started preparation of master plan. Being a special type of task, the reconstruction modality adopted in all three cases was through formation of users' committees to ensure high quality and timely completion.

Preparing master plans

Reconstruction through preparation of master plan is an opportunity to acknowledge past memories and to introduce present day needs. The master plan of Rani pokhari prepared by local consultant (hired on three quotation basis) had provisions of amphitheater, greenery and some commercial outlets as income generating activities, besides design of Balgopaleshwore temple. The plan is limited to the study area with little linkages with immediate surrounding areas. The proposed commercial activities within the pond does not match with the history of Rani pokhari, dedicated for the death of the prince. Past shared values and contemporary needs are hardly analyzed. The master plan was approved with the involvements of government agencies only: NRA, KMC and DOA. With technical support from Khwopa Engineering College, the master plan of Bhaju pokhari has focused on the protection of historical artefacts found during excavation. Though the municipality consulted local heritage experts, the master plan is limited within the site area with little integration with surrounding environments. The approval process lacks large public debate on the proposed activities and design solutions.

In the case of Nhu pokhari of LMC, two master plans were already prepared: one by central for integrated urban development (CIUD), a local non-government organization focusing on rain water harvesting and other by ward office with stepping all around the water body. However, local communities having sentimental attachments with the pond could not satisfy with the design solutions. The ward office in collaboration with local communities hired an urban designer based on three quotations. As the budget for that fiscal year of NRs 5 million (phase – I) was to expire, so the master plan was worked out along with detailing of the activities to be constructed up to that amount. The designer consulted local communities and ward officials, carried out quick contextual study - historical background and transformation of pond and its role, present situation and linkages with adjacent land use activities and major landmarks in the surrounding vicinity such as Lagankhel Bus Park, another pond with parks and so on.

While cleaning the pond and carrying out some construction work (phase – I), many historical facts revealed. The water body of the pond on the west side had been dumped by debris up to 2 feet. The pond periphery had been encroached in the past during widening of the adjacent roads on the east and west sides. Also, the vegetable market and nursery on the north side and one story rented structure including ward office on the east sides were in fact built over pond's area. The present level of stepping on four sides were uneven due to dumping of garbage, construction materials and other waste. Partial digging was carried out on the west side to find out the floor and sloped walls on different levels on the west side. These historical facts were retained in the master plan but proposed multiple contemporary uses for the remaining spaces on the remaining three sides. Being a public space equipped with large water body, stepping were redesigned with different types of street furniture (semi covered, steeping itself, recessed niches, etc.) to retain visitors. Provision of lighting and

mobile charging facilities (solar backed) were also planned. Open sport facilities were designed on the top level of west side whereas flexible open spaces (for multiple activities) were planned on the east side in the long run, after removing all rented structures including present ward office. Provisions of public toilets, display walls showing the historical transformation of the pond and disaster response equipment were also included at the two corners. Redesign of vegetable market would face towards water body with provision of terrace garden restaurant on the top floor. The master plan supported by contextual study analysis was presented at ward level with local communities first and then at LMC with larger audience including mayor and deputy mayor. All their valuable comments were incorporated in the final version of the master plan.

Controversy in implementation

There was a huge protest from local community and heritage activists during implementation phase in Rani pokhari. Their dissatisfactions included replacement of traditional brick works by modern reinforced cement (RCC) for walls and temple reconstruction, removal of black cotton soil of the bottom of pond, sand extraction after drying off the pond water. Only temple was damaged but the work was also carried out for the whole site by removing historical elements. The damaged Rana style temple was replaced by 'Shikhara' style based on a sketch on a book. After damaging many historical facts, an expert group was formed to address the public protest. NRA fixed the daily wage of workers as NRs 1450 for skilled labor and NRs 1050 for unskilled labor. Bhaktapur municipality also considered special rate, much higher than prevailing government's rate for workers engaged in conservation activities. However, LMC could not make such decision and hence the payment was based on actual site measurement based on government's norms and the rate given to the labors was much less than the other two cases. As a result, the earlier workers did not work in the second phase. Another contractor was hired. Construction work is going on slowly, as it has to be adjusted with allocated annual budget.

Conclusion and Recommendations

Failure to engage local concerned communities and experts especially in finalizing master plan, lack of integration of site area with surrounding environment with contextual analysis ensuring conservation of past shared values and inclusion of contemporary uses and absence of special rate for labors all impacted the historical pond revitalization in Kathmandu valley in the post-earthquake period. Historical ponds are to be acknowledged as heritage by the concerned municipalities and DOA and hence accordingly reconstruction/renovation guidelines are to be formulated.

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URBAN HERITAGE CONSERVATION IN KATHMANDU VALLEY

Community Role on Conservation and Usage

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Abstract

Urban conservation deals with managing change in heritage within urban areas and particular historic urban centers within the greater context of the urban system. The way of interaction between the people and the structures reflects the sense of belongingness in the community towards heritage. The dwellings, neighborhood, and settlement pattern make the architecture of Kathmandu valley unique. By case study of Ranipokhari, Pu- Bahal case shows the various reflection of the community usage before and after the Gorkha earthquake, during and post Covid pandemic and predict the future usage. Unlike like the watch dog for nationally listed heritage, local heritage should be given more attention by local government, community organization and the people.

Introduction

A valuable meaning carrying history and standing universal value is heritage. According to Schouten (1995), Heritage is a processed history, constituted through “mythology, ideology, nationalism, local pride, romantic ideas or just plain marketing, into a commodity. Concept of urban conservation has its roots in the conservation movements in the late nineteenth century when awareness of the value of historic urban centers developed in reaction to the loss of the defense structures of many fortified medieval cities in Europe due to their expansion. (Jokilehto, 2003). The uniqueness of the valley’s towns’ architecture and settlement patterns can be observed through the formation of individual dwellings, organization of the neighborhood and urban squares as well as the community spaces and building. This pattern is considered to be unique even within the cultural zones of South Asia. (Pant& Funo, 2007).

The rational of the study is to assess the planning, funding and policy tools of the heritage incentives schemes for the conservation of the traditional settlements. Our ancestors have built heritage and set the unbreakable tradition of preserving them by various means such as institutions like Guthis, Department of Archeology, and Ancient Monument Preservation Act etc. Heritage and communities have always been two sides of the same coin because of their reliance and co-existence. In Nepal community participation in heritage management is not a popular practice; rather central government authority, NGO’s and INGO’s like UNESCO, the Kathmandu Valley Preservation Trust (KVPT), Nepal Heritage Society and others have a major role. Both centralized heritage management practice and a lack of community awareness to some extents are responsible for the exclusion of communities from the management process. (Apil K.C, 2019).

In cities like Kathmandu, heritage structures are directly linked with the day to the day lifestyle of the people. Both tangible and intangible heritage are found in the city with emotional, cultural and use value associated with it.

But reconstruction of and intangible heritage are found in the city with heritage structures in Kathmandu Valley has been the center of dissatisfaction because of its unresponsive character towards community participation and social inclusiveness.

Objective of Study

The objective of the study is to understand the urban heritage conservation in traditional neighborhoods in terms of community role. It tries to review the change in the urban heritage conservation in Kathmandu Valley since 1951 and compare it with the current scenarios.

Research Methodology

After the 2015 Gorkha Earthquake, reconstruction process has started with the involvement of different stakeholders in different levels and is majority of the works are still going on. Several field visits were carried out by the authors to understand the process of the reconstruction and how communities are being involved in it. In past years authors have closely worked in the reconstruction of various such heritage structures with professionals and community mobilizers and shared views and expertise during the reconstruction process. Both formal and informal interviews were conducted with community members, experts in the field, heritage lovers, professionals like Architects, photographers, people living nearby etc. The data for the analysis was also collected from multiple sources including documents related to urban heritage conservation done in the past, bibliographic, local and national news publications, local vendors of nearby etc. For more detail information questionnaires’ survey was also conducted with the people residing near the heritage.

Case Studies

Ranipokhari

Ranipokhari in Kathmandu stands as a commemorative monument of excellence holds paramount importance of our civilization. Ranipokhari (Nhu Pukhu) was built in 1670 in the memory of the sudden demise of the beloved son of King Pratap Malla, Chakravartendra Malla. After the great contribution of Queen Bhuvan Laxmi, second name was christened to the pond as *Nhupukhu* meaning “Ranipokhari”. The urban pond with heritage structure at its center has observed the changing rulers of Nation since the Malla era in 1670 to Republic Nepal. The pond was an excellent example of Nepalese medieval architecture and engineering, which was recharged by water flowing underground channel (TU Teachers’ Association 2012). Along with its historical and religious importance, Ranipokhari also carries cultural importance as after the completion of the Ranipokhari in 1670, King Pratap Malla initiated a cultural festival called *Gajatra*, which commemorates the death of the people during a

Keywords: Urban heritage, Community, Conservation, Local government, Community organization

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year. In 1934, the temple was struck by 8.0 Richter scale Earthquake on 15th January.

Figure 1, illustrates Ranipokhari before 1934 earthquake. Because of various earthquakes, mainly those in 1833, 1916 and 1933, Ranipokhari was reconstructed time and again.



Figure 1 Ranipokhari before 1934 earthquake. -Old Nepal

On 25th April, 2015, ground shook violently destroying many historical and religious monuments. Ranipokhari reconstruction has faced 4 years of dispute with 1.5 years of deeds. During the reconstruction of the temple the experts were divided in terms of the time bound authenticity of the structures. There was the confusion regarding on which style the temple should be built as some experts suggested to recover the Malla Era *Granthakut* model where some believe that it is not fair to ignore the 150 years older Rana era model.

In 2016, Kathmandu Metropolitan City was given responsibility to design, plan and oversee the Ranipokhari Reconstruction Project. But due to use of the modern concrete material local activists Shailesh Shakya along with hundreds of other activists forms human chain to protest the decision of using modern materials. The halted reconstruction is again started on the supervision of DOA where KMC suggested a bizarre ambition of developing the heritage site as a theme park with recreational spaces, food courts, bright lighting, amphitheater, fountains etc. merging Ranipokhari with Shanti Batika. Unhappy with such decisions the locals, historians, archeologist's protests putting the reconstruction on hold. As the Ranipokhari reconstruction got the much-needed attention of the community people and heritage conservationists, an official meeting was held on 28th December, 2018 where the officials decided to form a specialist committee to suggest how the reconstruction of the pond be carried out. The committee members highlighted some key recommendations and suggestions which included:

- The original structure and cultural, historic and archeological sensitivity should be preserved.
- Reconstruction material should be of a standard in line with its original construction.
- Historic temples made in the four corners of the pond should be preserved and retained inside the compound of the pond.
- The archaeological and historical environment should be maintained.
- Historic temples made in the four corners of the pond should be preserved and retained inside the compound of the pond.
- The connecting bridge to the 'Bal-Gopaleshwor Mandir' (Temple located in the center of the historic pond) should also be reconstructed according to its previous

archaeological design.

- There should be easy access for the public to the pond and temples built inside its compound. (Annapurna Post 18 January 2018).

After a lot of back and forth for the responsibility of Ranipokhari Reconstruction, the NRA and DOA is given the responsibility. Figure 2 below shows the Ranipokhari in its original 1670 form.

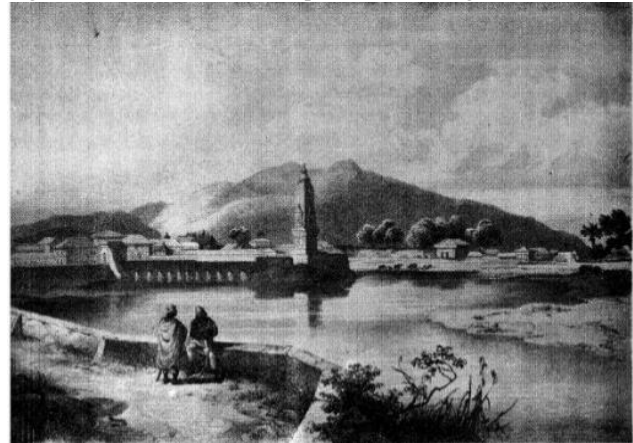


Figure 2 A sketch of Ranipokhari made by a Prussian artist in 1845. -Kailash, 1979, pp35-60

Ranipokhari, located at the heart of the city stands as one of the remarkable landmarks of the Kathmandu Valley so the professionals from various other fields and the broader general public were also highly concerned. Ranipokhari reconstruction process and the various debates regarding the role of heritage management authorities and the reconstruction procedure were not limited to the heritage management authorities, local communities, heritage experts and conservationists.

The locals and conservationist highlighted that *The Constitution of Nepal* in Section 32 clearly states language and cultural rights as a fundamental right where Sub-Section 3 further emphasizes that "every Nepalese Community possesses the right to preserve their language, script, culture, civilization and heritage" (The Constitution of Nepal 2015, p.20)



Figure 3 Ranipokhari after reconstruction in Malla era Granthakut style. -NepaliSansar, 2020

Pu: Bahal

Pu Bahal is a complex of 'residential-greater courtyard' unit on the west of Taumadhi (tamari) chowk of Bhaktapur, where the famous 5 storied Nyatapola temple is located. (Silpakar, 2021).

Pu Bahal is one of the 8 Hindu Bahal of Bhaktapur and is owned by Dhaubhadel community. Literally, Pu: Bahal translates to ‘big Bahal’. The figure 4 shows the location of the Pu: Bahal at western side of the Taumadhi Square.

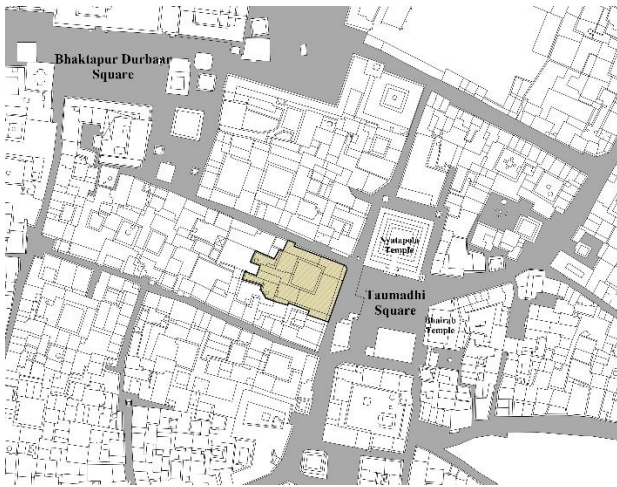


Figure 4 Location map of Pu: Bahal

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“The complex of Pu: Bahal has four faces from the courtyard, the western faces have most historical value, as it was built before the Nyatapola temple. The western portion of the complex were used as residential units for the head masons and craftsmen during the construction of Nyatapola. The later added northern, southern and eastern faces then completes the complex, making one of the largest chowks, hence ‘Pu: Bahal’ was named. Built in the period of King Bhupatindra Malla, the eastern wing has a special staircase with tiny riser, where he used to ride horse up to the first floor to have his meal and inspect the construction of Nyatapola temple.”, according to interview with Om Dhaubhadel.

The open court of 11.86 m x 12.37 m, square configured is surrounded by 8 household; decedents of a single Dhaubhadel family. The residential complex has seen a lot of changes over time with partitioning of halls, vertical division of house, enclosed balconies, addition of floors etc. from its originally constructed form.



Figure 5 Front façade of Pu: Bahal viewed from Taumadhi Square.

Though the last Gorkha earthquake did not do much damage to the building complex, yet some remarkable damage was seen on the traditional flat roofing (*Kausi*) on the eastern face. Being one of the significant faces in one of the main squares, Taumadhi square, holds various rituals and rites associated with it. In time the urban façade of the square is changing, various legal and architectural complications have raised in the transformation, the Pu: Bahal is not an exception to it.

Since, it has been under a very confined owners, in overtime the multiple issues on ownership have raised due to property inheritances. The complex had gone a renovation during 1972-73 period where major changes in ‘Malla façade’ was seen which reflects today. The white lime plaster, changing of *Tikijhya*: to simple elongated single bay window. The faced on eastern wing facing Taumadhi square remained unchanged still reflecting the Malla façade with *Tikijhya* and *Vosujhya*.



Figure 6 Neoclassical touch on the western wing

The present layout plan of the dwelling cluster is the division of total 10 households which used to be a single-family residence and had only 2 number of staircases with free circulating balcony at second floor.

Analysis: Comparison of case study

Rani Pokhari was of great importance in reconstruction phase after its destruction during the Gorkha Earthquake in 1975. Since it had gained status of national heritage reconstruction at a national stake, many donor agencies, supervision and financial to technical agencies were involved to safe guard it. But to irony, the reconstruction of monument went against the will of people with the ‘bidding’ process for its reconstruction without any norms and regulatory to look at the method and process of reconstruction. As a result, on May 2, 2016 the water was drained out without any consultation with the locals. This tale tells how the governing

bodies were dealing with national heritage reconstruction, even though monument preservation act, 2013 clearly states prohibition in the act. (Onlinekhabar, Sept. 26, 2020).

Following the incidences on the usage of 'foreign material', concrete columns for reconstruction was criticized by the locals then with the court order the work was called off, the Kathmandu Metropolitan city, one of the governing bodies for the reconstruction of Rani Pokhari was bringing up ideas to turn up the pond into swimming pool and other amenities. This shows how irresponsible the concerned authorities are toward the heritage. Due to various mass protests on behalf of the conservation of historic monument, the steering committee was formed with the coalition between concerned authority and the local people that actioned towards the completion of the rani Pokhari in the form of early Malla era-*Granthakuta* style. Although the masterplan is said to be an inclusive development with parks -open spaces but all are barred so, public are not accessible to the space. The conservation has been a modular only in terms of structure, but contextually it has failed as the *Nhu Pukhu* is regarded as the traditional rain water sink and ground water recharging system what energizes the aquifers for various *hiti*.

Though the urban face of the Kathmandu is reflected though it, the urban working mechanism is also associated with it. The conservation process which would have been likely to be carried out of 'bidding' process with very few to non-supervision in traditional construction had been halted, all thanks to energetic people who took on the project to completion with traditional method.

Pu Bahal being one of the urban façade of Taumadhi Chowk reflects the glorious Malla architecture. Since the complex is now under the ownership of 10 household, any deceive factor on its alternation plays a vital role in the overall integrity of chowk. Over the period of time, it needs maintenance and reconstruction. Taumadhi square reflects its charm not only through the cultural heritages standing in the premises but the people living nearby and their long dated back houses plays the equal role. During the reconstruction and conservation of the Bahal methodology can be either of the following to protect the heritage building complex.

- Complete complex reconstruction
- Phase wise reconstruction
-

In either of the following, the Monument Conservation Act, 2013 must be equally followed as stated: "Committee under Department of Archeology, local government, archeological department must be formed where Municipal government must be the steering committee and supervision team."

In the present context, most of the outdoor activities which used to be carried out in the building complex has changed to indoor activities as well as the agricultural oriented people has shifted to the service-oriented ones. The upcoming redevelopment work of the complex must cater all these changing lifestyles without disturbing the overall integrity. So, the design must adopt all these changes with the proper supervision and consultation with the specific experts on heritage. The material to be used during the reconstruction should meet the architectural stereo-types.

Key Issues of Urban Heritage Conservation and community role change

The way of urban heritage conservation has been changed along the time intervals. The problem of urban heritage conservation must be considered as developmental problem. Rapid urban

expansion, lack of heritage inventory, regular maintenance, lack of public participation, lack of funding's etc. affects the construction of any urban heritage. As the needs and priorities of the people have changes during the period of time the reconstruction must meet all these requirements making it difficult to conduct. Similarly, the never-ending debates between the stakeholders and community during most of the reconstruction projects has given the room to question the roles of ownership and the authenticity of the cultural heritages. The community involvement in Nepalese heritage management is only limited in raising awareness among community members and taking their feedback rather than reconstruction and conservation work.

Conclusion

Urban conservation is considered crucial to achieve sustainability in the historic towns. Comprehensive conservation plan that aims to preserve identity and heritages, regenerate local economy, maintain sense of community and place and improve quality of life of local people should be formulated and implemented. Even though multidisciplinary work and collaboration has been advocated, there is no adequate interlink between the practice of conservation and potential lessons from one arena of conservation (environmental and biodiversity) to another (cultural heritage). A key observation emerged from the research is that the key stakeholders in Nepal's heritage management is governmental bodies, non-governmental bodies and local communities but the existing heritage policy does not much engage with the community perspective. Community involvement are usually limited in consultation, giving advice and feedback but are not involved in the intensive and the extensive works.

The fundamental questions such as 'Whose Heritage?', 'Authenticity during the Reconstruction', 'Future Ownership' etc. must be addressed collectively which smoothen the working methodology. After the Gorkha earthquake, the improper displacement of the communities and the haphazard reconstruction of the cultural heritages could lead to the loss of the identity of our traditional and historic settlements. Heritage reconstruction should be taken as a conservation project rather than simply taking it as a construction management. As heritage reconstruction is a challenging job because of its rigorous effort, time and cross-validation of authenticity the reconstruction of such heritage structures must be given the utmost importance. Thus, the impact of the earthquake could be taken as a good opportunity to rejuvenate the communities with proper involvement in the maintenance of the cultural heritage.

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INVESTIGATION ON THE RESPONSE OF URBAN INFORMALITY TO COVID-19 PANDEMIC AS A NEW MODE OF SPATIAL PRODUCTION

A case of Khulna

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Abstract

For more than one and half years, the Covid-19 pandemic unexpectedly shut down the formal economic sector to control the outbreak and transmission of the virus in the major cities of Bangladesh. In the absence of formal services and the economic sector, city life extensively relied on urban informality, which is conventionally interpreted as an illegal mode of spatial production by the poor for economic survival. The paper, by exploring the case of Khulna city in Bangladesh, examines how urban informality emerged as an inclusive structural principle of public spaces during the pandemic time and what lessons it brought to rethink the current paradigm of architecture and urban design.

Introduction

The prevalence and transmission of the Covid-19 since its inception in 2019 have significantly changed the ways of everyday urban living. Many governments have adopted strict lockdowns to control the spread of the deadly virus, which marked a significant impact on the socio-economic conditions of developing countries. These measures have shut down the formal economic sector exposing the marginalized, micro-entrepreneurs and economically vulnerable groups to a more critical condition.

Cities in Bangladesh are no different. Moreover, the poverty figures in urban areas have risen as an immediate effect of the pandemic (Mandal, Boidya et al. 2021). Since March 2020, the major urban areas have been battling to control the Covid-19 outbreak. The formal economic sector has been forced to shut down many times throwing the middle and low-income economic class into an abyss.

The crisis of the Covid-19 triggering the insecurity, poverty, and inequalities among the lesser economic class required urgent strategic response to support the vulnerable group and for reducing longstanding impacts. Yet, the imposed (pandemic-related) restrictions and the mandatory maintenance of social distancing have made it difficult to use the public spaces in conventional way to overcome the crisis. Due to the stranded urban life and lack of ingenious solutions in the public realm, essential/basic services have been put to a halt.

The collection of everyday necessities became difficult, due to the restriction on movement and for the shutdown of formal marketplaces.

In such crisis, the urban informal sector, which the formalized urban system does not recognize as a legal spatial practice (Roy 2015) has extended beyond its configuration resulting in increased scopes to cope with the crisis. The in genuine evolution of the urban informal sector is evident in many areas where the formalized urban system cannot match. To

this end, the study aims to decode the informal system as an economic and social structure under the shed of planned architectural form and its contribution during the deadly crisis of the pandemic time. Moreover, the response and the evolution of the informal as a new mode of spatial engineering during the outbreak of the pandemic, thus demand a critical attention to understand the production of public space, when collective participation reconfigures the spatial arrangement to address crisis.

Methods

To investigate and analyse the responses of urban informality towards the uncertainty of today's time originated with Covid-19 pandemic; Khulna, the third largest city in Bangladesh has been selected as case study (Rahman 2016). Khulna is an ex-colonial city which occupies the identity of a highly strategic point in the south-west coastal belt for trade, providing livelihood opportunities for a large number of people, especially seasonal migrants. For the scope of this paper, one of the central recreational-commercial areas, known as Khulna New Market (area), has been focused for detail analysis. The NM is located at the edge of an affluent residential area in Khulna city, holding the social, economic and historical image of the then colonial city. It was designed in early 1970 and still serves as an escape for the city dwellers from their daily routine life. The main premise is square in plan, having four entrances- one on each side and a central open space. The surrounding blunt walls isolates the internal activities from the outer settings, representing an introvert characteristic of a marketplace though the peripheral informal activities have made those almost invisible.

The investigation of this paper has been approached by qualitative stance through a place-based method. The approach empowers the study to contextualize the evolving patterns of spatial practices through an iterative and flexible process.

Keywords: Urban Informality, Covid-19 Pandemic, Public space, Khulna

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The data collection has been completed in two stages; firstly, the published academic articles of pandemic influences on the city's economy and spatial practices have been reviewed. The thematic process helps to organize the literature according to the mood of spatial growth and connect with locale factors. Secondly, the field notes were taken in two phases, firstly, a pilot survey was conducted that included in-depth observation of people's behaviour and mapping space organization around New Market (NM) area of Khulna during the new-normal time and sharing sessions with permanent informal vendors depicts growth pattern of informality before and during the Covid-19 pandemic. The 2nd phase comprises interviews of different stakeholders include visitors, locals, and authorities, and mapping activities based on types and times.

Literature review

In academic literature, the informal development is conceived to evolve from a dichotomous relationship with the formal. The lack of legal status of urban informality rarely let its merit of spatial articulation to include in the conventional scholarship of Architecture. However, as Covid 19 became an unavoidable pandemic crisis, the relationship between the formal and informal became more evident to be continuum suggesting a new portrayal of the spatial articulation of urban informality is required ameliorating the its conventional image as a 'parasitic' development.

The ILO report mentioned more than 62% of informality worldwide is directly affected by the lockdown who relies on unregulated activities for livelihood (Organization 2020), on the other hand, informal hawkers who sell the everyday necessities turned into inseparable parts of this pandemic life. The shutdown of legalized services during Covid-19 pushes people to engage into alternative sources for required services which simultaneously generate adjacent to the regular marketplace. The architectural ideology of space composition and regularity insists on the perceived usability of users from their logic that produces a new genre of space.

The socio-economic perspective interprets this production as a socially constructed formality where economic activities are shaped by social relationships within different stakeholders (Polanyi and MacIver 1944). This unauthorized spatial mechanism reflects the interrelationship within every individual which carries out the economic engine and societal cohesion during this outbreak (Laguerre 2016).

Analysis

NM is the most vibrant place in the city for its diversified services mentioned during the discussion with the users. The adjacent spaces of the modern marketplace were kept for parking which is occupied by hawkers at different times with garments products, seasonal fruits, vegetables, and kids accessories. The archetype of the NM instigates the

formal-informal spatial relationship that further extends with

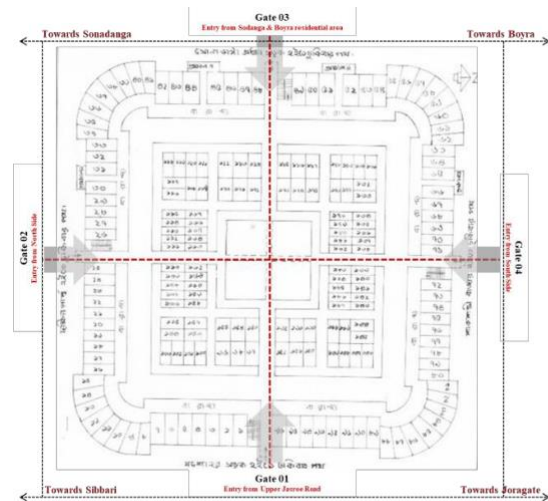


Fig. 1: The map depicts the North-West movement corridor were mostly occupied by vendors during covid time..

the needs of different social classes living around the area, disregarding the conventional planning ideology. Figure 1

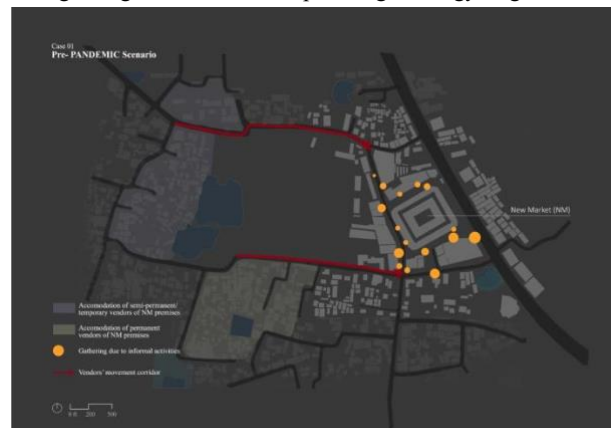


Fig. 2: The map illustrates the location of vendors during pre-covid time.

shows the symmetric entries at four sides interlinked the access road which pulled-out internal activities and merges with outside events. This inter-relation helps to level up the co-existence of formal and informal economic corridor, ignoring the formal barrier of architectural planning and opens up the scope for enhanced social inclusiveness which simultaneously aided the survival of the dwellers during pandemic.



Fig. 3: The map shows the North-West movement corridor were mostly occupied by vendors during covid time..

In the pre-covid time, the development of urban informality was done mostly through the negotiation with the shop owners of the New Market and other concerned authority on the latter's beneficial term. The informal traders located at the periphery of the NM pulled more people to the formal premises thus rising up the sale. In case of choosing a location for the informal business, the traders generally looked for the availability of a flat surface for a table or mat in the unused peripheral spaces of NM premises. Their location at the periphery did not obstruct the market's access points, yet making intelligent use of the inaccessible edge condition of the NM area.

Some specific places are occupied with dedicated services, such as cobbling, key mender, and roadside snacks. Figure 2 depicts the density of vendors varies with surrounding land use, the flow of people, and choices of services accordingly. During the pandemic situation, it has become clearly evident that the informal trades succeeded to sustain when the formal NM was shut. Their presence provides people with essentials, creating an alternative survival route for the failed system that had been traditionally dependent on the formal economic sectors.

Figure 3 shows; a shift in the placement of informal vendors as they used to sit at the North-West side movement corridor, offering daily necessities such as vegetables, fruits, and others to the city dwellers. Due to the shutdown of Prantik Bazar, people solely depended on these services that benefitted both the provider and the customer. Even some vendors were seen at North-East side because of the regular movement of the nearby residents (from Sonadanga residential area). This scenario simultaneously opens up the scope of inclusion of the informal sector in the formal planning ideology as the informal activities level up the NM premises from a macro-social dimension to a meta-social (Zukin 2017).

Most of the trades were unfixed depending on the requirement to move to elsewhere when the selling was over. This sort of spatial flexibility to continue trade during the pandemic can be interpreted as one step closer to dismantle/challenging the traditional architectural vocabulary that has been founded on the elitist concept and tends to be temporally rigid, object-focused and exoticism-biased.

Instead, the spatial production of the informal traders relied heavily on the socio-economic transactions of the common. These transactions of the people have shaped architecture to be fluid, dynamic and most importantly temporary to prevent the system to fail.

5 Discussion

Urban informality is an evolving process with time influenced by localized factors, but the stuck economy of Khulna during

the pandemic evokes different classes of people to engage in the system. Informality around Khulna New Market connects locals and visitors by diversified services related to everyday necessities range from foodstuffs to living. These forms of informal resources uphold the moribund economy of bureaucratic society and provide a new spatial vocabulary to urban life during the pandemic. For strict restrictions, these inclusive forms of spatial practices engaged people as a comfortable place. Concerning the principles of architecture and urban design, the system itself expands by creating reliability. The comfortable, welcoming, and friendly environment of the informal organization engage various groups, classes, and ages of people who collectively needed to survive the crisis.. In this situation, the informal sector that is conventionally understood to function as a 'parasite' offered to be the most consistent form of architecture to respond to the crisis.

Conclusion

The Covid-19 infection has questioned the legitimacy of the architecture concerning space control, codes and regulation. Modern, organized, and efficient approaches in planning have appeared obsolete to face the challenges posed by the pandemic or similar natural or man-made disasters. To this end, an alternative form of architecture needs to be in place against the conventional conception that advocates stability, spatial codes and exclusivity.

The urban informality in Khulna enlightens that avenue by going beyond the obscured and regulatory system-driven architecture that cannot cope with the crisis. During the pandemic, the flexibility and inclusivity of the informal system contributed to sustain the economic engine of the city, as well as, made the place livable for people regardless of class-specific identities.

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PEDAGOGY IN THE PANDEMIC:

Prospects and problems of architectural education in Bangladesh

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Abstract

During COVID 19 Pandemic, Bangladesh, like many more countries around world, started trying various alternative virtual mediums to reach out countrywide scattered students to continue the collapsed education system. Unlike most subjects, Architectural teaching requires to adapt to a studio-based teaching approach with 'one to one interaction'. The extensive literature review conducted within the scope of this research could not find any study trying to identify the challenges faced by various architecture schools across the world. The objective of the study was to assess the adoption rate of virtual classes and to determine the various benefits, challenges, and reasons for non - adoption by the stakeholders; i.e., the students.

Introduction

Architecture is one of the unique courses where the learning is focused on real time experience-oriented studio environment. Architecture studios are interactive spaces which is primarily conceived as the lecture space; additionally, it is the multi-dimensional space where students spend their time developing design works, nourish their creativity, communicate with each other, discuss and share with their peers. Naturally, the studio environment helps to develop the sense of belonging within the students to the architectural profession (Dutton, 1987; Ceylan, et.al, 2020).

Ledewitz (1985) described that in the architectural design studio, students get training about the various aspects of architecture education; they learn a new graphical language, nurture new skills like three-dimensional visualization and representation of their own ideas. Learning through interaction is a basic requirement for the architecture education (Maghool et al., 2018).

Undoubtedly, the design studio is the central element of architectural education, developed through a continuous process of exercise throughout centuries. Because of these objectives, adaptation of architecture studio environment was one of the major issue in architectural schools during the pandemic. During this unexpected and challenging conditions, architecture students are facing some specific issues, for example unavailability of technical infrastructure, uninterrupted internet, proper computer which can run software like AutoCAD or Sketchup, materials for making models and many more. Revised curriculum encouraged alternatives for physical models, focused more on digital interpretation and presentation (Alnusairat, et.al.,2020). Moreover, general health problems, psychological conditions, unavailability of electronic devices, adaptation to the new normal condition became

severely challenging for all the students. During this unique educational situation, investigation was circulated through an online survey among the students to perceive the threats and opportunities of the newly emerged digital space for the architecture students.

The goal of this research is to study the ideas and evaluate the prospects and problems faced by the students of the architecture department of Brac University during their design studio courses; which is being conducted by distance learning methods through the newly introduced BuX platform.

Additionally, this research can serve as a foundation for the planning of the future architectural education processes, with beneficial guideline for the future academic researches, especially for the virtual environment.

Methodology

The survey was done at the middle of the Summer 2021 semester between 1st to 15th August, 2021. It focused on collecting feedbacks from the students of Architecture of Brac University. Most of these students took online design studios during the COVID lockdown period. The survey aimed to examine their experiences about online design studios that were conducted during the pandemic time. The survey population is represented by first, second, third, fourth and fifth-year students of the B. Arch program. The survey questionnaire was conducted using google form so that it becomes easily accessible to every student. This user-friendly tool helped the students to easily access the questionnaire and respond to it. A total of 100 students participated, which is 25% of the total student number of the department; containing 71 female students and 29 males.

The questionnaire was designed depending on an extensive investigation of the existing literature available on online learning. They included reports on the challenges, opportunities

Keywords: Architecture education, Bangladesh, Pedagogy during Pandemic, Virtual class.

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and constraints of online teaching in architecture schools of various countries. Following the studies by Alnusairat, et.al. (2020) suitable elements were pointed out, focusing on issues effecting teaching in the online design studio environment.

Result and discussion

To cope up with the Covid Pandemic Lockdown, nearly all the institutions adapted the online teaching platform. This transformation from the conventional to the virtual, through a continuous process of trial and error, has been a major turn for the teachers, who had to explore and embrace online teaching methods almost overnight (Varma and Jafri, 2020). Google Meet, Zoom, Microsoft Team, Skype all gained popularity in a very short time. According to the survey conducted, 97% of the Brac University students embraced Google meet as the principal mode of communication. They also use Facebook messenger or WhatsApp to stay connected with classmates outside class time. 77% of the surveyors were satisfied with the application used for the tutorial classes, whereas 23% were not satisfied.

Results depending on the studio level indicated that the first-year students are more positive about the virtual studio than the senior ones, as fourth- and fifth-year students are more analytical about it. Regarding the communication with the tutors, 46% students felt that it's easier now to reach out to the tutors when 46% disagreed that the communication is more comfortable than before (Fig. 1). Nonetheless, 58% students were agreed that they were given liberty for choosing the material.

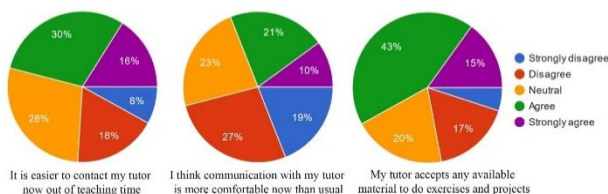


Fig. 1: Communication with the teacher

In the architecture education system, one-to-one tutoring feedback is an essential part. In the studio, students not only learn and grow different skills when they are working together in the paired space, but they also learn by attending to one another's critiques. Additionally, students who are taught collaboratively rather than individually, may nurture the expertise they require for creative work (Crisosto et al., 2010). This procedure is important to enhance the student's self-confidence during their design training (Choi and Kim, 2016).

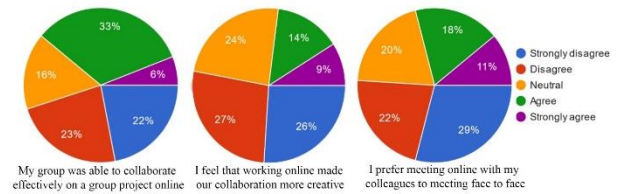


Fig. 2: Peer Learning and collaboration

From the data derived from this study, it indicated low range of contentment with the virtual learning experience. Only 33% of the students agreed that they get more feedback on their work than usual, while 35% received feedback on assignments in a timely manner, quicker than usual. Students strongly disliked working on a group assignment online, 51% preferred meeting their colleagues face to face than online when 53% felt online collaboration was not successful (fig. 2).

Only 30% students believed that they could easily present their design ideas when working through only a computer, specially without manual hand sketches or physical models. Just 37% accepted they were able to maintain design work virtually like the usual quality while 28% remained neutral. Despite overall negative responses, the students indicated their development in computer skills more than expectation. Most (82%) had rapidly developed their skills in Photoshop, Revit and CAD software. The sudden shift to online platform has some other beneficial outcomes as well. The dependency on the online resources increased to a great level (81%). While only 34% agreed that online studio could be helpful to develop the design concept, 65% said internet could be a good resource for their assignments. Approximately 81% of the surveyors spent more time watching educational videos in YouTube or reading various blogs on architecture than before due to accessibility of resources (Fig. 3).

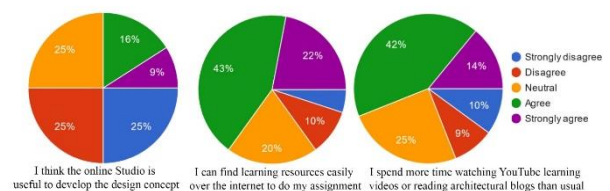


Fig. 3: Learning quality and outcomes

At the conclusion of the survey, students answered questions which reflected their opinion about the future online classes. While 40% students indicated that they would think about taking online studio in future, 39% disagreed. According to Mulligan et al. (2018), future experience could be less challenging for the architecture students provided enhancement in the collaborative thought about the precise architectural problems. Further scanning of the survey revealed that the junior students were 15% higher than the senior students who

would consider participating in the online class in future.

Conclusion

Architectural design studio is a physical classroom which develops the recognition of a student as an architect reflecting their personality, where they can express their ideas and get motivated by other students with their thoughts, feelings and the way they perceive the life (Coyne et al., 1994). The design studio can be expressed as an influential space for discussion, presentation, conversation, participation and education (Ceylan, et.al, 2020). The traditional physical studio, which is the fundamental education environment of architectural design studies, is suddenly converted into a virtual environment because of the Pandemic.

The findings of this study highlighted that a large percentage of the participants felt unsettled about aspects of their online learning experience and wanted more guidance and support. The survey shows an interesting perspective regarding the cognitive consequences of the online design studio, especially at this traumatic pandemic time. If the architecture students are provided with necessary equipment for their studies and they are given the opportunity for self-reflection, they can achieve efficient results even in the crucial pandemic environment. Another significant result of this survey is the indication of the weakness of the conventional physical studio, where students joined the discussion or classes while dealing with their design works at the same time. They often missed some valuable information or comments along with the interruption of concentration (Ceylan, et.al, 2020). The digital method of education is anticipated to create various learning opportunities and make the students ready as active learners instead of passive listeners (Salama and Crosbie, 2020). This can be a principal characteristic of online education which is required to be applied into the design studio even if they return back to the traditional physical environment. However, further studies are essential to collect more information about different pedagogical initiatives being initiated globally, especially the procedures and the experiences in the architectural design-based courses during the pandemic period.

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ARCHITECTURAL RESPONSE TOWARDS HEALTHCARE DESIGN

○Bimala Basnet*

Abstract

Globalization has brought people, culture, technology, economy, public health and many other closer. The aging of earth has witnessed the technological development, urbanization, overcrowding, climate change, pandemic, catastrophe, social inequality and many more which has direct and indirect effect on the human health. These bigger problems have to be looked both locally and globally in order to be settled. The increasing and ageing population demand the quality health care and environment which is influenced by human behavior and the decision taken by designers, architects and policy makers. Architecture being creative tool addresses the material form of the world within a changing environment considering both the functional needs of humans for healthy living and the impact on ecology. The objective of this article is to assert the potential of architecture in order to address the ongoing global health issues which is done through reviewing journal articles and other documentations that were influenced by rethinking the design process to cope the root causes of the challenges. The article also poses demonstration of how the challenges can be mitigated while benefiting the inhabitants from strategic designs. Findings and discussion highlights the reshaping of design process in order to elucidate strategies within the context, encouraging the designers to reorient the architectural practice concerning the current realities.

1. Introduction

Technological development, social and economic evolvement has enhanced the quality of public health. In the era of increasing urbanization, globalization, digitalization, ageing population, rise of non-communicable diseases, pandemic and climate change, the nature and scale of public health challenges is rapidly increasing and the significant transformation are both necessary and urgent (Muscat, Brambilla, Caracci, & Capolongo, 2020). Health care is basic human need where safety, technology and comfort is becoming a common slogan. The idea that healthy behavior can be influenced by altering the environments within which people make choices has gained traction in health care, architecture and policy in recent years (Kraus, 2016). In the predominately urban world, that is rapidly evolving having to deal with complex issues as pollution, natural disasters, water scarcity, waste management, spread of disease and many more, the impact of human activity cannot be neglected. Non-communicable disease such as diabetes, cancer and heart diseases are responsible for over 70 percent of global death (Muscat, Brambilla, Caracci, & Capolongo, 2020). These bigger issues are influenced in the daily basis with the design of the built environment and the decisions taken by the individuals. Architecture comes into play as it has power to regulate human behavior where policy acts as a guiding tool to achieve quality of built environment. The prevention of ill-being of population has begun and the role of designer indirectly is to support the promotion of healthy lifestyle (Cooper, 2017). The built environment plays an important role in the determination and facilitation of contemporary lifestyles (Rice, 2019). This responsibility refers to designing morally and ethically responsive designs with focus on do no harm while promoting the healthy lifestyle preventing ill health.

Global ill health is at critical point as more than 95% of world's population suffer from health problems (Lay, 2015). The majority of all poor health outcomes globally are now related to non-communicable diseases and many are associated with the design of built environment resulting an urgent need to address the situation (Rice & Drane, 2020). Lifestyle diseases are

not treatable in medical settings alone or with pill, but in homes and everyday settings for which a unified front is needed (Rice, 2019). Architecture plays a substantial part of a redesigned built environment and to improve human health, there is a need to change the spaces that society inhabits (Rice, 2019). Architects have the opportunity to contribute to find solutions to major societal challenges, to lead change, to improve the quality of life for everyone and to grow the demand for their services by focusing on health promoting aspects of design (Muscat, Brambilla, Caracci, & Capolongo, 2020). Working across sectors to incorporate a health promotion approach in the design and evaluation of built environment components can mitigate climate change, promote adaptation and eventually improve public health (Muscat, Brambilla, Caracci, & Capolongo, 2020). The purpose of architecture has also been described as design to improve human life, to create a more livable and sustainable built environment, and to construct practical spaces for human activities (Dannenberg & Burpee, 2018).

Worldwide, the urban population has grown rapidly from 751 million in 1950 to 4.2 billion in 2018 and projection show that global trends could add another 2.5 billion by 2050 resulting in almost 70 percent of the total population (Muscat, Brambilla, Caracci, & Capolongo, 2020). Therefore, public health globally seeks attention for quality life, quality built environment emphasizing overall health and well-being. Architecture plays an important role in determining health and wellbeing, particularly as a contributory component of an unhealthy lifestyles (UN Habitat, 2016). Both the building and urban design can provide meaningful impacts for individual, population and global health through the lens of health (Dannenberg & Burpee, 2018).

Ten percent of health outcomes are the result of built environment, while 50 to 60 percent are because of health behaviors which denotes improving population health needs to involve altering health behaviors that go beyond the clinical setting and incorporate community and public health systems (Kraus, 2016). The health crisis is not caused by the choices that individual make but decisions that are pre-emptively nudged through the design of built environment and other socio-technico-material factors (Rice, 2019). The design of

Key words: healthcare, architecture, design process

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the built environment is currently undertaken by an architectural profession that lacks specialized knowledge of health and wellbeing (Rice, 2019). The disciplines of public and environmental health have long recognized the impact of the built environment on health, the researcher should identify key issues, evaluate proposed design solutions, and provide insight for the future of care (Anderson, 2018). There is considerable capacity and urgency for further insight into healthy architecture from academic research and exemplars from architectural practice (Rice & Drane, 2020).

2. Objective

The purpose of the study is to understand the role of architecture in achieving the healthier space.

3. Methodology

In order to address the research purpose, literature review was conducted in google scholar scientific data base. This data base was preferentially selected because it involves most of the technical and social science discipline that might include a substantial component of the contribution related to architecture, public health and healthcare design. After some preliminary searches based on the keywords 18,100 results were yielded which were screened and several contributions were excluded reviewing title and abstract reflecting the scope of research. In particular, the main exclusion criteria were:

- Contributions focused on frameworks based on health care services as in-home health care stations, medical practices, smart healthcare design services
- Contributions relating to the building design and construction concerning the sustainable design, structure of building and the use of software
- Contributions concerning the technological advancements as e-health, m-health, telemedicine. Some of the journals were concentrated on improving the public health through intelligence and system

After the title and abstract screening, 33 papers were read and of them 25 were meticulously studied and analyzed based on following theme

- Built environment and public health
- Architecture as a tool to nudge physical activity
- Design strategies for infection prevention and control
- Healthy architecture
- Healing architecture and restorative design
- Therapeutic value of outdoor environment
- Antivirus built environment
- Global health

4. Findings

a) Built environment and public health

The built environment includes all the physical part of where we live and work such as buildings, streets, open space, and infrastructure which influences a person's level of physical activity (CDC, 2011). Health is influenced as much by design of

cities as it is by diet or medical care (Burden, n.d.). WHO-healthy cities have taken built environment as one of the strategy to deliver improved health (Rice, 2019). Built environment can contribute to climate change, influence transportation and affect health through the use of resources, materials, site location and availability of green spaces (Muscat, Brambilla, Caracci, & Capolongo, 2020). During the 19th century dramatic improvement in public health in industrialized nations were made possible by changes in the built environment through the installation of comprehensive sewer systems, improvements in building designs to ensure that residents has light and fresh air, and the movement of residential areas from noxious industrial facilities (Perdue, Stone, & Gostin, 2003). The rising public health issues such as obesity and non-communicable diseases has stressed the attention on lifestyle and the impact of built environment (Muscat, Brambilla, Caracci, & Capolongo, 2020). Well-designed places engage, reduce stress, enhance learning and allow those to who become ill to heal faster and better (Burden, n.d.). Despite significant links between physical activity, proper nutrition, a clean environment, the current built environment does not promote healthy lifestyles. Walkable streets and neighborhoods maximizes not only immediate access to active transportation, but also determine how often we take walks or go outside, how connected we feel to nature, how much we feel engaged and involved with others, how likely we are to volunteer, and influence many other positive health indicators (Burden, n.d.). Urban areas frequently lack adequate safe playgrounds and green spaces and the open spaces are covered with garbage and debris which attract vermin and can harbor criminal activities (Perdue, Stone, & Gostin, 2003). Built environment affects the health in numerous ways which can be subsided through architecture and planning through promotion of healthy behaviors.

b) Architecture as a tool to nudge physical activity

An important public health challenge of the twenty-first century is to increase individuals level of physical activity and to reduce their sedentary behavior (Landais, et al., 2020). The concept of choice architecture with the use of nudges is a promising approach to influence decision making regarding health behaviors (Forberger, Wichmann, & Comito, 2020). Nudging has become a popular approach for (re)designing environments, procedures and tools to get humans to behave differently (Frischmann, 2019). Many of the lifestyle choices are rarely overtly made, instead many behavioral decisions are often covertly designed into our environments (Rice, 2019). Physical activity is not only performed by individuals simply for the sake of health but more importantly to manage every-day life such as commuting to work, grocery shopping, visiting doctors, bringing up children, visiting friends or leisure time activities (Forberger, Wichmann, & Comito, 2020). The built environment can 'nudge' individuals towards healthier or less healthy lifestyles; at present, too many of those nudges are pushing society towards ill-health (Rice, 2019). Individual can be prompted to take the stairs instead of the elevator through foot prints on the floor that lead to the stairwell (Landais, et al., 2020). Nudging people to cycle contribute to make them healthier and decrease the amount of congestion and pollution that results from car and other vehicles (Qigley, 2013).

c) Healthy architecture

The design of built environment plays an important role as a determinant of health (Rice & Drane, 2020). Healthy architecture

should contribute to a state or complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (Rice, 2019). Contemporary architectural practice obviously does take some health issues into some consideration but does not cover all or most aspects of health (Rice, 2019). Salutogenic design refers to the embedding of preventive care strategies in our built environment, by placing focus on factors that support human health and well-being rather than on factors that cause disease (Muscat, Brambilla, Caracci, & Capolongo, 2020). Although predominately architecture-focused salutogenic design has also applications in other design disciplines within public health and ageing well, such as in behavior and service design. Several studies have confirmed that human beings perceive natural environments as more restorative than urban environments which offers various colors, forms and scents encouraging humans to forget about their everyday life (Dilani, 2012). The concept of biophilia and biomimetics with the intention to connect human with nature on physical, mental and social level as biological need affects our personal wellbeing, productivity and social relationship as: ecological dimension, social dimension and psychological dimension. Daylight positively impacts human physiology and should be considered rather than artificial daylight which claims to have the same effect (Dilani, 2012). A window and a view, or exposure to natural light, can impact patients' wellbeing, heart rate variability, or other circadian responses (Anderson, 2018). Studies have shown that a patient in hospital with window view of nature has less recovery time with less prescription of antibiotics compared to a patient in a room with a window view of blank wall (Dilani, 2012). An improved indoor climate can improve employee health, decrease the amount of sick days, reduce healthcare needs and increase productivity, which in turn strengthens the human capital and leads to higher profitability (Dilani, 2012). Acoustic design reduces the stress from unwanted noise that has been associated with health risk and cognitive distraction (Dannenberg & Burpee, 2018). Another example is creating a transit-oriented development which encourages its residents to walk and use transit more and to drive less, with benefit that include increased physical activity, improved air quality and avoids motor vehicle injuries (Dannenberg & Burpee, 2018). Healthy architectural design can promote health and healthy lifestyle while meeting the daily needs of users through healthy design strategies.

Designers and architects are increasingly adopting scientific methods to assess the impact and the value of design on the communities served by existing and future projects through the assessment tools as health impact assessment (HIA) which evaluates potential health effects of a plan, project or policy before it is built or implemented and gives recommendations to optimize positive health outcomes (Kraus, 2016). Another is health design assessment (HDA) which enable designers to address community-specific population health needs, such as food deserts, walkable communities, fitness needs and community-specific issues offering opportunities for designers to interact through community outreach with the individuals living in neighborhoods where health care facilities are located to inform design and better connect providers with the

communities they serve (Kraus, 2016). Some other tools are strategic environment assessment (SEA) and sustainability assessment which encourage holistic, systematic projects and plans appraisal, but deeper frameworks are necessary (Muscat, Brambilla, Caracci, & Capolongo, 2020). According to "Developing a framework for the assessment of the environmental determinants of walking and cycling" there are four main factors of the built environment that influence physical activity and impact health and well-being: functional, safety, aesthetic and destination (Pikora, 2003). The use of real-world mock-ups and virtual simulations could assist in the evaluation how design options may influence space and reveal essential changes that may not be obvious in architectural plans and drawings.

d) Design strategies for infection prevention and control

When architectural spaces are conceptualized and designed with a clear goal, such space can promote or aid the inhibition of infectious diseases (Emmanuel, Osondu, & Kalu, 2020). The built environment can be shaped and reshaped to support infection control. Architecture can be a tool to help reduce the risk by creating spaces that prioritize health-giving attributes-through the circulation of airflow, spatial design, biophilic elements, natural light and selection of the right building materials (Garofalo, 2020). In the 19th century, cities like London, New York and Paris implemented housing reforms to improve living conditions in tenements and other dwellings through incorporation of light, nature and airflow into a building's design which was seen as a prescription for sickness and disease and coincided broad sanitary movement to shape urban form to make it healthier (Garofalo, 2020). In present scenario, the worldwide global pandemic COVID-19 has restricted the use of public spaces and government has urged citizens for physical distancing (six feet apart) to reduce the transmission of corona virus and protect the public health. Some design strategies to employ in adapting our domestic, commercial, residential and hospital spaces for infection prevention and control can be design for social distancing (with adequate space in waiting areas, corridors, hallways, stairs and entrance lobby), design to enhance natural ventilation (which helps in mitigating nosocomial and other infectious diseases), design to enhance daylight or sunlight (helps sway spread to airborne pathogens), design with adaptive finishing materials and construction methods (reduces the lifespan of virus) and flexible design with sustainability features (which adapts to change and accommodates new challenges) (Emmanuel, Osondu, & Kalu, 2020). Architecture can contribute greatly to the prevention and control of disease leading to healthier life.

5. Discussion

Globalization has brought people closer than ever before resulting the urge to address global challenges rapidly and competently. Population growth, climate change, catastrophe, pandemic, economy are some important factors that has resulted in serious health deterioration throughout the history. The built setting has direct and indirect impact on the public health and architecture has been considered as an important tool to minimize ill health while promoting healthy lifestyle. Buildings needs to tackle problems like energy, climate change, biodiversity, public health. Nature provides a large database of adaptation strategies. Several benefits are identified for applying biomimetics to solving building problems,

such as enhancing: creativity and innovation, optimizing resource (i.e. materials and energy) use in buildings, lowering pollution, benefiting health and mitigating urban heat island effects and laying a foundation for environmentally responsive developments. The design of the built spaces and environment must move beyond universal design focusing on design that enhances health care as the design of stairway in public buildings closer to entrance so as to increase the likelihood of people to use stair which will have positive health impact. Others can be the use of color psychology, texture, sense of belonging, views, connection and disconnection creating a healthy environment. In the neighborhood design, the elements as parks, walkable neighborhood, bicycle route, buildings with adequate access to natural light and ventilation, developed infrastructure can enhance the health of the occupants and their lifestyle. Future design innovation might include an emphasis on both the micro and macro level (design of a building both the interior and exterior environment and community centered design).

Studies have shown that the access to green or open space is often linked to income, particularly in cities. Covid-19 has placed this issue front and center: those with access to balconies, gardens or good, close neighborhood parks have been benefiting from them during weeks of lockdown, while others have been trapped inside (Lufkin, 2020). The old settlement, areas with high land value and the informal settlement have it worst as the building are attached and crowded with inadequate outdoor spaces, narrow streets and poor ventilation. High land values have resulted in the vertical development with no to limited public open space in a private property. Balconies were seen celebrated by the people during the lockdown as being only medium to connect to outdoor

world, nature and people promoting healthy living. For slowing down the transmission of COVID-19, studies have proposed the unidirectional lanes (Miglietti, 2021). The pandemic has forced the designers to bring new perspective while designing spaces where the design process is to be more challenging and brain storming as the other attributes as functionalism, aesthetic, economic are also equally important.

6. Conclusion

Restoration of health through design and technology is possible as both the tools are thriving. The design should take account for bigger forces that are in play envisioning the bigger picture of how the global challenges can be creatively mitigated in long run. The pandemic has challenged the designers to design enhancing the social interaction and at the same time slowing the transmission of virus. The cholera pandemic of 1800s transformed New York and other major cities with urban design elements as wide boulevards and parks and today the COVID19 pandemic is spurring the architects again. Architecture as a creative tool has a power to alleviate the crisis concerning the global challenges by reshaping itself addressing the need of human and ecology. As Vitruvius writes the architecture should be equipped with knowledge of medicine for without the consideration of healthiness (of the design) cannot be assured (Ibrahim, 2019). The design of a space should live, heal and thrive being justifiable and measurable addressing the need of everyone who can potentially navigate the space and to achieve this there is the need of collaboration between different field; public health, architecture, and urban planning.

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VERTICAL GARDENING WITHIN CITYSCAPE: ALONG THE WAY TO THE MODERN PRACTICE

Smart Technologies, Challenges and Prospects

○Ampatzoglou Triantafyllos

Abstract

The vast ramifications of the SARS-CoV-2 Pandemic, along with climate change and extreme urbanization, are leaning on cities. Within this frame, an overview of the concept of vertical gardening (VG) is proposed, exclusively supported on a bibliographic review. The endeavor attempts an adumbration of the fundamental notions, onward the rapidly developing smart technologies relevant to the practice. The purpose is to point out VG as a contemporary and versatile arsenal of tools that enhances resiliency in the built environment. Thus, the immanent dynamics of VG will disperse and promote beauty and prosperity in the global community of people.

General Scope Climate change and extreme urbanization are incontrovertible, exigent realities with which our era must deal. The continuous urban territorial expansion, accompanied by the increase of human density, necessitates a continual and radical recasting in the ways urban environments are imagined, conceived, designed and finally actualized. In addition, the vast ramifications of the SARS-CoV-2 coronavirus Pandemic are leaning on cities to absorb the blast and additionally, invert the situation. Within this frame, an overview of the concept of vertical gardening (VG) - a hybrid form of Nature-based Solutions (NBS) - is proposed, which gently emphasizes on utility needs, without reducing the impact of architecture, a definite multilateral mediator to *increase resilience in the built environment and mitigate environmental degradation* (Naboni, 2019, p.140). Hereby, the aspiration is to track ongoing research, shed light and present tangible evidence on VG contribution in developing resilient urban spaces, biodiversity conservation, energy savings and promotion of urban health, through literature review and a body of recent studies.

Fundamentals VG, which falls under the wide range of Green Infrastructure (GI) and NBS, is expected to play a vital role in ecological urban development of the future. It has been current since the late 80's, however only since recently – and through its technological ripeness – is observed having an accelerating upward trend and emerges as a promising tool for confronting present and future urban acute issues. Nonetheless, it is imperative that an overview and analysis of the fundamentals is conducted: what is a vertical garden? how is it constructed? which are the composing parts and what are the benefits? Moreover, what are the innate challenges regarding the technique of VG? An initial respond to the query can be traced in the fundamental work of Patrick Blanc, *The Vertical Garden: From Nature to the City*, (2008), expanding and affecting, all through contemporary practices, from the various technical details of the initial setup's construction to the handling and juxtaposition of the plant species (Vialard, 2010) just to start with. As Blanc (2020) highlights, there is still lots of work to do regarding VG

sustainability issues and the bigger diversification of the available plants.

The Role of Smart Technologies on VG (on the way to Climate-Smart Cities.) However, the main obstacle, which prevented - until recently - the expansion of the technique, featured initially from VG suppliers and providers, is the imperative for regular care and management, an essential procedure that requires specialized knowledge and is time-consuming. Thus, the necessity for regular maintenance - utilization of Internet of Things (IoT) - (Bondarevs et al., 2015), to the remote management imperative - utilization of Cloud and IoT - (Liu et. al., 2018), has proved no easy task. However, within this bunch of challenging tasks, coexists the opportunity for insights and *well-informed decision-making with respect to our knowledge of how fast and best to improve urban sustainability* (Bibri, 2018). This claim's potentiality and significance is partially revealed by experimental, state-of-the-art set-ups that establish and promote synergies between VG applications and Machine Learning (ML) methods; such as the one conducted by Salomone et al. (2020) in the ZEB Lab as well as, another motivating, exquisite case which is the research conducted by Liu, Pang, Karlsson and Gong (2020). The two aforementioned case studies constitute exquisite examples of prosperous, cross-discipline discourse and provide tangible evidence of VGs – fortified with ML methods – as sources of reliable data, characteristics of the highest priority and essential for the transition to *evidence-based guidelines to build climate-smart cities* (Naboni, 2019, p.138).

Challenges Additionally to the above-mentioned challenges, the literature review unveils deficiencies in software tools as well as interoperability issues amongst different software (Allan & Kim, 2016), or in some cases a lack of metrication tools (Xing, Jones & Donnison, 2017), factors which affect and feed the messiness in the attempt for scales interconnection, as well as, further inclusion (of VG) within coherent policy frameworks (Somarakis, Stagakis & Chrysoulakis, 2019). While the policy frameworks have been a matter of concern for quite some time,

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as VG lacked standards or certification processes and was only locally used as city driven remedies (UK Guide to Green Walls), the present situation encourages the dialogue towards a feasible resolution. Additionally, as Blanc highlights (2020), changes in plants-selection criteria and sourcing strategies are required, following the same imperative with urban greening and tree-planting targets (Antonelli et al., 2020, p.51).

Case Studies and Interconnections Subsequently, a preview of diverse VG case studies will follow. Thus, prominence is given on the broad implementation prospects, extending in various climatic zones and spatial schemes, from indoor and outdoor uses to private and public spaces. The aim of this part is to reveal the versatility of VG across the scales of the urban, the building and the human. As it is revealed, the dynamic versatility of the technique, regarding the multi-scale benefits, has ignited a variety of cross-discipline research work, designating VG even as a major restorative tool (Lotfi, Refaat, El Attar & Abdel Salam, 2020). Among a wide body of literature, the works of Chiquet, Dover & Mitchell, (2012), are selectively chosen on aspects of urban environment's biodiversity; the research of Van den berg, Wesselius, Maas & Tanja-Dijkstra, (2016), which provide evidence *for green walls as a means for restorative classroom design*; additionally, Enzi et al. (2017, p.164), underlines, *NBS such as green roofs and walls can have a positive impact on ameliorating the Urban Heat Island and therefore help to increase energy efficiency*; and the project of ANS Global on confronting air pollution in a peri-urban environment (2019).

Contemplating the future of VG The present work is based on the best application scenarios and state-of-the-art set-ups from interior spaces; at the same time explores small scale urban projects, probing resiliency issues. Given the potential for the adoption and the benefits of VG applications, it is the authors firm belief that they have the prospect not only to bring an alfresco breakthrough in the leftover vertical urban space, but also to play a confluent role in a more livable and humanly empowered built space. Concluding, *now, more than ever before, we need to explore the solutions that plants could provide to the global challenges we face* (Antonelli et al., 2020), while giving prioritization to the fulfilment of the Sustainable Development Goals (SDG).

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THEMAL SAFETY AND COMFORT IN CONTEMPORARY HOUSES OF NEPAL: PRESENT AND FUTURE CLIMATE SCENARIOS

○Shreejaya Tuladhar*, Arunima Dev*, Lunibha Manandhar*

Abstract

Contemporary houses in Nepal are built with little consideration of the local climate unlike traditional vernacular architecture, resulting in anecdotes of extreme interior temperature. The study aims to use thermal simulation to evaluate not only the adaptive thermal comfort of these shelters, but also the interior temperatures that may be considered health risk to vulnerable populations e.g. the elderly, sick and children. Climate from cities Jumla, Kathmandu and Nepalgunj representing Himalayan, Hilly and the terai regions respectively were used for the evaluation. Performance of these shelters in future projected climate scenarios such as 2050, 2080 was evaluated. Design solutions to improve thermal safety and comfort were tested to suggest recommendations.

1. Introduction

Contemporary architecture in Nepal is very homogenous in terms of material use and building technology despite the great diversity in terms of climatic conditions and socio-cultural values of its population. The materials used in these constructions are primarily burnt bricks walls, concrete floors and roofs. This contemporary form of construction is rapidly spreading in urban areas and lately also in rural areas, in the aftermath of the 2015 earthquake. This trend has come at the expense of traditional vernacular houses. It is now common to see these contemporary brick-concrete houses in the high Himalayan regions as well as the lowland terai despite the vast difference in the local climatic conditions.

Contrary to their vernacular counterpart, contemporary houses are built mostly ignoring the local climate in which they are built (Upadhyay, 2006). Anecdotes of extreme interior temperatures of being too hot or too cold are common.

In this research, we used thermal simulation to evaluate the typical contemporary house in the climate of three cities Jumla, Kathmandu and Nepalgunj each representing the Himalayan, Hilly and the terai climatic region of Nepal respectively. The evaluation will be based on ASHRAE-55 adaptive thermal comfort (ASHRAE, 2010). Additionally, evaluation will also be done to see if indoor temperatures fall within the health risk zone. Currently, there is no agreed upon Standards for thermal conditions or temperatures for thermal safety. A similar study done in climate of Kathmandu and other nearby South Asian regions showed indoor temperatures within “health risk” zones where upper threshold is set at 35°C and lower threshold set at 12°C (Tuladhar et. Al, 2019). Health risk zone indoor temperatures might cause health risks to vulnerable populations i.e. the sick, elderly and children.

Our results showed that the interior temperatures not only exceeded the threshold for Adaptive thermal comfort For the projected future climate scenario of 2050, 2080, the

frequently, but also exceeded the health risk zones limits depending upon the location it were tested in.

Similar evaluations were also done on future projected climate scenarios of 2050, 2080. The result presents a grim scenario where the interior conditions greatly exceed the health risk threshold in the future scenarios. These results show it is highly likely that in the future active heating, cooling and conditioning will be required for at least part of the year in order to achieve thermal safety and comfort which will have implications on future energy demands further exacerbating climate change. The study also shows the resiliency of the shelters in future scenario and its susceptibility to heat or cold waves. Passive design solutions were also tested using simulation tools to improve the thermal comfort and safety and recommendations produced.

2 Presentation Summary

Methodology

A bedroom from a typical contemporary house design representing typical new constructions was selected for the thermal simulation. The bedroom is 3m X 3.375m depth. This room was below a concrete roof, situated on the South west corner with the external south and west brick masonry walls, while the north and east walls were internal brick masonry walls. This bedroom was chosen to represent the worst case in terms of thermal conditions and exposure.

We simulated this room or space for one year, using a typical meteorological weather files for Jumla, Kathmandu and Nepalgunj. Thermal simulations were performed using the US Department of Energy’s EnergyPlus (DOE, 2015) simulation engine, via the Honeybee interface (Rousdari M.S and Mackey C., 2017), a plug-in for Grasshopper (McNeel, 2017), a visual scripting plugin for the Rhinoceros 3D modeling software (McNeel, 2017).

current typical meteorological weather files were morphed

Keywords: Thermal Comfort, Thermal Safety, Energy Modeling, Future Climate Scenario, Climate Change

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using the CCWorldWeatherGen, a tool developed by University of Southampton's Energy and Climate Change Division to morph weather files according to IPCC (Intergovernmental Panel on Climate change) HadCM3 A2 experiment scenarios.

Passive design solutions such as insulations on walls and roof, better glazing, exterior shades and shutter on glazing, shaded double roof were tested using the simulation tools on the extreme hot/ cold weeks to improve the thermal safety and comfort.

Analysis

The metric for evaluation was the percentage of the year that the interior operative temperature met the threshold for adaptive thermal comfort. However this common metric proved to be insufficient in describing the magnitude in which the interior temperatures exceed the adaptive thermal comfort threshold. Therefore, we ended up using the metric of Hot/ cold degree-hours which is °C above or below the threshold for adaptive comfort added up for each hour of the year. Same was also done for hours and degrees exceeding the hot and cold health risk thresholds of above 35°C or below 12°C.

Hourly temperature curve graphs of the hottest and coldest week was also analyzed to see if the interior operative temperature reaches into the health risk thresholds

Fig. 1 shows the comparison between the annual adaptive comfort metric between the three locations. In present climate, interior conditions in Jumla are mostly cold while it is the opposite for Nepalgunj. Kathmandu is more mild with half the hours comfortable and the other half equally cold or hot.

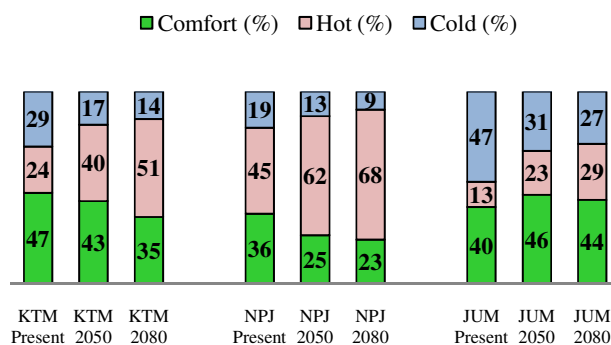


Fig. 1: Adaptive thermal comfort in present and future scenarios

Regarding the future climate scenarios of 2050 and 2080 it was observed that that the mild climate of Kathmandu warmed up to resemble the climate of present day Nepalgunj. Climate of Nepalgunj shifted to be even more hot Meanwhile the climate of Jumla warms up to be milder and more comfortable resembling that of present day Kathmandu. Table 1: shows the degree hours exceeding comfort and health risk threshold.

Table 1: Degree-hours comparison

	Hot discomfort	Hot health risk (>35°C)	Cold discomfort	Cold health risk (<12°C)
KTM Present	5291.52	3.90	5496.51	298.09
KTM 2050	10616.23	105.75	2102.21	2.01
KTM 2080	15959.37	1127.99	1408.42	0.00
NPJ Present	16354.83	2550.43	2955.46	0.76
NPJ 2050	28054.03	7769.88	1199.39	0.00
NPJ 2080	37874.97	14510.33	856.56	0.00
JUM Present	2107.70	0.00	12394.37	1227.96
JUM 2050	4586.07	0.53	6466.90	114.86
JUM 2080	6775.01	5.79	4937.92	42.83

Discussions

Building designers need to proactively adopt passive design strategies in order to improve not only the thermal comfort but also decrease health risks. The study showed that simulations are effective tools to test the effectiveness of passive strategies appropriate for a given climate. In light of the grim future predictions in the case of future climate scenarios, it is clear contemporary construction practice fails to ensure health and safety in the shelters. Local government and other stakeholders must plan to mitigate this extreme future scenario by introducing building codes and passive design strategies to improve the building envelope. The concerned authorities must also anticipate plan for the increased energy consumption

Conclusion

The study demonstrates that the interior condition of the contemporary houses does not meet the adaptive thermal comfort thresholds for majority of the year. Moreover, the interior operative temperature exceeds the health risk threshold temperatures. For future climate scenarios, there is a great increase in interior temperatures exceeding the health risk threshold of 35°C for Kathmandu and Nepalgunj.

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ASSESSMENT OF INDOOR AIR QUALITY ON KATHMANDU URBAN KITCHENS FOR SUSTAINABILITY

○Bindu Shrestha¹, Ph.D

Abstract

In the Nepalese context, cooking is one of the most significant energy-intensive activities in households, and women contribute higher in household chores than men, including cooking activities in the kitchen. Kitchen indoor air quality has a crucial environmental role for dwellers. It has a strong linkage with kitchen design (building design) and health issues to achieve sustainability. The study suggests that IAQ should be a concern of city development authorities and building-by-laws.

1. Introduction

Household energy contributes 35% of total world energy, and it is expected to increase by 20-40% in 2040 (Santamouris, 2019). In the Asian context, cooking is one of the higher energy-consuming activities within households. The kitchen is one of the considerable spaces where women spend more time in family food and health. In the context of Nepal, households consume 80% of total energy with almost 60% of total energy in cooking activities (Nakarmi, 2018). Kathmandu city accounts for 22% of the total population (CBS, 2015) and is accompanied by the complex urban problems of severe demand for resources contributing to health consequences. It has a more considerable impact on kitchen design in human health. Pandey et al. (1990) and Pokharel & Rijal (2020) have emphasized that poor ventilation ultimately increases CO₂ concentrations resulting in poor IAQ, and recognized building characteristics, such as infiltration and ventilation rate, play an essential role in the variation of indoor CO₂ concentration. Besides, cooking oil, smoking, and human activities are imperative contributors to indoor air pollution (IAP) due to fuel emissions, people's smoking, and cleaning home (Du & Wang, 2020). With this consideration, this study aims to identify the linkage between kitchen design along with the use of electric appliances (kitchen hoods/exhaust fans) with indoor air quality in urban Kathmandu households. Indoor air quality is one of the vital agendas for environmental sustainability linking to human health. It is recommended that building regulations need to consider of energy and comfort of the kitchen workers.

2. Methods and materials

The research is designed as a case study based on a sustainability perspective with energy linkage. The research method approach is twofold: quantitative and qualitative methods with field tests, questionnaire surveys, and interviews

to reveal the lived experiences, energy culture, and the environment. The study has revealed a social reality as a construction of people's life. The research strategy focuses on ethnography and the Kathmandu case. The door-to-door questionnaires survey have done in 623 households in Kathmandu in three city layers – city-core, middle-city, and outer-city. Each city layers consist of 208 households. The environmental data – indoor air quality tests (CO₂, RH, indoor air temp.) have taken in 12 households in the three city layers. The air quality test was done using Onset's HOBO MX1102 CO₂ sensor in the cooking areas. It has a recording range: 0 to 5000 ppm and accuracy: ± 50 ppm $\pm 5\%$ in a non-condensing environment. The qualitative analysis of interviews and observation was analyzed, developed network, and interpretation is obtained in a neutral voice relating to literature.

Table 1: Demographic data in three-city layers

Location	House Type			Family Type			Residence Type	
	Modern (%)	Traditional (%)	Mixed (%)	Joint (%)	Nuclear (%)	Single (%)	Own (%)	Rental (%)
Inner city	67	16	17	25	71	4	64	36
Middle city	95	1	4	14	83	3	58	42
Outer city	90	3	7	13	80	6	54	46

3. Results and Discussions

A. Use of Kitchen hoods/exhaust fan in Urban Kitchens

The use of exhaust fans and chimneys was higher in modern buildings compared to traditional and mixed buildings. The data showed that 23% of modern buildings contained exhaust fans, and 22% consisted of chimneys, while the traditional building contained exhaust fans only 0.3% and chimneys by 0.16%. Mixed buildings contained 2% of exhaust fans and 1% of chimneys. The observation and findings indicated that most

Keywords: Energy, indoor air quality, urban kitchen, household

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new buildings consisted of kitchen hoods and proper ventilation to achieve a healthy kitchen. WHO standards and the American Society of Conditioning Engineers (ASHRAE) have provided ventilation standards to maintain a level of CO₂ and suggested having windows open for fresh air flow and healthy air quality. Carbon dioxide level has potential health issues when it exceeds 1000 ppm (Fisk et al., 2013) and impacts human decision level.

B. Air Quality on Normal days

The comparison of the CO₂ concentration level in the households could illustrate the role of ventilation and kitchen hoods appropriately in IAQ, as shown in Figure 1. In the D12 household, cooking dinner time was higher than morning time, and CO₂ concentration raised to 1630 ppm with the only use of LPG for cooking. The trend of average ppm remained below 1000 ppm. The kitchen did not have any exhaust fan and chimney, but openings were located rear side of the cooking area. The average CO₂ concentration level was 523 ppm, with a variance of 209 ppm. In the D13 household, CO₂ concentration level in a day was higher in evening dinner cooking time, raised to 2150 ppm. The cooking space did not have ventilation, an exhaust fan, and a kitchen hood. The average CO₂ concentration was 728 ppm, with a variance of 589 ppm. The higher variance was noticed in this household, as shown in Figure 1, due to the use of firewood/coal to make barbeque (choyala) in the evening.

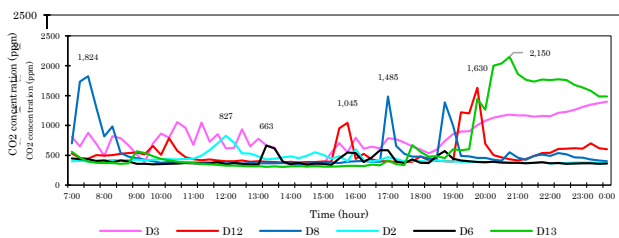


Figure 1. CO₂ concentration level in urban kitchen

C. Air Quality on Social Events

Family & friends gather, and cooking varieties of food in the social events are part of energy-consuming activities. Kathmandu city consisted of inherent cultural and religious beliefs. Respondent of inner-city - D12 household had less frequency of social activities in the home and resulted in low energy consumption. However, IAQ in terms of CO₂

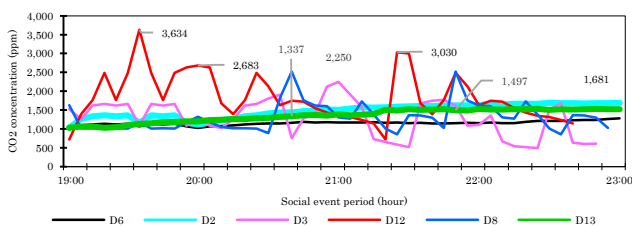


Figure 2. CO₂ concentration level in urban kitchen during social events

concentration level resulted higher during a social gathering, raised to 3634 ppm due to use of firewood for making traditional barbeque -choyala (Figure 2).

The observations showed that the household of low-income groups living in rental spaces used fewer electrical appliances and fewer social activities. However, those spaces had relatively higher CO₂ levels compared to household owners' space.

D. Cooking Culture

The observation on cooking showed that it has also impacted the energy use pattern and air quality of the kitchen. The respondents of households D12, D13 cooked 2-3 items daily while D8, D3, D2, & D6 cooked 4-6 six food items daily for two-time meals. The daily energy-intensive activities were shallow due to food habits. On the contrary, household D2 cooked a similar number, but vegetarian foods and the family was based on religious belief and self-energy consciousness. The result showed that health issues influenced cooking culture, food habits, availability of cooking time, religious and cultural aspects that ultimately influenced energy consumption to a certain extent and influenced the IAQ of the kitchen. However, this study could not provide enough statistical data on the relationship.

4. Discussions

Environmentally, kitchen design and culture had been improved due to electric kitchen hoods for better air quality. In contrast, the air quality results showed the inner-city kitchen environment, especially in the rental spaces lacking ventilation, exhaust fans, and chimneys. It has been identified that time spent in higher pollutant kitchens has significant risk factors for acute respiratory infections. In this regard, Lee et al. (2012) and Rahman & Islam (2016) investigated that kitchen hood system can reduce CO₂ concentration (@ 1.5 m/s hood system Vs. close vent) by ten times by the use of an efficient hood system to maintain thermal comfort quite well inside the kitchen space. One of the contributing factors to an increased level of CO₂ in the Kathmandu urban kitchen was found as increased occupancy, cooking culture, and cooking fuel types. Shen et al. (2020) and Taneja et al. (2008) underlined that cooking activities contributed to emitting CO₂, including other pollutants.

Additionally, the trend of increased indoor CO₂ levels was higher in winter compared to summer. In this regard, factors included indoor activities, closed ventilation, stagnant pollutants, and human occupancy duration played a role in increasing CO₂ concentration due to limited floor area and human metabolism. However, information on IAQ in the kitchens in urban households was minimal in Kathmandu. In this study, females have long cooking hours and are exposed to

emissions without proper ventilation. They have to cook ethnic foods on firewood and eye irritation, and some have mild respiration problems, but it was taken as normal due to a lack of awareness of IAQ. People living in small units without windows and poor indoor air quality (IAQ) potentially pose severe concerns for occupants' health and well-being. In particular, those conditions might have affected more in the current pandemic context COVID-19 (Peters & Halleran, 2020). Women's cooking hours were increased during the COVID-19 pandemic, and kitchen indoor air quality was often overlooked.

4. Conclusions and Recommendations

Indoor air quality is one of the environmental indicators to demonstrate the sustainability level of the city. Females of lower-income groups still suffer from unhealthy cooking space due to unawareness and unaffordability for the electric kitchen hoods. The study suggests that IAQ should be a concern of city development authorities and building-by-laws for not allowing enclosed kitchens and rooms without proper ventilation and kitchen hoods. More attention should be given to rental residents in small compact areas (inner-city) because pollution levels tend to be higher in smaller spaces. Behavioral change in occupants is essential to reduce exposure, such as burning incense, mosquito coil, etc.

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4

Abstracts

TAXONOMY VS TAXIDERMY:

Setting Up A Binary to Ignite Debate on Green & Sustainable

o Bibhuti Man Singh

Abstract

***Taxonomy:** “..... science dealing with the identification, naming and classification.....”*

***Taxidermy:** “... . the art of preparing, presenting, preserving the skins of animals, stuffing and mounting them....”*

The purpose of a binary is to provoke,
to emphasize or clarify by contrast or juxtaposition.

Taxonomies are all-inclusive, analytical.

Taxidermies depend more on appearances.

The purpose of this paper will be to justify the structure and philosophy behind SONA's Ecologically Responsive Architecture (ERA) Guide, first presented at the ARCASIA Round Table Conference 2015 in Kolkata.

All international discourse on Green & Sustainable, including the many rating systems currently in use, is essentially taxidermy.

SONA seeks to introduce a taxonomic approach, a non-numerical rating system, free of controversy, universal in scope and application, beyond reproach.

Paper will conclude with some Master Sheets developed over the years, yet to be openly debated, peer reviewed and finalized prior to a public hearing.

*Past President, SONA, Past Chair, Committee on Green and Sustainable Architecture, SONA

ENVIRONMENT AND BUILT SPACE

Architecture and Design as a Means for Health and Happiness

○ Ar. Sarosh Pradhan

Abstract

The Covid-19 pandemic has given us some deep reflection time, especially the way we look at our environment and the built habitat. This paper and presentation would explore the reflection time during the pandemic to reflect the pros and cons of our changing architectural and built context and also try to share a personal journey over the last 25 years as an Architect seeking an appreciation of our beautiful Nepal along with health and happiness within the craft of Architecture and design as a profession.

In the past 50 years, it is with unprecedented speed at which technology, travel, human-induced development and environmental destruction has taken place. Yet, during the pandemic Nepal as well as many countries re-lived the Shangri-la in terms of birds chirping and nature regaining her natural spirit, while man-made environment took a pause and was compelled to reflect. Some questions that arise are- can we slow down or reverse the destruction of Mother Earth and re-evaluate the nuances of Architecture and planning in seeking a more meaningful and holistic value as a profession? *Architecture Design for Space and Place Making* can no longer be looked from the linear lens of the Architectural Profession or its grandeur only, but must explore the larger wisdom of valuing nature and building with the larger consciousness of doing more with lesser of the earth's resources.

The Himalayan region, which is home to some of the highest mountains, coupled with unique human cultures and habitat, is said to be the barometer reflecting the Earth's health. When the rest of the world seemed to be developed and industrialized, Nepal seemed to have been left far behind by circumstances, geographical positioning, political and natural calamities. Yet, you take one trek into the mountains, breathe fresh oxygen, look at the spiritual nature of the habitat and it is easy to forget the pandemic and seek more value in life or in Architecture. The way we build or not build can be called a virtue, or a curse that needs to be corrected.

* Architect, Sarosh Pradhan and Associates, Editor in-chief, SPACES Magazine

THE ARCHITECT'S BURDEN: WHY URBAN SYMPHONY APPEARS 'OFF BEAT' AND 'OFF SCALE'?

○ Dip Pandey*

Abstract

The paper aims to bring renewed insights into the understanding of architecture within its specific context and the architect's role, heuristically, through musical analogy. Just as individual notations of specific frequency either progress or regress in a musical symphony following an accompanying rhythm, individual buildings of distinct style and diverse expression appear either modestly or in full extravagance in an urban symphony. Whereas a musical symphony – no matter of which genre, usually a pre-meditated creation by a single composer strictly adhering to the rules of beats and scale sounds mostly melodious, an urban symphony being an impromptu pictorial performance equivocated by built forms gushing out of manifold constructive mind may appear tumultuous. Even an expert onlooker can find deciphering rhythm and harmony in such case difficult. Kathmandu as it appears today, where contemporary architectural practice seems like a 'thoughtless march' or 'a rootless expansion' to critics, might best illustrate this premise. A lay onlooker often remarks the city as 'a parched jungle of concrete edifices.' The architects also might have realized how their buildings sadly end up being an ordinary one among the crowd. Turning this tumult into a rejuvenating rendition is a cumbersome task awaiting the architects. This requires finding reasons behind 'off beat' and 'off scale' appearance of urban symphony. Since the nature of inquiry is subjective, the paper proposes problem-centered expert interview as the main research method followed by participant observation for data collection. Drawing on the varying opinions and lived experiences of the experts and supplementary observations, the paper discusses the discordant state of architecture in Kathmandu city and concludes on a serious note to rethink the way forward.

Keywords: Urban symphony, rhythm, discord, tumult, rejuvenating rendition

* Assistant Professor, Chitwan Engineering Campus, IOE, TU, Nepal

PANDEMIC, SPACES, TERRITORIES AND HOMECOMING

O Sumnima Bhandari

Abstract

The lines of borders are not drawn as easily. The lines of control, troops of armies and the ten yards pillar (dasgaja) speak volume of the centuries long diplomatic, political and social interdependency. Nepal being a landlocked country, shares approximately 1800 kilometer long stretch of an international open border with our neighboring country India.

During the brutal wave of pandemic, borders witnessed thousands of Nepalese migrants rushing back home, seeking the safe haven which was a devastating sight to see. After the harsh blow rendered by the global pandemic, nature of the borders has not remained the same. Looking upon the intensity witnessed by the space and stories engraved in the border stones, this paper, as titled is an attempt to look at the values of the spaces that are coming back to life after the trauma.

This paper revolves around this sensitive issue, addressing how architecture weaves a community. Looking deeper into the nature, culture, lifestyle and social status pre, post and during the pandemic, this paper will also shade light upon the possible solution to soften the existing disputes and creating a common, beautiful, celebrated piece of architecture at the binational border.

The paper will be assisted by history, stories, case studies and researches regarding the border including cultural and social parameters of the settlements formed along the border.

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7

Special Remarks



Ar. B.V. Doshi

Indian Architect, Pritzker Prize Laureate

Balkrishna Vithaldas Doshi, OAL, (born 26 August 1927) is an Indian architect. He is considered to be an important figure of Indian architecture and noted for his contributions to the evolution of architectural discourse in India. Having worked under Le Corbusier and Louis Kahn, he is a pioneer of modernist and brutalist architecture in India. His noteworthy designs include the IIM Bangalore, IIM Udaipur, NIFT Delhi, Amdavad in Gufa, CEPT University, and the Aranya Low Cost Housing development in Indore which was awarded the Aga Khan Award for Architecture.

In 2018, he became the first Indian architect to receive the Pritzker Architecture Prize, which is considered one of the most prestigious prizes in architecture. He has also been awarded the Padma Shri and the Padma Bhushan. Most recently, he has been awarded the Royal Institute of British Architects' Royal Gold Medal for 2022.

Address and Discussion

In Conversation with BV Doshi
Moderated by Ar. Sarosh Pradhan

B.V. Doshi:

What I learnt from Corbusier is this that there is no distinction between object and living, they are both merged. I worked with him in Paris for 4 years and then another 4 to 5 years in India. He taught me about freedom, creativity, working with communities, climate and technology. Actually, Corbusier looked at buildings like living beings. And he thought- buildings, architecture, environment and life all go together as one entity. This idea he held was my greatest gift from him. Corbusier talked about freedom, innovation and the environment in which we live. Finally, he used to say that we must have a pact with nature. If we can do this in collaboration with nature, and follow what our instinct tells us, then architecture becomes an extension of life. Louis Khan was one of my seniors whom I met in Philadelphia and he considered Corbusier as his teacher, and therefore, he treated me as his brother. So I learnt from him how to create spaces which can be used by everybody and it would become a part and parcel of their life.

You should not do what you are saying but draw the meaning behind it. This is the way I started drawing. The other thing is what we should really ask students to do is to go to common places. Education must begin with the base. Love. Love for life. Love for creating something which is more meaningful and adds additional values. Architecture is not a product. Architecture is a process where life throbs in. There is a heartbeat. It is not something that you will touch. Sense of purpose should be separate.

Sarosh Pradhan: How was the balance between the academics and your professional life?

Actually I started the school because I wanted to learn. I wanted to discover. Because it is only in the school where you are asking the students to change. Why do you want to change? You should know that, if you want to know the history and culture, you should take the students with you. You go to porters, and see how they are working outside with no tools. So I think the whole idea is that, you want to create and build something which is impartial, formal, aesthetic, and functional. So what is a function? Function does not happen because somebody else says so. Function happens because there is a behavioural pattern. The behavioural pattern is very important. How do they behave? How do they transact? How do they believe? I mean, you can sleep, you can squat, you can run, you can stand, or you can walk. There are many levels- you can do a systematic study of lifestyle, home, pattern, available materials, go back to your tradition and find out how they did things. Hence, you have to do a lot of historical studies and then you can really understand what is it that I want today, for today's life.

Sarosh Pradhan:

You like to use the word "habitat" in all your talks. When you came back to India from Paris, India was transforming from dependence to another level. At that point of time, India was trying to find its identity, We are in a similar state, here in Nepal. We have had the removal of the monarchy and there is a new constitution in place. In terms of architecture, we are searching. Can you share some of your experiences?

B.V. Doshi:

The issue is very simple. Everybody lives in a house. The house has a kitchen, a living room, a bedroom, a verandah and a terrace, etc. But when you walk to the street, you will observe the habits of people like gathering and sitting. They are chatting in the open spaces and creating experiences for themselves which are different from one another. It has nothing to do with any style. That is local and then you go and see how they dress. You can see how economical the way one dresses, the way one sits, the way one chats, the way one communicates is. I think those are the things that are most important- the living style, living habits, gestures and meaning because people want to gossip when their houses are next to each other. If there is a verandah, a station, a little parapet, people come there and gather. However, there are places where these things do not work because it is not the habit there.

QUESTIONS FROM THE AUDIENCE:**Professor Dr. Sudarshan Raj Tiwari:**

I enjoy the study of history and culture, and you have also made a name in these fields. In the identity issue that you are highlighting, is the study of history a kind of requirement in architectural education? If we make it a requirement, what do you think the students should be going for- the study of historical settlements, historical buildings, historical open spaces or public spaces?

BV Doshi:

I think I forgot to tell you something. When I went from India to London, and to Paris, and while I was working with Corbusier, there was something deep inside of me that said- "*I am an Indian*". I belong to a particular religion, and caste. I have certain beliefs. My culture has been dominant even today. I belong to the world. Nevertheless, I go outside and I ask myself, "*Am I really an Indian? Am I from this place?*" Finally, I realised it was my culture, eating with my hands and fingers, mixing all the foods together as they were wondering and I said "*but that is my way*".

The first thing is to be a Nepali. Secondly, supposing that you are a Nepali and you had to build something today, that never existed before, you will know what you are creating is and how it is assimilating into the built environment. You know, the flowers which grow in the soil, the soil itself, the culture, your temperament and history is the backdrop and on this backdrop, you are sowing something and it has to grow with aesthetics in quality which is your own. You made one building that is absolutely traditional in Nepali. Not for any reason but if I am Nepali and I want to eat chicken, I will taste it first. Similarly, you have to totally, integrally, genetically, be a Nepali and to be the best architect, you must have pride in yourself. Even I started changing what Corbusier was doing, knowing that I'm a disciple of Corbusier. I had to have fights with him. So I started mixing things together and created things. So be yourself.

Sumnima Bhandari:

I am fascinated by the way you presented scriptural stories from the Mahabharata and the Bhagwat Geeta in your book. You also feature the conversation between Markandeya Rishi and King Bajra where you talk about art, music, dance and everything that supplement each other. Different forms of art, architecture and literature are also part of it. So, contemplating as of now, where music, dance and other art forms are thriving, we feel like architecture is certainly not thriving as it used to in ancient times. Where do you think we made a mistake?

What can we, as young architects do, so that ancient architecture could be revived and cities could become as vibrant and beautiful as they used to be in the vedic eras?

BV Doshi:

I think it is a wonderful question. Suppose that you are unknown, you do not even have sense in your eyes or ears and you are walking the streets of Nepal, tasting the food of Nepal and listening to the sounds of Nepal when you suddenly feel the legends of Nepal. Open minded, like a child, you are going to say, *"I am going to start now all over again, this magical place that I have experienced, tasted and felt"*. I think at the moment you are an architect but you do not have to pretend that you are educated like one. You are yourself and I think that is more important.

You will make mistakes, create blunders, but you will also invent and I think with all things combined together, you will eventually find your way of working and attitude. If you are truly Nepali, it will show naturally. You must flow naturally and invent. I had a lot of difficulty when I started the School of Architecture. I was asking these questions. *"What is it and how do the students behave? How does one look out? How does climate change happen?"* I was influenced by Kahn because it was the period of time when I was working with him at the Indian Institute of Management (IIM) and the School of Architecture building was done around the same time. I understood that he was precise and very thorough in asking questions. And then I found the juxtaposition- cross ventilation came, windows came, light came, breeze came from outside and when the monsoon came or when the summer heat came, the sliding shutter, the folding shutters began to become a part of the environment. So it is not something unusual. If you become what you want and if you really follow, nothing else matters. You can be yourself and that will be the best version of yourself. The same is true for the architecture that you create.

Sarosh Pradhan:

One last question. For those of you that do not know, Doshi ji is 94 and he is still interacting with his fellow architects and students. So my question is, *"What is your secret of staying young, besides doing architecture?"*

BV Doshi:

I like to see new things everyday. I like to see how the sun moves around, I also like to look at children and people around. You know there is a lot of curiosity which has to be felt. You know, we do not know anything. I am a teacher because I want to learn. I want to learn all the time. So the teacher and the student are not different things. Teacher is not someone who came from heaven. He has come from the student and that is how he became a teacher. Teachers can still make mistakes and blunders, so everybody who learns, becomes a teacher.

Sarosh Pradhan:

Thank you so much for your words of wisdom and we pray for your good health and we hope that you can visit us sometime.

BV Doshi:

Thank you. I hope Corona goes away and that I am with you and we can have a good time together.



Top:

Ar. Sarosh Pradhan in Discussion with architect and Pritzker Prize Laureate B.V. Doshi

Bottom:

Audience taking part in the discussion

8

Awards and Recognition

6.1 SONA President's Special Award 2021



Ar. Robert Wise (1929-1996), a Swiss national was one of the first few foreign architects who made Kathmandu their home and set up practices for an extended period, thereby contributing immensely to the field. Robert Weise's career started in Nepal from 1957 with humble designs of cheese factories, godowns and staff quarters, while on a two year assignment with the Swiss Assistance (SATA) for the Ministry of Agriculture. Nonetheless, before his tenure ended, he had progressed to various private projects which included commissioned designs for the royal family, such as a barn for the Royal Palace, a restaurant in the Gokarna forest and residences for Prince Himalaya and Prince Basundhara, along with a proposal for the Nepal Bank building in New Road, Kathmandu. However, it was not these but the three

year contract as Architect-in- Chief for the preparation of the Master Plan of the Tribhuvan University Complex and the design of its Library Building and Science Block, which prompted Robert to stay back in Nepal, leaving the refuge of the Swiss government. From then on till the late 1980's, Robert's designs attempted to bridge the modern style of architecture he had learnt as a student, as well as his experiences with European architecture in the late colonial period of Western Africa, to the context of the Kathmandu Valley.

Notable among the many completed designs are the extension of the Royal Hotel (Bahadur Bhawan converted by Boris Lissanevitch), Hotel Annapurna, Fishtail Lodge in Pokhara, Hotel Malla, Army Headquarters, SOS Children's Village in Sano-Thimi, Hotel Yellow Pagoda in Kantipath (now Nabil Bank), Geodetic Observatory in Nagarkot, Japanese Embassy Staff Quarters in Jawalakhel, Soviet Embassy, besides a number of residential buildings. Weise was approached to submit a proposal for the design of a new palace by King Mahendra which was part of the nation-building process for a "Modern Nepal". The project design was later commissioned to "Chatterjee and Polk". To commemorate his contribution towards the exemplary works of preserving Nepali cultural identity in modern buildings, Robert was commended by the Royal Nepal Academy in 1979. However, in spite of providing service to the country for 30 years, he was always condemned by younger architects as a foreigner and it was always a struggle for him to extend his visa.

In recognition of late Ar. Robert Wise's career of exemplary, sustained and significant achievements and contributions the field of modern architecture, epitomizing the vision of SONA, he has been awarded with the SONA President's Special Award 2021. Late Ar. Robert Wise's works are the first of its kind to confront the challenges adaptation of a modern style of architecture within the local context of the country. His works are rooted contextually and incorporate modern adaptations of locally sensitive building materials and technology, thereby exploring design and meaning of built and natural places. His teaching, research and practice have made exemplary contributions to the field of human-centered architecture in the context of Nepal and have direct, visible impact on our cities and communities. Wise's unwavering dedication to the field of architecture in Nepal is well deserving of the highest recognition. Hence, he is recognized with this Special Award.



Ar. Kai Weise, son of Late Ar. Robert Weise receiving the award on his behalf

6.2 SONA Science Day Award

To the regular student of architecture, journalism may seem like a largely outlandish field. It is, however, largely untapped as a source of intellect. It is this source that the Society of Nepalese Architects (SONA), in association with the Ministry of Education, Science and Technology, Nepal looked to explore through an essay writing competition. An official announcement to Call for Applications for essay competition for the “SONA Science Day Award- 2021” from students pursuing Bachelor of Architecture in Nepal was made and submissions were expected by September 12, 2021.

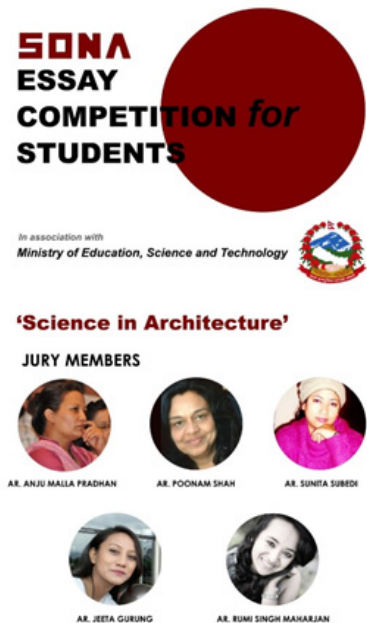
The essay competition organized by the institution aimed at architectural students who have a flair for writing and an ability to articulate ideas in written format. The key theme of the essay writing competition was ‘Science in Architecture’, the usage of which has been pivotal in the past and has been shaping the future in many ways. The theme looked to explore the scientific aspects of building design and planning, inclusion of innovative technologies, alternative building materials and the concept of futurism. The key objective of this award was to recognize innovation, science and use of technologies in the field of architecture through research and practice.

Architecture is a confluence of art and science. The “Science in Architecture” essay competition looked for the thoughts and opinions of the students regarding the role of science in architecture. What is the impact of scientific development and innovation in architecture? If there is one at all, how does it affect architectural aesthetics and the working philosophy?

Society of Nepalese Architects (SONA) was overwhelmed by the enthusiastic participation of all the students on such a short notice. Altogether 31 participants sent their essays, which were sent for review after coding-decoding of the document. Students from different architectural institutes across the country participated bringing in their diverse thoughts and discourses. The essays were evaluated by a panel of experienced academicians and architects. The jury panel consisted of:

- o Ar. Anju Malla Pradhan, immediate past SONA president
- o Ar. Poonam Shah, architect
- o Ar. Sunita Subedi, vice president
- o Ar. Jeeta Gurung
- o Ar. Rumi Singh Maharjan

The essays submitted by the students were evaluated on the basis of their way of interpretation, quality of content, plagiarism, and proper citation. All the papers were appreciated as the approach and interpretation of the topic was different from author to author. The winning



submissions and honorable mentions shall be featured in “The Built Culture”, an architecture magazine initiated by SONA.

With immense pleasure, Society of Nepalese Architects (SONA) congratulates all participants for their diligent and determined hard work.

The winners are:

S.No.	Position	Name	Institution
1	Winner	Lina Tilija	Pokhara Engineering College, Pokhara
2	First Runner-Up	Monila Shrestha	Himalaya College of Engineering, Kathmandu
3	Second-Runner-Up	Priyanka Karna	Purwanchal Engineering Campus, Dharan
4	Honorary Mention 1	Karuna Giri	Acme Engineering College, Kathmandu
5	Honorary Mention 2	Alina Lwagun	Purwanchal Engineering Campus, Dharan
6	Honorary Mention 3	Shreya Poudel	Nepal Engineering College, Kathmandu

6.3 SONA Award for Architecture Excellence

In order to honor and recognize the achievement of architectural excellence in practice and in keeping with its noble objective of further developing and supporting the profession of architecture in Nepal, the 14th Executive Committee (2021-2023) of the Society of Nepalese Architects (SONA) announced the SONA AWARD for architectural excellence. The SONA AWARD is sought to be a hallmark beginning of a new era of recognition and celebration of architecture in Nepal.

The key objective of this award was to recognize the excellence and quality achieved in a built architectural project in terms of architecture's defining principles and dimensions of human purpose, aesthetics, and technology; story-telling, innovation, and imagination; services, energy, and ecology and/or contribution to

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Prof. Dr. Sudarshan Raj Tiwari
Former Dean, Institute of Engineering
Architectural/Cultural Historian
Jury Committee Chair



Prof. Dr. Jibraj Pokharel
Former Dean, Institute of Engineering
IP Vice-Chancellor, NAST
Jury Committee Member

localism, regionalism or globalism as the case may be. All buildings built in the territory of Nepal after 1990 (SONA Establishment Year) and before the end of 2021 were eligible for nomination.

AWARDS CATEGORIES

The award was envisaged in two categories as defined by the total floor area built:

Category A: A building with total built up area less than 1000 sq. M.

Category B: A building with total built up area more than 1000 sq. M.

The Architecture Excellence Award for Category A was awarded to the **Residence of Purushottam Lochan Shrestha**, Katunje, Suryabinayak Municipality, Bhaktapur by Method Consultancy (Principal Architect: Srijana Prajapati).

The residence of Purushottam Lochan Shrestha was designed and constructed in 2072 BS to 2074 BS as a modern adaptation of a traditional Newar Residence. Various elements of traditional Newar architecture, such as, the Ku: Jhya (intricately designed corner window), wooden windows, local red bricks, etc. have been used. The spaces have been designed to let in maximum southern and eastern sun. With ongoing globalization and modernization, the traditional Newar architecture is losing its value and significance. Hence, this project aims to re-invent and incorporate traditional building typology into modern building practice.



Views of the Purushottam Lochan Residence, Suryabinayak.

The Architecture Excellence Award for Category B was awarded to **Pavilions Himalayas**, Pokhara by Wonaw & Associates (Principal Architect: Alex Shrestha).

The Pavilions Himalayas Eco Resort is located in a valley near Phewa Lake, Pokhara, Nepal. Surrounded by farmland, forested hills and a mountain fed stream, the 14 luxurious eco-friendly villas form the natural landscape. Spread over organic farmland, the resort respects the natural elements, showcasing village life in Nepal.

The resort has been conceptualized to be a part of the village as an eco-friendly abode with minimal footprint to the environment from its early design stage to its construction and actual finishing. The use of local materials, workforce, indigenous technology and local architecture blended with the eco-friendly technologies and practices have been the guiding principles for the design. The structures are built on a single and split level configurations, using the natural

topography to minimize the disturbances to the flow of land. The villas are built spaciouly with the latest amenities to give a sense of comfort and luxury. Latest construction technology along with traditional architecture and local craftsmen also make the buildings safe, energy efficient and coherent to the local surroundings.



Views of the Pavilions Himalaya Eco-Resort, Pokhara.

6.4 SONA Design Competition Award

The Society of Nepalese Architects (SONA) announced a social initiative in the form of an architectural design competition that will help in the establishment of a center for differently-abled children as envisioned by the Spinal Cord Injury Network Nepal (SCINN). This facility will be the first of its kind in Nepal and will provide an enabling environment for the children to live, learn and play with dignity and help create an environment to allow them to fully explore their potentials. This competition was based on the SONA design competition guidelines that have been developed to ensure the free and fair participation of its members. Spinal Cord Injury Network Nepal is a non-profit non-government organization registered in 2015 by 7 people affected by spinal cord injuries. It is registered in the District Administration Office and the Social Welfare Council. After the dreadful earthquake in Nepal, the team decided to set up a hostel for young children dealing with spinal cord injuries. The team has been running the hostel in a rented house and there are currently 9 boys and 7 girls are living in the hostel while continuing their studies. The current hostel can facilitate up to 16 children and come from various remote parts of Nepal.

The site has been provided by Gokarneshwor Municipality and is a part of the master plan of their proposed National Martyrs and Peace Park. The 2.57 Ropani land situated along the strip of the road has been surveyed without cost by M/s IFID Nepal and is indicative of the challenging nature of this site that runs parallel to the road. A major aspect of the conceptual design will be in addressing the terrain and drainage-related issues.



FIRST PLACE



The Award for the Second Position was won by **Ar. Rahul Bajracharya** and Third Position by **Tattva Consult Pvt. Ltd. (Lead Architect: Ar. Abhishek Bajracharya)**.

SECOND PLACE



THIRD PLACE



6.5 SONA Futsal Tournament

On 2nd Oct 2021 Society Of Nepalese Architects (SONA) organized a futsal tournament at Dhuku Futsal Hub Maharajgunj, Kathmandu as a pre-event for SONA Day 2021 that will be held on 31st Oct, 2021. About 100 people including SONA executives, architects, volunteers and students participated in the event.

SONA president Ar. Rajesh Thapa inaugurated the tournament with welcome speech and kicking off the ball. Eight teams of Architects and Architecture students competed in the tournament. The tournament was held in league format with two group of 4 teams each.

Urban FC secured first place in the tournament and Banglamukhi Tigers managed to secure the second place. President Ar. Rajesh Thapa awarded the trophy to both teams and ended the tournament with a closing note.

Snippets from SONA Futsal Tournament.







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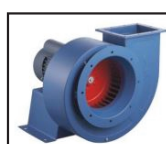
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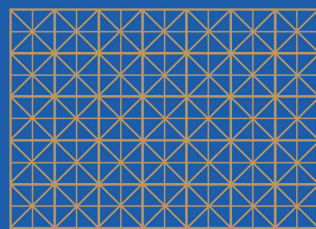
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