The University of Texas at Austin,
Community & Regional Planning

Planning Forum UT

Vol. 19

Editorial

Taylor Cook
Jiaxuan Huang
Ziqi Liu
Adam Ogusky
Mashrur Rahman
Leon Staines

Managing Editors

Samira Bashar
Kaylyn Levine

Designer

M.A. Sanchez

Cover photos originally from Mahlaqa Fahami, edited.

Faculty Advisors

Alex Karner
Jake Wegmann
Ming Zhang

University of Texas School of Architecture
Sutton Hall 2.130
310 Inner Campus Drive, B7500
Austin, TX, 78712

Planning Forum UT

Editors' Note

Dear readers,

We are pleased to welcome you to Volume 19 of Planning Forum. This year's volume builds upon the quality scholarship of the previous iteration. The editorial board and designers have worked diligently to create this volume under the guidance of the University of Texas at Austin faculty. Our work has been guided by our mission statement:

"To serve as a platform for emerging voices and new perspectives on the most pressing issues in planning."

This year's volume is comprised of research content determined by thorough solicitation, review, and selection processes by the editorial board. Additionally, our designers have created an aesthetic and organized frame to respect the effort and meaning behind each piece in the volume. Planning Forum's continued success would not be possible without the determination and collaboration of students and faculty.

Volume 19 contains three inquiries, which are traditional peer-reviewed scholarly articles that each make an original and compelling argument. Jafar, Hoque, and Chowdhury explain the role that citizen involvement has in minimizing unethical environmental planning approaches. Liu highlights the mixed-use development trends in Shanghai, indicating a shift towards more social, innovative, and collaborative environments. Nipun and Hoque argue for strategic, sustainable, and engaged water planning in Rangpur, Bangladesh.

We continue with three explorations, which allow authors to share emerging perspectives on urban planning and design issues. Hendawy uses Jakarta to explore feminist theories of visualization, pushing for inclusive planning. Perez, Poulsen, and Perez share excerpts from a conversation on reimagining engagement through play. Lastly, Sivakumar considers how design, equity, identify, and land use decisions interact in urban environments.

This volume contains two photo essays by Fahami and Sorto focused on international neighborhood change and equitable placemaking in Germany and El Salvador.

Next, Losoya shares a book review recommending *Entangled Life* for audiences interested in engaging with planning for more-than-human relationships.

We also have continued the Planning Forum tradition of highlighting the Project Reports, and Theses, by Community and Regional Planning students from 2022-2023 academic year.

It is our hope that this volume stands by our mission of sharing emerging voices and issues in planning. We would like to extend our sincerest thanks for those who submitted for this volume, to our fantastic editorial board and reviewers, and to everyone who helped to make this publication a reality for another year.

Samira Bashar and Kaylyn Levine, Managing Editors

About

Planning Forum is an annual publication produced by graduate and doctoral students in the Department of Community and Regional Planning at The University of Texas at Austin. The journal publishes peer-reviewed scholarly articles as well as critical explorations in less conventional formats. Planning Forum serves as a platform for emerging voices and new perspectives on the most pressing issues in the field.

Scholars, practitioners, activists, and writers of all kinds are welcome to submit.

Inquiries: Articles in this section are original, scholarly research and is double-blind peer-reviewed.

Explorations: Articles in the Explorations section may take a variety of forms. Critical, theoretical, and exploratory essays, personal or journalistic accounts, interviews, and conversations are all possibilities.

Photo Essays: Photo essay can be a series, montage or a collage of photographic images with captions and comments.

Book Review: Book reviews are analytical rather than descriptive analysis and evaluate the book's contribution to the related field.

Inquiries

Explorations

Photo Essays

Book Review

Collective Innovation Spaces in Shanghai: Location Choice and Implications For The Built Environment.

Haijing Liu is a Ph.D. candidate in Community and Regional Planning at the University of Texas at Austin. Her dissertation research employs a mixed-methods approach to unravel the dynamics of the U.S. green job market, focusing on its distribution and growth across metropolitan areas. Liu's work sheds light on significant disparities within this sector, emphasizing the underrepresentation and wage inequities faced by African Americans, Latinos, and women. Her research, deeply rooted in the 'three-E' paradigm—environment, economy, and equity—provides valuable insights into the interplay between institutional capacities and local economic structures. This approach not only highlights disparities but also suggests pathways for more equitable and sustainable development. Beyond her dissertation, she is actively engaged in exploring wider economic development and sustainability issues, with a keen focus on addressing gender disparities in the green job market and examining the broader societal readiness for sustainability transitions.

Abstract

This paper studies the clustering effect of innovation spaces and its social implications in Shanghai. Using two kinds of spatial density analysis methods, the study first identifies the hotspot of innovation spaces, and then use a probit model to study the mechanism behind the clustering. The model demonstrates that rental housing units, IT companies, universities, restaurants, bars and coffee shops have a positive impact, while large housing developments and parks have a negative impact on the clustering. The rapid establishments of innovation spaces also present a shift of urban development models in Chinese cities. Unlike the extensive urban developments happened in the last decade, people and business value the more fine-grained urban developments that tie the social aspect of urban life back. The existence of innovation spaces not only generates an innovation network that facilitates innovation and entrepreneurship but also social interactions and a collective life style.

1. Introduction

China responded to its economic deceleration, marked by an annual GDP growth rate dipping below 10% since 2011, with a national initiative promoting mass innovation and entrepreneurship. Scholars like Birch, (1981) and Baumol (2008) attribute significant job increases and successful urban growth to regions with the highest rates of innovation. They argue that entrepreneurship stimulates economic growth by applying innovative approaches in a competitive market.

Inspired by these insights, the Prime Minister launched a national initiative promoting "mass innovation and entrepreneurship" at the Summer 2014 Davos Forum. Soon afterward, during a State Council executive meeting in January

2015, the term “Collective Innovation Spaces” (CIS) emerged. CIS refers to physical platforms like coworking spaces, makerspaces, hackerspaces, and innovation centers, designed to support and facilitate innovation and entrepreneurial activities (Deng et al., 2020).

The central government’s policy suggestions in China significantly shape local governments’ decisions and the direction of the capital market. As a result, the number of CIS in China skyrocketed from just 50 before 2015, to 2300 in 2015, and further to 4000 in 2016 (Fig.1). This rapid growth has influenced many urban design projects and master plans, positioning CIS as a cornerstone of their design strategy.

Previous studies on CIS have mostly approached the topic from a business and management perspective, seldom connecting it to its urban environment. This study offers a fresh perspective by concentrating on the role of urban amenities in CIS development, aiming to inform neighborhood scale planning and design decisions. Through interviews, surveys, and statistical spatial modeling, this research uncovers the significance of a balanced mix of affordable housing, workspaces, and social spaces in CIS clustering in Shanghai.

The study finds that established IT firms are the strongest predictors of CIS clustering. Accessibility to social spaces such as bars, restaurants, and coffee shops takes the second spot. The availability of rental units, which offer a more affordable housing option in China, correlates positively with the clustering of CIS. On the other hand, the presence of parks correlates negatively with CIS clusters.

These statistical findings suggest a shift in urban development models in Chinese cities. Unlike the extensive urban developments of the past decade, current trends show individuals and businesses leaning towards dense and mixed-use urban developments. These developments weave the social

aspect of urban life back into the urban environment. CIS does more than create a network facilitating social interactions, innovation, and entrepreneurship—it revives the collective working and living style prevalent before the open reform.

In the subsequent sections, this study will delve into the theoretical background and conceptual framework, the data and methods, and the results and discussion, before offering a conclusion.

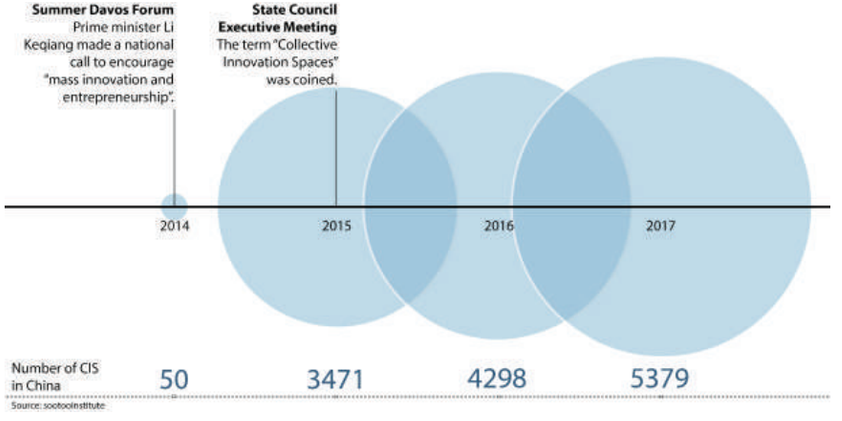


Figure 1: The growth of Collective Innovation Spaces in China

2. Literature Review

2.1 Why study CIS clusters?

New theories and ideas are increasingly examining the relationship between the characteristics of urban space and its impact on economic performance. In China, urban planning has frequently served as a tool for economic development. Spatial constructs such as science or high-tech parks, cultural districts, office parks, etc. have been framed as the spatial expression of the knowledge economy (Ali, 2013). CIS, as a rapidly

growing market, not only offers physical infrastructure for local entrepreneurs, but also transforms the office landscape in the downtown area (Jamal, 2018).

The concept of the cluster originates from the field of economic geography, where Porter (1998) defined the clusters as “a critical mass” of collocated companies and institutions. In Porter’s theory, he identifies the locational competitive advantages fueling the clustering of industrial activities. Firms are inclined to seek proximity to an established industrial cluster to leverage the existing infrastructure, human capital, knowledge spillover, and input and output. While Porter emphasizes that collocated industries should be from the same category, Jacobs (1969) believes that diversity and the interdisciplinary nature of different sectors stimulate the emergence of new industries, thereby promoting a sustainable economic environment.. Glaeser et al. (1992) examined these theories and argued that a diversity of industries, rather than a monopoly, encourages knowledge spillover, expediting industry growth and employment increase. Although their industrial cluster analysis is at a regional scale, the clustering of CIS aligns with their theory at a smaller scale. CIS clusters can be seen as a mix of diversity and uniqueness. Few CIS has restrictions on the industry of the companies seeking entry, making these spaces a place for interdisciplinary knowledge exchange and collaboration.

On the other hand, there is a general spatial pattern of the industries within a city. For example, in Shanghai, IT companies tend to locate outside the downtown area, where new urban development takes place; design and advertising companies tend to locate inside the downtown area, where there are historical architectures and rich contexts. Thus, from the theoretical perspective, CIS clusters enable industrial clusters with diversity.

Furthermore, the study of CIS clusters, rather than isolated CIS, is motivated by the social network factor. The existence and sense of community is the core of collective innovation spaces, with the value of these communities residing within social networks. Activities such as social events, lectures, and pitches unfold in areas such as the lounge or the common area inside CIS, serving as platform and hubs for social interactions, innovation, and entrepreneurship. These platforms and hubs become connection nodes in the innovation network, making spatial proximity critical for the network’s viability. The more spaces a CIS is proximal to, the larger the network it resides in, enhancing the potential for users in these spaces to excel and innovate. Therefore, we anticipate that CIS clusters will foster economic prosperity.

2.2 Why place matters?

CIS clusters can illuminate the location choices of emerging firms. Audretsch and Feldman (1996) determined that innovative industries have a shorter cluster radius. Many scholars emphasize the importance of face-to-face interactions in productivity, asserting that locations facilitating “close contact and exchanging ideas” generate economic growth and social values more efficiently (Feldman & Choi, 2015; Glaeser et al., 2010). These scholars focus on a more granular scale than traditional industrial cluster literature, centering on quality of life and urban ammenties that attract skilled workers rather than solely on the business interest of firms.

Florida (2008) argues that firms relocate with human capital, underscoring the importance of creating the desired quality of place that attract human capital. This argument inspired many scholars to outline a range of urban amenities that appeal to knowledge workers and the creative class (Chatterji et al., 2014; Florida, 2002).

However, the relationship between firms and individulas is complex. People might choose to move to a particular city

primarily due to abundant job opportunities, with urban amenities serving as secondary incentives influencing their preferences for a specific location within the city (Darchen & Tremblay, 2010). Therefore, I designed this study to focus in one particular city, Shanghai, where the neighborhood scale provides a more suitable lens for examining how the quality of space and urban amenities influences the location choice of firms and individuals.

2.3 Theoretical frameworks of quality of place

Extensive existing literature delves into how non-market public goods, such as affordable housing, transportation, healthcare, education, leisure facilities, retail, and natural amenities render certain places more attractive to the creative class and knowledge workers (Florida, 2002, 2008; Glaeser et al., 2001; Insch & Florek, 2008; Kunzmann, 2012; Yigitcanlar et al., 2007).

Although many scholars have emphasized the importance of specific urban amenities to the creative industry and entrepreneurship, few empirical studies have tested these theories in Chinese cities. Simultaneously, an increasing number of cities are adopting the concepts of innovation districts or knowledge-based urban development for urban redevelopment or new town planning projects. Without an accurate understanding of the mechanism underlying the innovation ecosystem, these concepts merely serve as buzzwords to attract the support of the central government and brand projects for mass media consumption. Thus, this paper is one of the first attempts to illuminate the design and planning of knowledge-based urban development in China.

Most literature is grounded in the context of the U.S. and other Western countries and CIS, specifically coworking spaces are argued to have a strong influence on downtown redevelopment (Jamal, 2018). Taking into account the cultural differences between China and Western countries, this paper revisits recent

urban development models in China, which are tied closely to the nation's economic and political agenda. The context provided by these recent three development models aids in constructing this paper's analytical framework.

2.3.1 Danwei

The "danwei" represented the "basic unit of urban life" during the central planning period in socialist China. As Bray defines it (Bray, 2005), "danwei is a generic term denoting the Chinese socialist workplace and the specific range of practices that it embodies, which marks a common system shared by all urban Chinese workplaces." A typical danwei model is architecturally designed as a walled or fenced compound with controlled access points (gates). A danwei complex integrates three types of spaces: spaces for living, spaces for working and spaces for social services. While these spaces have distinct functions, they remain physically interconnected or juxtaposed (Fig. 2).

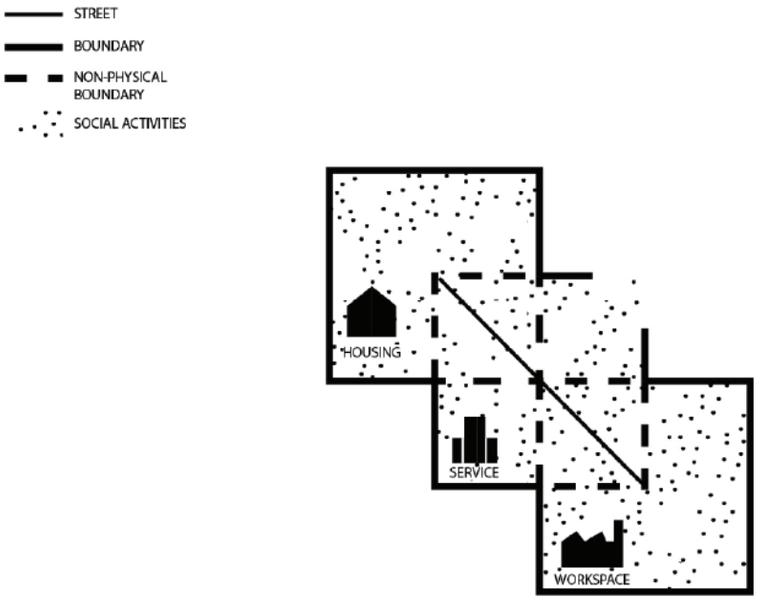


Figure 2: A conceptual diagram of Danwei model

In general, the danwei merges life, work and play within a singular city unit. Through spatial design, it fosters robust cohesion within the commune, seamlessly blending life and work into a unified existence.

2.3.2 High-tech Development Zone

Following the open door policy of 1978, China concentrated its effort on revitalizing and reforming science and technology development. In 1988, the Torch Program was initiated to accelerate this sector's development. Adhering to the theory of industrial agglomeration and taking inspiration from models like Silicon Valley and Route 128, high-tech development zones (HIDZs) were introduced in urban peripheries where large green land parcels were available. Its design prioritizes car usage, which are featuredby large blocks and wide roads. Single-use zoning is employed to facilitate the agglomeration of high-tech research and production. Most of HIDZ were located on farmlands isolated from the urban center. Incubators, as an early form of CIS, were mainly located in HIDZ or industrial parks.

The spatial layout of HIDZ represents a radical departure from traditional Chinese city layouts or the danwei configuration. Streetscapes, once vibrant arenas for daily social interactions, lost their dinstinctive socializing characteristics. A clear segregation emerged between living spaces, workspaces, and public spaces, becoming the primary flaws of HIDZs. "Big-box" shopping malls were introduced as a substitute for social spaces. However, unlike danweis or traditional urban spaces-where an intimate building scale facilitates encounters and social interactions - the HIDZ's built environment inhibits everyday social activities due to reduced foot traffic and difficult access to social spaces.

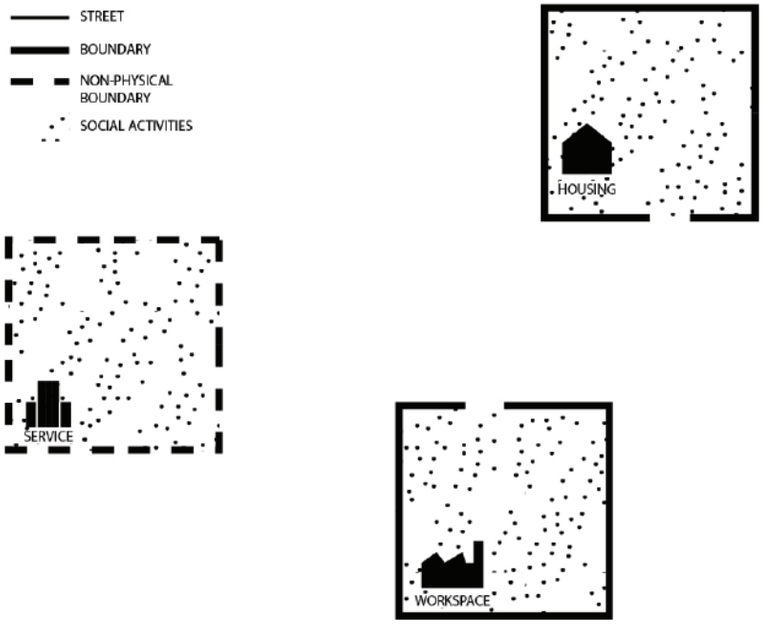


Figure 3: A conceptual diagram of HIDZ model

2.3.3 Knowledge-based Urban Development

Knowledge-based urban development (KBUD), also known as innovation districts, has emerged as a primary economic strategy for numerous city governments. While the Chinese government originally advocated for CIS rather than innovation districts, many recent master plans have emerged the buzzword "innovation and entrepreneurship". Diverging from previous urban typologies, KBUD places a greater emphasis on characteristics centered around individuals. Two key elements are the quality of urban life, and the availability of social spaces for interaction.

According to Katz and Wagner (Katz & Wagner, 2014), the critical elements of innovation districts include integration with their urban context, disruption of organizational hierarchies, fostering interactions and collaboration between industries and other

knowledge communities, encouraging face-to-face interactions and ultimately promoting technological advancement.

As describes, “Knowledge community precincts in a city are not ivory towers in the urban jungle, nor communities gated against visitors and burglars. They are, ideally, catalytic locations for urban life. They are experimental life spaces for the next urban generation and laboratories for testing new forms of work-leisure-home lifestyles.”

From a design perspective, KBUD necessitates a compact spatial layout to increase density; integration with existing urban fabric; connectivity to public transportation; a diversity of programs and functions as well as a diverse population. Further, it needs to promote walkability and bikability, and provide public spaces and social areas for interaction, communication and collaboration (Katz & Wagner, 2014; Kunzmann, 2012; Yigitcanlar, 2010).

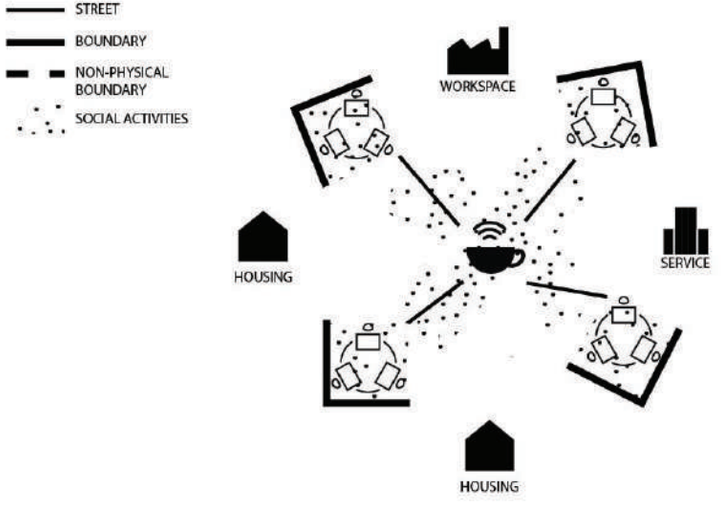


Figure 4: A conceptual diagram of KBUD

The concept of “third places”, coined by sociologist Ray Oldenburg, refers to those locations where people spend time apart from home (first place) and work (second place). These areas, including cafes, parks, and communal spaces, provide settings for idea exchange, relationship-building, and broader creative interactions. As such, the advent of CIS developments in Chinese cities could reestablish the proximity between workspaces, living spaces, and these crucial third places featuring what Yigitcanlar (2010) describes as “the new forms of work-leisure-home lifestyles”. Through the network constructed by CIS and other types of third places, spaces for social interactions and the sense of community will also resume in everyday life in Chinese cities.

To conclude, as we delve into the analysis of urban development models in China, it’s crucial to acknowledge that while many scholars have pointed out the importance of specific urban amenities to the creative industry and entrepreneurship, very few empirical studies have been conducted in Chinese cities to investigate these theories. This gap in research becomes all the more significant as more cities globally, including those in China, are adopting the concept of innovation districts or knowledge-based urban development for their urban redevelopment or new town planning projects.

However, without a precise understanding of the mechanisms underlying the innovation ecosystem, the popular terminologies associated with it often end up being used merely as titles to garner central government support and to brand projects to the mass media. This reality underscores the need for in-depth research into the subject.

To this end, this paper serves as one of the pioneering efforts to draw conclusions from both existing literature and current practices in CIS to illuminate the design and planning of knowledge-based urban development in China. Through the exploration of urban amenities that are crucial to CIS clusters,

I seek to provide a more comprehensive perspective on the phenomenon and practical guidance for future developments.

3. Data and methodology

The data collection of this study consists of two parts. The first part of the data collection is interviews with CIS users and managers. The result of this part, along with the literature review helps to establish the conceptual framework of the statistical model that examines the relationship between urban amenities and CIS clusters. The second part of the data collection is to construct the statistical model, which relies on multiple online sources to obtain the location of CIS and urban amenities.

3.1 Interview

At the beginning of 2018, the author went for a site visit to several CIS. Interviews were conducted with 18 space users and 15 space managers. Space users claim restaurants and convenient stores are the most visited among CIS users. 72.2% of the users claim to be frequent visitors to convenient stores and restaurants. 50% of the users claim to be frequent visitors to coffee shops. 11 out of 17 users live in rental units, and their primary transportation method is by metro. Here (Fig. 5) is a summary of the interview results, which will help construct the conceptual framework in the next chapter.

3.2 The Statistical Model

3.2.1 Data

Data for the statistical model was primarily sourced from multiple online sources. The primary dataset for CIS was scraped from Ctoutiao in 2018, comprising 716 entries with name and address. However, among these 716 entries, some were missing

while some others did not meet the CIS definition utilized in this study. Consequently, the author initiated a four-step verification process to refine the dataset.

Firstly, entries such as high-tech development zones, tech-parks, creative industrial clusters, and office parks were removed because they do not conform to this paper's definition of CIS. Secondly, the author conducted site visits to confirm that locations listed as CIS on the website operate as CIS according to the central government's definition. As such, observations that contradicted this were removed.

In the third step, the author noticed missing locations from specific CIS chain brands, like People Square and FT Town, among others. To fill these gaps, the author visited the respective brand websites and scraped all the location data to add to the list. Lastly, the list did not include entries from international coworking brands such as WeWork. These were subsequently added to the dataset. The final list consisted of 361 collective innovation spaces, complete with names, geolocations, and brand names.

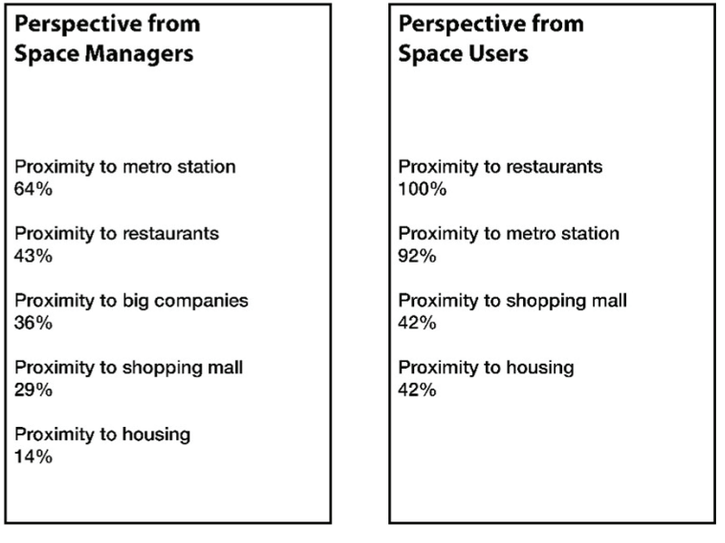


Figure 5: Summary of interview results

The UDparty online data platform, which provides access to rental and POI data in Shanghai, was also utilized. The rental data includes street address, floor area and price. The POI data has address and categories.

3.2.2 Model Specification

In this model, the dependent variable measures the accessibility of a given CIS to other CIS within a walking distance. The higher the accessibility to other CIS within a walking distance, the more likely that the CIS is located within a cluster that promotes regular face-to-face interactions crucial for stimulating innovation. Most literature regards 1000m as a standard threshold for walking distance.

The independent variables have been chosen following the theoretical framework of live, work and play. For living spaces, the indicators include accessibility to housing and rental units. The working spaces are gauged by accessibility to anchor companies (as per the POI dataset), IT companies, distance to the nearest university, and accessibility to research institutes. Social spaces are evaluated based on the accessibility to coffee shops, bars, parks, Chinese and exotic restaurants. Control variables include accessibility to restaurants, entertainment facilities, metro stations, retail and distance to the city center.

The gravity index is used to measure accessibility. *Gravity ^{r}[i]* represents a node i at a radius of r is defined as follow (Sevtsuk & Mekonnen, 2012):

$$Gravity^{r}[i] = \sum_{j \in G-\{i\}; d[i,j] \leq r} \frac{W[j]}{e^{\beta \cdot d[i,j]}}$$

β is the exponent that controls the effect of distance decay on each shortest path between i and j, d[i,j] is the distance between i and j. In this paper, β is set to be 0.002 following (Sevtsuk, 2017). W[j] is the weight of a specific destination j that is within the defined radius r from i. Due to data limitations, this paper will not consider any weights for the destinations.

4. Results and discussion

From Fig. 6 (below), it's evident that CIS clusters are primarily located in downtown areas, certain high tech parks, and some recently developed knowledge-base innovation districts. Although the map provides a broad spatial pattern of these places, the statistical model will offer a more in-depth understanding of the mechanisms underlying CIS clustering.

The dependent variable of Table 2 is the gravity index of CIS, which indicates its degree of clustering. Table 2 presents four models: live, work, play and live-work-play. The live model only includes parameters associated with living spaces and control variables. The work model only includes parameters associated with workspaces and control variables. The play model only includes parameters associated with social spaces and control variables. The live-work-play model includes all parameters and control variables.

The adjusted r-square value in the first three models reveals that the work model consistently has the highest predictive power on CIS clusters. This result implies that industry influences CIS clusters more significantly than the other two factors. This finding is consistent with the literature (Darchen & Tremblay, 2010; Storper & Scott, 2009) that career choices among knowledge workers/ or the creative class have a greater influence than the quality of space. The adjusted r-square of the live-work-play model is higher than the work model. This indicates although industry foundation plays a vital role in the clustering of CIS, the quality of space also has a positive effect. The following section will examine each parameter in the model in more detail.

Figure 6: CIS locations and its gravity index

4.1 Industry foundation & agglomeration effect - the *work* model

In terms of industry, two factors significantly contribute to the clustering of CIS. When accessibility to IT firms increases by one unit, the gravity index of the CIS increases by 0.162. When the distance to the nearest university decreases by one kilometer, the gravity index of the CIS increases by 0.4. These results indicate that CIS tend to cluster near IT companies and universities. While anchor companies and research institutions are often considered as important institutions for industrial clusters in literature, they do not have a notable impact on the clustering of CIS.

The effect of universities on innovation industries is well documented(Chatterji et al., 2014; Pittaway et al., 2020). A prevalent understanding is the potential for innovation spillover from universities. Being near a university means more cooperation with professors and research labs, expediting the commercialization of innovation. Another potential factor driving CIS clustering around universities comes from the policy side. The mass innovation and entrepreneurship initiative encourage college graduates to start their own companies. College students are potential users for CIS, and many CIS are jointly funded by universities and government, meaning universities are likely to provide space for CIS. Moreover, being near universities means affordability and accessibility to knowledge for CIS users. For instance, one CIS user stated the advantages of being close to universities include access to affordable meals in the university cafeteria the opportunity to attend lectures and talks hosted by the university, which are especially beneficial for early entrepreneurs and high-skilled workers.

Despite the influence of the IT industry being seldom documented in the literature, accessibility to IT companies remained strongly significant in all robustness checks, and had a relatively high coefficient. As in many news articles, The rapid expansion of the IT industry in China in recent years has been a phenomenon recorded (Wang & Loo, 2017). The IT industry's growth rate surpasses other industries and has generated a large number of startups, such as platforms related to the shared economy, e-commerce, and also new media (The Economics, 2018). Therefore, IT startups are considered as the major users of CIS. CIS tend to cluster in an area where it has a high density of IT companies in order to gain access to a larger pool of potential users.

4.2 Affordable living options - the *live* model

Regarding living spaces, accessibility to rental units has a positive effect on the clustering of CIS. This statistical finding aligns with the interview data, which shows 64.7% CIS users are renters. Results from Table 2 suggest that when the gravity index between CIS and rental units increases by one, the gravity index of CIS will increase by 0.041. These empirical results suggest that CIS tend to cluster in places where there are more available rental units.

One explanation for this is that many CIS users are recent college who cannot afford to purchase housing units in Shanghai. Another explanation is that many entrepreneurs consider their time to be extremely valuable. Given the intense market competition, many entrepreneurs do not have regular working hours or weekends off. Consequently, entrepreneurs cannot afford long commuting hours and being able to live nearby is critically important.

It should be noted that there is a limitation in the data due to the lack of inclusion of the subway network in the calculation. As the interviews indicate that 70.6% of CIS users commute by metro, when calculating the gravity index between CIS and housing units, the subway network should ideally be included in the calculation. However, due to limitation in the subway

network data, this paper only considers the accessible rental units within the 1000m walking radius.

4.3 Social Spaces

For social spaces, the accessibility to coffee shops, bars, and Chinese restaurants positively influences the clustering of CIS, while parks seem to have a negative effect. While findings for coffee shops and restaurants are in line with existing literature (Green, 2014; Jackson, 2017; van Oort et al., 2003), the impact of parks contradicts one paper by Yigitcanlar (Yigitcanlar et al., 2007). There are three potential explanations for this discrepancy.

First, Yigitcanlar's study focused on Australian cities, where have a different cultural context. Second, many parks in Shanghai are large, often isolated by major infrastructures, such as highways, resulting in lowperceived accessibility. Lastly, office buildings near parks typically come at a higher cost. Startups or CIS users are less likely to pay a premium for proximity to parks or open spaces, leading to a lack of CIS clustering around these areas.

In China, restaurants often serve as primary locations for meetings and business interactions, making them important social space for entrepreneurs. Unlike parks, restaurants, bars and coffee shops are privately owned public spaces. Among these semi-public spaces, bars have the highest coeffient, suggesting they play a significant role in social interaction. Bars provide a less formal setting than resturants. In Chinese culture, dinning in a restaurant comes with many unspoken rules regarding seating and drinking, whereas bars do not typically have such rulesand are favoured by young people for their vibrant and relaxed atmosphere.

The model highlights the increasing importance of various types of social spaces. They offer the quality of space favoured by knowledge workers and the creative class. Therefore, CIS tend

to cluster in places that strike a good balance between social space, work opportunities, and affordable housing.

Figure 7: Reachable social spaces from CIS at Jing'an Temple Cluster

4.4 Discussion

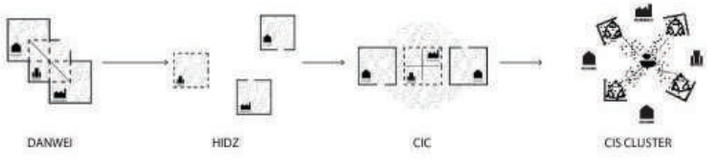


Figure 8: The evolvement of urban development models

The previous section took a retrospective look at different urban development models across varying time points to understand the Chinese context for constructing the statistical model. Now, I want to revisit these urban development models with a different focus, especially on their planning process and social

implications.

Urban development models aren't merely tools for city growth and economic advancement. They are also social constructs that reflect society's values, priorities, and aspirations. The planning process, as well as the resulting urban environment, can shape societal structures, cultural values, and quality of life.

The danwei system, as described above, can be seen as an intricate social and physical unit that includes both the residential and work elements. It's a concept that integrates many facets of life - work, social interactions, and all aspects of living – within one structure. People in this system are colleagues, neighbors, and friends, creating a multifaceted network of relationships.

The structure of a danwei, as characterized by Bjorklund, is essentially multifunctional, where workspaces can morph into social spaces, and household events can spill over into common areas (Bjorklund, 1986). There's no stark delineation between different types of activities; instead, all aspects of life seamlessly blend and interact with each other. This gives rise to a uniquely intertwined socio-spatial environment where social interactions often occur in transitional spaces such as roads, alleys, or hallways.

The danwei design also fosters a strong sense of community. Its intimate scale and gated complex create a shared identity and communal bond among its residents. However, this shared identity can also work as a double-edged sword, as the physical and administrative barriers of a danwei can isolate its community from the rest of the city, potentially limiting exposure to diverse social and cultural experiences.

Although the planning of HIDZ have guidelines for allotting public spaces such as parks, community centers, recreation centers, the accessibility of these spaces can often be a challenge. Planning regulations might stipulate a certain

number of these public facilities per population count; however, this does not necessarily translate to their effective use.

The issue of accessibility arises when these public spaces are situated on large parcels of land, often bounded by expansive road networks, which effectively means they serve a much larger catchment area. This leads to people residing in HIDZs often needing to drive considerable distances to access these spaces, which should ideally be close to their homes and easily accessible on foot or by public transit. This inaccessibility tends to inhibit regular use of these spaces, consequently stifling opportunities for social interactions and community-building.

In essence, the placement and distribution of public spaces in HIDZs can often result in spatial segregation, reducing the sense of community among residents. It also highlights a common urban planning challenge: how to design and implement public spaces that not only meet quantitative criteria, but are also readily accessible, encourage social interactions, and enhance community cohesion.

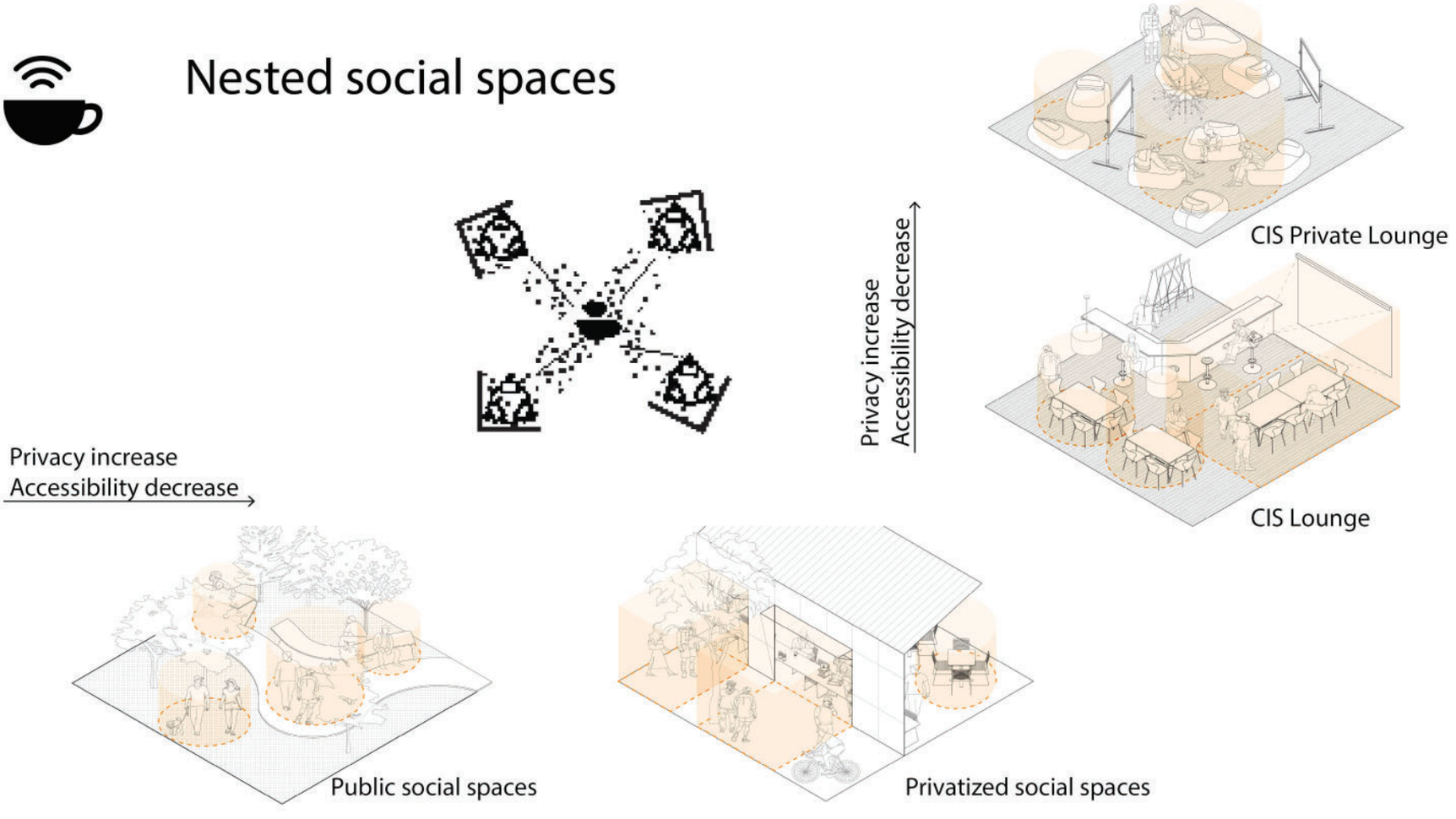
Historically, urban planning in China heavily relied on metrics, with the focus primarily on meeting the basic human needs of everyday life. More recent practices, however, have adopted more comprehensive and fine-grained approaches. CIS tend to cluster in areas where there is a comprehensive ecosystem in place. They can succeed in various ways through a sophisticated approach, as opposed to following a simple checklist.

One of the unique aspects of the CIS development model lies not only in its fine-grained scale, allowing for a more organic planning approach, but also in its nested social space that helps foster a sense of community among various groups of people. During my visits to several CIS in Shanghai, I observed that different spaces within the CIS serve different social functions. The lounge areas are generally accessible to the public and often host events such as pitches, demo days, and lunch lectures

with entrepreneurs and venture capitalists. I noted during my weekday afternoon visits to People Squared and Kr space that the lounge area was bustling with people meeting in various groups. The unique design of the public space in places like Mixspace also attracts visitors. Moreover, many CIS provide not only lounge areas but also more private common areas exclusive to their users, offering a peaceful space for rest and reflection.

At the neighborhood scale, private domains such as restaurants, coffee shops, and bars complement the CIS, creating nested social spaces with varying levels of privacy and accessibility (See Fig.9). These nested social spaces foster community formation, adding another layer of vibrancy to these urban areas.

Figure 9:



5. Conclusion

This study explores the location preferences of CIS in Shanghai, focusing on how these decisions impact social spaces and urban living. The statistical model used in this research offers valuable insights into the decision-making process of CIS developers and their motivations for clustering in certain areas. Based on the theory that CIS developers select locations based on nearby amenities that appeal to their primary users—startups and young entrepreneurs—the model's results largely corroborate the existing literature, confirming that factors like industrial heritage, social interaction spaces, and proximity to universities positively impact CIS clustering (Audretsch & Feldman, 1996; Florida, 2002; Glaeser et al., 2001).

However, the model also reveals some inconsistencies with existing theories. For instance, the negative correlation between the presence of parks and open spaces and CIS clustering contradicts Yigitcanlar's argument about the importance of outdoor activities to young entrepreneurs (Yigitcanlar et al., 2007). This discrepancy opens a new avenue for further investigation.

Unique to Shanghai's context, the model reveals a strong correlation between the presence of IT companies and CIS clustering. Additionally, the model shows that increased access to rental units positively impacts CIS clustering, offering a new insight into the locational preferences of CIS developments in Shanghai.

Complementing the statistical model, this paper also incorporates data from interviews, surveys, observations, and mappings to more thoroughly understand the social implications of CIS clusters. The CIS model, integrated with 'third places' like coffee shops and restaurants, encourages a renewed sense of community and public engagement. It blends with the urban fabric, dissolves boundaries, fosters networks, and stimulates diversity and conversations among various social groups. This integrated, multidisciplinary approach, combining quantitative modelling with qualitative analysis, allows for a more nuanced understanding of how CIS developments influence social dynamics and urban living in Shanghai.

Bibliography

Ali, M. (2013). Knowledge economy and the city: Spaces of knowledge. In *Knowledge Economy and the City: Spaces of Knowledge*. Routledge. https://doi.org/10.4324/9780203816141

Audretsch, D. B., & Feldman, M. P. (1996). R & D Spillovers and the Geography of Innovation and Production. *The American Econnomic Review*, 86(3), 630–640. https://doi.org/Article

Baumol, W. J. (2008). Entrepreneurs, Inventors & the Growth of the Economy. *The Conference Board EPWP*, 1–15. https://hcexchange.conferenceboard.org/pdf_free/workingpapers/E-0039-08-WP.pdf

Birch, D. L. (1981). Who creates job? *The Public Interest*, 65(Fall), 3–14.

Bjorklund, E. M. (1986). The Danwei : Socio-Spatial Characteristics of Work Units in China' s Urban Society. *Economic Geography*, 62(1), 19–29. https://doi.org/10.2307/143493

Bray, D. (2005). Social Space and Governance in Urban China. *In Stanford University Press*. https://doi.org/10.2307/20066144

Chatterji, A., Glaeser, E., & Kerr, W. (2014). Clusters of Entrepreneurship and Innovation. *Innovation Policy and the Economy*, 14(1), 129–166. https://doi.org/10.1086/674023

Darchen, S., & Tremblay, D. G. (2010). What attracts and retains knowledge workers/students: The quality of place or career opportunities? The cases of Montreal and Ottawa. *Cities*, 27(4), 225–233. https://doi.org/10.1016/j.cities.2009.12.009

Deng, K., Ding, Z., & Xu, M. (2020). Population agglomeration and the effectiveness of enterprise subsidies: a Chinese analysis. *Regional Studies*, 54(8), 1136–1148. https://doi.org/10.1080/00343404.2019.1681586

Feldman, M. P., & Choi, J. (2015). Harnessing the Geography of Innovation. In *The Handbook of Global Science, Technology, and Innovation* (pp. 267–289). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118739044.ch13

Florida, R. (2002). The Rise of the Creative Class: The New Global

Competition for Talent. *In The Rise of the Creative Class*. HarperBusiness.
Florida, R. (2008). *The Economic Geography of Innovation*. 92(4), 808–882.
Glaeser, E. L., Kallal, H. D., Scheinkman, J. A., Shleifer, A., Scheinkman, J. A., Barro, R., Becker, G., Heim, C., Henderson, V., Katz, L., Lucas, R., Rosen, S., Rotemberg, J., & Schultz, T. W. (1992). Growth in Cities. *Source Journal of Political Economy Journal of Political Economy*, 100100177(6). http://www.jstor.org/stable/2138829
Glaeser, E. L., Kerr, W. R., & Ponzetto, G. A. M. (2010). Clusters of entrepreneurship. *Journal of Urban Economics*, 67(1), 150–168. https://doi.org/10.1016/j.jue.2009.09.008
Glaeser, E. L., Kolko, J., & Saiz, A. (2001). Consumer city. *Journal of Economic Geography*, 1(1), 27–50. https://doi.org/10.1093/jeg/1.1.27
Green, R. (2014). Collaborate or Compete: How Do Landlords Respond to the Rise in Coworking? *Cornell Real Estate Review*, 12, 52–59.
Insch, A., & Florek, M. (2008). A great place to live, work and play. *Journal of Place Management and Development*, 1(2), 138–149. https://doi.org/10.1108/17538330810889970
Jackson, L. (2017). The importance of social interaction in the co--working spaces of Boston USA and London UK. *European Media Managers Association Conference*.
Jacobs, J. (1969). The Economy of Cities New York. *JacobsThe Economy of Cities1969*. http://www.bodysportsboutique.com/table-of-contents-the-economy-of.pdf
Jamal, A. C. (2018). Coworking spaces in mid-sized cities: A partner in downtown economic development. *Environment and Planning A, 50(4)*, 773–788. https://doi.org/10.1177/0308518X18760857
Katz, B., & Wagner, J. (2014). The Rise of Innovation Districts : A New Geography of Innovation in America. *Brookings Institution*, May, 1–34. http://www.brookings.edu/~/media/Programs/metro/Images/Innovation/InnovationDistricts1.pdf
Kunzmann, K. R. (2012). *The Strategic Dimensions of Knowledge industries in Urban Development The Strategic Dimensions of Knowledge Industries in Urban Development*. 3625. https://doi.org/10.1080/02513625.2009.10557034
Pittaway, L., Aissaoui, R., Ferrier, M., & Mass, P. (2020). University spaces for entrepreneurship: a process model. *International Journal of Entrepreneurial Behaviour and Research*, 26(5), 911–936. https://doi.org/10.1108/IJEBR-09-2018-0584/FULL/PDF
Porter, M. E. (1998). Clusters and the New Economics of Competition Harvard Business Review. *Harvard Business Review*, 77–90. https://doi.org/10.1042/BJ20111451
Sevtsuk, A. (2017). *Integrating Urban Design and Analytics Andres Sevtsuk*. 1–32.
Sevtsuk, A., & Mekonnen, M. (2012). Urban network analysis. A new toolbox for ArcGIS. *Revue Internationale de Géomatique*, 22(2), 287–305. https://doi.org/10.3166/rig.22.287-305
Storper, M., & Scott, A. J. (2009). Rethinking human capital, creativity and urban growth. *Journal of Economic Geography, 9*(2), 147–167. https://doi.org/10.1093/jeg/lbn052
van Oort, F., Weterings, A., & Verlinde, H. (2003). Residential amenities of knowledge workers and the location of ICT-FIrms in the Netherlands. *Tijdschrift Voor Economische En Sociale Geografie, 94*(4), 516–523. https://doi.org/10.1111/1467-9663.00278
Wang, B., & Loo, B. P. Y. (2017). Hubs of Internet Entrepreneurs: The Emergence of Co-working Offices in Shanghai, China. *Journal of Urban TechnologyOnline) Journal China, Journal of Urban Technology*, 243, 1063–1732. https://doi.org/10.1080/10630732.2017.1285124
Yigitcanlar, T. (2010). Making space and place for the knowledge economy: Knowledge-based development of Australian cities. *European Planning Studies, 18*(11), 1769–1786. https://doi.org/10.1080/09654313.2010.512163
Yigitcanlar, T., Baum, S., & Horton, S. (2007). Attracting and retaining knowledge workers in knowledge cities. *Journal of Knowledge Management, 11*(5), 6–17. https://doi.org/10.1108/13673270710819762

Reclaim City's Right Through Urban Protest: A Triumph over Ecocidal Planning at CRB Area, Chattogram, Bangladesh.

Rahanat Ara Jafar is a highly motivated individual who combines her passion for education, research, and social advocacy to create a harmonious blend of architecture and humanitarianism. Currently serving as an assistant professor in the Department of Architecture at the Chittagong University of Engineering and Technology, she is known for her research on the "Handloom Community of Bangladesh," which earned her accolades during her B.Arch thesis. Rahanat's commitment extends beyond academia as she actively engages in social projects and volunteers for slum children's education. Rahanat is a dedicated member of the Bangladesh Youth Leadership Center and a Campus Ambassador for Campaign Red Works, which significantly impacts various domains. She's studying for a Master's in Architecture with a holistic approach at Bangladesh University of Engineering & Technology. Rahanat's publications range from urban protests to innovative homestead designs, demonstrating her commitment to reshaping societal narratives through architectural insights. E-mail: rahanatara@cuet.ac.bd

Farhana Hoque, an architecture graduate from Chittagong University of Engineering and Technology (CUET), is an academician whose fields of study have been linked to sustainable community development and urban design, particularly in the theme of waterscapes. At present, she is employed as a lecturer at Leading University, Sylhet, Bangladesh. However, apart from working as an academician, she is actively involved in social and volunteer work. In 2022, she received a grant from the British Council for her research work. She also participated as a speaker in a panel discussion session on the topic of "Women in Innovation and Technology" at the Women in Leadership Summit 2023. Farhana is an optimistic individual who believes that any function could be resolved by analysis and investigation, as depicted in her work. Email: farhanahoque_arch@lus.ac.bd

Shahriar Sakib Chowdhury, a passionate advocate for positive change, embarked on a transformative journey from a young age. At 16, he collaborated with Better Future Bangladesh, witnessing the profound impact of collective efforts. Inspired by the visionary Bangabandhu Sheikh Mujibur Rahman, Shahriar joined the Bangladesh Student's League, honing leadership skills and fostering connections. Active in various university clubs and organizations, including mooting, debating, and cultural clubs, he showcased a commitment to continuous learning. His leadership extends to advocacy for socialization and humanitarian efforts. Shahriar, a distinguished participant representing his country in the International Round and securing the 6th spot among the oralists in the national round of the Philips C Jessup International Moot Court Competition, authored profound Legal Research Papers, notably exploring Predatory Pricing Practices in Bangladesh. In his LLM journey, he weaves the threads of his life's narrative into a canvas of experiences, continuously striving for excellence. Email: shahriarsakib15@gmail.com

Abstract

In city planning, both infrastructure and landscape are inseparable parts. To make decisions on city planning, accountable authorities and users must participate equally. The lack of harmonious participation in the decision-making processes of both parties can lead to chaos or a state of conflict in urban life, which eventually turns into urban movements of general users to persuade the Government to reclaim their identity. The study introduces citizens' rights to the City and the pivotal role of public participation in eliminating or slowing down unethical approaches in city planning when nature is interrupted. This research examines how the public, environmentalists, urban planners, and architects responded to the proposed construction of a 100-seat medical college, a nursing school, and a 500-bed hospital on six acres of property in the CRB (Central Railway Building) hill in Chattogram, Bangladesh. The CRB Hospital project will directly destroy the natural habitat for the 197 indigenous plant species in the CRB area, with at least nine endangered trees evolved over a hundred years and animals that are reliant on the resources that trees provide, which are labeled as ecocide and did not get the clearance of Environmental Impact Assessment(Rio-Declaration on Environment and Development). Besides, the residents of Chattogram voiced their displeasure, as CRB is not only a green landscape but also a place of nostalgia for the City's cultural identity. Finally, the research would try to depict how a logical protest leads to receiving environmental clearance, as it would disrupt natural biodiversity.

Keywords: City Planning, Ecocide, Cultural Heritage, Urban Protest, Legal Rights.

1. Introduction

In recent times, urban citizens have shown interest in the decision-making for city planning. It takes place as a result of a fresh wave of activism that is manifesting itself in cities all over the world(Domaradzka, 2018). When local activists engage in urban politics and influence decision-making by legal means and active participations, urban activism has become an increasingly significant component of urban governance processes. According to Purcell,it has increasingly gained recognition as one of the critical components of sustainable and democratic urban development (Purcell, 2003).

The paper's aim is to describe the critical role that citizen involvement plays in preventing or reducing the use of unethical city planning techniques. To this aim, it depicts a situation in Chattogram where a proposed construction decision of a hospital in CRB (Central Railway Building) area reclaims environmental clearance because of a logical protest.

The CRB area is a beautiful natural location in the city. A number of century-old trees may be found throughout the hills, valleys, and hillocks surrounding CRB. The region is known as Chattogram's oxygen hub and serves as a natural habitat for various wild animals, plants, and birds. In the morning and evening, people in the region go running, and many others visit CRB to get some fresh air. There are other cultural celebrations. Concerned citizens protested against the idea and voiced their disapproval of the development, centering CRB (Star, 2021).

The research focuses on how urban protests for the CRB area change ecocide planning decisions. It also attempts to acknowledge the importance of conserving nature. Overall, the outcome of the study is acknowledging the fact that claiming citizens' rights logically can influence decision-making while city planning. Consequently, a short overview of the fact that citizens' urban activism varies in different contexts.

2. Methodology

The research uses a literature review from two different perspectives to conduct this study. Firstly, this study has been done with secondary data, which unfolds the history of city planning in terms of public participation or public protest through the urban planning perspective. In the second part of the literature review, we have explored the legal side of public involvement or protest based on our study area. Adopting a multi-methodological approach, we tried to compare some case studies to determine the outcome of raising voices. The input data in this study are facts, laws, and interviews published in newspapers, and views from planners on the importance of public involvement during city planning.Some factors were analyzed here as key elements for research, i.e., City planning, Public participation in decision making, Right to the city ~ Urban protest. Ecocidal planning is also being discussed in the process of research. All the factors justify both the stated part of the literature review. The conceptual framework [Figure 1] is given below.

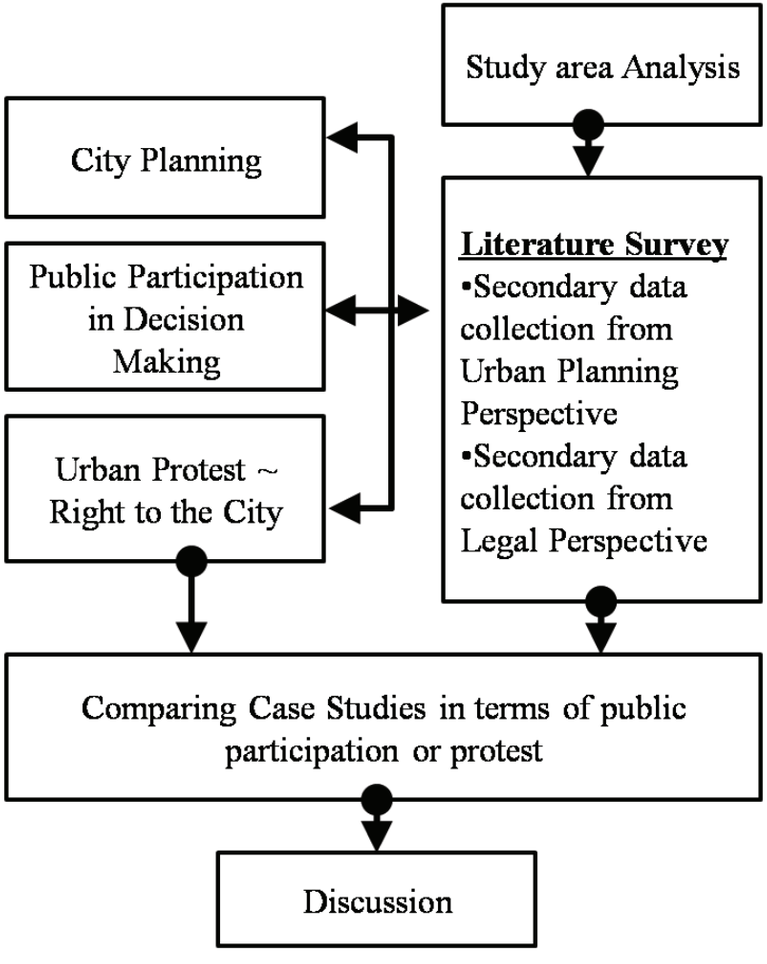


Figure 1: Conceptual Framework

3. Literature Review

3.1 City Planning

Throughout humankind's history, the city has been the meeting place for people where humans from many cultures have come together in public spaces. Public space is an essential aspect of a good and well-functioning city. Old cities were constructed as people moved on their way to the limit of their eyesight utilizing the surrounding environment. First comes life, then the space around them, and lastly, the built environment; life, space, and development that's the ultimate order for growth. In that manner, many great cities give rise to excellent infrastructure. City planning involves a whole interconnected system around humanity and focuses on the quality of life in cities, suburbs, towns, and villages. Many aspects including the environment, economy, culture and transportation, need to be addressed on people's demands while planning a city. The city's deficiencies need to be adapted and designed for the future from the perspective of empathy. Otherwise, city planning will become a nightmare for the city's distant future.

3.2 Public Participation in Decision Making

> **"A good city is like a good party – people stay longer than really necessary because they are enjoying themselves."**
> — Jan Gehl

Across the developing world, cities are expanding in size and number, dramatically raising the demand for affordable, rapid food supply for their increased urban populations. According to Prujit (2004), these phenomena act as the catalysts of the construction of roads and other infrastructure, resulting in the slow demise of nature. The projected length of increased paved roads is 25 million kilometers globally from 2010 to 2050, equal to the global rotation of more than 600 times (Laurance, 2014).

Numerous infrastructure-related decisions need to be reviewed or improved. For instance, the total area of wilderness is rapidly disappearing across the planet, 70% of the world's forests are found within one kilometer of a forest edge (Haddad, 2015), the rate of tropical forest fragmentation is sharply rising, and only 10% of the original intact habitat exists in half of the world's biodiversity hotspots (Sloan, 2014). Many animal species are declining as the human population grows, particularly in the tropics, and protected areas are becoming more isolated and at risk of poachers and unlawful encroachment.To establish plural power in the urban planning scene, two diverse parties, including both official and unofficial ones, must be able to communicate with one another.Arguments in support of greater public participation frequently highlight the advantages of the process and the belief that engaged individuals are preferable to idle ones; Some of India's best-known and most powerful recent movements arise from local grassroots interests, including many movements that are against externally imposed industrialization and forced displacement. These include Singur and Nandigram in West Bengal, the Kalinganagar, anti-Posco and anti-Vedanta movements in Odisha, and the anti-nuclear power station movements in Jaitapur, Kudankulam, and most recently at Mithi Vridhi in Gujarat (Padel, 2012). These and many other movements have in common opposition to takeovers of land and resources by corporations, ruthlessly introduced to local areas as in the national interest, yet locally perceived as undermining the highly evolved livelihood systems of communities rooted on the land (Padel, 2012).

3.3 Urban Protest

"Cities are humans' shoddy attempts at making ecosystems."
— Elliot Connor, *Human Nature: How To Be A Better Animal*

Urban development brings about enormous social, economic, and environmental shifts. Urban areas are the only places where

the emergence of socially destructive processes is more obvious than anywhere else. These negative impacts mostly satisfy a few percentages of privileged communities while suppressing disempowered poor or middle class communities. However, it shouldn't be surprising that some of the most prominent social disputes today are related to urban concerns and frequently revolve around socio-spatial demands and rights. Cities are increasingly being shaped by a profit-oriented logic, making them less livable and less tailored to the demands of their inhabitants (Domaradzka, 2018). Unofficial parties may hold protests to persuade the government to reconsider its plans in order to fix the absence of public participation in planning and decision-making processes. Some argue that these movements paved the way for the emergence of distinct civil society actors, most notably urban social movements or urban protests, which, according to Castells, serve as catalysts for change in the urban system (Domaradzka, 2018). According to Prujit (Pruijt, 2004) 'Urban movements are social movements that aspire to give urban dwellers some measure of control over their urban surroundings. The constructed environment, the urban social fabric, and the local political system make up the urban environment'

In order to gain social legitimacy, modern urban movements seek a "Right to the City" and establish democratic, solidarity-based places rooted in local cultures. Mumbai city witnessed a significant civil society protest against the planned metro car-shed project in Aarey, a densely forested city region, in the latter part of 2019 (Staff, 2020). The Mumbai metropolitan region development authority (MMRDA) seized a substantial percentage of the aarey forest to construct this shed. The primary source of dispute was the MMRDA's eradication of up to 2000 trees in a single day (Staff, 2020). In the era of climate change, removal of greenery made environmentally conscious urban citizens anxious but eventually it took the form of an "Urban Protest". Though the destruction of the metropolis'

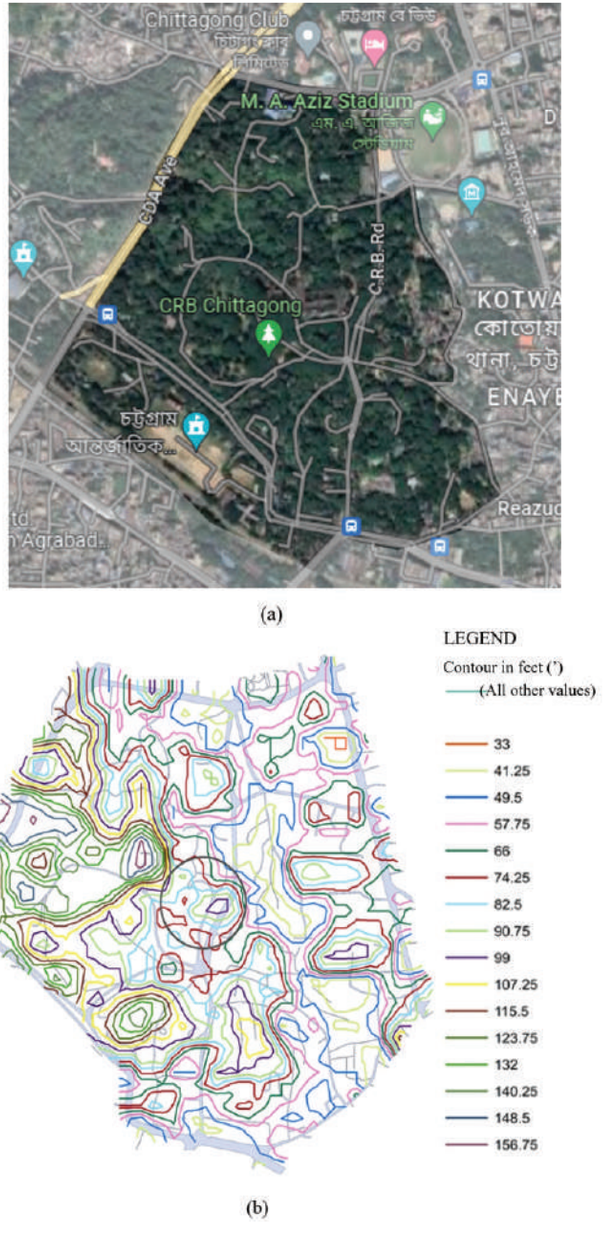


Figure 2: (a) Satellite map of the site, **(b)** Contour map of CRB area (Right). [Source: Generated from Google Earth Pro and Chittagong GIS Map by Authors]

green lung has already been done, the project eventually got scrapped on the grounds of controversy. And this event awakens the citizens to appeal for their right to the city.

4. Study Profile Area

The second-largest city in Bangladesh is Chattogram. The city has seen significant physical changes due to urbanization as a result of overpopulation. One of the changes due to overpopulation is the lack of open space for its citizens (Jafrin & Beza, 2018). The study area, Central Railway Building (CRB), is an open public space which is situated in the heart of Chattogram city, which is surrounded by a highly dense civic area.

4.1 Physiographic Study of The Site Area

The study area, locally known as CRB, which stands for Central Railway Building, is located in the coordinate of 22°20'35" N latitude and longitude. It is located under Ward no 15, and according to the Detail area plan, it is under DPZ (Department of Planning and Zoning)-03(CDA, 2009). The zone includes areas constructed under British administration. The Military and Bangladesh Railway are the primary landowners at the location. The majority of the zone is made up of hills. Topographically This zone is divided into hills and valleys [Figure 2]. The total site area is approximately 174 acres(CDA, Detail area Plan, 2009).

According to the Detail Area Plan 2009, all of the city's hills will be subject to special controls and continue to be designated as "strategic open space." The site is a protected area for culture, heritage, and the environment.

4.1.1 Land Use Mapping of The Site

The existing land use map shows that the site area is composed

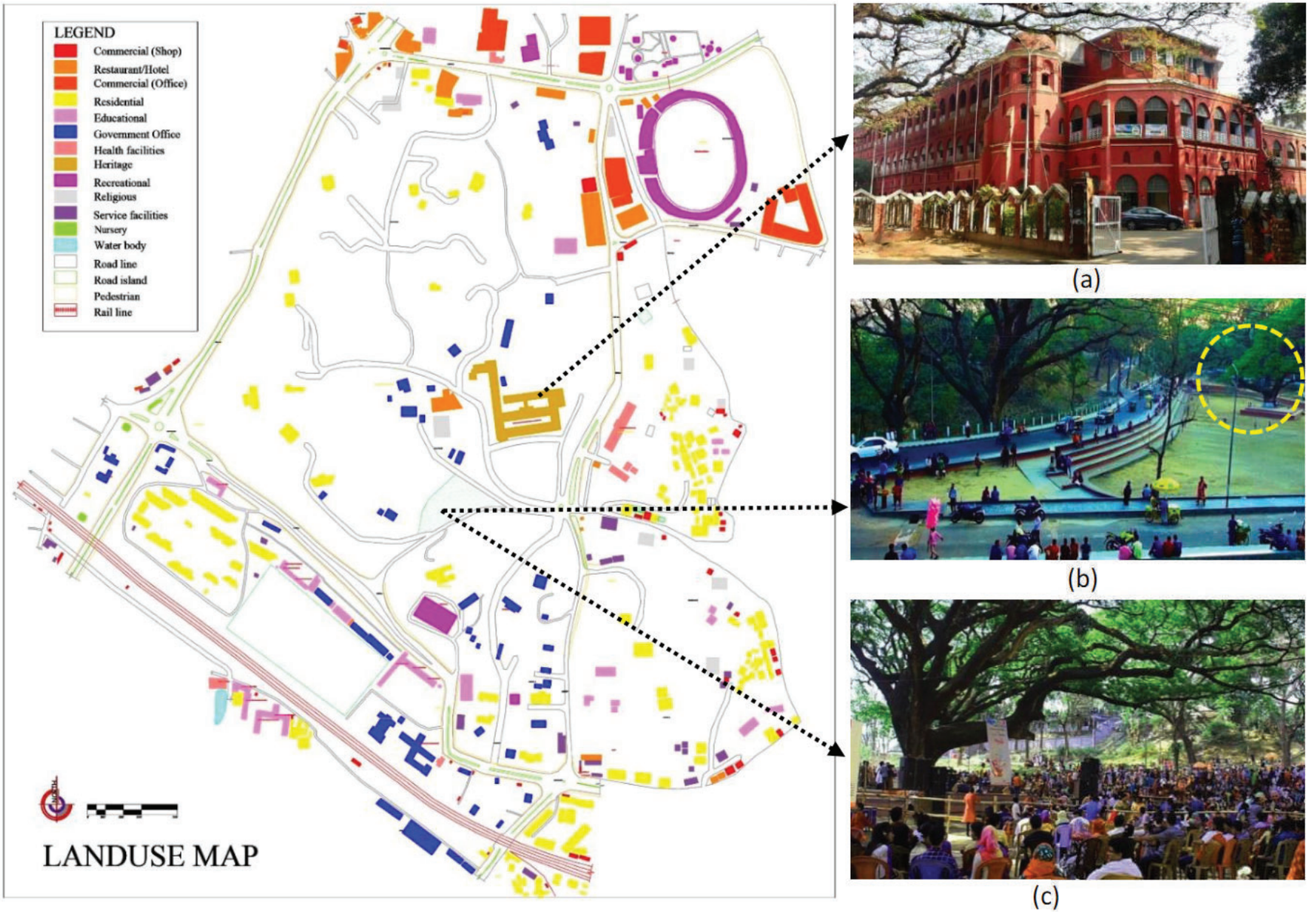


Figure 3: Land use map of the site. **(a)** View of Central Railway Building, **(b)** Perspective view from Shirish Tola. **(c)** Celebration Image of PahelaBoishakh at Shirish tola. [Source: Generated from Google Earth Pro, Google Images by Authors]

of different land use patterns in the Figure 3. As per the land use Plan, the whole CRB area infrastructures are divided into two main parts: Government Buildings (residential, office, health and services) and infrastructure for public recreation (restaurants, shops, open plaza, social club, and many others). For instance, Commercial buildings are mostly restaurants. Besides, there are many open spaces for public gatherings, specifically a public plaza known as Shirish Tola [Figure 3(b)].

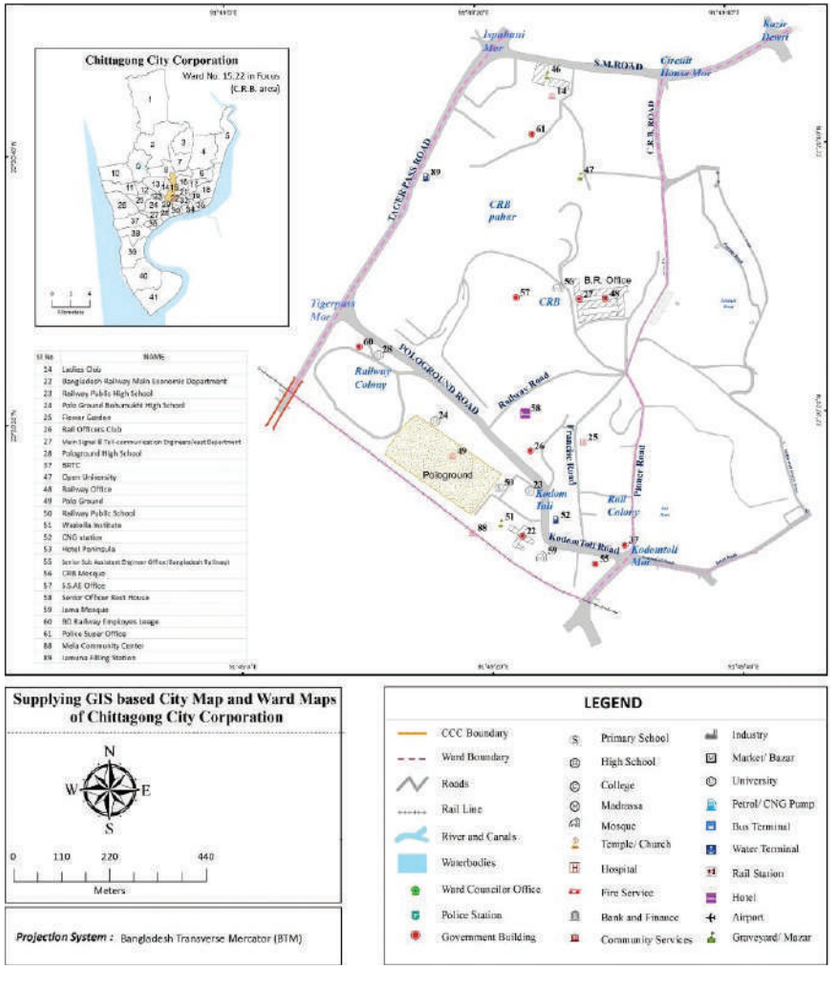


Figure 4: Study area road network. [Source: Chattogram City Corporation Wards Maps.]

Other Significant amenities are social clubs and community facilities are The Chattogram Club, the Ladies club, and the Institution of Engineers Bangladesh (IEB) [Figure 3(a)]. In contrast, few religious buildings and hospitals serve the

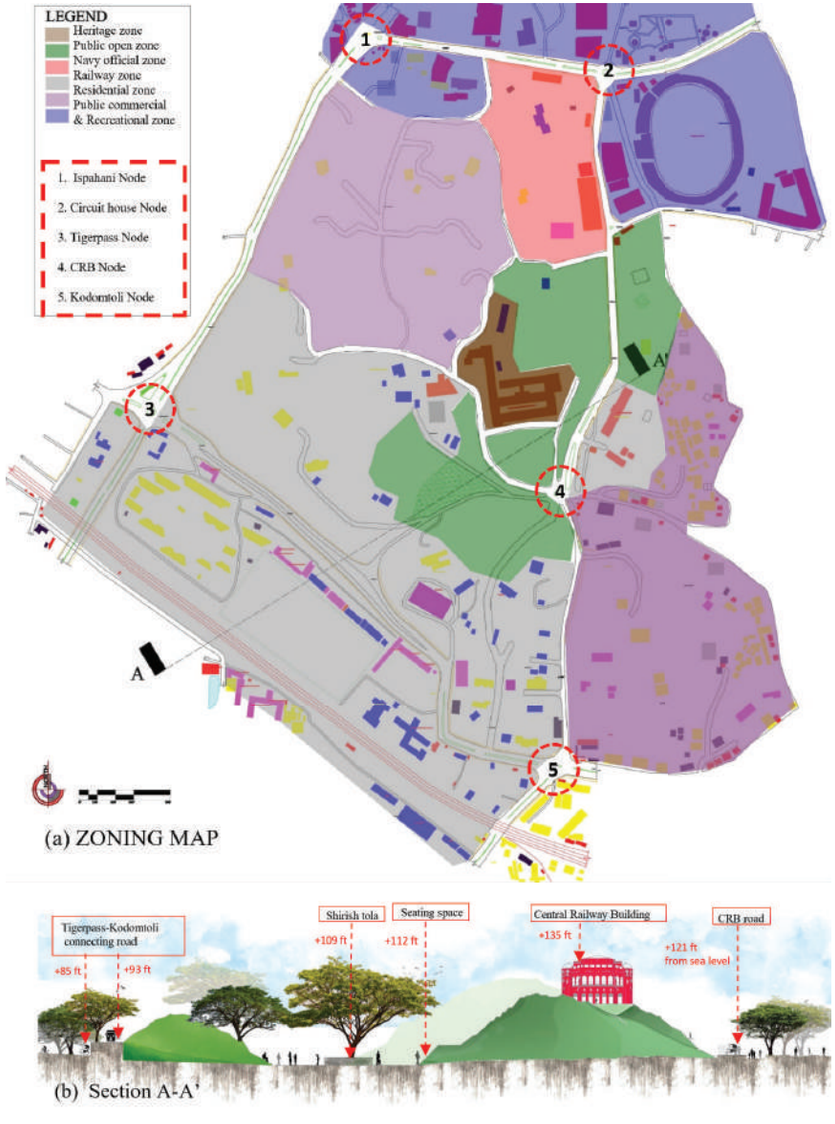


Figure 5: Study area Zoning map and Section A-A' has showed. [Source: Authors.]

community. Also, a Dhaka-Chattogram rail track leads to the railway station on this site. No Industrial development is found in this zone.

This location is significant historically. The Central Railway Building (CRB) is located in Chattogram's picturesque hilly region. There are staff quarters, lodges, a rest house, and bungalows for railway officials. In addition, the CRB houses a Sonali Bank branch, a police station, a post office, and a public restroom.

The site also has many public gatherings space, namely MA Aziz stadium, the outer stadium, Shishu park, The Zia Smriti museum, Hotel Radisson Blu, and a few commercial buildings. Major playgrounds, Polo ground field where exposure happens every year.

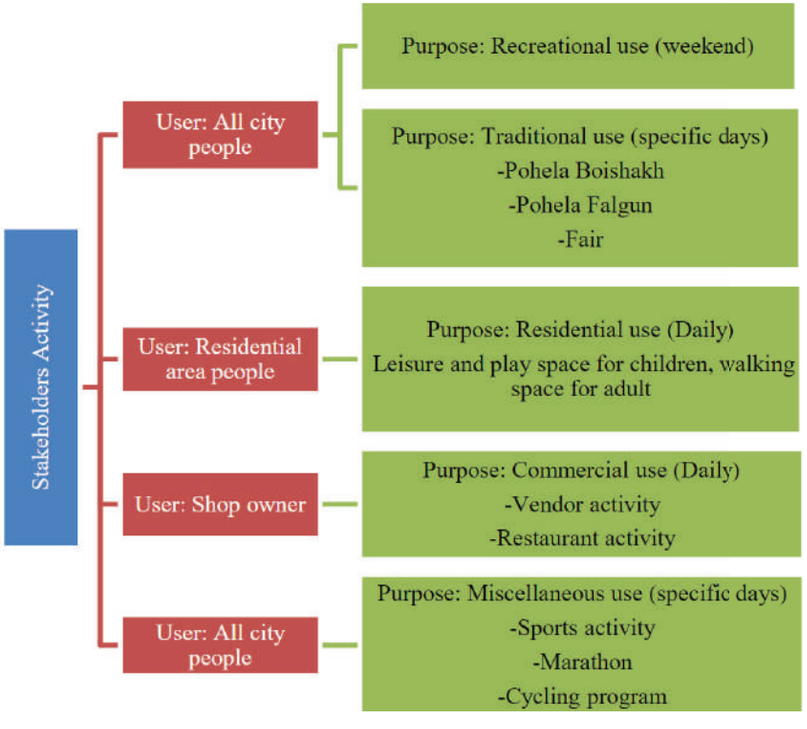


Figure 6: Stakeholders activity diagram. [Source: Authors]

4.1.2 Circulation and Road Networking

The city can easily be reached from the site. The Ispahani circle from the north-west side, the Circuit House circle from the north-east side, the Tigerpass circle from the south-west side, and the Kodomtoli circle from the east side are four different intersections with which it has connected [Figure 4]. On weekdays, there is no traffic congestion on the interior road. On conventionally significant days (Pohela-Boishakh), however, there are restrictions on vehicular accessibility. The site's internal road network is utilized not just for access to the site but also for passing through other locations.

The internal tertiary road network develops and preserves the topography that is depicted in the current land use plan [Figure 3]. Some portions of government buildings have limited public access because they are restricted areas. However, there is a shortage of adequate street illumination because many of the site's areas are used as public gathering places.

4.1.3 Zoning and Stakeholders activity

In the study area different activities has occurred in different zone. The zoning boundaries are marked in the Figure 5. People are mostly congregating in the public open zone, public commercial zone, and public recreational zone. Additionally, the Circuit House node is the most often used node point to reach the CRB region and among all accessibility node, CRB node is the most crowded one.

This location is used differently by different age groups [Figure 6]. The activities vary according to the days as well. Weekends saw the most traffic in the CRB zone. Also, residents who live near the railroad and in nearby residential areas, frequent use the area for recreation on a daily basis. On the other hand, the location transforms into a celebratory area during important occasions like Pohelaboishakh, Pohelafalgun, sports programs, and fair days.

4.2 Historical, Cultural and Traditional Value of the CRB

4.2.1 Historical Value

The British constructed several structures during their rule to aid in their administrative duties; one of the few structures still standing that chronicles Chattogram's 200 years of British colonial control is the Central Railway Building (CRB). The location has the name of the structure. Before India was divided into two countries in 1947, the British seized the administration of Chattogram from Nawab Mir Qasim in 1760. CRB is one of the British-constructed structures to facilitate their administrative tasks during their rule. Recently, it has served as the general manager of Bangladesh Railway's administrative headquarters. One of the earliest structures in the port city, the building was finished in 1872(CDA, Detail area Plan, 2009)(Star, The Daily Star, 2015).

From to railroad sources, the building was once a two-story construction with 34 rooms on the ground floor and 33 on the first. The southern half was expanded to a three-story building, while the eastern and northern portions were expanded to a four-story building in 1918. The structure is organized into various departments, including administration, engineering, estate, and audit, and it resembles a massive labyrinth with numerous rooms, halls, spiraling stairs, domes, and porticoes (Tribune, Dhaka Tribune, 2020).

During the Liberation War in 1971, the aerial bombing caused damage to a part of the building; nonetheless, it was restored using the original design. In the center of the old building's south block is a two-story carriage porch with two gorgeous gothic arches. The inside of the building has a foyer with a hemispherical dome on top. Additionally, the previous structure contains a tower in the southwest corner with a spiral stairway and a tiny dome reminiscent of Mughal architecture. The structure displays Chattogram City's scenic beauty and British colonial architecture(Star, The Daily Star, 2015).

The historian Shamshul Hossain, author of "Eternal Chattogram," a book about the history of Chattogram, and former Chattogram University Museum curator said about the structure, "The historical building is not in good shape. Rainwater leaks through the roof in some places of the building. We should protect the building for the progeny".However, the archeology department has not yet designated the historic structure as protected. The government may publish an official gazette designating any antiquity as protected following the Antiquities Act 1968 [amended in 1976] (Tribune, Dhaka Tribune, 2020).

4.2.2 Cultural And Traditional Value

The site has its own traditional and cultural values. Bengali people celebrated their traditional days (Victory Day, Pahela-Falgun; the first day of Spring, Independence Day, Pahela-Baishakh) here. Every year, Chattogram City's Pahela-Baishakh celebrations take place in the nearby CRB Shirish Tala, which serves as a focus of celebration for festivals. On the event of the first day of the Bangla calendar, hundreds of people congregate here to watch the Bolikhela[wrestling match] (Tribune, Dhaka Tribune, 2020). For all those reasons, this area is the most vibrant in terms of culture.

Every day, especially in the afternoon, a large number of visitors are drawn to the old building due to its incredible architecture and serene atmosphere. The building is set against a beautiful backdrop of surrounding hills covered in various flowering trees(Tribune, Dhaka Tribune, 2020). In addition, on every vacation or religious festival day, the site is used as a recreational space for the public. Furthermore, finding sizeable open space in the middle of the city is hard. So, the space is considered a breathing space for every citizen. On the other hand, there is much green, especially plants that produce wood. The space is the hope for the city to hold heritage, cultural life, traditional value, and green.

(a)

(b)

(c)

(d)

Figure 7: Different ways people protest to save CRB. **(a)** Solidarity rally, **(b)** Tree plantation **(c)** Protest at CRB area **(d)** Creative and bold placards use at Shahbagh[Source: Google photos.]

5. Protest and Triumph over Ecocidal Planning

A contract between Bangladesh Railway and United Enterprise Ltd for the construction of a five hundred beds multi-specialized hospitals and a Hundred seats medical colleges in Chatoogram's CRB area, which is a heritage site recognized by the Chattogram Development Authority (CDA), was signed in March 2020 (Tribune, Dhaka Tribune, 2021).. The choice will be harmful to the ecosystem. Citizens of Chattogram, therefore, have a justification for protesting the coming ecocide (Star, The Daily Star, 2021).

The citizens of Chattogram protested against the ecocidal planning and raised their voices against it, eventually succeeding. Several groups, including the Bangladesh Environmental Lawyers Association, the Bangladesh PoribeshAndolon and Association for Land Reform and Development, Nijera Kori, and the PoribeshBachaoAndolon, have sent legal notices to the responsible authorities and demand to declare CRB a "special biodiversity conservation area" following the law. Ecocide law is demanded by a Bangladeshi panel to safeguard the environment.The Chattogram divisional coordinator of Bangladesh Railway ShramikKarmachariSangram Parishad, SK Bari said, "We are not against building a hospital, but we are opposing the decision to build it at that location," (Star, The Daily Star, 2021).

To make ecocide a crime under domestic law, the Ministry of Environment, Forests, and Climate Change suggested establishing a new legal framework. Saber Hossain Chowdhury, the committee chairman, said: "Just as genocide is treated as a crime, the destruction of an ecosystem also warrants the same treatment. This is because, without an ecosystem, none of us can survive"(bdnews24, 2021).

Dr. Mahafujur Rahman, the liberation warrior, and CRB RokkhaMoncha convener, said, "We are continuing the agitation to save CRB which is a heritage declared by Chittagong Development Authority" (Express, 2021).

Teachers and former and current students of Chittagong University's Fine Arts Institute protested the building of a hospital at the CRB by painting pictures. "People usually do not live without a functioning lung. CRB is exactly the place known as the lungs of the entire city's fauna" (Tribune, Dhaka Tribune, 2021).

Chief Engineer Kazi Hassan Bin Shams of the Chittagong Development Authority (CDA) stated: "CRB falls under the protected area category as a Heritage Zone. There are policies that do not allow any commercial establishments in the CRB area" (Tribune, Dhaka Tribune, 2021).

However, Kumira has been suggested as a replacement by the Parliamentary Standing Committee on the Ministry of Railways. Hearing the alternate site suggestion, Prof Anupam Sen, president of CRB Protection Movement and vice-chancellor of Premier University says, "This proposal is the result of a long-running movement"(Tribune, Dhaka Tribune, 2022).

6. Verses of Legislation Vs Ignorance

6.1 Ecocide And Degrading Environmental Factors

Without healthy ecosystems, life on Earth cannot continue.The destruction of trees impacts the food chain necessary for human survival by reducing the biodiversity in the area.Natural disasters like hurricanes, tornadoes, and heatwaves are becoming more frequent and severe due to global warming, damaging nearby cities and developing nations and mandating tremendous efforts to construct and sustain functional areas(Readfearn, 2022).

Ecocide is frequently committed to making places for urbanization or new industrial locations far less significant than forests, fertile soil, and clean water sources.Climate change and catastrophic events are already producing environmental emergencies, and ecocide exacerbates the effects of Mother Nature's neglect. The industrialization and exponential development of the human population are to blame for this disregard.(Safdie, 2022).

6.2 EIA And Other Provisions

Before deciding to move forward, the Environmental Impact Assessment (EIA) evaluates the ecological implications of a plan, policy, program, or project. EIA is typically used to assess ongoing initiatives by people or businesses(Ekhlas Jasim Resen, 2023).

An assessment under EIA aims to ensure that decision-makers consider a project's potential environmental impacts before deciding whether to move forward with it. Before making significant choices and commitments, the International Association for Impact Assessment (IAIA)((IAIA), International Association for Impact Assessment, 1999) describes EIA as detecting, anticipating, analyzing, and neutralizing the physical, social, and other relevant effects of development projects (Viola M. Bruschi, 2018). Environmental impact assessment (EIA) standards for water-based growth initiatives were implemented throughout Bangladesh in 1992. In 1995 and 1997, respectively, the nation created its laws and regulations (Momtaz, 2002).All significant donor organizations with operations in Bangladesh have implemented strict EIA rules. However, supervision needs to be given more attention, and donor agency criteria play a significant role in effectively implementing EIAs. The framework to guarantee adequate EIA is also insufficient, and there needs to be more collaboration among the numerous entities engaged in environmental decision-making processes (Momtaz, Environmental impact assessment in Bangladesh: A critical review, 2002).

For any suggested operations expected to cause significant adverse effects on the natural environment, the national government ought to evaluate the environmental impact, according to the 17th principle of the 1992 Rio Declaration. As a result, EIA is a vital process that must be carried out before beginning any construction activities in ecologically vulnerable places, like Bangladesh's Chattogram Hill Tracts. Bangladesh must adhere to this rule because it is a signatory to the Rio Declaration (Okwuchukwu, 2019).

According to MufidulAlam, the director of the Department of the Environment (DoE) (Chattogram Division), the project's environmental impact assessment request still needs to be submitted to the department (Najifa Farhat, 2021).Furthermore, after devoting much effort, they could not submit an EIA for the CRB project or a positive response from the relevant authority authorizing the project's continuation.

6.3 Domestic Law Perspective

The people of Chattogram have always greeted blossoming endeavours by the State and co-operated wholeheartedly.

Here the issue in question is not the undertaking but the area specified for the project enactment, i.e., CRB, which is metaphorically anointed the lung of Chattogram. The People of Chattogram have used their constitutional entitlements, particularly the freedom of assembly guaranteed by Article 37 of the People's Republic of Bangladesh Constitution(Bangladesh, 1972). Under acceptable limits set by legislation for the betterment of public order or health, this provision permits citizens to congregate and participate in nonviolent public gatherings and processions.Because the CRB hospital project will harm the natural environment, the right of individuals to express their disapproval is fundamental and essential.

Notwithstanding worries about potential damage to the ecology and its very nature, the Bangladesh Railway has firmly endorsed the construction of a healthcare facility and medical institution at CRB, Chattogram(Shilpi, 2021).It additionally criticized the negative press coverage of the hospital's construction. Nevertheless, it should be emphasized that the location has become an official national monument and was previously recognized by the CDA as a heritage or archaeological site. Therefore, any growth plans should not endanger the environment because they would have significantly less of an influence than they would on the ecosystem.

The safeguarding of all national monuments is guaranteed under Article 24 of the Bangladeshi Constitution(Bangladesh P. R., 2012), which also orders the State to take action to avoid their desecration, harm, or destruction. This clause applies to the CRB site in Chattogram, a national landmark and historical location. Hence, it has become the responsibility of the governing body to protect this area and stop the suggested construction project from destroying it.The proposed development has also infringed Articles 18A, 24, and 32 of the Bangladeshi Constitution(Bangladesh P. R., 2012). The residents of Chattogram consider the CRB, thanks to its luxuriant flora, to be a source of life and are opposed to the greed-driven,

ecocidal construction proposal. Any plan to proceed with the project while ignoring these legal requirements would be unconstitutional.

6.3.1 The Wildlife (Conservation and Security) Act, 2012

The CDA has recognized the Chattogram Railway Building (CRB) Area as a site of heritage or historical significance that necessitates "protection and conservation for historical, architectural, environmental, or ecological point of view" and serves as an important symbol of the colonial era.The State must safeguard and preserve natural assets such as wetland areas, wildlife, forests, and ecological diversity for generations to come, as stated in Article 18A of the Bangladeshi Constitution (Bangladesh P. R., 2012), which relates to the preservation and enhancement of the natural environment and biodiversity. The declaration of a human right to specific ecological circumstances is an environmentalright(Ahmed, Conservation of ECAs, 2017).

The Government of Bangladesh passed the Wildlife (Conservation and Security) Act, 2012(Bangladesh P. R., 2012)to safeguard and preserve forests, wildlife, and biodiversity(Islam, 2022). The primary piece of legislation in Bangladesh for preserving nature and biodiversity has emerged as this Act. A Wildlife Advisory Board comprised of specialists in protecting the environment, forests, and wilderness may be created by the governing body under Section 3(1)(Ahmed, Revisiting the Wildlife Preservation and Security Act, 2012, 2018). The Board is tasked with evaluating the status of preserving biodiversity, nature, and forests and offering recommendations under section 3(2). While sections 7, 8, and 9 address the detection of fragile, threatened with extinction, and severely threatened species, the eradication of wild creatures, and the scattering of wild animals, section 6 forbids the acquisition of wild animals and plants.Under the rules in the Wildlife Act of 2012

(Bangladesh P. R., 2012)CRB is categorized as a region including forest, natural features, wildlife, threatened species, and animals. In addition, building a hospital project by destroying serenity violates several provisions of this Act.

6.4 International Law

Though no international legislation codified against ecocide, several nations accepted the initiative and began formulating stringent statutes against it. Vietnam was the only nation to codify a National Ecocide Law in 1990.

Additionally, nations including Georgia, Armenia, Russia, Ukraine, Belarus, Ecuador, and Tajikistan have made ecocide a crime. Making ecocide a global offense is a difficult but uncomplicated procedure. Any of the 123 member countries may submit a law-making proposal to the Assembly in December 2022 to change the Rome Statute (Hasan, 2022).

In the Republic of Bangladesh, a legislative board headed by Saber Hossain Chowdhury recommended that the government declare ecocide, comparable to genocide which is subject to the law (Hasan, 2022).Bangladesh has already started an anti-ecocide initiative, and development initiatives must now be more lush, inclusive, and resilient to climate change.By highlighting the need to stop the enormous environmental destruction, the crime of ecocide would raise the magnitude of ecological harm. Therefore, no one must ignore this massive act of environmental and climate catastrophe. The Rio Declaration's Principle 3(Nations, 1992) stipulates that the nation-state shall equally implement the right to development to address the ecological and developmental demands of future generations. The principle suggests that every development initiative should be carried out after considering what will be left for the following generation instead of just the current one.The environment has already suffered from global warming, so we must exercise greater caution and adopt protective measures; otherwise, we would be engraving the graveyard for the future generation and violating another law.

According to the Rio Declaration's 4th Principle (Nations, 1992), safeguarding the environment must be a crucial component of all developmental activities to achieve sustainable growth and cannot be addressed separately. Therefore, during any development project, the Government must protect the atmosphere or environment of that place from the start to the beginning at all times as a priority and not obliging it will violate this provision.

6.5 Awareness ~ Legal Rights

Socialization sets the stage for environmental protection and management.Along with publicizing environmental regulations, the government must put them into action through supervision and fines to raise industrial parties' understanding of the need to abide by the law and for the general public to gain their legal rights to healthy environmental standards.The Supreme court should issue orders encouraging environmental education and awareness across the nation. It opens the door to introducing ecological/constitutional education, not just in the classroom but also at colleges(Johnson, 2020).Recently, the state and its citizens have been under the fundamental duty and responsibility of protecting and improving the environment, as we saw in the CRB incident at Chattogram. Everyone, including the Government, should be obligated to safeguard the flora and fauna while having a civic insight towards the climate. Bangladeshi democracy depends on the welfare of its people, and active participation must not lead to submission to monocracy, which will damage the environment and create ecological imbalance. Positive judicial and legal initiatives are required to revitalize the field of environmental law despite its adversarial problems (Johnson, 2020).

Case	Proposed Project/ Plan	Steps Taken Towards Proposal	Protest Or Resistance	Level Of Execution	Level Of Plan Scrapped	Result
Dapperbuurt 1970(Pruijt, 2004)	-Total demolition. -New housing in lower density. -Shopping center. -Market smaller.	-Some demolition.	-Lodging objections. -Demonstrative tent camp. -Research. Squatting, street barricade. -Seizing and publicizing municipal information. -Painting the house of the head of the building inspection.	Nothing	-Idea of total demolition. -Shopping center.	System of renewal that enables inhabitants to stay in the neighborhood. Apartment sizes have been varied to better suit tenant demands (there are more units for one- and two-person families).
Weesper Zijdestrook 1972 (Pruijt, 2004)	Office Building	-Demolition of the old office Building. -Foundations laid for larger building	Legal Action	Nothing	Construction of office BuildingAborted.	Low-income housing instead of office building
Ekbatan Town 1996(Staff, 2020)	-Total demolition. -Green land useconversion to commercial land use, -Religious institute management office	7.7 of the 14.5 hectares that were left as green space and services were converted to commercial usage, and the remaining green was later destroyed.	-Lodging objections. -Petition signed by 25,000 individuals	Religious Institute construction	Idea of. Shopping Mall	The religious institution convinces the Inspection Organization and pledges to plant 600 trees within the scope of the project.
Sampur, Trincomalee2011(Global Energy Monitor.wiki, 2022)	Coal Power plant	-5,000 hectares (7000 residents) has been cordoned off, -Construction of 500MW Petroleum plant	-Lodging objections. -Resistance by residents and environmental groups, -Legal action.	Shelved	Project cancelled after legal procedure of 10 years	Proposal of establishing LNG plant instead of original project (not implemented)

Table 1: Cases on Proposed Projects & Protests

7. Cases On Conflicts

Some cases from the past protests and conflicts are listed down on the above Table 1 to give a comparative view on how protests put pressure on imposed proposals which will harm the citizen's wellbeing. But not all the cases are successful as the cases stated above. Incidents like Chernobyl showed the biggest nightmare in mankind's history as people weren't aware at the right moment about their legislative rights as they're ignorant about the immeasurable effect of nuclear station. Selfish insensitive planning decisions and their aftermaths are evident in human history with the uncountable loss of human, wildlife and many more. Locals battling to safeguard wetlands in coastal Andhra Pradesh or those organized by the Bhoomi Sena in Maharashtra against the projected bullet train may not be driven by concerns about climate change but rather a desire to maintain control over their lands, other resources, and means of subsistence. However, their struggles both directly and indirectly address climate change (Adve, 2019).

8. Discussion & Recommendation

Urban planning revolves around social, economic, political aspects of any city. Whenever any development is processed, it holds a promise too rarely or unequally fulfilled of realchange for the better. We seem to accept that power play in developments is main key while it is leveled as corruption in decision making. Three aspects need to be checked while citizen's demand is addressed by reevaluating any planning project in three steps that is to include Urban, Climate or relevant experts in decision making, then to open the floor for public trial, hence combining all the reports for feasibility of following projects. We need to put more focus on constitutional gadgets that enforce laws and legislations. If we delve deeper into the matter, we can see

that there are restrictions on hill cutting, but the penalty fee or amount for violating the hill cutting laws is not justified. Due to the lack of proper scrutiny, beneficial stakeholders tend to find loopholes in the law.According to Bangladesh National Building Code 2008, approval and amendmentfee for hill cutting isBDT 30,000/- per bigha.However, there are certain parties who are exploiting this regulation by fraudulently cutting hills and then seeking an amendment, thus allowing them to pay the penalty and repeat their illicit actions. Shockingly, the responsible authorities appear to be oblivious to these despicable acts, and this lack of action is only emboldening more individuals to partake in such nefarious activities.We have seen that protests do not always yield the expected results from the discussed cases. However, they serve as a potent reminder that the public is vigilant and will not tolerate any form of destruction. Moreover, the active involvement of citizens serves as a means to keep officials accountable for their actions, ensuring that they act in the best interests of the people they serve. Protest is always the last step of citizen's anguish. As a concerned citizen, it is crucial to take action to prioritize the protection of the environment in reclaiming the city's rights. This can be achieved through educating the public on sustainable practices and encouraging mindful actions. In addition, laws must be put in place to prevent harmful planning practices that damage the environment. Using unsustainable methods and chemicals in construction and development projects must be prohibited with proper scrutiny.Hefty fines and penalties should be imposed on individuals and companies that engage in activities that harm the environment. They should have some guidelines for protest if it's inevitable, Protestors must have a concise message, maintain a peaceful approach, exercise discretion on social media, assemble a legal team, and demonstrate respect towards law enforcement. They must collaborate to guarantee that their protest is effective and secure.

9. Conclusion

We have laws, legislations, but on most of the instances, we can see the ignorance of general people, as they are least aware about their own rights. Always law cannot save the humankind if it is unknown. Public participation does not justify the illogical demand, but it can always cut the litigation cost and increase probability of sustainable solutions as it creates accountability and belongingness among citizens.A well-known Indian case, MC Mehta v. Union of India 1987, AIR 1086, emphasized the importance of establishing initiatives such as developing human conduct in accordance with legal standards.Our government should take necessary steps to ensure that people understand how vital it is to conform their behavior to legal obligations.The judicial system might also mandate radio stations, websites, newspapers, and television stations to broadcast environmental awareness campaigns. The Supreme Court can also state that every district and the educational board should promote and facilitate environmental education.

References

(IAIA), International Association for Impact Assessment. (1999). *International Principles for Social Impact Assessment*. International Principles for Social Impact Assessment.

Adve, N. (2019, September 26). How the Climate Justice Movement in South Asia Took a Big Step Forward Last Week. *The Wire*.

Ahmed, A. (2017). Conservation of ECAs. *The Daily Star*.

Ahmed, A. (2018). Revisiting the Wildlife Preservation and Security Act, 2012. *The Daily Observer*.

Assessment, ". o. (1999). *Principle of Environmental Impact Assessment Best Practice*. International Association for Impact Assessment.

Bangladesh, P. R. (1972). *Article 37, Freedom of Assembly, The Constitution of the People's Republic of Bangladesh*.

Bangladesh, P. R. (2012). *The Wildlife (Conservation and Security) Act, 2012 (No. XXX)*. People's Republic of Bangladesh.

bdnews24. (2021, June 20). *bdnews24*. Retrieved from https://bdnews24.com/: https://bdnews24.com/environment/2021/06/20/bangladesh-panel-calls-for-ecocide-law-to-protect-environment

CDA. (2009). *Chattogram Development Authority (CDA)*. Retrieved from https://old.cda.gov.bd/: https://old.cda.gov.bd/dt_gallery/location-of-dpz/dpz-03/

CDA. (2009). *Detail area Plan*. Chattogram: Government of Bangladesh.

Domaradzka, A. (2018). Urban Social Movements and the Right to the City:. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations volume 29*, 607–620.

Ekhlas Jasim Resen, M. A. (2023). Environmental Impact Assessment for Industrial Organizations Using Rapid Impact Assessment Matrix. *Ecological Engineering & Environmental Technology (EEET)*.

Express, T. F. (2021, August 24). *The Financial Express*. Retrieved from https://thefinancialexpress.com.bd/: https://thefinancialexpress.com.bd/national/country/voices-against-crb-hospital-project-get-louder-1629773603

Global Energy Monitor.wiki. (2022, June 14). Sampur Power Station.

Haddad, N. M. (2015). Habitat fragmentation and its lasting impact on Earth's ecosystems. *Science advances, 1(2), e1500052*.

Hasan, T. (2022, February 16). Retrieved from The Business

Standard: https://www.tbsnews.net/thoughts/why-it-necessary-include-ecocide-rome-statute-371569
Islam, M. Z. (2022). Appraisal of domestic and international legal institutions for promoting wildlife conservation in Bangladesh. *Springer Link*.
Johnson, J. (2020). Need for reforms in environmental law. *iPleaders*.
Laurance, W. F. (2014). A global strategy for road building. *Nature*, 229-232.
Momtaz, S. (2002). Environmental impact assessment in Bangladesh: A critical review. *academia.edu*, 1-3.
Momtaz, S. (2002). Environmental Impact Assessment in Bangladesh: A Critical Review. *Environmental Impact Assessment Review, Volume 22, Issue 2*, 163-179.
Najifa Farhat, P. B. (2021, July 20). Retrieved from Dhaka Tribune: https://archive.dhakatribune.com/bangladesh/nation/2021/07/20/crb-hospital-project-unlikely-to-get-environmental-clearance
Najifa Farhat, P. B. (2021). *Najifa Farhat, Pimple Barua*. Dhaka Tribune.
Nations, U. (1992). *Rio Declaration on Environment and Development*. United Nations.
Okwuchukwu, B. (2019). Analysis of Some of the International Environmental Principles and Their Relevance to Nigeria's Quest for Environmental Security. *The International Institute for Science, Technology and Education (IISTE)*.
Padel, F. (2012). Social Movements: Reformulating Development to Promote Grassroots Democracy - A R Desai Memorial lecture. *Indian Sociological Society conference*. Udaipur.
Pruijt, H. (2004). The impact of citizens' protest on city planning in Amsterdam. In W. S.-T. L. Deben, *Cultural Heritage and the Future of the Historic Inner City of Amsterdam* (pp. 228-244). Amsterdam.
Readfearn, A. M. (2022). State of the environment: shocking report shows how Australia's land and wildlife are being destroyed. *The Guardian*.
Renée A. Irvin, J. S. (2004). Citizen Participation in Decision-Making: Is it Worth the Effort? *Public Administration Review, Volume 64, Issue 1*, 55-65.
Safdie, S. (2022). Ecocide: Definition and Examples. *Greenly resources*.
Shilpi, S. I. (2021). *Should a hospital come at the cost of ruining lungs of Chattogram?* United News of Bangladesh (UNB).
Sloan, S. J. (2014). Remaining natural vegetation in the global biodiversity hotspots. *Biological Conservation*, 12-24.

Staff, F. (2020, October 12). *Firstpost*. Retrieved from https://www.firstpost.com/india/aarey-controversy-how-proposal-for-mumbai-metro-car-shed-in-green-lung-spawned-political-battle-8904391.html
Star, T. D. (2015, November 20). *The Daily Star*. (M. Uddin, Editor) Retrieved October 10, 2022, from https://www.thedailystar.net/: https://www.thedailystar.net/star-weekend/heritage/the-symbol-chittagongs-colonial-history-174856
Star, T. D. (2021, July 20). *The Daily Star*. (M. R. Uddin, Editor) Retrieved from https://www.thedailystar.net/: https://www.thedailystar.net/views/opinion/news/ecocidal-project-crb-chattogram-greed-over-green-2134111
Tribune, D. (2020, March 10). *Dhaka Tribune*. (A. Hossain, Editor) Retrieved October 11, 2022, from https://archive.dhakatribune.com/: https://archive.dhakatribune.com/bangladesh/nation/2020/03/11/central-railway-building-blend-of-british-colonial-architecture-and-scenic-beauty
Tribune, D. (2021, July 20). *Dhaka Tribune*. (P. B. Najifa Farhat, Editor) Retrieved from https://archive.dhakatribune.com/: https://archive.dhakatribune.com/bangladesh/nation/2021/07/20/crb-hospital-project-unlikely-to-get-environmental-clearance
Tribune, D. (2021, August 12). *Dhaka Tribune*. Retrieved from https://archive.dhakatribune.com/: https://archive.dhakatribune.com/bangladesh/chittagong/2021/08/12/artists-protest-against-crb-hospital-by-painting
Tribune, D. (2022, May 11). *Dhaka Tribune*. Retrieved from https://www.dhakatribune.com/: https://www.dhakatribune.com/nation/2022/05/11/parliamentary-committee-for-alternative-site-to-crb-for-chittagong-hospital
Viola M. Bruschi, P. C. (2018). Geoheritage, Chapter 14 - Geoheritage and Environmental Impact Assessment (EIA). *ScienceDirect*, 251-264.

Urban Water Retention Measures: A Prospective Study on Shamasundori Canal, Rangpur.

Wahida Rahman Nipun has recently completed her Bachelor of Architecture degree from Shahjalal University of Science & Technology, Sylhet, Bangladesh. She has worked as a research assistant on the subject of "An Architectural Research Addressing Post-COVID-19 Challenges in the Urban Environment of Sylhet and Chattogram, Bangladesh." As a student of architecture, she aspires to use architecture as a tool for any social issue as well as to induce the community to engage with it. Her commitment intensified as she participated in a workshop on low-cost housing, where she witnessed the remarkable impact of community efforts organized by Habitat for Humanity International in 2016. Therefore, her academic and research interests include community-based architecture focusing on informal urbanism, the cultural significance of urban spaces, sustainability, and resilience.

E-mail: nipun19@student.sust.edu

Farhana Hoque, an architecture graduate from Chittagong University of Engineering and Technology (CUET) is an academician whose fields of study have been linked to sustainable community development and urban design, particularly in the theme of waterscapes. At present, she is employed as a lecturer at Leading University, Sylhet, Bangladesh. However, apart from working as an academician, she is actively involved in social and volunteer work. In 2022, she received a grant from the British Council for her research work. She has also participated as a speaker in a panel discussion session on the topic of "Women in Innovation and Technology" at the Women in Leadership Summit 2023.

Farhana is an optimistic individual who believes that any function could be resolved by analysis and investigation, as depicted in her workLecturer, Department of Architecture, Leading University, Ragib Nagar, Kamal Bazar, Sylhet, Bangladesh.

E-mail: farhanahoque_arch@lus.ac.bd

Abstract

The foundations of human civilization have grown based on water bodies such as rivers, lakes, and canals. Almost all significant ancient civilizations, such as Mesopotamia, the Nile Valley, Mohenjo-Daro, and Harappa, had originated on river banks. As all living creatures require water and life cannot be sustained without it, modern urban areas are also developed using the same principles, with the source of water or catchment region being nearby. Urban water bodies serve a multi-functional role in the metropolis, alongside being a source of water for agriculture, irrigation, fishing, landscaping, and ecotourism, all of which have a positive social impact. It can also be utilized to prevent water logging and mitigate the heat island effects in order to improve urban microclimates. However, increased human interference and intervention in catchment areas have also accelerated the processes of siltation and sedimentation within these water bodies. Therefore, it is essential to give sufficient weight to the planning and retention processes. Otherwise, without proper management of urban water bodies, it can also affect the urban area. Shamasundori, a 16-kilometer-long artificial canal that runs through the Rangpur metropolis, is a more than 129-year-old traditional canal which is being hampered because of pollution and illegal occupancy. This study analyzes the Shamasundori canal's impact on Rangpur city. The study aims to address the importance of retention of the canal. The paper evaluated the historical and current developments in the Shamasundori Canal using statistical analysis. Based on the field survey, existing canal information will be collected and with the help of the literature studies, urban water bodies planning strategies and restoration policies will be assembled. Finally, the paper will discuss the need to preserve the canal and a few environmental benefits which could happen through restoring the canal.

Keywords: Environmental benefits, Retention, Shamasundori Khal, Urban waterbodies.

1. Introduction

Water, as one of the most vital natural resources for life, has always played a significant role in the establishment and formation of settlements in most parts of the world throughout the history of modern civilization. Before urban modernization, as rivers, streams, springs and groundwater were the only source of water, human settlements used to be formed around them (Kurochkina, 2020). Water creates magical and exciting environments that strengthen the settlements of the city's cohesion and sustainability. Many modern cities are blessed to have inland water sources whereas some lack a comprehensive waterfront. Some cities often have urban waterways like rivers and canals however, others usually cut through their urban fabric to meet the need for water (Rahana.H, 2020). Many inland water sources are used to serve multiple purposes such as drainage, irrigation, water supply, hydroelectric power generation, and navigation. Although, the metabolization of water to serve urban consumption through drinking, agriculture, irrigation, fishing, wastewater, landscaping, ecotourism, and canals to prevent water logging or reduce heat island effects is a necessary but understudied aspect of urbanization in Bangladeshi cities. Owing to the fact that the constant negligence and lack of maintenance of rivers and canals, is now an emerging issue of urbanization in most of cities. Many rivers and canals now must be regulated and maintained to make them fully navigable, allowing vessels to move from one water level to another due to the lay of the topography and particularly changes in water levels. It is essential that we must shift our focus to urban blue spaces in order to maximize and accelerate their potential for urban growth. Water as an asset in urban living can be reintroduced by integrating water systems with urban development. There are multiple tools and methods available for developing innovative integrated water systems (Davies, 2022).

The urban canal is one of the unique structures in the city that can provide ecological resources, economic benefits, and opportunities for socialization and recreation for city dwellers. Canals allowed cities to thrive, establishing well-known epicenters such as Venice, Suzhou, and Amsterdam. Waterways evolved into streets, complete with shops, restaurants, and residences. Canal architecture is inherently concerned with liminal situations. While canals can be built by damming, dredging, or modifying existing river paths, but these methods are typically associated with larger urban development (Baldwin, 2021).

Based on the most recent objective studies from fieldwork in Rangpur metropolitan city, the studied canal, Shamashundori, is basically a channel that connects two points of the Ghaghot river that flows through the city. The canal, Shamashundori, which was once excavated for the improvement of the town, is now in very poor condition, causing misery in the city. The canal flows naturally throughout the city. The canal has served the city for many years but has never been properly upgraded or preserved. Though, according to the Rangpur divisional town master plan 2010-2030, The primary land uses in waterfront regions are for leisure and commercial purposes. However, without understanding the quality of urban space, standards, the morphology of the area and guidelines for waterfront development, and urban design principles and technique, it is very challenging to implement the desired land use based on an outline zoning plan, which is more of a quantitative approach (Karmaker, 2022).

Thus, this study. which are both intimate and expansive in scale, are concluded through lively sections and hierarchical layouts of canal Shamasundori, as well as aims to identify a set of performance measurement indicators that will provide contextual findings for Rangpur and evaluate the existing canal system's performance, because using indicators appropriate for cities in developed countries may not provide a realistic

visualization for the city. The research focuses on the potential solutions that celebrate the dynamics of modern canals and landscapes.

2. Literature review

2.1. Canal's evolution and classification

The Old French term channel, which means "channel," is where the word "canal" first appeared (Bhuiyan, n.d.). A manmade open waterway is a canal. It has a natural channel or perceptible depression with water flowing through it consistently or sporadically, or it serves as a connector between other bodies of water (Banglapedia, 2021).

In the past, canals were frequently employed to reduce the distance between two sites (Dutta & Sarkar, 2020). For example, the Rhine-Marne canal was built to connect two rivers. Besides, Canals were presumably initially designed for irrigation, but as technology advanced, they were also made for navigation. Ship travel distances have decreased because of canals, such as the Suez Canal (finished in 1869) and the Panama Canal (1914). The invention of modern technologies and creative design approaches have made it possible to build canals for both international trade and inland water transportation (Dutta & Sarkar, 2020).

Based on construction, there are two categories of canals, conveyance canals, and navigation canals. Conveyance canals are dug to transport water for agriculture, drainage, or power. Conveyance canals are often walled with earth, narrow, and capable of quickly moving large volumes of water. The most crucial factors in canal building are water availability, differences in land and water levels, slope. It is reported that the construction of irrigation canals in Bengal began more than

3,000 years ago. Since that time, building conveyance canals has become a common practice nationwide. Navigation Canal construction is done to aid navigation (Banglapedia, 2021).

The types of canals extend beyond their key functions. Some of the main functions of canals include carrying stormwater in the event of severe rains, safeguarding the nearby area from flooding, directly affecting the microclimate of the area, giving the public much-needed visual comfort, balancing the environment, and preventing pollution levels. Depending on certain criteria, these have been categorized into a variety of types (Dutta & Sarkar, 2020). Table 1 below lists them all.

SL.NO	PARAMETER	CLASSIFICATIONS OF CANAL
1.	Based on Usage	• Conveyance
		• Navigation
2.	Based on Construction	• Aqueducts
		• Waterways
2.	Based on Discharge	• Main canal
		• Branch canal
		• Major distributary
		• Minor distributary
		• Watercourse or field channel
3.	Based on Provider	• Unlined canal
		• Lined canal
4.	Based on Alignment	• Contour canal
		• Watershed canal
		• Side slope canal

Table 1: Classification of Canal based on different parameters. [Source: (Bhuiyan, n.d.), (Banglapedia, 2021)]

2.2. Canal-oriented development

The city and the canal coexist peacefully according to multidimensional behavioral patterns that produce benefits for both parties. Both share a mutually beneficial existence that may be observed in terms of their physical and functional traits.

Therefore, it is difficult to keep the city and the canal in constant equilibrium as they develop (Soumyadeep & Sanghamitra, 2020).

The goal of canal-oriented development (COD), a placemaking idea, is to build mixed-use communities along canal banks by utilizing the waterfront's appeal and practicality as a natural magnet for societal and economic activity (Buckman, 2017).

The primary benefit of COD is that it gives developers the freedom to build on a large number of sites along the area it drains. Dependent on the feeling of place created by water sensitivity, there may be separate zones along the route based on activity and size. Neighborhood and public areas are constructed focusing on sustainability and functionally solved infrastructure (Soumyadeep & Sanghamitra, 2020).

COD can use as a redevelopment or design tool. The canals would use to encourage waterfront development, which is enlisted below:

- By promoting pedestrian activity on foot,
- For leisure and recreational purposes, spaces could create in canal surroundings.
- When appropriate, offering the ideal calming backdrop for construction projects.
- Transit-oriented development (TOD) on inland waterways for the transportation of people and goods.
- Support the local economy for the neighborhood's residents (Buckman, 2017).
- Keep the natural equilibrium intact (Bindu & Mohamed, 2016).
- Ensure environmental safety of waterbody (Kurochkina, 2020).

2.3. Environmental benefits of water body

2.3.1. Mitigate water clogging

Flooding is a typical occurrence in Bangladesh during the monsoon season, although its frequency and severity have grown recently. Despite numerous factors, the area's inactive and haphazard drainage system is one of the primary causes (Sabnam et al., 2021).

It is discovered from a case in Chennai that every lake there has a natural flood discharge route that drains the spillover. Water bodies mitigate water clogging and reduce flooding. However, building infrastructure over water bodies prevents water from flowing freely (Wan et al., 2020).

2.3.2. Reduce on heat island effect

The urban heat island effect, or the phenomenon in which cities are warmer than their rural environs, occurs in almost every metropolis. Cities retain more heat than open, unpaved areas due to their high building density and paved surfaces. Cities can experience temperature differences of 3 to 7 degrees at night and 1 to 3 degrees during the day, with temperatures rising even more in clear, calm weather. The energy requirements for heating and cooling as well as the local ecosystems can all be significantly impacted by the heat island effect. Understanding how the water cycle operates is crucial for reducing these risks (Climate, 2016).

Water bodies effectively absorb shortwaves via evaporation and have efficient emissivity. On the other hand, the water surface energy can also go through water bodies through conduction, convection, and advection. Investigative investigations revealed that 100-meter-long water bodies on a small scale can lower heat during the day (Kemarau & Eboy, 2020). Urban water basins that are commonly open and surrounded by trees provide cooling on hot days (Jacobs et al., 2020).

2.4. Water policies of Bangladesh

The water policy was established in 1999, approximately 16 years back (Government of Bangladesh, 1999). Bangladesh's most recent and significant water policy is the 2013 Water Act. It incorporates information from earlier water rules and supersedes all earlier water-related regulations (WARPO, n.d.). In addition, several other regulations cross over and relate to the canal, such as The Environment Conservation Act of 1995, the National Policy for Safe, Water Supply & Sanitation 1998, and the Integrated Small-Scale Irrigation Policy 2011.

The gap between water policy and practice illustrated the following:

- The Water Act of 2013 is generally a solid policy. However, several areas, including water pollution and the provision of drinking water, are not effectively addressed, and there are some inconsistencies with prior water policies and other related policies.
- There are conflicts in scope where it is unclear which agency is in charge of carrying out specific operations. In addition, there are scope inconsistencies where it is unclear which agency is in charge of carrying out specific tasks.
- The requirements for implementing mechanisms could be improved in some ways, but overall, the mechanisms are adequate (Petrie et al., 2015).
- Another critical problem is that most people are not sufficiently aware of the importance of efficient water use, according to field observations (Kabir & Das, 2015).
- The integration of natural water bodies or channels into urban planning and design framework is not specified by any building construction regulations, building codes, planning regulations, or wetland acts in Bangladesh (Mowla, 2013).

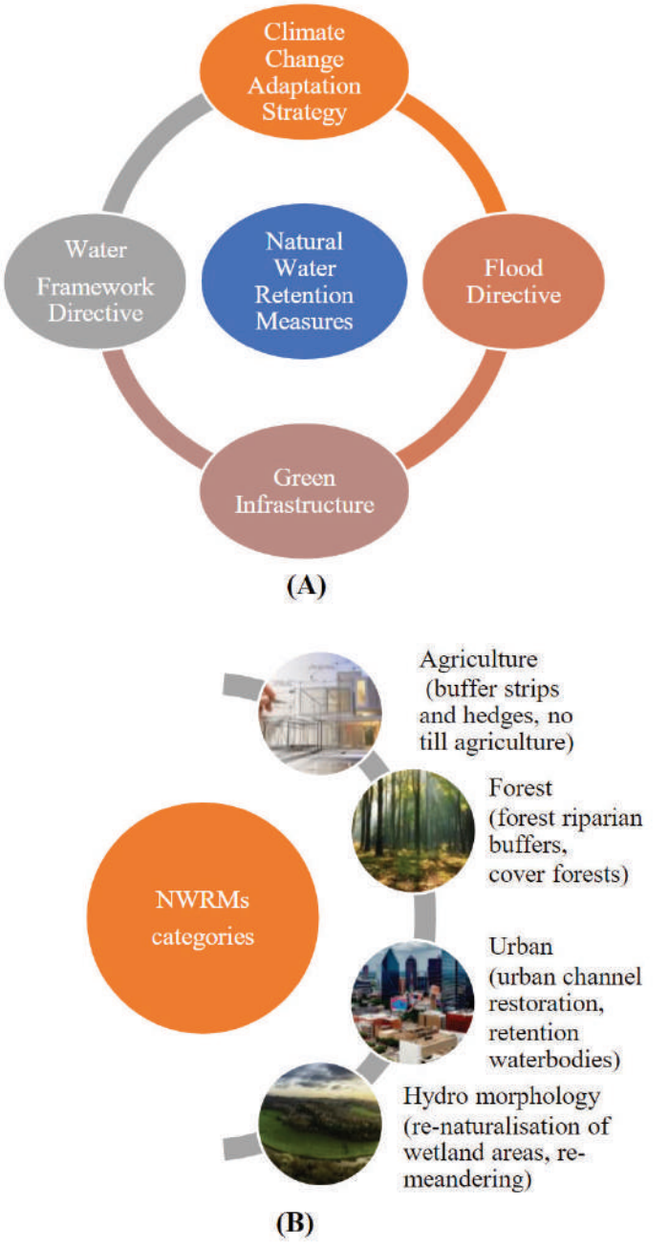


Figure 1: (A) Natural water retention measures and selected policy initiatives **(B)** NWRSMs categories
[Source:(Zeleňáková et al., 2017), (Cis et al., 2014)]

2.5. Water retention measures

Natural water retention measures (NWRMs) serve a variety of purposes. By restoring or sustaining ecosystems as well as the natural features and qualities of water bodies through natural means and processes, it seeks to safeguard water resources and manage water-related concerns. Enhancing the retention capacity of aquifers, soil, and aquatic and water-dependent ecosystems is the principal objective of adopting NWRM to improve their state. The use of NWRM promotes green infrastructure, enhances the quantitative state of water bodies in general, and lessens a region's susceptibility to floods and droughts (Zeleňáková et al., 2017).

Selected policy initiatives are shown in Figure 1(A). NWRM can contribute to Water Framework, Green infrastructure, Climate change adaptation strategy, and Flood Directives goals.(Zeleňáková et al., 2017) Aquifer recharge, large-scale floodplain and wetland restoration, small-scale ponds, and soil conservation techniques are a few examples of the diverse strategies that formulate NWRM. They can be categorized into four groups, as shown in Figure 1 (B) (Cis et al., 2014).

3. Methodology

The study uses both quantitative and qualitative research methods. Different secondary data have been gathered from various sources for the quantitative analysis. On the other hand, primary data have been used in qualitative analysis. Besides, the full investigation was conducted from 1 June 2022 to 15 October 2022. The research framework provides a diagrammatic summary of the procedures followed during the research process and its results. See Figure 2 to the right.

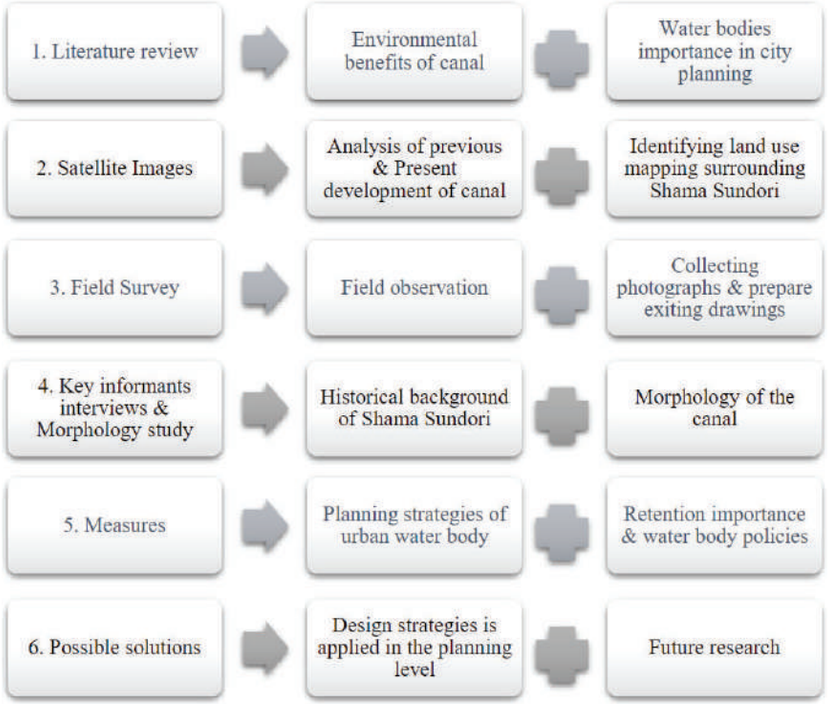


Figure 2: The research framework. (Source: Authors)

The research work has not made use of any theoretical assessment model. First, a discussion of related terms based on a survey of the literature will aid in understanding some definitions and contexts for this issue. The literature review has helped highlight the value of having water bodies in urban design and the advantages the canal Shamasundori offers for the environment. In order to analyze chronological changes, satellite photos were used to examine present condition of Shamasundori Canal. The analysis uses zoning map to provide information. Information about the existing canals will be gathered based on the field survey and with the assistance of the key interview informants. In addition, both primary and secondary data contribute to our understanding of the canal's morphology. According to the site survey, a SWOT

analysis (Strengths, Weaknesses, Opportunities, and Threats) is performed here—these aids in the search for potential canal planning schemes and retention policies. In order to investigate various suggestions for urban water body design strategy, some case studies are also examined. After that, some design strategies have applied comparing the existing canal area. Finally, future research possibilities have also discussed.

4. Study profile area

This study focuses on Rangpur's canal network and morphological structures. Rangpur, one of Bangladesh's newest city corporations, is endowed with natural resources such as open spaces, parks, and water bodies in the heart of the city. It is geographically located between 25°56' North latitudes and 89°25' East longitudes. RpCC [Rangpur City Corporation] covers an area of 203.63 square kilometers and has a population of 7,96,556 people divided into 33 wards. Rangpur is situated on the banks of the river Ghagat, a tributary of the Teesta. The canal, Shamasundori, is a branch of the Ghaghat river that runs through the city [Figure 3].

4.1. Historical background of Shamasundori

Rangpur, one of the country's oldest municipalities, was established as a District Seat (Zila Sadar) on December 16, 1769, and as a municipality in 1869. According to folklore, the canal, Shamasundori was excavated in 1890 under the supervision of Raja Janaki Ballav Sen as part of the development of the city area in memory of his mother, Queen Shyama Sundari. He was the son of Rangpur zamindar, Chaudhurani Shyam Sundari Devi (Devi Chaudhurani) and Raja Janaki vallabh Sen. He was the Chairman of Rangpur Municipality from 1892 to 1894 and later served as Honorary Magistrate, Chairman of

the Local Board, and District Board Member. In 1891, he was crowned as king. According to the legend, Rangpur once had an outbreak of malaria, diarrhoea, cholera, and spring fever due to waterlogging as there was no proper sewage system in this area and many people are said to have died prematurely as a result of that. Throughout that outbreak, the queen bride of Dimla, Chaudhurani Shyama Sundari Devi had also died prematurely of malaria due to the bite of that mosquito which was fostered due to water logging of the city. (Apple, 21.03.2016) Soon afterward, Janaki Ballav Sen, her bereaved son, dug this canal in memory of his mother for eight years, from 1890 to 1898., to prevent the mosquito infestation in Rangpur city. (Huda, Jan 14, 2020) (Jalil, 2014)

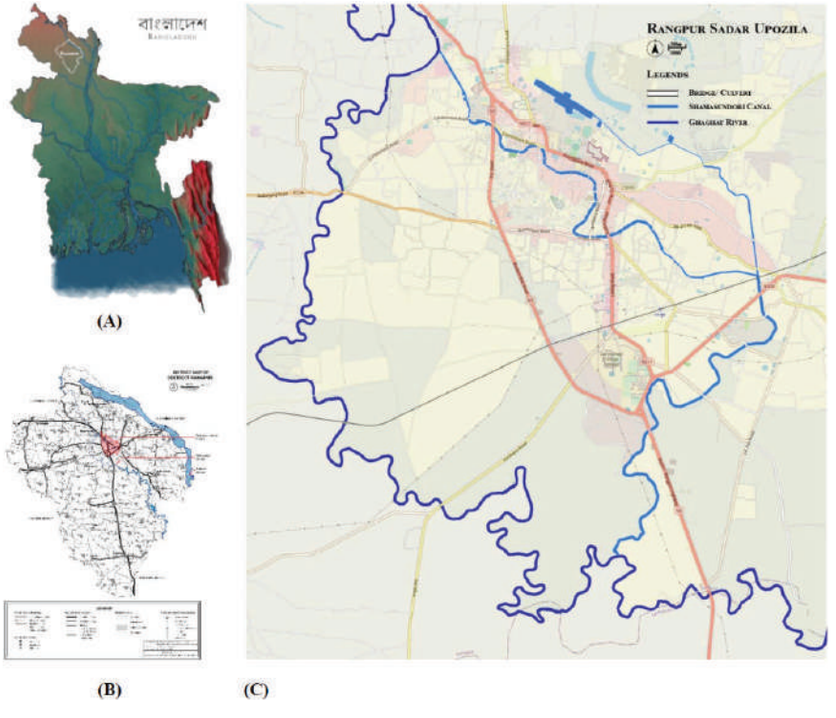


Figure 3: The location of the study area. (Source: Google map modified by Authors)

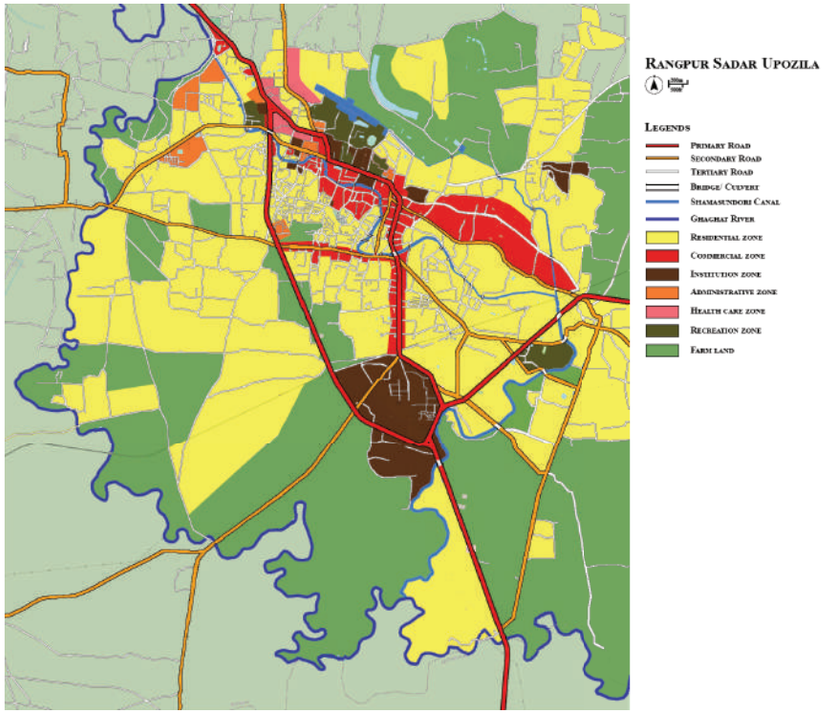


Figure 4: The land use map of the site. (Source: Google map modified by Authors)

4.2. Morphological analysis of Study area

Rangpur City Corporation is divided into 33 wards. The core city is divided into wards 12 to 30, with 16-28 wards holding majority of the population and residences (Sabnam et al., 2021). Shamasundori, a 16-kilometer-long artificial canal is a branch of the Ghaghat river in Rangpur, Bangladesh, was excavated for the improvement of the town, in 1890. The canal runs from the Kellaband Ghaghat river in the north-west through all of the city's neighborhoods, including Pashari Para, Kerani Para, Munsi Para, Engineer Para, Gomsta Para, Sen Para, Mulatol, through Tentultala, Nurpur, Bairagipara to the Mahiganj Satmatha Railgate area, where it meets the KD Canal and rejoins the Khoksa Ghaghat river. Water from the Teesta used to flow into the Ghaghat river and that water flowed through the Shamasundori canal before rejoining the Ghaghat. This river was once navigable. As a result, many commercial zones like Nawabganj and Mirganj, had been developed in Rangpur throughout that time period. However, the rivers changed its course as a result of the 1787 earthquake and this branch of the Ghaghat river had died at some point. Since the establishment of Rangpur City Corporation and division, the population has grown to over one million people. Large buildings, business establishments, restaurants, and houses have been constructed near the Shamasundori canal, occupying the canal space. According to legend, the canal was initially 40 to 120 feet wide, which has been now narrowed down into 8 to 10 feet width for negligence over the time.

Rangpur city corporations has no natural or man-made forests. However, there is ample cropland for farming. The main planted trees here are homestead forest and roadside trees. According to the land use map [Figure 4], planted trees and farm land are declining slowly, owing primarily to urbanization. This is a result of the transformation of farm lands into urban areas, as well as other development activities. According to the land use maps, all of these changes occurred in the city's north-western suburbs. The majority of farmland is lying on the city's southern and northern outskirts, with a rising residential zone in between [Figure 4].

4.3. Statistical analysis of Water logging problem of the Study area

Rangpur is a major metropolitan city in northern Bangladesh with a population of around 16000000 people. Water logging is one of the major problems in the Rangpur City. Previously, this particular region of Bangladesh was known as a drought prone area due to a lack of rainfall. However, during the monsoon season from June to August, the study area receives medium to heavy rainfall. In recent years, there has been a rise

in the intensity of rainfall. In September, 2020, the majority of the city has been submerged because of excessive rainfall in a short period of time during the monsoon season. By breaking a 60-year rainfall record, a 433 mm rainfall in 12 hours flooded the whole city for almost two days. The residents of the city experienced at least 2 foot or 3 foot water congestion throughout this. Figure 5 portrays the amount of average rainfall in millimeters from 2001 to 2020, indicating that rainfall in this area is gradually increasing.

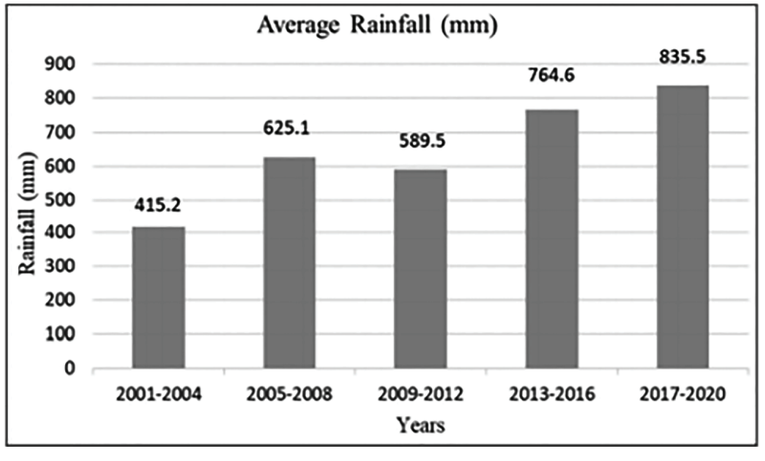


Figure 5: Average Rainfall (mm) (2001-2020). [Source: (Sabnam et al., 2021)]

Days/Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(1-3)	√	√		√	√		√			
(3-5)			√			√		√	√	
(5-7)										√

Table 2: Number of day's water logging. [Source: (Sabnam et al., 2021)]

The number of days with water logging has grown as rainfall has increased as shown in Table 2. This has been more apparent in recent years. Every year during the monsoon, Hanuman Tola, Islambagh, New Jummapara, Munshipara, Keranipara,

Robertsonganj, Kotowali Thana region, Mahiganj, Haragachh, Shalban, Ganeshpur, Kamarpara, Mulatol, Masterpara, Bonanipara, and Lalbagh experience the most severe scenario.

The primary causes of this crisis are the inactivity and deterioration of the Shamasundori canal, which runs through the city. The topographical condition, insufficient and inefficient drainage system, minimal maintenance, and lack of dredging has also worsened the situation. Geographically the central Rangpur City is lower in elevation compared to the surrounding areas, which eventually leads to water logging. Again, due to increased population, the number of open lands and ponds is decreasing, and a poor drainage system prevents rainwater from draining away, intensifying the severity of water logging. Here, Figure 6 depicts the spatial degree and extent of flood vulnerability in the Rangpur district as determined by spatial vulnerability mapping (Sabnam et al., 2021).

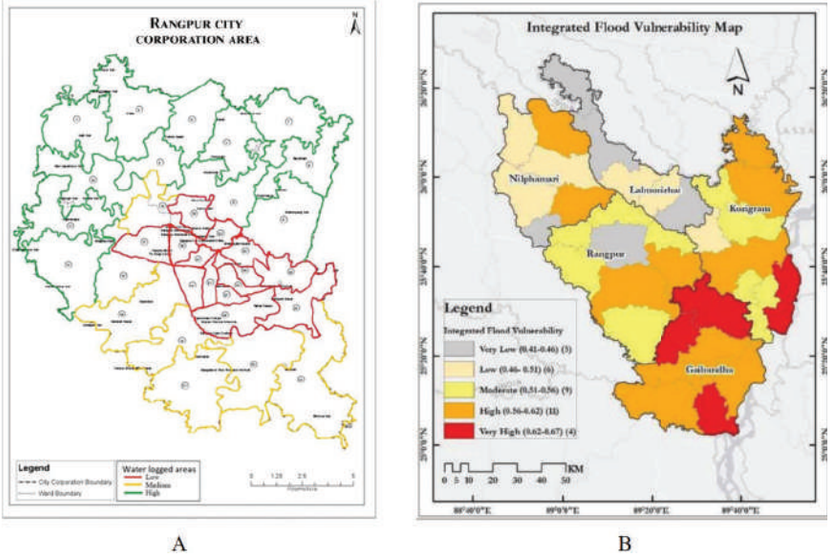


Figure 6: Flood Vulnerability map. [Source: (Sabnam et al., 2021), (BBS, 2013)]

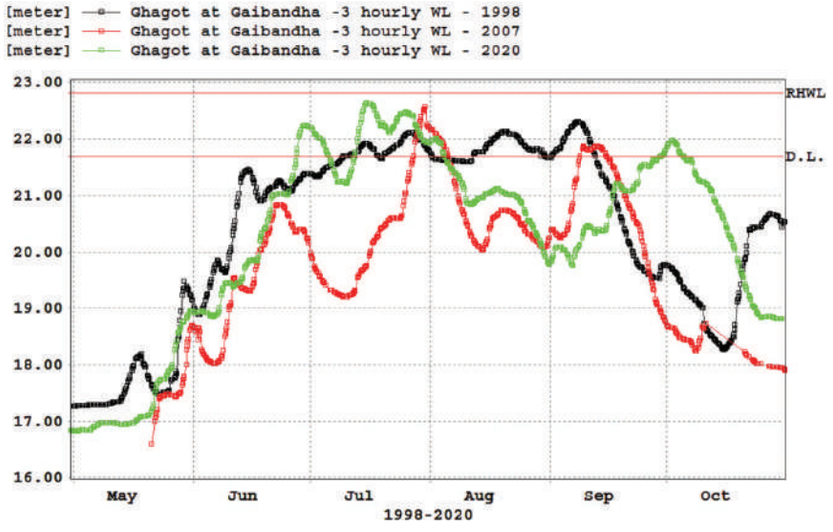


Table 3: Comparison of Hydrograph on Ghagot at Gaibandha. [Source: (BWDB, 2020)]

The Shamasundori canal connects to the Gaghat river, a branch of the Teesta which runs through the Gaibandha, Rangpur and Nilphamari. When the peak level of the Teesta rises during the monsoon, the peak level of the Ghaghat rises as well. If the flow of the Shamasundori canal remains uninterrupted, the likelihood of flooding in Rangpur district is reduced. Table 3 shows the peak water level of the Ghaghat river during the monsoon season from 1998 to 2007 and 2020, respectively.

4.4. Circulation & Accessibility of the canal

The Shamasundori canal, a Ghaghat river brunch, runs from Baktarpur, CO bazar area (25°46'24.6"N 89°13'15.8"E) in the north-west through the city and rejoins the Khoksa Ghaghat river near Sekh para in the south-east (25°41'09.4"N 89°15'21.3"E). The canal traverses through all of the city's neighborhoods, including residential, commercial and farmland area. Running through passing Pashari Para, Kerani Para, Munsi Para, Engineer Para, Gomsta Para, Sen Para, Mulatol, Tentultala, Nurpur, Bairagipara,

Mahiganj Satmatha Railgate area, to Sekh para the canal never lost its connection as well as near Satmatha Rail gate area, it splits into two sections that eventually meet the Chikli lake and Ghaghat river accordingly. The city's road network was built considering the flow of canal and bridge and box culverts were installed when required [Figure 7].

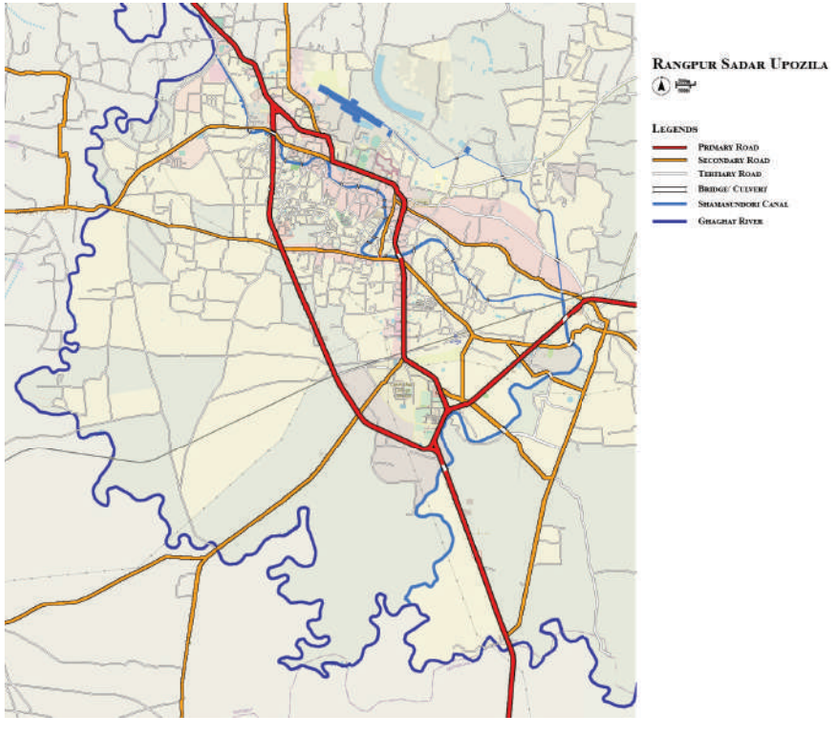


Figure 7: Road network of the study area. (Source: Google map modified by Authors)

4.5 Existing condition of the Canal

The Shamasundori canal, which once was an exhilarating source of natural beauty and clear water, has now become a source of misery for the city's residents due to human activity. There are hardly any water flows through the canal right now, on the other hand, it has lost her beauty as a result of negligence

over the years. Because of the canal's black-colored polluted water and stench of garbage, it is now difficult to even walk along it. According to the locals, the 16-kilometer canal has been narrowed to eight to ten feet in many places, making it an extremely dirty place and a breeding ground for mosquitos and other diseases. Furthermore, it overflows and causes flooding and water-logging in the city whenever it rains. People concerned blamed the canal's poor condition on widespread encroachment, waste dumping, and a lack of re-excavation. Nonetheless, some residents even had connected their home's sewerage system to the canal.

Although the then chairman of Rangpur municipality, AKM Abdur Rauf Manik, took the initiative in February 2012 to renovate the 12 km Shamasundari canal, build and excavate a bridge over the canal, and call for a tender to the local government engineering department within a budget of Tk around 25crore, but the contracting firms disregarded the rules and billed without completing the work. According to a source in Nagar Bhavan, the tender called for boulders to be installed on both sides of the Shyamasundari Canal for 12 kilometers, footpaths to be built on both sides of the canal, and three bridges to be built over the canal. However, no work has been done on the three kilometers between the Sadar Hospital and the Grand Hotel Mor via Gomstapara, apart from the park adjacent to the Keramatiya Mosque in Kerani para road (Figure 8, image D), only place, where the boulders were placed on both sides of some parts of the canal, footpaths were built on both sides of the canal and three bridges were constructed without digging the canal at all (Sajjad Hossain Bappi, 11.02.2019) (Nazrul Islam Razu, 05.02.2022).

Incidentally, an embankment has been constructed at some point along the canal near Baktarpur, as the Cantonment is close by (Figure 8, image A). Other places, however, such as Satmatha (Figure 8, image G), Mahiganj (Figure 8, image H), and Tajhat (Figure 8, image I), have no development like this except

for the existing culvert that connects both sides of the canal. The canal, on the other hand, is treated as the back side of the residential zone in some areas, such as Pasari para (Figure 8, image B), Kotki para (Figure 8, image C), Honumantola (Figure 8, image E), and Kotowali thana (Figure 8, image F). Even though it is considered the backside of the house, a walking path exists on both sides of the canal in some areas such as Pasari para (Figure 8, image B) and Kotki para (Figure 8, image C).

Table 4: The SWOT Diagram of the study.

STRENGTH	• The Shama Sundori canal is nearly 130 years old and was methodically designed and planned to access almost all the neighbourhoods of the main city. • The canal is mostly open on both sides and runs through the city's residential and commercial areas. • The canal is close to the main road and well connected by bridge through all zones.
WEAKNESS	• The canal's width had been reduced to some spaces due to urbanization and development, as well as constant negligence. • Continuous dumping of waste had also halted the canal's water flow to some areas. • The only renovated park space adjacent to the Keramatiya Mosque is now in terrible shape owing to the lack of proper maintenance and ignorance.
OPPORTUNITIES	• The canal network can greatly assist in resolving the overflow of water as well as water clogging issue of the city during the time of heavy rains and monsoon seasons. • During dry seasons, the canal network can store water for irrigation and agriculture. • The canal's stored water can also help to mitigate the heat island effect of the city caused by urbanizations. • The canal network has the potential to form a public realm space. • Through the community participation approach, the canal can be a good source of community income. • The canal network can be used as waterway to reduce traffic congestion during the festival seasons.
THREAT	• Waste from large buildings and sewage systems is dumped into the canal on a daily basis, causing pollution and clogging up its water. • Because of the garage disposal, the canal has now transformed into a breeding ground for mosquitoes and other diseases. • The canal is now been encroached and being misused by the lower income groups.

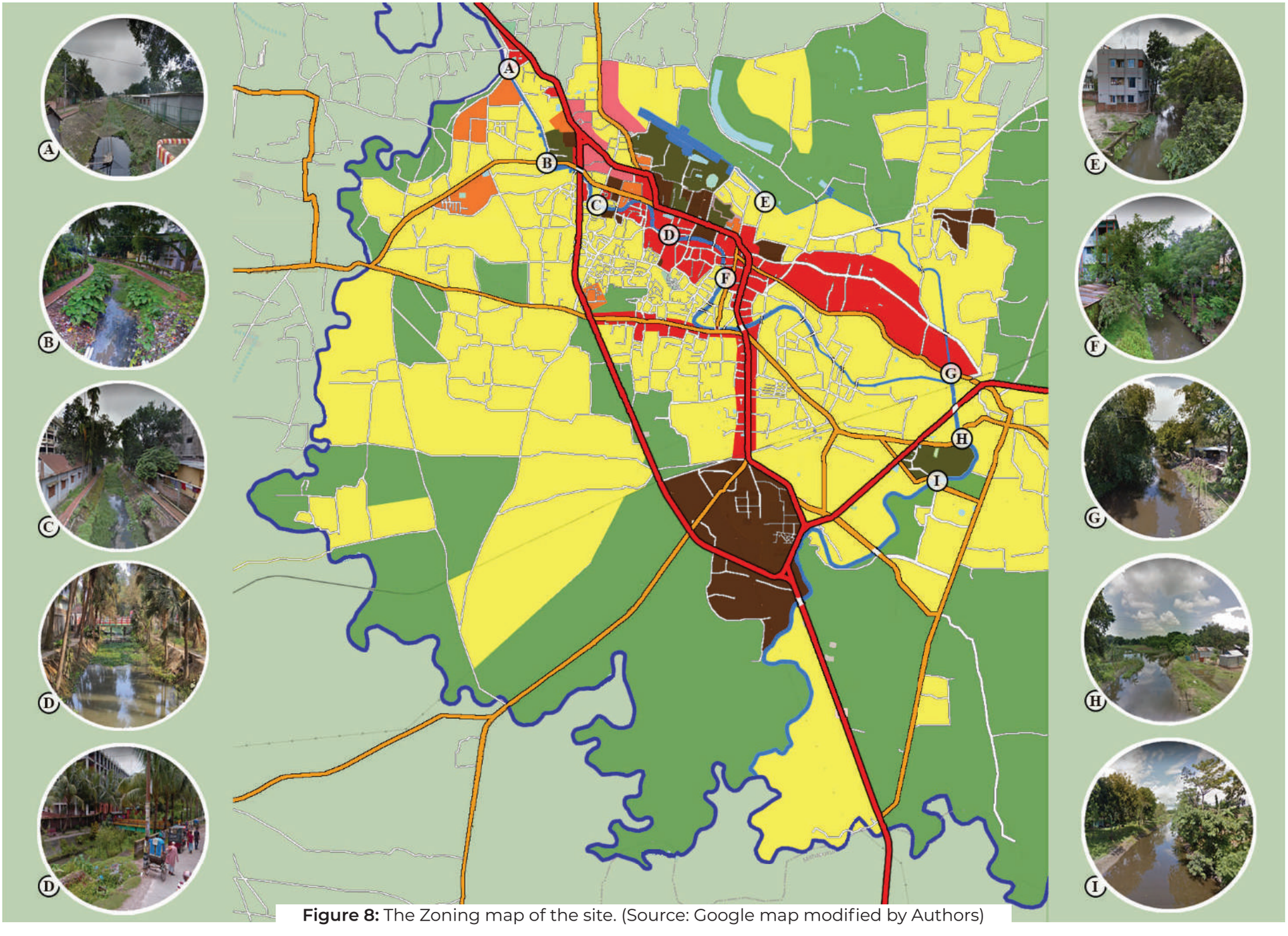


Figure 8: The Zoning map of the site. (Source: Google map modified by Authors)

5. Result and Discussion

To solve the existing problem strategic measure, need to be taken. The most damaged sites should be located first in order to address the water logging and pollution issues. According to their degree of vulnerability, such locations should likewise receive priority. The matter will be resolved by authorities after analysis of the field survey. With the rising population and home size, drainage facilities need to be improved and regulated.

The local population must be taken into account when designing the canal. There is adequate room along the canal in many places to build recreational areas for locals. This will provide canal connectivity to the inhabitants. The design development process can open to community members as well. Like this, they will have a sense of belongings for the canal. However, safety measures must also be properly considered as well.

The study offers several applications at the planning level based on the parameter discussion in the upper portion. The following section contains several conceptual design options for the Keranipara, the Kotki Para, and the Kotowali thana roads.

The Shamasundori runs through a variety of areas in Rangpur, including residential, business, and recreational areas. Both the site and the canal's surroundings would be modified based on various land uses.

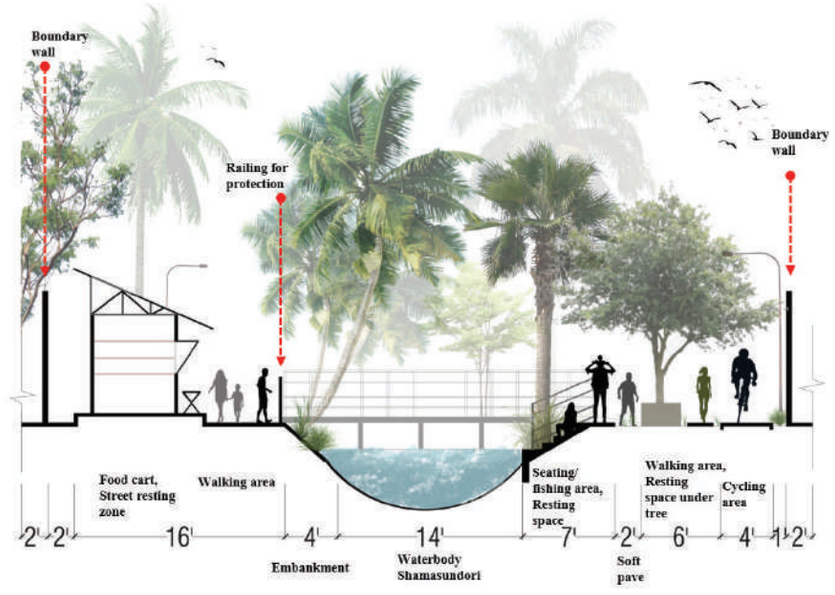
In the initial stage of planning, water recycling, excavation of the canal, and proper waste management will help to improve the living conditions of the surroundings. Then, the minimal intervention of nature will preserve the environment in its harmonious state.

For public spaces like Keranipara Road, the placemaking concept could be applied where a connection could build up between the public and the place [Figure 9]. The design must be eco-friendly and sustainable also. People would stay in the region and create memories if there are more pedestrian walkways, rest areas, and activity areas. Since the area needs more recreational activities, food carts, kid-friendly areas, and cycling zone are suggested to draw more visitors.

The Kotki para road and the Kotowali thana road are residential areas. It is very important to consider the surroundings when designing because the surroundings are necessary element of the design. As neither residential area considered the canal to be its front, the area could be more vibrant with additional public activity. On the Kotki para road, there is less space on both sides of the existing canal. As a result, elevated decks are proposed in figure 10 as a recreational space that welcomes the canal water to flow naturally during the usual tidal flow and rainy season (Hoque & Sadia, 2018). Besides, fishing spots or boating excursions would increase the number of entertainment options for locals.

According to Figure 11, cycling lanes, planter boxes, and pedestrian walkways are recommended designing for Kotowali thana Road. The aesthetic attractiveness of the area may be improved by placing street furniture around the planter box. Additionally, residents could use the walkway to exercise in the morning. Since the canal is narrow, the retaining wall construction technique would follow instead of endarkenment.

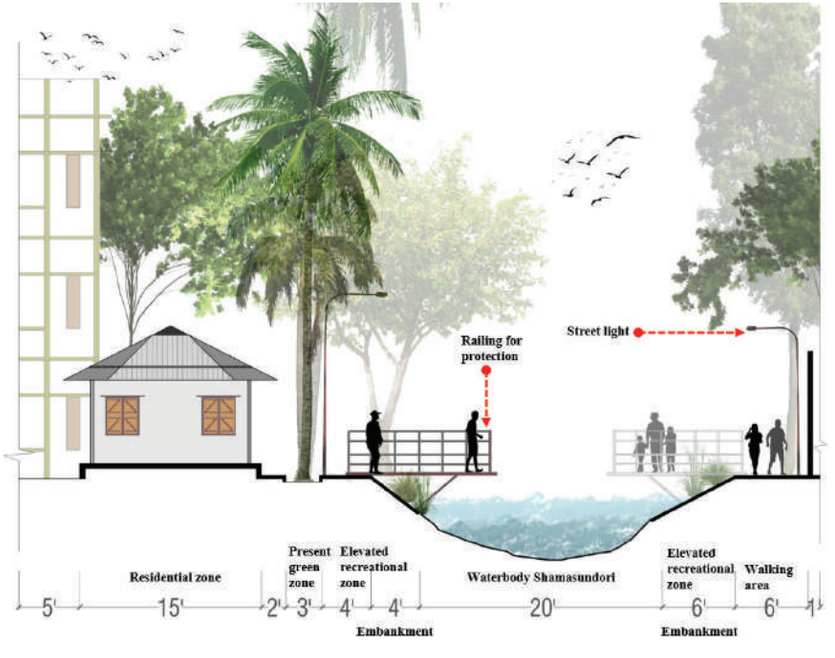
Overall, in order to provide protection, the railing should be used on both sides of the canal when designing around it. The installation of streetlights will also ensure safety. Apart from that, soft pavement would be preferred over hard pavement for walkways because it is pervious to manage stormwater in the walkable area.

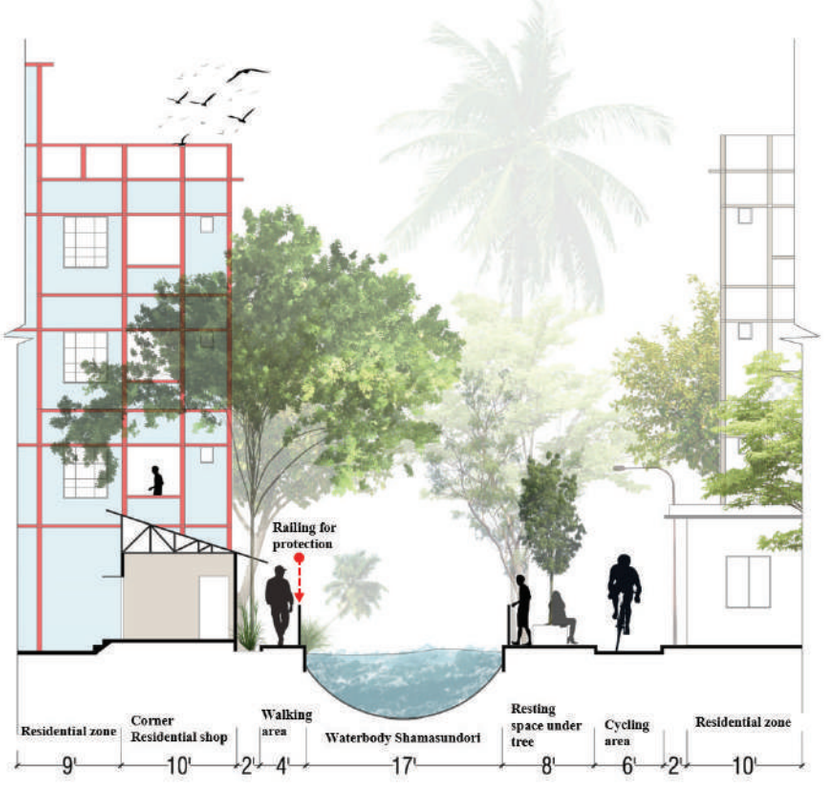


Upper Right: Figure 9: Conceptual section of Keranipara road. [Source: Generated from (NACTO, 2013), (NACTO, 2012), (UTTIPEC Delhi Development Authority, 2010)-by Authors]

Bottom Right: Figure 10: Proposed section of Kotki para road. [Source: Generated from (NACTO, 2013), (NACTO, 2012), (Hoque & Sadia, 2018), (UTTIPEC Delhi Development Authority, 2010)-by Authors]

Bottom Left: Figure 11: Proposed section of Kotowali thana road. [Source: Generated from (NACTO, 2013), (NACTO, 2012), (UTTIPEC Delhi Development Authority, 2010)-by Authors]





6. Conclusions

Waterbodies must be considered in city development since different types of water features play multiple functions for cities. Sometimes, the waterbodies carry include historical tales. Additionally, the presence of waterbodies contributes to the creation of a bond between the surrounding people and the place. So, it is crucial to protect those for both the environment and people.

The study examined that the Shamasundari canal, which was dug to keep the city clean, has now become a source of pollution. The canal functioning contexts are at risk. As a result, the area needs to be preserved for its historical and cultural significance. The study illustrates a few potential water-oriented development strategies and the advantages of conservation for the environment. Finally, the results of the study highlight how crucial it is to preserve the Shamasundari canal.

The study has a limited timeline and did not explore pragmatic approach. Hence, there is scope for in depth study in the design and the planning level where community intervention of the design implication could be discussed.

References

Al-Amin Apple, O. N. (21.03.2016). *SHYAMA SUNDARI'S STORY*. Our News. Retrieved from https://archive1-ournewsbd-net.translate.goog/%E0%A6%B6%E0%A7%8D%E0%A6%AF%E0%A6%BE%E0%A6%AE%E0%A6%BE-%E0%A6%B8%E0%A7%81%E0%A6%A8%E0%A7%8D%E0%A6%A6%E0%A6%B0%E0%A7%80%E0%A6%B0-%E0%A6%95%E0%A6%A5%E0%A6%BE/?_x_tr_sl=bn&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc

Baldwin, E. (2021). *Urban Waterways: The Dynamics of Canal Architecture*. Retrieved from ArchDaily: https://www.archdaily.com/954873/urban-waterways-the-dynamics-of-canal-architecture

Banglapedia. (2021, June 18). *Banglapedia, National Encyclopedia of Bangladesh*. Retrieved from https://en.banglapedia.org/index.php/Main_Page: https://en.banglapedia.org/index.php/Canal

Bappi, S. H. (11.02.2019). Money lost in the name of Shyama Sundari canal reform. *Daily Bangladesh*. Retrieved from https://www.daily-bangladesh.com/country/83017?fbclid=IwAR2JEobL--TjMK7cVtUbNUURubEBtuj2I1dq-HyTpRjcKJio6ppJUadiWHs

BBS, B. B. of S. (2013). *District Statistics of Rangpur* (Issue December). http://203.112.218.65:8008/WebTestApplication/userfiles/Image/District Statistics/Rangpur.pdf

Bhuiyan, T. (n.d.). *Civil Engineering*. Retrieved October 8, 2022, from https://civiltoday.com/: https://civiltoday.com/water-resourceengineering/open-channel/265-whatis-a-canal-types-of-canals

Bindu, C. A., & Mohamed, A. R. (2016). Water Bodies as a Catalyst to Growth and Development- The Case of Kodungallur Town, Kerala. *Procedia Technology, 24*, 1790–1800. https://doi.org/10.1016/j.protcy.2016.05.222

Buckman, S. (2017). Canal oriented development as waterfront place- making : an analysis of the built form. *Journal of Urban Design, 21*(6), 785–801. https://doi.org/10.1080/13574809.2016.1234332

BWDB. (2020). Annual Flood Report. In *FFWC, BWDB, Ministry of Water Resources*. http://mowr.gov.pk/wp-content/uploads/2018/06/Annual-1073 Flood-Report-2010.pdf

Cis, W. F. D., Group, W., & Pom, W. G. (2014). *EU policy document on Natural Water Retention Measures*. https://doi.org/10.2779/227173

Climate, W. s. (2016). *Water sustainability and Climate*. Retrieved from https://wsc.limnology.wisc.edu/: https://wsc.limnology.wisc.edu/research/urban-heat-island

Dutta, S., & Sarkar, S. (2020). *Canal-Oriented Development : Integrating an urban canalfront with the city. June*. https://doi.org/10.6092/2281-4574/6954

Davies, E. A. (2022). *canals and inland waterways*. Retrieved from Britannica: https://www.britannica.com/technology/canal-waterway

Government of Bangladesh. (1999). *National Water Policy*. The Ministry of Water Resources Government of the Peoples Republic of Bangladesh Dhaka, Bangladesh.

Hoque, F., & Sadia, N. (2018). WATER URBANISM AND RESPONSIVE SOLUTIONS : A CASE STUDY OF MAHESH CANAL, IN CHITTAGONG , BANGLADESH. *1st National*

Conference on Water Resources Engineering (NCWRE 2018), March, 1–6.
Huda, S. (Jan 14, 2020). Rangpur: History within easy grasp. Retrieved from https://www.thedailystar.net/lifestyle/travelogue/news/rangpur-history-within-easy-grasp-1853566?fbclid=IwAR0nrcMCjMt5zyb1Weu8HaS3sJmKyUcnd-5NKWGoHjM5EZVQr7aSLtFTizI
Jacobs, C., Klok, L., Bruse, M., Cortesão, J., Lenzholzer, S., & Kluck, J. (2020). Are urban water bodies really cooling? *Urban Climate, 32*(February), 100607. https://doi.org/10.1016/j.uclim.2020.100607
Jalil, M. A. (2014). রংপুর [বাংলাদশেরে লোকজ সংস্কৃতগি্রন্থমালা]. Rangpur: Bangla Academy Dhaka.
Kabir, M., & Das, P. (2015). *Water Management in Bangladesh*. 2.
Karmaker, K. (2022, December 8). Shyamasundari Canal: Once Rangpur's lifeline, now merely a drain. *The Daily Star*. Retrieved from https://www.thedailystar.net/environment/news/shyamasundari-canal-once-rangpurs-lifeline-now-merely-drain-3190221
Kemarau, R. A., & Eboy, O. V. (2020). *Analyses Water Bodies Effect in Mitigation of Urban Heat Effect : Case Study Small Size Cities Kuching , Sarawak Analyses Water Bodies Effect in Mitigation of Urban Heat Effect : Case Study Small Size Cities Kuching , Sarawak*. https://doi.org/10.1088/1755-1315/540/1/012010
Kurochkina, V. (2020). Urban water bodies as the basis for functioning of public spaces. *E3S Web of Conferences, 217*, 1–15. https://doi.org/10.1051/e3sconf/202021702005
Mowla, Q. A. (2013). Dwindling urban water-bodies of Dhaka and the city fabric: a post-mortem. *Dhaka Metropolitan Development Area and Its Planning ..., Figure 1*. https://www.bip.org.bd/admin/uploads/bip-publication/publication-9/paper/20140427142809.pdf
NACTO. (2012). Urban street design guide. *In Choice Reviews Online* (Vol. 51, Issue 07). https://doi.org/10.5860/choice.51-3603
Nazrul Islam Razu, T. B. (05.02.2022). The Business Standard. *Encroached, polluted, Shyama Sundari canal now brings misery to Rangpur city*. Retrieved from https://www.tbsnews.net/bangladesh/districts/encroached-polluted-shyama-sundari-canal-now-brings-misery-rangpur-city-366715
Petrie, L., Hoque, S., Tanzeem, J. S., & Chowdhury, Q. (2015). *Water Governance in Bangladesh Challenges and Opportunities Around Policy, Institutional Functions and Implementation for A Sustianable Water Future*.
Rahana.H, N. S. . (2020). Study on Integrating Canals in City Structure. *International Journal of Science, Engineering and Management*, 5(4), 11–16.
Sabnam, M., Tabasum, M., & Abdullah, F. (2021). *A Study on Water Logging Problem of Rangpur City A Study on Water Logging Problem of Rangpur City. August*. https://doi.org/10.11648/j.ijepp.20210904.12
Sajjad Hossain Bappi, D.-B. (11.02.2019). Money lost in the name of Shyama Sundari canal reform. *Daily Bangladesh*. Retrieved from https://www.daily-bangladesh.com/country/83017?fbclid=IwAR2JEobL--TjMK7cVtUbNUURubEBtuj2I1dq-HyTpRjcKJio6ppJUadiWHs
Soumyadeep, D., & Sanghamitra, S. (2020). Canal-oriented development: Integrating an urban canalfront with the city. *International Journal of Urban Planning, 13*(1), 47–66. https://doi.org/10.6092/2281-4574/6954
Urban Street Design Guide. (2013). In *Island Press/Center for Resource Economics eBooks*. Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-534-2
UTTIPEC Delhi Development Authority. (2010). *Street Design Guidelines for equitable distribution of Road space*. http://uttipec.nic.in/upload/uploadfiles/files/7554441800.pdf
Wan, S., Laloo, L., & Ranjan, A. (2020). *Urban development impacts on water bodies: A Review in India. 8*(1), 363–370.
WARPO. (n.d.). *http://old.warpo.gov.bd/index.php/home*. Retrieved October 10, 2022, from Water Resources Planning Organization: http://old.warpo.gov.bd/index.php/home/project_details/45#:~:text=Bangladesh%20Water%20Act%202013%20(BWA,estuaries%2C%20coastal%20waters%20and%20groundwater.
Zeleňáková, M., Diaconu, D. C., & Haarstad, K. (2017). Urban Water Retention Measures. *Procedia Engineering, 190*, 419–426. https://doi.org/10.1016/j.proeng.2017.05.358

On Play, Democracy, and Planning: A Conversation

Keila Zarí Pérez is a social–play designer and educator. Her current design practice is rooted in activism and participation in socio-politics through play and playfulness. She works with speculation and embodied ways of teaching in design education. Her work includes furniture design, playful methods, and process facilitation, as well as research and teaching at the LAB for Play in Designskolen Kolding, Denmark. She is now a Visiting Lecturer at the School of Design and Creative Technologies, UT.

Mathias Poulsen is a play activist and PhD student at Designskolen Kolding, Denmark. Currently working at the Lab for Social Design where he combines research on design, play and democracy to explore how we might design for new forms of democratic participation. His PhD project has emerged from years of working with grassroots communities, especially within play and education. He is also the founder of the international play festival Counter Play and the Danish Play Think Tank, cultivating communities for investigating play.

Katherine A. Pérez-Quiñones is a doctoral student in the Community and Regional Planning Program in UT-Austin. Born and raised in the west coast of Puerto Rico, she is passionate about health and environmental justice and believes in people's right to stay and achieving wellbeing on their land.

This conversation emerges from desires of more democratic planning. Not in the sense of getting more people to show up and participate in a one-off engagement process but thinking about ways to sustain a culture of engagement with our everyday environment and places we inhabit. Through their playful lens, two design scholars and play facilitators help me explore possibilities to rethink the formats through which people are engaged in order to "have a say" in issues that affect them and the planet. The following are some excerpts from our extended conversation:

Katherine: What are you two working on?

Keila: Right now, I'm in Jordan working on a project with the "Global Goals" initiative establishing an activist football (soccer) league. We have one hundred women playing and the ten teams carry out activist actions in their communities between each game day. After a match, the two teams go to a "play activist field" where I host them and we're trying all kinds of play methods to exercise their role as activists. We practice partnering up, speaking up, and leading.

Mathias: I am in Canberra, Australia, as part of my PhD project where I'm trying to understand play as a mode of democratic participation. I'm drawing on the Danish tradition of junkyard playgrounds or *Skrammellegepladsen*, as a space and metaphor for democratic participation. I ask, *what if our deliberation is not only rational, sitting around a table making really proper, coherent arguments about things... What if it's also more experimental inquiries and ways of exploring some matters of mutual concern?*

If we have a space we want to explore, or an issue in the community that we want to deal with, what if that happens also, by playing and by building things and engaging with materials.

Katherine: You're both trying to facilitate these experiences as ways to expand democracy, but in different ways. Mathias,

maybe you're experimenting more with the format itself in these playground experiments while Keila is using play to activate other areas of life?

Mathias: Yeah, at first, I wanted to understand a different format of participation. To say, okay, the human expression and being in the world can't be captured in rational language only, so we also need embodied, playful ways of making inquiries, and of making our statements and arguments. But what I'm starting to also ask is, maybe by doing this I'm also finding a way to critique democracy itself in its current conception, something I'm realizing by being here and having a different context. Democracy is really built on very western Eurocentric values and principles of modernity and Enlightenment, in rational thought and the individual and all those things that we really take for granted in the Global North. And some of the things that I'm interested in the playground have to do with bodies playing a really big role, it's the irrational, the sensorial. It's the relations rather than what the individual can do. It's distributed agency.

Katherine: No doubt there are important critiques to the disembodied way the deliberative model and communicative rationality have been theorized. And taking a cue from Johan Huizinga, one of the great things about play is that it can break from the "real", it can even embrace the irrational or non-rational that you are naming. So, why should we mix play with messy political considerations?

Mathias: We know as designers, as people, that there are other creative ways of both getting to know the world and to express our opinions, on the world. So, that was it. I just felt like, okay, when we play, we do this as well. We say things about who we are and what we find to be important and how we like to be together with each other. We make a lot of these kinds of statements. I just wanted to bring that into a practice that is otherwise really sort of fairly rigid and formal and very language-based and very "rational". So that's sort of one way of countering

that, of saying, if we are to go on with this democracy thing, then I think we need a broader repertoire of ways of participating.

Katherine: Keila, you worked with Danish politicians for one of your projects in your Master's. Now you are working with women in Jordan. Both groups have quite different backgrounds from our own as Puerto Rican women. How do you think of this relationship between play and culture and what are your thoughts on facilitating for a multicultural group or for a group whose culture might be different from yours?

Keila: Yeah. So, one thing working with play is that it definitely has a universal language to it. No matter where I start to explore these topics and facilitate a play experience, there is something universal even if people don't have the words or use the same language to describe it. *We all know what it feels like to be in a state of play or in a state of playfulness*.

Now, one of the main differences would be the way that play is valued, and its initial acceptance to it. Of course, being in a country like Denmark, where play holds a really high position, it almost feels like a luxury that you can sit down with a running political candidate in the middle of his campaign and have a playful discussion, sitting with tied coffee mugs, pulling each other's cups, and playing with cakes while talking about really important political topics.[...] It feels like a privilege that I can do that in Denmark, whereas when you go into some other places, there's more hesitation to engage in something that seems so frivolous at first sight. But as you go into the process, people start to see that there is something much more serious and much deeper to it. And that somehow you can extract a lot of sense and a lot of meaning from the process of engaging with playful experiences.

Mathias: Keila, I love this. But, I love how you hold onto this notion that while it feels like a privilege, while it feels like luxury, it is actually not. It's something that's much deeper than that

and a part of our human nature probably.

Keila: Yeah. I think that's where play has its potential. It's a natural way of being in the world. Even if at some point we've kind of lost that and we've forgotten that, we're here to try to insist that it's actually a way that feels quite natural to explore and to negotiate our ways of being together as a society.

Katherine: Do any of you feel strongly about play having greater potential outside of institutional channels? Should we bring this type of thinking into a planning department, for example?

Keila: I think both are important and both have a different potential and a different role. There's something for sure that can be valuable in putting play in institutions. You can use it for social innovation and there's collectives like Play the City, I think from Holland, doing this particularly. But then, it becomes a lot of *gamification* processes of how you consult the citizen. And for me, it's more interesting when we're taking this grassroots approach and when we're putting play at the hands of people at their everyday life situation.

Mathias: I think, we often tend to equate democracy with the institutions and representative democracy. And it can be so much more than that. How can we shape a society together that's meaningful for all of us ideally. And the institutions are a part of that, but they think they're the biggest part of that. And a lot of people think that, but to me, they're just a part alongside a lot of other components. I think there's a need to raise the awareness of the capacity of democracy to also live outside of institutions. We should just accept the local enactment of life… it's what matters. And then of course we need to be able to sort of talk to each other, but **at least it puts more emphasis on the living of life rather than the institutionalizing**. So maybe some better balance is needed between this general tendency to put everything into the institutions. It feels like we don't really know how to move on and I think part of that might be because

institutions are not that imaginative.

However, within the urban planning field, there seems to be on the one hand, a celebration of the temporary and improvisation in public spaces. And on the other, there remains this ideal of making things look nice and feeling orderly and under control. Colleagues here in Melbourne are designing for play in public space and trying to see what happens when you bring play into the streets in different ways. And I'm also keen to explore and think more about how we can create these kinds of frictions between these ideas about improvisation and the institutional needs for control and predictability. What happens when we take play to the streets and we invite people to play and we honestly, sincerely don't know what will happen? Because we can't just pretend not to know. We actually, really have to let go of that control and desire to predict things. If we just pretend, then it's not gonna get very interesting, it's not gonna become real play that people are actually having a sense of ownership over.

Katherine: I think planning does not feel comfortable with that at all, maybe in part because this idea that we work for the public good has some of us thinking that we figured out what this looks like…

Keila: It's not all designers that take that approach into finding out what are the actual problems that we wanna find solutions to. Are we asking the right questions or are we just in a cycle of creating the things that we *think* people need? I think it's a shared dilemma with planning in some ways. And I think that's also why play brings an interesting resistance to the material; a resistance to what may be an accepted aesthetic approach, an accepted material approach, or an accepted form. It might be because play can easily exist without us designing for it. But we can of course, also decide to enhance it or to create even better conditions for it to arise.

Keila, facilitating the “activist play field” for a group of women who led social change campaigns in their communities and helped “close the play gap” in Amman, Jordan.

Katherine: What is your experience with play’s community-building capacity?

Keila: Play has a great value in its capacity for bringing together completely different interests and different backgrounds and making a space. A good play situation or a good play experience would be created taking into consideration both ends of a spectrum, those who want to engage purely for fun, for the enjoyment of it, because “I think it’s funny” and the ones who engage because they have a relationship or special interest in the topic (ex. climate change).

Mathias: I am so intrigued by these ideas of community, and I think it’s really hard to tell when are you cultivating a community and when are you hosting a one-off thing or if you even have resources to cultivate a community? We can’t always plan for long-term things, but I think we can try to approach the things that we do, even if we are just facilitating workshop or a co-creation thing, or a town hall hearing, *as if* we wanted to cultivate a community. Really inviting people in, really listening and trying to create that space for being sincere.

Katherine: Yes, some prefigurative politics; enacting a little bit of the world that you want to see in the future. Just doing things as you want them to work. Not just asking people what they want, but also putting some action to that.

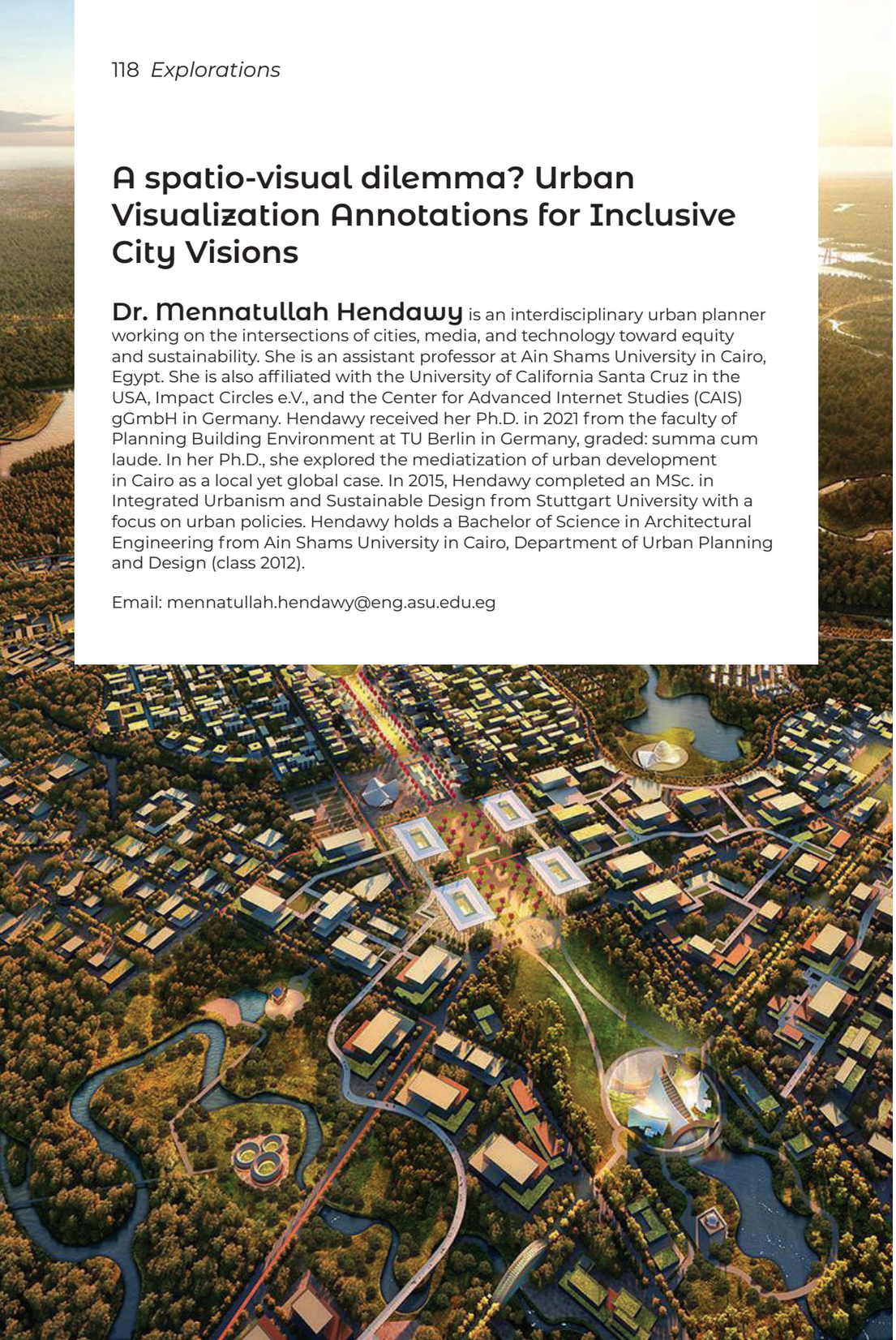
After our conversation, Mathias sent us this cute picture from Canberra, where he was a visiting scholar at the “Centre for Deliberative Democracy and Global Governance”.

This is our only evidence.

A spatio-visual dilemma? Urban Visualization Annotations for Inclusive City Visions

Dr. Mennatullah Hendawy is an interdisciplinary urban planner working on the intersections of cities, media, and technology toward equity and sustainability. She is an assistant professor at Ain Shams University in Cairo, Egypt. She is also affiliated with the University of California Santa Cruz in the USA, Impact Circles e.V., and the Center for Advanced Internet Studies (CAIS) gGmbH in Germany. Hendawy received her Ph.D. in 2021 from the faculty of Planning Building Environment at TU Berlin in Germany, graded: summa cum laude. In her Ph.D., she explored the mediatization of urban development in Cairo as a local yet global case. In 2015, Hendawy completed an MSc. in Integrated Urbanism and Sustainable Design from Stuttgart University with a focus on urban policies. Hendawy holds a Bachelor of Science in Architectural Engineering from Ain Shams University in Cairo, Department of Urban Planning and Design (class 2012).

Email: mennatullah.hendawy@eng.asu.edu.eg



Introduction

Historically, the capital city of a nation has played a pivotal role in shaping its “image, representation, and identity” (Lazar, 2005). Several countries opt to relocate their capital cities for various reasons, such as in response to a revolution, post-independence, or to establish a new political agenda (de Vries WT, 2021). According to Jenkins (2012), capital relocations are undertaken for several reasons such as to achieve neutrality (e.g., Lagos to Abuja in 1991, Melbourne to Canberra in 1927, Rio de Janeiro to Brasilia in 1960), embrace a more ‘Western’ orientation (e.g., Moscow to St Petersburg in 1712), preserve national unity (e.g., Auckland to Wellington in 1865), alleviate urban congestion (e.g., Kuala Lumpur to Putrajaya in 1999), ensure self-defense (e.g., Yangon to Naypyidaw in 2005), or as a measure for risk management (e.g., Jakarta to East Kalimantan, Borneo, planned in 2024).

In certain instances, the relocation of the capital involves establishing a newly constructed site, and visualizations play a significant role in advocating for the transition to these new cities in the current era characterized by heightened visual communication. For this purpose, diverse media, computers, and digital tools are extensively employed to depict the envisioned city. It is noteworthy that contemporary digital tools utilized for visualizing new capital cities tend to accentuate and address only specific segments of the urban landscape, primarily targeting elite populations. This selective emphasis is likely employed to attract investment and portray newly planned cities in a more favorable light (see Hendawy et al., in press)

Sometimes, the visualizations of future cities promoted in public media, private design studios, universities, and public streets may not accurately reflect the everyday experiences or perceptions of the majority of their citizens regarding the future

of their cities (Hendawy and Stollmann, 2020 Hendawy and Saeed, 2020; Hendawy, 2021a; Hendawy, 2021b; Hendawy, 2022). Instead, these visualizations often present a singular perspective that may be construed as an objective truth, as it is influenced by groups holding significant epistemological power (D'Ignazio and Klein, 2020). Within this context, it is not always easy to tell whose voices are represented in a visualization because they are not traditionally designed to provide much information about who made them, why they made them, how to use them, or how they came to be. Taking this perspective into account, these visualizations, while appearing to represent the experiences of the public, can contribute to marginalization, disempowerment, and socio-spatial injustices. Consequently, such effects may impede vulnerable groups from accessing essential services and infrastructure (Hendawy, 2021a; Hendawy, 2022).

In this article, I perceive the communicated images of new cities as a form of visualization. I also deal with visualization as a medium of communication used by diverse actors, such as urban planners and city officials, to communicate urban visions and designs. Drawing on the case of the capital relocation from Jakarta to the new city in East Kalimantan, Borneo, as an illustrative example highlighting the necessity for an alternative approach to urban visualization for comprehensive communication of new planned cities, this article contends that integrating connected latent data into communicated urban visualizations—referred to as urban-visualization annotations—could render invisible information visible. This, in turn, has the potential to serve as an effective counter-strategy against exclusive and top-down urban visions, particularly if these annotations incorporate avenues for marginalized voices to dissent and actively participate in the discourse. The article subsequently provides insights into the Jakarta relocation and proposes the use of annotated urban visualizations for fostering inclusive planning.

The reallocation of Jakarta to East Kalimantan

In 2019, President Joko Widodo of Indonesia announced the relocation of the current Indonesian administrative capital from Jakarta province on Java island to East Kalimantan province on Borneo island (BBC, 2019), with Jakarta remaining as the country's economic hub (Irfan Gorbiano, 2019). This decision is unsurprising to some, given Java's vulnerability to the impacts of climate change (Van de Vuurst and Escobar, 2020) and its infrastructural challenges, including issues related to sewage treatment (BBC, 2019). In line with other large-scale national urban projects, visual communication, and visualization play a significant role in disseminating and endorsing the vision of the new Indonesian administrative capital. Many of the visualizations endorsed for the new capital are produced by commissioned architectural and urban offices, primarily to highlight the government's vision. Employing various communication channels, 3D rendering computer programs are utilized to portray the proposed image of the new capital. These depictions often convey specific environmental and design narratives, emphasizing the incorporation of extensive greenery and water features yet frequently omitting human subjects. The ensuing images (Figures 1 and 2) showcase some of the promoted visualizations about Jakarta's rellocation.

Figure 1: Copyright, Original image – Urban Plus, December 2019 (http://www.urbanplus.co.id/project/nagara-rimba-nusa-ibu-kota-negara-indonesia/)

Figure 2: Original image posted on JokoWidodo's Twitter, April 2021 (https://twitter.com/jokowi)

The visualizations of the new Indonesian capital are aesthetically appealing and may contribute to attracting investments for the project; however, they lack significant information. Notably, it is not apparent from these images who the designers are, which societal groups participated in conceptualizing the designs, whether they serve as formal plans or represent early-stage concepts, and what the realistic time frame or implementation costs entail. This concealed information is pivotal, as it influences viewers' comprehension of the plans and their implications for the country's future. Addressing this knowledge gap, communities can employ a method that can be referred to as 'urban visualization annotations', as elucidated in the following section.

Annotated urban visualizations

The urban visions disseminated in the public sphere frequently originate from those in positions of power, in many cases obscuring the needs and aspirations of marginalized and vulnerable societal groups (see Hendawy, 2022). This pattern is prevalent worldwide, particularly in contexts marked by centralized decision-making and top-down urban planning. In the field of computer science, Burns et al. (2021) emphasize the importance of rendering the invisible visible through the disclosure of metadata in visualizations. According to Burns et al. (2021), visualization biographies consist of metadata, which comprises information not directly observable in visualization but elucidates the genesis of the visualization or its current functionality. These biographies are crafted to unveil the invisible, offering additional context to enhance the understanding of visualization.

Building on these thoughts, I propose the implementation of 'urban visualization annotation' within the urban development field, similar to the idea of data biographies in computer science. Urban visualization annotation can be defined as an added deeper layer of information about publicly communicated city and urban visions. It is an additional, more profound stratum of information on the publicly communicated visions. This supplementary layer aids the general public in comprehending the context of the visualization and facilitates the expression of their diverse perspectives. Crucially, these annotations provide an alternative aesthetic gateway to diverse urban visions.

Similar to meta-information about data and biographies written about people, urban visualization annotations can encompass various information. For instance, some of the information that may be incorporated into an urban visualization annotation includes details about the envisioned project, such as who was or was not consulted in the design process, or information about the publicly communicated visualizations, such as the creators of the visualization, its history, the motivations behind their creation and the timeline of its creation. Additionally, an annotation layer might delve into how specific social groups, such as residents of slum areas, perceive, or do not perceive, themselves reflected in the project design and its visualization. The annotations are about communicating the information that may be clear to members of a specific society group but not others. As such, these annotations may incorporate maps, data, or photographs to present the perspectives of multiple societal groups.

Additionally, an urban visualization annotation could incorporate expert knowledge from within the community regarding features of the design and their potential impact, aspects that might be overlooked or disregarded by those in positions of authority. For instance, in the plans for the Indonesian capital, community members might observe that the plan fails to address the fate of individuals currently residing in the area, aligning with criticisms raised about the existing plan (Asia News Network, 2021). By collecting and disseminating such information, voices initially excluded from the process of envisioning the future gain a platform to identify, question, and "talk back" to those in power. Offering opportunities for dissent against power and data align with feminist theories of visualization (D'Ignazio and Klein, 2016).

Upon revisiting the visual imagery of the proposed Indonesian capital (Figures 1 and 2), various types of information are rendered invisible and lost. However, the potential benefits of making this information available through annotated urban visualizations become evident. Envisioning a scenario where individuals from the community can integrate their thoughts and questions directly into the image is crucial for a more inclusive representation.

In the image below, I abstractly show how a discussion may be

ignited through an urban visualization annotation, intending to stimulate readers' imaginations. The idea is to think about how images could be annotated to highlight information not inherently present in the images. This involves incorporating the perspectives of various societal groups to communicate information that may be evident to one community but not to another.

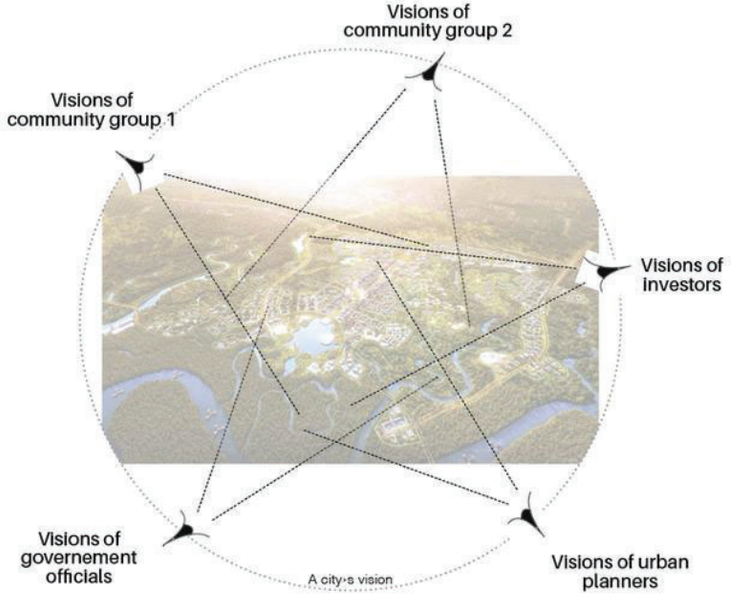


Figure 3: Copyright: Author, inspired from Hendawy 2022

It is crucial to emphasize that the example in Figure 3 is not the sole or optimal method to achieve the objective of urban visualization annotations. I suggest considering urban visualizations as a medium of communication representing multiple actor perspectives. In this context, urban visualization annotations may ignite dialogue around urban projects. The objective of this article is to initiate a discussion on the importance of rendering invisible urban information visible by incorporating the often-hidden information about urban projects and the perspectives of various stakeholders in the

urban visioning process of new cities. This inclusive approach aims to facilitate more informed decision-making in city development. Future research may use the urban visualization annotation to focus on what information can be communicated via them.

Urban visualization annotations for inclusive planning

As a counter-strategy against top-down planning and against exclusive urban visualizations that prioritize elite populations, as urban visualization annotations make invisible information visible, they could offer communities a mechanism to gather and disseminate information about visualizations created by elite powers, surpassing the details provided by the creators themselves. By providing a (visual) medium for diverse community groups to express their visions and integrate their thoughts and knowledge into the visualization, annotated urban visualizations could serve as a means for society groups to engage in a dialogue with the visualizations generated by bodies in power and the entities that crafted them. As such, allowing a way to question and "talk back" to positions of authority (i.e. the creators of urban projects and the visualizations (usually governing bodies)).

There exist several unresolved questions on urban visualization annotations that I aim to pose and leave open for discussion, thereby broadening the discourse on the subject. These questions encompass: What information should be incorporated? Who should contribute to the biography? What format should the biography assume? The answers to these questions are inherently context-specific and contingent upon factors such as the characteristics of the community, the context in which the visualization is promoted, and the nature of what is

being visualized. For instance, the inquiries addressed by urban visualization annotations for a single building may differ from those for an entire city plan. Moreover, communities with active internet or social media usage may prefer computer-generated or digital annotations, whereas those without digital access may opt for printed or handwritten annotations. At a fundamental level, urban visualization annotations should reflect the community aspirations in ways that top-down designs fail to do. They should actively coproduce and disseminate community-centric knowledge frequently excluded from one-way planning processes.

References

Asia News Network. The Phnom Penh Post.(2021, November 1).Indonesia Capital Bill Draws Concerns about Democracy. .https://www.phnompenhpost.com/international/indonesia-capital-bill-draws-concerns-about-democracy.

BBC News. BBC.(2019, August 24). “Changing Places: Why Countries Decide to Move Their Capitals”. https://www.bbc.com/news/world-49406700.

Burns,A., On, T., Lee, C., Shapiro, R., Xiong, C., & Mahyar, N. (2021). “Making the Invisible Visible: Risks and Benefits of Disclosing Metadata in Visualization.” To appear in the Proceedings of the 2021 Visualization for Social Good Workshop.

D’Ignazio, C. &, F. Klein, L.(2016). “Feminist data visualization”. Workshop on Visualization for the Digital Humanities (VIS4DH), Baltimore. IEEE.

D’Ignazio, C. &, F. Klein, L.(2020). “Data feminism”. MIT press.

De Vries, WT. (2021). “Urban Greening for New Capital Cities. A Meta Review”. Front. Sustain. Cities 3:670807. doi:10.3389/frsc.2021.670807 https://velvetescape.com/

Hendawy, M., Riad, R., Elgredly, S. H., (in press) Visual politics of a mediatized urban age: Tracing what the press news makes visible about urban planning — Case of the new administrative capital city in Egypt. Nature Cities.

Hendawy, M., 2022, Spatio-Visual Co-constructions: Communication and Digitalization of Urban planning in a mediatized world - Cairo as a glocal Case. Ph.D. Thesis, TU Berlin, defense date: 5 August 2021, Grade Summa Cum Laude

Hendawy, M. 2021a. “Imaging Power: Planning visualizations and the co-construction of spatio-visual injustice” [presentation].

Hendawy, M. 2021b. [In]visibilities: The Academic City versus Ordinary Cities - Mediatizing Planning Knowledge in Egyptian Universities. ARCHPLAN special issue with Prof. Patsy Healy as Guest Editor.

Hendawy, M. & Stollmann, J., 2020 The Entanglement of Class, Marriage and Real Estate: The Visual Culture of Egypt’s Urbanisation, Urban Planning Journal.

Hendawy, M. and Saeed, A. 2020, Beauty and the Beast: The Ordinary City versus the Media-tized City, Case of Cairo, Urbanisation journal

Irfan Gorbiano, Marchio, Karina M. Tehusijarana, and N. Ardi. The Jakarta Post, August 27, 2019. “Jokowi Picks East Kalimantan”. The Jakarta Post.https://www.thejakartapost.com/news/2019/08/27/jokowi-picks-east-kalimantan.html.

Lazar, D. (2005). “Capital Cities, Cultural Representation, And National Identities”. Berlin-Washington, 1800-2000: Cambridge: Cambridge University Press.

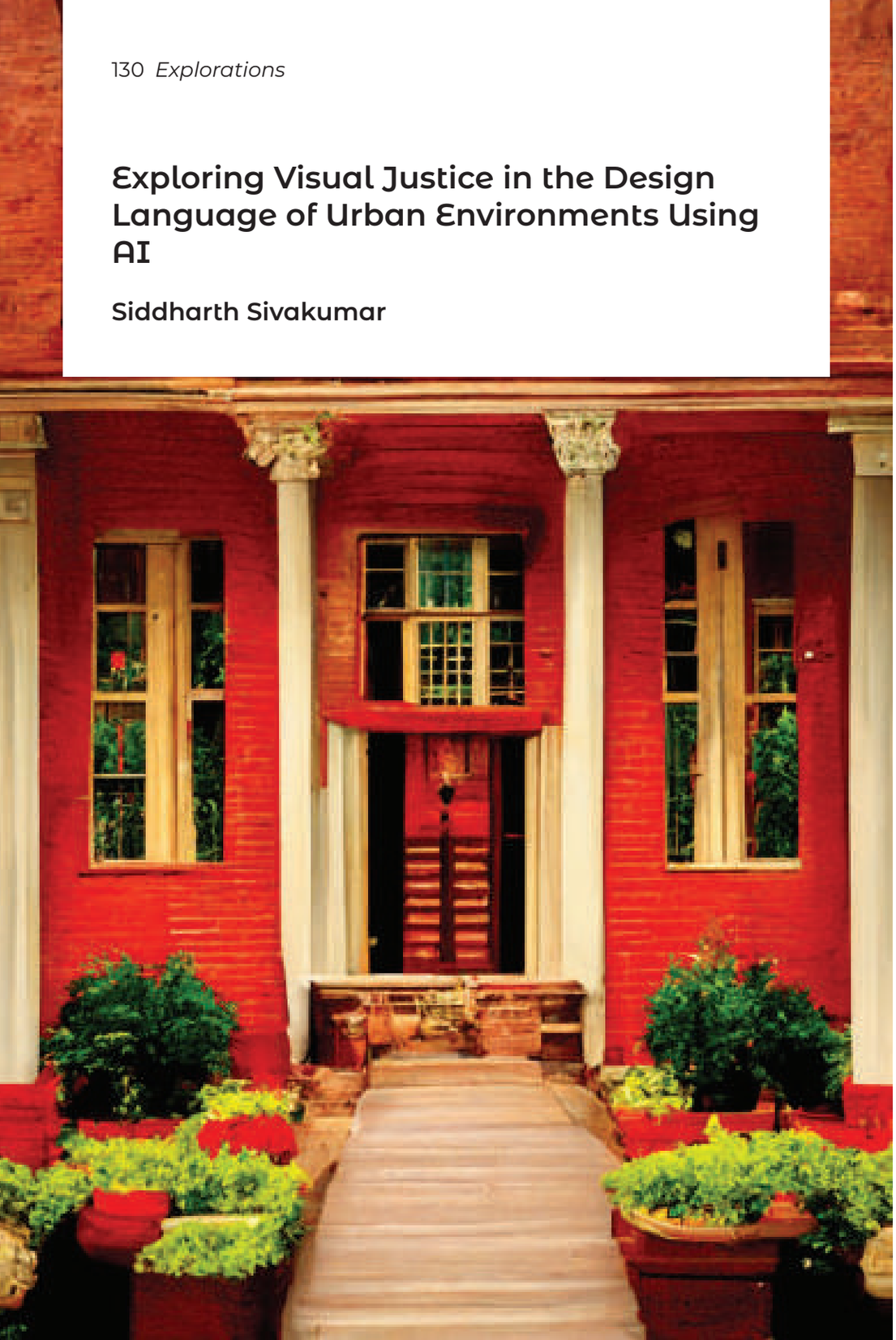
Van de Vuurst, P. & E. Escobar, L. (2020). “Perspective: Climate Change and the Relocation of Indonesia’s Capital to Borneo.” Frontiers in Earth Science 8 (2020): 5.

Acknowledgment

I would like to thank Tamara Al Masadeh for her assistance in formatting the article as a part of her internship at Impact Circles e.V. in Berlin.

Exploring Visual Justice in the Design Language of Urban Environments Using AI

Siddharth Sivakumar



A Language is formed when there are two basic constituents – a Lexicon and a Syntax. While the syntax of architectural design is well established through decades of professional practice in the post-war era, the vocabulary of design suffers from a plethora of choices magnified by the excesses accorded by the digital landscape. Clients and designers are motivated by personal tastes and compulsions which have in most cases engendered an incoherence in the urban landscape. For instance, A charming old pre-war neighborhood might find a neo-modernist structure in its midst that breaks the visual landscape. The appeal of several tourist destinations such as Savannah, Georgia, or Florence, Italy lies in their ability to project a unified visual image of the city. Redevelopment in the 60's has regrettably rendered many such areas void. While it can be argued that greater choice in design choices supports creative expression and individualism, visual coherence in urban design language is an absolute necessity to prevent "placelessness" and deterioration of 'neighborhood character". Design practice focused on equity must also consider the visual environment. Codes and Zoning are evolving to address these issues, but this can come at the cost of an existing character. This essay seeks to explore a new method to understand what may converge and then subsequently diverge to form distinct identities.

Two streets are selected to understand how different neighborhood characters may evolve – 21st Street in Midtown Sacramento, California (Figure 1) and Hirsch Street in Home Park, Midtown, Atlanta, Georgia (Figure 2). Several Buildings in each street are selected by conducting a walking audit and a deconstruction of their visual characteristics undertaken using standard architectural lexicon.

These are then used as rules in an architectural design exercise. To understand the potential of such an endeavor, the "Mid Journey" AI is used as an impartial objective judge in determining a conceptual output.

Figure 1: Mid Town Sacramento CA

Figure 2: Mid Town Atlanta, GA

Mid Journey is a proprietary Artificial Intelligence program that creates visual outputs from textual prompts and descriptions and is currently in the open beta phase. As such it provides an excellent use case for considering the translation of visual zoning codes found usually in the form of textual descriptions into unbiased architectural design concepts mirroring the building design process.

The Atlanta buildings present the following selected elements – red brick, extended front porches, and white window trims amongst others. These were selected since they were uniquely different elements as compared to the Sacramento buildings. The Sacramento buildings in the style of classic suburban American homes present colored wood sidings, brown shingled sloped roofs, and white window trims amongst other elements.

Figure 3

Therefore, a Hypothetical New Development in Midtown Sacramento (Fig. 5) differs significantly in output from a potential new development in Home Park, Midtown Atlanta (Fig. 3) based on the selection of façade elements from existing buildings in the neighborhoods to create a diverging urban character. It is interesting to note that this hypothetical development closely mirrors the design language of the oldest preserved buildings in the adjoining Georgia Institute of Technology campus. The building highlighted below is the 1928 Crum & Forster Building (Fig. 4) designed by the Architects who helped establish the Architectural Program at the school. It lends credence to the possibility of the architects of these buildings originally considering the historical Renaissance façade and urban character of the area during the construction of these houses.

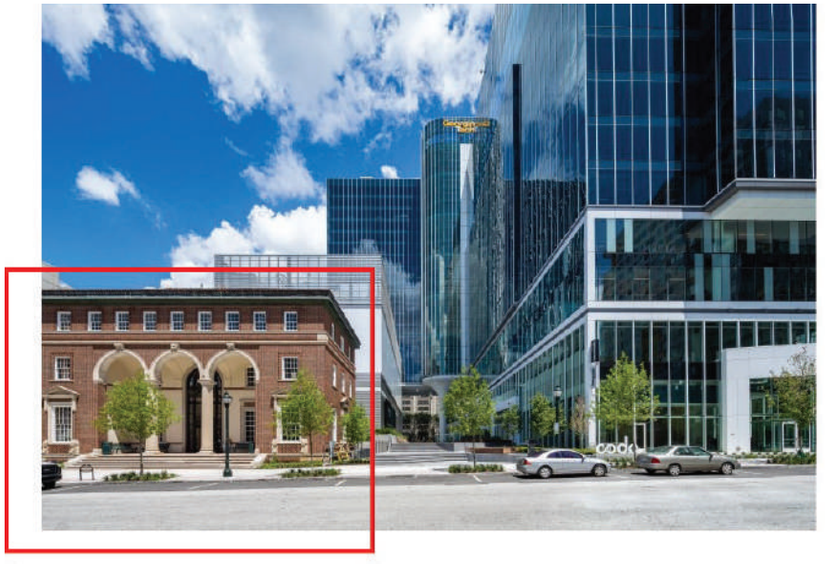


Figure 4

Figure 5

The architectural combination that is subsequently produced is interesting and shows that existing neighborhood characteristics can be used to include “visual guidelines” in zoning and other unified development codes. We find further refinement with every subsequent redevelopment can assist in the creation of neighborhoods with a coherent and unified urban facade landscape and more importantly an identity.

Urban Renewal and Heritage: Realizing the urban regeneration and cultural diversity through the exploration of streets at Kreuzberg, Berlin.

Mahlaqa Fahami, an aspiring architect living in Berlin, holds a Master's Degree in Heritage Studies from Brandenburg University of Technology, Cottbus-Senftenberg. She has participated in several international design competitions and recently was awarded the 3. *Diesing Preis* in Architecture in the 169th annual AIV-Schinkel Competition in Germany. Currently contributing her skills as a full-time architect to a Berlin-based Landscape and Urban Design office, Mahlaqa's works reflect her passion for public space design. Her academic pursuits have been focused on the intersection of cultural heritage and open-space planning, greatly influencing her recent research works.

This photo essay is focused on an explorative experience in the Kreuzberg neighborhood from U Kottbuser Tor to Leigendamm, Berlin, Germany where the historical and contemporary elements are re alized. According to UNESCO (2021), the term cultural heritage encompasses several categories of heritage such as, tangible and intangible. With this photo essay, we will briefly look through some of the tangible and intangible heritages of this neighborhood which have been playing an essential part in building its urban character. The presence of historic buildings, installations, and monuments represent the past of Berlin before and after the World War II. Most interestingly, the lives and cultures of different migrant communities, such as the Turkish immigrants have played an important part in creating such elements in this area. The arts, buildings, courtyards, and urban spaces have equal participation from the immigrants who have shared their culture in this part of then-West Berlin. Moreover, Internationale Bauausstellung (IBA) architects such as, Hardt Waltherr Hämer, Heide Moldenhauer and many others - came forward with careful urban renewal strategies during 1984/87, to not disperse the residing migrant community from the neighbourhood. Some of their works are still visible there. Lastly, the punk rock culture, the contemporary "multiculti" character of Kreuzberg is prevalent in the vicinity of this neighborhood. Urban renewal, as well as historic buildings and cultural di versity that symbolizes modern Kreuzberg to us, are noticed by the author of this essay, through the method known as "dérive: the exploration of a place or neighbourhood by walking on one's own or in small groups of two to three" (Debord, 1958). The walking is influenced by the Serial Vision technique by Gordon Cullen (1961) where each image is taken and visualized and noted on the map. The even progression of the walking is noticed with surprising features and changes in the area with multi-cultural dominance. From the first gen trifying divider mixed-use building Neues Kreuzberger Zentrum (NKZ) to the Kunst Quartier Bethanien, the different layers of urban renewal and heritage are observed in this exploration to comprehend the relationship between regeneration and cultural diversity in Berlin.

01 The Figure Ground Map. The position of the walking through the figure ground map is noted by letters „a to t“ to better understand the author’s perspectives. The author has used the color “red” in the captured photos to focus the point of interests. This self-explorative walking with photos on specific points makes us realize the link between the past and the present in Urban Renewal and heritage-making at Kottbuser Tor, Kreuzberg, West Berlin.

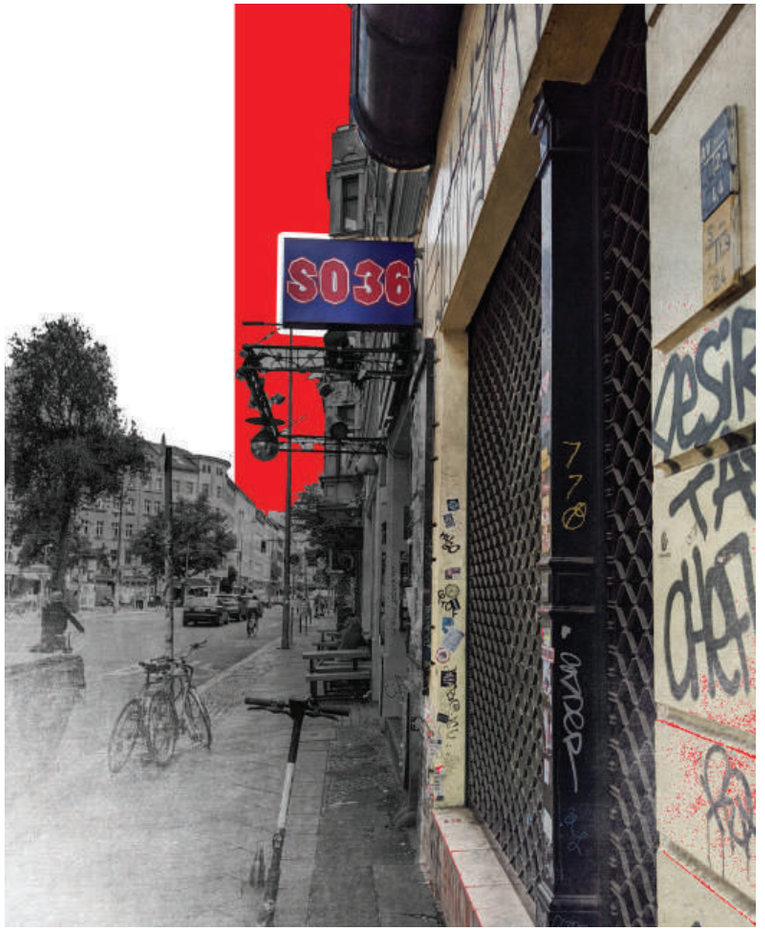
“The even progress of travel is illuminated by a series of sudden contrasts and so an impact is made on the eye, bringing the plan to life (like nudging a man who is going to sleep in church)”
- Gordon Cullen, The Concise Townscape, 1961

02 The Neues Kreuzberger Zentrum (NKZ).

The walking journey starts from point a which is noted on the figure-ground map at Adalbertstrasse, Kottbuser Tor in front of the NKZ that was built as a „noise barrier“. This mixed-use development once was the first symbol of renewal in Kreuzberg with an intention to disperse the working population and welcome gentrification. The building changed from “an utopian beacon into a dystopian nightmare“ (Failed Architecture, 2021) over time. If one goes beyond this building, he/she can experience a different side of Berlin with multiculturism.

03 Turkish Food Restaurant under NKZ at point a to b.

The neighborhood is popular for its Turkish cuisine and grill houses. The present multiculturism at Kreuzberg is the result of the amalgamation of the migrant communities after their entry as labor workers in West Berlin during the 1960s. The way they have shared their cultural elements and created their own transnational identity - shows us that culture and heritage have immense power to establish a sense of belonging to a place. During city renewal, these cultural features play an important role to recognize a place's urban character.



04 The SO36.

The second turn is taken on points b to c at Oranienstrasse. Here the origin of punk rock music SO36 from the 1970s is experienced. The name has been taken from the postcode Südost (SO) 36 of the neighborhood. The presence of rock culture tradition with young population is prominent in this urban space.

05 The "Am Haus".

Moving a bit forward at Oranienstrasse, the mural art of Turkish words on „AmHaus"by the Turkish female artist Ayse Erkmen (1949-) is found. It was installed in 1994 to represent the peculiarity of the language in the young generation of Turkish in Germany, who take German as their main language (amidst interpretation, 2012).

06 Graffiti on a residential building at Naunynstrasse.

Kreuzberg is famous for its mural art and graffitis, and the introduction to the Turkish mural arts showcase the cultural diversity in the neighborhood. The neighborhood also has graffitis on the punk rock culture on the urban facade. One such example is observed during the walking on point-i at Naunynstrasse.

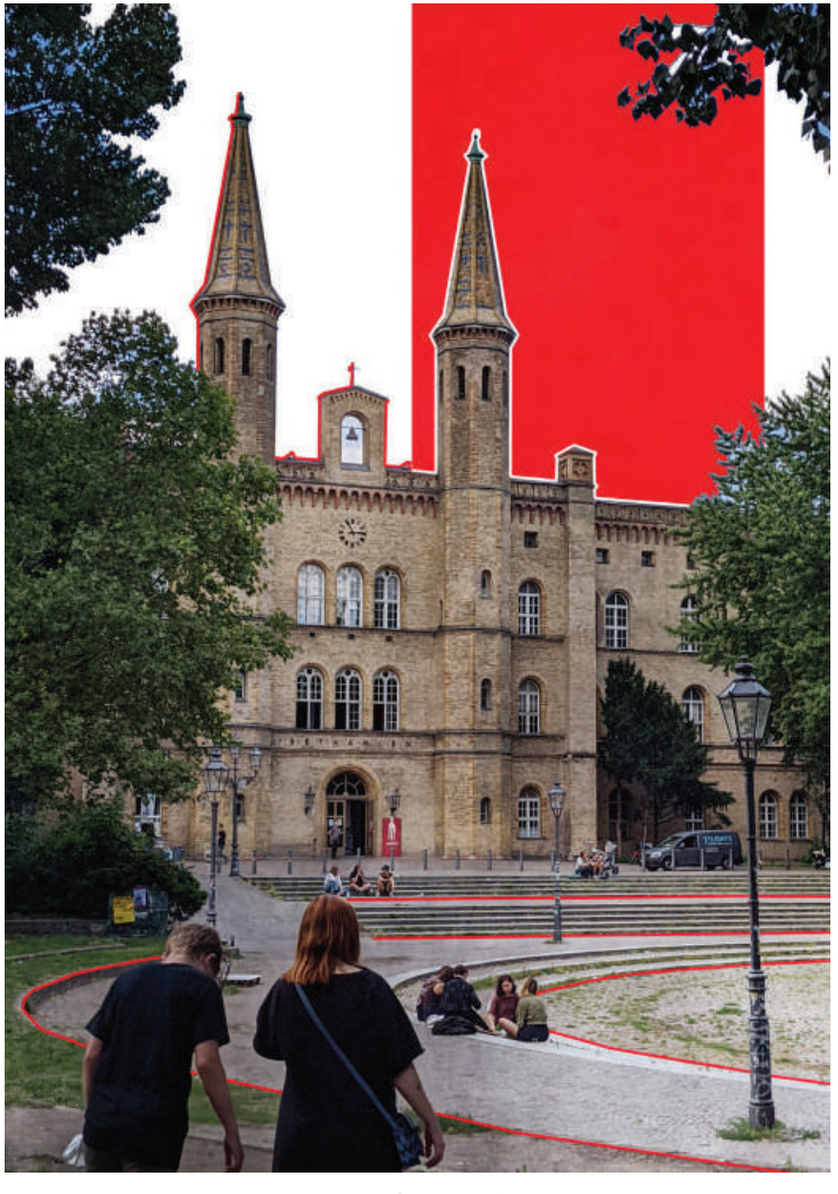
Yeter's work is composed of humans made out of colorful three-dimensional tiles shown in everyday life scenes with a twist of unfamiliarity.
- Esra Akcan, Migration, Citizenship, and the Urban Renewal of Berlin-Kreuzberg by IBA-1984 / 87, pp. 236.

07 The mural art on 76/78 blocks by Hanefi Yeter at Adalberstrasse.

From point c to f, courtyard spaces, typical housings with residents from different communities are observed on the walk. At the start of point h to i at Adalbertstrasse, the 76/78 blocks are observed where some major renovation works were conducted by IBA Altbau team with Hardt-Waltherr Hämer as the planning director in the 1980s. The blocks were renovated with the community's participation. Architect Moldenhauer initiated some extraordinary works such as murals, community hof spaces, and Kita, in this area. One such mural work was created by Turkish artist Hanefi Yeter at the request of Moldenhauer (Akcan, 2018). This mural is still prevalent on the renovated block at Adalbertstrasse.

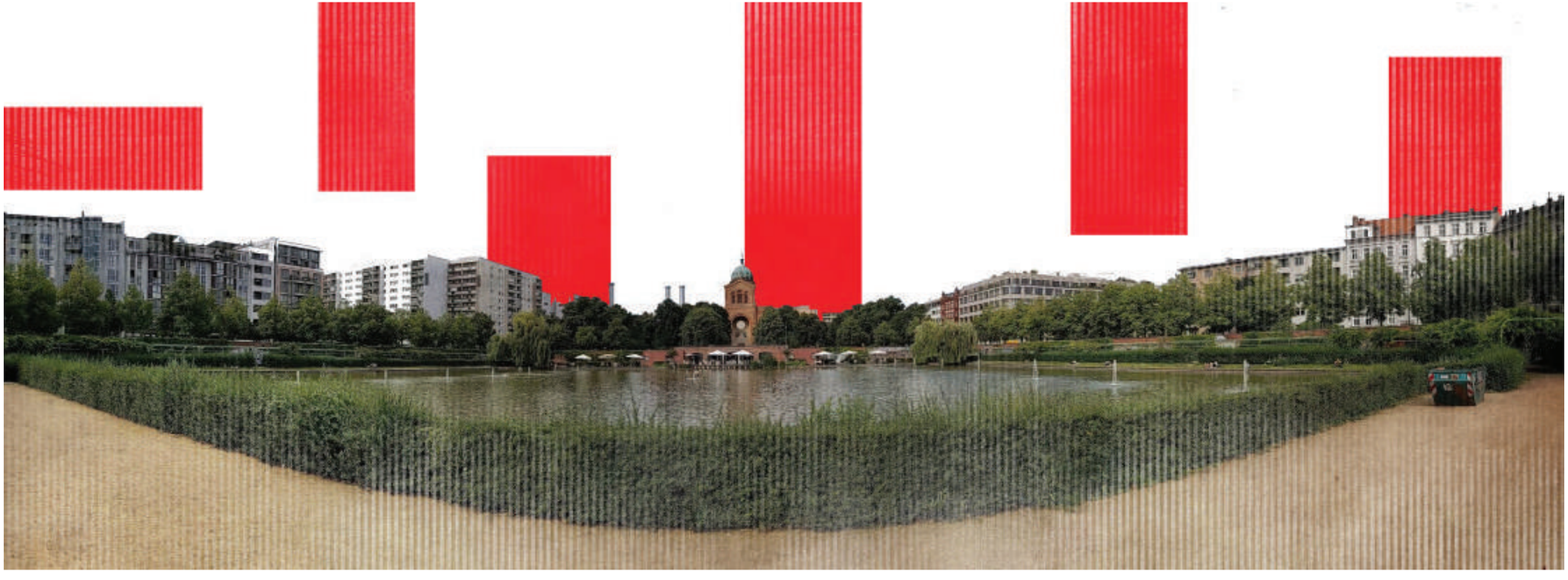
08 The cinema exhibition behind the Bethanien.

When coming towards the Waldemarstrasse, the cinema exhibition is noticed by the author with a large stage and lighting. Going forward to the Mariannenplatz the Kunstraum Kreuzberg/Bethanien is found in point j-k on the map. Bethanien is one of the oldest buildings and hospitals in Kreuzberg built around 1846 (3schwestern, 2021). Now the building and its open spaces are used for cinema, music school, art exhibitions, and restaurants. The most interesting matter about this historic old building is - it has added a different perspective to the Kreuzberg neighborhood with the artistic character to the community people.



09 The Kunstraum Kreuzberg/Bethanien.

(Exhibition space, movie screening, artists' workspace)



10 St. Michael's Church.

After crossing the l-o point on the map, at Legiendamm, the author was surprised by the view of the Engelbecken park and the vista of the St. Michael's Church, designed by architect August Soller. The water body within the park space and the view of a modern restaurant with the historic church as the backdrop provide one with an intriguing feeling of old and new. The current gentrification is somehow comprehensible on the scene with the new modern buildings alongside the waterbody.

11 The KinderHaus at Dresdener Strasse.

Coming to the end of the walking, on point q to r, at Dresdener Strasse, a parking garage turned into Kita-*KinderHaus,* was observed. This is designed during the IBA Altbau's careful renewal. This project is considered one of the most successful conversion projects in Berlin and bears the history of urban renewal after the fall of the Berlin wall at West Berlin (internationale-bauausstellungen.de, 2020).

From point r-s-t, the journey brought us back to the Kottbuser Tor again.

12 A photo collage on the heritage and renewal at Kreuzberg, Berlin

This photo essay is a brief attempt to represent the multicultural heritage of this small neighborhood of Kreuzberg district in Berlin and how it has evolved throughout the urban renewal process. At the end of the walking exploration,the strong presence of immigrant communities' culture, punk rock heritage, music, art, murals, historic monuments are observed in every part of this neighborhood. However, the present trend of gentrification is hampering these cultural elements. Whereas, urban renewal should always respect the community, and their heritage that creates a sense of belonging to the place. In the case of Kreuzberg – the district also requires such a careful approach to the current urban development process that keeps the heritage making process alive and visible in the neighborhood.

References

Akcan, E. (2018). Open Architecture Migration, Citizenship and the Urban Renewal of BerlinKreuzberg by IBA 1984/87 (1st ed.). Walter de Gruyter GmbH.

amidst interpretation. (2012). Am Haus. Amidst Interpretation. Retrieved 3 October 2022, from https://amidstinterpretation.wordpress.com/2012/04/04/am-haus/.

Cullen, G. (1961). The Concise TOWNSCAPE (1st ed.). Routledge.

Failed Architecture (2021). FA Workshop: Berlin's Neues Kreuzberger Zentrum - Failed Architecture. Failed Architecture. Retrieved 6 October 2022, from https://failedarchitecture.com/events/fa-workshop-berlins-neues-kreuzberger-zentrum.

internationale-bauausstellungen.de. (2020). Kindertagesstätte Dresdener Straße // Ein Parkhaus wird zum Kinderhaus | IBA. internationale-bauausstellungen.de. Retrieved 2 October 2022, from https://www.internationalebauausstellungen.de/geschichte/1979-1984-87-iba-berlin-die-innenstadt-alswohnort/kindertagesstaette-dresdener-strasse-ein-parkhaus-wird-zum-kinderhaus.

UNESCO. (2022). Definition of the cultural heritage | United Nations Educational, Scientific and Cultural Organization.. UNESCO. Retrieved 8 October 2022, from http://www.unesco.org/new/en/culture/themes/illicit-trafficking-of-cultural-property/unescodatabase-of-national-cultural-heritage-laws/frequently-asked-questions/definition-of-the-culturalheritage.

Debord, G. (1958). Situationist International Online. Cddc.vt.edu. Retrieved 1 August 2022, from https://www.cddc.vt.edu/sionline/si/theory.html.

3schwestern. (2022). Bethanien – 3 Schwestern. 3 Schwestern. Retrieved 1 October 2022, from https://www.3schwestern.com/bethanien.

Inside El Salvador, San Miguel CENTRO URBANO DE BIENESTAR Y OPORTUNIDADES (CUBO)

Dr. Juan Antonio Sorto earned his PhD in Urban Planning and Environmental Policy from Texas Southern University. He is currently a Post Doctoral Research Fellow at the Bullard Center for Environmental Justice and Climate Change at Texas Southern University. His research interest are public participation, housing, environmental and climate justice, and policy. He is currently leading an ethnographic research in El Salvador through the Bullard Center and Gerardo Barrios University in San Miguel, El Salvador to determine how public participation can lead to the creation of a capacity plan in an undeveloped nation that will allow the community to address environmental and climate issues.

Governments in Latin America and Mexico have used different types of design and placemaking models to address systemic social inequities impacting urban and rural communities. For example, in 2016, the Government of Medellin, Colombia created the Medellin Model program, which uses modern architecture to create sustainable buildings in low-income communities and improve public transportation (Díaz, 2019). In 2018, the Mexico City government found partners within the architecture field willing to advance their Points of Innovation, Freedom, Art, Education, and Knowledge (PILARES) program to address inner city youth development by constructing buildings that were welcoming to the targeted audience (Zatarain, 2022).

In 2021, El Salvador's President Nayib Bukele inaugurated several urban community spaces known as Centros Urbanos de Bienestar y Oportunidades (CUBO), which translates to Urban Wellness and Opportunities Centers. Following the same concept as Medellin and Mexico City, CUBOs were placed in areas known to have an elevated level of inequality through the lack of economic opportunities and education combined with highs level of crime. For the CUBO in San Miguel, El Salvador located inside the neighborhood of Colonia Milagro de La Paz, the building was designed and built using modern architectural features, including solar panels and ecofriendly materials to sustain the building. The building functions as a library, computer lab, kitchen, and a space to learn and practice other trades, which are designed to bring the community together. Images show the design and usage of CUBO San Miguel, El Salvador. All images were taken on February 11, 2022.

Top Left: Welcome sign: CENTRO URBANO DE BIENESTAR Y OPORTUNIDADES (CUBO).

Bottom Left: Front of the Building.

Right: Water tower next to a ramp designed for people with disability to access the second floor.

Top Left
Two police officers using Wi-fi. There is a police station on site.

Top Right
Doors to the entrance of the building are operated by solar energy.

Bottom Left
Two patrons using the facility as a meeting place.

Bottom Right
A large teddy bear next to a sign that reads Area De Lectura (Reading Zone).

Top: Two workers next to the bookshelves and computer station.

Middle: Kid play zone with two large screens and video game consoles.

Bottom: Activity board highlighting past and future events inside CUBO.

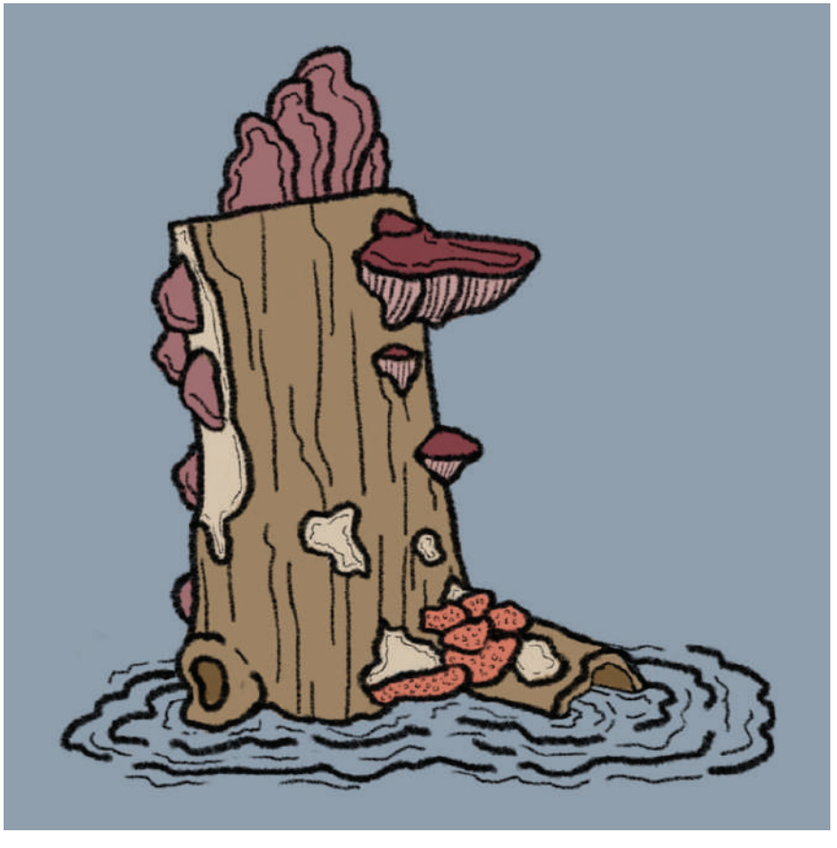
References

Díaz, L. S. (2019). *INFRASTRUCTURAL PROJECTS IN MEDELLIN'S INFORMAL SETTLEMENTS, COLOMBIA: Medellín Model: Infrastructural projects in informal settlements*. Retrieved from Critical Perspectives on International Planning: https://sites.utexas.edu/internationalplanning/case-studies/infrastructural-projects-in-informal-settlements-medellin/

Zatarain, A. K. (2022, June 23). *The PILARES Program Seeks to Bring Beautiful Design to Mexico City's Neglected Neighborhoods*. Retrieved from ArchDialy: https://www.archdaily.com/984135/the-pilares-program-seeks-to-bring-beautiful-design-to-mexico-citys-neglected-neighborhoods

Planning as Fungi do: A review of *Entangled Life: How Fungi Make our Worlds, Change our Minds and Shape our Futures*

Jorge Antonio Losoya was born and raised in Del Rio, Texas along the Texas - Mexico border. He holds a M.S. in Community and Regional Planning and M.A. in Latin American Studies from the University of Texas at Austin. He currently works in state-led disaster recovery planning. His research interests surround disaster recovery, hazard mitigation, emotional landscapes, Latinx geographies, and artistic methodologies.



Above floodwaters. Artwork by Losoya

In *Entangled Life: How Fungi Make our Worlds, Change our Minds and Shape Our Futures* (2020), Sheldrake takes us into the world of fungi where planning scholars can expect refreshing perspectives from non-human organisms. Sheldrake's storytelling proves to be a captivating lesson on fungal biology, detailing their intimate entanglements with the human world. Through each chapter, the author challenges us to think as fungi do. The book asks planning scholars to unsettle their human-centered concepts and engage with the more-than-human world. *Entangled Life* offers thoughtful insights through an exploration of fungi's agency and resilient nature, which planners interested in social-environmental landscapes, placemaking, and interdisciplinary scholarship may find useful.

The author uses anecdotes from his time as a biologist to illustrate the ways fungi affect our thinking, feelings, and behavior. In the first chapter, he uses truffle hunting to frame fungi as active beings who interpret their environments, explaining how smell links the human world to the fungal one. Chapter 4 investigates psilocybin testing and fungi's influence on the human and non–human mind. Some of the transformative and grassroots movements are explored in chapter 7 through the author's experience with radical mycologists. Each story mixes biological explanations with lessons for understanding our world.

Sheldrake's telling of the dynamics of truffle hunting establishes fungi as agents of the landscape who utilize the lure of smell to influence animal and human behaviors in the hills of Bologna, Italy. In describing the sophisticated behaviors of fungi, Sheldrake asks us to rethink our attitude toward non-human organisms. Here Sheldrake poses an important question to readers that may lead us to broaden who we plan for and with:

> Might we be able to expand some of our concepts, such that speaking might not always require a mouth, hearing might not always require ears, and interpreting might not always

require a nervous system? (p. 42)

With this question in mind, how can planners shift their thinking away from human-centered perspectives of the landscape they shape? What are other ways of participation? If planners are to grapple with fungi as collaborators, what could they learn from fungi? For Sheldrake, the possibilities of collaborating with fungi allow planners to imagine new meaningful ways to engage with the human and non-human world. *Entangled Life* thus asks planners to stretch their concepts and disciplinary boundaries to visualize a more complete and entangled space that includes both human and non–human participants.

In Chapter 2, Sheldrake introduces mycelium, which he describes as "a map of a fungus's recent history and is a helpful reminder that all life - forms are in fact processes not things" (p. 53). Mycelium is further explored in chapters 5 and 6 where he describes its role in brokering relationships in ecosystems. For planners, then, mycelium may offer ways to conceptualize communities' placemaking activities. For example, when considering the possibility of mycelium retaining a sense of memory (p. 47), one may then imagine a community's mycelium as a hidden network inscribing memory on the landscape. Mycelium thus reminds planners that belonging is rooted deeply in the landscape, memory, and more–than–human relationships. And that community is a process, not a thing.

Sheldrake makes fungi's persistence incredibly clear in Chapter 3 when he describes the extremophile lives of lichens and in chapter 5 which details fungi's long existence on Earth. What then can planners learn about this resiliency and persistence from fungi? They can learn from fungi's restorative power in ecosystem remediation (p. 185) or from the fungal ability to catalyze radical transformation and partnerships from the ground up (p. 186). Planners may also learn from fungi's capacity to thrive in disturbed landscapes, like truffles (p. 43) or matsutake (Tsing, 2015). As flexible, and collaborative organisms, fungi challenge planners to foster synergetic relationships across species and disciplines to imagine extravagant futures detached from systems of oppression.

While Sheldrake is not the first to recount our entanglements with fungi (Tsing, 2015; Hathaway, 2022), his book is a well-crafted introduction for planners unfamiliar with these curious organisms. Although imaginative, the author is also cautious in his arguments, reminding readers of the dangers of anthropomorphizing and romanticizing more-than-human relationships (p. 210). Readers should not expect grand solutions to planning challenges from the lives of fungi but instead be led to sprouting new questions whose solutions lie outside their boundaries.

Entangled Life is a thought-provoking book for planning scholars interested in discussions on knowledge production, queer ecology, and non-human agency. Planners who want to understand the more-than-human relationships in the spaces they engage with or those looking for new metaphors for understanding the world should read Entangled Life. I recommend this reading for planners eager to wander beyond traditional planning limits to spaces that allow them to unmake and recreate new worlds as fungi do.

Book Citation

Sheldrake, M. (2020). *Entangled life: how fungi make our worlds, change our minds & shape our futures*. Random House.

References

Hathaway, M. J. (2022). *What a Mushroom Lives For: Matsutake and the Worlds They Make*. Princeton University Press.

Tsing, A. L. (2015). *The Mushroom at the End of the World*. Princeton University Press.

Professional Reports and Theses by 2022-2023 MSCRP Graduates

Spring 2022

MAKING "PLEXIBLE" PROJECTS POSSIBLE: ADDRESSING BARRIERS TO STACKED FLATS IN AUSTIN
Courtney W Banker

PRODUCING ABOLITION: PUBLIC SPACE AND PROTEST IN SEATTLES BLACK LIVES MATTER MOVEMENT
Tony Bissiri

SPATIOTEMPORAL CLIMATE RISK VULNERABILITY ASSESSMENT TO EXTREME HEAT AND PARTICULATE MATTER: COMBINING REALTIME CONCENTRATION OF DE FACTO POPULATION
Seung Jun Choi

THE GREENING OF THE CITY: DEVELOPMENT AND APPLICATION OF A BIOPHILIC URBANISM FRAMEWORK TO NEIGHBORHOOD DEVELOPMENT IN AUSTIN, TEXAS
Brittany Faulkner

IDENTIFYING CHALLENGES IN USING COMMUNITY LAND TRUSTS TO PROVIDE LONG-TERM AFFORDABLE HOUSING IN AUSTIN, TX
Jessica Gay

ADDRESSING LONG-TERM POPULATION LOSS AND ABANDONMENT: TWO CASE STUDIES FROM THE GREAT LAKES
Joshua Goldberger

MAKING TOD EQUITABLE: A GENETIC ALGORITHM APPROACH
Aodhan Hemeon-McMahon

WHEN NEIGHBORS PREPARE TOGETHER: AN ANALYSIS OF EMERGENCY PREPAREDNESS EFFORTS AT THE NEIGHBORHOOD SCALE
Jessica Marie Jones

PLANNING HEALTHY CITIES FOR IMMIGRANT POPULATIONS
Yuhana Khan

A NEW REPUBLIC OF THE NGOS? EVALUATING THE POST-BLAST NGO-LED RECOVERY OF BEIRUT
Rand Makarem

THE EASTERN CRESCENT AND BEYOND: THE CURRENT STATE OF AND POTENTIAL FOR LOCAL FOOD PRODUCTION AND MULTIFUNCTIONAL AGRICULTURE IN THE AUSTIN-ROUND ROCK-GEORGETOWN PERI-URBAN FRINGE
Veronica Y Romero

A REVIEW OF PEDESTRIAN, CYCLIST, AND MICROMOBILITY USER SAFETY IN THE AUSTIN WEST CAMPUS NEIGHBORHOOD
Wesley Tsai

ANALYZING THE REAL-WORLD IMPACTS OF THE USE OF COMMUNITY GARDENS AND URBAN AGRICULTURE
Aspen Wilkins

ENVIRONMENTAL JUSTICE SPATIAL ISSUES: ANALYSIS OF AUSTINS PUBLIC SCHOOLS AND THEIR PROXIMITY TO ENVIRONMENTAL HAZARDS
Ottilia A Willis

The University of Texas at Austin Community & Regional Planning

ASSESSING POWER DISRUPTION DISTRIBUTION, SOCIAL VULNERABILITIES, AND ENERGY SECURITY IN TEXAS COUNTIES (2016-2020)
Kelsey Wingo

Summer 2022

EQUITY EVALUATION IN HUD DISASTER RECOVERY PROGRAMS
Sidney Beaty

DO MINIMUM PARKING REQUIREMENTS MATTER?
Stephen N Jones

IMPLICATIONS OF THE TEXAS MAIN STREET PROGRAM: CASE STUDIES OF THE FOUR-POINT APPROACH
Morgan L Lee

RURAL MOBILITY CHALLENGES: AN ANALYSIS OF NINE RURAL MOBILITY-AS-A-SERVICE TRIALS IN JAPAN
Minori Matsuzawa

FINDING AN OASIS IN THE DESERT: A FOOD DESERT ANALYSIS OF FUTURE LIGHT RAIL STOPS AND THEIR SOLUTIONS
Philip A Randall

A PLANNING TOOL OF EQUITY TRANSIT-ORIENTED DEVELOPMENT (ETOD): EVALUATING, CLASSIFYING, AND OPTIMIZING TRANSIT STOP IN AN EQUITABLE PERSPECTIVE IN AUSTIN, TEXAS
Yingrui Zhao

Fall 2022

INCORPORATING DISASTER RESILIENCE AND MITIGATION PRACTICES INTO TRANSPORTATION PLANNING IN THE UNITED STATES
Victoria Byrne

SO YOU WANT TO SELL YOUR BACKYARD: AN ANALYSIS OF SMALL-SCALE DETACHED CONDOMINIUM DEVELOPMENTS IN AUSTIN, TX
Kaileen McHugh

Spring 2023

CLIMATE CHANGE PLANNING & ACTION IN THE #CAPITALOFCAPITAL: EVALUATING MIAMI'S CAPACITY FOR CLIMATE JUSTICE
Sophia Aitken

LANDSCAPES OF CARE: YOUTH PERSPECTIVES ON GENTRIFICATION AND DESIRED GEOGRAPHIES IN AUSTIN, TEXAS
Gaby G Benitez

COVERED IN ADS?: THE EQUITY IMPLICATIONS OF ADVERTISEMENT-FUNDED TRANSIT INFRASTUCTURE
Victor Allan Butcher

DECARBONIZING AUSTIN: STRATEGIES TO INCREASE EQUITY IN SOLAR ADOPTION
Olivia C Corless

FUNDING OUR FUTURE 35: AN ANALYSIS ON THE COMPATIBILITY OF VALUE CAPTURE FINANCING WITH A HIGHWAY REDESIGN PROJECT
Andie Duong

KEEPING THE LIGHTS ON: PREVENTING SMALL BUSINESS DISPLACEMENT IN AUSTIN'S EAST RIVERSIDE NEIGHBORHOOD
Katie Enders

NATECH RISK AND AN EXAMINATION OF HOUSTON'S NATECH VULNERABILITY
Natasha Lynn Gaskill

AGING FRIENDLY IN ADUS: LESSONS DRAWN FROM AUSTIN AND LOS ANGELES
Samuel Chase Gonsoulin

INTEGRATING RESTORATIVE AND REPARATIVE PLANNING CONCEPTS INTO HIGHWAY REVISIONING PROJECTS: REIMAGINING I-35 IN AUSTIN, TEXAS
Mollie Hinderaker

COMPARATIVE ANALYSIS OF HOUSTON, TEXAS AND NEW YORK CITY, NEW YORK'S INCORPORATION
Katherine Linda Pietsch Koslan

SOCIAL NETWORKS FOR LANDSCAPE-SCALE CONSERVATION IN THE TEXAS HILL COUNTRY
Whitney B Linder

DEMOCRATIZING MOBILITY AND ACCESSIBILITY IN AMERICAN COMMUNITIES: TRANSPORTATION DEMAND MANAGEMENT AND UNIVERSAL DESIGN APPROACHES
Franky Cabardo Mabalatan

AN ANALYSIS OF THE RACIAL GEOGRAPHY OF AUSTIN POLICE DEPARTMENT TRAFFIC STOPS IN 2020
Matthew Mejia

PLANNING FOR SMART SAFE ROUTES TO SCHOOL; LEARNING CASE OF GEORGIAN ACRES COMMUNITY HUB FOR SMART MOBILITY, AUSTIN, TEXAS
Naomi Nelson

PARTICIPATORY BUDGETING'S CONTRIBUTIONS TO ENVIRONMENTAL JUSTICE: EVALUATING GREEN PROJECTS FUNDED THROUGH GREENSBORO PB
Maggie G Nemetz

CAUSES OF DISPLACEMENT: A LOOK INTO THE STATE OF PUERTO RICO'S HOUSING CRISIS BEFORE, DURING, AND AFTER HURRICANE MARIA
Charmelis Antonia Reyes

UTILIZING ADAPTIVE REUSE TO BALANCE COMMUNITY DESIRES AND ECONOMIC NEEDS A CASE STUDY OF OLD TAYLOR HIGH, TAYLOR, TEXAS
Nora Leigh Roy

HOW PARKS AND RECREATION SYSTEM MASTER PLANS ARE ADDRESSING DISPLACEMENT IN GENTRIFYING CITIES
Estrella Isabel Sainburg

INVISIBLE BARRIERS: UNDERPASSES AS A HIGHWAY LEGACY
Tetyana Samiliv

JUST THE TICKET: THE ROLE OF ACTIVISM IN SHAPING AUSTIN'S FUTURE LIGHT RAIL SYSTEM
Jonathan Shuster

CHALLENGING THE LAND USE PLANNING STATUS QUO IN THE AUSTIN METRO AREA
Kayla Michele Smith

EXPANDING THE MIDDLE: CREATING A MORE INCLUSIVE DEFINITION FOR MISSING MIDDLE HOUSING
Olivia Sullivan

COOPERATIVES AS VEHICLES FOR COMMUNITY AND ECONOMIC DEVELOPMENT: A CASE FOR ALTERNATIVE OWNERSHIP AND EXPANSION OF THE SOLIDARITY ECONOMY IN AUSTIN, TEXAS
Shaw Alexander Vallier

BIG CIVIC ENERGY: SOCIAL CONNECTEDNESS DURING THE COVID-19 PANDEMIC IN AUSTIN, TX
Krista Michelle Weatherford

Summer 2023

STUDENTIFICATION IN AUSTIN, TEXAS: (RE)DEVELOPING WEST CAMPUS
Edwin Bautista

AN ETHNOGRAPHIC ACCOUNT ON MINHA CASA MINHA VIDA'S AFFORDABLE HOUSING POLICY
Matt Bechtlufft

MUNICIPAL CLIMATE ACTION PLANNING: BARRIERS AND BEST PRACTICES
Jessica Diane Young

NURTURING REST THROUGH PARK PLANNING: EXPLORING HOW PARKGOERS OF DIFFERENT GENDERS PRACTICE RESTFUL RECREATION IN THE GREAT LAWN OF ZILKER METROPOLITAN PARK IN AUSTIN, TEXAS
Gabriele Huffman

PUBLIC LAND FOR PUBLIC GOOD: LEVERAGING CITY-OWNED PROPERTY TO CREATE AFFORDABLE HOUSING IN AUSTIN, TEXAS
Jonathan William Lee

RECONCILING WITH THE MONTOPOLIS NEIGHBORHOOD THROUGH RESTORATIVE PARTICIPATORY PLANNING AND COMMUNITY-LED AGENDA SETTING
Oriana Lopez

CLIMATE IMPACTS AND FOOD SYSTEMS PLANNING: AUSTIN FARMS RESILIENCE TO HEAT AND DROUGHT
Gabrielle Patracuolla

THE POTENTIAL EFFECTS OF COMMUNITY HUB FOR SMART MOBILITY (CHSM) ON TRAVEL MODE CHOICE FOR ACCESSING TRANSIT: A CASE STUDY OF AUSTIN, TX
Marsha Phillips

PARTICIPATION IN THE CITY OF AUSTIN'S BUDGET PROCESS: MOTIVATIONS, PROCESS, AND EFFICACY
Rhys Rudolph Edwa Rea-Tucker

THE COST OF WATER: A STUDY OF HOW SOCIOECONOMIC FACTORS IMPACT WATER BILLS IN AUSTIN, TEXAS
Carrie Smith

Planning Forum UT

Get in touch with: planningforum@austin.utexas.edu
sites.utexas.edu/planningforum