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Orientation of Alley Landscape Development in the Context of Urbanization and Climate Change in Gò Vấp, HCMC, Vietnam

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ABSTRACT

As the defining urban features of Hồ Chí Minh City, Việt Nam, the alleyway represents an important nexus of intervention for climate change adaptation as well as urban renovation to improve inhabitants' daily lives. This article aims to lay the theoretical groundwork for looking at the alley space as a concept belonging to structural-functional school in order to identify its features and functions with particular attention to its role in the context of climate change and rapid urbanization. The concept is examined through the study of the alley space via primary research consisting of a description of the alleyways in Gò Vấp District and interviews of inhabitants and users of these spaces on the condition of the alleyways. Additionally, secondary research on the renovation and adaptation of alleyways in other context was conducted in order to identify possible policy grafting to Vietnam. Results show that many alleyways have insufficient infrastructure, vegetation, and safety standards as shown through both observation and participants' responses. The planning of these spaces remain deficient in involving the local communities, especially when compared to international experience. It is concluded that the alley space is quintessential feature of the city's urban landscape but its adaptation to ongoing developmental pressures have been inadequate. Adapting these spaces to the modern context while incorporating community voices in planning and implementation is not only, it is essential to the survival of the city.

Keywords: Alley space, alley landscape, urbanization, climate change, Gò Vấp.

INTRODUCTION

Urbanization is considered an inevitable process in the course of development that changes all aspects of lives in society, from economics, politics, and culture to the environment. Along with economic growth and the reality that the people's cultural and spiritual life is improving, their related needs are also increasing accordingly. Before, when society was undeveloped, the basic human needs consisted of food, clothing, and shelter. With time, as society develops, people acquire the needs for better food, more socially-suitable modes of clothing, and wealth commensurate. The need for good urban planning and governance in Hồ Chí Minh City has also come into sharper focus as the demand for urban residents grows. This attention has also shone upon the alleys of the metropolis - a characteristic, historical economic-social-cultural space of the inner city. A host of scientific research methods were deployed to facilitate the study of alley landscape renewal and the planning of said projects in the context of rapid urbanization and climate change; these methods included field research, ethnographic survey in the alleys of Gò Vấp District, in-depth interviews

with some related subjects. The aim was to determine the answers to the following research questions: Why is it necessary to develop alley spaces and landscapes? How will urbanization and climate change affect the physical space of people living in Gò Vấp's alleys? By referring to some international cases and experiences, some suggestions will be proposed to inform Vietnam's people-centric urban renovation.

LITERATURE REVIEW

1. Conceptualization and Identifying Research Gap

Regarding any issues with widely understood but less explicitly defined components, it is exceedingly difficult to neatly separate scientifically relevant from their colloquial understanding due to the interrelated and organic nature of social problems; moreover, each concept possesses connotations that should and could only be understood and interpreted within a delineated research context. The alleyways could be considered one such issue. It is an immediately understandable concept yet lacks a clear theoretical conceptualization. However, this does not mean that it has not been the subject of study. For example, cities in the United States have created handbooks to guide the activation and revitalization of alleyways as a space for community building and economic growth (Department of Transportation, 2010; Fialko & Hampton, 2015). With its 13,000 alleys stretching over 1,900 miles, the city of Chicago and its handbook is an important reference for policy recommendations. Furneaux and Manaugh (2019) described the usage of alleyways in Toronto as a safe and shared space among households to allow for the socialization of children. In the Canadian context, the natural life within alleyways is also an important aspect of greening and conserving human-nature relationships in urban space (Newman & Dale, 2009). The studies of alleyways in Asia, and particularly Hồ chí Minh City, is equally interesting and diverse. In the context of Asia, Gilbert-Flurte and Imai (2020) extensively documented the usage and patterns of life in 8 Asian cities, clearly demonstrating the intimacy and cultural values which these often-overlooked spaces offer. They depicted alleys as a space of complex history and interaction, shaped not only by local inhabitants but also by governments and global forces, often threatened by the same. With regards to the threats face by alleys, Gilbert (2018), in a study of 6 different alleyway neighbourhoods in Hồ Chí Minh City, discusses the alleys in the context of materialisation and urban renewal and the relationships between inequality and urban political processes.

In spite of the variety of practical studies on the configuration and effects of alleyways on inhabitants' lives, we find a potential definitional gap regarding the conceptualization of alleyways which would facilitate theoretical examination. Thus, when it comes to the concept of "space" in relation to the orientation of renovation and development efforts of alleyways in Hồ Chí Minh City, or alley space and alley landscape for short, we defined it as consisting of the parallel existence of the visible, tangible and invisible life as manifested through the daily activities and interactions of the alleys' inhabitants. This concept is built upon the concept of "landscape" as defined by Phan (, p. 5): "Landscape is a territorial whole with gradations along the spatial and temporal dimensions. It is made up of many natural-social components and parts, and between these components and parts exist a highly close-knit and interactive relationship." Tangible life includes features such as landscapes, trees, people, houses, infrastructure… visible objects which could be counted. The invisible life is what we perceive through the senses that cannot be seen or touched, better captured through participant observation and qualitative interviews. Therefore, the alley space is not simply extant through its physical features, but rather it is shaped by the interactions between different actors and objects throughout its history. These interactions consist of those between inhabitants, between inhabitants and outsiders, between inhabitants and the physical and natural environment, and between the inhabitants, the physical environment, and the myriad of forces surrounding the alleyways such as urban planning and governmental financing. Nguyễn (2007) described this amalgamation as a "cultural space" in the sense that it possesses five dimensions: three dimensions of mechanical space, one dimension of time, and one dimension of spirituality

Adaptation is a very broad concept employed in many different fields. Especially in the area of climate change where it has become one of the most widely used terms in recent decades. This article uses the definition set out by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat (n.d, para. 2): "Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change." Similarly, the improvement and development of landscapes are two of the many ways to adapt to climate change in the direction of sustainable ecological development, with specific aims of minimizing flooding and the heat island effect in the modern metropolis.

The identification of the definitional gap for alley space led us to find that there are not many theoretical and practical studies of the functions of alleyways and the complex system that alley space represents, particularly in the context of Hồ Chí Minh City and with regard to climate change adaptation. Previous studies do not focus on the alley space as a system of interactions with components, tangible and intangible, which combine in their operation into a larger system. This might not be sufficient in cities such as Ho Chi Minh. The alleyway is a structural form that is inexplicably tied with the history and culture of Sài Gòn – Hồ Chí Minh City. In the process of urbanization, alleys have become a distinctive feature of urban space as they become embedded with cultural and historical values (Gilbert, 2018). The alley has become a site of memory and for the fostering of human connections, the spirit of village friendship, and the cohesion of many individuals using a common space. Therefore, in the context of urbanization and climate change, it is essential to pay attention to the renovation and development of alleys in ways that meaningfully improve people's lives. Therefore, the article aims to expand on the climate change adaptation potential of alleyways in Hồ Chí Minh City, laying a foundation through which future theoretical work regarding the alley space as a social system could be studied. As this will be a first step in a long process of building up this field of knowledge, the article also sets out future research directions and recommended methodologies.

2. Theoretical foundation for research

In order to orient the directions to improve and develop the alley landscape space to adapt to the context of urbanization and climate change, our research paper employs structural-functional theory as described by Garner (2019). This theoretical foundation was chosen as almost all physical configurations of objects and structures are utilized effectively only when we determine their correct function and task. This dictum applies equally in the planning, renovation, and development of the alley landscape whereby determining the full function of the alleys will allow for the proposal of ideas and strategies to improve the alleys within the studied areas. In the context of urbanization and climate change and utilizing the structural-functional theory, the main functions of alleys can be identified as the follows:

Firstly, urbanization affects aspects of social life in both positive and negative manners. The most obvious deleterious effect of this process is the supplantation of natural water bodies and drainage areas such as ponds, lakes, and canals, causing local flooding and poor drainage. Additionally, rapid urbanization deteriorated the alleyways of the city in terms of aesthetic values, hygiene, livability, as well as in terms of physical space to due encroachment. Thus, in considering the renovation and development of alleys, it is necessary to stress imperatives such as minimizing flooding, regenerating landscapes and spaces into not only aesthetically pleasing but also sustainable forms, as well as increasing community connectivity and cohesion.

Second, regarding the adaptation to climate change, it can be seen that in recent years natural disasters have occurred with higher frequency and intensity. In urban areas, the temperature is becoming untenable as the heat island effect intensifies while flooding has become a commonplace occurrence. The job of urban planners is only increasing in volume and complexity as time goes on. Therefore, the structure of the alleys, an important element of the city's residential life and experience must be designed, embellished, and renovated to minimize the intensifying climate of the city and at the same time reduce flooding and manage rainwater effectively.

The use of structural functional theory in the article helps us analyze scientific and objective designs and constructions in order to determine the appropriate location of the work, contribute to improving the physical and spiritual life of residents, and identify the most pressing objectives in the effort to develop the alley space landscape in the context of urbanization and climate change. This endeavor allows us to locate the functions of the landscape in relation to the lives of inhabitants to configure structures that meet the demands of their activities.

Structural Functionalism, then, will enable us to examine the alleyways within Hồ Chí Minh City by considering the behaviors of its myriads of tangible and intangible components in separation and unison, conceptualizing the alley as a system comprising of different parts. Thus, it enables us to see how the reduction of externalities from urbanization and the process of climate change adaptation are materialized or is possible within each aspect of the alley, and in turn, how the alley as a whole could contribute to the adaptation process of the city.

METHODOLOGY

In addition to the application of structural functionalist theory, and in part to respond to the common criticism lobbied against it which is that "functionalism strongly

emphasizes the pre-eminence of the social world over its parts (i.e. its constituent actors, human subjects)" (Giddens, 1984, p. 1), the study also uses an adaptive approach with the participation of the community. We cannot design or propose any planning options that consider only one perspective, it is essential to understand the characteristics, context, and cultural characteristics of a community, as well as the factors integral to community cohesion. Therefore, the orientation and improvement of the alley landscape need to meet both prerequisites, which are to adapt to the specific context of each area and to involve the community. If the plans for developing the alley landscape do not meet the above two conditions, it will become detached and lifeless; a condition which will prove to be impractical and undesirable in the context of sustainable development. Architect Ralph Erskine in a 2000 interview shared that "being a good architect requires a heart of compassion because architecture is an applied art that involves frameworks that respond to the needs of human life" (Gehl, 2019, p. 229). It is clear that although cities around the world have unequal levels of economic development and distinct problems, they are similar in the integrated relationship between urban planning and the consideration of human beings. In Hồ Chí Minh City in particular and urban areas around the country in general, a human-centric design must become the paradigm.

When approaching any subject whether natural or man-made, instead of opposing it, we must seek harmony, adaptation towards sustainability, and close linkages with the area we want to redevelop or renovate. At the same time, adaptation with the participation of the community is a paramount condition because when the community participates, they can realize their roles and responsibilities to the landscape, take part in maintaining its sustainability as well as contribute to improving it in perpetuity. With this consideration in mind, we have devised a methodology based on the observation and quantitative description of the alley, qualitative interviews of the alleyways' inhabitants, and, finally, secondary research on the experience of renovating and adapting alley space to climate change in other countries.

1. Study area

The research team conducted an ethnographic study of the alleys in Gò Vấp District, specifically those in Ward 4, 5, and 7. The reason we chose Gò Vấp is because of its important geographical position on the map of Hồ Chí Minh City. Gò Vấp District is located within the proximity of the urban core while being near Tân Sơn Nhất international airport; it also possesses the role of being the northern gateway of Hồ Chí Minh City and maintaining the connection between the western and eastern regions. Despite having a favorable geographical position, in general, the urban landscape of the district has not been developed, leaving many existing potentials to be explored.

Gò Vấp District is the 3rd most populated administrative territory in the city with 676,899 inhabitants in 2019. Additionally, it is one of the most densely populated with a population density of 34,304 people/km2 (Statistics Office of Ho Chi Minh City, 2020).

2. Observation and Quantitative Description of Alleys

We took note of the length and width of each alleyway along with a photograph of that space in the morning (9 am – 12 pm). Additionally, we took note of three features in each alleyway, specifically the hygiene and cleanliness, the presence of vegetation, and the available infrastructure Specific features which were noted were the presence of waste storage equipment, light fixtures, communal spaces, and quality of roadways. The research team then observed the activities within each alleyway, ranging from residential to commercial activities.

3. Quantitative Questionnaires of Alleyways' Inhabitants

In addition to the description of the alley space's features in Gò Vấp District, the research team conducted a questionnaire with 150 inhabitants in the observed alleyways in Ward 4, 5, and 7 to gain insights into how they would personally rate the comfort, safety, and their overall satisfaction with the alley space. The results from these questionnaires could then be used to compare and contrast the objective observation in the previous section with the perceived condition of the alleyways by the people who actively use them every day.

The sample was determined in order to provide an exploratory view into the sentiments of inhabitants and users of the alley space in Gò Vấp District. Participants were identified through convenience sampling, consisting of those who the research team could approach during field observation of the alleyways. However, a screening question was asked to ensure that the respondent is or was an inhabitant of the relevant Wards. The interviewers conducted the questionnaires verbally and recorded the answers on paper question sheets for the respondents.

4. Secondary Research on the Experience of Other Locals

Aside from data collection on the characteristics of the alleys in Gò Vấp District, the research team actively

tapped on the experience of similar alley renovation projects in other cities around the world in the form of journal articles, city planning handbooks, and other relevant documents. This secondary research allows us to synthesize lessons that would be beneficial for potential application in Hồ Chí Minh City.

It is difficult to overstate the importance of "The Chicago Green Alley Handbook" prepared by the City of Chicago's Department of Transportation under Mayor Richard M. Daley in 2010. The handbook extensively documented Chicago's historical and practical experience with renovating and adapting their massive alleyway networks, synthesizing years of policies into practical lessons for other policymakers and researchers.

Care was taken to consider the differences in context between Hồ Chí Minh City's alley space and that of other urban spaces. As has been shown, the alley space is a unique "urban vernacular" in Asian cities, nowhere more so than in Hồ Chí Minh City where its organic and sprawling growth have made it the defining feature, rather than auxiliary ones, of the city.

RESULTS

Description of Gò Vấp's alleys

In terms of the overall landscape and architecture, the alley space has no outstanding features. In fact, there are many alleys with dimensions unsuitable for the movements of residents in the alley. The situation arises partly due to lax management, resulting in nebulous enforcement of the alleys' boundaries and width. Thus, the encroachment of the alleys' spaces incrementally narrows them year by year.

In the quantitative description, it was found that the alleys in Gò Vấp have widths ranging from 2 meters (m), 3m, 3.5m, 4m, 4.5m, 5m, and 8m to the largest being 12m (Figure 1, 2, and 3). For alleys with sizes from 2m – 4.5m, the usage of the alleys is spartan, mainly as a pathway for households inside to go in and out; the landscape on both sides of the alley consists of nondescript walls with no greenery.

For alleys with a width of 5m or more, in addition to facilitating mobility and circulation of people, the alleys are also used by people as a place of commerce and to park vehicles. In terms of landscape, the aesthetics of these alleys are similarly not remarkable, with a negligible amount of greenery.

For alleys with an area of 8m - 12m, the space and landscape are more open and aesthetically pleasing than alleys with an area of 5m or less. However, these alleys do not possess any outstanding features. The area is more open, but the green space, as well as the infrastructure, remain monotonous.

In general, most alleys lack important infrastructure and features such as sidewalks and vegetation. Furthermore, the state of the path leaves much to be desired due to the deteriorating state of most of the alleys. In alleyways within spaces of private ownership, the quality of the pathways is of much higher quality both in terms of aesthetics and materials. Despite efforts to upgrade them, it is clear that the alleyways would require much more investment.

Quantitative Questionnaire of Alleyways' Inhabitants

Table 1 contains the descriptive analysis of the 150 questionnaires concerning respondents' characteristics in terms of age and gender.

Due to the scope of this paper as an exploratory study of the concept of the alley space and inhabitants' perception of said space, only the results of two questions will be reported. These two questions concern the respondents' evaluation of the walkway and the path tilings in the alleyways. These evaluation included their level of satisfaction with its condition as well as its availability. The state of the walkway and the presence of path tilings are related to the ease, safety, and level of comfort in traversing and occupying the alley space, especially for daily motorists and merchants. As both of these measures concern one of the most important features of the alley way, the throughroute, they could roughly represent respondents' general satisfaction with the state of the alley way.

Through the analysis of the questionnaires, we found that inhabitants generally rate the infrastructure within the alleyways as unsatisfactory. Figures 4 and 5 show the proportion of respondents' ratings for the "**Respondents' Evaluation of the Walkway in the Alley**" and "State of the path tiles in the alley"

With regards to walkways in the alleys, 45 respondents, or 30% of the sample were Neutral regarding their satisfaction. However, the proportions who indicated Dissatisfied/Few and Very Dissatisfied/Few were 26%

Figure 1. Alleys' width from 2 to 4.5 meters in Go Vap District, Ho Chi Minh City.
(**Source:** Daley, 2010)

Figure 2. 5-meters-wide alleys in Go Vap District, Ho Chi Minh City.
(**Source:** The Research Team, taken on 12/01/2021)

Figure 3. 8-12 meters wide alleys in Go Vap District, Ho Chi Minh City.
(**Source:** The Research Team, taken on 12/01/2021)

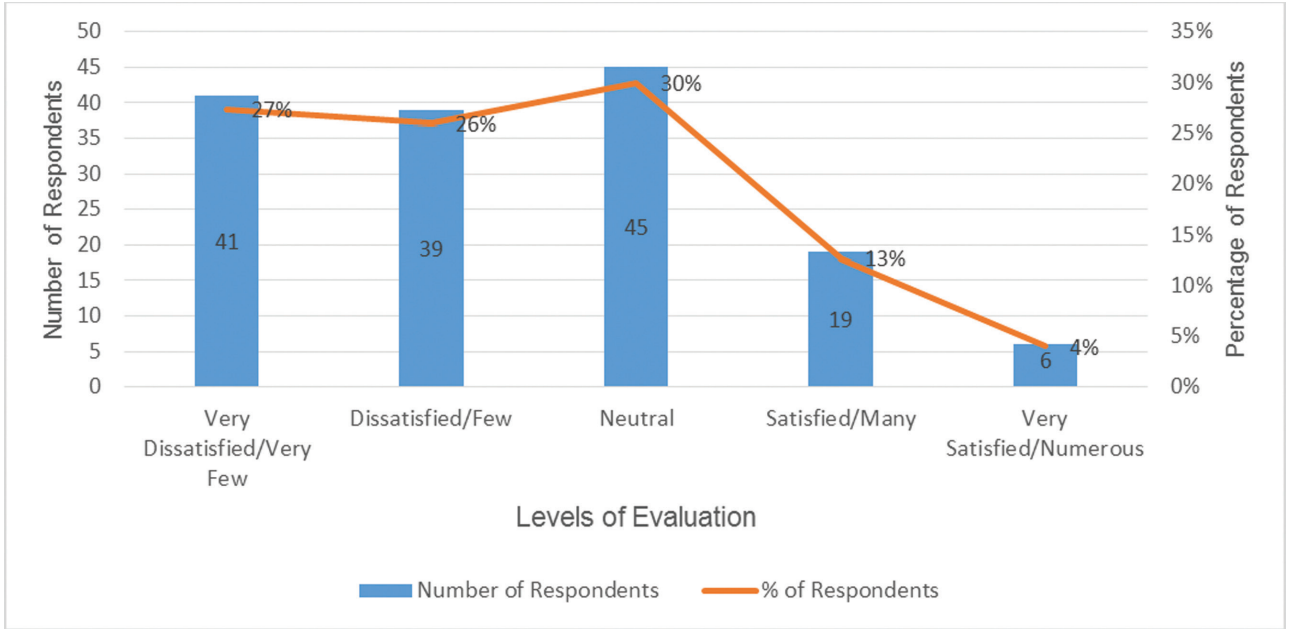


Figure 4. Respondents' Evaluation of the Walkway in the Alley – This figures reflects respondents' evaluation of the availability of walkways in the alleyways, representing their perception of the ease of walking in the alleys (availability and quality of pavements, linearity of routes).

and 27% respectively while the combined percentage of those who are Satisfied/Many or Very Satisfied/ Numerous is only 117%. This is consistent with the researchers' description of the alley space, which often lack sufficient pavements, vegetation, and are circuitous to traverse.

Table 1. Descriptive Statistics of Questionnaire Respondents

Age			Gender		
	#	%		#	%
20-30	16	*10.7%*	**Male**	82	*54.7%*
31-40	30	*20.0%*	**Female**	68	*45.3%*
41-50	38	*25.3%*			
51-60	35	*23.3%*			
>=60	31	*20.7%*			
Total	150	*100%*	**Total**	150	*100%*

Of the 150 respondents, 50 (33.3%) were Very Dissatisfied/Very Few with the state of path tiles in their alley while 46 (30.7%) were Dissatisfied/Few. The number of respondents who are Satisfied/Many or Very Satisfied/Numerous with the state of path tiles in their alleys is only 7% and 1.3% respectively. This is consistent with observation as many alleys lack any proper path tiling, resulting in uneven routes, pot holes, and stagnant puddles after rain.

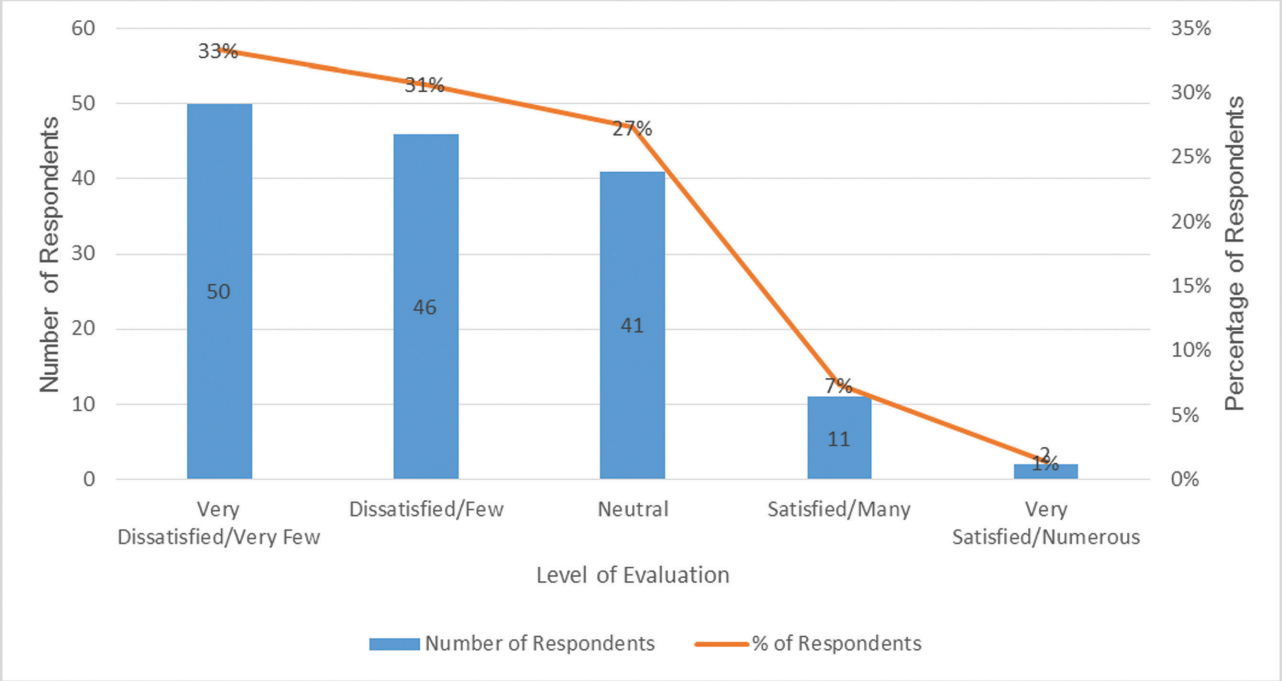
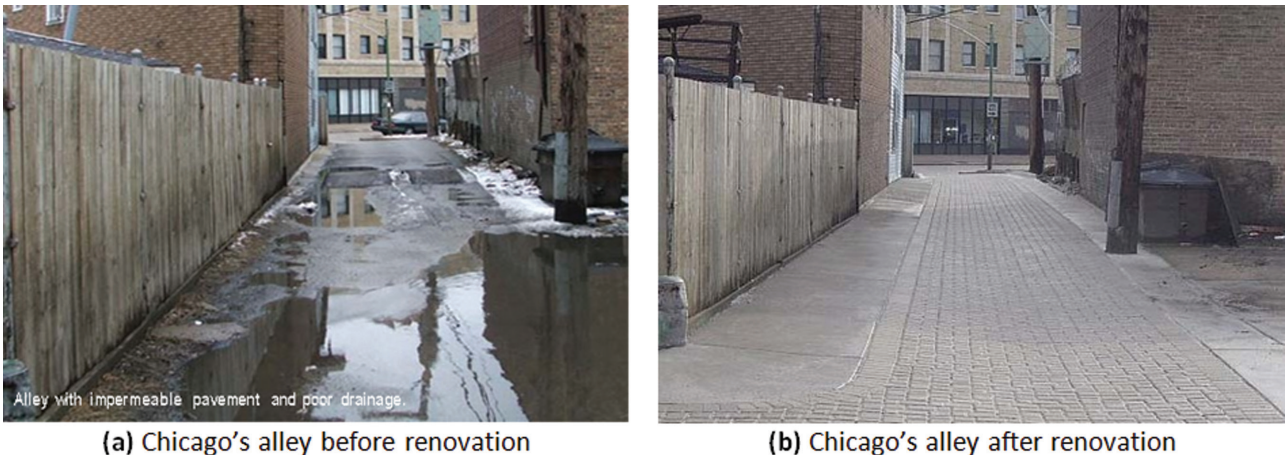


Figure 5: Respondents' Evaluation of the Path Tiles in the Alley – This figure reflects respondents' evaluation of the state of path tiles in the alleyways, representing the level of travel comfort as well as the aesthetic values of the alleyway.



(a) Chicago's alley before renovation

(b) Chicago's alley after renovation

Figure 6. Chicago's alley before and after renovation.
(**Source:** Daley, 2010)

Secondary Research on International Experience

The United States and the United Kingdom were identified as the two leading countries in the project of renovating alleys in sustainable ways. Since 2006, many major cities in the US have implemented variations of the "Green Alley" programs. By 2010, more than 100 "green alleys" had been completed (Lê, 2018). Starting with Chicago, then San Francisco, Los Angeles, Detroit, Seattle, Minneapolis, Denver, etc., the project has attracted attention and participation from both governments and communities alike (Figure 4). These cases illustrate that the core of alley renovation and development projects must be constructed on commitments to sustainability through the application of goals related to environmental protection, economic development, and social justice (Suratee et al., 2020).

Accordingly, the environmental goals of such "green alley" projects must focus on reducing carbon emissions, managing rainwater sustainably, saving and strengthening water supplies, lessening the urban heat island effect, and pursuing related environmental health goals. To achieve this goal, the renovation should use permeable materials, bio-tar, and suitable designs for sustainable rainwater management such as the nurturing of plant life and vegetation patches which would also effectively reduce urban heat by creating shade while expanding habitats and ecosystems for plants and animals. In addition, climate-friendly transportation of walkway networks for pedestrians and cyclists and convenient connections to public transport can be integrated into green alleys. Elements of the green alley can also be closely associated with green infrastructure; the Environmental Protection Agency (EPA) defines green infrastructure as using "natural hydrological features to manage water and provide environmental and community benefits". Green infrastructure can also be used to mitigate problems related to air pollution, the urban heat island effect, wildlife conservation, and other recreational needs. A specific example of an environmental goal is the alleys in Chicago which have been renovated and designed to enhance rainwater management, reduce the runoff speed, and refresh the groundwater supply by using water-permeable bricks for alleys' structures.

For economic purposes, it is necessary to identify the potential of the alleys and then proceed to determine the function and exploit said values. For example, alleys located near commercial areas and entertainment centers with large square areas can be converted to support the surrounding economic activities. The transformation and identification of the function of the alleys will enhance their economic values by creating more entertainment, dining, and pedestrian connections in the community. Once renovated, alleyways can support economic development, become tourist attractions, and potentially increase the value of adjoining real estate. An oft-mentioned example is Bùi Viện Street where re-development has spurred economic activities, increasing the quality of life for inhabitants after determining its potential and function.

For social purposes, alleys can be designed to foster social cohesion. By reducing opportunities for illicit activities, creating a safe place for active and pedestrian recreation, and utilizing public spaces for recreational events and community gatherings such as concerts, and community activities on holidays, the alleys can become communal sites of gathering and interactions, forging new neighborhood bonds.

With the orientation to increase community participation in the renovation and development of the alley landscape and aesthetics to create responsibility and community attachment to the space, there are potential lessons to be learned from Singapore. As early as 60 years ago, Singapore implemented compact urban planning with the building of many high-rise apartments and recovering land to build roads and green parks (Việt Thành, 2021). Due to its small area and large population, the planning in Singapore is centered around high-rise apartment

Figure 7. Focus group discussions with local community members organized by CLC.
(**Source:** Surattee et al., 2020)

buildings. In Singapore, residential living concentrated around alleys does not exist in the same manner or scale as in Hồ Chí Minh City. But regardless of the organization model, the planning and development of climate change adaptation models with community participation remain extremely important in both contexts. In recent times, Singapore has begun paying greater attention to understanding and developing solutions at the micro-level and is endeavoring to incubate community solutions through surveys, interviews, and consultations with the community. A report published in 2020 by the Center for Liveable Cities (CLC) of Singapore's Ministry of National Development highlights the importance of sustainable urban development through a combination of measures from the community and the government (Surattee et al., 2020).

Through many interviews, consultations, and roadshows (Figures 7 and 8), CLC has recognized the interest of residents in developing community spaces to adapt to climate change, especially through planting trees, collecting rainwater, and public gardening (Figure 9) (Surattee et al., 2020). Based on the shared desire to work with the community to renovate the common space with artistic design and natural elements, international lessons help us rethink the alleys with respect to Hồ Chí Minh City, especially in identifying advantages and disadvantages, utilizing available resources to contribute to planning ideas, and renovating alley spaces while protecting the identity of each area in particular and the city in general.

DISCUSSION

In general, the alleys in Gò Vấp in terms of landscape and aesthetics are not outstanding. If the potentials of the alley space and landscape are not adequately considered and developed in accordance with the pace of societal growth and progression and with the looming threat of climate change, there is a risk of these spaces becoming sites for social evils while inhabitants' quality

Figure 8. Roadshows and consultations to demonstrate links between climate change and local inhabitants' lives and understand challenges faced by inhabitants.
(**Source:** Suratree et al., 2020)

Figure 9. Discussions by community champions to develop solutions appropriate to their community context in Singapore.
(**Source:** Centre for Liveable Cities, 2020)

of life deteriorates. Additionally, the alleys are also vessels containing the core living values of the urban soul, creating the connection between people. Without the appropriate development orientations, they will lose their inherent human values and the city will lose its distinct historical and cultural markers of urban growth and urban communities, failing its goal of sustainability and fostering fraternity.

The disappointing state of the alley space in Gò Vấp is further shown through the questionnaire's responses. With over 50% and 60% of respondents stating that they are Dissatisfied or Very Dissatisfied with the state of walkways and path tiles in the alleyway respectively, it can be seen that the objective observation is supported by the personal perceptions of inhabitants.

The renovation and development of alley space and landscape is a paramount objective in the context of urbanization and climate change. This requires a process of research, survey, and appraisal of the area to be rehabilitated as well as the consideration of experiences from developed countries. The learning process will help to save time while promoting creativity and iteration based on the available resources and methods. Based on international experience, we realize that two directions require further analysis. One is to renovate and develop based on existing resources, methods, and skills. The second is urban planning with the active participation of the community to foster a system of creative iteration for communal structures as well as imbuing the community with ownership to maintain their shared spaces sustainably in the long term.

From the lessons learned from the United States, the United Kingdom, and Singapore, we propose the following directions for advancing future research, and for renovating and developing alley spaces and landscapes in the context of Vietnam and Hồ Chí Minh City:

Firstly, it is necessary to conduct a more thorough survey of the alleys to identify and evaluate the actual situation of each alley and then offer appropriate development solutions. The features which must be identified include landscape, space, infrastructure, ownership, and SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). This would require the usage of more advanced technology on top of researchers' observation. For example, the usage of 3D scanning and the use of heat mapping to determine the usage of different spaces within the alleyways. Additionally, the state of legal ownership of different features within the alleyways would also help determine the delineation of activities between private and public spaces. Within the structural-functional theory framework, this would allow us to better determine the functions of the tangible aspects of the alleys.

Secondly, community participation in research should be considered. Researchers must try to connect with the community of alleyways to understand how they use the alley space and landscape as well as develop ideas they might have. On top of the 150-respondents questionnaire used in this article, focus group discussions are powerful as demonstrated in the case of Singapore. Aside from this, public roadshows would also allow for the active participation of other inhabitants as well as those who traverse through the alleyways. Finally, in-depth semi-structured interviews would help shed light on the intangible life within the alleys, clarifying the functions of said elements in the life of the alleys.

Thirdly, after surveying, analysing, and evaluating the current situation, and getting ideas from the community, draft plans and projects for each alley based on related goals such as environmental protection, economic development, and social justice can be formulated in terms of policy papers or research. Alleys will be designed to effectively meet each specific goals such that renovation or complete re-development might be required.

POLICY RECOMMENDATIONS

Based on the results of the questionnaires showing the high level of dissatisfaction from inhabitants and the experience of Singapore with community participation in urban planning, our recommendations for policymakers centre mostly on the encouragement of community participation in the renovation and adaptation of alley space.

We recommend that a joint urban planning process is organized between policymakers and community members, specifically in both the planning stage and implementation stage. This would allow policymakers to tap on the insights of inhabitants, form appropriate policies to address needs, and empower community members to take ownership of planning and revonation projects. Similarly, community members would gain a stake in the well-being of their alleyways and form commitments to the success of the plan to which they contribute. Additionally, the involvement of

the community members helps create a surveillance mechanism through which community members would actively keep watch of errant behaviors and enforce rules, protecting the results of their labor and saving governmental resources. This process can and should be initiated by the government through mass movements that permeate the local levels in Ho Chi Minh City such as the Women's Association. Only when community members are actively encouraged, or in this case recruited through community champions and model citizens, can they feel empowered and included in the planning process and its outcomes.

CONCLUSION

It can be seen that over hundreds of years of establishment and development, alleys have gradually become a quintessential structure in urban Hồ Chí Minh City in particular and cities in the country in general (Gilbert, 2016). There is no material without value if we know how to explore and exploit its pot0ential. The alleys themselves have nurtured humane, historical, and cultural values throughout their existence. In other words, tangible and intangible values that few urban structures have. Despite this, the alley space has not been considered from a theoretical and practical perspectives. The research here lays a foundation for the development of this field of knowledge. Additionally, the current image of alleys is associated with more negative than positive factors: flooding, theft, addiction, waste, etc., clearly demonstrating the need for development planning and renovation of alleys in the context of urbanization and climate change. The preceding analysis and evaluation of functions and areas in specific urban areas will help avoid having to correct costly mistakes in the future. In the same vein, the designs and plans drafted should incorporate community participation. The article has also set out future research directions in order to deepen the theoretical understanding and conceptualization of alley space as a unique system of socio-physical interactions. Thus, the renovation of alleys cannot only consider the current situation of climate change and inadequate planning, but must also take into account historical, societal, conservation, and resilience values which could be inherited by future generations.

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All authors have read and approved the manuscript and take full responsibility for its contents. No potential conflict of interest was reported by the author(s).

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