Advances in Science, Technology & Innovation
IEREK Interdisciplinary Series for Sustainable Development

Paola Gallo · Simon Elias Bibri · Francesco Alberti · Abraham R. Matamanda · Cristina Piselli · Hamid Rabiei · Rosa Romano · Ayse Ozcan-Buckley *Editors*

# Urban and Transit Planning

## Volume 2
## Culture and Sustainability for Built Environment

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# Advances in Science, Technology & Innovation

## IEREK Interdisciplinary Series for Sustainable Development

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Francesco Alberti • Abraham R. Matamanda •
Cristina Piselli • Hamid Rabiei •
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Editors

# Urban and Transit Planning

## Volume 2: Culture and Sustainability for Built Environment

A culmination of selected research papers from the International Conference on Urban Planning and Architectural Design for Sustainable Development (UPADSD)—8th Edition—University of Florence, Italy

Springer

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# Preface

The challenges of sustainability in the context of urban planning and the achievement of the SDGs are interrelated. Urban Sustainability and the Sustainable Development Goals need to go hand in hand. Cities are critical in responding to the urgent need for environmental, economic, and social sustainability. In recognition of the urgency of sustainability in cities, the 8th edition of the Urban Planning and Architectural Design for Sustainable Development (UPADSD) Conference (October 24–26, Florence, Italy) focused on sustainable strategies in terms of urban and transit planning and the potential of green infrastructure and culture within the same context to support the global agenda for sustainable development. It thus provided a roadmap for integrating sustainability into relevant plans, programs, and decision-making processes in urban planning and urbanism.

This book is part of the peer-reviewed Advances in Science, Technology and Innovation (ASTI) book series presenting the IEREK Interdisciplinary Series for Sustainable Development. The book is therefore an edited collection of papers from the 8th International Conference on Urban Planning and Architectural Design for Sustainable Development (UPADSD), which presents groundbreaking research through the intersection of urban sustainability and sustainable development goals under two separate volumes. Volume 1 includes articles on strategies, innovations, and climate change in the context of urban and transport planning. Volume 2 contains articles on culture and sustainability for the built environment, focusing on the same context of urban and transit planning. In this regard, the first volume presents the indexing of articles under the following three headings: (1) *Urban Design Strategies for Climatic Mitigation*, (2) *Urban Design: Development, and Management*, and (3) *The Future of Urbanism and Sustainable Design*. The second volume similarly consists of articles categorized under the following different headings: (1) *Integrating Art and Culture in Urban and Architectural Landscapes*, (2) *Reinventing the Built Environment: Emerging Trends and Innovations* and (3) *Innovations in Architectural Methods and Technologies*.

The book covers a wide range of academic disciplines in sustainability, including green urbanism and nature-based solutions, energy efficiency and renewable energy in architecture, renewable energy systems, climate-resilient infrastructure, sustainable transport, and reliable transit systems, urban forms within the urban design, development, and management context, innovations in architectural design methods and technologies, policy, and governance. It also incorporates the latest developments and research in urban sustainability studies that contribute to more sustainable cities, such as infrastructure, civil engineering, geology, mining, water, and natural resource conservation and management. The emphasis is on ideas that can influence public policy to promote sustainable urban planning and management, air and water pollution control, and green infrastructure.

The editors would like to thank the chairs of the IEREK group for their support and assistance in the editorial process. We would also like to thank colleagues from related academic disciplines who agreed to review and comment on the articles. We hope that this series will foster collaboration among the members of the IEREK group and attract other interested researchers by showcasing the significant developments taking place within the context of IEREK Urban Sustainability Studies.

Florence, Italy Rosa Romano

**Acknowledgements** We would like to express great thanks to our contributing authors in this book. We would also like to thank the reviewers for their hard work and dedication to the finished text. Special thanks to the editors of this book for their diligence in the organization of the chapters and professional editing. Lastly, thanks to the IEREK team for supporting the publication of the best research papers submitted for the book.

# Introduction

Climate change continues to be a severe challenge for communities around the world. Cities are particularly vulnerable to the effects of climate change, with the risk of extreme weather conditions, such as floods and heatwaves increasing every year (World Economic Forum, 2021). Seventy percent of cities worldwide are already dealing with the effects of climate change, and studies and research have proven various direct and indirect harmful effects on urban and human health due to extreme weather conditions. Air pollution, loss in biodiversity, and ocean acidification are just some of the indirect effects of climate change on human health, while direct effects, heatwaves, and floods, create additional socio-economic effects (European Commission, 2020).

Besides climate change, population growth, rapid urbanization, resource depletion, and economic and sanitary crises have a tool on cities, their public space, and the quality of life. Creating a climate-resilient urban environment is becoming one of the crucial aspects of architecture and urban planning and one of the global and European Goals for 2030 and 2050 (2030 Agenda for Sustainable Development, 2015; Paris Agreement, 2017; European Green Deal, 2019).

As a response to these megatrends, there is a visible change in city development approaches towards a more human and nature centered-approach (walkable cities, inclusive cities, healthy cities, green cities, smart cities, etc.) and the importance of putting human rights to both health and a healthy environment at the center of the debate. Reaching these ambitious goals and achieving a truly integrated sustainability capable of answering all the challenges requires a new way of thinking, analyzing, and designing our cities. Moving away from a linear way of thinking towards systems thinking allows the shift from simplistic approaches that tackle one or just a few challenges at a time to understanding the core causes of the problems, their interrelations, and help integrate environmental, social, economic, and ecological aspects. It has never been so important and necessary to look at a city from a holistic perspective and re-design our spaces in close collaboration with all stakeholders within a trans-disciplinary team.

According to these scenarios, society is facing environmental challenges between climate change and urban population growth; interconnected challenges that are at the core of society's concerns for its future and have been well represented by the contributions selected for this publication. In fact, these contributions are organized into three distinct parts, articulating the discussion according to aspects of architectural and urban design in line with these main challenges.

The first part focuses on the issue of integrating art and culture into urban and architectural landscapes. This chapter provides an in-depth view of the contribution of culture and positions it as a possible fourth dimension of sustainability and an integral part of the environmental, economic, and social dimensions of sustainable development.

The second part deals with how to reinvent the built environment on the basis of architectural design that can help the city increase its resilience under the threat of now certain impacts. Based on these features, this part brings together contributions from authors who mainly identify three trends: fixing the future, indulging the future, and creating less socially fragile urban environments. While fixing the future involves restoring environmental qualities

and closing environmental flows within urban boundaries, indulging the future focuses on creating enough space to accommodate the possible spatial impacts of unprecedented events and changes.

The last part addresses issues from the perspective of innovations in architectural design methods and technologies at the mainly at building scale. Today's designers must constantly face new challenges while keeping pace with rapid technological changes and the current revolution in design and construction processes. This means actively seeking to innovate through design research, raising the level of built space performance, and adopting advanced technologies in practice. Focusing on innovations in urban and architectural design processes, this part collects contributions that address innovative design methodologies, advances in computational design practices, innovations in technologies in building construction and preservation as well as the integration of research with design. It also discusses strategies for integrating innovation into design practices, as a contribution to the development of design solutions that are both sustainable and culturally resonant in crafting environments that are healthful, sustainable, and inclusive.

The book provides therefore an intriguing and stimulating read, pointing the way to a paradigm shift in the design and planning process. As to how and at what cost this transformation will take place, however, there are no guarantees; the only certainty is that it will certainly not happen overnight.

Paola Gallo

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# Integrating Art and Culture in Urban and Architectural Landscapes

# An Analysis of the Imageability of Ethnic Enclaves in Manila, Philippines for Culturally Sustainable Design and Development

Melodia Ramos-Sampan, Jocelyn Rivera-Lutap, John Benedict Castillo, and Deon Franchezka Pineda

**Abstract**

Cultural sustainability serves as a driving force for maintaining a cultural group's identity, practices, and beliefs to protect its values from external forces. In most Asian countries, ethnic enclaves are maximized to generate a vibrant economy rooted in tourism, whether the genesis was a product of spatial segregation or has evolved organically. There have been several historical enclaves in Manila. Among the most famous are the Chinese in Binondo and the Muslims in Quiapo. Scattered on strategic points outside the fortress city of Intramuros, the urban foothold of these enclaves can be traced as far back as the sixteenth century during the Spanish colonial era. The lack of integrative design and development in these urban ethnic enclaves, which led to diminished socio-economic potentials, sparked the motivation for this study. Creating an objective resource material will serve as a foundation for identifying, preserving, and conserving their cultural identity. Architectural manifestations encompassing the most distinct elements within the geographical bounds, in addition to the paths, nodes, edges, districts, and landmarks, were tackled to contextualize design and development parameters. The analysis also focused on identifying various urban designs and architectural elements associated with the enclave's physical and social domains. This was achieved through archival research, site investigation, GIS mapping, and surveys via a Kobo Toolbox platform. Results of the analysis were then synthesized as a basis for designing and developing ethnic enclaves that empower the community and their descendants to remain attached to their way of life and form new connections to the city while preserving their unique attributes.

**Keywords**

Ethnic enclaves • Ethnic equality • Placemaking • Heritage conservation • Cultural identity

## 1 Introduction

In Lewis Mumford's classic book "What is a City," he firmly states that the defining essence of a city is its ability to generate dramatic situations. While the physical elements of cities can be found in other places, such as suburbs, the urban densities, and proximities offer the unique potential for social discord and conflict. This is recognized as a distinct framework that fosters diverse opportunities for communal living and significant social interactions (Mumford 1961). The cities may either thrive and flourish or be abandoned and forgotten due to their collective form and function as the soul of a nation. The places where there is prosperity and abundance are when the highest degree of embodiment transpires not only in economic and political spheres but also in socio-cultural spheres. These are also locations possessing the strongest ideals, where cultural transmission can emanate from (McAdams 2007), and are said to have the capability of representing values of thought much like how Athens is to democracy (Bell and de-Shalit 2011). Cities are integral to society, creating identities and a sense of place. As spatial representations of the intertwining concepts of society and culture, cities are composed of various inhabitants and socio-cultural groups wherein people with the same background congregate. These people form enclaves, which contribute to the city's diversity due to the high concentration of ethnic and cultural identity as they create a representation of their own home in the host city. The term "enclave" can be found in the works of sociologists who

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wrote "City and "Community": The Urban Theory of Robert Park" (Goist 1971). It was used in the context of urban planning, and the concept of enclaves became increasingly relevant as researchers explored issues related to urban segregation, ethnic neighborhoods, and gated communities. The development of these enclaves can generally be classified into how the communities were formed, either by spatial segregation or organic development.

Spatial segregation was a means of control by a conqueror or colonizer over a grown or growing population. In the Philippines, this phenomenon started during the Spanish Colonization in the sixteenth century, but even before their occupation, the country already had villages and trading centers. The archipelago's geography and natural resources attracted early communities, leading to the formation of small urban areas (Scott 1994). However, the dawning of a planned unit development in the Philippines started in the walled city of Intramuros, the center for Spanish governance and Christianity. The spatial segregation was confined to certain social classes, and not everyone was allowed to live within its walls, including natives (*indios*), as well as other races dwelling in Extramuros or those found beyond the city's walls. The inhabitants of Intramuros were primarily those who held positions of authority, power, and influence in the colonial government. The Spanish colonial authorities enforced a hierarchical and stratified social structure emphasizing distinctions based on ethnicity, social class, and cultural background. The dissociation was a means of establishing control, maintaining social order, and facilitating the Spanish colonial administration (Lico 2008). This brought about the establishment of the Parian—an enclave designated for the Chinese residents in Manila—during the early years of Spanish colonization to control and separate the Chinese community, primarily engaged in trade and commerce. Parian and Binondo, located just outside Intramuros and adjacent to one another, emerged as a significant district during the Spanish colonial period. It became the main settlement for Chinese immigrants and transformed into a vibrant economic and commercial center (Verdejo et al. 2014).

Enclaves can also emerge organically as zones where people with socio-cultural commonality, differentiable from a prevailing or common group, congregate and settle. They are critical points in the city where high cultural expression is evident, as defined by Lim et al. (2017). Often, distinct built environments, which are part of the city's heritage, are also contained in such spatial territories; hence, the consequent regard as historical centers. This was true for the Muslims in Quiapo, who inhabited the area even before the Spanish occupation of the Philippines (Hawkley 2014). In 1855, the Spaniards, bringing Christianity into the country, built a wooden Church, now known as the Minor Basilica of the Black Nazarene. The Catholics and Muslims harmoniously co-existed in Quiapo (Gomez and Gilles 2014). The Muslim residence exponentially increased when the Golden Mosque, also known as Masjid Al-Dahab, was built. It is located in the Quiapo district, not far from Quiapo Church. The mosque was built by the government in the '70s and is known for its golden dome, continuing to serve as a significant religious and cultural center for the Muslim community in the area (Watanabe 2007).

There is an active trend of migration toward urban areas and cities. According to the World Population Prospects Report of the United Nations Department of Economic and Social Affairs (UNDESA) (2019), 55% of the world's population is settled in cities. The translated amount is about 4.3 billion people, which is expected to rise by 70% in 2050. This unprecedented circumstance pushes the built environment beyond its sustainable limits to keep accommodating the urban population amidst its influx. It also forces the once qualitative urbanism to shift toward quantitative. The current scenario creates detrimental effects on the identity of the delicate parts of the city, like historic cores and ethnic enclaves, as the mushrooming state of urban development destroys their genius loci, thus the loss of authenticity (Radoine 2016). Since the spatial dimension is essential to a human's placemaking, if the site, which, in this case, an ethnic enclave, loses its identity, then the collective memory of the people related to those locations will be subsequently doomed (Hoteit 2015).

The city functions through its parts, and by using architecture, along with its three sign systems, namely material, rhetorical, and visual, it can communicate itself not only to its citizens but also to visitors of various backgrounds. The city's identity is essentially a result of collective sub-identities, and in manners, people perceive the spatial boundaries inside it (Jones and Svejenova 2017). There are recurring issues, however, that may jeopardize the built environment of ethnic enclaves and, eventually, the portion of the city's identity. These may be problems originating from the very place, as expressed in the study of Kostrzewa (2017), wherein market-led gentrification fragmented the area and resulted in its endangerment. On the other hand, problems may also arise outside a specific cultural area but still damage it once penetration beyond spatial boundaries happens. As one solution to issues like these, the United Nations (UN) calls for more culturally sensitive models in urban development, in line with the tenets of Sustainable Development Goal (SDG) 11. The Habitat III paper urges global cities to rehumanize urban spaces, both on a physical scale and through a sense of belongingness, through ways including but not limited to access, representation, and a participative approach. Policies also aim to protect the city's cultural sphere as part of its sustainable development (Duxbury et al. 2016).

The application of a culturally sensitive urban development model is still crude in developing countries like the

Philippines. It can be observed that the National Capital Region (NCR), including the city of Manila, is subjected to developments that are rising instantaneously. Since it has been shaped by various political powers for about 384 years, the capital city of Manila has become a renowned melting pot of culture. As a bustling and highly dense urban agglomeration, several socio-cultural groups have historical footprints in the city. Among the most visible are the Chinese in the Binondo district and the Muslims in the Quiapo. Whether driven by market, infrastructure, transportation, or real estate-led forces, gentrification has already breached the boundaries of the aforementioned ethnic enclaves, sometimes permeating to the point of erasure. Abrupt infrastructures, which are physical manifestations of the ruling elite, such as highways, either elevated or on-grade, bridges, railways, sprouting residential developments including exclusive high-density dwellings, complex commercial structures, and industrial facilities have all dotted the city and chaotically co-existed with the culturally genuine built environment (Choi 2016; Roderos 2013).

### 1.1 Hypothesis

$H_0$: There is no significant difference in the level of familiarity of an enclave with regard to age and visit frequency.

$H_a$: There is a significant difference in the level of familiarity of an enclave with regard to age and visit frequency.

### 1.2 Objectives of the Study

The study focuses on the districts of Binondo and Barangays 383 and 384 in Quiapo. While several enclaves exist in Manila, some have left minimal traces to be recognized. The areas identified are the most prominent; however, to guarantee their sustainable existence, the need to understand their historical relevance and circumstances within the contemporary urban world is of utmost importance. Through cultural preservation and conservation, future generations will greatly appreciate and value these developments. With this, the study aims to:

- Recognize the unique socio-cultural identities that prevail in the ethnic enclaves in Manila and their effects on the local built environment
- Examine the environs of each enclave through the lens of Lynch to understand the role of each architectural element in the identity of these places
- Map the notable urban design elements found in the enclaves through QGIS, supported by survey results, site observation, and archival materials reviews
- Draw a realization of the ethnic concentration in various parts of the city and how they interact with visitors and non-residents
- Determine contemporary urban factors that are detrimental to the identity evolution and continuous development of these special areas and provide a timely urban-related solution for those matters.

## 2 Literature Review

### 2.1 The Image of the City in Relation to Ethnic-Concentrated Areas

An ethnic enclave, in the perspective of sociology and anthropology, is a location with an exceptionally high concentration of a particular ethnic group, typically one that is distinct from the surrounding areas. The manifestation of the enclave is strengthened by the area's architecture and reinforced by the human senses. These nooks in the cities give particular pleasure no matter how big or common they are since they are pieces of architecture on a much bigger scale. City design is a temporal art compared to other art forms, the experiences that concern their surroundings, the events leading to the memory of past experiences. Moving elements like people are equally important as physical stationary parts. They are not merely observers but an integral part of it as they are the ones who perceive and, more importantly, create the place. People's understanding of a city is only partial or fragmentary. They only retain those that are relatable or those that catch their attention. A city is a product of many builders who built it according to their reasons or needs, which is why cities are dynamic and ever-changing. There is also no final product; instead, it is only a continuation of many phases of development. This is also the reason why shaping a city is an act separate from architecture (Lynch 1960).

### 2.2 Socio-Cultural Groups, Their Spaces, and Activities Inside the City

Humans naturally tend to form connections and establish groups based on their defined similarities. Sociologists Lazarsfeld and Merton (1954) termed such natural occurrences as homophily. This phenomenon results in homogenous networks, creating societies that live similarly and have a standard system of values and norms (Mcpherson et al. 2011). As an intrinsic part of humanity, culture enables the development of people-centered societies through social integration (Duxbury et al. 2016). A city is a spatial representation of the intertwining concepts of society and culture.

Both concepts work hand in hand in shaping the local identity. This is supported by the theory of Structural Functionalism, which Herbert Spencer and Robert Merton mainly established. It views society as a system containing subsystems wherein all must function together (Cockerham et al. 2014).

Globalization has advanced the state of migration across all parts of the world. Immigrants, often unfamiliar with the new host country, would treat places with residents common to their culture as ideal places to settle in, hence the said congregation (Schüller and Chakraborty 2022). The said group may treat these places in the city as transition spaces while they are still adapting to the new culture they are subjected to, while it can also be permanent spaces for residence, wherein generational families of defined socio-cultural backgrounds, all originating from immigration, chose to settle, thereby creating a pronounced cultural presence in such places.

Both homophily and the phenomenon of migration have led to establishing enclaves with a sense of commonality. This union further strengthens the existence of each enclave with the presence of festivities and cultural celebrations that manifest within these socio-cultural groups. For instance, Chinatowns are known for their Chinese New Year celebrations, which are observed across the globe. In the case of the Philippines, the streets of the Manila Chinatown in Binondo are dominated by traditional Chinese decorations like red lanterns, golden trinkets, and banners accompanied by food festivals and dragon dance displays that are attended by the large Filipino Chinese community in the vicinity (Ongcal 2023). Fireworks displays, which have long been part of the Chinese tradition, also occur as they welcome the New Year (Ibekwe 2021). In addition, the distribution of red envelopes or *angpao* was observed to spread good luck. Muslims also have solid cultural celebrations transpiring within their socio-cultural groups, such as Ramadan, which happens on the ninth month of the Islamic calendar. During Ramadan, Muslims fast from sunrise to sunset and can only eat during *iftar*. During this month-long religious tradition, the Manila Golden Mosque in Quiapo feeds hundreds of less fortunate Muslims with their belief in sharing as a means of helping others and multiplying the rewards of fasting a hundredfold (Esmaquell 2024).

## 2.3 The Formation and Dynamics of Ethnic Enclaves in Cities

Logan et al. (1994) elaborated that in order for ethnic enclaves to thrive, three key characteristics must exist: the presence of co-ethnic owners and employees, a high concentration of people from the same ethnic group, and a focus on a particular sector or industry. From an instrumental perspective, enclaves offer protection against hostile elements in society, facilitate the preservation of cultural norms (including language), provide employment opportunities, and sometimes allow for ownership of businesses within the same ethnic group. Additionally, enclaves enable participation in community, religious, and cultural organizations, as well as the opportunity to reside with members of the same ethnic group. The establishment and clustering of households within these domains are mainly the result of a combination of push factors like housing opportunities and discrimination and pull factors like shared identity, desire to live near friends, and access to ethnic services (Qadeer et al. 2010). Ethnic enclaves can also be considered as a concentration of ethnic and socioeconomic milieu (Benassi et al. 2020; Seol 2010).

The discussion on ethnic enclaves involves addressing themes of equality and segregation, as there are instances wherein the deliberate spatial formation of ethnic enclaves is rooted in planning policies or city laws. However, when differentiating ethnic enclaves from spatial segregation, it is essential to note that the former, while it may be initially established by the idea of the latter, exists based on socio-cultural commonality or clannish manifestation. The formation of ethnic enclaves can exhibit the phenomenon of spatial segregation; however, not all instances entail the emergence of ethnic enclaves. As such, the two should not be used interchangeably (Klaesson and Öner 2021). Still, for the most part, segregation of individuals or groups often physically manifests in the creation of enclaves. According to Gupta et al. (2024), various forms of segregation are evident, including residential and educational, and those in the form of public amenity utilization, such as educational, hospitality, and healthcare facilities, among others. Furthermore, it was mentioned that geographical segregation is classifiable into four types: (1) Legal, (2) Social, (3) Gated Communities, and (4) Voluntary Segregation. In their work, the Hierarchical Density-Based Spatial Clustering of Applications with Noise (HDBSCAN) model was employed to analyze the clustering of individuals and subsequently identified 16 distinct segregations. This represented a significant increase from the nine segregations identified by the conventional Density-Based Spatial Clustering of Applications with Noise (DBSCAN) classification model.

The discourse on ethnic enclaves remains highly relevant as these places are integral to the city's history, serving as sites of oppositional resistance and the ongoing struggles for social justice (Liu and Geron 2008). Recent academic literature explores the social processes of class, differentiation, and clustering within ethnic enclaves, as well as the possibility of their spatial boundaries dissolving as ethnic groups assimilate into the mainstream society of the city, as proposed in the theory of spatial assimilation. Importantly, it has become evident that contemporary ethnic enclaves result

from individuals' voluntary choices within prevailing market structures and public policies driven by economic opportunities and housing availability. It has also been stressed that ethnic enclaves differ from ghettos, as the latter is a result of social exclusion characterized by poverty and blight (Qadeer et al. 2010).

With enclaves being formed mainly through spatial segregation, Wong (1998) measured it in the sense that its levels in an area decrease when interactions in the ethnic group increase. Reardon and O'Sullivan (2004) introduced alternative measures as a means to refine the existing evaluation of isolation. In their study, they have discussed two primary conceptual dimensions: spatial exposure, the capability of each member in a group to meet external people from other groups, and spatial evenness, the similar distribution of groups in a residential space. In measuring spatial exposure, the average composition of the local environments of the individuals in a particular group is needed in the computation. On the other hand, the variation among racial compositions of occupants in a region of interest is needed in measuring spatial evenness. Additionally, a set of requirements for segregation measures was established, which include the ability to interpret scale, independence from arbitrary boundaries, equivalency in location, invariance to population density, the ability to decompose spatially in an additive manner, and invariance to scale. These criteria are applicable to both measures of geographical evenness and measures of spatial exposure.

The United States (US) is home to gateway cities, wherein immigrants have high access to labor, capital, commodities, and cultural exchange. Inside these urban areas are ethnic enclaves, created as a setting for entrepreneurs, community activists, and artists who were once historically evicted or displaced. New York City is one of the best examples, cradling various ethnic enclaves like Koreatown, Chinatown, Little Tokyo, Little India, and Little Australia (Lin and Mele 2012). In Toronto, a multitude of ethnic enclaves have emerged as a result of employment opportunities, particularly within the Central Metropolitan Area (CMA). Notably, these enclaves are inhabited by diverse ethnic groups, including African, Chinese, Caribbean, Italian, Jewish, Portuguese, and South Asian communities. The spatial distribution of these enclaves is characterized by a dynamic trend, with some boundaries expanding and consolidating while others are stabilizing and deconcentrating (Qadeer et al. 2010).

Similar to the West, various great Asian Cities are melting pots of culture and are home to several long-standing ethnic enclaves that have demonstrated changing dynamics. In Singapore, the emergence of various ethnic enclaves can be directly attributed to the Jackson Plan of 1828, which initiated a form of spatial segregation for administrative control. This led to the clustering of diverse ethnic groups on the island, including Europeans, Arabs, Bugis, Chinese, Indians, and other subgroups, into *kampongs* or quarters. Although not strictly isolated from each other, this spatial segregation has played a significant role in defining the distinctiveness of the community and its built forms (Kien 2006; National Heritage Board 2023). Leniency and assimilation have gradually permeated Singaporean society, particularly with the enactment of the Ethnic Integration Policy (EIP) in 1989. However, the colonial-era mandated places, i.e., the actual ethnic enclaves, still exhibit a higher concentration of their respective ethnic groups (Leong et al. 2020). This historical spatial segregation continues to influence the urban landscape and community dynamics in Singapore, shaping the socio-cultural fabric of the city-state.

The former administrative seat of the Dutch colony, Jakarta, bears a resemblance to other cases of colonial influence, as urban policies have played a significant role in structuring the enclaves that are now highly regarded areas within the city. Migration and economic activity have significantly influenced Jakarta's diverse ethnic communities over the centuries. Districts such as Pasar Baru, Glodok, Kelapa Gading, Condet, and Cililitan contain ethnic enclaves with distinct cultural and historical significance. Despite the impact of migration on the Betawi population, enclaves still exist in Mampang and Manggarai in South Jakarta, underscoring the city's cultural diversity and the historical significance of the Betawi ethnicity. Glodok in northern Jakarta is also a renowned Chinese district with a 370-year-old temple and a bustling bazaar selling *bakso*. Despite a history of Chinese culture suppression, political reforms after 1999 have made the country more inclusive. This has made Glodok a popular destination for Indonesians of all ethnicities, offering a pedestrian-friendly design and a variety of street cuisine that reflect Jakarta's multicultural mix (Ajistyatama 2014; Coca, n.d.).

## 2.4 Origin of Ethnic Settlements in Manila

In the Philippines, ethnic settlements are not utterly new. Manila has a long history of change and urban refitting for the needs of its diverse users. Even before the rise of colonial power, ethnic concentration was already evident with the presence of the Tagalogs, Muslims, and other groups or tribes well-settled inside dense areas considered prime or central places (Aguilar 1987; Fluckiger 2018). Pre-colonial Manila was the center of importation for the settlements around Laguna de Bay, whose population was primarily the Tagalogs. Its approximate inhabitants were 2,000 people, including 40 Chinese and 20 Japanese (Doeppers 1972).

When the Spaniards set foot in 1571, the Filipinos resorted to a scorched earth policy to deter power imposed by the colonizers. Coming into terms, a pact between the

local Rajahs and Spaniards allowed the occupation of the latter at the south bank of the Pasig River, where they established Manila as the colonial capital of the Philippines (Cushner 1960; Morley 2018). Manila was then divided into two socio-racial forms: the Intramuros (within the walls) and the Extramuros (outside the walls). Intramuros, protected by a 3,916 m long stone wall, were exclusively settled by the Western population. On the other hand, Extramuros was occupied by various Asian enclaves: the native Filipino Indios, the Chinese Sangleys, and the Japanese Dilaos (Lico 2008; Morley 2018). Throughout the course of the 384 years of colonial influence, more cultural concentrations have formed in Manila. Today, the ethnic enclaves in the city include the Chinese in Binondo and the Muslims in San Miguel and Quiapo.

## 2.5 Muslim Enclave in Manila

Manila has been a kingdom for affluent Muslims transformed from the aging Hindu kingdom when a Brunei Sultan ruled long before the Spaniards (Absari and Morados 2020; Majul 1976). This enclave was along the Pasig River, surrounded by a palisade equipped with soldiers to guard the fort. The Muslims actively engaged in trade and agriculture as they had frequent transactions with the Chinese and Bornean. When the Spanish came to Manila, its coastal areas were inhabited by Muslims who were under the rule of Rajah Sulayman and Rajah Matanda. They refused to accept the dominating power of the Spaniards but were later on defeated, hence the fall of Muslims in Manila in 1571 (Absari and Morados 2020; Majul 1966). During the Spanish colonial era, Muslims mainly engaged in retailing and trading (Watanabe 2007). During American colonization, most Muslims settled in the commercial areas of Binondo, San Nicolas, and Santa Cruz, having strong economic ties with the Chinese, who had resided there since the Spanish occupation. One of the main objectives of the Society of Indian Muslims, which was established in 1926, was to construct a mosque and a graveyard for Muslims in Manila. The organization's goal of building a mosque was not realized, but its network was passed on to the Muslim Association of the Philippines in 1949. Further into the 1960s, growing separationist tensions and armed conflict resulted in even greater migration of the Islamic population, either by force or choice, to various cities outside Mindanao and even the country. Manila and its greater metropolitan region became the preferred choice of families due to greater accessibility to permanent jobs and more stable businesses. A 3.2 ha land in San Miguel was purchased in 1964 by the association called the "Islamic Center." There were three buildings, two of which were utilized as residential areas for Muslim students and business transients. The other building was renovated into a mosque in the mid-1970s, known as the Grand Manila Mosque (Watanabe 2007). In 1976, the Golden Mosque was constructed in Quiapo as a welcome gift to the then-leader of Libya, Muammar Gaddafi, who was supposed to visit the Philippines but did not push through. This mosque is considered the largest in Manila (Calano 2015).

Quiapo, known as the heart of Manila, has long been rich in economic activities, wherein the presence of Muslim merchants can be observed. Barangays 383 and 384 in Quiapo and the adjacent Barangay 648 in San Miguel show the most substantial Muslim influence in Manila as these areas surround the Golden Mosque and the Islamic Center. Most Muslims in Quiapo manage businesses like halal food shops, jewelry, carpets, and pirated media. Several Muslims living in San Miguel also conduct their businesses in the bustling area of Quiapo (Yahya 2007).

## 2.6 Chinese Enclave in Manila

During the massive influx of silver in the 1570s, Chinese laborers and traders were attracted to migrate to the Philippines. Upon the arrival of the Spaniards in the country, the Chinese became the group offering the needed services of the colonial elite, which the Filipinos were unwilling or unable to provide. This has allowed the Chinese to establish economic stability (Doeppers 1972). While the Chinese dominated the country's local trade system, the Spaniards also imposed power by establishing a colonial government in Manila. There were over 20,000 Chinese, outnumbering the Spaniards based in Manila, who were less than a thousand. As a result, the Spanish government limited Chinese immigration and restricted the ones in the country by enclosing them in a ghetto called Parian, outside the walled city of Intramuros (Gebhardt 2017). Initially, they were dispersed in Manila, with some being able to reside within Intramuros. Imposing segregation was a strategic plan by the Spanish to limit the risk of Chinese rebellion. Fortifications and cannons were erected, pointing directly to the settlement and business area of the Sangleys as a form of defense (Flannery 2014). Initially, Parian was called Alcarceria, which means silk market. This was established in 1581 on the opposite side of Intramuros but was then moved across the Pasig River in 1583. It was important to note that not all Sangleys resided in Parian, as some were found in Tondo, where the majority of the ethnicity was settled upon the arrival of the Spanish in Manila (Weightman 1955).

In the late sixteenth century, a royal order was released to remove all Chinese in the Philippines; however, a handful of artisans and merchants were retained to ensure that services were still accessible to the Spanish settlement in Intramuros. Hence, Binondo was established as a Chinese town in 1594.

Upon the assignment of Spanish Dominican fathers, they converted the community into Catholic Chinese through baptism and marriage, with the first generation of *mestizo* offspring coming to life (Wickberg 1964). While Binondo became the "Community for the Christian Chinese and Mestizos" who received certain privileges in the seventeenth century, unbaptized Sangleys remained in Parian (Chu and See 2016; Wickberg 1964).

At the end of the Spanish occupation, Binondo remained to thrive as an economic hub for trade and commerce. During the American colonization, public elementary and night schools, socialized housing, and the concept of sanitation were introduced to this Chinese town (De Viana 2007). The area has long been a convergence point for Filipino and Chinese cultures for centuries. Historically recognized as a prominent business and luxury district, as well as a center for religious practices, it has also been a hub for the consumption of oriental cuisine. Binondo, known as the oldest Chinatown in the world, is still filled with bustling commercial strips but is trying to regain its identity due to excessive commercialization, gentrification, and increased population (Vaswani 2022).

## 3 Methodology

The study sets out its investigation by establishing first the nature of ethnic enclaves as an integral part of contemporary globalized cities. It looks into the specific cases of Binondo and Quiapo, which are the prominent Chinese and Muslim enclaves in Manila, respectively. As illustrated in Fig. 1, archival research was conducted to examine the formation of these enclaves, the development of their socio-cultural environment, and their historic urban configuration or specific location. Furthermore, relevant literature was consulted to support and further elucidate the general identity of these places. To gather the public's perspective on these ethnic enclaves, the researchers formulated a 52-item questionnaire centered on the themes of familiarity, degree of experience, discernment of the enclave's identity, distinct elements observed in these places, and streets that left a lasting impression. The questionnaire was posted online in Kobotoolbox and was distributed using a random sampling method, resulting in a total of 434 responses. The proponents also conducted a first-hand site visit to the two enclaves to strengthen the data further, explicitly documenting the existing ornaments, decorations, elements, and scenes that constitute these places' urban design and imageability. The method of documentation was through geo-tagged photographs taken by the proponents themselves, which they then supplied to QGIS version 3.26 to draw an accurate mapping of all the urban elements' locations. The survey results were then statistically treated to confirm if the initial hypothesis was true. With the representative findings from various perspectives (the public, the site, and the literature), the results were presented holistically through an analysis and conclusion. A recommendation was also made that applies to the existing socio-cultural and built environment cases unveiled within these two enclaves.

## 4 Analysis and Results

The physical boundaries of the two case studies of historical enclaves in Manila, namely the Chinese in Binondo and the Muslims in Quiapo and San Miguel, were established through Geographic Information System (GIS) mapping. Furthermore, the physical elements associated with the cultural identity of the two enclaves were identified through site observation, surveys, and mapping. The survey was divided into three categories: demographic, enclave familiarity, and perception data. These data were analyzed with the help of tables and charts and statistically treated using Analysis of Variance (ANOVA).

### 4.1 Sample size determination

Cochran's formula was used to determine the recommended number of respondents in the survey. To ensure the reliability of the responses, a 5% margin of error, a confidence level of 95%, and a population proportion of 50% were considered. Upon computation, the total sample size needed is 385 respondents.

$$n = \frac{z^2 pq}{e^2} = \frac{1.96^2(0.5)(1-0.5)}{0.05^2} = 384.16 \approx 385$$

$$Z = 1.96 \text{ for a } 95\% \text{ confidence level}$$

### 4.2 Statistical analysis on the level of familiarity and frequency of visit

ANOVA was utilized to treat the statistical data from the survey and test the hypothesis. The respondents' familiarity level was examined depending on their age and frequency of visits to each enclave. The inference of the result can be seen in the p-value, which would determine whether to accept or reject the null hypothesis ($H_0$). Moreover, the null hypothesis is false when the F-value exceeds 1.

The respondents' level of familiarity with the presence of the Muslim community in Quiapo and San Miguel was tested to determine whether there is a significant difference depending on age. The statistical results in Table 1 show that there is a significant difference in the level of familiarity and

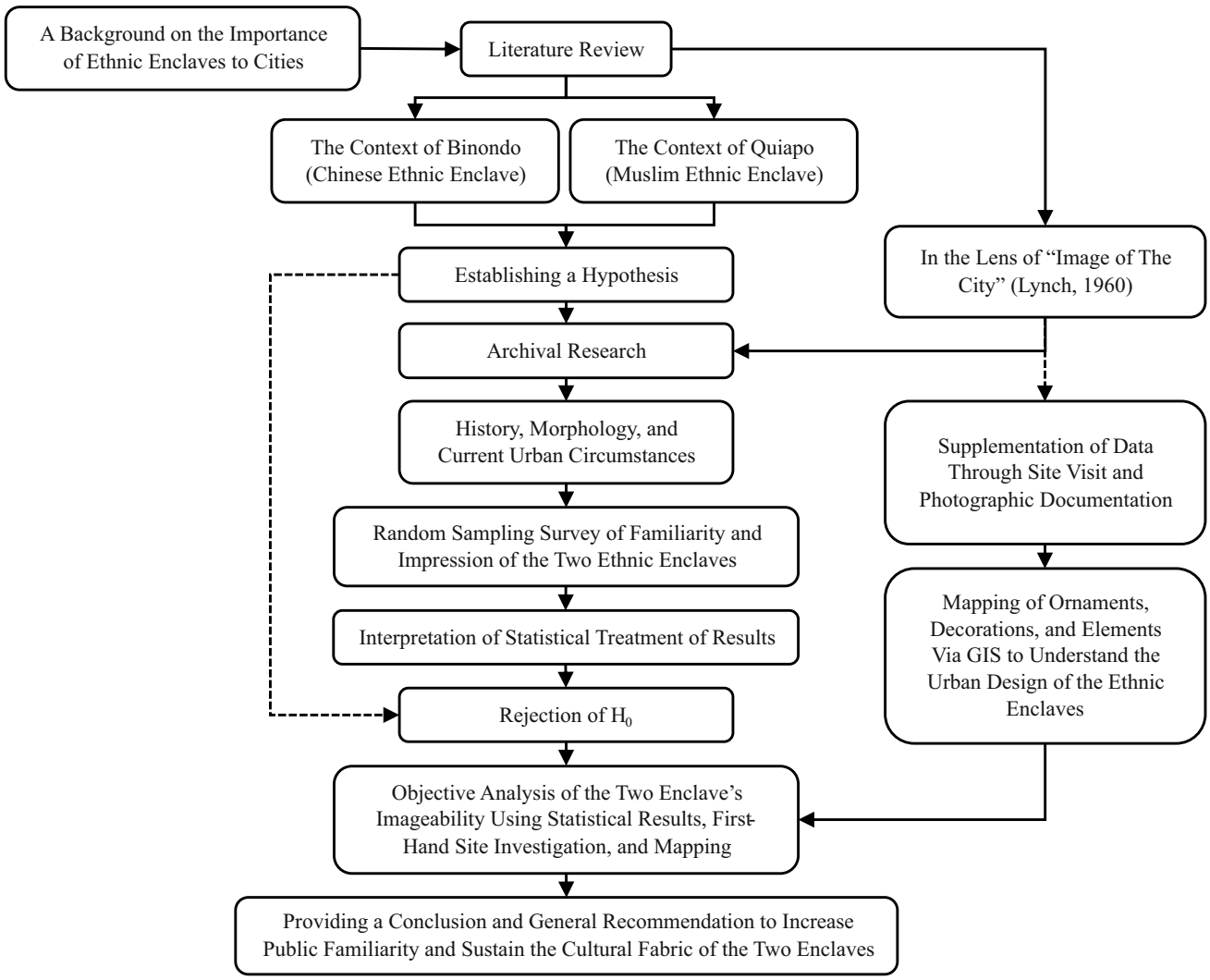


**Fig. 1** The methodology of the study (*Source* Authors, 2023)

**Table 1** Muslim enclave level of familiarity based on age

| Cases | Sum of squares | Df | Mean square | F | p | η2 |
|---|---|---|---|---|---|---|
| Age | 26.367 | 5 | 5.473 | 4.565 | <0.001 | 0.062 |
| Residuals | 411.246 | 343 | 1.199 | | | |

*Note* Type III Sum of Squares

age, with a p-value less than 0.001 and an F-value of 4.565, thus rejecting the null hypothesis. Based on the responses, people in the older generation tend to be more familiar with the Muslim enclave, while the younger respondents are more unfamiliar.

Visit frequency was set as an independent variable in assessing the respondents' familiarity with the Muslim community. From the values shown in Table 2, the number of times a person visits exhibits a significant difference in the level of familiarity, as the p-value equals 0.001. This means that the more frequently the enclave is visited, the more familiar the person is with its image. With this result, the null hypothesis is rejected, as indicated also by the F-value equating to 4.029.

An analysis was done on the level of familiarity of the respondents with the Chinese community in Binondo based on their age. Upon the determination of variance (Table 3), results show a significant difference in a person's level of familiarity depending on age, as the p-value is less than 0.001. From the survey responses, the person is more familiar with the enclave if he or she is older. This rejects the null hypothesis as the F-value is 6.727—greater than 1.

**Table 2** Muslim enclave level of familiarity based on visit frequency

| Cases | Sum of squares | Df | Mean square | F | p | η2 |
|---|---|---|---|---|---|---|
| Visit frequency | 24.329 | 5 | 4.866 | 4.029 | 0.001 | 0.055 |
| Residuals | 414.284 | 343 | 1.208 | | | |

*Note.* Type III Sum of Squares

**Table 3** Chinese enclave level of familiarity based on age

| Cases | Sum of squares | Df | Mean square | F | p | η2 |
|---|---|---|---|---|---|---|
| Age | 46.652 | 5 | 9.330 | 6.727 | <0.001 | 0.087 |
| Residuals | 488.211 | 352 | 1.387 | | | |

*Note* Type III sum of squares

**Table 4** Chinese enclave level of familiarity based on visit frequency

| Cases | Sum of squares | Df | Mean square | F | p | η2 |
|---|---|---|---|---|---|---|
| Visit Frequency | 50.658 | 8 | 6.332 | 4.564 | <0.001 | 0.095 |
| Residuals | 484.205 | 349 | 1.387 | | | |

*Note* Type III Sum of squares

The difference in the respondents' level of familiarity with the Chinese enclave was determined with regard to visit frequency. Values exhibited in Table 4 indicate a significant difference in the level of familiarity depending on how frequently a person visits an enclave, which means a person who visits more tends to be more familiar than those who visit less. Therefore, this rejects the null hypothesis as the p-value is less than 0.001 and the F-value is 4.564.

## 4.3 Analysis of the imageability of the Chinese enclave

Binondo district is famous for Chinese cuisine and budget shopping. Those familiar with the district frequently visit the place to eat Chinese food. Equally, the district offers affordable commerce combined with visual pleasure, which makes it an excellent experience for visitors. The district's most distinct landmark is the Chinese arch or *paifang*. Distinct features include shops along the famous streets, adorned with colorful banners, Chinese characters, Chinese lanterns, mystical animals like dragon and golden fish, displays of laughing Buddha, and Chinese charms with symbols.

According to 34% of the respondents, Binondo's most prominent element was structures and buildings. In comparison, 24% chose roads and streets, 18% selected landscape features, 15% picked public spaces, and 4% chose transportation and land use, respectively, while only 1% viewed Binondo as no prominent feature (Fig. 2a). This indicates that structures and buildings aid most in establishing the imageability and distinctiveness of Binondo. Toward a greater extent of Binondo's distinction, respondents have revealed that ornaments, decorations, symbols, and street signs must be seen within the district and its boundaries. There were slight differences in percentages of the different elements or features that make Binondo as a Chinese community distinct or recognizable; hence, respondents view all these as significant in establishing the identity of the enclave. Referring to Fig. 2b, slightly over a quarter (28%) agree that ornaments like dragons, laughing Buddha, and colors red and gold make Binondo a distinguishable Chinese community. A quarter (25%) chose landmarks like the *paifang*. Less than a quarter (24%) view that Chinese street signs and lucky animal signs make Chinatown recognizable, while the remaining 23% chose decorations like red lanterns. Regarding the intangible feature of olfactory (Fig. 2c), it was observed that more than half of the respondents (54%) chose Chinese cuisine as the most associated scent of Binondo. In comparison, only 3% stated that they associate the place with the smell of incense, medicine, and herbs.

Five landmarks in Binondo are known to most respondents: Ongpin Street, New Binondo Chinatown Arch, Lucky Chinatown Mall, Binondo Church, and Escolta Street, respectively. The responses also revealed that Ongpin Street is the most prominent area in Binondo, where most Chinese shops are located. It is also lined with Chinese restaurants, drawing locals and foreigners for a taste of authentic Chinese cuisine, which the area is famous for. Chinese signs, symbols, ornaments, decorations, and characters were eminent in this area. Next to Ongpin Street's popularity is the famous New Binondo Chinatown Arch, which serves as a gateway to Quintin Paredes Street, charmed with Chinese symbols and exhibits Chinese architectural character. Apart from these, Lucky Chinatown Mall gained third popularity among the locals, as it houses a wide variety of fashion brands and diverse stores with low-cost products that attract low-budget

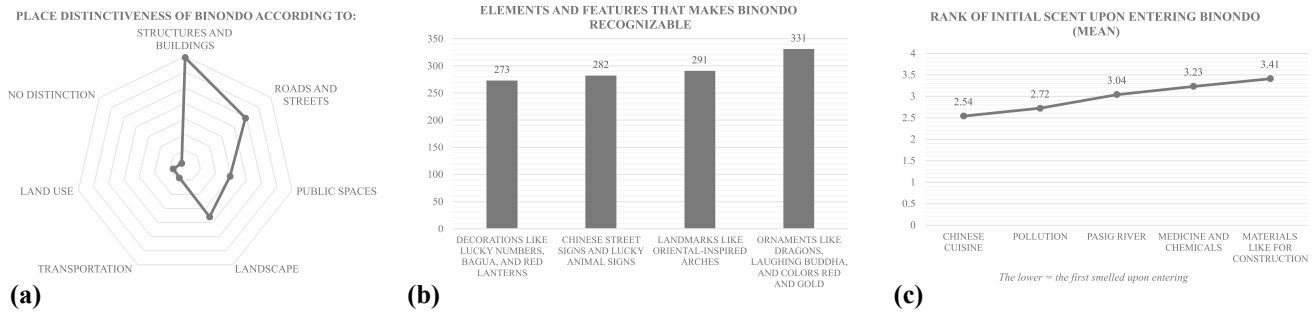


**Fig. 2** A Place distinctiveness of Binondo according to various urban design elements (*Source* Pineda, 2023) **b** Current elements and features that are seen by respondents that make Binondo recognizable (*Source* Pineda, 2023) **c** The rank of initial scent upon entering Binondo (*Source* Pineda, 2023)

shoppers. Binondo Church is one of the landmarks in Binondo, ranked fourth among the well-known distinct identities of the district. Lastly, Escolta Street became famous because of its historic significance as a financial district with the convergence of offices, shops, bars, and other businesses. The streets of Reina Regente and Quintin Paredes share the same popularity since these are major streets lined with Chinese restaurants and decorations and the Filipino-Chinese friendship arch along Quintin Paredes Street.

Upon a thorough site observation of the proponents, the locations of urban design elements such as Chinese ornaments, decorations, restaurants, and arches along Binondo streets were mapped in Fig. 3. The concentration of prominent Chinese ornaments, specifically the dragon lampposts, are found mainly in the streets of Ongpin and Quintin Paredes. Some are also seen in sections of Juan Luna Street, especially in front of the Binondo Church, and in some portions of Sabino Padilla Street intersecting Ongpin. There are 18 entrances to the Chinese enclave in Binondo, but only four existing paifang exist. Two arches are located along Ongpin Street, two bridges, the north and the south bridge, and one at its end approaching Plaza Sta. Cruz. The fourth is the recent one along Quintin Paredes Street, near the intersection of San Vicente Street.

Notable decorations like Chinese lanterns and red knot tassels are placed on lampposts in the streets of Juan Luna, Reina Regente, Ongpin, and portions of Dasmariñas and Escolta. Street signage with Chinese characters can only be found along the streets of Ongpin, Quintin Paredes, Sabino Padilla, Poblete, and Soler.

Most Chinese restaurants can be found along the streets of Reina Regente, Alvarado, Ongpin, and Quintin Paredes. However, the map also shows that not all streets of Binondo have Chinese restaurants, welcome arches, ornaments, decorations, street signs, and symbols that will help promote the district's distinct cultural identity to residents, visitors, and neighboring areas.

In terms of the five elements that impact imageability, as established by Lynch, not all paths in Binondo are furnished with ornamentations, decorations, and street signages in Chinese characters. Only streets filled with famous restaurants and shops most known to locals, particularly non-residents, display urban design elements. Considering that it was established during the Spanish occupation in Manila, paths are not wide enough to cater to smooth vehicular flow, and pedestrians tend to occupy carriageways when walking. The edges of Binondo do not consistently exhibit Chinese design elements with *paifang,* which are found only in the streets of Quintin Paredes and Ongpin. Some edges, specifically the entrances found in the bridges of San Fernando and Dasmariñas Street, are designed in red and gold, with the former lined up with Chinese lanterns on its posts. Various landmarks are found inside the Chinese enclave, ranging from notable structures to infamous sculptures (Fig. 4). Respondents have viewed Ongpin Street as a famous landmark. However, it is technically a path because it is filled with Chinese restaurants. The Binondo Church is one of the prominent landmarks in the area, with its façade featuring elements in line with Chinese culture, like the *bagua* and the color red. The busiest node is the intersection at the center of Binondo, where the Binondo Church and Ongpin Street are located. This indicates that people mostly visit the commercial strip along this area. The intersection found in the streets of Reina Regente and Soler is also active as it is near the 999, 168, and Divisoria Shopping Malls, which are occupied mainly by Chinese merchants; however, these nodes do not display any urban design elements that feature the Chinese culture. Binondo district features strong character along the streets of Quintin Paredes and Ongpin. At the same time, some Chinese ornaments and decorations are scattered along the streets of Sabino Padilla, Dasmariñas, and Juan Luna. All four components portray traditional Chinese culture, adding to the district's character.

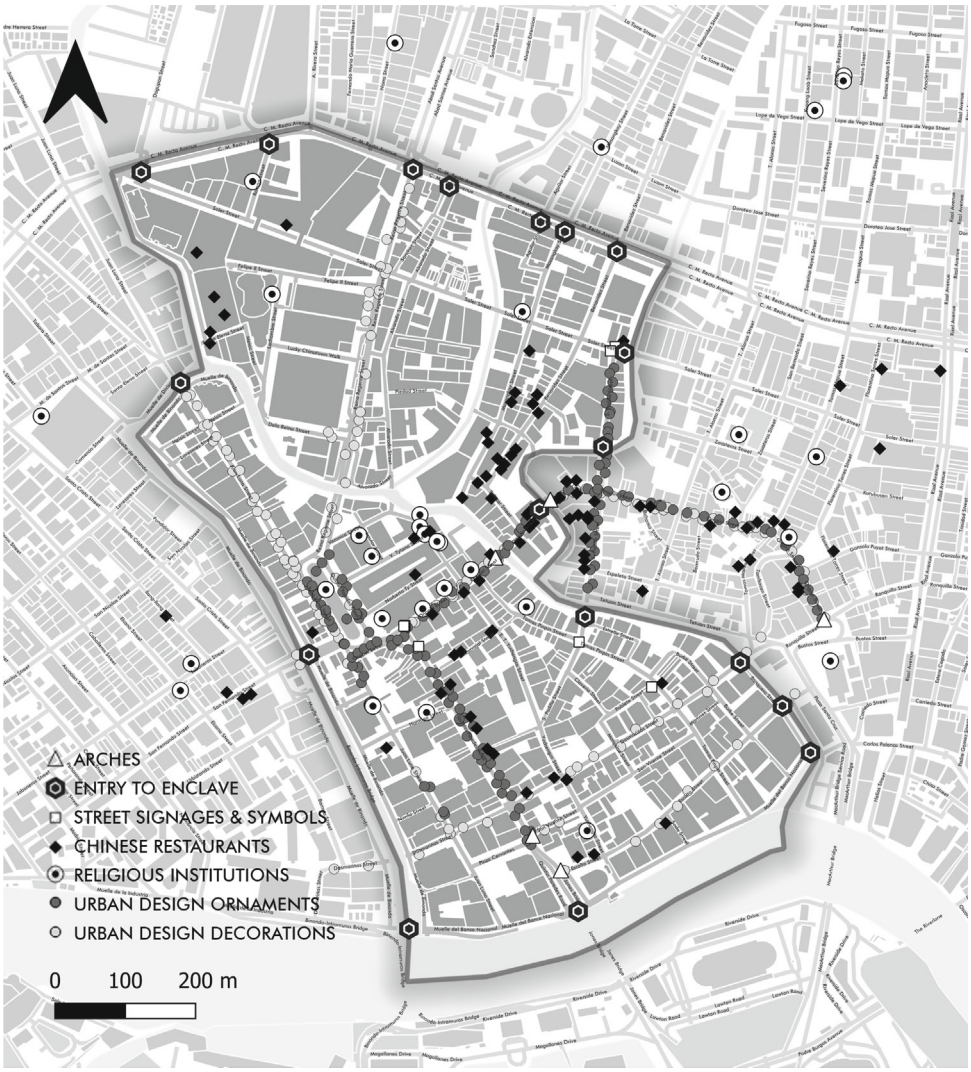


**Fig. 3** Distribution of existing urban design elements in Binondo Chinatown (*Source* Pineda, 2023)

## 4.4 Analysis of the Imageability of the Muslim Enclave

For the Muslim enclave, the most prominent features found in the community were also structures and buildings, as voted by 27% of the total respondents, while 22% chose roads and streets, 18% picked public spaces, 14% selected landscape features, 11% for transportation, 5% chose land use, and 3% declared that no prominent features could be seen (Fig. 5a). There is a significant difference in percentage derived from the different elements and features that make the Muslim community distinct or recognizable. The Golden Mosque and Muslim-inspired arches were viewed by 39% of the respondents as a distinguishable character of the Muslim community in Quiapo, while 23% chose Mosque decorations such as geometric, flower, and vegetative calligraphy to make Quiapo distinct. Moreover, 16% of selected ornaments, like *okir* and Muslim lanterns, make the enclave distinct. Insignificantly, 1% and 0.1% of the respondents revealed that stalls, vendors, Muslim products, the social sphere, and the design of the structures make Quiapo a distinguishable Muslim community (Fig. 5b).

One of the substantial findings (Fig. 5c) is the strong familiarity of respondents with the scent of candles and flowers coming from the Quiapo Church than that associated with Muslim cultures like the scent of Middle Eastern cuisine, halal food, Muslim store herbs, and food products. This signifies that the Catholic culture overpowers the existing Muslim enclave in Quiapo. The same findings were found when the respondents were asked about the most notable landmarks found in the district, wherein Quiapo Church and the adjacent Plaza Miranda occupied the list dominantly. The two were followed by Hidalgo Street, historically dubbed as one of Manila's "most beautiful and fashionable" streets as it housed grand mansions of prominent families before its decline. Consequently, it has become famous and become a landmark of its own as a shopping hub. The whole street length was lined with different stores selling various

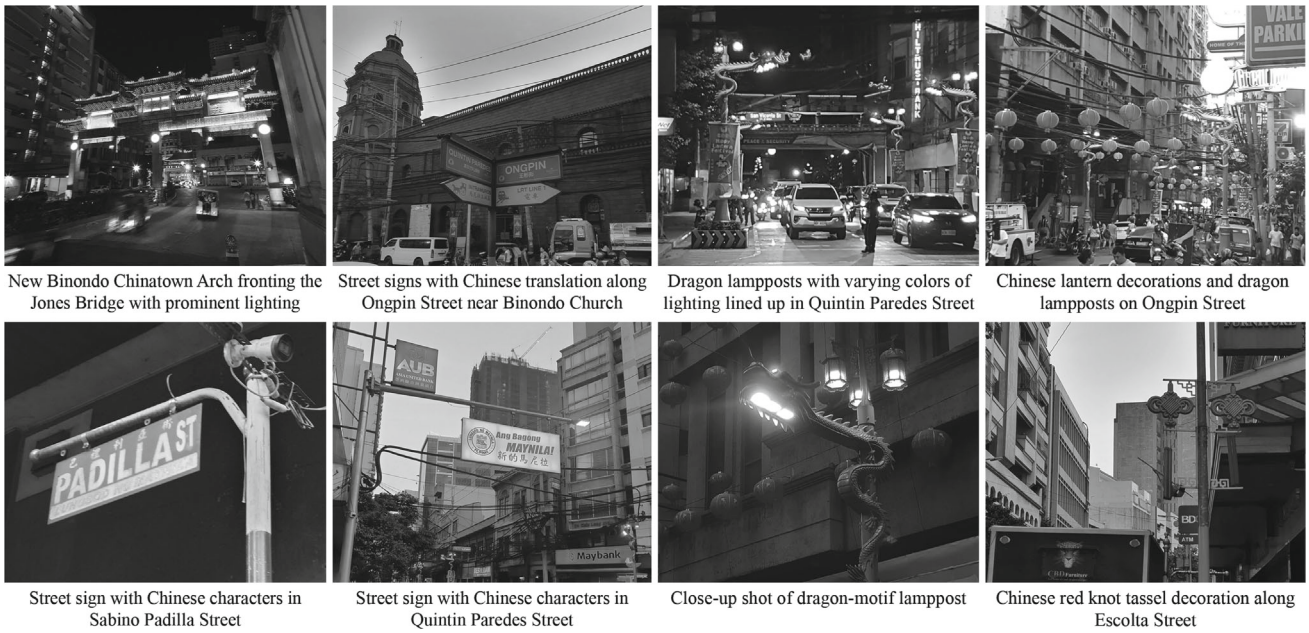


**Fig. 4** Documentation of various ornaments and decorations that contribute to the urban design of Binondo (*Source* Castillo, 2023)

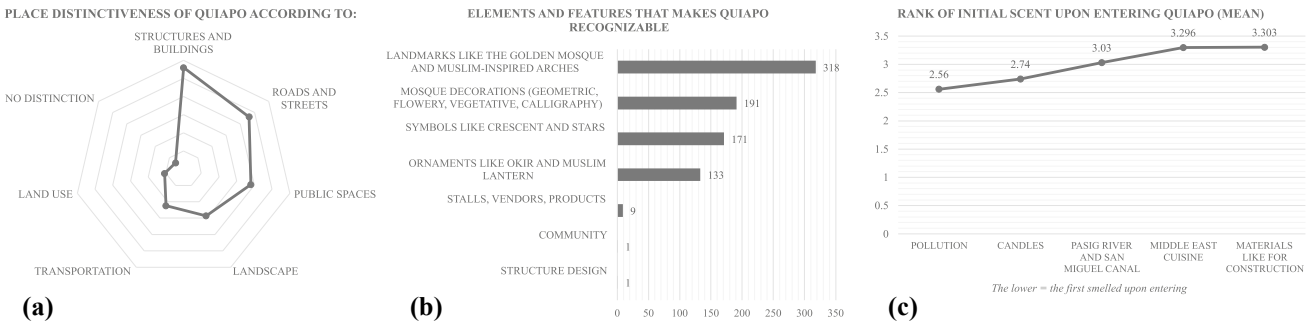


**Fig. 5** A Place distinctiveness of Quiapo according to various urban design elements (*Source* Pineda, 2023) **b** Current elements and features that are seen by respondents that make Quiapo recognizable (*Source*: Pineda, 2023) **c** The rank of initial scent upon entering Quiapo (*Source* Pineda, 2023)

goods at a budget price. On the other hand, Quezon Boulevard is the principal access to Quiapo church, a very short highway of the University Belt area. Unfortunately, these famous landmarks located on the east side of the Quiapo district are not associated with the Muslim enclave on the west side. The majority of the respondents were not intensely familiar with the presence of the Muslim community opposite the Quiapo Church.

Locations of urban design elements that depict Muslim cultural identities, such as mosques, ornaments, decorations, halal food shops, and Muslim apparel stores, as well as the boundaries of the enclave, were established from the proponents' first-hand site observation and mapping, as seen in Fig. 6. The Muslim enclave is located in Barangay 383 and 384 in Quiapo and 648 in San Miguel. The concentration of Halal food shops and Islamic apparel stores were dispersed along the streets of A. Bautista, Elizondo, and Arlegui all in Barangay 383. There are four Muslim mosques in Quiapo district. The Manila Golden Mosque and Cultural Center, otherwise known as the Masjid al-Dahab, the largest mosque in Manila, is located within the predominantly Muslim section of Quiapo in Barangay 384, together with the Quiapo mosque on its left. The Ma'had Manila and Islamic Center Mosque is located in Barangay 648, and the last one is the Al Fatah Mosque, located across the Muslim enclave near the Quaipo church.

There are 11 entrances to the Muslim enclave in Barangays 383 and 384, while there are three in Barangay 648, with only two arches serving as a gateway. The Golden Mosque arch, featuring *sarimanok* statues and small domes with crescents, is located at the entrance of Globo de Oro Street. The other arch is located at the entrance of Barangay


**Fig. 6** Distribution of existing urban design elements in Quiapo Muslim area (*Source* Pineda, 2023)

648, adorned with geometric patterns on its column and crescents on top of it. Muslim ornaments like *okir* and lanterns are nowhere in the enclave's streets. Decorations such as geometric, flowery, and vegetative patterns were also lacking, with only six vegetal-inspired lampposts along Gunao, Elizondo, and A. Bautista Street. Only the crescent symbol is displayed on their arches. All of these impact the establishment of Muslim cultural identity within the Quiapo and San Miguel district to its residents, visitors, and neighboring areas.

The Muslim enclave was also analyzed based on the five elements that impact the imageability created by Lynch. The site observation, documented in Fig. 7, has determined that the paths do not display Islamic ornamentations and decorations except for a few vegetative lampposts along Gunao and A. Bautista Street. Globo de Oro Street, where the Golden Mosque Arch is located at the entrance, was not passable as it was converted into a parking area. Sidewalks were absent; hence, the vehicles and pedestrians merged in carriageways. The edges of the Muslim enclave also do not consistently show character. Only Barangay 384 in Quiapo and Barangay 648 in San Miguel display arches that depict Muslim elements and patterns. The landmarks in the area that show strong Islamic representation are mosques, four of which were found in the two districts, one near Quiapo Church, two in Barangay 384, and one in Barangay 648. There are no significant findings regarding nodes in the enclave except for the common connecting points to Islamic apparel, halal food shops, and other stores. The Muslim enclave occupies two districts and three barangays in Manila, which are closely adjacent. Barangay 648 is more of a residential area compared to the bustling commercial zone of the two other Barangays in Quiapo. Most Muslim residents in Barangay 648 are merchants in Quiapo. Of the three barangays in the enclave, Barangay 383 does not significantly display any Islamic characters, elements, or landmarks.

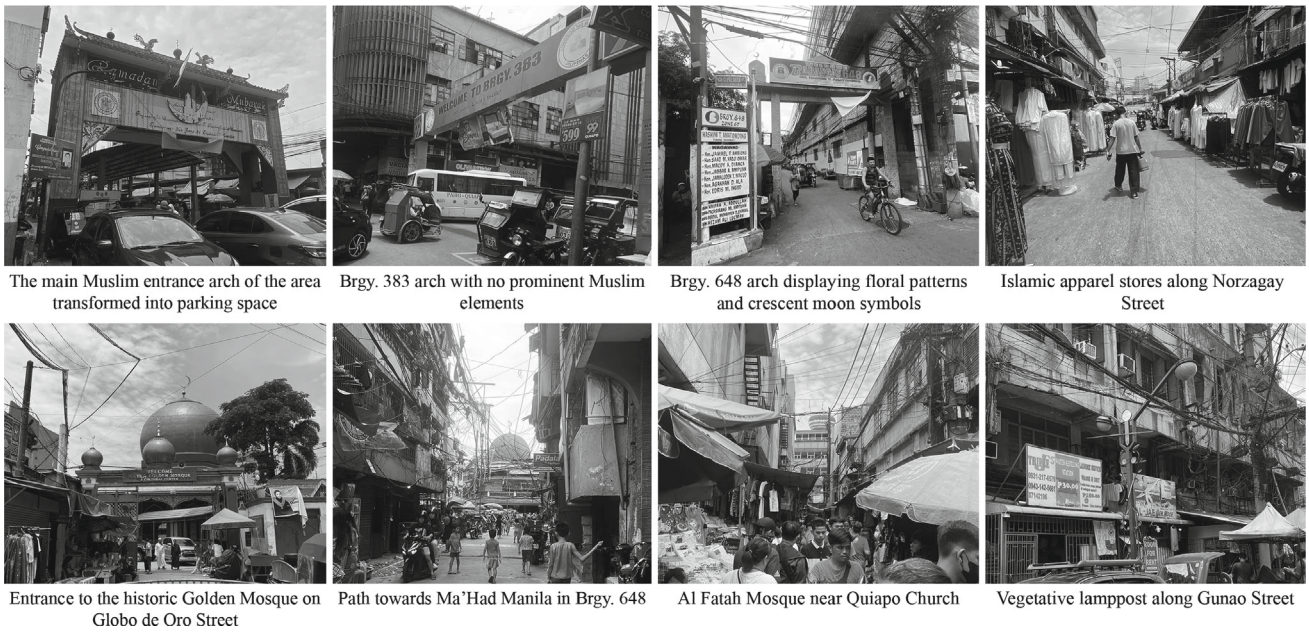


**Fig. 7** Documentation of various ornaments, decorations, and scenes that contribute to the urban design of Muslim Quiapo (*Source* Pineda, 2023)

## 5 Conclusion and Recommendation

The study focused on a detailed analysis of urban design elements that could be incorporated into the paths, landmarks, edges, and nodes of the Chinese enclave in Binondo and the Muslim enclaves in Quiapo. This was undertaken to provide an objective scientific basis to sustainably enhance the placemaking of these ethnic enclaves and advance their distinct cultural identity. The results of extensive surveys, site visits, and GIS were used to arrive at these findings, which are expected to impact the development and redevelopment of ethnic enclaves significantly.

While Manila's Chinese and Muslim enclaves may be similar in their current socio-cultural circumstances, their historic urban formation is largely distinct. The historical trajectory of Binondo and Quiapo provides insight into the various causes that contribute to the creation of ethnic enclaves and the ways in which spatial segregation is manifested. As narrated in several historical accounts, Binondo was a deliberate effort for spatial segregation created by the Spaniards in the sixteenth century to impose physical and social control on the northern bank of the Pasig River. It is among the several organized settlements in the capital city that were notably within the range of the cannons of Intramuros and were subjected to religious and civil colonial control. As such, it is clear that this ethnic enclave is borne out of legal segregation. Such a particular case serves as a prime example of how external intervention can significantly impact urban environments in an effort to control both society and physical space. On the other hand, the part of Quiapo occupied by Muslims has organically evolved. The push-and-pull factors hugely influenced it in the latter part of the twentieth century. The flourishing job market and greater economic stability in the metropolis, along with the convenience and accessibility brought about by urban living, have been the inviting factors for Muslim families seeking a safe and secure home. This is particularly significant given the longstanding political strife in Mindanao dating back to the 1960s, which has made finding suitable housing and employment a challenge. This can then be classified as a form of voluntary segregation. These specific instances clearly illustrate that ethnic enclaves can emerge either organically, due to a particular location's inherent appeal and prospects, or through deliberate interventions by governing entities or urban planning endeavors. The historical circumstances of Manila's Chinese and Muslim enclaves provide a compelling study of the complex interplay between geographical segregation, socio-cultural dynamics, and historical events in shaping urban landscapes.

The two enclaves were analyzed through Lynch's lens, discovering the significant role of structures, roads, streets, landscape features, and public spaces in their socio-cultural identities. The survey further indicates that gateways (Chinese and Muslim arches) play remarkable cultural icons by simultaneously acting as landmarks. The bustling streets of the Chinese enclave in Binondo owe much of their vibrancy to the presence of various stores and restaurants and the ornamental and decorative elements of urban design that adorn the area. These urban embellishments add visual interest and serve as a clear boundary, signaling to pedestrians that they are within the limits of the enclave. The

strategic placement of these symbols is crucial in defining the district's edges, while nodes—essential points of connection between different areas—must be carefully planned to ensure ease of navigation for pedestrians.

In reference to the survey results, the two ethnic enclaves were not well-known, particularly to the younger generation and those who visit less frequently. Therefore, the established null hypothesis is rejected, as there is a significant difference in familiarity with an enclave depending on age and visit frequency. Furthermore, the youthful visitors' lack of solid familiarity with the Binondo and Quiapo ethnic enclaves implies that urban identities were not firmly manifested in the physical urban environment of both districts. Based on critical assessments, the Chinese enclave in Binondo already offers sensory stimulation, which is fundamental to the cultural experience of the residents and visitors. However, there is a need to further promote cultural identity by maximizing the placement of Chinese ornamentation, decoration, signs, and symbols within the enclave and on the bounding paths and edges. Meanwhile, the Muslim enclave in Quiapo needs to further establish its cultural identity through sensory stimulation, Muslim-inspired ornamentation, decorations, signs, and symbols on its inner territory and peripheries, as they are severely lacking. Implementing these urban design measures to establish urban distinctiveness in the enclave is expected to increase its visibility among non-residents significantly.

In order to strengthen the imageability and identity of the two enclaves, Chinese and Muslim-inspired ornamentation, decoration, signs, and symbols are vital elements to be seen inside, as well as places leading to these urban domains where visitors' visual access is critical. Furthermore, sensory stimulation is imperative in establishing the cultural identity of both enclaves. As exemplified in this study, streets play a significant role in showcasing cultural identity, as it is the common point where people experience the city or, in this case, a district. They should stand out as landmarks on their own, with a range of activities, such as shopping for distinct Chinese and Muslim products or dining with authentic cuisines, to maintain variety and vitality. However, the random locations of landmarks, nodes, street signs, symbols, ornaments, and decorations within the ethnic enclaves can create fragmentation and dilute identity. Therefore, both tangible and intangible elements must be consistently integrated wherever possible to preserve the unique cultural identity of both enclaves. Professionals in design, planning, and related fields are continuously refining their placemaking techniques while researchers are exploring ways to enhance further the cultural identity and aesthetic appeal of these distinctive locations. To achieve improvement, particularly one that is culturally accurate and sustainable to the imageability of ethnic enclaves, it is crucial to establish guidelines for physical development. Based on the insights gained from this study, they should encompass building facades, streetscapes, other urban design elements, and even day-to-night activities. By intensifying the lifestyle and experience of residents and visitors, these standards can help shape the present and future development and redevelopment of ethnic enclaves. Additional extensive research may be conducted to build on these findings, including cultural mapping, immersion, and focus-group discussions.

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