The Spatial Expression of Informal Livelihoods: An Examination of Charcoal Production in Tondo, Manila and Resettlement

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Abstract

Access and provisions for livelihood are mandated by policies in housing resettlement. However, while the design and planning of housing developments typically focus on the particulars of housing units, little attention is given to the spatial details of livelihood reconstruction. The study addresses this issue by examining Ulingan, an informal settlement engaged in the communal production of charcoal, clarifying its spatial organization, and comparing it with St. Martha Estate Housing, the resettlement site. By examining charcoal-making in Ulingan and its spatial characteristics, the research sheds light on the organization of space in communal livelihoods within informal human settlements and highlights how it compares with socialized housing templates. ***The study suggests that, although spatial organization influences the cultivation of systems of cooperation in livelihoods, it is also important to consider the broader context in which informal livelihoods thrive. Future studies should examine the impact of spatial organization in different types of resettlement sites (e.g., in-city, off-city, slum upgrading) across various types of informal economies to inform planning for livelihood reconstruction.***

Keywords: informal economy, informal settlements, livelihood reconstruction, resettlement, socialized housing

I. Introduction

Livelihood is widely acknowledged as essential in the successful relocation of informal settlements to formal housing sites. In the Philippines, the *Urban Development and Housing Act of 1992* (UDHA) identifies affordable housing, basic services, and access to livelihood as requisites in the upliftment of the living conditions of the urban poor (*RA 7279*, 1992). Typical socio-economic spaces such as neighborhood multipurpose buildings, shopping centers, and transportation terminals are mandatory in socialized housing design (HLURB, 2008). However, little attention is given to the spatial requirements for livelihood reconstruction that restores and improves existing socio-economic systems in informal settlement relocation and the lives of resettlers.

To explore this issue, the study examines the role that existing livelihoods can play in informing its restoration at resettlement sites. Specifically, it scrutinizes the spaces in an informal charcoal production settlement in Tondo, Manila (Ulingan) and juxtaposes it against the off-site socialized housing development where the community was relocated (St. Martha Estate Homes). By examining charcoal-making in Ulingan and its spatial characteristics, the research sheds light on the organization of space in communal livelihoods within informal settlements and highlights how it compares with socialized housing templates. While the study recognizes the poor living conditions at the site brought about by charcoal production, it does not make any assessment on environmental quality and is limited to characterizing spatial organization. Data from field observation, key informant interviews, satellite imagery, and archival records are coded and analyzed to inform the research.

A. Background of the Study

The study focuses on an informal settlement engaged in the production of charcoal in the Tondo Manila Bay Area. The community was known as "*Ulingan*," derived from the word "*uling*" or charcoal, and was located at the northwestern edge of the Vitas Reclamation Project owned by the National Housing Authority (NHA). From 2013 to 2014, houses and charcoal stations were incrementally demolished, and residents were relocated in phases to St.

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Martha, a rowhouse development in a peri-urban site in Bocaue, Bulacan, approximately 33 kilometers away from the Tondo Manila Bay Area (Figure 1).

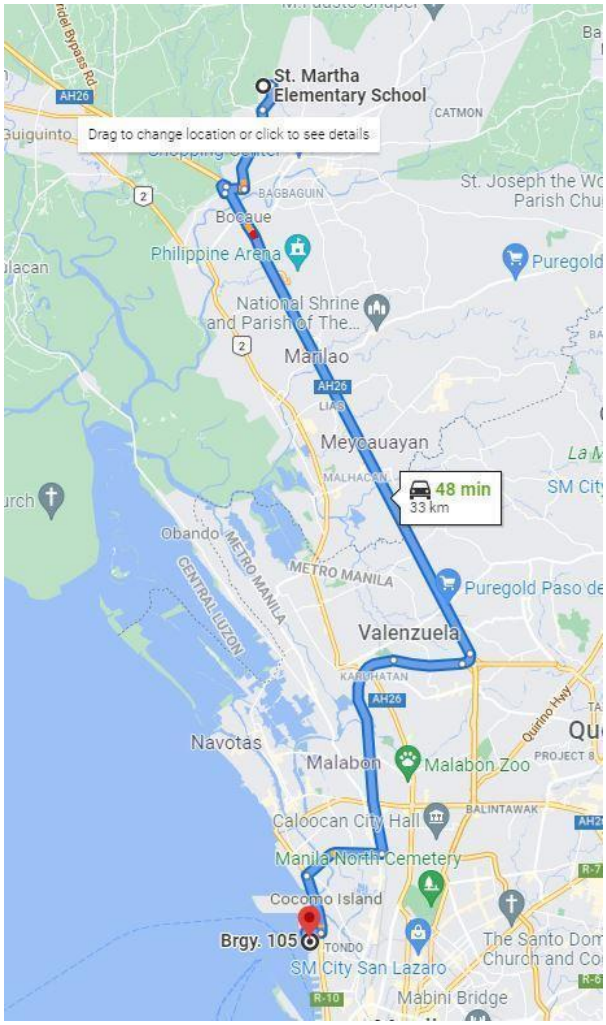

Figure 1. Directions from St. Martha Estate Housing to Ulingan, Tondo Manila. *Source: Google Maps, 2021.*

Informal charcoal production, an unregulated and illegal practice, has negative impacts on the environment and is associated with a number of occupational hazards. However, charcoal-making was a source of low-skill employment and income for the community and, apart from providing affordable energy to nearby low-income households, Ulingan also supplied charcoal to markets in other parts of Metro Manila.

Prior to eviction and relocation, Ulingan had more than a hundred self-built proprietary charcoal stations clustered at the center of its community surrounded by makeshift housing structures that were occupied by 330 recorded informal settlement families (NHA, 2013). It was part of a larger amalgamation of informal settlements along the bay. What set Ulingan apart from the other communities was its distinct and unique character defined by the production of charcoal—thick, smoky air, blackened structures, and the pervading odor of burnt wood. The "ulingan" was not only central to the community's economy but was also its identity. Aside from the lack of basic services, environmental quality was poor and charcoal-makers were not equipped with personal protective equipment (Figure 3).

In contrast, St. Martha Estate Homes in Batia, Bocaue, Bulacan is a rowhouse development that is typical of socialized housing units provided by the NHA, that included primary amenities such as power and water (Figure 3).

Figure 2. Charcoal production in Ulingan, Tondo, Manila. *Source: Olivia Alma G. Sicam, 2013.*

Figure 3. St. Martha Estate Housing, Bocaue Bulacan. *Source: Olivia Alma G. Sicam, 2016.*

B. Problem and Objectives

Access to livelihood is a primary consideration in the provision of shelter for the urban poor. However, unlike housing units, it is not expressed in detailed spatial or architectural terms and little attention is given to livelihood reconstruction during the design process. Current research and industry practice in socialized housing design and construction traditionally focus on the delivery of housing units. As a result, ways to meaningfully restore livelihoods in resettlement sites from a design and planning perspective are understudied.

To address this issue, the study aims to emphasize the role of space in the livelihoods of informal settlements by comparing the spatial organization of an evicted community and its relocation site. Consequently, the study has the following objectives: first, describe the existing livelihood system at Ulingan; next clarify its spatial organization and the spatial organization of St. Martha Estate Homes, the typical housing development where the community was relocated; and finally, compare the spatial qualities of both sites.

This study, by closely investigating the urban form of a livelihood-based informal settlement and its relocation site, can provide a more nuanced understanding of a community's existing socio-economic life that may inform the spatial terms of livelihood reconstruction in the design and planning of socialized housing prior to resettlement.

C. Review of Related Literature

Legislators recognize that socialized housing is rejected by a large percentage of beneficiaries due to the off-city location of resettlement sites, which tend to be far from income sources (*SBN-690*, 2019). As a result, the lack of economic opportunities is cited as one of the main justifications for amendments made to existing housing laws (*SBN-690*, 2019; *SBN-1216*, 2016; *HBN-236*, n.d.). But while livelihood and economic opportunities are widely acknowledged as essential components in socialized housing development, unlike housing units and basic services, they are not explicitly described in spatial or physical terms under the law or in guidelines set by government agencies aside from references to proximity, land area, and density.

Spatial provisions for livelihoods under the three (3) Philippine housing agencies—the Urban Development Coordinating Council (HUDCC), the National Housing Authority (NHA), and the Housing and Land Use Regulatory Board (HLURB)—are vague and inadequately represented. To illustrate:

1. The National Informal Settlements Upgrading Strategy (NISUS) of the Philippines, a report prepared by the HUDCC in 2014, envisions all informal settlement families (ISFs) to live in resilient, vibrant, and connected communities with transportation and telecommunication links to employment and other sources of livelihood (HUDCC, 2014). It references the UDHA, which aims to uplift the living conditions of the homeless by providing affordable housing, basic services, and access to livelihood through different national and local government agencies. In the UDHA's Implementing Rules and Regulations (IRR), livelihood is a part of post-resettlement procedures and is provided through skills training, livelihood programs, and loans (*RA 7279*, 1992).
2. The NHA is charged with developing and implementing housing programs in the Philippines, which includes housing development and resettlement, financing schemes, and private-public partnerships. Its mission is to build affordable, livable, and inclusive communities that have access to utilities, social services, and livelihood opportunities (NHA, n.d.). In line with its goals of providing technical assistance in housing development and planning, the agency recently published design and training manuals for housing units (NHA, 2017). The manuals cover the drawing details and specifications for residential units but do not provide any guidelines or recommendations for the design and construction of livelihood spaces in socialized housing developments. Furthermore, in the different phases identified in the NHA's process of providing shelter (pre-implementation, implementation, and post-implementation), livelihood is considered during implementation, which is already at the phase of infrastructure construction and the provision of basic services and community facilities (NHA, 2015). That is, it is phased after site planning and architectural and engineering design.
3. The HLURB has the authority to prescribe standards and technical requirements for socialized housing. Its Implementing Rules and Regulations (IRR) of 2008 provides the basis and objectives for the minimum design standards and prescribes technical and building design guidelines. In it, the different parameters in the formulation of design standards are identified, including the basic needs of human settlements, identified as water, movement and circulation, storm drainage, solid and liquid waste disposal, park/ playground, and power. The IRR also includes minimum standards in the provision of livelihood spaces. The mandatory allocation for community facilities, such as neighborhood multi-purpose centers, convenience/ retail centers, schools, and tricycle terminals, is described as a function of gross land area, or the number of saleable lots and dwelling units of the housing development, and as a function of density, or the number of lots or dwelling areas per hectare. These spaces are recommended to be located strategically within the development with a preference toward adjacency to the park or playground. (HLURB, 2008)

Current socialized housing development policies in the Philippines are replete with design and construction guidelines for housing units while livelihood provisions are relegated to post-resettlement procedures that focus on facilitating assets and developing skills. Although it is acknowledged that resettlement provides improved housing conditions, most displaced families still experience negative impacts on their livelihood circumstances (Nikuze et al., 2019). Because the exclusion of livelihood reconstruction in the planning and development of resettlement projects can intensify generational poverty and heighten impoverishment risks. Thus, development studies advocate for the inclusion of livelihood reconstruction in planning processes (Cernea, 2008; Cherunya et al., 2021; Koenig, 2014; Nikuze et al., 2019), which includes involving affected communities in discussions during preparatory stages (Nikuze et al., 2019). However, there is a tendency for the participatory approach

in slum upgrading to be narrowly interpreted and fail to respond to the livelihood reconstruction needs of communities. Traditional approaches to sustainable livelihoods focus on the facilitation of assets and do not address the adaptive strategies that emerge in precarious circumstances to secure livelihoods (Cherunya et al., 2021). Furthermore, urban resettlement deals with a range of complex issues, including the diversity of livelihood strategies and incomes among the urban poor (Koenig, 2014). This underscores the inadequacy of current standardized solutions for restoring and improving the socio-economic capacities of displaced communities.

The role of space is emphasized in mapping the precariousness of day-to-day activities to fulfill the livelihood needs of the urban poor. In a study on the challenges of reconstructing livelihoods in the context of informal settlement upgrading, Cherunya et al. (2021) found that domestic spaces in improved housing disregard the dynamic circumstances of beneficiaries and prevent them from accessing alternative livelihoods, which may result in the deterioration of housing facilities. Their research suggests that a lack of understanding of livelihood reconstruction can degrade spatial quality, worsen living conditions, and contribute to further impoverishment. This study builds on the examination of space as a primary component in livelihood reconstruction by utilizing urban design language to characterize spatial organization.

D. Methodology

The study explores ways informal livelihoods can be characterized by examining the spatial organization of charcoal production in an evicted informal settlement and by comparing it with a typical resettlement site. It aims to systematically describe and compare the order of spaces in informal and formal housing with a particular focus on livelihoods. The study draws on two (2) sets of data: qualitative primary and secondary data collected from 2013 to 2014, during the relocation period; and data gathered in 2016 and 2021 after resettlement.

A case study is used to compare pre- and post-resettlement livelihood spaces. Data are examined and collected on the informal settlement, Ulingan, and the relocation site, St. Martha Estate Housing, through field observations and interviews. These are then reviewed, coded, and mapped. Spatial patterns and themes in both sites are identified and examined using spatial principles of urban design (Schenk, 2013). These principles clarify the organization of space by categorizing urban forms according to typology (Table 1). Diagrammatic maps are coded on satellite images extracted from Google Earth Pro.

Table 1. Organizational Principles (adapted from: Schenk, 2013)

URBAN DESIGN ORGANIZATION PRINCIPLES			
SPATIAL PRINCIPLE	TYPES	DESCRIPTION	
General Organization	Non-Geometric	Biomorphic/ Organic	Curved layout; shaped by natural forces; evolved, vibrant, dynamic, or fluid character.
		Free, Artistic Composition, Collage	Loose arrangement of buildings in a park; detached; free; soft and fluid; planned; requires an explanation from authors.
	Geometric	Orthogonal Grid	Efficient division of land; common organizing principle; lots are arranged in an orthogonal grid.
		Circular	Radial streets.
		Hexagonal, Star, Honeycomb	Non-hierarchical hexagonal grid; hexagonal city blocks.
Spatial Relationships	Additive	Pre-defined parts; the sum of assembled parts; can be applied in different scales; can either be augmented, changed, and extended or fixed; not confined to a grid.	
	Divisional	Pre-defined overall form; parts are generated by dividing the whole.	
	Superimposition	Superimposing two or more ordering systems; enriches the spatial experience.	
	Single Entity/ Grad Form	Individual parts merge into an overall form; can be non-geometric or geometric; enclave.	

Primary data were collected through systematic observations and semi-structured interviews during field visits from 2013 to 2014, covering the last year of charcoal production, the demolition of Ulingan's structures, and the eviction of the community, and in 2016 in St. Martha Estate Housing, documenting the resettlement site. Panoramic photographs from Google Street Views are also used. Most field visits to Ulingan were conducted with the assistance of a local guide from the Tondo Manila Bay Area, while other visits were NHA-assisted inspections during incremental clearing and relocation operations. Observation, documentation, and interviews at Ulingan, recorded through field notes, photo documentation, and video recordings, aimed to distill information on the charcoal production process, networks, and their spatial outcomes. The interviews in St. Martha Estate Housing in 2016, on the other hand, aimed at gathering data on the spatial character and livelihood opportunities at the relocation site. To this end, interviews with former Ulingan residents who continued to work in Manila despite resettlement were also conducted in the vicinity of the former site, Barangay Aroma, in the Tondo Manila Bay Area in 2016 and in 2021. Participants in interviews before and after resettlement were composed of convenience samples of charcoal producers and their networks. Among the participants, two (2)—Respondent 1 (R1) and Respondent 2 (R2)—were interviewed in the pre- and post-resettlement phases in 2013, 2014, and 2016. R1 was also interviewed in 2021 with other respondents. These interviews provided insights into the progression of experiences of the same individuals and their families over time. NHA employees, barangay officials, and community leaders were also interviewed for additional context. Archival records to verify geographic and demographic data were collected from the City of Manila, the Department of Social Welfare and Development (DSWD), and the NHA.

The study recognizes a number of limitations. First, the analysis only considers the internal spatial elements in both sites and does not look into external variables such as geographic and socio-economic characteristics that may also have a significant impact on livelihood development. Second, the informal economy is a complex network that involves an immense variety of goods, services, and markets. Ulingan's very specific focus on charcoal production limits the study's generalizability. Third, the interviews were not exhaustive and are not representative of the entire community. Resettlers have different resources and capacities and will, therefore, have varying experiences. To address these issues, further research can also include an examination of extraneous variables that can influence livelihood reconstruction across different informal typologies and geographies (e.g., in-city/off-city resettlement) that includes a larger sample size or a more diverse profile of interview participants.

II. Data and Findings

The study focuses on the spatial outcome of the socio-economic activities in Ulingan, an informal collective involved in the production of charcoal, and compares it with the spatial qualities of St. Martha Estate Housing, the off-city resettlement site where the community was relocated. By comparing and contrasting the two (2) urban forms, the research provides insights into the role of space of informal livelihoods in the restoration of existing socio-economic systems in socialized housing developments.

The findings of the study are presented chronologically. First, charcoal production in Ulingan is described to establish the existing livelihood system of the community. Next, Ulingan is characterized to clarify its spatial organization prior to demolition, followed by the characterization of St. Martha Estate Housing where the community was incrementally resettled after eviction. Ulingan was an informal settlement located in the port area of Tondo, the most populated district in Manila with 628,363 people (PSA, 2015). In contrast, St. Martha Estate Housing is located in Bocaue, Bulacan, a peri-urban site with a population of 119,675 (PSA, 2017).

A. Ulingan Livelihood Systems

Ulingan was accessed through R-10 by entering the NHA right of way that was also the main access road to Pier 18, which served as a temporary dumpsite for Manila's wastes. A dirt road leading to the community through Sitio Damayan, a larger informal settlement, could be traversed on foot or in different types of land vehicles—from small pedicabs to large dump trucks. The site was bounded to the north and west by the bay, to the south by a privately leased area, and to the east by Sitio Damayan. There were no connections to basic services such as power and water.

Charcoal production involved different sets of people: the community leader, charcoal producers (proprietors and laborers), raw material suppliers (junk shops, dump trucks, scrap wood collectors or *mangangahoy*), and buyers (wholesale and retail). The community leader assigned plots to proprietors for charcoal stations. The proprietors could perform multiple roles: from collecting their own scrap wood for raw materials, providing their own labor in the making of charcoal, and selling their own products directly to end-users. There were four (4) key stages: (1) delivery and stockpiling of raw materials; (2) production; (3) packaging; and (4) trading/distribution (Figure 4).

Delivery and stockpiling of raw materials.

The raw materials used in the production of charcoal were used and discarded wood, sourced from nearby port facilities and construction and demolition sites all over Metro Manila. Wood raw materials were brought to designated stockpiling areas or *tambakan* inside Ulingan that were easily accessible to charcoal producers. These

were delivered directly to Ulingan or through middlemen, such as the junk shops and the *mangangahoy* in the Tondo Manila Bay Area. Some Ulingan charcoal station proprietors were also involved in collecting their own scrap wood. Drop-off areas for stockpiling raw materials were located along R-10 and in designated tambakan areas in Ulingan. The scrap wood was delivered in large quantities by dump truck or in smaller quantities by pedicab, sidecar, or *kuliglig* (modified motorized pedicab) or other such light vehicles.

Production

The production process of charcoal involved sorting, stacking, carbonization, and cooling. This was accomplished in designated, independently-owned charcoal stations or kilns. While charcoal-making was a communal industry, each kiln or station had its own production schedule depending on the resources and skills of each proprietor. Based on interviews, the number of charcoal stations ranged from one hundred (100) to one hundred forty (140), with production capacities that ranged from fifteen (15) to one hundred (100) sacks per cycle depending on the size of the charcoal kiln. Each sack of charcoal produced could be divided into fifty (50) smaller packages that were sold for individual household use. On average, each charcoal station had a production rate of two cycles per week.

Stacks of scrap wood were brought to individual charcoal stations by light vehicles or on foot. Preparation for a batch of charcoal took half a day. Solid wood pieces were neatly stacked inside the stations, enclosed from bottom to top in scrap galvanized iron sheets, and topped with soil. The stack was then lit up with fire for the three-day carbonization process of wood. After carbonization, the kiln was cooled by sprinkling water brought in small buckets and the metal enclosure was then removed for re-use in the next cycle.

Packaging

The finished charcoal was sorted and packaged by sack or by smaller plastic bag units. The charcoal was packaged and sold in two (2) ways—in PVC sacks to be sold wholesale on-site or delivered to markets, and in smaller plastic bags to be delivered and sold retail to the nearby communities. Each piece of carbonized wood was inspected for nails, screws, and other attached recyclable materials during the packaging stage. Recovered objects were collected and sold to the junk shops along R-10.

Trading and Distribution

Charcoal proprietors either sold their products to wholesale buyers, who purchased the charcoal on-site and distributed them off-site, or they engaged in off-site wholesale and retail delivery themselves. The markets for Ulingan-produced charcoal included five (5) informal settlements in Tondo with the highest population in Manila—Baseco, Parola, Aroma, Vitas Katuparan, and Smokey Mountain; major markets in Manila—Divisoria and Pritil; and major markets in nearby areas outside of Manila—Navotas and Malabon.

The relocation process and incremental demolition of housing structures began in 2013. By 2014, housing structures were completely demolished while the proprietors of the remaining charcoal stations completed their last batches of charcoal. In interviews, the last proprietors on-site expressed feelings of apprehension and uncertainty toward the future at the loss of their main source of livelihood.

Housing conditions were significantly improved at the resettlement site, in comparison to the makeshift housing structures in Ulingan. This was observed during a field visit and interviews in 2016. However, some of the resettlers complained of lowered incomes and difficulties in sourcing alternative livelihoods. Others maintained ties with Tondo, Manila. Two (2) respondents from 2013 and 2014, R1 and R2, were interviewed at St. Martha Estate Housing. R1 secured quarters at Barangay Aroma, an informal settlement in Tondo, Manila near the former Ulingan, and opened a market stall while maintaining her housing unit at St. Martha. Her husband engaged in other sources of income, such as pig farming. R2 continued to produce charcoal in a different town in Bulacan, which she sold at a public market in Tondo, Manila. Both indicated that they were additionally burdened by the longer commutes.

Resettlers who engaged in livelihoods in Barangay Aroma, including R1, were interviewed in 2021. R1 continued to maintain both her market stall in Tondo and her housing unit in Bulacan. She related that most of her neighbors at St. Martha already sold their housing units and moved back to Tondo. However, there were others, like her, who kept their houses in Bulacan and periodically commuted back and forth to Manila for work.

Figure 4. Charcoal production process. *Source: Olivia Alma G. Sicam, 2013.*

B. Spatial Organization

Ulingan

Two (2) major zones defined the community—the charcoal production cluster (Figure 5), composed of charcoal stations, and the residential perimeter of self-built houses (Figure 6). It had a biomorphic form with paths that curved in and around the site. Informally defined unpaved roads that could accommodate large trucks extended into networks of narrow paths for smaller vehicles and pedestrians, with several points for stockpiling raw materials and end products evenly distributed throughout the production cluster.

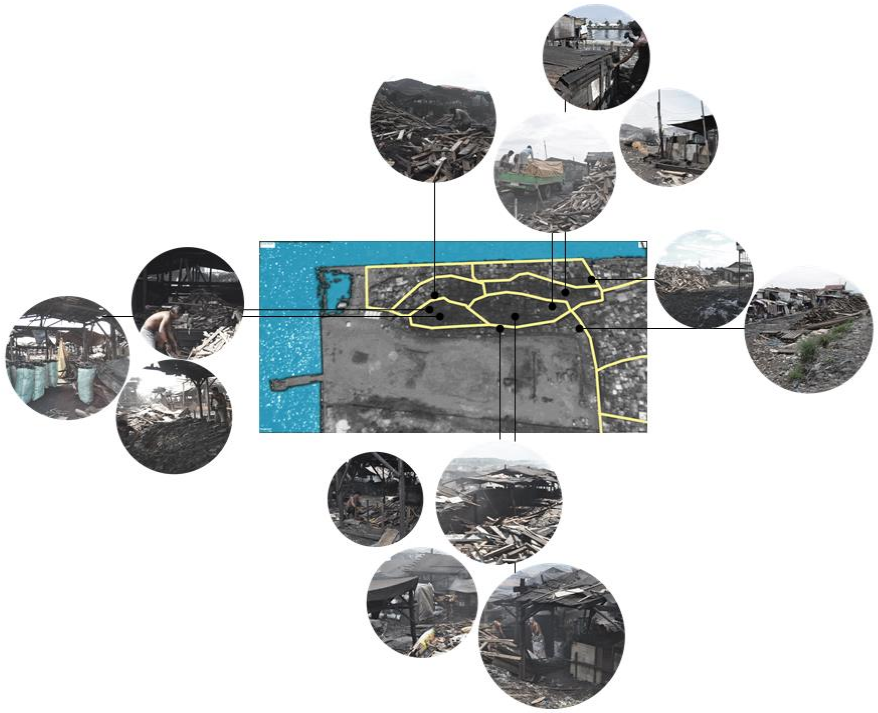

Figure 5. Mapping of the charcoal production cluster. *Source: Olivia Alma G. Sicam, 2013; Base map: Google Earth Pro.*

Figure 6. Mapping of the residential perimeter. *Source: Olivia Alma G. Sicam, 2013; Base map: Google Earth Pro.*

The residential perimeter was a high-density area with single and two-storey structures mostly made of light-weight materials. Houses along the break water to the north and the west were raised on stilts. Most houses observed did not have fenestrations except for the main entrance door. The production cluster was a high intensity zone with closely spaced charcoal stations. Stations had two (2) basic configurations: (1) tent and kiln or (2) kiln only. The tent was made of a light framing system of wood vertical posts attached to a batter board on the ground that had a pvc fabric tarpaulin roof and was open on all sides. The kiln was built from wood stakes supporting used plywood or galvanized iron sidings or shoring that enclosed the stacks of wood that were later carbonized into charcoal.

Fumes from the charcoal kilns blackened building surfaces and covered the site in a thick fog of smoke. Ulingan's built forms merged into a charcoal production enclave for its residents. The individual charcoal stations clustered into a single grand form with biomorphic exterior edges and served as an open central area that was enclosed by the residential perimeter (Figure 7).

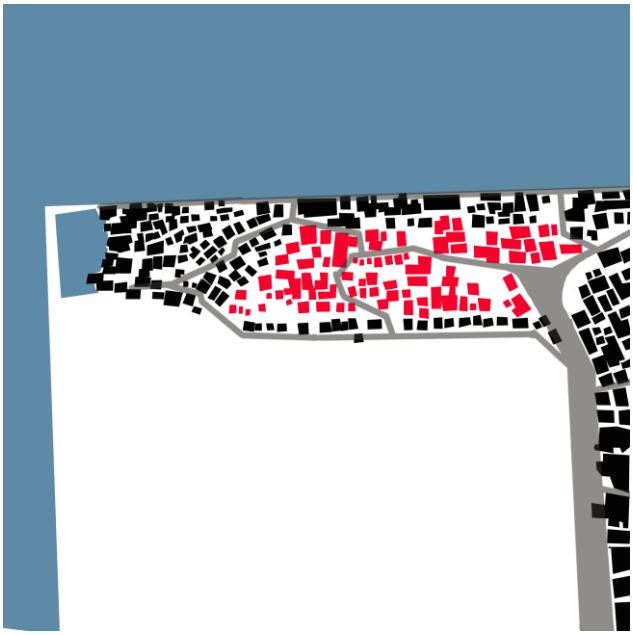

Figure 7. Spatial organization of Ulingan, Tondo, Manila. *Base map: Google Earth Pro.*

St. Martha Estate Housing

The resettlement site was organized by a geometric orthogonal grid. It had a formally defined perimeter of row houses and was surrounded by large tracts of land. Building blocks were composed of single-storey row houses. The units had a generous interior vertical space that could be converted into a loft. Row houses were made of reinforced concrete columns and beams with concrete masonry walls, reinforced concrete slab-on-fill, and

galvanized steel roof (NHA, 2017). An elementary school was located at the center of the community with buildings that partially enclosed a front open space. Other open spaces were composed of undeveloped lots. The development had provisions for electricity and running water.

Branching from the main road, the resettlement site was an assemblage of predefined and repetitive units. It was augmented to the north by a second housing development phase. The row house blocks allowed for future expansion (Figure 8).

Figure 8. Spatial organization of St. Martha, Bocaue, Bulacan. *Base map: Google Earth Pro.*

III. Discussion

It is widely acknowledged that livelihood is an essential part of housing resettlement. Apart from the mandatory allocation for community facilities, livelihood provisions in resettlement sites also involve skills training, capacity building, and the facilitation of capital. However, socialized housing development typically focuses on the design of housing units while spatial considerations for livelihood reconstruction remain understudied. As a result, there is a limited understanding of how the allocation of space in housing developments impacts capacities to restore and improve livelihoods. To address this, the study characterizes livelihood space in an informal charcoal production community and a socialized housing resettlement site and compares the two (2) sites by articulating spatial organization through urban design principles.

Table 2. Spatial Organization Comparison

SPATIAL ORGANIZATION		
PRINCIPLE	ULINGAN, Tondo, Manila	ST. MARTHA ESTATE HOUSING, Bocaue, Bulacan
GENERAL ORGANIZATION	Non-geometric; biomorphic.	Geometric, orthogonal gird.
RELATIONSHIP OF PARTS TO WHOLE	Grand form; unplanned enclave.	Additive; planned rowhouse development.

The data suggests that, while the housing resettlement site at St. Martha Estate Housing improved living conditions, it did not address the spatial requirements of livelihood needs that the resettlers from Ulingan were accustomed to. The two (2) sites had contrasting spatial organizations and different assemblage patterns (Table 2). Ulingan's spaces were organized to cultivate a common business among neighbors, whereas the row houses at St. Martha focused on individual housing units. What was lost at St. Martha were the spatial qualities in Ulingan that allowed the community to share resources, foster socio-economic networks, and self-organize.

Shared resources

The clustering of charcoal stations at the community core of Ulingan provided equal access to livelihood spaces, which was convenient to the charcoal producers. While charcoal stations were individually managed, the communal production cluster also allowed for the sharing of space and resources that was essential to the business of making charcoal. Common spaces included circulation and stockpiling areas where suppliers and buyers from outside the community intermingled with charcoal producers. In contrast, St. Martha had linear, structured residential blocks that did not orient toward community spaces.

Fostering networks

Resource-sharing enabled the community to form a medium-scale industry in the production of charcoal. Ulingan was a hub for the supply of charcoal in the Tondo Manila Bay Area and was supported by a network of backward and forward linkages. The eviction of the community disconnected the complex socio-economic links in Tondo that fostered the lively informal charcoal production economy.

Capacity to organize

Informal settlement formation is associated with organic spatial morphologies. While it is the general perception that informality is unplanned, Ulingan was, to a certain extent, internally planned. The site was overseen by a community

leader who designated plots for charcoal stations that were individually managed. This resulted in the centralization of production spaces for charcoal-making that strengthened the community's capacity to organize and work toward common interests. A lack of shared spaces and central axis, typical of resettlement housing, reduces interactions among neighbors and inhibits social cohesion.

The results build on the evidence that a more nuanced understanding of how the urban poor communities navigate socio-economic spaces in addressing the precariousness of everyday life can inform livelihood reconstruction (Cherunya et al., 2021). The typical rigid and linear spaces at row housing resettlement sites do not respond to the dynamic circumstances of resettlers and limit access to communal livelihoods. This can lead to the worsening of living conditions and impoverishment of relocated communities. By examining the spatial patterns that emerge from the lived experiences of beneficiaries prior to relocation, ways in which livelihoods are restored at resettlement sites can be better understood.

However, it should be noted that external factors, such as geography and local economy, play an important role in determining access to livelihood opportunities. The Tondo Manila Bay Area is the most densely populated district in Manila and constitutes a large market for the informal economy. The success of charcoal production at Ulingan can be attributed to the high demand for charcoal as the main source of affordable energy in the urban poor communities of Tondo. St. Martha Estate Housing, on the other hand, is a peri-urban site with a much smaller population. In addition, the informal economy covers a broad range of goods and services that have their own spatial characteristics. Generalizability is limited by characteristics that are very specific to charcoal production. Future research is needed to establish the interrelationships between location, the informal economy, livelihoods, and spatial organization.

IV. Conclusion

While livelihood is recognized as essential to housing for displaced informal settlers, the role of space in informal settlement livelihoods as a means to inform reconstruction at resettlement sites remains understudied. By investigating communal charcoal production in an informal settlement in Tondo, Manila, clarifying its spatial organization, and comparing it with that of the resettlement site in Bocaue, Bulacan, the study establishes the value of space in supporting community livelihoods. However, this does not take into account other variables such as location and type of goods or services in the informal economy that also have an impact on accessibility and marketability of livelihoods at resettlement sites.

This suggests that, although spatial organization influences the cultivation of systems of cooperation in livelihoods, it is also important to consider the broader context in which informal livelihoods thrive. Future studies should examine the impact of spatial organization on different types of resettlement sites (e.g., in-city, off-city, slum upgrading) across various types of informal economies to inform livelihood reconstruction.

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