Housing Resilience and the Informal City

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Abstract. Central to managing urban growth in the new millennium is understanding the role and nature of the resilience shown by residents and communities in growing towns and cities, and especially in what can be termed the informal city. Urban resilience is defined as the ability of cities to manage and adapt to change, and includes robustness, mitigation and adjustment at all levels. On the other hand, the informal city is about spaces, places and communities where residents adapt to the circumstances at hand using locally based rules, processes and governance. These actions are generally ‘outside’ the structures and processes that guide order and control in the formally planned city. Using the kampung locality of Tamansari in Bandung, Indonesia, as a case study, an analysis of housing resilience and understanding of the local dynamics of housing adaptation in Tamansari was undertaken by assessing four elements, namely, the collective resilience at the Tamansari level, vertical and horizontal housing adaptations, and changes to functionality and space in alleyways and public areas. Five key findings are identified: (i) there is commonality in what residents are seeking, namely, additional living space, modified access ways, privacy, and access to light and air circulation, (ii) a variety of construction methods and materials are utilized, (iii) the process of transformation is ‘step by step’ and incremental, (iii) notions of physical private/public boundaries are fluid, reflecting their flexibility and ability to be locally negotiated and contested, and (v) housing and wider circulation and activity spaces are defined by their multi-functionality. In this setting, legitimization of the informal city by the State is critical as informal settlements play an important role for residents to express and develop their skills of resiliency which may not be acceptable and or tolerated in other parts of the city.

Keywords. housing, informal city, resilience.

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hidup tambahan, perubahan jalan akses, privasi, dan akses terhadap sirkulasi cahaya dan udara, (ii) menggunakan berbagai metode dan bahan konstruksi, (iii) proses transformasi terjadi secara bertahap, sedikit demi sedikit, (iii) pengertian batas fisik pribadi/publik tidak pasti, mencerminkan fleksibilitas dan kemampuan mereka untuk dinegosiasikan dan diperebutkan secara lokal, serta (v) perumahan dan sirkulasi serta ruang aktivitas yang lebih luas yang didefinisikan oleh multifungsinya. Pada keadaan ini, legitimasi kota informal oleh negara sangat penting karena permukiman informal memainkan peran penting bagi warga untuk mengekspresikan dan mengembangkan keterampilan mereka mengenai ketahanan yang mungkin tidak dapat diterima dan atau ditolerir di bagian kota yang lain.

Kata kunci. Perumahan, kota informal, ketahanan.

Introduction

Context

One of the greatest moral challenges of our time in the urbanization of towns, cities and mega urban regions is how to accommodate the growing numbers of city residents and groups who do not have: (i) equitable and affordable access to housing and land, and (ii) acceptable levels of infrastructure and services. Since 2007, more people live in urban areas than any time in history. In 2014, some 54% of the world’s population was estimated as residing in towns and cities, and this is expected to increase to 66% by 2015. Ongoing urbanization will add 2.5 billion people to the world’s urban population by the year 2015, with 90% of this growth taking place in Asia and Africa (United Nations, 2014a). As a result, the challenge to better understand and manage cities, including growing inequities as expressed in city form and structure, is greater than ever before.

For many countries comprising the developing world, most urban growth is being generated in the informal city and especially in the form of settlements. These latter habitats are often described by value laden terms such as informal settlements, slums, squatter and unplanned areas. Informal and squatter settlements, which may or may not be slums, can be defined as forms of urban development that evolve outside the legal boundaries of what is normally referred to as formal and normative planning systems. Notwithstanding definitional issues surrounding terms such as slums and informal settlements, the 2014 Millennium Development Goal (MDG) report indicates that approximately 33% of urban residents in developing countries now reside in slums (United Nations, 2104b).

Central to managing urban growth in the new millennium is understanding the role and nature of the resilience shown by residents and communities in growing urban regions, towns and cities, and especially in what can be termed the informal city. The informal city includes those geographical areas such as informal and squatter settlements which are nestled in the interstitial spaces of a cities spatial form and structure, and which are generated by processes of city building that do not fall within ‘top down’ highly regulated planning regimes. The latter are the domain of urban planning and development systems which exist in part or full in most developed and developing countries of the world. It has been acknowledged in the literature that many disadvantaged communities, such as those living in poverty and informal settlements with restricted human development opportunities, are well adept at adapting their living environments to the adverse conditions at hand (UN-Habitat. 2106). As a result, they exhibit high levels of resilience (Sudmeier-Rieux, 2014).
Despite the simplistic dualism perspective of formal and informal as used as a starting point to analyze city processes and outcomes, the formal and informal city remain extricably linked and overlapping at multiple levels. For example, many public oriented water, sanitation, drainage and road projects and programs in informal settlements are a combination of formal and informal governance arrangements. As well, the nature and role of the informal city itself is linked in city plans and policies to explicit and or implied concepts that some type of formal unitary city structure must dominate. Such visions and accompanying rules and regulations shaping the formal city are often expressed in regional, city and local growth Masterplans and the like. Because informal and squatter settlements are considered illegal and a problem to be ‘corrected and fixed’, they are often excluded from these plans. As such, the narrative of how the informal city and their residents cope with local human scale physical form and related changes at the household level receives little attention.

Objectives

In the above context, the central tenet of this paper is that a resilient city is one that is flexible and supportive of diverse socio-cultural groups as they adapt to changing social, economic and physical conditions. One consequence of being resilient is acknowledging the growing scale and proportion of informal settlements that comprise much of the ‘real city’ now being produced. Expressions of resilience as shown by residents at the local level can be analyzed in terms of their ‘bottom up’ physical adaptations in housing forms and use of adjoining public spaces. Ever evolving places and spaces form the habitat within which residents interact and carry out their social and economic functions within the informal city. As such, resilience in the informal city becomes a means of adaptation and transformation so as to survive against the social and economic constraints of the wider city. In this setting, the objectives of the paper are to:

1. overview notions of resilience and informal city, and;
2. identify the varying ways in which residents in an informal settlement (kampung) in Tamansari, Bandung, express their resilience via a range of adaptation practices to meet their housing needs.

Notions of Urban Resilience and Informal City

Urban resilience in cities has been used in a number of differing contexts ranging from climate change to sustainability, and to the role of resilience in reducing the vulnerability of urban areas from natural disasters (Lewis and Mioch, 2005). Revell (2010) defines resilience as the adaptive capacity of a system to respond to unexpected shocks and unforeseen changes. In this setting, urban resilience is the ability of cities to manage and adapt to change, including its vulnerabilities. Central to definitions of urban resilience are ideas of robustness, mitigation and adjustment at all levels. This includes from national, city and local level formal governance, to how residents respond to their local circumstances at hand. Flexibility and responsiveness in how cities and their residents adapt and respond to change, both positive and negative, are central to understanding notions of urban resilience and sustainability (Sudmeier-Rieux, 2014). Thus, social, community and broader governance responses to resilience may not only be formal, but informal if the needs and circumstances of residents, such as poverty and hardship, are not meet by modern formal government policy, institutional and legal settings (Jones and Suhartini, 2014).

On the other hand, the informal city is about spaces, place and communities where residents adapt to the circumstances at hand using locally based rules and processes (see, for example,
Evolving from notions of ‘informal economy’, ‘informal activities and informality’, and now to ‘informal urbanism’ incorporating large and growing spatial areas known as informal and squatter settlements, mainstream definitions of informality and the informal city remain framed from the viewpoint of the dominant formal discourse and the role of the overarching State. Roy (2009), for example, discusses informality in terms of the two-fold condition of what is legal and illegal, authorized and unauthorized, and legitimate and illegitimate. Such views give little currency to the perspective that residents and groups in the informal city may see things very differently, and as such, have their own agreed processes and systems of order, control and approvals for local development and governance. Thus, such processes and resulting physical ‘chaos’ maybe informal and unacceptable to some including the dominant urban elite, but accepted as day to day normal individual and wider community activities to those living in the informal city. In this context, many informal settlements can be conceived as dynamic hubs of resilience and adaptability used by disadvantaged groups as a normal response to managing and adjusting to change with little assistance at the local level by formal systems. While such expressions of informal urbanism maybe documented as problem by some, it is a savior to others as they stake their claims to rights of access and survival in the city.

**Insights from Tamansari, Bandung**

The field work for this paper was undertaken by the author over two periods, namely, 5 days in July, 2104, and 7 days in April, 2015. The fieldwork in April, 2015, was undertaken concurrently as part of a joint planning studio involving students from the Department of City and Regional Planning, School Architecture, Planning and Policy Development, ITB, and students from the Urban and Regional Planning Program, School of Architecture, Design and Planning, University of Sydney. The theme of the studio was focused on understanding informal urbanism in Tamansari, with student groups focusing on one of two areas of explorations and learning, namely, opportunities for improvements to housing, and opportunities for improving the condition of services and infrastructure.

Bandung is located 3 hours’ drive south-east of Jakarta forming part of an expanding and growing mega-urban corridor of approximately 200 kilometers (Firman, 2009). It is the capital of West Java and third largest city in Indonesia having an estimated metropolitan population of approximately 10.5 million persons (2014), including some 38,450 hectares of ‘slums’ containing many urban kampungs. Tamansari is a sub-district within the City of Bandung administration and is located to the north of Bandung in a small valley bordered by Cihampelas Street and Tamansari Street to the west and east respectively. The locality of Tamansari and its
swathe of kampungs are divided by the Cikapundung River, which flows from the north to the south as part of the Citarum River Basin (Figure 1).

**Figure 1.** The Dutch 1933 Bandung Masterplan by Thomas Karsten, which shows Tamansari in the top center of the plan as a green corridor of open space. (Source: Gunawan, 2005)

The history and development of kampungs in Tamansari is closely associated with the return of evacuees after World War II as they sought to reclaim land and housing they had originally occupied. This occupation was followed by civil unrest and political struggles over moves to establish a separate Islamic state in the 1950’s and early 1960’s, one result being major increases in migrants to the once fertile Tamansari area known for its natural beauty and agriculture. Temporary and semi-permanent occupation saw many dwellings constructed of bamboo and wood replaced by permanent materials, such as brick, concrete blocks, tiles and corrugated iron. Vacant lands were gradually subdivided and filled with increasing housing, one consequence being that many settlers, migrants and their descendants have now become long term Tamansari landlords (Jones, 2016a).

With a strategic central city location, Tamansari has evolved into a high density melting pot of kampungs influenced by a multiplicity of governance arrangements. Migration and natural population increase combined with low level Government control has seen a major shift in Tamansari from its designation by the Dutch colonial administration as a corridor of reserved green space, to a dense affordable residential area close to employment. The open space corridor focused on the Tamansari valley and the Cikapundung River so as to protect ecosystems has been transformed into what some perceive as an uncontrolled and disordered kampung area with declining environmental quality. In Tamansari, this is most visible in the Pulosari kampung which is located as a small island within the middle of the Cikapundung River. Pulosari is physically connected to adjoining kampungs in Tamansari by three pedestrian bridges, with the northern end of this small island situated underneath the flyover of the Pasupati freeway. Pulosari is one of the densest kampung in Bandung and Tamansari, with a population estimated at around 800 persons in 220 households on .65 hectares. This equates to a density of around 1,271 persons per hectare (Source; ITB - Sydney University Joint Studio presentations, April 6, 2015).
Against this background, the initial analysis of housing resilience and understanding of the local dynamics of housing adaptation in Tamansari was undertaken by assessing varying housing types, including identifying ‘dominant’ housing typologies as they have changed over time (Figure 2). Housing types generally refer to housing structures (such as height, attached, detached, front, side and rear setbacks) and their elements (such as façade design, materials, door and window openings, and roof types) which are defined by their commonality of characteristics, and hence the display of patterns within the urban form (Scheer, 2010). In neighborhoods like Tamansari and as with many other high density informal settlements, tools of analysis such as housing types and broader housing typology become problematic as the presence of repetitive patterns become complicated by the diversity and complexity of myriad housing forms, density and multi-functionality. The eclectic transformation process that defines Tamansari means that housing types are continually being modified and adapted at the local scale, and therefore wider housing topologies are also complex, dynamic and changing.

Figure 2. Lower density attached and detached housing on the ‘formal - informal’ edge of Tamansari which would have been the dominant house types in the mid to late twentieth century

Against this analytical framework, the approaches used by residents to cope with housing change can be grouped across 4 elements of adaptability. The first is the collective resilience reflected in overall form and structure that has emerged in Tamansari. Elements 2 and 3 examine vertical and horizontal housing adaptation and change, while element 4 reviews adaptation in alleyways and public spaces.

Element 1: Overall Form and Structure

The form and structure of Tamansari is defined by the collective accumulation of its public circulation spaces (streets and internal alleyways), plot subdivision patterns, housing on relatively small plot sizes, and the centrality of the Cikapundung River. The first two components were imprinted into Tamansari by the formal system, and with the river acting as topographical divider, provides the basis on which form has adapted and evolved. Against this background, broad institutional recognition and support for the existence of kampungs combined with a lack of ‘formal’ planning, control and order by various layers of Government in a city center location has seen Tamansari emerge as a flattened spatial form of attached residential buildings. Housing types have evolved from detached and attached singly story dwellings with front setbacks as constructed in the 1950’s and 1960’s to a homogenous form comprising diverse ‘stacked’ housing types of around 2-3 stories.
In this context, the morphology of Tamansari reflects a mixed pattern of buildings, with residential structures and perimeter streets coming first, and ‘bottom-up’ alleyways, services and infrastructure invariably following later. As one moves from the formally planned Cihampelas Street and Tamansari Street boundaries to the Cikapundung River, the density of built form increases and formal circulation spaces decrease while alleyways increase in number yet decrease in width. As discussed later, buildings within the flattened overall envelope remain fluid in form and structure, with building initiatives being primarily horizontal and vertical as owners and tenants adapt existing attached building structures (Figure 3). It is only on the edge of Tamansari on lands adjoining Cihampelas and Tamansari Streets that plots which offer ease of access, have less physical constraints and which can be amalgamated are those that have been redeveloped for medium to high rise ‘modern’ towers.

**Figure 3.** Tamansari is a flattened spatial form reflecting a multiplicity of resilient human scale adaptations

With a high density spatial form within a relatively low form envelope, major concerns exist within Tamansari and the City of Bandung administration over an absence of clean water and adequate sanitation. As well, incremental housing changes means increasing ‘dark’ alleyways and rooms with reduced sunlight, poor ventilation and drainage. A lack of formal circulation patterns means alleyways average 1.5 to 2 metres in width, thus encouraging predominantly pedestrian based movement mixed with motor bikes and cycles. A dense, adaptive and fine grain urban form of Tamansari means spaces are highly walkable, compact and mixed use.

**Element 2: Horizontal Change**

Due to the attached form of most dwellings and a gradual ‘filling in’ of the setback area of houses, horizontal ground floor alterations have not all been utilized for adding extra rooms. Rather, many changes have focused on: (i) changing the function of the setback, and (ii) contesting and ‘pushing the limits’ of the private dwelling boundaries at the interface of the front building alignment and alleyways. The latter could be termed ‘set-forward’ as the changes to form and function extend into the public alleyway space, this pushing the edge of the current ‘acceptable’ building line.

Residents have put in place a myriad of changes to their setbacks including: (i) infilling the setback with a wall to make more internal space, thus building to the front alleyway boundary, (ii) using the setback to insert a permanent or small mobile economic activity, or provide storage for motor bikes, and most noticeably, (iii) using the setback to provide a space for stairs or a ladder to the upper floors. This latter change provides separate entry to both ground and upper floors, thus allowing rooms at all levels to be partitioned off for the purposes of room rental. Where detached side walls exist such as on the perimeter of block patterns, some tenants have inserted windows to increase light, air circulation and visibility.
The collective impact of infilling private and public space is that alleyways become narrower and light and air circulation is reduced (Figure 4). As well, functions that depend on the utility of the public circulation space, such as delivery of water bottles by motorbike and hand drawn food carts, have to adjust their transport modes to continue their livelihoods. As a result, forms of mobility for performing social and economic functions are restricted but adapt. As well, the use of setbacks for motor bike and mobile cart storage means small ramps and level changes are introduced to allow the motor bikes and carts to be pushed into the setbacks rather than be lifted.

**Element 3: Vertical Change**

With the majority of dwellings in the denser Tamansari kampungs attached at the side and rear due to the existing housing and plot typology, the morphology of room and floor accretion is vertical as the former attached single story dwellings are extended upwards. The process of ‘stacking’ a new floor structure above the existing roof - typically a beam and joist floor with timber boards, and walls constructed of concrete blocks or bricks - means residents are not displaced during the typically step by step construction process. The resilience of residents and households is reflected in the fact many dwellings add a new floor directly above their former roof (‘set above’), thus leaving intact the original roof form and materials, such as a pitched tile roof. With space at a premium, the area either side of the lower level pitched roof is used by some households for storage (Figure 5).
Aside from floor extensions, the desire for space, light and air circulation means balconies are added over available alleyway airspace, or protrude onto neighboring adjoining roofs. This type of housing change is termed ‘set-over’ and invariably means that when extending over alleyways, light is reduced to lower levels. Where older buildings are fully refurbished and renovated, new ‘modern’ permanent materials and ordered linear design forms have been introduced, including upper sun decks and balconies. Such a mix in materials, aesthetics and design expression and standards reinforces the ever present nexus between the formal and informal as spaces are ‘personalized’ at the human scale (Figure 6).

Figure 6. The imagery of formal and informal housing side by side with different standards applied

Element 4: Utility of Alleyways and Public Spaces

A maze of narrow non-linear alleyways provides the connecting spaces for social and economic functions to flourish within and between the Tamansari kampungs, and formal city beyond.

Many narrow alleyways are also formed from the residual voids that separate dwellings and their horizontal extensions. This process of encroachment into alleyways by development that is ‘set-forward’ of the current accepted building alignment is continually reshaping both the (i) irregular block patterns and (ii) alleyway alignment that comprise the underlying form and structure. Where spaces are wide enough or are at the junctions of alleyways, they become the centrality of private/public interface, being a hive of social and economic interaction via markets at varying times of the day. Such spaces of exchange become time-space efficient as they take on multiple roles at different times (Figure 7). Thus, notions of form and function remain fluid and interconnected.

Figure 7. Time-space efficient and flexible alleyways and public spaces in Tamansari
Conclusion

This paper has focused on local scale expressions of housing and space adaptability as key indicators of resident’s resilience and ability to cope within the informal (and formal) city. Insights from Tamansari highlight the flexible and incremental approaches used by residents to meet basic shelter and related social and economic needs in the context of lack of access to acceptable levels of housing, infrastructure and services as enjoyed by many other residents of Bandung. In terms of the nature of resilience and how residents are resilient, five key themes emerge; (i) there is commonality in what residents are seeking, namely, additional living space, modified access ways, privacy, and access to light and air circulation, (ii) a variety of construction methods and materials are employed including those which could be called ‘formal’, (iii) the process of housing transformation is ‘step by step’ and incremental as adaptation methods such as ‘set-back, alleyway alignment, set-forward and set-over’ are used to expand the housing form over time as resources allow, (iv) notions of what constitutes physical private/public boundaries and hence the house alleyway interface are ever changing and fluid, thus reflecting their flexibility and ability to be locally negotiated and questioned (as seen, for example, in changes to setbacks, the introduction of ‘set-forwards’ and the ad hoc location of public art and graffiti), and (v) housing and wider circulation and activity spaces are defined by their multi-functionality, rather than being mono, single or separate use.

In this context, the legitimization and recognition of the informal city by the State is critical as informal settlements play an important role for residents to express and develop their skills of resiliency which may not be possible and acceptable in other parts of the city. In this context, housing resilience in informal settlements is a key means of coping with the adverse consequences and impacts of the wider urbanization processes. It is also a symbol of social and community resilience. While the paper has dealt with resilience as expressed in housing form and physical adaptation, further inquiry is needed as to the socio-cultural, spatial and aesthetic processes driving ‘becoming resilient’. This includes the deeper motivations of residents as to why and how these adaptations have occurred, including how consent from neighbors and adjoining households is negotiated and obtained.

The reality of the complexity of informal urbanism reinforces the notion that as the informal city grows, so must new approaches to its management, socio-cultural diversity and inclusion within the formal city, however defined, also evolve (Jones, 2016b). Despite the underlying human development and human rights issues that pervade informal settlements and wider notions of informal city, they unfortunately continue to gain their uniqueness by contrast to the processes and outcomes that are held up as sacrosanct in defining the ‘formal planned city’ (Kellet, 2011). The negativity surrounding informal settlements and wider informal city, including the emphasis on place rather than people, place and social attachment only further constrains attempts to highlight the positive features of community building and ‘bottom up’ housing resilience approaches in the informal city. In this setting, the main challenges are twofold. The first revolves around how best to support and encourage this resilience within the context of respecting varying socio-cultural expressions of housing forms in diverse cities with a multiplicity of stakeholders, plans and development processes at work. This includes better alignment with plans such as The Regional Medium Term Development Plan of Bandung Municipality 2014-2018, which advocate a ‘prosperous, clean obedient and friendly’ city increasingly based on neo-liberal planning and development approaches (Susanto and Rahardyan, 2016). Secondly, there is an urgent need for more sophisticated, innovative and equitable approaches to management and understanding of resilience in the informal city at a city, national and global levels, noting much of the current analysis is skewed by Euro-American planning perspectives (Jones, 2014, 2016b).
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References


