Development Aspects of Formal and Informal Urban Types

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Nowadays there is official support for the *enabling strategy*, advocating self-help housing and small-scale business, while authorities are to support community efforts and relax development codes in low-income countries. In practice there is, however, often a resistance to this strategy. Professionals seem to be uncertain about what to do. The fact that informal settlements usually consist of one-storey one-household units facilitates self-help, but it also contributes to urban sprawl. There is also uncertainty how to promote densification while securing qualities such as daylight in rooms, cross-ventilation, fire protection, vehicle accessibility and urban agriculture. Which are the ways towards modernisation that incorporates informality, self-administration and affordability? These questions are discussed in the paper. It is concluded that the enabling strategy can be fruitfully combined with modernisation for better health and other functional qualities.

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Introduction

Although much progress has been made to abandon the most inappropriate policies to solve the problem of housing demands in low-income countries, contradictory ideas prevail about the alternatives. The alternative most discussed is the 'enabling strategy', which advocates community based initiatives, self-help housing, promotion of small-scale business, while authorities are to support community efforts and relax development codes and housing standards. This strategy is supported by ample research, but in practices there is often a resistance to apply it on the ground.

Among architects, planners and politicians the modernist provider model still dominates thinking, which means that enabling and incremental housing processes do not gain momentum. The house types produced within the modernist provider model include walk-up lamella blocks and standardised detached one-family units in 'durable' building materials. These house types are usually expensive and inappropriate to climate. Most of the urban poor live in informal settlements developed against the will of the authorities. Here one may find urban types adapted to the needs of the household. These areas often display spatial qualities which are not recognised by decision-makers.

This paper explores what we can learn from informal settlements in low-income countries, and discusses which the obstacles are to implement the enabling strategy. An emphasis is given to design aspects such as house and urban types and how these relate to streets, and to semi-private and communal space at the level of the housing block. The paper is based on reflections upon the author's own research, on a review of literature, and upon research carried out by master and PhD students in low-income countries over a period of 40 years with the author as the supervisor.

Failure of the modernist provider model in low-income countries

It has always been difficult to meet demands for housing in periods of rapid urbanisation. Industrialising countries had at least a chance to address the urban housing problem because of high productive forces, but in low-income countries resources are not available to meet the demands (Hamdi, 1991; Vestbro, 1998; Vestbro, 2011). In most of these countries there is also a lack of political will to give priority to housing. For these reasons most of the poor urbanites end up in informal settlements (Kombe & Kreibish, 2000; Satterthwaite, 2005; Vestbro, 2008). The number of people in such areas is estimated to be 828 million (2010) and the number is increasing. The internationally agreed target for slum eradication is the only one of the Millennium Development Goals that is so low that the amount of slum dwellers is expected to *increase* even if the target would be reached (UN, 2010).

Previously the most important method to solve urban housing demands was *public housing*. Models for public housing were developed by colonial powers to provide civil servants with what was considered to be 'decent dwellings'. Housing was explicitly used as an instrument to gain control over populations active in the anti-colonial movement (King, 1984; Vestbro, 1975). The policy of public housing was often continued after independence when indigenous governments had overoptimistic hopes for rapid economic growth.

Public housing requires financial resources, a modern building industry, and a well functioning planning system. Usually these preconditions have not been in place. Therefore very little public housing has been implemented. The few units that were constructed were usually allocated to civil servants at subsidised rents, as in the colonial period (Kanyama, 1998; Vestbro, 2008). For the majority of the urban population there was no housing provision at all. Informal settlements continued to grow, and they grew at an accelerated rate. Urbanisation was speeded up by the fact that colonial restrictions to migration were lifted (Satterthwaite, 2005).

Figure 1. Six storey walk-up apartment block in Zanzibar, built in the 1970s (photo: Dick Urban Vestbro).

In order to increase house production and reduce housing costs the idea of 'low-cost housing' was introduced (Abrams, 1964). What should be regarded as low cost was a question of expert assessment. Minimum standards were often set at central government level, for application countrywide. Such minimum standards usually included a WC, separate sleeping rooms for parents and children, a separate kitchen, and minimum plot sizes. It turned out that production costs for such housing units were too high to make housing accessible to low income earners, unless heavy subsidies were provided.

When trying to understand the relevance of modernism for developing countries Brasilia is a most interesting case. The new capitol of Brazil, built in the 50s and the 60s, is probably the most consistent application of modernist principles in architecture and town planning anywhere. In his critical analysis of Brasilia the US anthropologist James Holston shows that all planned features of the new capitol strictly followed the principles of the early modernists. Urban activities were strictly separated and the wide transport routes contributed to the division of the city into separate enclaves. Residential areas were dominated by high-rise apartment blocks, formed as flat glass and concrete volumes. Abstract forms and industrial materials were chosen to stimulate identification with a desired machine culture (Holston, 1989). Holston shows that residents refused to use space as intended and that many physical changes have taken place with the purpose to re-establish vernacular qualities. These changes – and developments outside the planned city – are seen as a rejection of modernism. He calls this process a "brazilianisation" of Brasilia (Holston, 1989).

Other research has also shown that modernist apartment blocks are often transformed incrementally by illegal or semi-legal extensions. Transformations include division of rooms for more privacy, additions of balconies, constructions of loggias to acquire more space, and building new rooms at ground level for residential or income-generation activities. These transformations increase densities, provide for variations of facades and augment residents' attachment to their housing environment. For many people extensions constitute an alternative to moving when household demands change. Extensions also contribute to personalising one's own environment (Kellett, 1995; Tipple, 2000).

The paradox is that the more politicians and planners advocate the modernist model for mass housing, the less is produced.

The Indian architect Charles Correa explains how this works. In his book 'The New Landscape' (1985) he shows that tall apartment blocks are expensive, energy-demanding, climatically unsound, and that more indoor space is required if residents are cut off from access to outdoor spaces, when living in private indoor cells at long distances from the ground. He also shows that apartment blocks are incompatible with the lifestyles of the poor, since such structures do not permit residents' self-construction efforts or incremental house extensions when people's income and changing needs require such adaptations (Correa, 1985).
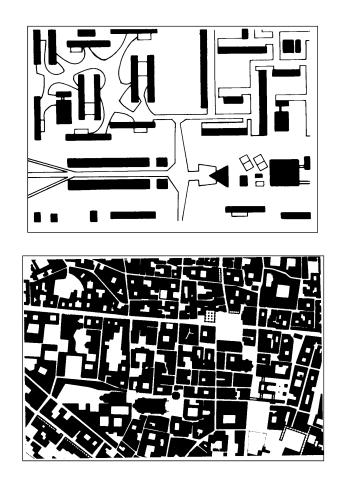

Figure. 2. A 'superquadra' of Brasilia (left) as compared to the Brazilian town of Parma in 1830 (right). The two plans comprise roughly the same surface (350 by 530m). Holston points to the human scale of buildings and the strong sense of spatiality in Parma, qualities that are lost in Brasilia (source: Holston, 1989).

Benefits and problems of the enabling strategy

One of the pioneers of the enabling strategy was John Turner, who had a strong influence on the international housing debate (Turner, 1976). He found that for the urban dweller without an income the most important thing is to get a job. Since the poor cannot afford transport costs they must live within walking distance from job opportunities. Thus they pay less attention to acquiring a plot or a house. When the poor household gets a regular income priorities change. Then it becomes meaningful to find a better place to stay and incomes may allow certain travel costs.

This means that the low-income earner can look for a plot at a certain distance from the city. Security of tenure is still more important than the house, however. Only when incomes increase further the house itself starts to become a priority. The low-income earner can usually not afford standards such as several rooms, durable building materials, drainage, paved roads or clean water (Turner & Fitcher, 1972). Often architects and planners still do not want to recognize the truth of these observations.
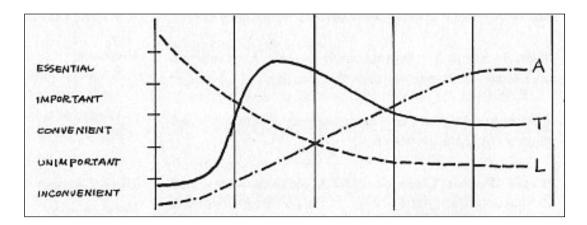

Figure 3. Diagram illustrating Turner's theory about priorities among urban dwellers, going from extreme poverty on the left to higher incomes on the right. A = amenities; T =tenure; L =location (Caminos, Turner & Steffian, 1969).

Although Turner's ideas spread to key persons in academic institutions and international organizations, it took a long time for them to influence housing policies. It was not until Habitat II in Istanbul 1996 that Turner's ideas became parts of the vocabulary of official documents (Vestbro, 2008).

The most prominent follower of Turner's thinking is Professor Nabeel Hamdi of Oxford Brookes University. In a number of books he has elaborated the ideas of the enabling strategy (Hamdi, 1991; Hamdi & Goethert, 1997; Hamdi, 2010). He calls the enabling model 'Supporters' since authorities are expected to support the efforts of the inhabitants. The most important task for them is to remove obstacles when the poor enable themselves to solve their housing problem. While Hamdi argues that the Provider strategy has been disastrous he maintains that the Support model has not been successful either. Therefore he asks whether we should see how to combine the best elements of the two models (Hamdi, 1991).

For the Indian context Correa has elaborated ideas of the enabling strategy in his well illustrated book *The New Landscape* (1985). He argues that what he calls 'the self-help city' facilitates the use of affordable building materials, has higher usability through better adaptability and is more suitable to the lifestyles of low-income people, since these may carry out household chores in streets and other outdoor spaces, which are shared with other households. The resulting new urban landscape will also facilitate self-help maintenance, provide for more variety, and "constitute a crucial step towards defining a truly egalitarian urban society, totally different from that prevailing in the vast majority of Third World cities" (Correa, 1985:54). In the Tanzanian context similar conclusions are drawn in a PhD thesis based on a thorough investigation of an informal settlement in Dar es Salaam. The author Liberatus Mrema finds that public open spaces in the area display qualities such as active and passive territorial boundaries which enhance the use of a place and promotes identity. The creation processes explain why residents value public open spaces. The study recommends that planning and design professionals ought to learn from the qualities of existing open spaces (Mrema, 2008).
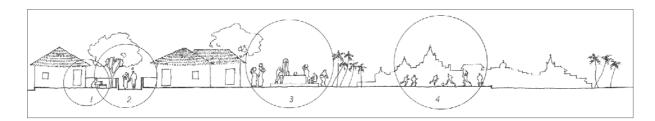
Figure 4. Illustration of the important role of semi-private and communal spaces in informal settlements. Legend: 1= semi-private, 2= local communal, 3= neighbourhood communal, and 4= public space (Correa, 1985).

A country which consciously decided to adopt an enabling strategy was Botswana. In this country informal settlements are rare and planning is implemented to a much higher degree than in most other Sub-Saharan African countries. A new enabling Development Code was put in place in 1996. One of the aims was to reach vulnerable groups such as female-headed households, who should be allowed to use their plots for income-generating activities such as subletting rooms and perform small-scale business. For this purpose the Code included a provision of 'relaxed capacity', which would allow plot holders to build additional buildings, thereby exceeding the percentage of built space. The intention was also to allow construction of buildings at shorter distance to adjacent plots. In order to benefit from the relaxed capacity one would, however, have to apply to the national planning office. This indicates that the enabling strategy was accepted with strong reservations from the start (Bourennane, 2007).

Bourennane's study shows that the relaxed capacity of the new Development Code has virtually not been used at all. None of the residents interviewed said that they were informed about the possibility to relax regulations in order to provide built space for Home-Based Enterprises. The same answer was given by the technical officers in charge of advising plot-holders. Planners at municipal and national levels – the ones who had the duty to inform about the new code – said either that they did not know about the relaxed capacity, or that they knew about it, but were uncertain how to implement it. The researcher concluded that it is possible that planners knew more than they wanted to admit. It is apparent that the planners did not like the relaxed capacity of the code from the beginning (Bourennane, 2007).

The study also shows that many plot holders built additional houses with short setbacks and short distance to neighbouring plots without asking for permission. Applying for such building permits would require expensive architect drawings and long waiting for central government decisions. In a couple of cases women appealed successfully to local politicians when technical officers threatened to intervene against constructions without building permits (Bourennane, 2007). The conclusion of this should not be that legal reforms are not required, but that stronger efforts are required to implement enabling strategies in practice.

Urban types to address urban sprawl

Hana Nasif in Dar es Salaam, Tanzania, may be taken as an example of a consolidated informal settlement where attempts have been made towards incremental upgrading. The area is situated within walking distance from the city centre, which makes it is attractive for poor people who cannot afford transport from areas further out. Like in other urban areas along the coast Hana Nasif is dominated by the urban Swahili type house. This house type – which developed from rural prototypes of the Swahili culture – is one of the few that are affordable also when built by government authorities. The house is typically owned by a landlord, who makes a living by subletting rooms to five to ten households.

Spaces such as veranda, corridor, latrine, wash place and strips between buildings are shared. The house type allows for gradual extension of rooms. A household, whose income increases, may acquire an adjacent room (Vestbro, 1975; Nguluma, 2003).

Nguluma shows that a process of densification and modernisation is going on in Hana Nasif. Densification sometimes means that spatial qualities such as air circulation and daylight in rooms are suffering, but densities are still moderate since most buildings are only one storey and houses are not grouped for increased densities that maintain spatial qualities. Modernisation is shown by mud-and-wattle being replaced by sand-cement blocks and thatch being replaced by corrugated metal sheets. Horizontal extensions are sometimes followed by vertical extensions. Nguluma argues that if local, self-educated craftsmen are trained for two-storey constructions such houses may be created and thus provide for densification without jeopardising cross-ventilation and daylight in rooms (Nguluma, 2003).
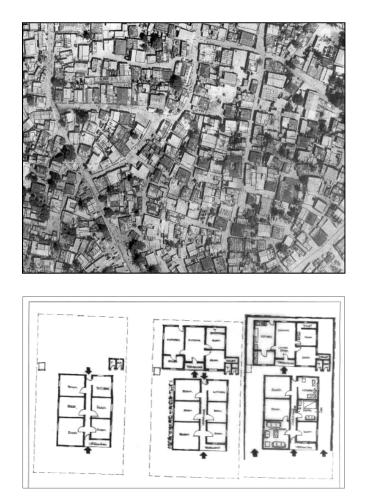

Figure 5. Top: aerial photo of Hana Nasif with a Floor Area Ratio[2] of 0.2-0.7. Down: an urban Swahili type house gradually modified from 1975 to 1992 by additions of rooms and fences to the detriment of air circulation and usability of outdoor space (Nguluma, 2003).

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[2] Floor Area Ratio (FAR) is a measure of physical density. It is calculated as the total building area (floor space multiplied by no of floors) divided by land area. Two-storey buildings covering 25 per cent of the land means that FAR is 0.5.

Informal settlements contribute to urban sprawl because of the tendency to favour one-storey one-household constructions. Like in industrial countries urban sprawl means appropriation of valuable agricultural land and high infrastructural costs per unit (when such investments are made). In other respects there are considerable differences.

While sprawl generally leads to longer distances to work, this factor is more severe in low-income cities, because the poor cannot afford costs for transport to job opportunities. They need to be present where small-scale business may meet customers, or where temporary jobs are offered. People living in informal settlements in fringe areas often cannot afford to travel to the city centre, at least if cities are large enough to require motorized transport (Vestbro, 2012).

Taking Nguluma's study as a starting point two Swedish master students carried out a study of the possibility to introduce two-storey constructions in low-income informal settlements in Dar es Salaam while keeping costs down through the use of self-educated craftsmen and local building materials. On the basis of a comprehensive survey of the construction sector in Tanzania and a fieldwork in Hana Nasif, the students worked out a proposal for a two-storey version of the urban Swahili type house. Walls are to be made of interlocking bricks of soil-cement, a building material available at low cost. This construction is easy to execute and demands less technical knowledge of workers. For the intermediate floor, composite slabs with reinforcement sheets were proposed. Since such sheets are imported the researchers found that a shift to local production would be required, in order to promote local development. According to the authors the FAR would increase substantially even if only one third of the houses in Hana Nasif would be two-storey (Kruse & Torstensson, 2010).

One of the few books dealing with sprawl in low and middle income cities is the anthology *Compact Cities: Sustainable Urban Forms for Developing Countries* edited by Mike Jenks and Rod Burgess (2000). The book provides a useful account of the situation in low and middle income countries. In his chapter about the compact city debate Rod Burgess points out that compaction by reclaiming oversized spaces for cars or abandoned industrial sites is not feasible in low-income cities. He notes that low-income settlements have low residential densities, while these areas (whether formal or informal) are usually subject to continuous densification through squatting and self-help extensions "finely tuned to changes in household income and space requirements.

Densification efforts should therefore be aimed at assisting this process and should focus on the upgrading and guided rationalisation of urban space within these settlements" (Burgess, 2000:18).

Strangely enough very little attention is given to the role of house and neighbourhood types for urban sprawl in the mentioned anthology. It is only in Acioly's chapter that figures for densities are given and the role of urban types is discussed. In Cairo the author finds that informal densification has lead to streets only three meters wide lined with urban blocks consisting of six-storey buildings covering plots up to 100 per cent.

It is concluded that this high density makes the environment unhealthy, since rooms lack daylight and ventilation, and since the air is polluted by adjacent heavy car traffic (Acioly, 2000:129).

The situation in Cairo stands in stark contrast to Sub-Saharan Africa. Here big cities have densities far lower than that in Cairo. A study of Dar es Salaam by Lupala shows, for instance, that FAR is as low as 0.4-0.6 in consolidated informal settlements areas, where the densification process has been going on for many decades. In younger informal settlements FAR often range from 0.2 to 0.3. It is only in the central business and residential district of Kariakoo that one finds FAR as high as 1.5 to 2.2 (Lupala, 2002).

Another researcher who has addressed the issue of urban types and densities in informal settlements is the Ugandan architect researcher Assumpta Nnaggenda-Musana.

Although Uganda's capitol Kampala has a population of only 1.5 million the city suffers from urban sprawl, the most important reason being the low density of the built environment. Also formally planned areas have low densities. Buildings usually cover as little as 10 to 20 per cent of the plot (Nnaggenda-Musana, 2004).

The analysis of Nnaggenda-Musana shows that some of the existing house types are more appropriate for densification than others.

She shows how densification can be combined with incremental and participative upgrading, following the enabling planning model. Houses of the lowest quality are to be replaced by new ones. She suggests that some of the new houses be designed to allow vertical extensions when residents can afford to build a second floor.

The author shows how urban agriculture and Home-Based Enterprise can be maintained – or added – during the densification process, even when the FAR is trebled (Nnaggenda-Musana, 2008).

Figure 6. Proposed incremental upgrading in Mbuya, Kampala. Note the ample amount of space between buildings, allowing for intensive household activities, socializing and future extensions of houses (Nnaggenda-Musana, 2008).

Another interesting study on how to upgrade an existing slum is the master thesis of the two landscape architect students Bratel and Hellqvist, who carried out their field study in an informal settlement in Bangalore, India. They found that slum residents have had time to develop their housing situation to suit their needs in line with what their economy allows and concluded that an incremental process would suit them better than rehabilitation based on demolition.

It was found that in situ upgrading is flexible and depending on social, economic and natural conditions. Among others they wrote:

"When talking with residents, it becomes clear that many prefer to keep their houses rather than having it torn down. The permanent houses will be identified along with the houses that are in need of reconstruction. The houses in need of reconstruction will be demolished and solid foundations for future houses to which basic necessities (water, sewage, electricity) are connected, are built in its place. This foundation will quite easily be extended to a habitable one-storey structure by the slum dwellers….The simple single-floor structure will eventually also be able to grow to a two or three storey house based on its owners' needs and economic opportunities". (Bratel & Hellqvist, 2011: 149).
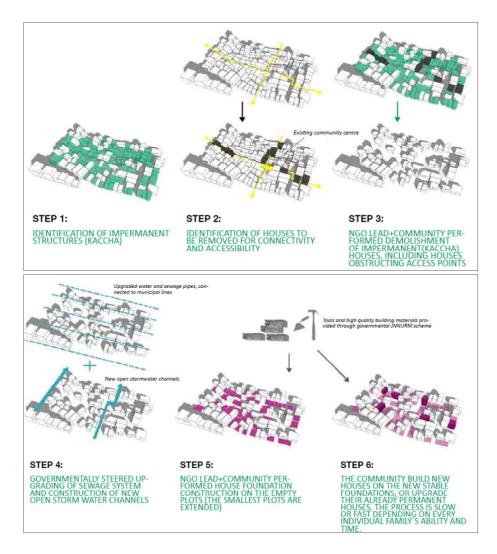
Figure 7. Proposed incremental upgrading of the informal settlement Leprosy Colony in Bangalore, India (Bratel & Hellqvist, 2011).

Conclusions

The discussion above shows that the modernist provider model is inappropriate for solving the problem of informal settlements in low-income countries. This does not mean that modernisation should not be a priority. Classical modernism in architecture and planning included strong development components such as care for functional standards, daylight in rooms, cross-ventilation and other health-related aspects. These factors are highly relevant, but the modernist model must be revised to meet local needs (Nawangwe and Vestbro, 2003). For informal settlements to be regularized and provided with basic infrastructure such as clean water and paved roads, professional guidance is required.

The challenge is to get order without falling into the pitfall of over-centralizing. Authorities need to know at what level to stop applying centralizing techniques. In the informal settlements public intervention is needed for infrastructure services and for providing an enabling environment so that the residents may build their own neighbourhoods. In Sub-Saharan cities 60-85 per cent of the population live in informal settlements. Virtually all buildings in these areas are detached one-storey houses. Land coverage usually

range from 10 to 30 per cent. The informal settlements are continuously densified, a process without professional guidance. If professionals would better understand the need for incremental upgrading and the possibility to promote compact house and neighbourhood types, then densification can take place while maintaining basic spatial qualities. It is desirable to promote groupings of houses that are more land efficient, plot dimensions that allow deeper blocks with few but more accessible roads, house types with wall-to-wall design and constructions that permit vertical extensions while still using local skills and simple building techniques. The examples given in the paper show that it is possible to increase densities and still maintain ample space between buildings for household chores, agriculture and animal-rearing.

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