Urban morphology, urban transformations and conservation in Maputo, Mozambique

Lessons learnt and transfer of knowledge to other regions

Jorgen Eskemose Andersen

Architect & Associate Professor Institute of Planning, Head Department of Human Settlements (DHS), Det Kongelige Danske Kunstakademis Skoler for Arkitektur, Design og Konservering, The Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation

Philip de Langes Allé 10, DK-1435 København K
Phone: +45 4170 1500; +45 4170 1683
Email: jeske@kadk.dk
Website: www.kadk.dk

This paper is draws on the research programme Home Space in the African City (www.homespace.dk) and aims at providing insights to the development of African cities with an emphasis on planning and housing, based on in-depth empirical data from Maputo, the capital of Mozambique.

The Home Space concept was developed in order to record the spaces within which the majority of African urban residents dwell - dwelling being both a material place, an identity, an investment and a process. The unit of analysis was the land, the plot on which people reside regardless whether being planned or unplanned, formal or informal.

The notion of home is a relational concept, which reflects the embedded sense of belonging to a certain space. Home is material and imagined and the concept embeds relationships between imagined ideals and specific physical spaces. Home is somewhere in particular; a place invested with meaning through lived experience and culturally defined practices. The analysis of home making processes in Maputo documents how this sense of belonging is created and the research focus on the relationship between the material, symbolic and imagined home.

A house turns into a home through inhabitation which involves feelings of security (physical and legal), concepts of family and social networks, relation to neighbourhood and how objects and spaces are invested with symbolic meanings. The study argues that the Maputo peri-urban inhabitants are acting as the de facto city makers with limited, if any, assistance from the state and/or the private sector. Understanding Home Space making is hence key to understanding how Sub-Saharan African cities continuously expand and transform themselves.

Objectives and Research Question

The rapid urban growth in African countries in contexts of high levels of poverty requires active planning with people and not planning for people. This research programme documents that the vast majority of urban development in Maputo is managed by the residents themselves in a grey zone between 'formal' and 'informal' systems, and most housing development is being implemented by residents with little if any assistance from governmental institutions and the formal private sector.

The objective of developing the term Home Space was to identify a unit of analysis permitting study of the act of dwelling as well as the physical space of dwelling. Collectively African home spaces make up the vast majority of the region's urban areas. They are however inevitably enacted within political and economic contexts, which establish structural parameters for such agency. Understanding Home Space thus entails understanding the physical, social, economic, cultural and temporal aspects of urban change. The micro-level action multiplied creates the macro-level environment,

but macro-level issues influence the way the micro-level is created and perceived – a complex interaction. As such, the study both engages with a micro-level understanding of the house as living space and relates this to wider urban development i.e. understanding the broader urban issues through detailed inter-disciplinary empirical studies.

The Home Space research embraces 102 case studies with a broad variety of plot sizes, configurations and built up areas.

The main focus is an analysis of the physical environment which constitutes the framework for the everyday lived experience of urban residents in the rapidly expanding city – i.e. the processes of dwelling, house construction and home making. In this context, house construction and home making are continuous processes of improvements/extensions and transformations. The study documents how urban development is not controlled by the authorities– who are not coping with the enormous demand for affordable land - as a wide range of individual and private actors engage with land development.

These actors range from small landowners subdividing family land holdings through to real estate agencies. Poor, low-income and increasingly middle- and upper middle income socioeconomic groups all invest enormous proportions of their household economies in house construction and home making – the single largest national domestic source of saving - virtually without engaging formal financial institutions or the state in any way. The study consequently attempts to respond to the following research question: Who plans and built the African City?

A typical informal settlement in peri-urban Maputo. Albeit the obvious spontaneous patterns and lack of proper infrastructure provision such areas constitutes homes for millions of people in many African cites, and hence the issue of formality vs. informality is not at stake for these residents; this is simply their urban environments notwithstanding all the shortcomings, and this is where they establish families and built homes.

Slums

UN-Habitat defines a slum as an area that combines, to various extents, the following characteristics (UN-Habitat 2003, p 12, table 1.2):

· inadequate access to safe water
· inadequate access to sanitation
· poor structural quality of housing
· overcrowding
· insecure residential status

Making use of these criteria shall eventual define a substantial share of the peri-urban Maputo residents as "slum dwellers". The Home Space study provides evidence that such an approach is too simplistic as the reality in the Maputo case is very complex and dynamic. The urban expansion and densification of the bairros is primarily driven by individuals building the city each and every day according to their ideals and aspirations. Even though some peri-urban areas in Maputo carries slum characteristics as defined by the UN, the Home Space research team hopes that the evidence based findings may serve as a call for local government(s) to take point of departure in the reality on the ground and consequently plan with the people and not plan for the people.

Methodology

The study is based on 102 sites carefully selected in order to represent to the extent possible housing and urban development in peri-urban Maputo today. The study area is a band some 2.5 km wide stretching from the edge of the formal city and 20 km out to the current urban 'frontline' where land is being subdivided, marketed and eventually built upon.

The study relates to two previous studies in Maputo undertaken in 1990 and 2000 respectively. These studies offer a unique opportunity for longitudinal comparisons as half of the cases studied in the Home Space research are found in the 1990 or 2000 studies. The research takes point of departure in the physical sites, tracing the location and not the households - i.e. if a household has left since 1990 or 2000 it is the plot development and the present residing household that is being studied. If the land has been further subdivided the new additional developments are included in the study.

Detailed physical surveys have been prepared in order to document the level of physical change on the sites. The data offers insight into the home spaces of all 102 cases through drawings, photos and semi-structured interviews in order to provide a basis for a deeper understanding of urban development processes and how residents perceive these processes in Maputo today.

Land, Planning, Plot sizes and Densification

The Home Space research identified four categories of land access reflecting both the actual urban development processes and the nature of the state's role, namely: a) 'unplanned' areas; b) 'reordered' areas (previously unplanned and mostly still unofficial vis-à-vis formal land tenure; c) 'officially planned' areas and d) 'unofficially planned' areas. In general unplanned areas predominate (57%), followed by officially planned areas (27%), and then unofficially planned areas (9% - although a much higher proportion in the areas outside the city boundary) and finally reordered areas (7%). As with the city overall, the unplanned areas constituted the majority of the 102 sampled cases with some 40% , followed by the officially planned areas (38%), the reordered areas with some 8% and finally the unofficially planned areas constituting 14%. The surveyed cases show a remarkable variety in the size, layout and shape. The smallest plot was 77 m^2 while some few large plots were more than 1000m^2 with a median plot size on 360 m^2. Plot size has a clear relation to geographical location i.e. the more distant from city centre the larger the plots.

The variation in plot size reflects the geographical distribution of the planning typologies: The small reordered unofficial plots were closest to the city while the majority of the officially planned plots were concentrated 7-9 km from the central city edge while most of the unofficially planned plots were located in rural districts, where development control is significantly less effective.

The median plot size also manifest current norms used in planning. In the case of the officially planned and reordered plots all these followed official norms with minimum sizes of 10 x 16m in the reordered areas and 13 x 25m or 15 x 30 m in the officially planned areas. In the case of more recent emergence of unofficially planned areas there is a tendency for plot sizes to be somewhat similar to the larger officially planned plots (15 x 30m).

Concerning plot layout and limits, the most common plot layout was a rectangular form – this being not only the norm for official and unofficial planned areas as well as those re-ordered, but often also how people sub-divide land in unplanned areas. Perimeter walls were built throughout and the longitudinal study provides evidence of a transition from loosely defined plots in terms of perimeters, to well-defined and closed off plots. The majority of the plots surveyed in 2010 had a cover ratio of less than 50 %.

Almost all cases from the previous studies in 1990 and 2000 indicate significant densification evidenced in both subdivisions and extensions of existing buildings or addition of new houses as annexes.

A planned suburban area with small plot sizes (12,5x25M) and some open spaces for recreation and other urban amenities. Planned in 1985 and implemented incrementally. Infrastructure provision is still rudimentary.

Across the sample the typical house was 60m^2, with three divisions, including eventual smaller outbuildings and annexes. This figure however reflects huge variations from very small houses to houses with many divisions and some even in two stories. The number of household members did not seem to have a direct influence on the size of the house as some wealthy families were nuclear families with few family members, but still with big houses and hence economic status was the determining factor in terms of house size.

Social compositions

The study has defined five economic categories ranging from very poor and poor via average or medium to rich and very rich. The households in the sample were distributed with 24% defined as very poor, 23% as poor, 33% as in a medium economic situation while the rich group had 15% and finally the segment defined as very rich were represented with some 5%. Nuclear families were the most common household structure with 55% of the cases followed by extended families (30%). Single parent families were most frequent within the female headed households. Polygamy is rare but does exist in a few cases.

An average of 6 people was residing on plot with some difference between the numbers of residents on plot between the 5 economic status groups. Within the wealthy segment 5 people were recorded as residing on each plot on average while the highest number residing on plot was found in the medium income group with 7. The very poor and poor households had 5 and 6 respectively living on plot on average.

Most residents were migrants (59%) coming from outside Maputo, while the remaining 41% were from Maputo province or Maputo municipality. Most came in search for work or as refuges during the war ending in 1992. The majority of the migrants were from the southern provinces bordering Maputo province.

60% of the respondents were engaged in the informal sector, while 40% were in formal employment. Informal sector work covered a wide range of activities such as construction, carpentry and blacksmith services, car repair, security and domestic services. However most in informal sector activities are in petty trade of food and goods for domestic use. 80% of the more wealthy households were in formal employment, while for the very poor and poor households 82% were engaged in informal in the informal sector.

Infrastructure

In 2010 nearly 75% of respondents had electricity on the plot in the form of pre-paid meters and more than half of the cases examined had running water on their plot, the majority of this from private providers. In 1990 none had running water on their plot and in 2000 only two had running water on their plot. Those with no private water connection buy water from water kiosks or more commonly from plots with a source of running water as many generate income by selling water. The former public water standpipes supplied by the government have all vanished from the study area. Electricity supply was widespread with 74% with electricity connection on plot while only 12% of plots had in 1990 and 20% in 2000.

Concerning sanitation facilities, approximately 35% had a simple pit latrine while improved pit latrines were used in 30% of cases as was a WC with a septic tank – typically only seen in more well-off households. Households with no sanitation facilities at all were only recorded in few exceptional cases. None of the peri-urban areas were serviced with sewers as implementing bulk sewer systems is extremely costly and within the foreseeable future very few African urban areas will experience this at scale.
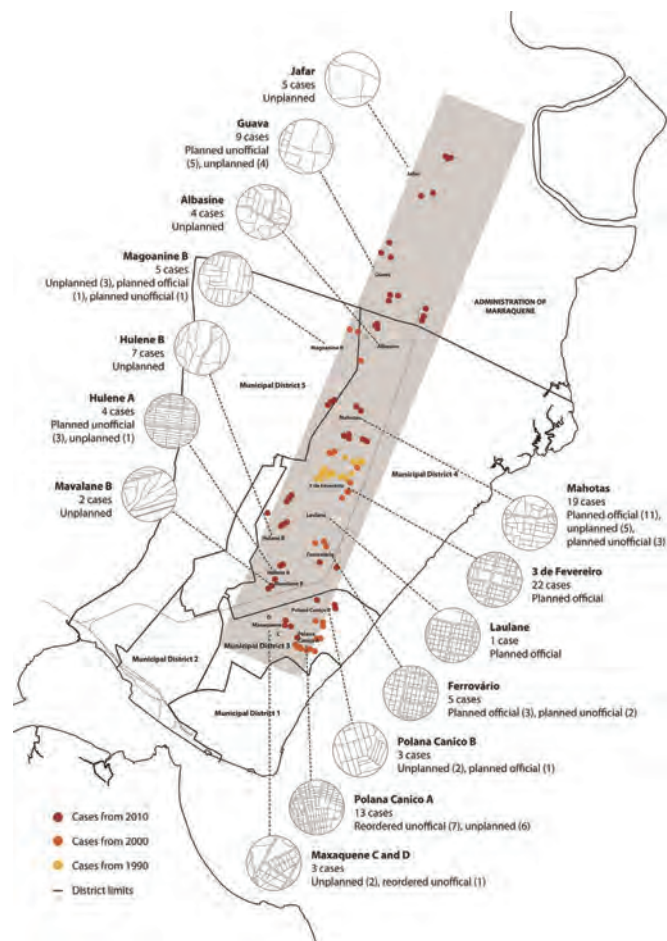

Diagram indicating the planning configurations of the neighborhoods in which the 102 cases are located.

Constructing the Home Space

50% of the sample cases informed that they moved to their current plot between 1990 and 2010. This means that the majority of the urban expansion and densification has taken place after 1990 with an urbanisation pace never recorded before and basically based on individual initiatives. Furthermore more than 60% of the respondents were first to build on what is now their plot adding to the dynamics of urban development over the recent two decades.

The majority of these new settlers informed that when they acquired the land there was nothing there while 23 % of these responded that they had replaced an initial precarious house with a permanent house. These figures indicates that a housing market has as yet not been established, but increasingly a land market is operating in a grey zone in the interface between the formal and informal as was evidenced already in the 2000 land market study (Jenkins 2000).

Constructing a home space is a long and continuous process and Maputo peri-urban inhabitants invest substantially in their houses. Cement blocks were the most common building material used with corrugated iron sheets as roofing material.

The peri-urban Maputo houses are built in phases spanning over years, decades and in some cases seemingly never finishes. The study provides clear evidence that the building process is significant slower among poor households. However, no matter the economic status of the household, the house was in most cases refurbished, extended and improved over the longitudinal period studied, even if these consolidation activities were quite modest. In many cases building materials were stored on the site as an indication of a desire to continuously invest in the house. All segments of society prioritise improving their homes, regardless of their land tenure status. House investments was not recorded as directly linked to location or planning category, whether formal, informal, planned or unplanned as residents indicated a generally high level of sense of security of tenure regardless of their lacking formal documentation. Residents were hence continuously improving their homes with generally no interference or assistance from the state, the formal private construction sector or financial institutions.

The longitudinal survey documents the almost complete vanishing of the houses typical in the 1990 and 2000 survey – a process which has been labelled as the "cementification" of the peri-urban Maputo. Whereas caniço (reed) or other building materials were widespread twenty years ago these building materials were rarely seen in the current 2010 survey.

The transformation process of substituting the houses built in reeds (canico) or wood structures roofed and cladded with corrugated iron sheets (madeira e zinco) appears to have come to an end and vast housing areas are now without any merits from former distinct architectural features in adobe, reed or corrugated iron sheets. The faculty of architecture at the national university has documented these threatened architectures in a series of studies however few have been published internationally.

The Home Space study documents signs of gentrification with wealthy house builders buying out poorer residents, giving way to either the building of large villa type of housing for themselves or occasionally in order to build condominiums for sale or rent. This process was mostly taking place in the interface between the formal and the informal city.

Distribution of all 102 Home Space cases.

Architecture features

The study has revealed some important generic architectural features. The small building contractors are crucial actors in the house building sector as most homes are built without any technical assistance from either architects or engineers or other formally trained construction personnel.

The step-by-step building process with most houses built in phases room by room has directly influenced the overall design as most additional rooms have an independent roof slope and hence the local expression for describing a house in relation to the number of roof slopes which equals the number of living spaces. With four different rooms this produces four different roof slopes – the so-called fan house ('ventoinha') - which seems to be a quite distinctive Maputo style.

The most common house type had typically 2 or 3 bedrooms and a living room, making up nearly half of the sample and were found in all income groups except amongst the poor who generally had smaller houses – 1 or 2 rooms – used as multifunctional spaces.

Windows were either made of wood or prefabricated steel with built-in burglar bars. House builders usually buy doors and windows in informal markets or occasionally local carpenters produce them according to agreements on price, quality and size.

The influence from the Portuguese colonial era is evident in many of the house types identified in the home spaces cases. The typical Portuguese villa built in many parts of Maputo by the settlers before Independence has thus influenced the popular building style as this is what many respondents referred to as a 'proper house'. The veranda and the image of a proper house (as in the cement city) hiding the metal roof sheets behind a deliberately designed concrete edge were strong preferred architectural features.

The study has observed a trend towards individual aspirations and architectural expression in new house construction for the wealthy with elaborate plans including non-rectangular forms, asymmetrical structure and architectural features such as bay windows. The previous ideals on how a typical 'proper' and socially representative house looks like is changing and the better-off residents were obviously taking the lead with inspirations from the affluent neighbourhoods in Maputo city as well as other visual sources. The involvement and role of architects in this development is unclear as many housing projects seemingly are designed by draftsmen. Architects are however increasingly engaged in projects referring to architectural features in line with international villa types.

The fan house type ("ventoinha") represented a flexible model adapted to the incremental phasing that most housing projects adhere to, but is apparently no longer the preferred model for middle- and upper class house builders. House construction and home making in peri-urban Maputo is thus a compromise between individual and collective cultural desires, social needs and economic possibilities.

In Jafar patterns follow a system of natural paths and larger homesteads, although some of these already have been subdivided.

In Guava an example of an unplanned plot structure, that is allowed to mix gradually with a planned grid street layout.

Magoanine has already been developed and most plots have been subdivided into the defacto standard sized plots (approx. 350 m2 on average).
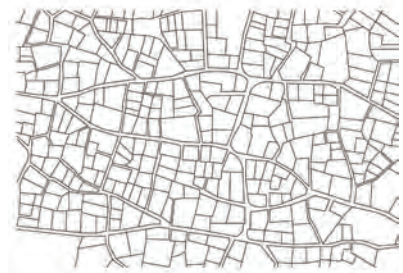
Conclusion

The study has documented that urban development in Maputo is influenced by the strategic action planning interventions in the 1980s which had an significant impact on the planning modalities, however nowadays customary landholders in peri-urban Maputo are subdividing their land and now selling to a relative affluent clientele. This clientele have different architectural points of reference and hence new types of houses are emerging. As most of these new occupants are quite well-off, new houses tend to be bigger and often in two or more storeys. Plots sizes are however still to a certain extent following the norms stipulated in the state planning developments.

The planning and demarcation of new subdivisions are undertaken by professionals as consultants to the local landholders. As these initiatives are private driven and uncoordinated the planners did not seem to adhere to any general geographical points of reference and hence the reality on the ground proves that implementation is ad hoc maximising the landholders options to demarcate as many as possible plots for sale.

This kind of development excludes planning for, and implementation of, areas for communal amenities such as sites for schools and health institutions not to mention areas for sport, parks and the like. Furthermore the planning and layout of roads are not coordinated and hence the joining of the different housing schemes becomes problematic. The city development has thus become a patchwork of relative small subdivisions with no structural planning knitting the areas together in a functional manner. Furthermore this private led development sees no interest in setting aside reserves for ecological sensitive areas e.g. depressions prone to floods or green zones as recreational facilities. These are all serious planning

issues, which need careful consideration on how to approach and eventual solve in a comprehensively manner to the benefit to local residents and wider society. In sum: The urban commons must be secured in order to promote sustainable and social just urban neighbourhoods.

This map shows the plots that does not have direct street frontage, and their connection to the street grid.

The urban development closer to the city indicates a continuous densification process with subdivisions of plots and more built up area on each plot. In the interface between the formal and the informal city developers and others are increasingly buying out the informal settlers. This has been going on for some time now and the study documents how this seems to be an irreversible process in which the formal city continuously expands into the unplanned areas at land prizes marginal to the real value. Local low-income informal residents are the losers as they need to relocate to new often distant locations with additional transport costs and difficulty in carrying out their informal petty trade activities. Others end up in other informal settlements close to the city often under precarious conditions with limited security of tenure.

The study observes that renting, unlike many African cities, is limited and no cases were recorded with renting as a business with absentee landlords. Most renting activities take place within a given home space where the landlord lives together with the tenants sharing the facilities available on site. It is however clear that in some inner located informal settlements renting is more frequent and as the urbanisation process progresses it may turn out that renting out spaces becomes a lucrative business as the demand for living spaces close to employment opportunities and social amenities eventual will increase.

The Home Space research calls for a review of the merits of planning which have proved to produce liveable and healthy urban environments, close to what residents aspire to, rather than attempt to provide unachievable norms, based on what government thinks is appropriate. This conclusion is not a romantic attitude to self-help and informal settlements as exotic urban environments, but a pragmatic recognition of a form of emergent endogenous urbanism. This urbanism is essentially different as it is emerging and not planned according to ideals and norms that emanate from a different place and time – representing a different modernity. Mozambican urban residents do aspire to some form of modernity, planned and designed by architects, adjusted to social, economic and cultural realities – which however most urban development projects proposed by professionals are not. What is needed is a professional approach to a different modernity and urbanisme based on popular demand – especially given the continued relative weakness of the state and private sector in the face of rapid urbanisation and widespread low income levels.

The Maputo experience of people-oriented urban development from the 1980s documents how a strategic low-cost and hands-on approach to the reality in a rapid expanding urban setting can produce significant lasting results.

Arguably the era of top-down state-oriented planning and housing delivering is ending in Sub-Saharan Africa as the nation states have proven unable to deliver flexible housing options to its citizens. The Maputo experience can provide new models for people-based urban development and housing initiatives in an endeavour to limit the proliferation of future slums and provide the basis for real participatory urban development processes.