Core–housing and collaborative architecture: Learning from Dandora

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ABSTRACT: This paper introduces a case study which aims to record and reevaluate the current state of the emblematic sites-and-services project of Dandora, located in Nairobi, Kenya. Sites-and-services schemes are a well-known set of principles and steps aimed to provide housing to low-income people in developing countries. These projects were crucial in pioneering the inclusion of concepts like self-help and core-housing as an alternative to traditional social housing projects. Today, many of these projects are considered unsuccessful. They were actively revisited and reevaluated soon after their execution in the 70s and early 80s, and it is generally agreed that, because of many and complex reasons, sites-and-services projects had a number of shortcomings during their implementation. However, most of these reevaluations were done soon after the projects were implemented, and their consolidation process over the years has received little attention. For this case study, we revisited a specific area of Dandora which is regarded as the one with the best environmental quality by both local authorities and residents. We surveyed and recorded the actual state of the self-built houses and the resulted typologies, while also interviewing the current tenants. The analysis shows that the involvement of the tenants in the shaping of the Dandora project has reached unforeseen extents on both architectural and communal levels. Finally, the paper discusses the implications of these typologies and their possible applications in social housing and collaborative design.

KEYWORDS: Core-housing, Collaborative Design, Informal Settlements, Sites-and-services.

INTRODUCTION

The quality of human settlements is a prerequisite for the full satisfaction of the most basic human needs and rights. The scale of the problem caused by the world population growth requires joint efforts and cooperation in finding solutions consistent enough to be applied in several developing countries, while also being flexible enough for adapting to the particular social, economic, environmental and cultural reality of those countries. One of the first responses to this problem were the sites-and-services projects, widely implemented by governments and agencies during 1970s and 1980s, when the approach became a paradigm for tackling the slums and squatters problem. Sites-and-services projects were also significantly funded and promoted by the World Bank, providing financial and technical assistance to local governments for its implementation. Some of these projects incorporated the idea of the core-house; a minimum house unit providing basic services which the tenants were supposed to improve and expand over time, promoting self-help and shared responsibilities between governments and tenants.

Theoretically, the sites-and-services approach was very promising, yet for a number of complex reasons, often including low investment recovery and the production of low quality urban environments, today many of these projects are considered unsuccessful. However, there is also agreement that most of the evaluations of these projects were done shortly after their implementation, without taking into account their consolidation and evolution over the years. So how these projects have changed and consolidated over time? In order to explore this question, we decided to visit the sites-and-services project of Dandora Phase one, surveying some of the resulted houses and interviewing the tenants in order to understand the current state of the project.

1.0 SITES AND SERVICES

Attempts for dealing with the housing problem on a global scale notably increased since the end of the Second World War (Basset and Harvey, 1997). At the beginning the problem was almost entirely confronted by local governmental agencies in developing countries. Although some of these agencies were occasionally assisted and supported by international institutions most of their efforts were independent from each other in their implementation, focalized in particular problems at a local scale. Conceptually, however, they shared a common origin: the sites-and-services projects. The sites-and-services scheme is generally understood as a subdivision and preparation of urban land for residential buildings and the provision of public utilities and community facilities (Soni, 1982). Besides this core idea, there is little agreement in what the sites-and-services concept actually means. The World Bank (1974) noticed that defining design standards for the projects to follow is an extremely difficult task, since they are hard to rationalize without considering a number of specific local variables like income level, local political system, transportation, and so on. Despite this, there is consensus that a building plot providing basic infrastructure is the most essential requirement for a sites-and-services project. From this initial idea, projects may evolve into one of two different approaches to the scheme. The first one emphasizes the participation of the households in the

process of construction of the house, yet not in its design, which is prepared and provided by a housing agency. The second one is focused on the freedom to build, where the householder is in control of the construction and design process of the house, being able to modify the scheme according to his/her needs, resources and abilities (Yap, 1998). In both cases, the affordability and flexibility of the basic building plot are essential for the rest of the process to progress successfully.

The first recorded sites-and-services schemes were executed during the 1940s and 1950s in developing countries like Chile and Kenya without significant external assistance (Mayo and Gross, 1987). This situation changed during the late 1960s and early 1970s, when international agencies became more and more involved in the development of site-and-services projects, reaching a significant global implementation of these schemes. A survey by the World Bank (1972) revealed that from the mid-1950s until 1972, around 770.000 service plots were implemented for occupation in more than 20 countries. A significant number of these plots were financed by the International Bank for Reconstruction and Development (IBDR). After the Vancouver Declaration these numbers increased drastically. In 1984 alone, the World Bank initiated around sixty-eight sites-and-services projects for the benefit of more than 25.000 households (Mayo and Gross, 1987).

1.1. Core-housing and sites-and-services
The idea of self-building generally implies a territorial claim within an urban area, where the settlers secure land which they do not own by gradually improving and expanding their houses to the point that they cannot longer be considered temporary shelters. These expansions take place as the families are able to save money for their execution, which often results in varied lapses of time between periods of construction. Abrams (1964) was the first in turning this spontaneous way of building into a framework for self-aided housing. He introduced the idea of an initial "core" provided with basic services in which the tenants could live while they expanded their houses. In theory, the introduction of the core-house promised great adaptability and affordability: depending on the income of the country the original core could include one or more rooms and allow both horizontal and vertical expansions. Also, the quality of the resultant houses could potentially be comparable to that of the fully built ones but being considerably cheaper and easier to implement. Local governments rapidly adopted this approach because offered several advantages in comparison to providing fully-built social houses, like low initial investment and involvement just to the point where they could still keep control of services, land tenure and location of the schemes (Napier 2002). During the 1970s the World Bank supported the core-house approach in many of its sponsored sites-and-services projects, with examples in Colombia, El Salvador, Mexico, Tanzania, Kenya and many others. However, the results of the implemented projects were not the expected ones, and since the mids-1980s both sites-and-services projects and the use of the core-house have received wide criticism, arguing difficulties in its implementation, bureaucratic procedures and political instability, a lack of proper design, poor construction standards and, above all, very low recovery of the initial investment and failure in securing land ownership for the initial tenures. The basic assumption was that the promise of land ownership will be the main incentive for the beneficiary to pay back the initial subsides. This was not the case, with most of the sites-and-services projects registering low cost recovery. There are no single reasons for explaining this and they vary from project to project. High cost of the land trespassed to the tenants, inconvenient location of the schemes, uncertain security of land tenure and new expenses for the residents (transport, electricity and water) resulted in many of the beneficiaries preferring to sell or rent the houses in order to pay back loans, proving that the assumption of ownership as the main motivation for the tenants to commit and produce quality houses was not fulfilled in most of the cases (Napier, 2002).

Sites-and-services schemes were subject of many evaluation reports shortly after their implementation during the 1970s and 1980s, usually pointing out the already mentioned shortcomings. The same applies to the concept of the core-house. However, the criteria for evaluating these projects were mostly focused in its initial implementation, and not on the consolidation of the houses over time. These projects were among the first attempts of self-help policies and core housing; the learning by doing stage of the concept. Long-term evaluations of these projects are scarce and there are still many lessons to be lean from them, especially from an architectural perspective. There are a number of sites-and-services neighborhoods today, often indistinguishable from regular neighborhoods, and the basic concept of the core-house can be found in modern approaches which are considered successful, like the Elemental projects (Aravena and Iacobelli, 2012).

2.0. CASE STUDY IN THE DANDORA COMMUNITY

The city of Nairobi has been struggling with informal settlements since the independence of Kenya in 1963. Most of the slums in Nairobi today have their origins in the early 1960s. The resiliency of the slums is explained by the tremendous population growth that Nairobi keeps experiencing. From the 1906 to 2009 the population of Nairobi has grown from 11.500 to 3.1 million people. More than half of the city's population lives in informal settlements which altogether occupy only a 5% of Nairobi's residential area (Mitullah, 2003). Between 1970 and 1978 the Kenyan government started a program which provided more than 40.000 units

of social houses. More than 50% of the built houses came from sites-and-services schemes, and more than half of those were, either partly or fully, financially supported by the World Bank (UNCHS, 1987). The Dandora sites-and-services project was started in 1975. Located about 10km to the east of Nairobi's city centre, it was the first project of this kind in Nairobi sponsored by the World Bank, which specified guidelines to follow in exchange for the loan; the preparation and servicing of 6.000 plots plus supporting infrastructure. It is estimated that the Dandora project accommodated around 12.000 households, roughly a 13% of the housing needs at that period, becoming a distinguishable and emblematic project within the urban fabric of Nairobi.

2.1. Identifying the community

There is precedent research which recorded the resultant typologies of the Dandora project shortly after it was first implemented, yet the surveyed typologies where sparse all over the totality of the project, aiming to obtain an average evaluation of it (Soni, 1982). For this particular case study we decided that it was more appropriate to record houses which were contiguous to each other, so we could understand the relationship between that resulted schemes and its community. Also, we needed to make sure that the residents were open to having us intruding in their private lives. This is not difficult to achieve when looking for individual plots in the whole of Dandora. However, when looking for several plots contiguous to each other, with more than one family living in each plot, this was a rather complex task. Finally, the majority of the residents of the selected plots welcomed us to their houses, and we were able to undertake the research with relative ease.

2.2. Case study: execution

During three days we visited and measured fifteen plots (Fig.1), recording the current typologies. The main aim when doing this was to understand how closely the tenants have been following the suggested design guidelines proposed by the local authorities, the quality of construction achieved in the self-built houses, the number of people living in them and finally, progression rate of the different expansions done over time. Also, we carried out interviews to tenants in each plot, aiming to register information about gender, ownership, years working in the city and their general opinion about the schemes.
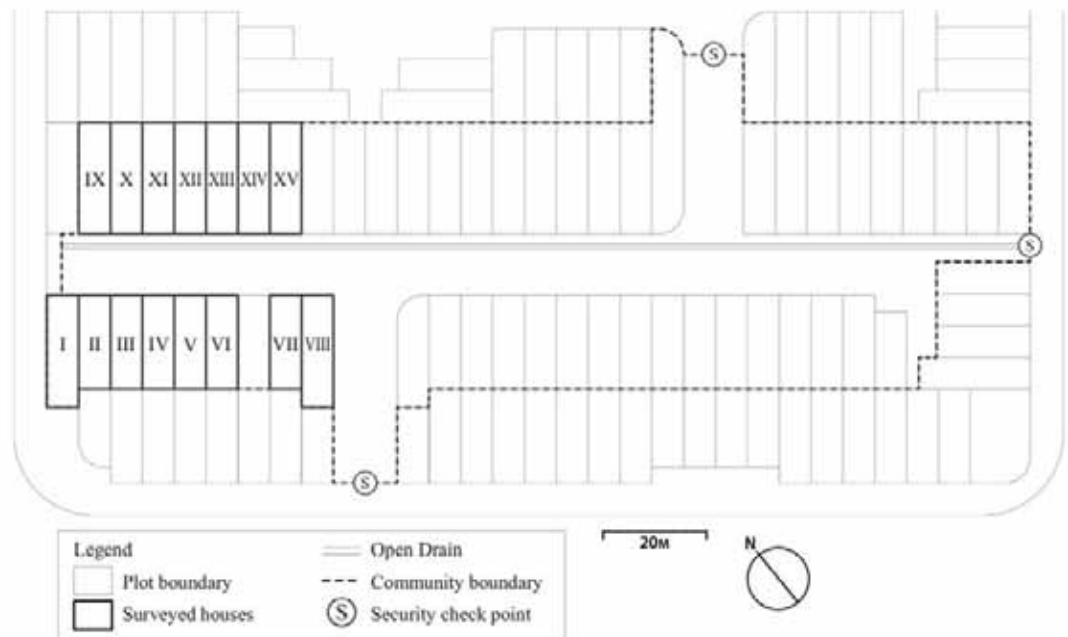

Figure 1: Plan showing the surveyed street and houses in the Dandora community.

2.3. Case study: results

One of the first noticeable characteristic of the surveyed area was that neighbors organized themselves for turning their streets into a gated community. During the day, access to the community is public, yet during the night gates are closed and kept by paid guards. The closing of the street was organized and financed by the residents so they could keep the community safe at night (Fig.1). The second observable fact was that all the rooms within a given plot are occupied by different tenants, and in many cases each room sheltered one full family. While this situation was up to some degree accepted in the initial project, understood as an extra source of income for the original owners, the extents of the overpopulation in each plot is beyond what

was expected (Fig.3) resulting in unavoidable tensions among the tenants. This situation, however, is observable in the whole of Nairobi and it is not unique to Dandora. Because of this, each plot can be understood as a micro-neighborhood, where the relationships and level of agreements between neighbors had a direct correlation with the quality and maintenance of the common public spaces (yards) inside each plot. The second characteristic is that each of the plots still keeps the core-room (Fig. 2), yet none of them uses it as common kitchen, as initially planned. Instead, they have become rooms for renting. The tenants usually cook either in the yards or inside their rooms in especial areas which they have prepared as kitchens (using liquefied gas stoves). It is difficult to conclude if this is because the original common kitchens have been rented as rooms or if the residents prefer to do their cooking separately and in private.

Also, the original common wet-core (W.C and shower) has been kept in all the typologies. This area is clearly a main encounter point for the tenants. Again, the quality and maintenance of the wet-core varies greatly from plot to plot, becoming a sign of the level of organization between neighbors. It was also interesting to see that, when expanding the houses, most the schemes on the north side of the street closely followed the design guidelines of the "upgraded state" suggested by the local government, although a few of them showed patterns of further expansions in the front and middle of the plot, generating a narrow corridor which created a separation between yards, resulting in one "public yard" (occasionally opened to the street) and an interior, more private yard (Fig. 2: houses IX, X, XI and XV). In the south side of the street the situation was different, where some of the plot's boundaries have been modified, taking portions from other plots (houses I and VIII). Some of these plots have reached a point in which more horizontal expansions are no longer possible (houses VI and VIII). It was also noticeable that of the tenants have rented two rooms for themselves and combined them into one. Many expansions were executed solely for this purpose (houses I, III, IV, IX, X, IX).
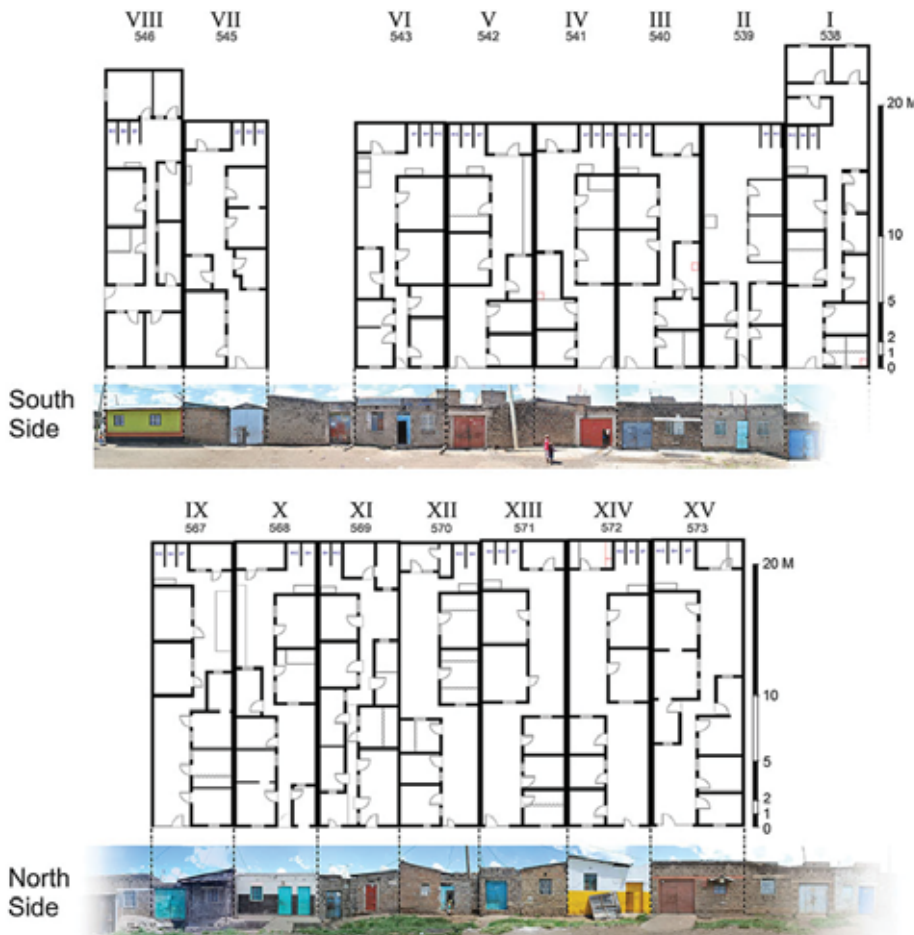

Figure 2: Resultant typologies of the surveyed street.

Most of the tenants also created soft partitions to their room, using curtains, light walls or vertical maximization of space. There was a clear difference between the qualities of construction in some of the schemes. These changes in quality had no correlation with the date of construction since some of the later

expansions are of lower quality than the initial ones. This contradicts the assumption that as the tenants become more experienced the quality of the schemes would improve. The changes of quality could be attributed to the level of investment, but in many cases this was explained solely on the skills and level of commitment of the tenants.

Figure 3: Sample typology showing density of occupation and the current conditions of the plot.

We also interviewed 34 tenants from different plots with the aim of understanding their evaluation of the project and how this one compares with surveys done soon after Dandora was first populated. In previous surveys a significant number of the tenants were originally from the country side, coming to the city for economic reasons, expressing their desire of going back to their villages after retirement. For those tenants, migration to the cities was more of a need rather than a choice, and this translated into an absence of long-lasting commitment with their houses in the city. Interestingly, this situation has changed. Around 70% of the current residents also have rural origins, yet most of them expressed their desire to stay in the city (their ages range from 20 to 60 years old). Almost 90% of the residents have a very positive evaluation of the houses and the community. From those, 60% stated that they have no intentions of moving elsewhere and they would like to stay in Dandora. From the 34 residents, only four of them are the original owners. The other 30 residents are renting their rooms.

CONCLUSIONS
The shortcomings of the Dandora project are evident when it is evaluated from a housing policy perspective, mostly due to its low recovery of initial investment. While this is indeed a strong argument against the project, there are positive outcomes regarding the core-housing approach and the quality the environment which it has produced. At first sight the resultant neighborhoods and living conditions may indicate that these projects were unsuccessful, yet this may be because unrealistic expectations for the project rather than mistakes in its conception. Many of these shortcomings (like overpopulation of the plots) are observable in several areas of Nairobi, and Dandora offers significant pros (like adaptability and flexibility) when compared with projects which were fully built by the government, proving that core-housing can be a viable alternative. The residents were positive in their evaluation of the scheme. Their reasons are strongly linked to a sense of community and safety developed in the surveyed street, but also with a new ease with urban life. It is difficult to draw a clear correlation between the design of the scheme and the origin and evolution of these community ties, but it is safe to say that the scheme is not acting against them. There is also something to say about the assumption of land ownership as the main motivation for the residents to improve their houses. Most of the interviewed residents are not owners, but renters and yet they are actively involved in permanent improvements to both their rooms and the open spaces of the plot. This is reminder that "to own" is not the same as "to belong". These are of course not easy concepts to incorporate in future guidelines for housing policies, but revisions to successful sites-and-services schemes can provide insights in this process. More methodologies for analyzing the correlation between the schemes and the generation of communities are needed, and that will be one of the focuses for future developments of this research. For now, it is worth noticing that sometimes, in order to open and fully create a sense of neighborhood it is necessary the creation of clear boundaries. This is a very architectural thing to do: the definition of boundaries as a mean to open possibilities and choices, rather than for creating restrictions and limitations. This is what the people of the studied community have done: defining boundaries for their community so they could open it to a new level, suggesting that what this project needs is not necessarily a budget increment or the definition of standards, but better architecture.

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