

Sites and Services from an Architectural Perspective: A Case Study in the Dandora Community

Since the Vancouver Declaration on Human Settlements (UNGA 1976), governments and disciplines related to the housing problem are in agreement about the negative repercussions of rapid and uncontrolled urbanization. The declaration was not only crucial in recognizing that the quality of human settlements is a prerequisite for the full satisfaction of the most basic human needs and rights, but it also established an international awareness that 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.

In response to this problem, a big number of sites-and-services projects were 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 strongly promoted by the World Bank, which provided financial and technical assistance to local governments in developing countries 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, many of these projects are generally 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 the consolidation and evolution of these projects over the years. So the question is, have these projects improved over time? For this research we revisited the sites-and-services project of Dandora Phase one, registering some of the resulted typologies and looking if there are still lessons to be learned from this scheme.

CASE STUDY: A STREET IN THE DANDORA COMMUNITY

The problem of housing, of course, did not start after the Vancouver Declaration. There was wide awareness about the magnitude and complexities surrounding

GLEN WASH IVANOVIC

Xi'an Jiaotong-Liverpool University

JUNKO TAMURA

National University of Singapore

the issue of informal settlements, and attempts for dealing with the problem notably increased since the end of the Second World War (Basset and Harvey, 1997). However, since then and previous to the Vancouver declaration the housing problem was mostly 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 various combinations public utilities and community facilities (Soni, 1982). At its core, a sites-and-services schemes requires different degrees of government sponsorship and, most importantly, involvement from the tenants in the construction and completion of the house, which is a shift from the idea of providing to the beneficiary an already completed residence (Peattie, 1982).

The earliest recorded sites-and-services projects were undertaken during the 1940s and 1950s, in Chile, Kenya and the Union of South Africa. These first schemes were executed with little or no external assistance (Mayo and Gross, 1987). This situation started to change 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 more than 770.000 service plots were implemented for occupation by low income urban residents in 23 countries. A great number of these plots were financed by the International Bank for Reconstruction and Development (IBDR). The numbers notably increased after the Vancouver Declaration. In 1984 alone, the World Bank (through the IBDR) initiated around sixty-eight sites-and-services projects for the benefit of more than 25.000 households (Mayo and Gross, 1987).

Besides the core conceptual idea of the sites-and-services scheme, there is little agreement about what the concept precisely stands for. 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 specific local conditions like income level, environmental conditions, available social services, local political system, transportation and so on. Nevertheless, there is consensus about that a building plot providing basic infrastructure is the most essential requirement for a sites-and-services project. From there, projects mainly 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, but 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 adaptability of the core building plot is crucial for the rest of the process to progress successfully.

THE CORE-HOUSE

The development of the concept of core-housing runs parallel to the one of sites-and-services. The conceptualization of the term came from informal processes of self-building observed in all parts of the world, especially in squatter settlements, where families expand their home room by room progressively in order to meet the families' need (Abrams, 1964). This process of self-building usually

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 long lapses of time between periods of construction. Abrams (1964) was the first one in turning this spontaneous way of building into a framework for self-aided housing. When working in some of the first sites-and-services schemes, he realized that the households who received the building plots were unable to actively participate in the construction process, mainly because they lived elsewhere, which resulted in the need of long commutes by the households during the construction period. Because of this, a number of households would build shacks on the plot so they could serve as temporary shelters, so they could stay there and avoid the long and costly commutes. Abrams then proposed the inclusion of a room (the core) to the basic plot, so the family could live there while resources became available and the expanding of the house could continue. Until then, sites-and-services projects procured to the household either empty plots or fully built 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. This was also appealing for governments since they could reduce their involvement and investment in the provision of houses just to the point where they could still keep control of services, land tenure and location of the schemes (Napier 2002). The idea and implementation of self-help and core housing promised then an increment in the supply of affordable housing, so during the 1970s the World Bank supported this 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 approaches were not the expected ones, and since the mid-1980s both sites-and-services projects and the use of the core house have received wide criticism. The reasons are varied and complex, and there is no clear consensus on why these schemes did not achieve the goals which put them in place. Some recurrent shortcomings of the projects point to difficulties in its implementation, bureaucratic procedures and political instability, a lack of proper design and construction standards, cultural misconceptions about the benefitted countries and population segments, very low cost recovery and failure in securing land ownership for the initial tenures. The last two factors are often considered the biggest shortcomings of the projects, since the economic viability of the scheme is crucial for solving the housing problem, delivering more for less. In this regard, sites-and-services schemes aimed to establish a shared responsibility between agencies, governments and intended beneficiaries in the funding and completion of the houses. Agencies will fully or partly provide the initial funds for the projects; governments will use the funds for implementing the initial plots and core houses which the final beneficiary had to pay back over time, while at the same time securing savings for completing and expanding their houses. The basic assumption was that the promise of land ownership will be the main incentive for the beneficiary to pay back the initial subsidies. Yet 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,

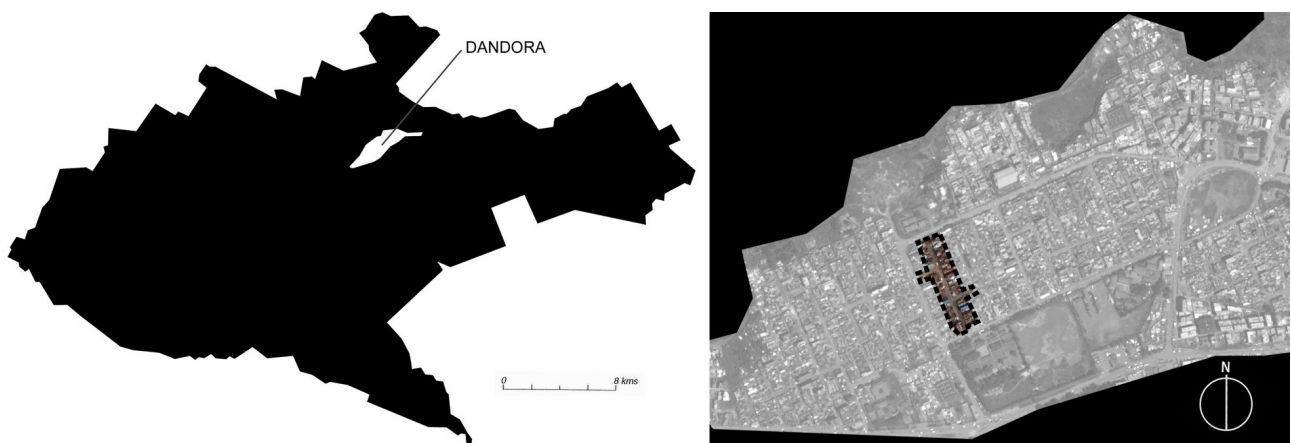
uncertain security of land tenure and new expenses for the residents (transport, electricity and water) resulted in many of the beneficiaries preferring to sell or rent the houses in order to pay back loans, proving that the assumption of ownership as the main motivation for the tenants to commit and 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 evaluation these processes were mostly focused in its production and not in the consolidation of the houses and schemes. 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 learned from them, especially from an architectural perspective. There are a number of sites-and-services neighborhoods today which are 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). While issues of cost-recovery, the scale of the projects and standards of construction are crucial from a public policy perspective, they are not the only parameters from which evaluations should be made. Today many citizens live in sites-and-services schemes, and regardless if they are the original tenants or not, they keep expanding their houses long after the initial evaluations were made, producing unexpected typologies and unique communities.

SITES-AND-SERVICES IN KENYA

The city of Nairobi has been struggling with informal settlements since the independence of Kenya in 1963. In fact, 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 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). During the 1970s it was estimated that the income of a householder in Nairobi was more than 5 times the income of a rural householder, explaining the explosive migrations which Nairobi experienced in the late 1960s (World Bank, 1975). In order to solve the problem, the government started the 1970-1974 housing program, trying to cope with the increasing demand for houses. The plan initially estimated a need of 5.800 units in Nairobi alone. This estimation notably increased for the 1974-1978 plan, which required 35.000 units. During this period, more than 50% of the built schemes were sites-and-services schemes, and more than half of those were supported by the World Bank (UNCHS, 1987). The Dandora sites-and-services project, with location about 10km to the east of Nairobi's city center (Fig. 1) was started in 1975. 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, the establishment of a materials loan fund from which the beneficiaries could borrow materials to build their expansions, the provision of on-site infrastructure (water electricity, street lighting, sewerage) and the construction of community facilities consisting of primary schools, health centers, market areas and a sport complex. (World Bank, 1975). The program included 3 options for the plots, all of them offering a different core: Option A included a contractor built wet core (consisting of W.C and washroom). Option B, in addition to the

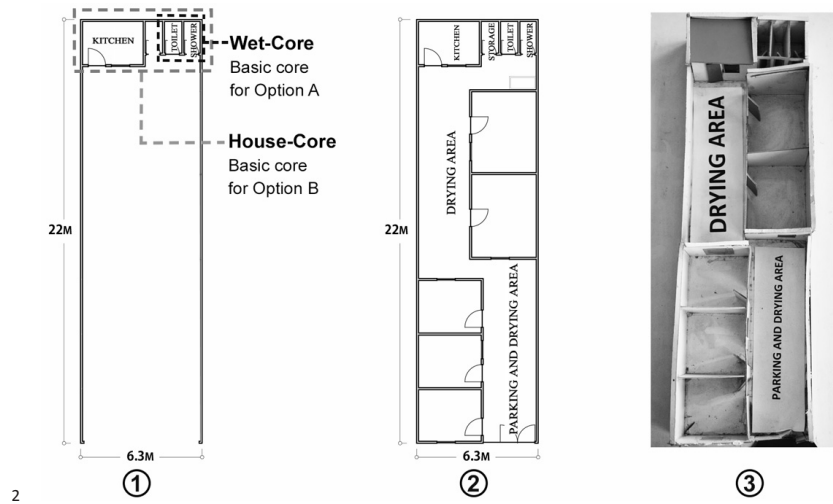
wet core, also included a contractor built room. Option C included the wet core plus two rooms, aimed as an example for the allottees on how they could consolidate their houses. Dandora represented a major intervention in comparison to pre 1975 endeavors, and evaluations of the project are mixed. It is estimated that the Dandora project accommodated around 12.000 households, roughly a 13% of the housing needs at that period. The project did promote landlordism, with 96% of the plots owners sub renting rooms. However, around 80% of the owners moved elsewhere, and the project failed to reach the 20% of the population with lowest income, since they could not afford to repay the loans nor the rent prices (UNCHS, 1987). Recordings of the resulted schemes where done shortly after the implementation of the project (Soni, 1982) most likely without reflecting the scheme's consolidation. It is also clear that some of the criticism received by the Dandora project may be applicable to other areas of Nairobi as well. In 1987, some unique examples of self-help at a community level where recorded in areas of Dandora (McInnes, 1995), yet not a clear correlation between this sense of community and the design of the scheme has been established.



CASE STUDY: A STREET IN THE DANDORA COMMUNITY

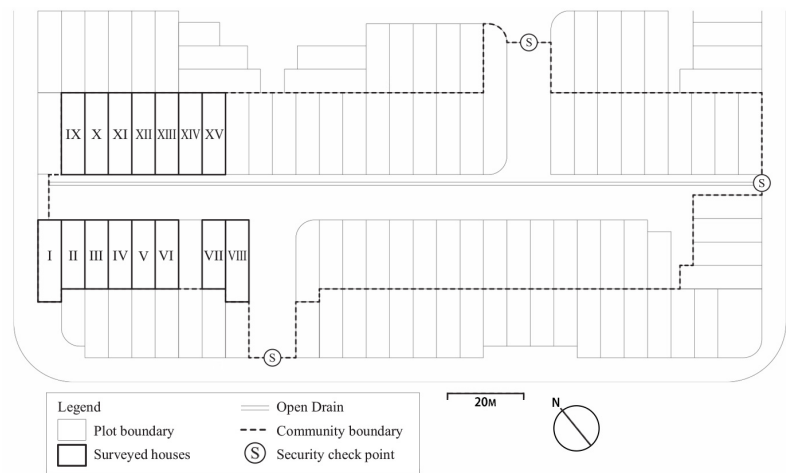
We decided to carry a case study in the Phase one of the Dandora project, aiming first to record the evolution of the core-houses and see which kind of community has developed there. We visited Nairobi in December of 2012. We first did some recognition visits to the area with the mission of identifying a suitable community for the case study. We established two main criteria for choosing the community: first, we wanted to find an area of Dandora phase one that, at least on a first superficial sight, seemed more consolidated than the rest of the communities. In addition to this, we were aware that previous evaluations of the Dandora community were focused on surveying single plots which were not contiguous to each other but spread throughout the totality of the project, trying to find information that could reflect a general average of the Dandora. For this case study we decided that it was more valuable to record houses which were contiguous to each other, so we could understand the relationship between that resulted schemes and single community more deeply. The second criterion was to see which community would be willing to having us intruding in their private lives. This is not a difficult task when looking for individual plots in the whole of Dandora. However, when looking for several plots contiguous to each other this was a rather complex task, considering that each plot has more than one family living in them and they all had to agree on receiving us. Finally we identified a street which fulfilled these requirements (Figure 1).

Figure 1: Location of Dandora in Nairobi and location of the studied community within Dandora.



2

After visiting the Nairobi City Council, we were informed that most of the plots implemented in Dandora Phase one corresponded to the Option B of the project: Basic lots of 100, 120 and 140m², which included a core consisting of services (W.C, washroom and storage) and one room projected as common kitchen for the residents but which could also be used as shelter for the tenants during the initial phase of construction (Fig. 2). We could also see the scheme for the “Upgraded State” of the plot, which was designed as a guideline for the tenants to follow when expanding their schemes. One of the aims of the case study was to see if the tenants actually followed this guideline or not (Figure 2).



3

After that we visited the community, one of the first noticeable characteristic 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 (Figure 3). The closing of the street was organized and financed by the residents so they could keep the community safe at night. During three days we visited and measured fifteen houses (Fig. 3) recording the resultant schemes, the number of people living in them and the dates of the expansions. 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 2: Original plot and core-house (1), Dandora “Upgraded State” plan (2) and model (3).

Figure 3: OPlan showing the studied community and location of the surveyed houses.

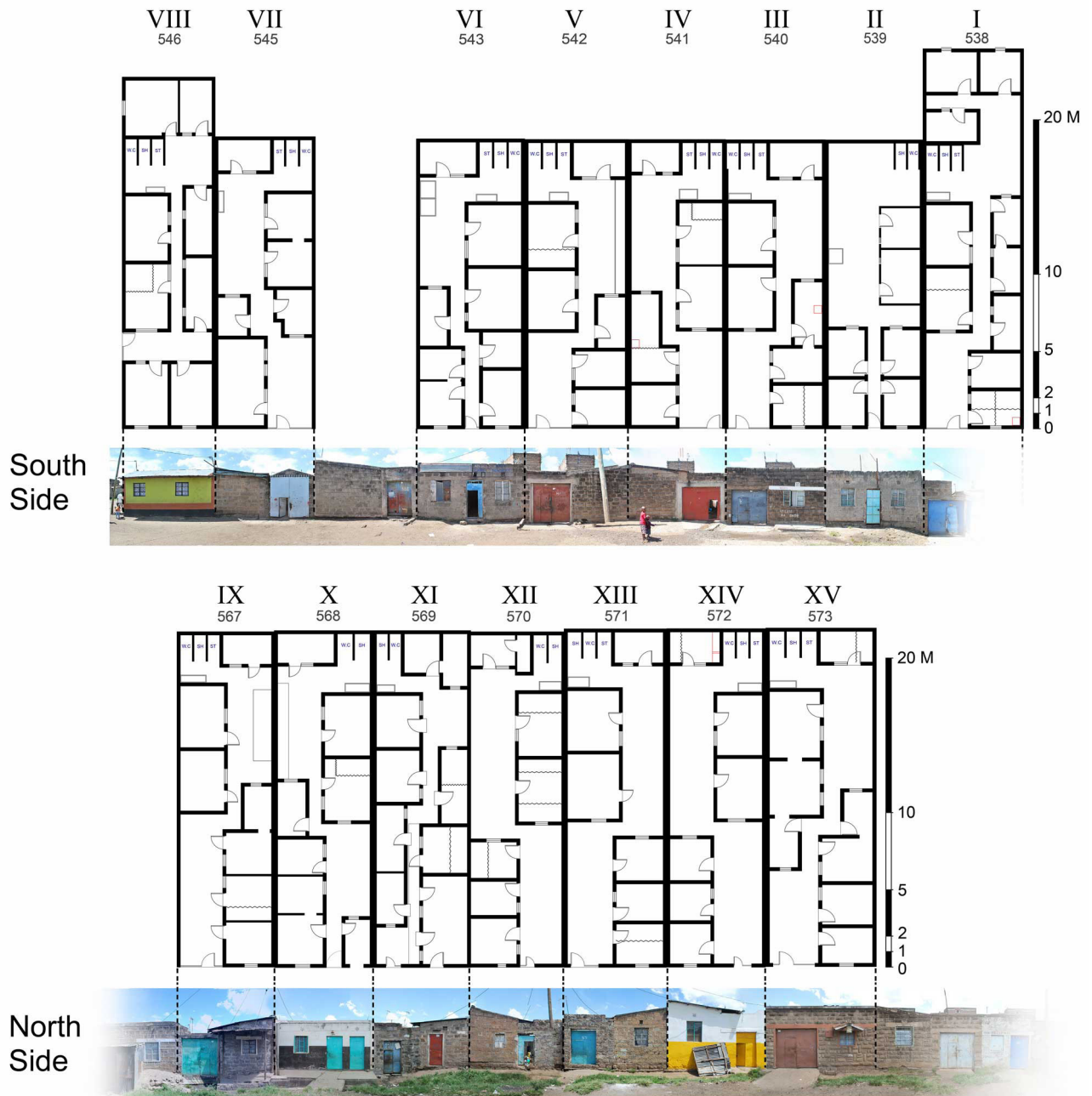
CASE STUDY: RESULTS

After measuring and drawing of the surveyed houses, the first and most evident observable characteristic is that all of rooms are occupied by different tenants, and in many cases each room sheltered one full family. In this sense, each plot can be recognized as a micro-neighborhood, and the relationships and agreements between neighbors had a direct impact in the quality and maintenance of the common public spaces inside each plot. The second characteristic is that each of the plots still keeps the core (Fig. 4), yet none of them uses the core room as a common kitchen, as initially planned. Instead, all the common kitchens have become rooms for renting. The tenants usually cook either outside (using charcoal) or inside their rooms in especial areas which they have procured as kitchen (using liquefied gas stoves). It is difficult to conclude if this is because the owners rented the kitchen as rooms in order to get more money or cooking is an activity preferred to do in private.

A main feature of the schemes is the wet-core, to which every plot added a laundry tub. 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 most the schemes on the north side of the street closely followed the design guidelines of the “upgraded state”, yet a few of them showed patterns of further expansions in the front and middle of the plot, generating a kind of corridor (Figure 4: 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) and the configurations are more flexible. Some of these plots have reached a point in which horizontal expansions are not possible (houses VI and VIII). It was also noticeable that of the tenants have rented two rooms for themselves and combined them into mini-apartments. Many expansions were executed for this purpose (houses I, III, IV, IX, X, IX).

The rest of the tenants usually incorporated 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. This change in quality had no correlation with the date of construction since some of the later expansions are lower quality than the initial ones. This contradicts the assumption that as the tenants become more experience 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.

We interviewed 34 residents, getting some unexpected results. 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 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.



4

Figure 4: Plans and elevations of the surveyed houses.

CONCLUSIONS AND DISCUSSION

While there are still shortcomings for the Dandora project, most of the residents evaluate the scheme favorably. The reasons are strongly linked to the safety and sense of community in the area, 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 playing against them. When the project was initially implemented the priority was placed on mass production, and that can be perceived not only in the plots but in the whole area. The fact that the residents created boundaries for their community in order to get more involved in its management suggests that interventions at a smaller scale aiming to reinforce these ties could have positive results. 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 they are renting their rooms. Many of them are actually investing savings in improving both the rooms and the open spaces of the plot. In fact, the residents of the best quality houses (X and XIV) are all renting. This is a reminder that to own is not the same as to belong, and that plots is not the same as places. 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 is the next step for this research. In the meantime, it is worth noticing the fact 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, shaping their own places.

ENDNOTES

- Abrams, Charles (1964), "Housing in the Modern World". Faber and Faber, London.
- Aravena, Alejandro and Iacobelli, Andres, (2012), "Elemental: Incremental Housing and Participatory Design Manual." Hatje Cantz Verlag GmbH & Co. KG, München, Germany.
- Bassett, Ellen M. and Jacobs, Harvey M. (1997), "Community-based tenure reform in urban Africa: the community land trust experiment in Voi, Kenya." *Land Use Policy* Vol. 14, No. 3: 215-229.
- Mayo, Stephen K. and Gross, David J. (1987), "Sites and Services— and Subsidies: The Economics of Low-Cost Housing in Developing Countries." *The World Bank Economic Review* Vol. 1 No. 2: 301-335.
- McInnes, George. (1995), "Hope and Despair in Urban Self-Help Building: The Case of the Dandora Community Development Housing Project in Nairobi." Mazingira Institute, Nairobi.
- Mitullah, Winnie. (2003), "Understanding Slums: Case Studies for the Global Report on Human Settlements, 2003 – The Case of Nairobi, Kenya."
- Mutisya, Emmanuel and Yarime, Masaru (2011), "Understanding the Grassroots Dynamics of Slums in Nairobi: The Dilemma of Kibera Informal Settlements." *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies* Vol.2, No. 2: 197-213.
- Napier, Mark, (2002) "Core housing, enablement and urban poverty: the consolidation paths of households living in two South African settlements. Thesis (Ph.D.) Newcastle University <http://hdl.handle.net/10443/2052>.
- Peattie, Lisa R. (1982), "Some Second Thoughts on sites-and-services." *Habitat International* Vol.6, No.1/2: 131-139.
- Soni, Praful N. (1982), "On Self-Help in a Site and Services Project in Kenya". Thesis (M.Arch.As) Massachusetts Institute of Technology, <http://hdl.handle.net/1721.1/78833>.
- United Nations General Assembly (UNGA), Habitat: United Nations Conference on Human Settlements, 16 December 1976, A/RES/31/109.
- United Nations Centre for Human Settlements (UNCHS), Habitat, "Sites and Service Schemes: The Scope for Community Participation - Training Module", 1984.
- United Nations Centre for Human Settlements (UNCHS), Habitat, "Case study of sites and services schemes in Kenya: Lessons from Dandora and Thika", 1987.
- World Bank (1972), "Urbanization: sector working paper." World Bank, Washington, D.C.
- World Bank (1974), "Sites and Services Projects." World Bank, Washington, D.C.
- World Bank (1975), "Kenya Site and Service Project." World Bank, Washington, D.C.
- Yap, Kioe S. (1998), "Sites-and-Services Scheme." as in: *The Encyclopedia of Housing*, Sage Publications, Thousand Oaks, 540-542.