

# The role of design in urban transformations: towards a sustainable integration of informal settlements in the urban context. Case-study Toi Market, Nairobi.

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**ABSTRACT:** Sustainable design initiatives have emerged worldwide to address the reality of slums, and the current debate focuses on whether informal settlements and slums should be transformed, relocated, or upgraded, yet our understanding of the spatial organization of informal settlements is very poor. In particular, research rarely considers the physical configuration of informal markets. These markets are seen as chaotic and unstructured but are often an integral part of contemporary slums; while the larger issue of slum upgrading mainly focuses on housing. This study contributes to our knowledge of Nairobi's informal markets to promote their integration into the urban context and to recover the role of design in the development process. The approach is qualitative and based on field research conducted in the Toi market (Nairobi). The research relied on direct and participant observation, structured and unstructured interviews with marketers, and drawings and mapping. Results provided an analysis of the market layout, a partial typology of the stalls, and a preliminary study of the traders' perception of design. The study was limited by a lack of references about Nairobi's other informal markets. Further research in the Toi market, and comparative studies with other informal markets in Nairobi would be valuable.

Conference Theme: Design for Sustainability

Keywords: informal settlements, informal markets, Nairobi slums, sustainable design, design for development.

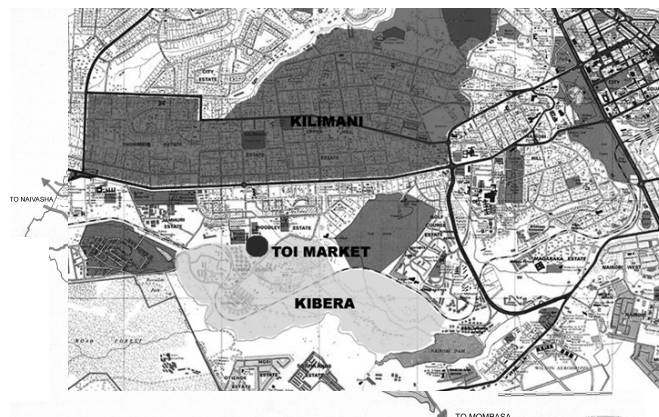
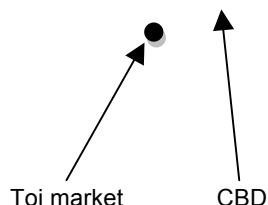
## INTRODUCTION

The term 'informal market' describes an open air market, where many types of goods and services are exchanged. Informal or squatter markets emerge spontaneously as a result of complex urban dynamics, sometimes occupying vast areas of the cities, and becoming integral to the urban economy. They provide solutions to unemployment, poverty, lack of services, and marginalization, through several activities. As public spaces, they also provide chances for forms of civic life. Generally it is the transient people who represent the social infrastructure of these impermanent realms providing enormous opportunities (Simone 2008). In informal markets people look for ways to integrate, as in arrival cities (Saunders 2010), or end up working temporarily in informal markets as unemployed in the formal sector. This transitional dimension favors the exchange of cultures and ideas (Mortenbock et al 2008). Despite their transitional nature, some informal markets become established multifunctional hubs where new urban communities find shape. Over decades they increase in activities and population developing various informal practices, among these activities is the 'shadow design', the focus of this research.

The study collocates in the current debate of "embracing alternatives to the forced eviction of slum dwellers and informal entrepreneurs" (UN-Habitat 2009), such as upgrading and regularization of informal settlements, however it argues that "integration is more critical than upgrading" (Abonyo 2004) and focuses on the importance of the role of design in the development process. Slum upgrading and sustainable design initiatives have emerged worldwide, yet our knowledge about informal settlements' spatial organization is very poor. Literature widely discusses the patterns of urban informality (UN-Habitat 2009), the processes of formation of squatter settlements and the importance of the informal sector in the national economies (Ananya 2011; Anyamba 2011; De Soto 2002). Squatter settlements' social characteristics are addressed by authors such as Davis 2006, Saunders 2010, and Perlman 2012. Un-Habitat Global Report 2003 though addressing the important theme of territoriality and spatial forms does not face the importance of design. Culturally sustainable housing design is documented by different authors, such as Bhatt (1999) or Alam et al. (2006); sustainable design for the poor is also described by C. Smith, 2007 and Architecture for Humanity (2006), who demonstrates the power of design to improve living conditions in housing and services. The analysis of spontaneous spatial arrangements has been undertaken: John Turner (1972) first promoted the importance of understanding the informal standards in housing, while Rybczynski et al (1999) have proposed a powerful investigation of physical arrangements in Indian unplanned settlements. Yet, with regard to informal markets major efforts mostly concern informal economies and social capital (Srivastava 1998; Jaghannatan; Schneider et al 2010), and with respect to Nairobi, studies focus on street vendors and Jua Kali (open air handicraft). Literature addressing the physical structure of informal markets is scarce and there lacks official planning policies for informal markets. This study builds knowledge about

patterns of informal spatial arrangements in the Toi market (Nairobi), to provide insights about affordable solutions for the poor, and partially fulfill the research gap about informal practices and standards in markets.

The Toi market is an important informal market in Nairobi. It is located four kilometers south-west the Central Business District, at the northern border of the Kibera slum (Fig. 1-1bis).



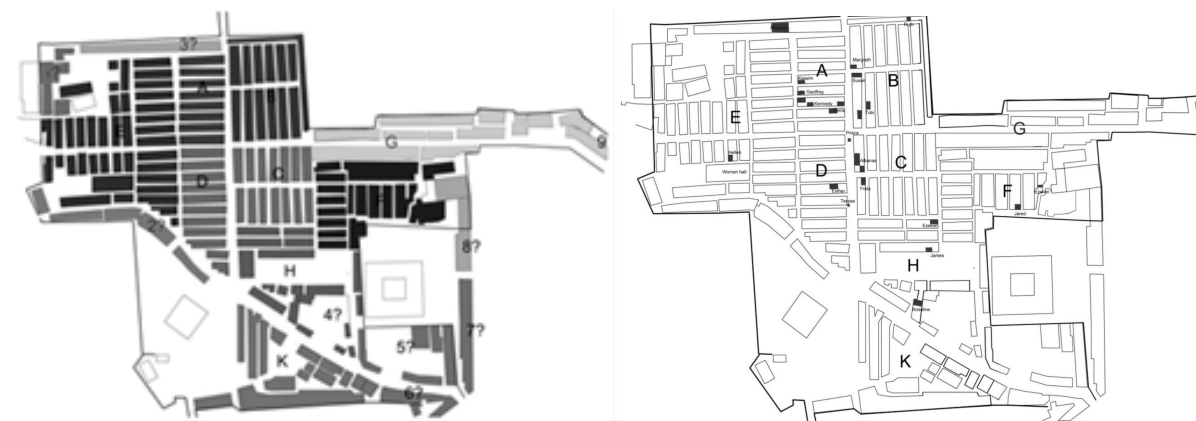
**Figures 1-1bis: Toi market location in Nairobi and at North of Kibera slum.**

The Toi market community is composed of a poor population surviving in inadequate socio-economic and environmental conditions. Since its beginning in the 1980s the structure owners and tenants have faced insecurity of land tenure, lack of trading licenses, low incomes, lack of access to credit and banking, and threats of eviction and demolition. Total lack of infrastructure, water and sanitation, social services and safe, permanent buildings have resulted in an unhealthy environment. The situation has worsened over the years with the increase in population but the community has been organizing to improve the conditions. The Toi Market was completely destroyed during the January 2008 post-election violence (PEV). With the return of political stability the stalls were rebuilt, but the configuration of the market changed completely. Toi market is an urban opening for agriculture products coming in from the countryside, and a food supply center for Kibera. It offers employment to over 2,400 traders and provides a huge variety of wholesale and retail goods and services including: fruit and vegetables, cereals, meat and fish, spices, textiles, second hand clothing and shoes, new clothes, charcoal and firewood, household and handcrafts. Services include food kiosks, water vending, tailoring and ironing, laundry, vehicle repair, chemists and herbal clinics, hairdressers, furniture and pool tables. The market also includes vendors specializing in bone recycling, rabbit and chicken rearing, and maize growing. The services network extends beyond the market's area through catering for weddings and tree planting. Beyond buying and selling, activities carried on at the market are many: saving schemes and credit, social and economic assistance, sanitation and water vending, business training; nutritional programs; weddings; religious functions; children counseling; provision of food and clothes for people in need; and football teams and games. Toi market is a magnet for a new and tremendously diverse urban population. Traders come from different backgrounds, tribes, cultures. The Toi Market Traders Society is registered at the Ministry of Justice and the organizational structure of the community is based on two major groups, the Toi Market Committee and Muungano Wa Wanavijiji (the Kenyan Federation of Slum Dwellers).

This research paper is organized into three sections. The first explains the research approach and methods used; the second section describes the results; and the third section presents the conclusions and the limits of the study.

## 1. METHODS

This study was based on a three weeks of fieldwork conducted in May 2011 as part of a post-professional masters in Urban Design and Housing, but was facilitated by an established relationship of trust and collaboration with the Toi market community. The research approach was qualitative. Informal communication, to introduce the research objectives, played a critical role. Meetings with the community's main organizational group (Muungano wa Wanavijiji) were held to involve and select the research participants. Information was collected through structured and unstructured interviews, site visits, mapping, and discussions about projects. These small projects (a new community hall and two solar cookers) were made possible through donation by AOC and were intended to activate a productive dialogue with the traders. This process provided a co-investigator who helped in conducting interviews in the short time available, and contributed to the community participation through donations. Results were organized through drawings of the market and its stalls, and interview forms were photos and notes describe the situation for each interviewee. The research objective was to involve different sections of the market (Fig. 2).



**Figure 2-2bis : Market sections and map of interviews.**

Interviews targeted different activities, an equal number of men and women, tenants and structure owners, young and old members of the community, established and new activities, and members of different groups. Two out of the twenty interviews were conducted with traders who are not members of Muungano. Three women who lost their stalls after the PEV and are displaced were targeted too. Six of the interviewees owned more than one stall. The total number of stalls covered was thirty-one. The number of interviewees was determined by time constraints and availability of participants. Interviews consisted of two parts: the first was a questionnaire regarding the trader and their stalls. Traders were interviewed at their stall, where they talked about their goods, the business they engage in, the stall itself, and the needs and personal issues. The interview guide based on M. Ortega's model, consisted of a visual and a descriptive part. The information gathered is about stall location, type of activity, whether the occupant is a renter or owner, duration of occupancy, number of workers, monthly income, stall dimensions, construction material and cost, purchase or rent price, objectives and challenges. A second part of the interviews developed in several sections, investigating the meaning of the term "community", discussing existing projects, the traders' perception of design activities and expectations for Toi market. One section involved looking at maps of the market before and after the transformations that occurred in 2008 and making comparisons between the two layouts (Fig. 3-3bis).



**Figure 3-3bis : Toi market before and after the PEV. View of the wholesale.**

The old market had been documented through graphics and photos. The Length and quality of the interviews depended upon people's involvement in Muungano activities and projects. Leaders are used to talking more than other members, while some interviewees felt shy; women in particular. Although they were asked to talk about design and projects interviewees tended to talk about organizational and political problems. Some women were interviewed during group activity, and this affected their answers. Interviews were generally longer and more detailed when interviewees had some education and/or were involved in community activities. Communication was facilitated by two Muungano members, who introduced the researcher to the traders and translated from Swahili to English. The second part of the interview was done anonymously and code identities were ascribed. Volunteers for the interviews were selected during meetings with the Toi Market Management Committee. Additional videotaped, unstructured interviews targeted three of the Toi market-Muungano leaders, who provided descriptions about the formation of the market and projects.

## 2. RESULTS

Results of the research were an analysis of the physical layout of the market in terms of accesses and paths, landmarks, public spaces and community services; a partial typology of the stalls and community structures; and an analysis of the traders' perception on the concepts of design.

### 2.1 Market layout

The formation of Toi market began in the 1980s. Evictions started soon afterwards and continued over the years, but the traders always came back and by 1999 the market was full. Four legible spatial categories have been identified in the urban system of Toi market: 1) accesses and paths system; 2) public spaces; 3) community services; and 4) stalls. The market developed naturally along paths connecting different residential areas that became characteristics in the market structure (Fig. 4). The market extends over about 3,5 hectares of government land and is surrounded by formal buildings. It is not directly accessible from the main road system. The main access is at South-East, on the Kibera Drive, road passing North of Kibera. Other five accesses open to small pedestrian alleys in the East, North, West, and South parts. Before the PEV the market was organized in sections but stalls had irregular shape and size. The market appeared as a chaotic and dense labyrinth of cardboard, polyethylene, and iron sheets structures arranged next to each other as an agglomeration of barracks (Fig. 3-4). Roof extensions created dark passages, difficult to identify, and with limited air and light. Feeble landmarks were represented by empty spaces (the main road, dump, wholesale and garages), the church, and the formal buildings surrounding the market (the most important is Kibera Plaza, formal apartments block). The market lacked roads, paved paths, basic infrastructures and services.

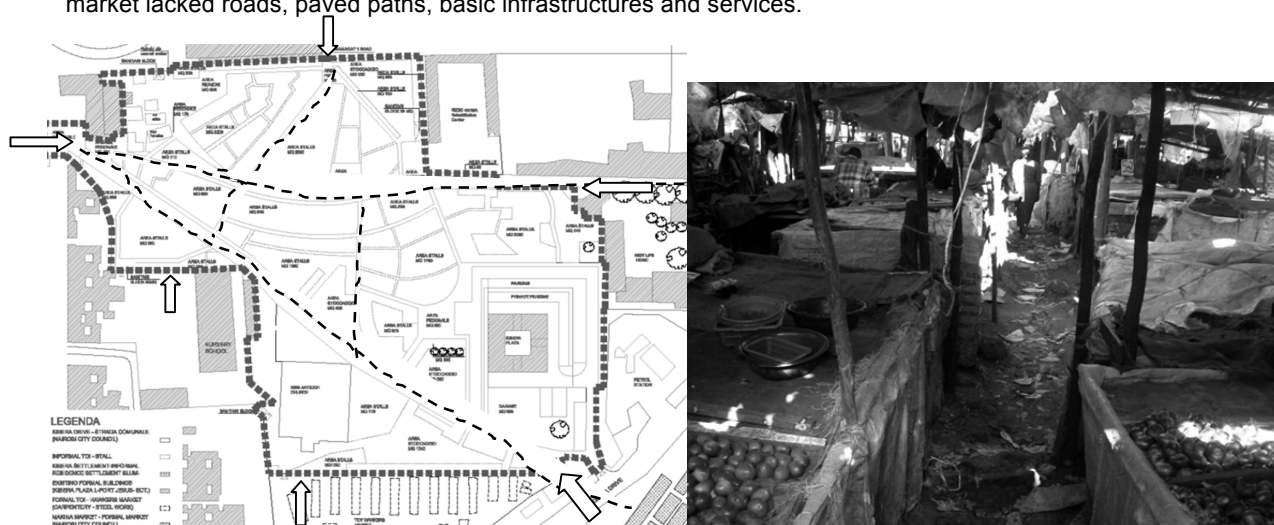


Figure 4-4bis: Toi market before PEV: Perimeter, access and path system. Narrow passage-way in old TM.

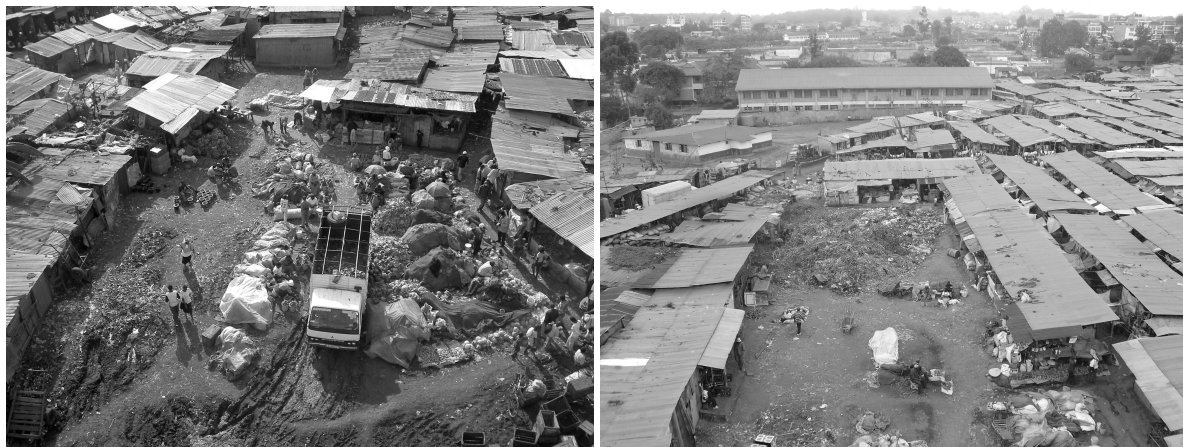
The reconstruction in 2008 definitely changed the market's structure. After the destruction, a task force was formed to rebuild the market. The committee was formed by the market leaders, old members and new groups who had invaded the market after the destruction. Instead of simply rebuilding over the previous stalls' traces, the committee decided to plan a new layout that would improve living conditions. A local microfinance institution called *Jami Bora*, provided a technician to assist in the development of planning. Three different plans were elaborated before a decision was made. The chosen layout resulted from a one month planning process and applied two concepts from a previous design proposal (by G.Cardosi master's thesis, 2004): a stall-module and a North-South connection system. Moreover, after visiting the Mutorwa formal market in 2007, the market planning team gained an understanding of the importance of public spaces and circulation system, and focused on concepts of accessibility and visibility of all the stalls. The old path system was comprised of four major passages (each approximately 3 metres wide) and a series of very narrow paths (about 50 cm) (Fig. 4bis). Stalls were not recognizable and not accessible for either the delivery of goods or shoppers (Fig. 5). Walking in the market was difficult due to overcrowding, lack of pavement and drainage, and sewer flows (Fig. 5) from nearby formal estates.



Figures 5: Toi market before PEV: view from high; sewer lines.

Fig. 5 bis Old dump site

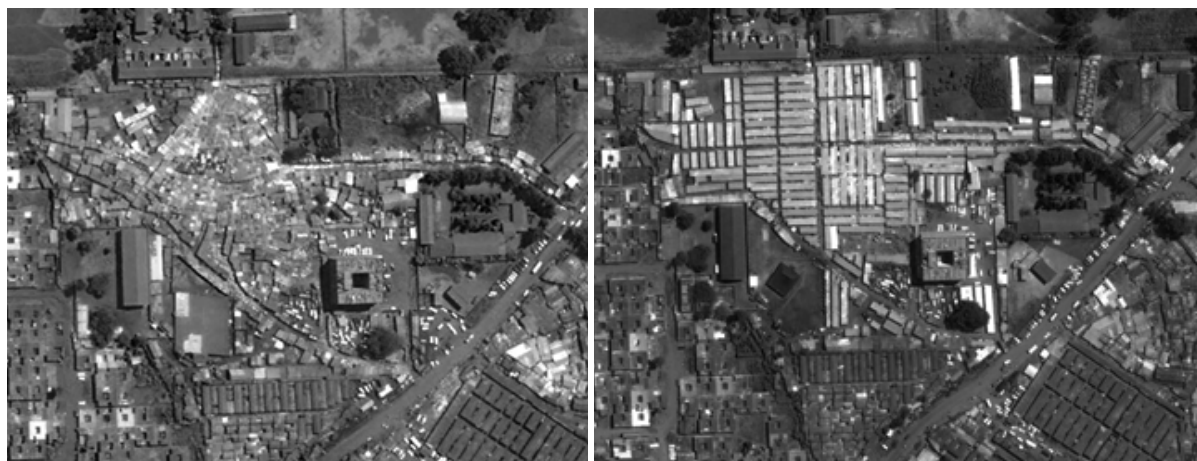
Environmental conditions worsened during the rainy seasons. With the gradual consolidation of the market the old system became inefficient. Therefore, despite the huge losses that resulted from the PEV, the community saw the destruction as an opportunity to build a *modern market*. The new layout was approved by the Nairobi City Council. The construction was supported by American funds, through Jami Bora. This institution provided construction materials and coordinated the operations in tandem with the market's task force. Construction was made by the marketers, who were supposed to be paid 300 Kenyan Shillings and food (sugar and maize flour) per day; apparently they only received the food. Marketers contributed to the reconstruction of the stalls with personal finance and labour; some provided doors, windows and furniture. Construction went on, section by section, for one month. Stalls were seized by marketers based on direct observation on the ground. Initially (section A) stalls were made 3x2metres, then it was noted that it wouldn't allow accommodating all marketers; hence a smaller module (2x2metres) was used (section B). But some public spaces were enlarged: the initial wholesale area was sized to accommodate a temporary dump (Fig. 6-6bis), while the North area was reserved to market meetings.



**Figure 6-6 bis : Wholesale area in the old TM. Wholesale area and dump in the new TM.**

In the end not all traders from the previous market were included in the new layout. Some were relocated in other areas and some remained hawkers in Toi market. The new stalls allocation was done by using the old saving scheme's list of members; but some were allocated more than one stall causing losses for others.

The new market looks like a conventional and formal one (Fig. 7-7 bis).



**Figure 7 – 7 bis : Toi market Google maps, before and after PEV.**

It is still organized in sections, but these are accommodated in rows of stalls (Fig. 7bis-8). Sections and stalls have letters and numbers. Activities are registered on maps. Every activity is accessible, customers can recognize traders and goods, and collecting for saving schemes is much easier. On the other hand, the market committee has a greater power and control over all activities. The new market has maintained six points of accesses. The northern and eastern ones have increased the number of activities along the pedestrian ways, becoming linear extensions. The new market has also kept the most important inner passageways. However the north-south and the east-west axis have been strengthened through major pedestrian ways of approximately 5 and 3 meters wide. These have become important axes for distribution. The original northern area, where the Toi market office and the church are located, has been maintained as public space (Fig. 8). On the other hand some spaces have changed function. In the southern part of the market, a church has been transformed into a mosque, and Muslims wield a rigid control over the structure and the surrounding garden. The old, one storey, Toi market office was rebuilt as a bigger, two storey structure and this, site of the Muungano group, has become a new landmark. Food kiosks once located only along the external roads, are now also inside the market. However, the

market still lacks land tenure and basic infrastructure. Power is now provided by the NCC through five new poles located along the major roads but individual stalls do not have power. Garbage is disposed of in the wholesale area but collection from the NCC is rare and a dangerous dump has formed that attracts children who scavenge there (Fig.8).

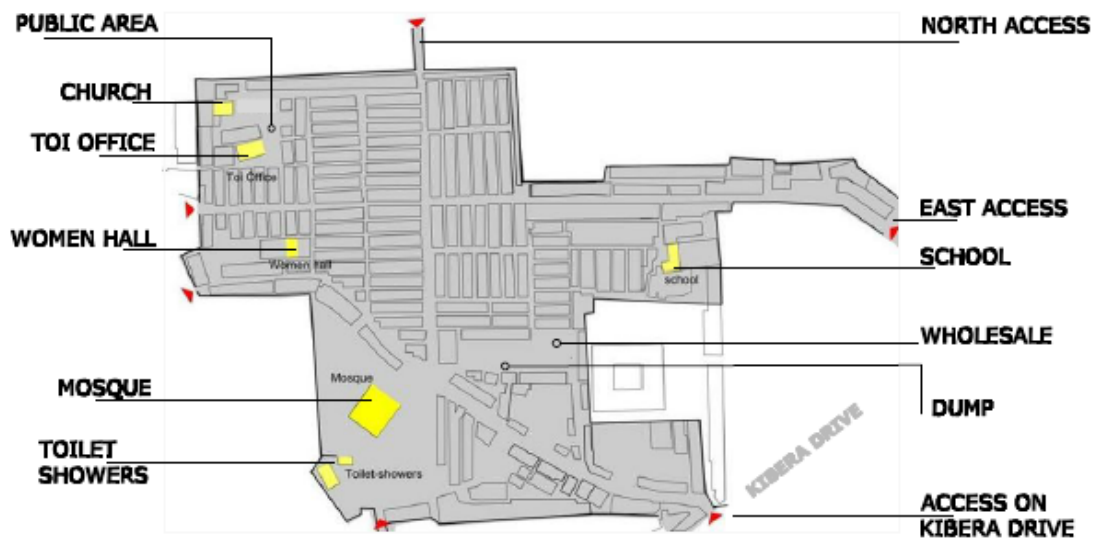


Figure 8 : Accesses and community services in the new layout

### 2.3 Stalls and community services

The survey considered the typology of five stalls: second hand clothes, food kiosks, cereals, jua kali, and fish. It also examined the women's hall. In the new market, as in the old one, the individual spaces represent the unit upon which the entire area is defined. In the old market stalls were mostly irregular and their aggregation generated much liminal space and an irregular layout, while the new market is based on a rectangular or square module. *Stalls* are temporary structures made of cut-off trees (eucalyptus), partition walls are mostly in polythene and cartons, roofs are made of metal sheets and floors are not cemented. Timbers are very fragile and structures often burn or collapse under strong winds. The stalls are of three sizes: 2x2 meters, 3x2 meters, and 10x12 meters. The combination of these units allows for optimization of the space and generates a regular morphology. In the new market roads have been well planned to accommodate people and handcarts. Major roads are 5 meters wide, while inner roads have a width of 2 meters (Fig. 9). The dimensions of stalls and roads were established in order to accommodate all traders. Combinations in the use of modules vary depending on the kind of activity and the economic potentials of the traders. In some cases marketers who occupy more than one stall have combined the units in different schemes. In other cases traders have extended the roofs over the roads or occupied spaces on the passageways. Roof and road extensions are frequent (Fig. 10). External spaces are often occupied by sittings and tables in the case of food kiosks, or by the goods from the stall.

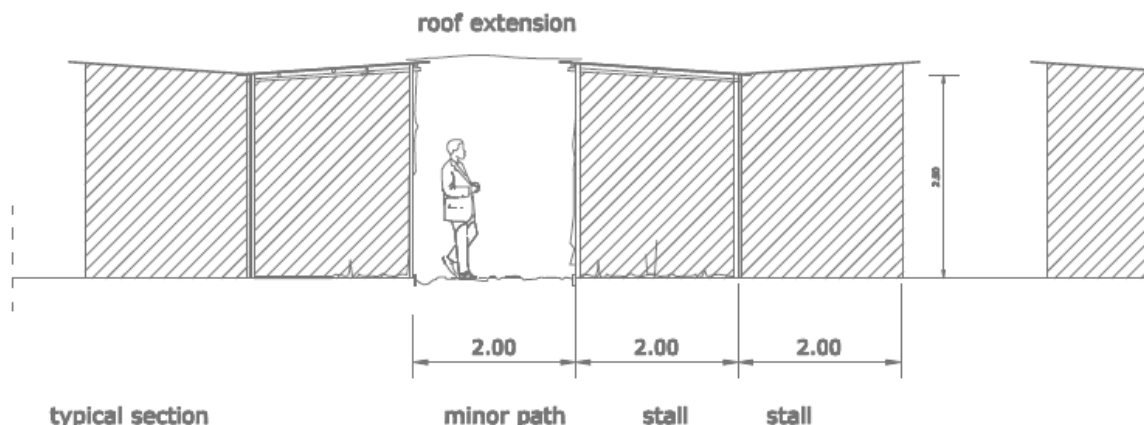


Figure 9 : Typical section on a minor path.

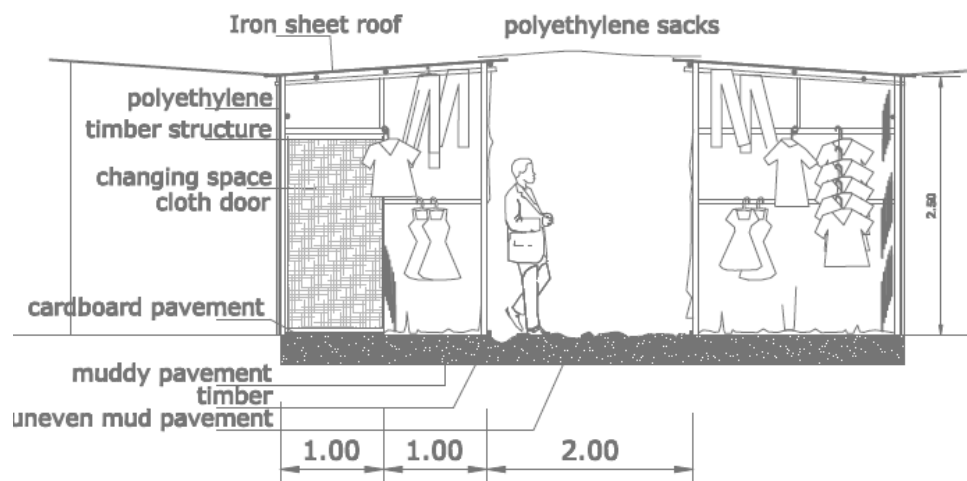


Figure 10 : second hand clothes. Double stall 2x3 m.

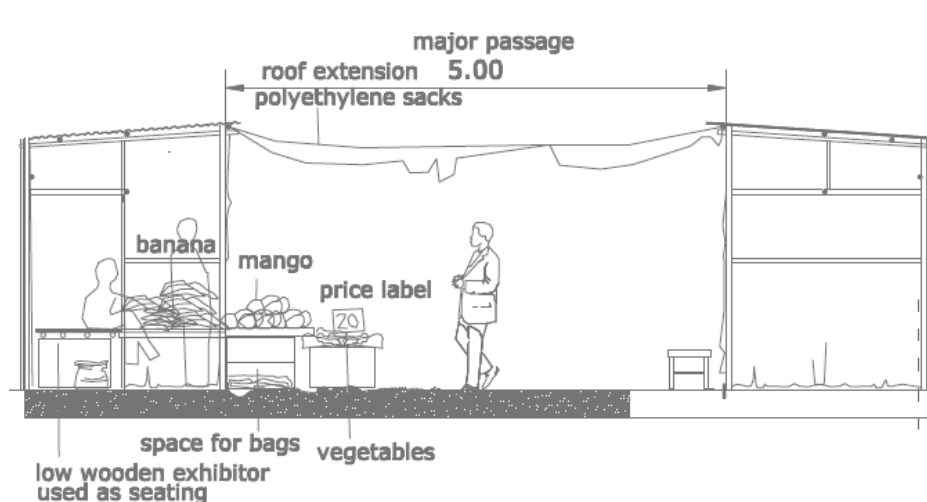


Figure11: fruit and vegetable stall 2x3 m.

Despite the standard module of the stalls, each vendor has personalized his stall through various solutions to exhibit and protect the goods, attract the clients and extend the business.

**Womens' hall:** fourteen women traders initiated a food kiosk in 2005 selling meals to other traders. After registering the group under the Ministry of Gender and Sports they started catering at Muungano meetings. In 2008 they lost their kiosk and equipment. During the market reconstruction they bought a small rectangular structure of about 4x10 meters, and about 3 meters high, where they prepare, cook, and serve food. The structure is made of iron sheets and wood. It is comprised of two major spaces, the front space where wooden tables and seats for customers are arranged along the walls, and a rear space that accommodates the giko, the pots and pans, and the stocks of products bought daily (rice, ugali, green vegetables, lentils, potatoes and charcoal). The two spaces are separated by a high counter that is used to work on, and for the storing of utensils. The structure is situated between two others, and has two small windows, at the front and at the rear. The women cook inside in the obscurity, and the heavy smoke pollutes the air. They buy water for washing and cooking from the tank run by youths. Their space is very small so the food for their children's feeding program is taken to the nearby Toi market office.

#### 2.4 Results of structured, unstructured and videotaped interviews

All the Traders have been allocated a new stall after the reconstruction. However, some vendors are still displaced. Three women interviewees sell green vegetables along the market roads. All stalls were built with the funds donated by Jami Bora, while each trader bought the furniture and equipment (tables, seating, doors and windows in the case of food kiosks).

The market traders have informally carried out design and planning. A planning team was constituted in 2007 to conduct enumeration and mapping with the support of the Kenyan Non-Governmental Organization Pamoja Trust. Two thirds of interviews recognized its importance, while one third didn't know about it or said that the group is not working, or only works on controlling the market's borders. The society's security officer monitors, and stops, illegal activities and cracks down on traders who are extending their structures on the roads.

Old and new projects are undertaken by several groups. For example: the *toilet project* was started by the Muungano group after the provincial administration forced the traders to build a public toilet in 1999. The toilet block started operating in 2005 but does not receive on-going maintenance. Some interviewees said that the project has failed due to its decentralized location. The youth group has undertaken various environmental and sanitation projects over the years such as *bathroom services, water vending, tree planting, composting, and garbage collection*. Some activities such as the recycling project failed due to lack of resources or controversies with other groups. They now run a group of bathrooms, and are engaged in water vending. The bathrooms are five small spaces (0.80x0.80m) without taps and tubes; traders and people coming from Kibera can find some privacy here and can wash from a water bowl. The group has also built an office, consisting of an open structure of about 6x5m, with a metal roof, and wooden seating on the grassy ground. Their site has been chosen for the construction of the new community hall. No official upgrading is being carried on right now. While the traders have petitioned government for funds to improve the site infrastructure, no allocation has been made.

In terms of spatial organization needs interviewees gave priority to: A) infrastructure: good roads and access to stalls; drainage; water, garbage disposal; streetlights; B) private stalls where, in order of importance: electricity, partition walls and doors (especially for second hand clothes); roof extensions to protect second hand clothes from rain, and vegetables and fruit from the sun.; cemented paving; only one mentioned water, and, for those selling fish, a freezer; one hotel mentioned good tables and TV; C) services: cleaning of the market; business training. In general, people wanted more space for expanding businesses.

Identification of priorities in terms of projects unveiled big differences among groups. The youth group's priority is a resource centre; for the women's group it is cooking and childcare; for the Muungano group the priority is planning and designing towards formal recognition of the market.

Interviewees who had some design process experience in the past recognized design as an important tool to bring people together. They agreed that it strategically makes individuals part of a whole, contributes to building community identity and resilience and environmental awareness, while putting differences aside. In design projects people are kept busy even when they have no businesses and are not employed. All interviewees recognized that the structure of the new market is working better than the old one. Spaces are well defined and recognizable, the organization of the market numbering the stalls is better. In the old market security and accessibility were major issues. However two traders complained that working in the market is more difficult now; vendors cannot choose a better position for their business. Interviewees agreed that the process of formalization and a good design for a modern market would increase investments and economic stability. For example a good design of the stalls with higher quality materials, providing partition walls, and locked doors would reduce the needs for a security system and increase investments in stocks. Over the years the marketers have imagined various solutions for the use of the land they occupy: the densification of the market area through building houses over the stalls; developing new income generating activities such as renting rooms for 'slum tourism', to increase the movement of people in the market and the volume of business. There is a clear need for multifunctional structures that concentrate more opportunities in one place.

### 3. CONCLUSION

- The community intends to move toward the formal framework. The traders have applied for recognition and this has already been discussed at the Parliament. Building on connections to the formal realm in multiple sectors the traders recognise the importance of undertaking design projects intended to create favourable conditions for customers and to increase their business.

- The shared vision for the Toi market's future is a modern market, whereas modernity is identified with legalization, security of land tenure, and a rational planning system where infrastructure plays a fundamental role.

- Design and planning can enable people to transmit concepts that survive instability and crisis. After visiting the Muturwa market the Toi market planning team got acquainted with the planning principles of a formal market structure, translating these principles into the reconstruction of Toi market.

- Map reading generates interest and participation. Searching for landmarks on a map can be important for visualizing problems and to strengthen the sense of belonging to the place. During meetings where maps were shown, everybody wanted to look at and understand them, including the women.

- Design activities undertaken to realize a community hall resulted in: participation at the meetings by different groups; written agreement among three groups about the site chosen for the construction; and communication with local authorities to request the building permit.

- The more rational and regular market layout has strengthened the power and control of one group over all activities.

This study was limited by: lack of verification of collected information; and lack of sources about Nairobi's other informal markets. There is a need of conducting a complete stalls typology; interviewing people from different social strata such as professionals; NGOs; and technicians at the local authorities; and the need of a comparative study among different informal markets.

## ACKNOWLEDGEMENT

I wish to thank the McGill School of Architecture for giving me the opportunity to conduct research in Nairobi; my advisor professor Vikram Bhatt whose great teaching ability and broad comprehension of informal realities are a constant point of reference. The community of the Toi Market for participating in the project; in particular Ezekiel Rema and Geoffrey Okwaro who assisted me in the field, and all those who volunteered as interviewees. The Kenyan Non-Governmental Organization Pamoja Trust, who provided some publications, professors E. O. Abonyo and Susan Kibue, who provided sources about Nairobi's informal settlements. The Italian no-profit association Architecture Open Circuit onlus whose donations to small projects facilitated the interaction with the community, and the co-investigator Patrizia Piras, whose collaboration greatly eased the work on ground.

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