Network analysis as an alternative tool for understanding and intervening in informal housing: case studies from Nairobi, Kenya

Dr. Alfred Omenya

Lecturer, Department of Architecture and Building Science, University of Nairobi & Director, Eco-Build Africa

Department of Architecture and Building Science, University of Nairobi, PO Box 30197 – 00100, GPO, Nairobi, Kenya

phone: + 254-(0)723-883-912
e-mail: aomenya2002@yahoo.co.uk, aomenya@uonbi.ac.ke

Abstract

This paper highlights possible areas of application of network analysis to analyse aspects of informal housing. It illustrates three network concepts: ego-centric networks (ties of individuals); networks towards collaborative action (ties that groups involved in various aspects of housing use to access resources); and networks of exchange (general ties defined by the resources they are used to access). Using examples from two low income settlements in Nairobi, the paper illustrates how each of the three concepts may be used to analyse empirical data. There are few previous studies of how these networks function in housing. However, there is a link between the network patterns and quality of informal housing. Analysing the networks shows how resources are actually accessed in informal settlements, providing useful insights for enhancement of various 'soft' and 'hard' outcomes of informal housing initiatives; helping give 'new lenses' through which informality can be better understood.

1   Introductory note

This paper introduces network analysis in housing. It outlines three levels of analysis, namely: ego-centric networks (ties around an individual), networks of collaborative action (ties of groups) and network of exchange (ties based on the actual materials exchanged). In the subsequent text and accompanying diagrams, the paper gives insights into how these concepts of network analysis can be applied in analysing empirical data, in informal housing contexts. Material presented in this paper constitutes a very small part of a larger study towards the authors' PhD in Architecture, at the University of the Witwatersrand, Johannesburg.
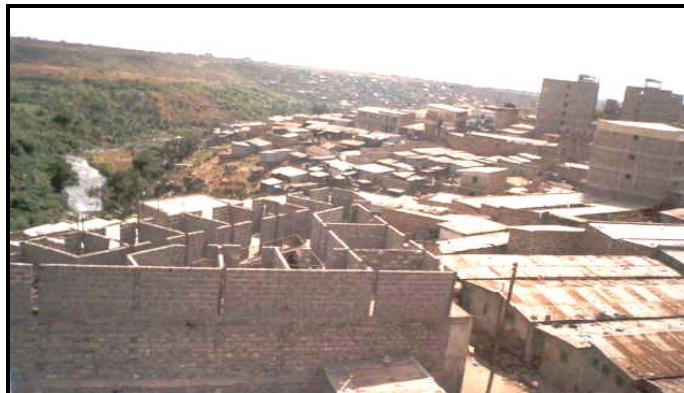

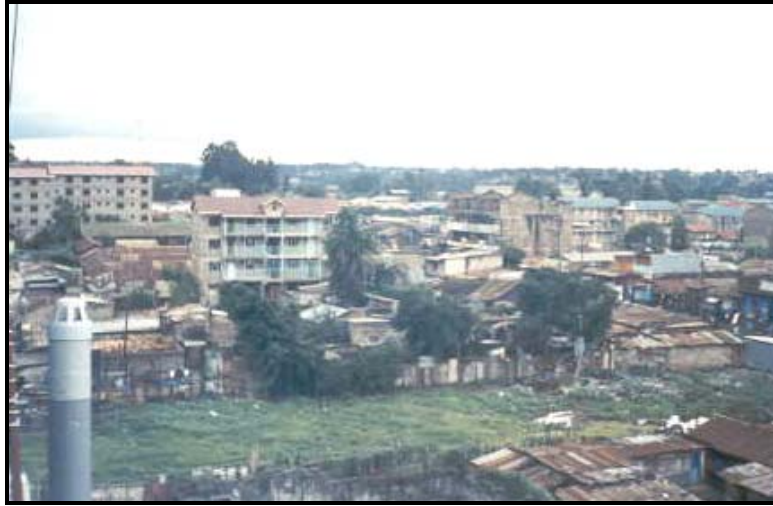Figure 1: Dandora, a low income neighbourhood in Nairobi

Figure 2: Mixture of formal and informal settlements in Kawangware, Nairob*i*
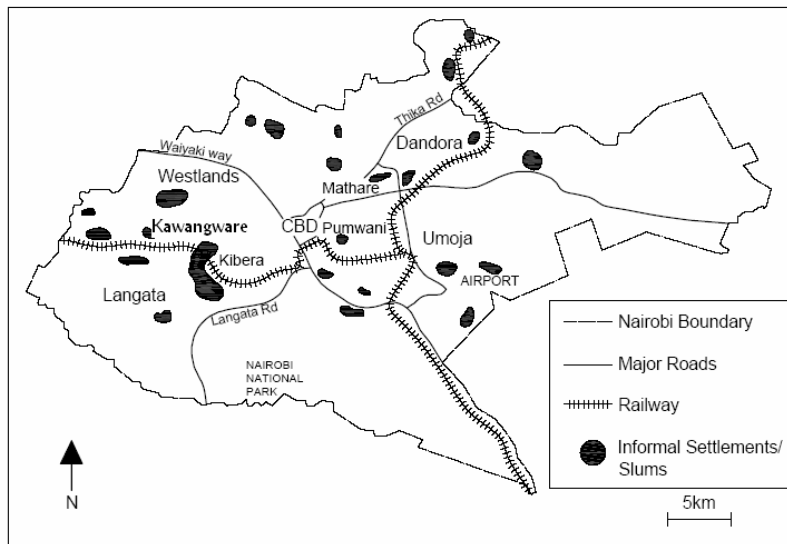

Figure 3: Map of the city of Nairobi, showing the study areas
Source: Omenya & Huchzermeyer (2006: 291)

2   Ego-centric networks

Ego-centric networks are atomistic ties of the individual (ego). Analysis of these networks focuses on an individual's links with immediately discernable others, who are themselves linked to less immediate others. These are partial networks, whose contents are diffuse and multiplex (Mitchell, 1986: 75). In these networks, the individual employs his/her links for own benefit (Banck, 1973: 37). They also influence the behaviour of the individual (Banck, 1973: 37). The ego establishes links to command over actions of others and over existing resources (Nadel, 1957: 115). The extent of manipulation of networks by the ego is dependent on his or her bargaining power in transactional processes (Banck, 1973: 43) and on the availability of 'spaces for negotiation'.

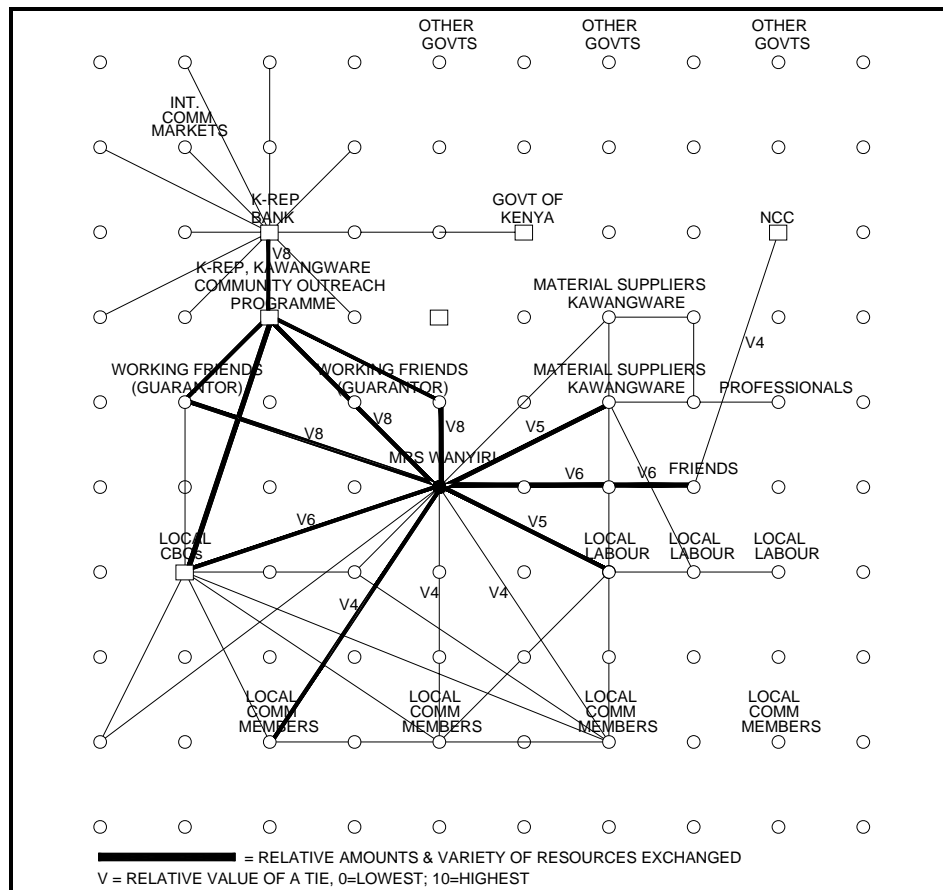## Sample ego-centric network in Kawangware, Nairobi

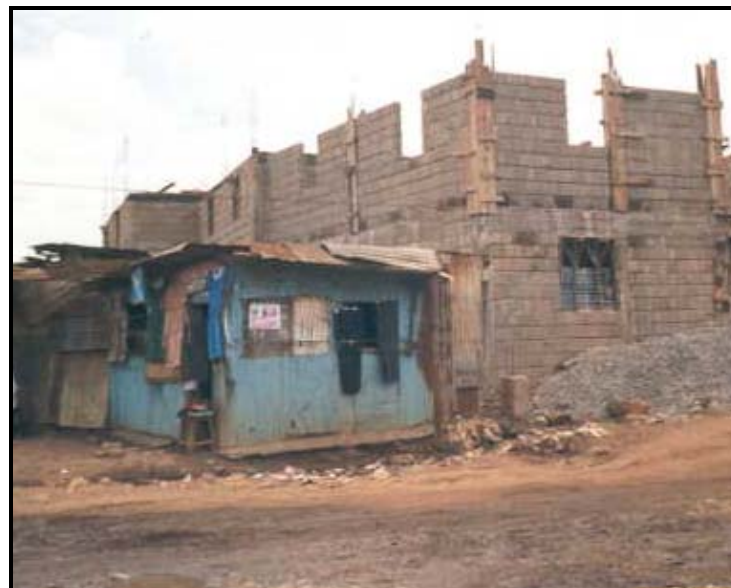Figure 4: Network towards access of resources by Mrs Wanyiri

Figure 5: Mrs Wanyiri's development in Kawangware, Nairobi

Mrs Wanyiri's network involves government bureaucracy, personal links and relationships with community members. She uses labourers from her locality, on recommendation of building material suppliers. She engages professionals on some aspects of housing design, with a view to cutting down construction costs, without compromising functional efficiency. She follows plan approval processes through friends in the Nairobi City Council (NCC). She accesses loans through a savings society, with friends as guarantors. Her savings are enabled by an infrastructure put in place by Kawangware Community Outreach Programme (KCOP). Through these links she is able to deal with bureaucracy, access resources, and meet various standards put in place by the NCC at a modest cost. She uses her social links to reduce her transactional costs. The study analysed many such networks and found them generalisable only to a small degree.

3   Networks for collaborative action

Networks for collaborative action are ties present because of, and limited by, need for collective action. They are predominantly present in organised groups and institutions. In networks for collaborative action, atomistic, concrete relationships that the ego develops are subsumed by and are subordinate to relatively abstract relationships that are driven by need for collective action. These are networks defined by formalism, i.e. spaces for prescription compared to ego-centric network's predominantly spaces for negotiation (Murdoch, 1998: 358). Formalism helps coordinate collective efforts (Murdoch, 1998: 363).

Networks of collaborative action are networks of groups. The networks that I discern and represent in this study are a subjective consequence of ties of the actors, which I choose to represent and those that I choose to ignore. Mitchell (1973: 32) outlines the key characteristic of groups as: a criterion of membership recognised by members and non-members; common aims and interests of group members; norms and rules commonly accepted by members; capability of joint action by members; a division of labour amongst members in terms of common aims and interests; and persistence of relationships of positions beyond the incumbency of individual occupants of these positions. Unlike hierarchies where relationships are prescribed, these networks also depend on spaces for negotiation (Murdoch, 1998: 363).

Sample network of collaborative action in Kawangware, Nairobi

Figure 6: Network diagram for the Kabiro Human Development Programme (KHDP)

KHDP has vertical ties with the government and horizontal relationships with the community. It has a series of linkages, local and international. The network is multi-centred, with various spaces for negotiation. The many centres are a consequence of a degree of devolution, which is good for effective connectivity to the local community and individuals. KHDP's secretariat has a high level of centrality and international, national and local connectivity. It has a high in-degree; it receives a lot of resources from external sources. It also has a high level of out-degree. It is an effective conduit for resource distribution. The network diagram (Figure 6) shows relatively short links between members and the satellite CBOs they belong to, implying that there are relatively few bureaucratic impediments. Members are exposed to government bureaucracy. This enables them to tackle many challenges they encounter in involvement in KHDP activities. KHDP has strong valued links. Its members have developed cohesion and have entrenched communal values over time. Many resources, ranging from land, finance, infrastructure and services, social amenities, information, vocational training, etc. are accessed through the links in the network.

4   Networks of exchange

At another level, relationships amongst individuals and collective action become diffuse; when ties are many, layered and generalised. In such a case the boundaries of networks are defined by the content of the ties, and by the materials exchanged (Mitchell, 1973: 25). The spatial limits of such networks could be the settlement, the city, the country, or the globalise space. These limits are defined purely on the basis of the content of the ties, where for example ties of labour tend to be limited within the settlements and cities, while ties of finance are spread into global spaces. In networks of exchange, a number of actors are involved in a many transactions which bind them to one another in a series of expectations and obligations; they perform services for each other (Mitchell, 1973: 26). Latour (1994: 792) observes that it is the mixing of non-human materials and human actions, which enables networks to remain stable across space (Murdoch, 1998: 360). Figure 7 is a sample of general network used to access land and finance in a low income neighbourhood in Nairobi.

Sample network of exchange in Dandora, Nairobi
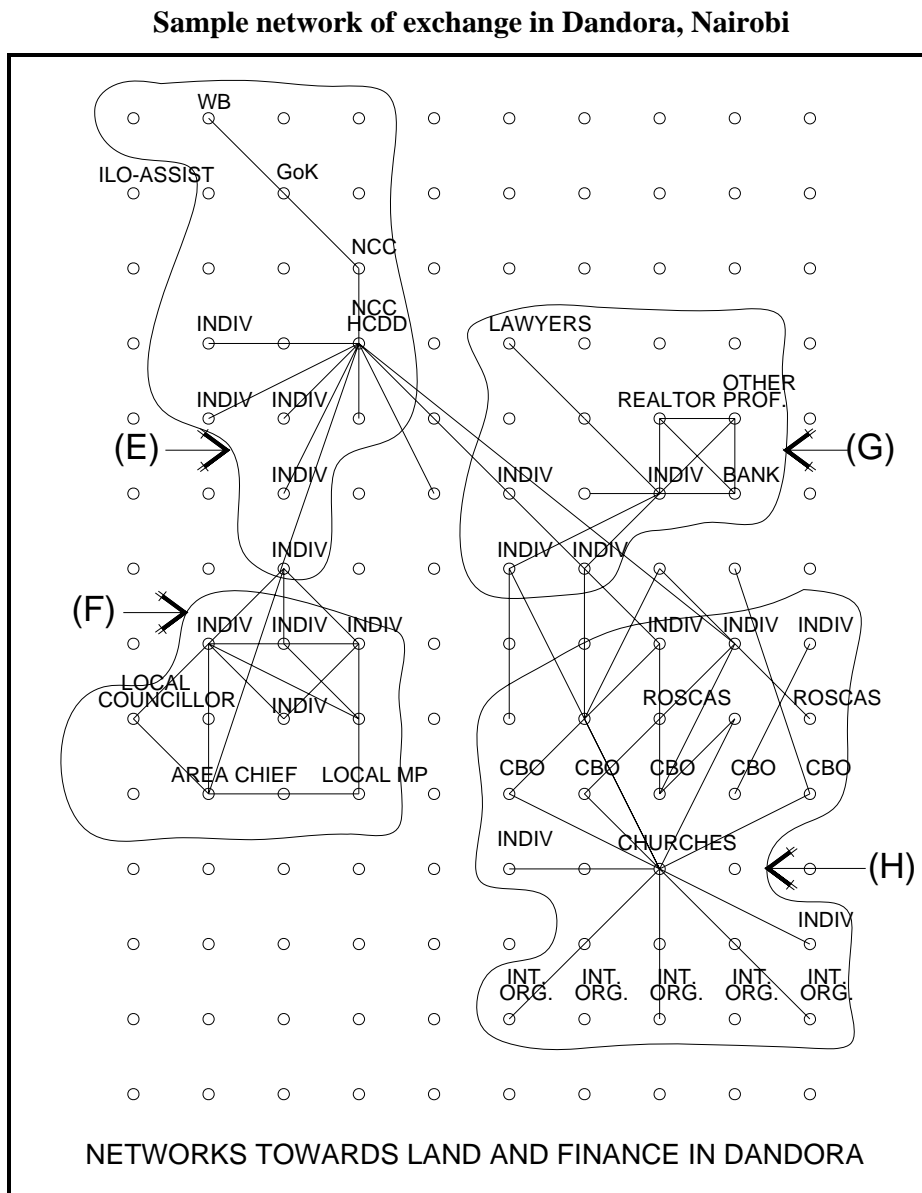

NETWORKS TOWARDS LAND AND FINANCE IN DANDORA

Figure 7: Networks Towards Access to Land and Finance in Dandora

In Nairobi, there is a close relationship between the networks towards land and those towards finance. There are linkages around church, community, local and international organisations (A, H). There are ties involving local self-help groups, formal and informal micro-financiers, and international NGO and donor agencies (C and D). There are also several linkages of individuals through Rotating Savings and Credit Schemes. These are weak, and are predominant in the poorest sections of the settlements. A typical network in Nairobi is that of individuals linked with the government through elements in the Provincial Administration and politicians (F). These linkages were common in Nairobi and are based on clientelism, and sometimes corrupt deals. I have also captured (F) individualist relationships that are used to access land and finance for housing, by upper income individuals investing in the settlements (G).This has problems, particularly in relation to public consumption. Lastly, there are the hierarchical relationships that have been used to access land in Dandora, during the World Bank supported site and service era (E).

5 Overall lessons: a network-based reading of informal architecture

This paper gives a glimpse of how network analysis can help understand resource use in low income informal housing. It is a part of an ongoing quest that would hopefully lead to models for simulating resource use and outcomes in informal processes in housing, with a view to intervening optimally in these situations.

In Nairobi there is a tendency for ego-centric networks to dominate other forms of networks. In many instances this dominance results in the interests of the ego running contrary to and prevailing over broader public/communal good. Further, powerful actors' interests prevail over those of the weaker ones and of local communities. Clearly, ego-centric networks are very beneficial in enabling individuals to access finance. This should be recognised and encouraged in housing development. Housing policy in Kenya should consider individuals' innovation in access to finance and create an environment where this finance is channelled to produce desirable and cost effective housing.
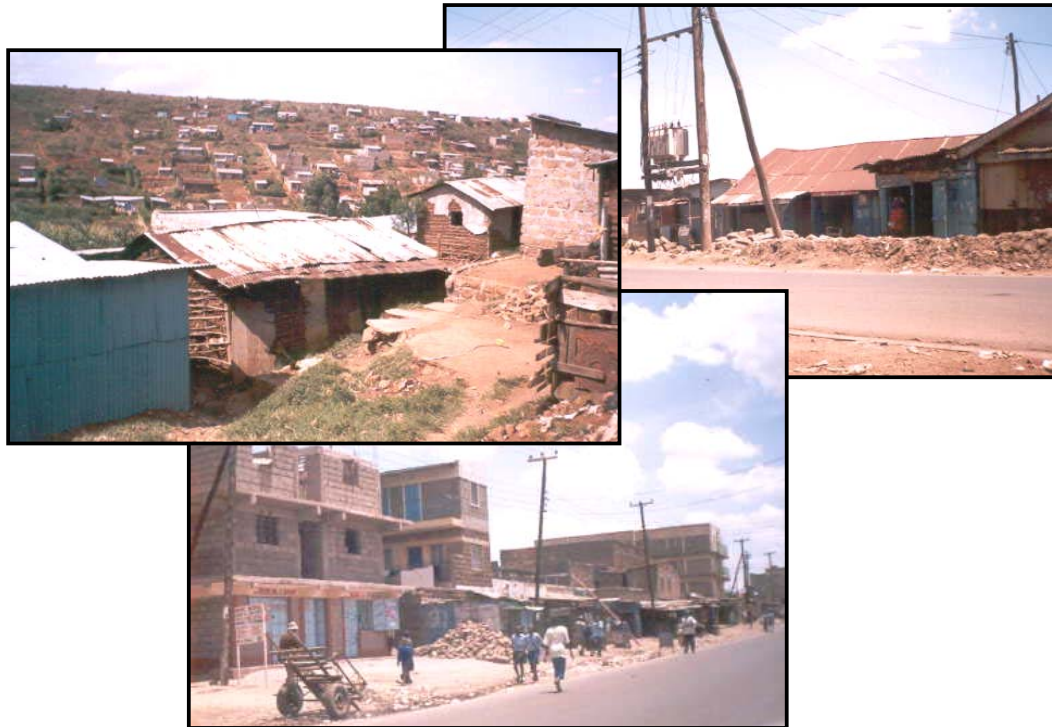

Figure 8: Architectural character in Dandora

Networks of collaborative action seem to achieve the most in terms of collective interests in housing. However, since these networks are still relatively weak in Nairobi, they need support from other sectors to be more effective. This is even more so as in Nairobi they are the networks that are bridging social and economic interests in housing. Currently, they cannot adequately protect publicly consumed goods. This calls for a continuous role of the local authority alongside these collective initiatives. It reflects lack of collective amenities and 'weak communal architectural language'.

In terms of networks for exchange, the most extensive of these were financial networks. This is an indicator that finances towards self-help housing are accessed principally through networks. This would call for a policy shift in a context where formal finance mechanisms, principally mortgages, tend to be the most dominant in official policy; and where income in relation to housing projects is limited to predictable formal incomes. There is need to consider employment of the hidden resources used by tenement developers in Nairobi for provision of low income housing. The character of tenement architecture in Nairobi reflects the way it is financed.

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