

# PRINCIPLES OF SETTLEMENTS STREET AND ROAD NETWORK FORMATION IN EGYPT

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The compaction pattern with high density, high diversity of activity, and mixed uses is the usual form for the majority of Egyptian cities, according to research on the typical Egyptian urban form. In contrast, new cities have been constructed using a distinct pattern that does not include any design allusions to the Egyptian environment [1].

According to a general assessment of the new Egyptian cities, they are socially or environmentally sustainable. In particular, the new gated communities make similar promises of a "prestigious suburban lifestyle attained by common features such as a lush manicured, architecture character, security, and distinctive amenities, and service facilities" [2, 3].

The new communities around Greater Cairo that have seen "an unprecedented boom in new desert development schemes of gated luxury communities" are obviously not the traditional model, and possibly not sustainable. The question of what the principles of settlements street and road network formation in Egypt should be is raised in this article.

**Walkability** is frequently mentioned in polls of suburban inhabitants' satisfaction. Walkability denotes easy access to facilities including workplaces, shopping establishments, and recreation locations. A street plan can influence the availability of these services, but it cannot, by itself, determine their presence. Accessibility is jeopardized by the discontinuous, circuitous, and perplexing roadway designs of loops and cul-de-sacs seen in many traditional suburbs.

Collector and arterial streets are also hazardous and uninviting due to heavy traffic, which discourages pedestrian use. There are more obvious and direct pedestrian pathways in more recent subdivisions of the new urbanism variety. Yet, the amenities in these neighbourhoods are frequently farther than the five-minute walking distance that modern customers prefer. Both a friendly roadway layout and a nearby mix of land uses are necessary for walkability.

A walkable mixed-use area or street is another pattern that has recently been found in the new-city centre and some gated communities in the south-east of October city. The new pattern is achieved by the distribution of commercial uses on scattered sites throughout the neighbourhoods, and it typically conforms to the vertical mixed-use prototype "living above shops". The formation of community through architecture and design is actually one of the main themes in all gated compound projects' advertising and promotion.

**Street quality.** Physical and operational characteristics, some of which are accidental while others are intended, both affect how well a street is regarded. Street life, complexity of the environment, socioeconomic class, and population density are ancillary characteristics that depend on history and culture.

The functions of design, however, include security, comfort, safety, and a sense of containment. Moreover, operational characteristics like the level of upkeep and cleanliness may strengthen or detract from physical characteristics, whether they are intentional or inadvertent. When considered collectively, these qualities create an appealing mental image and a pleasant sensation in the user, which are described as sociability, walkability, and delight for pedestrians and simplicity of use and safety for drivers (see fig. 1).



Figure 1 – Comparisons between traditional and contemporary Site Street

**A street's sociability** is essential to its quality. An important component of resident satisfaction is the sense of belonging and security, which are rooted in informal relationships that grow into social networks. Although street activity cannot be planned, some roadway characteristics might either encourage or discourage it.

Heavy traffic in cars has a direct correlation between its detrimental impact on sociability and its volume. A street layout that promotes speed as a wide through street will draw more traffic. Most traffic experts advise discontinuous street designs like those found in traditional loop and cul-de-sac neighborhoods to improve sociability, especially with regard to children's safety and play. Such street designs typically display a lower accident rate and a greater sense of security.

**Residential Street Pattern Design.** From 1900 to the present, cul-de-sac and loop street designs have changed. Their design accommodates automobiles by removing local street traffic and allowing smooth traffic flow at collector and arterial levels. Contrarily, to create good automotive traffic flow in grid designs that predate the automobile, significant modifications like one-way streets and traffic signals have been needed. Contrary to what the focus group believes, the curved avenues that are typical of traditional suburban subdivisions indicate an aesthetic preference rather than being wasteful in terms of land use.

Although though uneven lot forms do not pack well, this is not a major issue at low densities. In actuality, the gridiron geometric design is less effective than loop and cul-de-sac street patterns for comparable residential densities (which is why they are preferred by most developers). Technical street planning literature claims that traditional suburban street layouts use 16-25% less land than the grids promoted by contemporary urbanism.

According to a recent study by the IBI Group for Canada Mortgage and Housing Corporation [4], the number of people living in each household, the distance to the central business district, and most importantly, the number of vehicles per family, are the three

main factors that determine how much driving occurs in the suburbs. The number of people living in each household, their annual income, and the size of their homes (a measure of their wealth) are all associated to car ownership. Hence, the type of street pattern, which ranked tenth in importance, has a far smaller impact on auto travel than do car ownership, family size, and home location. Street patterns, however, came in ninth for influence.

The two most common suburban street layout options, loop and cul- de-sac, or grid, each provide specific benefits for users. While looping and cul-de-sac streets offer safety, efficiency, and sociability, continuous grid layouts offer connectedness and simple navigation. Combining the two layouts is necessary to construct streets that offer all these characteristics. The following traits would apply to such a combination:

- it would return to orthogonal geometry for clarity of organization and directness of pedestrian access;
- it would provide loops and cul-de-sacs for local streets;
- it would use open space as a structuring element of the layout for connectivity, relief, comfort, water retention, interaction, and delight;
- it would adopt a road hierarchy of local, collector and arterial for distributing and moving car traffic effectively;
- it would transform arterial roads from mere traffic conveyors to activity generators;
- the aim of this new combined street layout is to prevent nonresident through traffic, to maximize the number of houses on culs-de-sac and loops, to situate open space for maximum accessibility and to accommodate a range of housing types.

### **Literature**

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