

Toward the Development of Egyptian Cities A Proposed Reference Guide for Developing the Visual Image of Egyptian Cities in 2050

Waleed H.A.Hussein
Faculty of engineering, Fayoum university, Fayoum, Egypt

Abstract

This research paper focuses on the developments and changes in the design and shaping of Egyptian cities and their visual image. A discussion of the prevalent urban patterns and trends and the development of the Egyptian city's visual image is followed by an appraisal of the future vision of Egypt in 2050. The paper reviews principal recent developments, mechanisms of implementing sustainability and their effect on new cities and emerging urban planning principles to determine the impact of recent developments on the visual image of the Egyptian city. A proposed reference guide for the visual image of the capital city follows. Results and recommendations are presented in the final section of the paper.

Keywords: Urban Development, Egyptian Cities, Visual Image, future vision for new cities.

1. Introduction

Problem Statement

The absence of future visual image specifications for the Egyptian city (the capital)

Hypothesis

Research assumes that the visual image of the modern Egyptian city, according the national vision for Egypt 2050, will change under the influence of modern developments.

Research Objectives

Primary Objective

To develop a proposed reference guide for visual image (case study, the capital. Cairo)

- Activate and apply modern urban planning principles to develop the visual image of cities according to the national vision for Egypt 2050
- Measure the extent to which modern developments and the move toward sustainability affect the visual image of Egyptian cities

Methodology

To achieve its objectives, this research paper was divided into three sections. The first section uses inductive reasoning to examine the components of the urban environment as related to cities, the rules and standards of visual design for cities, and the factors that affect them. The second section is devoted to the study of the development of Egyptian cities, their characteristics and urban fabric, an examination of their present visual image and an appraisal of the future of urbanism in Egypt. This section also discusses principal trends, recent developments and their effect on modern cities and finally, the emerging principles of urban planning. The third and final section adopts a schematic analytical approach to address key modern developments and sustainability mechanisms and their effect on cities and their visual image, and proposes a reference guide for the visual image of Egyptian cities (using the capital, Cairo, as a case study). Research results and recommendations are presented at the end of the paper.

2. Urban Design Components

Urban design is the correlation between built-up blocks and empty spaces and refers to the overall features of the system of environmental spaces and transport and communications networks. It includes urban fabric and the structural architectural dimensions.

Definition of structural dimension:

The sum of visual qualities that characterize a given place, plus the people and communities who inhabit it; it encompasses the concepts of privacy, character, uniqueness, unity, homogeneity and repetition.

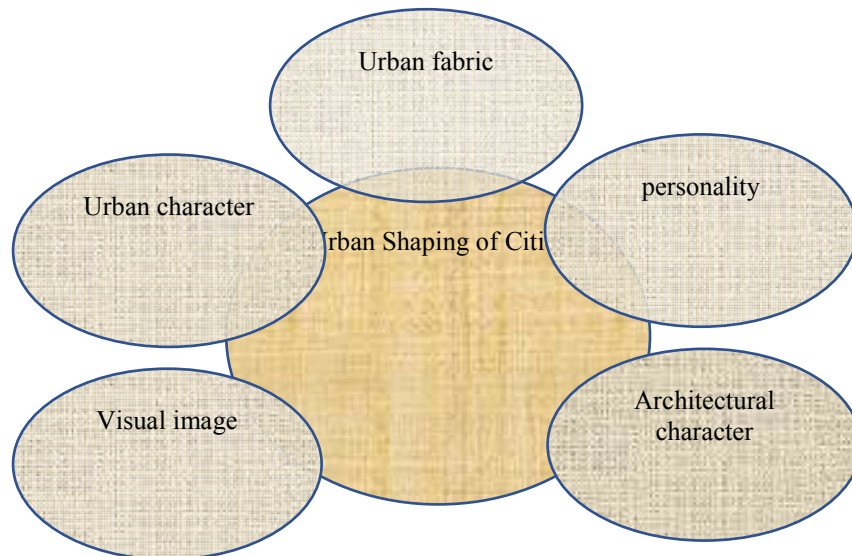


Figure 1

Source: *Qadaya altakhteet al omrani – moshkelat wa eteghat – holool* (Urban Planning Issues: Problems / Trends / Solutions) www.facebook.com

2- 1 Visual Design of Cities

This is the product of the visual relationship between urban design components and the network of transport routes; how these appear to onlookers passing through the transport network of interconnected paths linking public routes to key assembly points¹.

2- 2 Factors Affecting the Urban and Visual Shaping of Cities

1. Constant factors (environment – nature) – the shape and direction of urban development vary according to changes in conditions in the area surrounding the site and geographic and topographic characteristics.
2. Variable factors (human influences) – these differ from one era to another and include:
 - a. Social characteristics, population composition and cultural background of inhabitants affect the distribution of land plots, empty spaces, housing, municipal centers and transport paths.
 - b. Economic characteristics and activity affect a city's demographic growth and its ability to attract new residents (employment opportunities and a high standard of living)
 - c. Scientific and technological advances, represented in modern automated means of transport, road networks and infrastructure that connect different parts of the city and its extensions
 - d. Urban planning systems and laws that regulate urban development and city design
 - e. Political factors, which generally lead to unexpected, unplanned changes²

2- 3 Principles and Criteria of Visual Shaping

1. Defining general standards of taste: the natural environment often contributes to the success of a city's visual shape, while the constructional demands of urban lifestyles make it necessary to interfere with the aesthetics of this environment. Psychological and moral norms also enter into the design process and determine general taste standards.
2. Fulfilling the requirements of visual shaping: adopting appropriate urban design systems to reflect individual architectural character and ensure that urban communities have unique characteristics and distinctive identities; this is the natural result of applying sound design and planning systems and standards to achieve specific functional, aesthetic and economic activity objectives through:
 - a. Simple, clear urban design processes
 - b. Well-balanced overall appearance, in time and space
 - c. Respecting the natural environment and complementing it

¹ Ibid.

² *Al Tarkeeb alomrani ka ada le mostaqbal afdal lelmadeena almasreya* (Urban composition as a tool for a better future for the Egyptian city), research paper

- d. Variation and composition, attention to detail
- e. Congruence between physical form and function¹

The urban image of a given urban conglomerate is linked to the general character of the location. The distinguishing features of the location are defined, and the urban image should reflect the spontaneous result of community members' unique construction and technical potential and skills, in keeping with their environment, culture and beliefs at any given time.

2- 4 Definition of a City's Visual Image

Refers to the impressions, perceptions and sense of movement felt by the residents and users of a city – transport routes and paths, open spaces and extended views all play an important role in creating the overall image of a city, be it negative or positive².

2-5 Urban Environment Visual Formation Components (Composed of Two Groups):

1. Principal components of visual formation and their effect on city entrance design (paths – homogeneous, harmonious urban masses – edges – distinctive characteristics – assembly points)

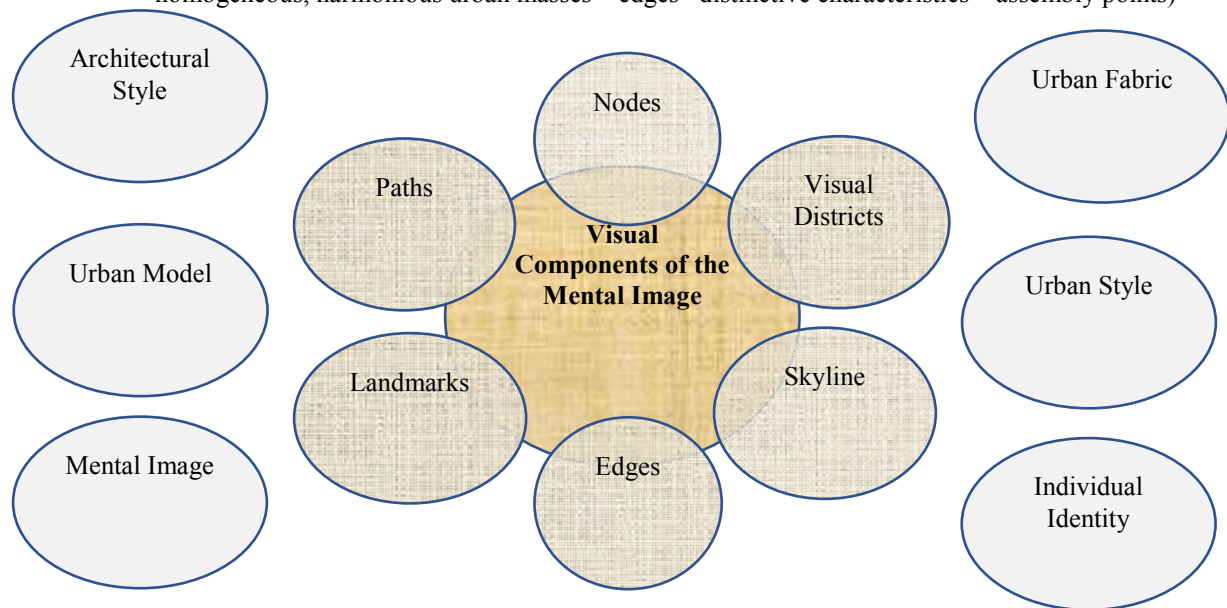


Figure 2

Source: *Qadaya altakhteet al omrani – moshkelat wa etegahat – holool* (Urban Planning Issues: Problems / Trends / Solutions) www.facebook.com

Definition of mental image: the impression created by the nature a thing; a reflection of its components – intimately connected to the biological, psychological and cultural traits of humans

2. Structural components of visual formation of a city: (size, surface area, population density – land formation and nature – nature & distribution of economic activity – shape – views – entrance routes – transportation arteries – details – urban fabric – skyline – types of urban spaces)³

3. Development of the City of Cairo in the Modern Era

The city has gone through many developments since the Fatimid era, both architecturally and demographically. At first, urban expansion did not encroach upon green spaces and there was no construction along the banks of the Nile. Transportation was difficult and security was absent in some areas.

During the period between the reign of Mohamed Ali and the 1952 revolution, the city developed new features; it was modernized and re-built and old buildings north and west of the city were demolished. The Citadel, Azbakeya Lake, Bulaq and Shubra districts were built. The city continued to grow under Kedive Ismail's reign, expanding to a surface area of one thousand feddans. A number of infrastructure and city lighting

¹ Ali Mohran Hashan, *Nahw tanmeya omraneya motawazena wa motaganesa fi almodon almasreya* (Towards a balanced and homogeneous urban development in Egyptian cities), research paper

² Ahmed Ragheb Almagharbi, Masters Thesis, *Dor mahawer al haraka wa alnehayat al basareya fi tashkeel al sora al zehneya lelmadeena (hala derasseya: Ghaza)* (The role of movement and extended views in forming a mental image of a city, case study: Gaza City), Faculty of Engineering, Islamic University, 2015

³ Ibid.

projects were launched, neighborhoods were developed further and beautified, public squares and gardens were planned and built, canals and bridges were constructed, railway tracks were laid down and the number of telephone lines increased. Modern schools, government agencies and constitutional, artistic, cultural, popular and national institutions were built (museums and the Opera House, for example), and Cairo became the permanent seat of government. Khedive Ismail was the first to introduce western style architecture in Cairo¹.

Cairo continued to development rapidly, expanding in size; new districts and neighborhoods were added and the number of educational institutions and universities in the city increased steadily, with the result that most services are now concentrated in the Greater Cairo Region. This resulted in inequitable access to employment opportunities and services that had many negative effects, in addition to the present high population concentration in Cairo. The city became an attractive immigration destination, giving rise to many infrastructural, environmental and traffic problems – which necessitated moving the capital to new or existing satellite cities and developing these.

Several new architectural and urban trends emerged. While some of these marginalized the importance of older trends, others serve to reinforce and restore cultural heritage by reinterpreting the planning and design principles of our cultural tradition and incorporating them into technically and artistically superior contemporary urban projects².

Egyptian cities in general suffer from clear disparities in their urban configurations, a consequence of the great diversity of their social, cultural, geographic and environmental make-up. The realization of an integrated urban system requires immediate action to regulate land use in urban communities at all levels, development and upgrading of degraded areas, safeguarding contemporary architecture principles, but rejecting alien architectural styles that do not reflect the Egyptian identity, regardless of whether these are the result of ignorance, poverty, or ostentation³.

3 - 1 Egyptian City Urban Configuration Properties

1. Transitioning from a simple to a complex city; the city nucleus is formed of an urban mass (the commercial center, displaying historical architectural features), on the outskirts of which numerous informal urban zones have sprung up
2. The urban configuration of contemporary Egyptian cities is composed of urban clusters known as ‘neighborhoods’, ‘districts’, ‘urban spreads’ or ‘urban communities’ that display different attributes and characteristics. Regardless of any urban planning defects or merits that may exist within them, each grouping has its own distinctive characteristics and performs a specific function in the city. The strength of a city’s configuration depends on the strength of the urban clusters that constitute it⁴.

3 - 2 Urban Fabric Patterns of Egyptian Cities

The configuration of contemporary Egyptian cities brings together a number of urban patterns that represent an interaction between past and present. Over the years, physical and cultural dimensions, motivations and circumstances generated disparate urban patterns, including:

1. Unplanned ancient historical urban patterns, usually found in the old nucleus of the city, that consist of a continuous, homogeneous urban fabric and present numerous planning difficulties
2. Modern and contemporary urban patterns; in contemporary cities, these are usually found in stable or semi-stable urban areas located on the periphery of the old city – changes were introduced to certain aspects of the old spontaneous urban patterns; contemporary patterns are more organized and more suited to the needs of modern cities
3. Informal urban patterns; usually found on the periphery of an existing city, they are not subject to any planning regulations and suffer from countless urban, social and economic problems
4. Rural patterns located on the periphery of existing cities or just outside city limits; predominantly rural styles with little or no urban planning, they are unhealthy environments whose presence constitutes a real danger to the stability of existing cities⁵

¹ Essam Saf, Reham Youssef, Lamis El Arabi, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, *Vision of Cairo 2050*, 2007

² Ibid.

³ Ali Mohran Hashan, *Nahw tanmeya omraneya motawazena wa motaganesa fi almodon almasreya* (Towards a balanced and homogeneous urban development in Egyptian cities), research paper

⁴ Ibid.

⁵ Ibid.

3 – 3 The Present State of the Visual Image of Egyptian Cities

Unplanned and disorganized urban expansion has led to the degradation of the overall aspect and visual image of Egyptian cities due to the intermingling and overlapping of multiple urban patterns, which goes against the aesthetic values that should be reflected in the urban elements of these cities.

4. A Future Vision for Egypt

Increased political openness, economic advancement and the political legitimacy of the ruling regime, combined with the growth in armament and using comprehensive sustainable policies that consider the future generations of Egyptians (population growth rates – managing water resources and the marine environment) to direct market-led growth – developing strategies for dealing with environmental infractions to realize environmental sustainability

4-1 Future Vision for the Greater Cairo Region 2050

Greater Cairo is a pivotal regional and global center for political, administrative, cultural, historical and economic activity¹.

4 -2 Future of Urbanism in Egypt 2050

Development in Egypt is generally tied to decreasing population density, urban expansion and diversifying economic activity. A future vision for Egypt's capital in 2050 was developed; a city that will be safe, comfortable and appealing to its residents and that is welcoming to visitors; a green, environmentally friendly city as well as a smart city with advanced communication facilities that attracts capital investments²

4 -3 Scenarios for Developing the Capital City

The size of the problems and challenges facing the city today make the project to develop or move the capital one of great national importance. Two scenarios have been developed. The first (the interpretative prediction scenario) is to develop and upgrade Cairo and maintain it as the administrative and political capital of the country. The second scenario (standards based reliability prediction) involves moving the capital from Cairo and establishing a new capital city within the framework of the future vision for Egypt.³

4 – 3- 1 First Scenario (Interpretative Prediction) – Developing the Greater Cairo Region and Maintaining it as the Political and Administrative Capital

There is a consensus that a radical solution to Cairo's problems will only be possible if steps are taken to implement a comprehensive plan. The hypothesis of this scenario is to develop the Greater Cairo Region that will become, in 2050, a city with a strong and diverse cultural and economic base and an urban structure that highlights our national cultural and historical heritage and integrates economic and cultural endeavors. Development also aims to achieve a balance between urban clusters and green spaces. In short, Greater Cairo will be a pollution-free, digital city where citizens will have easy access to different services, and whose residents will enjoy a high standard of living. It will be a global and regional political, administrative, cultural, economic and historical center⁴.

Implementation Mechanisms

1. Environmental and urban upgrading of informal, unplanned areas
2. Embark on the plan to relocate heavy, pollution intensive industries and implement new plans for the region in accordance with the envisioned future function of the capital
3. Study the relocation of cemeteries to new sites in the desert, well beyond the area of expected future urban expansion and replacing the old cemetery sites with open green spaces
4. Moving government institutions from the capital center to the outskirts of the city and providing easy public transportation to them in order to upgrade cities, reduce congestion, movement and migration; this solution depends on the cost of spatial centralization in Cairo
5. Creating a green belt around the Greater Cairo Region separating it from neighboring governorates
6. Upgrade and improve traffic and transportation inside Cairo by devising and implementing a plan to resolve present problems
7. Building one or more new airports on the edge of the metropolitan area of Egypt's capital city in

¹ Ministry of Housing, Utilities, and Urban Communities – General Organization for Physical Planning, *Mashrou3 al haykala al omaneya le eqleem al qahera – al taqreer al awal* (Urban Restructuring Project for the Cairo Region – First Report), March 2014

² Essam Saf, Reham Youssef, Lamis El Arabi, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, *Vision of Cairo 2050*, 2007

³ Ibid.

⁴ Ibid.

2050¹

Reasons for Up-grading the Capital City Rather than Move it (Relocation Difficulties)

1. The emotional attachment to Cairo as a city and as Egypt's capital for over one thousand years – this doesn't only involve the feelings of Egyptians, but those of all the inhabitants of the Middle East
2. The financial challenge of building a new capital city (high cost of investment in the construction of buildings, road networks and public services)
3. The difficulties involved in moving government and public employees from Cairo to the new capital; these employees and their families are attached to Cairo because of the good quality of life it offers and the availability of health, education and other services²

Envisioned Future Capital City

To be considered a city where living conditions are acceptable according to the standards of this century, Egypt's capital in 2050 must fulfill a number of conditions:

1. It must be a safe city, comfortable and pleasing for its residents and welcoming to visitors
2. It must be a green city that provides a healthy environment for its residents and that doesn't have a harmful impact on the natural environment
3. It must be a smart city with smoothly operating internal and external communication systems that applies Information and Communications technology to provide public services to residents, saving them time and effort and that attracts smart people
4. It must be an international city; one that provides easy communication with other parts of the world, that offers visitors security and quality living and entertainment conditions, that attracts investments and capital and that can accommodate the headquarters of international corporations. Numerous urban, security, military, environmental, political, economic and social factors make it difficult for present-day Cairo to fulfill these conditions or to perform this role³.

4 – 3- 2 Second Scenario (Standards Based Reliability Prediction) – Relocating the New Administrative Capital

This second scenario involves building a new Egyptian capital city by 2050 to constitute a new base for the nation's political and administrative leadership that will also attract investments and residents, and maintaining present-day Cairo as the cultural capital.

Moving the new capital from Cairo may involve several difficulties. These include: emotional attachment to Cairo (Egypt's capital for over one thousand years and the capital of the Arab World in times of crises that afflict the Middle East); material difficulties related to building the new city; social problems related to relocating employees and their families, and finally, the lack of societal consensus concerning the move (reflecting apprehensions about a disordered transfer of the capital).⁴

Why Building a New Administrative Capital for Egypt is Inevitable?

1. **Urban Structure Reasons**
 - a. High population density because of migration and natural population growth
 - b. Traffic and transportation problems (the road network in Cairo dates to the Middle Ages) – considering the absence of an efficient public transport network, people increasingly depend on private automobiles, intensifying traffic congestion while transporting limited numbers of people
 - c. Urban degradation and random urbanization that result from the increased demand for both housing and economic activity in Cairo, combined with the absence of a clear, long-term urban policy
2. **Environmental Reasons**

High population density increases pollution levels since pollutants are concentrated in a limited area. Building congestion slows down wind movement and decreases the dispersal of pollutants in the air. Insufficient open and green space limits the absorption of pollutants. The concentration of pollution intensive industries in Cairo increases noise pollution, solid waste pollution and visual

¹ Ibid.

² Ibid.

³ Professor Dr. Mohamed Abbas Al Zafarani, *Al Qahera 2050 wa asema gadeeda lemasr (ro'ya gadeeda le omran masr wa asemateha fi montasaf al qarn al wahed wa al eshreen)* (Cairo 2050, a new capital for Egypt – a new urban vision of Egypt in the mid twenty-first century), Research paper, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, 2007

⁴ Essam Saf, Reham Youssef, Lamis El Arabi, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, *Vision of Cairo 2050*, 2007

- pollution, distorting the city's features.
3. **Security Reasons**
 - a. Ensuring the security of statesmen and political institutions and avoiding wasting long hours working in narrow, congested streets
 - b. Ensuring the security of residents; population density and social, economic and urban degradation increase the crime rate, consequently citizens do not feel safe and public disconnect with the State increases. Conditions are even worse in unplanned urban areas (slums) that have become safe havens for criminals
 - c. High population density and difficult traffic conditions impede rescue and emergency services. Residents are in greater danger during natural catastrophes, such as earthquakes, because of the difficulty of accessing catastrophe sites.
 4. **Military Reasons:** Cairo is an attractive goal for hostile military strikes for several reasons:
 - a. It has the largest concentration of population, economic activity and infrastructure in Egypt, which makes it an attractive target for anyone who wants to direct a deadly blow to Egypt
 - b. High population density causes heavy casualties in case of shelling
 - c. Traffic congestion and a deficient road network make rapid evacuation (to limit losses) impossible
 - d. The overlap of political, military, civilian and historical targets increases the temptation for aggressive action and makes alleviating the effects of such an attack more difficult
 5. **Political and Social Reasons**
 - a. A national project the people will rally around
 - b. Avoiding public discontent by renewing hopes for assuaging Cairo's problems by relocating the political capital – the new capital project can also serve to absorb people's mental energies in a discussion of the project, benefitting from the ideas of those who support and those who oppose the project (or even denounce it), without imposing a pre-established viewpoint
 - c. Avoiding the socio-geographic disfiguration resulting from the concentration of all investments, employment opportunities and expertise in Cairo, which lowers the socioeconomic and quality of living levels of inhabitants of other regions, thus increasing the temptation to move to Cairo and adding to its congestion
 6. **Economic Reasons**
 - a. Cairo's poor performance as a city leads to a waste of energy, time and money; people working in Cairo spend many hours of their workdays travelling to work, hours that could have been spent performing their duties
 - b. Environmental and urban conditions in Cairo constitute a threat to tourism in the city
 - c. Making use of investment and financing opportunities¹

4– 4 Planning Egyptian Cities in light of Future Changes

The planning of new cities and urban communities must not be undertaken in isolation from expected future technological developments and it must be based on a clear and thorough understanding of future architectural and urbanization trends. This requires undertaking detailed studies of future lifestyles and recent technical advances to deduce future technological developments and applications in all urbanization and architecture branches and to ensure that new city and urban community (such as the new administrative capital) plans can accommodate the urbanization systems and techniques of the future. It also entails the adoption of recently developed technologies related to environmental, geographic distribution and urban fabric aspects and the planning criteria and standards for new cities. To accommodate novel techniques with a minimal waste of money and effort, plans must be flexible regarding urban fabric and different infrastructural components.²

The Complementarity of Development and Urbanism

The integration and complementarity of recent developments, in the forefront of which comes Information and Communications technology developments, and urbanism will result in a new, completely different world, and the merging of physical and electronic spaces. The relationship between these is concentrated in four areas:

¹ Professor Dr. Mohamed Abbas Al Zafarani, *Al Qahera 2050 wa asema gadeeda lemasr (ro'ya gadeeda le omran masr wa asemateha fi montasaf al qarn al wahed wa al eshreen)* (Cairo 2050, a new capital for Egypt – a new urban vision of Egypt in the mid twenty-first century), Research paper, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, 2007

² Nesreen Rafiq Al Laham, *Nahw khalq manateq tamayoz wa modon mostadama gadeeda bemisr –ro'ya naqdeya letakhteet al modon al gadeeda bemisr* (Toward the establishment of distinctive areas and new sustainable cities in Egypt – A critical examination of new city planning in Egypt), research paper series, Information and Decision Support Center (IDSC), 2011

- a. The relationship between transport and means of transportation
- b. The relationship between urban and electronic cultures
- c. The relationship between urban and virtual communities
- d. The relationship between the economics of urbanization and information¹

Urban Configuration of Egyptian Cities in Light of Future Changes

The expected radical changes to our present lifestyle will be reflected in the Egyptian urban configuration of the future, in the degree to which it is sustainable and applies smart technologies. Owing to the delay in the commercialization of these technologies and because present urban formations are not equipped to accommodate them, achieving this urban configuration of the future will take a long time. However, it can be realized immediately by adopting the second scenario for the future vision of Egypt 2050 (moving the present capital and building a new administrative capital), combined with an understanding of future urban development trends. Accommodating future lifestyle changes necessitates a number of planning and implementation measures:

- Undertaking detailed studies of future lifestyles and making use of the information technology revolution and the recently developed urban planning and design techniques it offers by using computer models to formulate optimum design decisions and by using smart systems that create digital architectural forms without human interference ('urban information systems')
- When shaping new communities, their local characteristics and identity should be considered, to immunize them against potential future conflicts
- Implementing a phased population settlement policy in parallel with the installation of infrastructural elements and networks in new urban communities
- Adopting planning concepts that are in tune with future urban configurations and expected future conditions and not according to present conditions –ensuring that plans for the urban expansion of existing communities are able to accommodate future technological developments with a minimal waste in infrastructure and ensuring that they are flexible about urban fabric and other infrastructural components²

Most Important Recent Developments (Scientific Revolutions in Various Fields)

- a. The Information Technology revolution: the digital revolution that has brought down the barriers of language, time and place that so greatly affects all fields of human activity
- b. The economic revolution: result of the informatics invasion of capital markets and business, bringing the global economy into a single network
- c. The technological revolution: has made cloning and organ transplants possible, and could give rise to two viewpoints:
 - First viewpoint: the disintegration of urban fabric and ending the need for spatial proximity
 - Second viewpoint: the ability of present-day cities to adapt to changing variables³

The Effect of Recent Developments on New Cities: appearance of virtual electronic sites, such as:

- a. Site of the international communications network vis-à-vis residential, administrative, commercial and recreational area locations
 - b. Digital communication lines alongside physical lines of communication (roads and means of transport)
- Shrinking of distances and the reliance on digital meetings has led to the dispersion of activities and decentralization⁴

¹ Mohamed Al Madhagi, *Al takhteet al omrani al tataworat al hadeetha wa malameh madeena al mostaqbal al yemeneya* (Urban planning: modern developments and the features of the future Yemeni city), Second Engineering Conference, Faculty of Engineering, Aden University, 2009

² Nesreen Rafiq Al Laham, *Nahw khalq manateq tamayoz wa modon mostadama gadeeda bemisr –ro'ya naqdya letakhteet al modon al gadeeda bemisr* (Toward the establishment of distinctive areas and new sustainable cities in Egypt – A critical examination of new city planning in Egypt), research paper series, Information and Decision Support Center (IDSC), 2011

³ Mohamed Al Madhagi, *Al takhteet al omrani al tataworat al hadeetha wa malameh madeena al mostaqbal al yemeneya* (Urban planning: modern developments and the features of the future Yemeni city), Second Engineering Conference, Faculty of Engineering, Aden University, 2009

⁴ Ibid.

4 – 5 An Examination of the Effect of Recent Developments on the Interpretative Scenario (Up-grading Cairo and Maintaining it as the Government Capital)¹

Variables	Manifestations of Change	Development Mechanism
Shrinking of distances	Large numbers of urban agglomerations	Working toward increasing the need for large cities to act as central points in organizing the relationship among the large numbers of urban agglomerations by creating a strong communications network Increasing the importance and sphere of influence of cities to make them the central connecting points in information and services networks
Digital meetings	Services and functions through virtual space	Many activities and functions will depend on direct physical contact – spatial proximity in cities will be needed to meet human needs, the importance of cities and urban spaces that depend on modern technology will increase, but they won't replace direct physical meetings, which promote the credibility of business parties
Dispersion of Activity (Decentralization)	Dispersal and transfer of businesses and activities	Modern developments will work in two directions; they will lead to the centralization of some activities and services and to the dispersion and decentralization of certain services, such as electronic industries and marketing – urban spaces will also be affected (substitutive or complementary relationships between urban and electronic spaces)

4 – 6An Examination of the Effect of Recent Developments on the Standards Based Scenario (Relocating the Administrative Capital)²

Variables	Manifestations of Change	Development Mechanism
Shrinking of distances	Fragmentation of urban agglomerations and non-compact cities	Fragmentation of large urban units and disappearance of small units. Emigration from large cities to small, distant communities that provide comfortable and quality living conditions The possibility of residing anywhere In addition to its primary function, the home serves as a communication center
Digital meetings	Services and functions through virtual space	Relocation of institutions and entities away from crowded big cities and using electronic communication networks in place of direct communication; meetings will be held in virtual rooms and buildings connected to information networks. Cities will lose their physical functions and become virtual cities connected through digital space
Dispersal of Activity	Transfer of businesses and activities	Urban life will be weakened because many activities will take place within homes and services will reach people wherever they are. This will help to move activities anywhere outside or inside of the city and will resolve many urban problems, such as building congestion, crowding, service provision pressures and environmental pollution.

4 – 7 Recently Developed Urban Planning Principles

- 1) The use of non-physical alternatives: using information systems to change the nature of public service buildings
- 2) Using transportation alternatives: transporting persons and cargo through the Information Technology network
- 3) Intensive production on demand: providing services and products rapidly and economically on demand
- 4) Smart management: using smart automated systems to manage public facilities
- 5) Commodity conversion: using the advantages of modern technology to re-shape urban configurations in

¹ Ibid.

² Ibid.

line with modern needs

5. Mechanisms for Building Sustainable Cities in Egypt

- 1) Building small or medium-size new cities of 100 thousand to 150 thousand inhabitants (200 thousand inhabitants in exceptional cases) to overcome financing difficulties. Speeding up the settlement of the cities according to their nature, function, the objectives for which they were built, geographic location, economic base, their relationship with the region in which they are located and the employment opportunities they are expected to provide. The cities expected growth over time (based on the pull factors they offer) should be considered, and a range of city sizes should be established.
- 2) Making the city as independent and self-sufficient as possible and building it on an economic base of income producing activities that lend an economic advantage to the new city and enhance its attractiveness to residents (large university campuses, industrial zones, tourist attractions etc)
- 3) Selecting the sites for new cities based on detailed studies that identify and compare potential sites using specified criteria, such as topography, nature of the soil and surface water, climate, inhabitants, economy, security, transportation networks etc. Once agreement on potential sites is reached, the study results should be presented clearly to facilitate the political decision. A feasibility study should be undertaken prior to implementation of the new city construction project and before allocation of the required investment financing. New cities should be located at a sufficient distance from existing ones to avoid the coalescence of urban agglomerations. Preferably, new cities should be constructed in proximity to small or medium-sized cities that are backed by desert land to provide the necessary services to the new city during the early stages of its development, while also promoting the development of existing small cities.
- 4) Formulating a national urban development policy for Egypt with linkages to economic and social development plans that encompasses within it an overall economic development plan to stimulate structural changes in the distribution of population and economic activities while prioritizing the role of new cities
- 5) Providing subsidized housing for low-income groups to encourage them to move to new communities – the government should provide low-cost, subsidized housing in new cities and facilitate the purchase of residential units by providing credit facilities and low-interest loans.
- 6) The government should provide financial support to investment projects in new cities to promote the creation of new job opportunities and to encourage residents to move to these cities (tax and custom exemptions, financial loans and grants).
- 7) Using economic instruments to drive business and economic activities out of Cairo and Alexandria (imposing taxes on economic activities within the Greater Cairo Region, withholding licenses for new projects inside the region and granting exemptions to projects set up in new cities located outside the limits of established urban areas
- 8) Planning new cities and communities in accordance with future technological evolutions to ensure that they are able to accommodate advanced technologies in all urban aspects and that they are equipped to meet the needs of future generations
- 9) Establishing communications networks based on advanced Information Technologies in new cities and establishing an advanced transport network linking the new cities to existing ones
- 10) Build a renewable energy infrastructure in new cities, activate mechanisms to use solar energy to desalinate sea water, water treatment and re-use of the water to plant trees and green belts around the new cities, harvest seasonal flood and rainwater, improve solid and liquid waste management (collection, treatment and recycling of wastes)
- 11) Planning new cities in desert areas must be adapted to all the details of the desert environment (apply the principles of environmental urbanization, such as compact urban fabrics, adapt planning standards to the local environment, creating architectural styles that are in keeping with the local environment and are expressive of the local culture) – using modern urbanization technologies (smart cities that use Information & Communication technology) – devising mechanisms to involve citizens in the construction of their homes, while offering alternative housing unit designs – reducing cost by making use of construction materials that are available on-site – technical follow-up to ensure that construction specifications and standards are met
- 12) Providing appropriate services to all population categories, providing sufficient and varied employment opportunities for all population categories, particularly women, to attract

- residents to new cities and to engender social and economic benefits for the region and the State –establish attractive seasonal cultural and recreational facilities in the new cities
- 13) When shaping new communities, their local identity must be taken into account and not left to be determined randomly by future settlement patterns. This will affect the stability of new communities and the degree to which they are adapted to the new region.
 - 14) Introducing structural changes in local administration systems: reducing the centralization of decision-making in Cairo, extending the powers of new city municipalities to make them in charge of land planning and new city plans, after taking the necessary steps to upgrade capacities and managerial efficiency (training, education and raising environmental awareness)
 - 15) Cooperation, in all the phases of planning, implementing and managing new cities, between government entities on the one hand and civil society organizations, private sector companies and community associations on the other
 - 16) Periodical follow-up and evaluation of new city performance – review and up-date of urban development schemes according to performance evaluations and new developments¹

¹ Nesreen Rafiq Al Laham, *Nahw khalq manateq tamayoz wa modon mostadama gadeeda bemisr –ro'ya naqdeya letakhteet al modon al gadeeda bemisr* (Toward the establishment of distinctive areas and new sustainable cities in Egypt – A critical examination of new city planning in Egypt), research paper series, Information and Decision Support Center (IDSC), 2011

5 – 1 Proposed Reference Guide for the Visual Image of Egyptian Cities in 2050

Visual Image Requirements	Cairo	New Administrative Capital
Clear & simple urban configuration methods	<p>Creating groups of urban clusters, each with its own character and function.</p> <p>Porous urban mass, with activities located outside it.</p> <p>Expanding green spaces inside the urban mass, network of environmentally friendly areas.</p> <p>Medium population densities and mixed land uses.</p> <p>Distinctive features constitute essential environmental references provide proper guidance.</p>	<ul style="list-style-type: none"> - Small & medium-size urban formations, interspersed with open spaces - Social and economic balance among various urban sectors (low population density, expanding economic activity, dividing the city into a number of neighborhoods with equal access to services and green spaces) -Horizontal residential patterns, connected to nature & consistency and harmony of building forms - Creating distinctive features and views - Very wide roads, dependence on public transport, using smart technologies to overcome traffic congestion problems, easy linkages between residences and work places
Proportionality, formation & attention to detail	<ul style="list-style-type: none"> - Preparing aesthetic & sustainable visual image projects, reducing entertainment venues, providing natural, open green spaces - Creating a green belt around Cairo - Altering the size and type of buildings and spaces to make them consistent with existing urban agglomerations -Respecting the general nature of individual areas 	<ul style="list-style-type: none"> - Respecting the overall nature of ministries and entities to be relocated while using smart and environmentally friendly technologies in their construction - Simulation of urban, cultural and historical spaces in environmentally friendly, smart urban spaces using virtual reality - Promote residents' needs, consider the home as the central base for all types of communication and transport & raise its standard
Well balanced overall form, architecturally & in time	<ul style="list-style-type: none"> - Use cultural heritage as the basis for development & up-grade historical and tourist areas - Urban & environmental up-grading of informal unplanned areas 	<ul style="list-style-type: none"> - Roads and infrastructure intermixed with electronic transport and managed through environmentally friendly smart systems - Expansion of recreational and relaxation spaces (natural green spaces to which cultural and historical symbols have been added)
Complementarity of form and function	<ul style="list-style-type: none"> - Centralization of certain activities and dispersion of others (such as factories and commercial outlets) -Using urban centers as central focus points for development, organizing the relationship among smaller centers and interconnecting them within a strong communications network -Relocating government institutions to reduce congestion and traffic –depending on e-government 	<ul style="list-style-type: none"> - Altering the nature and shape of public service buildings and transforming some into electronic spaces, reducing the size of various types of buildings (only principal buildings will be enlarged) and depending on e-government - Homes are made up of open spaces that can be re-modeled by changing wall locations and using movable furnishings - Changing some recreational areas into malls with open and enclosed spaces that offer leisure and consumer services, expanding spaces designated for families
Respect and complement the natural environment	<ul style="list-style-type: none"> - Expand green views, limit transport and internal congestion to help reduce pollution levels – prohibit construction on river banks and agricultural land - Enhance visual image aesthetics by preserving historical resources, the cultural heritage and the natural environment 	<ul style="list-style-type: none"> - Expand green views within urban agglomerates by creating a network of environmentally friendly open spaces - Making use of historical resources, cultural heritage and the natural environment to enhance visual aesthetics and attract citizens and tourists -Harmonious linkage of buildings to nature
Defining public taste standards	<ul style="list-style-type: none"> -Define the standards of community desire to achieve environmental and visual sustainability and to promote and reformulate cultural givens – speedy intervention to regulate urban communities and to repair any degradation –preservation of historical architectural features and integrating them into contemporary architecture 	<ul style="list-style-type: none"> -Define the standards of community desire to achieve the optimal visual image that is linked to the quality and nature of socio-economic benefits that will be reaped by the community, to synchronize & harmonize the Egyptian city's architecture and enhance its visual image

6. Conclusion Results

- Modern technology will affect the visual image of the Egyptian capital according to the national vision of Egypt 2050.

- The proposed framework for the visual image of Cairo is based on the application of visual formation elements using advanced smart technology to implement the national vision of Egypt 2050. This is to be done by defining standards for community desire to achieve environmental and visual sustainability, promoting and reformulating cultural traits and speedy intervention to regulate urban communities and to repair any degradation they may have endured, preserving historical architectural features and integrating them into contemporary architecture.
- The proposed framework for the visual image of Cairo is based on the application of visual formation elements using advanced smart technology to implement the national vision of Egypt 2050. This will be done by defining standards for community desire to achieve optimal visual image conditions that are linked to the quality and nature of socio-economic benefits to be reaped by the community to coordinate and harmonize Egyptian cities' architecture and improve its visual image.
- Complementary modern developments (particularly the complementarity between Information and Communications technologies and advanced architectural developments) will lead to the merging of physical and electronic spaces.
- Information systems must be used to alter the nature of public service buildings, adopt alternative means of transport and intensify production. Smart automated systems must be used to manage and control public facilities, and advanced modern technologies must be used to re-configure architectural forms to meet modern requirements.
- Recent developments directly affecting urban planning principles and the visual image of cities
- Changing present lifestyles: the change will be reflected in the form and degree of sustainability of future Egyptian architecture
- Adopting planning concepts that deal with future urbanization in the light of expected future conditions and not according to what is currently prevalent. Plans for the urban expansion of existing cities should be able to accommodate new technologies with minimum waste of infrastructure, and should be flexible about urban fabric and the various infrastructure components.
- The vision of Egypt 2050 aims to create a balanced society that adheres to its national and cultural identity within an environmentally friendly and sustainable development framework that promotes community participation.
- Developing a future vision of Egypt's capital in 2050 – a safe city where residents are comfortable and happy and visitors are welcomed, a green, environmentally friendly, smart city where communications are easy and that attracts investment capital. Two proposals are on the table (up-grading present-day Cairo and moving the capital). However, up-grading Cairo to fit the future vision will be difficult due to a number of reasons (architectural, environmental, security related, military, political, social and economic).
- The proposal to create a new administrative capital is the most appropriate solution to the current problems and the most suitable option for facing future challenges and satisfying future needs.
- Egyptian cities suffer from urban disparities (in their social, cultural and environmental make-up) that have affected architectural formations and led to the deterioration of their general appearance and visual image.
- Visual shaping is determined by public taste standards and the implementation of design conditions (urban – nature – function – transport).
- Visual formation is the result of the interrelation between urban clusters, spaces, paths and other urbanization components, combined with the effect of constant (natural) factors and variable (human) factors.
- The visual image of a city is the outcome of the impressions and sensations its users.
- **Recommendations**
- Applying an unconventional approach to development that is inclusive, well-organized and that achieves sustainability
- Defining the architectural problems that affect the visual image of cities and taking swift measures to resolve them
- Participation and cooperation of the public, youth and urban planning authorities in the proposal and development of the future urban vision of Egypt
- Redistribution of urban neighbourhoods and districts to ensure that each has its own function and distinctive architectural identity
- Review and reconsider public service locations and gauge the degree of traffic congestion around them, relocate them in line with future city plans
- Revise building and urban planning laws to implement the principles of sustainability
- Enhance visual image by underlining and promoting the cultural character, historical identity and architectural and urban styles of individual areas

- Tighten control over the implementation of laws and legislations to prevent the rise of architecturally decrepit areas that negatively affect a city's visual image
- Develop urban plans that consider future conditions and trends and that are sufficiently flexible to accommodate modern technological advances
- The importance of visual studies, the application of advanced smart technologies and virtual reality to enhance the visual image of the urban environment
- The importance of implementing visual configuration conditions and criteria in keeping with future determinants and potential so as to achieve visual well-being
- Merging visual image components with the city's historical features and realizing compatibility of contemporary architectural and urban configuration characteristics

References

- Ahmed Ragheb Almagharbi, Masters Thesis, Dor mahawer al haraka wa alnehayat al basareya fi tashkeel al sora al zehneya lelmadeena (hala derasseya: Ghaza) (The role of movement and extended views in forming a mental image of a city, case study: Gaza City), Faculty of Engineering, Islamic University, 2015
- Ali Mohran Hashan, Nahw tanmeya omraneya motawazena wa motaganesa fi almodon almasreya (Towards a balanced and homogeneous urban development in Egyptian cities), research paper
- Al tarkeeb al omrani ka'adah lemostaqbal afdal lelmadeena almasreya (Architectural formation: a tool for a better future for Egyptian cities) Research paper
- Essam Saf, Reham Youssef, Lamis El Arabi, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, Vision of Cairo 2050, 2007
- Engineer Mohamed Ahmed Suleiman, Research Paper: Manhag letagmeel albee'a albasareya lelmadeena alomraneya, derasat hala alkuweit (An Approach to the Beautification of the Visual Environment of Urban Cities, Case Study: Kuwait)
- Marwa Ahmed Abdel Rahman, Anser al tasmeem al omrani al mo'athera ala al edrak al basari lemadakhel al modon (Urban planning components affecting the visual perception of city entrances), Masters Thesis, City Planning, Faculty of Engineering, Cairo University, 2007
- Mohamed Al Madhagi, Al takhteet al omrani al tataworat al hadeetha wa malameh madeena al mostaqbal al yemeneya (Urban planning: modern developments and the features of the future Yemeni city), Second Engineering Conference, Faculty of Engineering, Aden University, 2009
- Ministry of Housing, Utilities, and Urban Communities – General Organization for Physical Planning, Mashrou3 al haykala al omraneya le egleem al qahera – al taqreer al awal (Urban Restructuring Project for the Cairo Region – First Report), March 2014
- Nesreen Rafiq Al Laham, Nahw khalq manateq tamayoz wa modon mostadama gadeeda bemisr –ro'ya naqdeya letakhteet al modon al gadeeda bemisr (Toward the establishment of distinctive areas and new sustainable cities in Egypt – A critical examination of new city planning in Egypt), research paper series, Information and Decision Support Center (IDSC), 2011
- Professor Dr. Mohamed Abbas Al Zafarani, Al Qahera 2050 wa asema gadeeda lemasr (ro'ya gadeeda le omran masr wa asemateha fi montasaf al qarn al wahed wa al eshreen) (Cairo 2050, a new capital for Egypt – a new urban vision of Egypt in the mid twenty-first century), Research paper, The Egyptian Cabinet, Information and Decision Support Center (IDSC), Center for Future Studies, 2007
- Qadaya altakhteet al omrani – moshkelat wa etegahat – holool (Urban Planning Issues: Problems / Trends / Solutions) www.facebook.com
- www.alarabiya.net/ar/aswaq/economy/2015/03/14
- www.youm7.com/story/2016/9/4