



## THE URBAN EXPANSION: POLICIES AND SOLUTIONS

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### Abstract

As a result of the dynamics of the city, an important changes occur include all components of the city and influence its shape, morphology and functions, most important of these processes are: urbanization and urban growth. Research interests in the horizontal urban expansion of the cities (as a result of the urban growth) then unplanned areas emerge within the urban environment with their rural characteristics. The research discusses the urban expansion, its effects and consequences and shows some of the studies, theories and strategies to control the expansion of the cities. Purpose of the research is drawing a futuristic image of the sustainable city and submits a three proposals explaining how to deal with areas at the edges of the city included in the urban environment and choosing the modes of sustainable use of land in order to meet the needs of the population and preserve the environment. Research concluded to a set of conclusions and recommendations.

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## Introduction

Cities in most countries of the world, especially developing countries, suffering the phenomenon of urban rapid growth as continuing population growth, immigration from the countryside to the city, followed by urban expansion phase, were cities expanded horizontally and creeps toward land at the edges and population centers surrounding in order to provision of appropriate spaces for uses to practice their functions. Because of the unplanned urban expansion, a number of problems appear, such as the proliferation of slums and the erosion of farmland, which called for a number of studies, theories and strategies that related the urban expansion to appear, that described in the next paragraphs preceded by a brief view about the concept of urban expansion and its types and consequences.

### 1- Concept of Urban Expansion

**1-** It refers to the expansion of a city and its suburbs towards the surrounding areas, it means the spatial urban growth sense, which includes: [1] p.2

a. Physical Expansion: A stage that follows the increase in population.

b. Functional changes refer to the change of space and the subsequent changes in land use as a result. Activity and space should be the essential component of any system defines the concept of urban growth. [1] p. 3

**2-** Urbanization is linked to economic growth for the region, which is accompanied by increasing population, [2] p.1 then spatial expansion.

**3-** Urbanization is defined as well, "The sprawl through the leap frog development process behind the cities and towns towards the areas of undeveloped and low-density and cannot be controlled within the urban growth, especially in areas of high "limits growing". [3] p. 15)

**4-** Harper and Gottman defined urban expansion: "Urban sprawl outside the city boundaries or any expansion of urban structure of the city and spread by the sprawl process without being bound by the boundaries of the areas where the operation occurred [4] p.23

### 2- Methods of Cities Expansion

The diversity of options for the use of space affects the growth, but it can be linked to the available space. [2] p2-3, as the growth of cities happens in four directions: in the (In) and the highest ((Up and Down) and outside (out) [5] p.2 this growth, occurs according to certain mechanisms, based on the potential that can be exploited, and these mechanisms are different, depending on the expansion sites relative to the master plans of cities, this may be a planned expansion which is within the boundaries of master plan or outside, which is the research interested in. [6] p. 143.2002

#### 2-1 The Expansion of Cities outside the Boundaries of the City:

This occurs by different methods as following: [6] (p148-150, 2002)

**A- Concentric Expansion:** Some cities creep gradually toward surrounding areas adjacent the design, areas free of obstacles according to the urban attraction influence of the nearby city, and transport routes pass through, linking it to the city center.

**B- Satellites Cities:** City expands in form of independently of their original city and communicate with each other by roads that provide good transport, ease communication between the city and the original one.

**C- Polynucleotide development** in form of concentrations close to the city and are connected with each other by roads those concentrations includes various activities to meet the needs of their population [7] p. 10 (Figure 1)

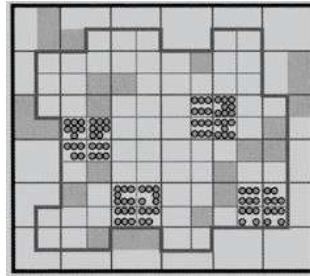


Fig.1 Polynucleotide Development

Source: Elina Besussi, Nancy Chin, Michael Batty and Paul Longly, university of College London, chapter2, 2010, p. 10

**D- Linear expansion or Linear strip development:** This kind of expansion of the city occurs where the potential for expansion is only in specific directions may be in one direction or opposite directions, such as coastal or riverine sites or mountain slopes (Figure 2).

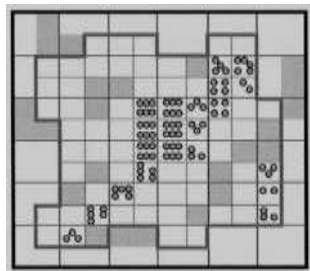


Fig.2 Linear Strip Development

Source: Elina Besussi, Nancy Chin, Michael Batty and Paul Longly, university of College London, chapter2, 2010, p. 10

**E- Scattered Expansion:** Some cities are expanding through the establishment of a number of urban centers with spaced forms and isolated from each other as separating them free from populated areas or low-density, those urban centers linked with the city and with each other by good transport links. [6] p.148-150) (Figure. 3).

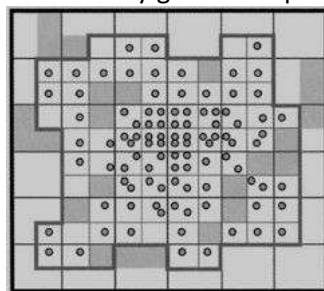


Fig.3 Scattered Development

Source: Elina Besussi, Nancy Chin, Michael Batty and Paul Longly, university of College London, chapter2, 2010, p. 10

## 2-2 Urban Expansion Results

Urban expansion results vary from city to another because of several aspects such as variation of the size of the cities and population and different functions. The most important problems arising from the expansion of cities are:

**1- Farmland overtaking** within the master plan and outside the city, so city loses its economic hinterland, this expansion leads to the decline of large productive agricultural land. [8] p. 446

**2-**The emergence of random residential neighborhoods breach of what is installed in the design in terms of location, planning and specification architecture, lacking in terms of health and public safety to the simplest applicable residential standards [9]p. 4.

**3-** Organizational problems: Some organizational problems prevent the provision of services properly, especially in developing countries, including the lack of scientific planning in line with population growth and economic development and the lack of required employment of financial resources in order to deliver services best by perpetuating the existing services and for the new urban areas, some of these problems are:

**a-** Social problems such as the ownership dispute and refusing the change by some people who have not like the development. [10] p.6-7.

**b-** The weakness of the relationship between urban changing and the economic, social and political changes on the other hand [11] p. 103.

**c-** Rural practices such as animal husbandry, the practice of agriculture in the empty land, is a rural aspects different from the activities practiced by the city's population, the pattern of housing units is subject to simulate rural pattern and these units are planned and built randomly. [12] p. 5.

### 3- Some Theories and Studies about the Urban Expansion

The most important theories and strategies and studies had been put addressing the problem of urban growth and its effects, are: (according to the chronology): [13] p.11-12

**3-1 Adna Weber Study** placed the first systematic study in her book, "The Growth of Cities" in the nineteenth Century "1899 the research was in line with the Charles H. Cooley study (transport theory), where he studied the emergence and proliferation of transport types and decentralization in urban areas.

**3-2 Ecological theory of the city:** Park, Burgess and McKenzie, Burgess explained in his book, " The City and spatial phases of the trends of urbanization in the city, and developing a model for the urban expansion shows the invasion surrounding areas. This theory was based on centralization and decentralization and mobility as tools for expansion, after this era, decentralization began to prevail on urban and regional plans. (Fig. 4)

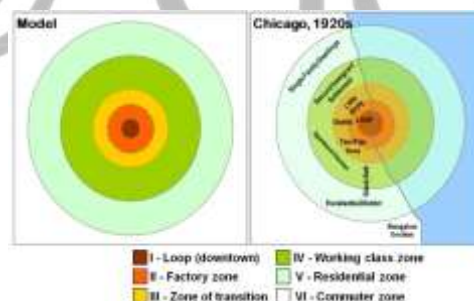


Fig.4 The Plan of land use, according to the theory of concentric circles of Burgess

[14] Source: Chapin, F.Stuart, "Urban Land Using Planning", 2nd, University Illinois Press, New York, 1972.p 14

**3-3 Theory of the central places** 1933 for Walter Chris-taller this theory illustrated, the spatial growth and locations of settlements served and their relationship with each other economically, and adopted the principle of the optimum population theory in order to manage the urban sprawl.

### 3-4 Garden city theory for Ebenezer Howard

Strategy of this theory focused on community economies for urban settlements and to create an economic wealth and the provision work opportunities, as well as accommodate the arrivals from the central city population. [15] P.19.

### 2-5 Theory of garden city suburb

Began to emerge in England differently from garden city of Howard's, where residential suburbs surrounded by a belt Green does not include industrial development, this condition require public transport system developed to allow workers to engage their work in the city, but the need to accommodate a larger number of the population and industries due to technical, economic and social and political changes leads to convert the concept of Garden City Suburb to Satellite City. [13](Deborah, 2009, p. 18)

#### 4- Some countries' policies to scope with the urban expansion

These policies vary from country to another depending on the economic, social and political conditions comes to some of these policies are:

##### 4-1 Urban Agriculture in Addis Ababa

Government of Addis Ababa reevaluate plans to scope with urbanization and encouraging urban agriculture that makes Ethiopia able to achieve food sovereignty and food security. [16] P.17.

##### 4-2 Smart growth in Mongolia

As well as immigration, another factor contributed to the increase of urbanization in Mongolia, is moving the city's economy to the market economy [17] p.18, economic logic called for the use of smart growth policy over a long period so compact cities policy had been used in the proposed master plan of the city in (2008) to (2030), where high-density development in the city center with a sophisticated transfer to achieve access to the Ger Area and increase density in the city center where appropriate with control over the growing expansion of the parties. [17] (2010, p.9-10)



Fig. 5 The peri-urban Ger Areas surround the built-up "downtown" of Ulaanbaatar (UB) city

Source: Takuya Kamata, James Richert, Tumentsogt Tsevegmid, Yoonhee Kim, Brett Sedgewick, "Managing Urban Expansion in Mongolia, Best Practices in Scenario-Based Urban Planning, the World bank Washington, D.C., The International Bank for Reconstruction and Development, 2010 publisher, The World bank Washington, USA, p.9-10

##### 4-3 Compact Cities Policy in China

High urbanization as a result of economic growth, a model of compact sustainable development has been used using geographic information systems as a model helps planners and policy-urban policies towards more sustainable development through the use of remote sensing and geographic information systems to monitor changes in land use and analysis of environmental effects resulting from the development of the land. Changes in the Earth is measured by analyzing the average annual rate of revenue from the various economic activities and that one of the results of compact development is to reduce the per capita consumption of land [18] p. 2000.

##### 4-4 New Towns Policy

For the purpose of re-organization and planning of human settlements and to alleviate the urban population pressures resulting urban problems within the central areas, the new cities had been built in Britain, Egypt and Iraq, The choice of this city of great importance as both "of which represents a center" for the development of head, namely in Iraq within the central region of Baghdad:

1. (50-60 thousand people) - the development of the Al Madaen Area.
2. Al-Thar-Thar (150 thousand people) - the development of the Thar-Thar area.
3. Zubaydah (300,000 thousand people) - Development of the Tigris East. [19] p. 7.

##### 4-5 Policy of Construction Urban Villages

The concept of urban villages is a challenge "to use the land as it combines the mixed ownership and mixed-use strategy (mixed-use / mixed - ownership strategy). urban villages policy had been applied since 1989 in Britain, these villages has a humanitarian scale and rumor familiarity and create a street vibrant of life within the master plan of the city, these factors help residents to restoration of their sense of belonging and pride in their surroundings. [20] p. 546-551)

##### 4-6 Green Belt Policy

This policy is applied in areas that are not allowed urbanization to happen, to provide protection of arable land, environmental and functional characteristics. This policy is applied in many countries of the world such as the Credit

River Valley in Mississauga in America, where the authorities include the land Of public ownership within the green belt plan and expanding it to preserve the land of high value in this region [21].

## 5- Research proposals

In the previous pages research discussed the phenomenon of urban expansion and the most important kinds and consequences and the most important theories and studies and policies that followed to counter this phenomenon. Research wondering what about the communities in the surrounding areas and how to deal with? Research suggests applying the technic of urbanization which means annexation of these communities to the urban environment, in the same time that is useful in the case of constructing metropolitan cities or major metropolitan regions and in case that there is a desire to converting the urban fringes into urban centers, but this is conditional with achieving the gradual complementary relationship between the new uses and the existing uses in the city through one of the methods of integration and spatial interaction, then we will have achieved our goal of confrontation the horizontal expansion of cities and the creation of a coherent and harmonious urban environment by three proposals:

**5-1 Assembling villages** and set up a joint shopping center: Assembling villages must be surrounded by green belt to preserve the region's environment and nature. These compilation villages must be provided by a Council to follow up providing services and any project that is held will be shared between the villages of the agglomeration. The merging of the villages based on the concept of achieving the minimum size of the population that supports "enough" of services, donor States that supports projects require the presence of 5,000 people at a minimum to finance any project in any urban agglomeration. [23](Khalil O.2005 p. 164).

## 5-2 Integration of villages and developed as a residential area

These areas counting as pods, housing pods, collecting these areas as a cell and development those on the basis of the principles of the residential sector, creating a connection between these areas, creation of curved roads (loop) are connected to the main road of the network to prevent through traffic. Features of this proposal, it is used in areas outside the city at sites to be developed independently for different purposes, it is surrounded by landscapes give a way to the process of planning more flexible and can be every pod leads a particular job as a commercial pod or residential pod.

## 5-3 Investment in housing (the establishment of an urban village)

The study of the nature of the land and select a specific space to create an urban village determined by existing schemas taken into account in the design enhance public spaces and reduce the separation of uses and create an overlap and integrated with the existing villages in terms of green spaces along roads and curved (loop) that connect them these villages will be covered by other development process. The establishment of such urban village provides a new settlement accommodate the future increasing of the population.

Before the implementation of the proposals above, socio-economic studies and field visits is needed to studying the current reality of urban uses and find out the pros and cons. The participation of the population of the region is very important to know the opinions and needs and find out appropriate solutions, here an urgent need comes to follow the scientific method in the perception of the city and its problems using the scientific methods in the analysis to choose the best proposal based on the size of the area, the problem determined, and intellectual reference in achieving integration and accessibility for the purpose of conducting spatial analysis and evaluate and choose the best proposal.

After discussing the phenomena of urban spatial expansion as a result of the urbanization and urban growth and submitting three proposals, research submits a set of the most important conclusions and recommendations below:

## 6- Conclusions

- 1- Urban dynamic characteristic behavior of urban systems reflect what is going on in the internal changes at the urban level.
- 2- Urbanization and urban growth of the most important processes of the change that includes all components of the city and influence the shape and morphology, functions and these operations are in response to the dynamic of the city.



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