An Evaluation Of The Aesthetics Urban Design Elements In The Cityscape Of Khartoum, Sudan

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ABSTRACT

The paper reviews the elements of urban design in terms of design principles and basics, and their inter-relation as aesthetic qualities of the city. It also introduce a case study of the Khartoum Central Businesses District (CBD), analyzing it, and inspecting its problems, then introducing the necessary suggestions and recommendations of the urban design process (in Khartoum city) with concentration to the architectural forms and cityscape.

Keywords: Urban design elements, ancient towns, urban forms, urban planning, urban aesthetics, cityscape.

Introduction

Many third world cities face many architectural and planning problems. Khartoum as one of these cities is no exception, as unavailability of urban design studies as well as laws, which govern the physical development. The matters which lead to low aesthetic quality of the city, which make Khartoum an arbitrary modern city, a modern city with some modern building created with distinguished architectural designs in which modern building materials are used in its constructions; arbitrary city in the absence of unity and harmony between these buildings.

This paper discusses the urban design elements as aesthetic values of the modern city. The paper begins the study of cities across the different ages, and the modern theories of urban design process.

The paper considers studying of the urban design elements across ages as the basic comparison in governing the current situation of Khartoum. In addition, the paper depends on survey field methodology, visual observation, and in analysis the current situation and its disadvantages.

Methodology

● Most of the materials in this paper have been collected from official records, such as, books, references, and the ministry of physical planning.
● In addition, authors’ observations and photography during field visits was collected.
● The method of evaluation is to analyze information and study them to inspect the problems of urban design in Khartoum C.B.D area.

Urban Design Elements And Aesthetics Qualities

Before the twentieth century, the urban design interested in physical form of the city, the general design of urban areas, and the quality of physical environment.

The ancient towns of Greece took both, their form and size from the pattern, based on a life style, made possible by temperate climate, the agora in the center of the city, served as a communal meeting place, for the exchange of goods, and ideas, the size of Greek city state was limited to allow democratic communication.

The planning of Greek city, for all regularity and formal building relationships, was never the result of academic urban planning and design rules. so the Greece didn’t take care of the city planning from an aesthetic point of view, the aesthetics existed only as a product of placing two or more buildings on the same site, and usage of marble in building.

The Romanian cities considered as center of Christianity. In addition, the Romanians are interested in elements of urban design in their cities, such as streets, districts, nodes, the edges of the city and landmarks. There was a link and relationship between these elements, which gave the distinctive character of the city visually and in terms of harmony between the components of the city.

The Italian cities considered as example of middle ages cities which were organized well, and there were aesthetics elements and unity of buildings in this cities.

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The earliest renaissance urbanism— the conscious arrangement of buildings into a predetermined form in 1470 in Genoa (Italy). Renaissance urbanism's had three main design components at their disposal: first, the primary straight streets, second, gridiron-based districts, third, enclosed spaces (squares, piazzas, and places). These components were times fused together to make a composite plan.

During the renaissance period of urban history, the aesthetic determination of spatial design and that of the enveloping architecture was more closely integrated than at any other time.

Definitions Of Urban Design

The term urban design has many definitions, those that are a result of the importance of urban design process in the society, which concern organization and spaces and bring the maximum benefits for urban residents; generally, the urban design can be defined as following:

- Urban design is a bridge between the professions of urban planning and architecture.
- Recent international research shows conclusively that good urban design has the potential to create value for communities, individuals, the economy, and the environment. The potential benefits include:
  - Better public health
  - Greater social equity
  - Enhanced land values
  - A more vibrant local economy
  - Reduced vehicle emissions
  - More sustainable use of non-renewable resources.

- Urban design is a study of the relationship between the components of the city, such as streets and squares and spaces and how to accept people and their use of these ingredients.
- The process of interest in the third dimension of the city’s contribution of urban design science.
- Urban design is both product and a process: As a product, urban design range in scale from parts of an environment, such as a streetscape, to a whole of districts, towns, cities, or region.
- Urban design is manifested in all aspects of the physical environment, including form, space, movement time, activity pattern, and setting.

The urban design of a place involves what the place looks like, how it feels, what it means, and how it works for people who use it.

Among other things, the urban designer is concerned with the sensory and cognitive relationships between people and their environment, with how peoples needs values, and aspirations can best be accommodated in build forms.

- As a process and conscious act, urban design involves the art of shaping the built landscape which has been formed over time by many different actors, urban designer is not primarily an individuals act, but a civic, collective activity, the clients of urban design, public and private, many be specific or multiple.

Urban design is a profession and field of study concerned with design ideas and possibilities with community choices and decisions, and with the urban development process, in short, it has to do with the processes for shaping environments and with the experiential quality of the physical forms and spaces that result.

Urban Design Elements

The general urban design elements and the physical elements of the city can be divided into the following categories:

Paths (Networks)

Every modern city contains an amazing array of pathways to carry flows of people, goods, water, energy, and information. Transportation networks are the largest and most visible of these. Ancient cities relied on streets, most of them quite narrow by modern standards, to carry food traffic and carts. The modern city contains a complex hierarchy of transportation channels, ranging from ten lane freeways to sidewalk.

The streetscape is the area of the street from building to building including the public right of way (i.e. the road, the median and both sidewalks) and any open setback area. The streetscape largely defines if an area is pedestrian friendly and it greatly affects the general look, feel, and character of the place.

The street furniture and streetscape are very important elements in paths, because of their aesthetical dimensions, and they add the good feeling and make the streets attractive, those elements represented in the following:

Weather Shelters: Weather shelters have multiple purposes, they are used for functional purpose, and they add aesthetic dimension to streets, photo 1 and 2 illustrates examples of weather shelters.

Photo 1: The streets are not only beautify by weather shelter, by adding statues and aesthetic elements in front make it more attractive (Source: www.UDG.com"2013)
**Advertising Units**: In the twentieth century, and according to the progress of business and commercial movement, the advertisement units emerged as a way to introduce products, and it became main aesthetic elements of streets, photo 3, 4 and 5 shows examples of advertisement units, which are used in streets.

**Photo 2**: Simple design, beautiful, and functional weather shelter on the side of street. (Source: www.UDG.com 2013)

**Photo 3**: Simple form, easy to construct, and used as advertising panel. (Source: www.UDG.com 2013)

**Photo 4**: Simple form, easy to construct, and used as advertising panel. (Source: www.UDG.com 2013)

**Photo 5**: Simple form, easy to construct, and used as advertising panel. (Source: www.UDG.com 2013)
**Trees**

Trees are very important street elements, they are used for environmental purposes, hence, they reduce the bad effects of climate, and make streets more attractive and beautiful.

**Buildings (Architectural Forms)**

Buildings are the most visible elements of the city, the features that give each city its unique character. Residential structures occupy almost half of all urban land, with the building types ranging from scattered single-family homes to dense high-rise apartments. Commercial buildings are clustered downtown and at various sub centers, with skyscrapers packed in to the central business district and low-rise structures prevailing elsewhere, although tall buildings are becoming more common in the suburbs. Industrial buildings come in many forms ranging from large factory complexes in industrial district to small workshops. The planners should arrange this different land use of the city in a good manner; they should concern in particular and take attention to the compatibility of different activities, population densities, traffic generation, economic efficiency, social relationships, and the light and bulk of buildings.

**Nodes: Open Spaces**

Nodes are points, the strategic space in a city in to which an observer can enter, and which are the intensive foci to and from which he is traveling (Photo 6). They may be primary junctions, places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another. Or the nodes may be simply concentration, which gain their importance from being the condensation of some use or physical character, as a street corner hangout or an enclosed square.

Open space is sometimes treated as a leftover, but it contributes greatly to the quality of urban life.

Hard spaces, such as piazzas, malls, and courtyards provide settings for public activities of all kinds. Soft spaces such as parks, gardens, lawns, and nature preserves provide essential relief from harsh urban conditions and serve as space for recreational activities. These amenities increasingly influence which cities will be perceived as desirable places to live.

**Edges**

Edges are the linear elements not used or considered as paths by the observer. They are the boundaries between two phases, linear breaks in continuity: shores, railroad cuts, edges of development, walls. They are lateral references rather than coordinate axes. Such edges may be barriers, more or less penetrable, which close one region off from another; or they may be seams, lines along which two regions are related and joined together (Photo 7 and 8). These edge elements, although probably not as dominant as Paths, are for many people important organizing features, particularly in the role of holding together generalized areas, as in the outline of a city by water or wall.

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**Photo 6:** A meeting point (node). *(Source: Salah Eldin, Ahmed Mohammed, 2005” Introduction To Urban Design “ Cairo)*

Landmarks

Landmark is a reference point in the area, its physical objects, such as buildings sign, status, and mountains.

Some landmarks are distant ones; it can be seen from many angles and distances, over the tops of smaller elements, and used as radial references (Photo 9, 10 and 11).

Landmark may be located in the center of the city, or at such a distance from the center, such as isolated towers, great hills...etc.

Some landmarks are primarily local, being visible only in restricted localities and from certain approaches. Such like innumerable signs, store fronts, streets, doorknobs, and other urban detail, which fill in the image of most observers.

Photo 7: Soft visual edge (green area). (Source: Salah Eldin, Ahmed Mohammed, 2005“ Introduction To Urban Design “ Cairo)

Photo 8: Strong water edge separated the town; the bridge is a visual edge separating districts. . (Source: Salah Eldin, Ahmed Mohammed, 2005” Introduction To Urban Design “ Cairo)
Photo 9: The international landmark (twin tower of Malaysia). (Source: Salah Eldin, Ahmed Mohammed, 2005 "Introduction To Urban Design" Cairo)

Photo 10: A national landmark (Florida U.S.A). (Source: Salah Eldin, Ahmed Mohammed, 2005 "Introduction To Urban Design" Cairo)

Photo 11: International landmark (Opera Sydney). (Source: Salah Eldin, Ahmed Mohammed, 2005 "Introduction To Urban Design" Cairo)

Case Study: Khartoum (CBD) Area

Beginning of Khartoum

Khartoum city had come through various historical stages, in the first stage it was merely forests. In the second stage Khartoum city had started as a small village when the first populated village emerged in this area, and Sheikh Arbab Alaqaid builds the first mosque for conducting religious rites and learning holy Qur’an. However in the third stage Turks set up a military centre in it. Consequently, the military centre had become a capital for the whole Sudan.

Urban Design Elements In Khartoum During Turkish Tenure

During Turkish tenure, Khartoum town was about one mile south of the Blue Nile (Figure 1). The town had seen growth and had extended to the north and northeast.

![Figure 1: Khartoum during Turkish tenure. (A.M. Ibraheem (1995) History Of Khartoum. Third Edition Dar Eljail Berute. Lebanon.)](image)

Elements of urban design during Turkish tenure represented in the following:

- Residential districts which were being constructed in one form.
- Large architectural masses representing in government buildings which appeared in same harmonious architectural form. As well, there emerged buildings of consulates.
- Public squares and gardens. There was a vast public square in which parties and official celebrations had been conducted.

Urban Design Elements In New Khartoum During The Anglo Egyptian Tenure

During the Anglo Egyptian tenure, Khartoum is divided in to various sectors. The first sector between Kitchener Street, currently known as University Street, and the Blue Nile was specified for government offices and houses of its employers. Then came the commercial sector being situated south of Kitchener street and was stretching west to the grant mosque, east to Victoria street, currently known as palace street, and south to Abbas Basha square currently known as united nation square (Wahat Alkhartoum). Behind such a square was situated the national market, currently known as Arabic market. East of Victoria street was being situated the industrial area for small craft manufactures. Urban design elements in the new Khartoum during the Anglo- Egyptian tenure (Figure 2):

There was two ideas on planning of Khartoum town: First, to link sectors and brought a system of street marching from a square to a square to provide services. Also the offices is gathered to be in one place. Business and treasury sector was situated in one place near the government offices.

The second idea rested on the assumption that Khartoum town would have to physically be a residential town.

**Residential Districts**

Khartoum was divided in to several districts. However the residential districts were divided in to three unequal classes each of which with special specification. Houses of first class should have been built with stone or baked bricks. Those of second class should have got their walls built with stone or baked bricks. Nevertheless, the houses of third class could have been built with mud (Photo 12, 13).

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**Figure 2:** Map of Khartoum during Anglo- Egyptian tenure. (A.M.Ibraheem (1995) History Of Khartoum. Third Edition Dar Eljail Berute. Lebanon.)

**Photo 12:** View of Khartoum east (Third Class District). *(Source: Ministry Of Physical Planning, Khartoum)*
It has been noticed that this fashion of districts building materials being used and the fashion of building gave harmony and coherence to the whole town.

Harmony and taking care of unified architectural appearance could also be seen on the government buildings such as palace, presidency of the government, Gordon memorial college (Photo 16), the post office ...etc. such buildings would have appeared in a unified architectural form characterized by porches and variegations on the fore sides.

Photo 13: View of Khartoum West (Almogran -Third Class District) although the houses built by using mud, it have a sense of harmony and unity. (Source: Ministry Of Physical Planning, Khartoum)

Photo 14: View of Khartoum West District (Almogran). (Source: Ministry Of Physical Planning, Khartoum)
Streets

There was three main streets marching east and west adjacent to the Nile and four main streets which were marching north and south, such streets were forming large squares of land as they intersected, these squares were divided by six streets crossing them east, west, north and south adjacent to the main streets.

The streets gained aesthetic elements represented by siris trees which were brought from Halfa town and grown in four rows on both sides of Kitchener Street between Gordon Memorial College and the principality office. As well, they were grown in the Blue Nile street (Photo 17, Aerial View: Photo 18) and the other streets. Street had been divided into division. In the centre, there was the root of the street which riders were passing by. Such a root was one third of the street which currently turned to become car road. This division of a street was paved with stone. And there were two passageways on both sides of the division each of which was one third of the street. The passageways were prepared for pedestrians.

Behind that we found a row of streets. And if street was so important such a Victoria, there would be two rows of trees on its both sides.

Light perches are also contributing to the components of street. However, oily lanterns were being used, currently replaced by lamps. The following examples are the most important streets during Anglo-Egyptian tenure.

Squares

Squares are one of the main components of Khartoum town during the bilateral tenure. The examples mentioned below are some of the squares during the bilateral tenure:

**Northern Square Of The Palace**

It emerged since Turkish tenure, its aesthetic components were the stairways leading to the river, the Nile Street which passing it, and the machine guns being placed in the middle (Photo 19).
**Photo 19:** Southern square of palace, we observe the aesthetics treatments. *(Source: Ministry Of Physical Planning, Khartoum)*

**Freedom Square**

It was situated west of the palace and north of the ministry of finance and economy, a place of principality during Turkish tenure. Most important component of such a square was the statue of Kitchener riding a huge horse being placed in the southern side (Photo 20). The courtyard was divided by paved aisles the form of the British flag. It was being known as sirdar courtyard, then as Kitchener courtyard and lately turned to become known as freedom courtyard in Abboud tenure.

**Photo 20:** Kitchener Square. *(Source: Ministry Of Physical Planning, Khartoum)*
Urban Design Elements And Analysis Of Existing Situation-Elqaser Street:

Elqaser Street contains in its both sides different and multi-functional buildings, which can be represented in the Buildings concerning health, Educational, and Commercial buildings (Figure 3).

**Figure 3**: Plan illustrate the Elqasser Street and Multipurpose Buildings
We observe that the buildings at the sides of street have different heights which are one to eight floors as a maximum height in this street.

The authors have to draw attention to how these buildings can be distributed with its different heights, because we observe that clearly the absence of urban design process in distributing and limiting the heights of these buildings in this street, the planning was concerned with two dimension only, and there is no a serious thinking of the third dimension and its visual effect up on the aesthetics dimensions of the city.

we observe that the one floor buildings are located at the cross points of Elqasser street with the long streets which take the east-west direction, however, we find that the cross points of the streets can be the best places to locate the distinguished buildings with the important function and aesthetic manipulation to be reference points and land marks, and increase the aesthetic value in the composition of the streets and the city as a whole, we can observe this in the figure 23 which illustrate photos taken from field survey.

We observe obviously the arbitrariness and paradox in manipulating the architectural forms and masses in the sides of street, we clearly observe the absence of a system which can govern the manipulation process which can lead to unity, harmony, and belonging to the unite city. I can discuss some elements of the architectural forms below:

**Openings:** there is a variation in the building openings (windows) we observe the small windows which continue horizontally at some buildings, and whereby, we find the huge windows at other buildings.

Also, we find the entirely solid elevations without any opens due to Elqasser Street. In spite of the opening buildings due to the street in the west and east directions this cannot be as a reason for absence of openings with a certain architectural treatments suitable for the commercial function of such buildings.

More ever, we observed that the nonexistence of any architectural elements which can be shared between these buildings like which we observed in the renaissance and medieval ages, buildings which characterized with the arcades and arches as an architectural elements which in all buildings of that time.

Figure 4 and photos below explain what have been said.

![Figure 4: The random heights of buildings around Elqasser Street.](image_url)
Cladding, Texture, And Color Of Solid Parts: there is variation also in materials used in cladding of elevations. We find some buildings have been cladded with brick, whereby another building have been painted with different colors, and others have been cladded with aluminum and glass panels, and others in ceramics. The multi used of materials in cladding is translate the arbitrariness in treatment of the architectural forms and masses, and absence of law which governing this. Figure 5 and photos below explain different buildings at Elqasser Street:

Due to the variation in materials used in buildings cladding, also, it could be clear the contrast in texture and colors.

We could find buildings which differ in texture and color in the both sides of the street. Hence, we find the hard texture in the buildings which cladded with brick and the soft texture in the buildings which cladded with green and silver aluminum panels, whereas, we find other buildings have been cladded with pre-cast concrete panels and others have been painted in green or other colors.

Figure 6 below explain the paradox and the contrast in colors and textures in the Elqasser street buildings, the matter which affirm what we have said about the arbitrariness of architectural forms and the absence of urban design process laws.

Figure 5: The different types of windows

AL Gamhoria Street

AL Gamhoria Street had been studied from crossing point of it with ELHoria Street in the west up to El mak Nimer Street in the east. We observe that, gamhoria street is one of the streets containing most multistory buildings and are different in manipulation process. Moreover, this street includes the very old buildings with its distinguished arcades and the modern buildings and others which are under construction.

Commerce is the dominant function in all the buildings that are located at the sides of the street, except the parliament building and Al faroog mosque, also, we find some educational buildings at the western end of the street which include Elneilan university and its colleges, with its old distinguished style, also we find the official administrative activities in the eastern part of the street which include the social insurance building, Sudan news agency (SUNA) in addition to the accommodation buildings at the eastern end in both sides of the street.

Building Heights

We observe the differences in the buildings heights without any visual relations between them. Heights are between one floor and twelve floors as a maximum height. Also, we observe the wide spread of one floor buildings at the eastern end of the street beside very high buildings, which can be shown in the following panoramic section (Figure 7).
Figure 7: The plan and panoramic section of al Gamhoria Street, illustrate the height of buildings.

Facade Treatment And Manipulation

The thing that distinguished Al Gamhoria Street is the existence of the old buildings with arcades which had been manipulated in an accepted style. For we find the obvious differences of styles in manipulating the building arcades. The old buildings had arcades and great columns and some of it had been manipulated with arches as show in figure 8 below.

Figure 8: Unsuccessful treatment of architectural forms, we observe the different styles, cladding, and colours, which insure the absence of urban unity and harmony.

Conclusions

Kitchener tenure or the Bilateral Governance period is considered as the actual beginning of Khartoum town.

However, urban features and components of town had clearly. Laws set for house building manifested in unified, harmonious districts of the town.

Planning laws prevailed so that planners of town or executors of plan could find no obstacles facing town planner today. That was because the government power was coming into effect and was characterized by military mood difficult to challenge. As well there were no natural or industrial obstacles to the plan.

The government was taking care of urban design process, which clearly manifested in the decision by the governor general recommending improvement a both Victoria and Gordon Street. The decision explained the details required for improving the street (grass, paved pedestrian passegaways, and growing tress).

After dependence, the formal planning of Khartoum did not discuss the urban design process with its great conception of the building heights and its different manipulations in all the parts of the city, it concentrated on the horizontal planning only and also set the basis for territories exploitation and the nets of general streets, but it did not make any details about the urban design process, except the beautification programme of Mefit which introduced a comprehensive action areas details in the Khartoum capital centre, it proposed concepts and detail drawings for distribution of activities and urban design elements such as land marks, street furniture, hard landscape, open spaces, and town scape details in both two and three dimensions, so the beautification programme is a good example of urban design study done in Khartoum.

Throughout the study of the current situation we can conclude its problems in the following points:

a. The completely absence of the urban design process and its different elements.

b. The obvious contrast in the heights of architectural masses and the non-existence of the references in distributing the height of the buildings.

c. The arbitrariness and poor in manipulations of the building façade and multi-use of building materials in cladding and the multi-color of the architectural masses.

d. The absence of unity between the architectural masses.

e. The absence of manipulations between the buildings and the streets.

f. The state of open spaces in front of the buildings inside the fence.

g. The clear weakness in the composition of the architectural mass itself, for we cannot find any architectural compositions that can draw the attention as a created architectural idea.

h. The abundances of advertisement panels at the buildings elevations, which increase the ugliness of the buildings and the untidiness of the elevations.

i. The absence of street elements such as trees, advertised panels and the panels for height and sometimes it were located in the not right style and uncreated one.

j. The non-existence of laws which govern the urban design process and the absence of an administration which concerned with urban design affairs in the ministry of physical planning and public utilities.

k. The nonexistence of building laws that govern the standard of the architectural masses of the city.

l. Carelessness of cleaning the city, for we see rubbish equipment at main streets of the city e.g.: El gasser and Al gamhoria streets which increase the ugliness of urban sight of the city.

Discussion and Recommendations

The authors discussed the elements of urban design and their aesthetics in the cities. They also discussed urban design in old cities so as to evaluate the current status of Khartoum. After conducting field studies and observations, we arrived at judgment on the causes of inadequate urban design in the city and other problems. Due to these problems, the city has become empty of any aspects of beauty. Such as consideration of urban design elements in terms of unity, harmony and other aesthetic ordering principles.

Therefore, it was necessary to set some recommendations, which I think will aid and help in the urban design process and promotion of Khartoum to be a modern contemporary city.

These recommendations are the result of study of urban design elements through different ages, field study, and observation.

We finally conclude that there is considerable lack of consideration of urban design in Khartoum. This argument supported by the fact that most of the previous studies in this domain did not set fundamentals for the urban design process, except the beautification program for Khartoum central business district, which set by Mefit. This program was very serious study for Khartoum, but unfortunately, it did not implemented. Moreover, the inconsideration of urban design by the authorities made the situation even worse. There is no special department for urban design in the Ministry of urban planning and public utilities, thus it is necessary to set some recommendations. These recommendations are not final solutions to Khartoum’s problems, yet they are attempts, proposals and opinions that may be helpful in the urban design process and may further aid and lead to improving urban design and beautification of the city.

1. The city third dimension and urban design process must be put into consideration during the process of laying down any structure plan for the city. Studies that only focus on the functions of the city must not be presented.

2. Setting programs and proposals on beautification process when lying down or developing the cities structures.
3. Presenting plans, studies and detailed designs for the types of solutions for urban design elements.
4. Setting a detailed plan that shows the stages of expansion, development and urban design of Khartoum’s center.
5. Laws must be set with regard to structure plan. Moreover, laws must be binding for architects (e.g. laws that obligate architects to execute particular forms of building entities, colors...etc.).
6. Architects must follow general policies mentioned in the detailed plan and urban design suggestion.

According to this study, the main cause of the current inadequate urban status in Khartoum city center is the absence of a directorate that is responsible for urban design in Khartoum. Hence, we suggest establishing such a directorate in the Ministry of physical planning. The directorate shall be responsible for subjecting plans and detailed designs, shown in the structure plan.

References
