Deformation of Visual Environment in Kirkuk City

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Abstract— *Recently, Iraq had witnessedhuge development in the field of materials and construction that lead to various types of residential and commercial communities that influence the urban, environmental, social, and economic aspects of the city. The bad situations that Iraqi cities suffer during the last two decades, and due to the absence of an efficient urban planning, and strict regulations that organize cities' land-use according to their master plan, and those that decide the relationship between buildings- spaces and their surroundings as well as the lack of visual organization for the elements and their relationships within the urban façade; all that have led to a visual deformation of the local urban environment.This paper discusses the deformation of the visual environment (townscape)in Kirkuk city as a case study, as it studies the impact of three factors in increasing the visual deformation of the townscape; first, the lack of organization of form's elements and their relationships. Second, the impact of the exaggeration of using elements and materials, and third is the impact of the lack of strict rules and regulations.*

Keywords—Visual Deformation, Townscape, Kirkuk City, Visual Environment, Urban Physical Components, Mass and Void Relationship, Urban Facade.

I. INTRODUCTION

Dominiczak, Zawadzka and Kiera describe the deformation of an urban structure as the distortions that occur to some models of urban structure as well as those that occur to the their urban scenes.[1] According to Venturi, the deformation of city'stownscape and streets resulted from a disorder in the relationships that link its elements;those relationships that link the buildings with each other within the urban scene might be balance, similarity, harmony, or integration [2]; while Sharp has highlighted the impact of social and economic factors on the deformation of the urban scene and the morphology of urban structure. [3] However, it can be considered as a distortion to any scene that Man sees and feels discomfort able towards it; it might be also described as a sort of the absenceof artistic test, or the absence of the beautiful image of all the buildings, streets, or sidewalks that surround us.[4]Radhwan refers also to the negative impact of adjacent various contradicted architectural styles, as well as the overusing of high lights, bright colours and forms in increasing the deformation of visual perspective to contemporary buildings. [5]The visual deformation then occurs due to the lack of the sense of beauty and belonging in the urban scene; that comes as a result of losing the balance among its elements, as well as overusing the acts of addition, change, and mixing many various architectural styles.

II. LITERATURE REVIEW

The literature Review includes two main subjects which are the visual environment and visual deformation:

A. Visual Environment

Visual environment;asdefined by Al-Haidary (2002),is Man's feeling that is resulted from visual perception to the elements that compose the physical and semiotic context. There are a lot of these elements which differs from town to town, region to another, and from a society to another one. [6] While according to MTA (2004), visual environment is the environment that consists of resources which form the motivators that the visual experience depends on; it highlights the importance of the visual environment in defining and understanding the visual changes that are resulted from urban projects. [7] Visual environment consists of three components which are; townscape, landscape, and space syntax. [8] This paper will discuss only the townscape aspect of the visual environment.

Townscape could be defined as whatever appears in the city, seen by eye, perceived by senses, and Man interact with in the urban configuration through the sense of unity, sense of place, and sense of experience within several concepts such as harmony, integration, sensual and visual organization. [8]Tucker finds that the townscape is represented by the spatial structure and visual aspect of the built and green components when they are perceived from an outer space; Tucker also considered the type of living for those who used it. [9]

in 2005, Al-Musawi had defined the elements of the townscape according to Antoniadis, Schulz, and Dunne into two main categories; [10] the first one is the facades' elements which are subdivided into: plaster elements such as columns, and penetrated elements such as windows and doors. [11] The second one is the other elements that create the external urban space which include floorings, street's furniture..etc.

WhileAntoniadis had classified the façade's elements into: walls, doors and windows, vertical elements, horizontal elements, and additional elements; Dunne had classified the elements of the commercial façade into: Wall parapet, marquee or advertising, canopy, and cornice.[10]

In 1961, Cullen had focused on how to have a significant townscape through unity and integration among its elements; and that would be through recognizing the role of the element in influencing:

1- The visual sequence of the townscape elements.
2- The perceptual influence of the place that varies between static and dynamic.
3- Enriching the urban component of the townscape through various treatments.

Cullen had classified the elements of townscape into three main components: the first is the features that include focal points, incident, punctuation, netting, screened vista, closed vista, and skyline; the second is the shifting access which includes deflection, fluctuation, narrowing, grandiose vista, and recession & projection; while the third one is changing ground level as Cullen highlighted the importance of the ground as the unifying and dramatic connecting element for the features and elements of the townscape.[12]

In 1961, Lynch had studied the main indicators of a regular townscape which are:

1- Singularity that enrich the identity of the elements that compose the townscape.
2- Form simplicity to ease the townscape perception and producing schemata.
3- Continuity that ease the cognition of physical complex.
4- Dominance that helps recognizing the parts within the whole.
5- Clarity of joint for the strategic points within the townscape.
6- Directional Differentiation to add suspense.
7- Visual scope that increases vision depth in both physically and semantically.
8- Motion Awareness to assume distance and direction for the recipient.
9- Time series.
10- Names and meanings to insure the identity of the physical configuration. [13]

B. Visual Deformation

In his article "The Visual Deformation in Damascus", Shahin (2011) hasindicated that the main reason for deformation is the disability to apply strict laws; on the contemporary architectural policy, that suit the urban fabric of each zone, and ignoring the fundamental plans that were set to organize this situation. [14] While, Arnhiem (1977) refers to the deformation of the townscape as a result of the overlapping of many systems, like the overlapping between the contemporary system of the townscape and its traditional old system. He showed four waysto deal with the adjacent old and new within the

townscape these are: imitation, harmonic integration, harmonic contrast, and totally ignoring heritage. Arnhiem explains that the deformation of the townscape occurs due to the disconnection among the past, present, and future; he shows the importance of finding harmony among the elements of the townscape that are bonded to each other with relationships that compose the whole townscape in order to improve the harmony and produce a good townscape. [15] Drder (1991) referred to the deformation through using contradicted architectural forms, colors, and building materials, as well as adding to buildings and distorting their appearance, the thing that lead eventually to the general deformation of townscape. [16]Al-Tayash (2005) discussed the causes of visual deformation and refers to neglecting general facilities, misuse of them, poor planning and design in addition to bad behaviors as main causes. He also highlights the role of financial resources in increasing or decreasing the visual deformation in cities, as the developed states with a strong economy could control the townscape with strict rules and laws that their society; which usually be with high social and cultural awareness, follow and highly respect; while in contrary, the states with weak economy, suffer high visual deformation in their cities. [17]During his study of the causes of visual deformation of Tolkarim City, Al-Talal (2009) finds that the element which mostly cause a visual deformation are the places of selling goods, canopies, and kiosks. and that to reach a good solution to the challenge of visual deformation, the municipality of Tolkarim should find good solutions to the car-parking areas, adding instructional signage, Streets' lighting, removing kiosks, putting garbage bins and unifying the advertising signage, as well as maintaining old buildings, determining the type and system for each street, and redesigning the town center. [18]

The previous literature review shows the role of the following indicators in causing the visual deformation of the townscape:

1- Big contradiction in form traits.
2- Social and economic situation of the city.
3- Adjacent contradicted architectural styles.
4- Losing the sense of beauty and belonging to the townscape for the recipients.
5- Weak laws and regulations that are meant to control the urban fabric.
6- Not following the fundamental plans that are meant to organize the urban fabric.
7- The overlapping of styles, especially the overlapping between the new styleand the old traditional style.
8- Making additions and changes to buildings that distort those buildings and then lead to the deformation of the townscape.
9- Neglect and misuse of general facilities.
10- Poor planning and design.

III. COMPONENTS AND ELEMENTS OF TOWNSCAPE

Considering the previous literature review, the study has concluded the main components and elements of the townscape that helps defining and assessing it. These components and elements are clarified by the table below: (Table 1)

Table 1: Townscape:Components and Elements [19]

Traits that contributes creating significant urban identity	Balance
	Harmony
	Integration
	Symmetry
	Unity
	Visual Sequence through masses coherence
	Enriching townscape with various treatment for its elements.
Elements that contributes creating dramatic vista within the townscape	Features: focal points, incident, punctuation, netting, screened vista, closed vista, and skyline.
	Shifting access: deflection, fluctuation, narrowing, grandiose vista, and recession & projection.
	Changing ground level.
	Connection through Mass organization providing visual and dynamic product.
Treatments used to increase the cognition of the townscape	Sense of space through masses organization.
	Connecting masses in a way that achieves orientation, and clear continuity for space.
	Hierarchy in circulationand spatial organization.
	Dominance: size of building, form of building, site situation within the urban space, type of relationship between the building and its built surroundings.
	Similarities among buildings: size and height.
	Complication in treatments and architectural details to increase the cognition and orientation within the townscape.
Connecting relationships that influence the townscape	Height of building.
	Type of streets' and circulation network.
	Building materials.
	Unity in Variety.
	Green belts.
	Street's furniture.
	Change of levels.
Façade's elements	Walls, windows, doors, vertical and horizontal elements.
	Architectural details like canopy and cornice.

IV. CASE STUDY: KIRKUK

Kirkuk is an ancient Iraqi Kurdish city that had witnessed several ancient Mesopotamian civilizations like the Sumerian, Acadian, Babylonian and others. It was first appeared approximately 3000 years ago, and had a strategic location within the old trade routes' network that connected it with the other surrounding important cities.That important location had always attracted strong civilized nations to occupy it and control it. Old Kirkuk was a fortified citadel with 129ft height, and 160ft above the sea level.This artificial hill was composed of the accumulated successive residential layers on that location since the half of the third millennium B.C. The citadel was surrounded by a strong wall with firm four gates. It started as a village then gradually started to grow to become a city. Its original citizens were Kurds,

Turkmens, Arabs, and Suryans. Muslims, Christians, Jews as well as people with other religions lived there together peacefully for long ages. The citadel was well known by its mosques and libraries. During the second half of the 18th century, Kirkuk became the biggest market in the region, and commercial centers were built to the Eastern and Southern Eastern sides of the citadel and that led to having new neighbourhoods there, what made that part of the city an important residential sector during the 19th century.In 1875 a stone bridge was initiated over the Khasa river to link the two parts of the city, then was demolished in 1954 to build another nearby Reinforced cement bridge, but in 2011 the current governorate of Kirkuk had rebuilt that stone bridge again.[21](Fig. 1)

This paper intends to reveal the main causes of the townscape visual deformation in Kirkuk via a questionnaire (Table 2) to 30 Iraqi academics who work in the field of architecture and urban design. The questionnaire includes Al-Askari Neighbourhood (Fig.3), Neighbourhoods near the Citadel (Fig.4), Al-Jumhoria Street (Fig.5), and Baghdad Street (Fig.6).

Table2: Questionnaire [20]

Q1: In your opinion, the absence of organization of which of the followings, might cause the absence of the visual and psychological comfort within the townscape?				
			Yes	No
On individual building level	Elements (Walls, windows, doors, vertical and horizontal elements.)	Harmonious		
		Inharmonious		
		Contradicted		
		Symmetry		
		Asymmetry		
	Relationships among elements	Similarity		
		Variety		
		Unrecognized		
	Façade's articulation	Clear		
		Unclear		
	Colours	Harmonious		
		Inharmonious		
		Contradicted		
	Types of the projections and windows	Similarity		
		Variety		
	Types of Facades	Similarity		
		Complexity		
		Ambiguity		
	Building	Unified		

	Materials	Various		
		Contradicted		

Q2: In your opinion, the absence of which of the followings, might cause confusion inrecognition form traits of the townscape?

			Yes	No
On urban façade level	Elements: (Walls, windows, doors, vertical and horizontal elements.)	Harmonious		
		Inharmonious		
		Contradicted		
		Symmetry		
		Asymmetry		
	Relationsh-ips among elements	Similarity		
		Variety		
		Unrecognized		
	Façade's articulation	Clear		
		Unclear		
	Colours	Harmonious		
		Inharmonious		
	Types of the projections and windows	Contradicted		
		Similarity		
		Variety		
	Types of Facades	Similarity		
		Complexity		
		Ambiguity		
	Building Materials	Unified		

Q3: In your opinion, do the exaggeration, neglect, or over-using of those elements in contributing in deformation of the townscape identity?

		Exaggeration	Neglect, or over-using
On architectural details within the individual facade	Openings		
	Walls		
	Doors		
	Vertical and horizontal elements		
	Other architectural details		
	Skyline		
	Building Materials		
	Colours		
	Type of building organization		
	Size of Building		
	Form of Building		

	Relationship between the building and its built surroundings		
	F.A.R		
	Architectural details that are used in the façade according to the peculiarity of the site.		
	Adjacent of various architectural styles within the same site.		
	Adjacent of old and new within the same site.		
	Green Belts		
Street's Furniture	Signage		
	Lighting		
	Trees		
	Displaying Goods		
	Canopies		
	Kiosks		
	Numeration		
	Features		
	Focal Points		
	Type of streets' and circulation network.		
	Mass and Void ratio		
	Overlapping of activities: commercial, industrial, residential ..etc.		

Q4: Do you think that not committing with the regulations and building conditions when designing facades in losing aesthetic value in townscape?

		Yes	No
Set-back			
Building Form	Walls		
	Openings		
	Doors		
Building Materials			
Colours			
Skyline			
F.A.R			

Architectural Details used in facade			
Adjacent of various architectural styles within the same site.			
Adjacent of old and new within the same site.			
Green Belts			
Street's Furniture	Signage		
	Lighting		

	Trees		
	Displaying Goods		
	Canopies		
	Kiosks		
	Numeration		
	Features		
	Focal Points		
	Type of streets' and circulation network.		
	Mass and Void ratio		
	Overlapping of activities: commercial, industrial, residential..etc.		

Q5: In your opinion, the absence of which of the following connecting relationships, might cause the absence of the townscape identity?			
		Yes	No
Type of streets' and circulation network.			
Height of Building.			
Unity.			
Architectural Details.			
Green Built.			
Street's Furniture.			
Change of levels.			
Balance	Colour		
	Size		
Harmony	Colour		
	Size		
Integration	Colour		
	Size		
Symmetry	Colour		
	Size		

Fig. 1: The Citadel of Kirkuk. [20]

Fig. 2: The Citadel of Kirkuk. [20]

Fig. 3: Kirkuk City- Al-Askari Neighbourhood. [19]

Fig. 4: Kirkuk City- Near the Citadel. [19]

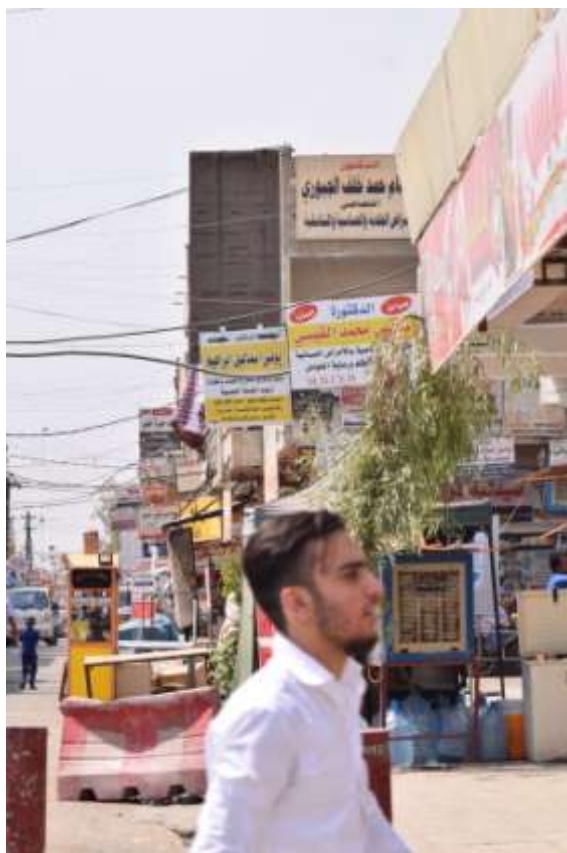Fig. 5: Kirkuk City- Al-Jumhoria Street. [19]

Fig. 6: Kirkuk City- Baghdad Street. [19]

V. CONCLUSIONS

The authors find that the townscape is the final result of the society's ID, culture and civilization, occurs as a result of the art of gathering elements (Masses, buildings, and trees.etc.) all together; where these relations are influenced by social, economic, technological, and/or political factors, and introduce accordingly the formal, perceptual, visual image of the townscape.

The field study and questionnaire highlight the role of the followings on producing the deformation of the citytownscape as they lead gradually to lose the sense of visual and psychological comfort within the townscape:

- The lack of harmony among the vertical and horizontal elements (Columns, roofs, openings, doors and windows.etc.).
- The variety of the relationships among elements.
- The unclear articulation of the facades.
- Unharmonious and contradicted colors of the mass and architectural details.
- Using various types of projections' and openings' forms.
- Over- complicated and ambiguous form offaçades that might lead to lose order in the townscape.
- Using various and contradicted building materials.
- Losing the unity among the types, built masses, form of projections and openings what lead to confusion.
- Exaggeration and extreme neglect in using vertical and horizontal elements(Columns, walls, doors and canopies...etc.).
- Unsuitable proportions and enclosure ratio between the span of open public space and the heights of surrounding buildings.
- The absence of the regulations that could produce an acceptable suitable Skyline for the townscape through controlling the heights of the buildings.
- The absence of a clear architectural identity for the city as a result of the absence of the architectural features that reflect the peculiarity of the site.
- Having the new next to the old regardless of the peculiarity of the site.
- The absence of the green belt within the townscape.
- The extreme and uncontrollable use of signage and other street's furniture.
- Overlapping various activities without limits, regulations and clear definition of the land-use.
- Lack of regulations and building conditions like: building-set-back, building's form, materials, colors, planting trees, and neighboring of various types and styles..etc.

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