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ANALYSIS OF ARCHITECTURAL COMPOSITION OF PUBLIC BUILDINGS IN ANKARA (1923-2014) WITHIN THE CONTEXT OF VISUAL PERCEPTION

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Abstract

Public buildings in Ankara from republic foundation are sampled in terms of visual composition and analyzed at urban and building scale. K.Lynch's analysis methods were used to determine landmark creating success in urban Scale. In building scale, though compositions belong to different periods and styles, the formative approaches of Gestalt, R.Arnheim, H.Sanoff and J.Joedicke's visual perception methods were chosen. Study concludes that symmetry dominate management structures constructed during the first and second national period. Studying foreign architects' constructions in intermediate period, symmetry in some structures is partially impaired and after 1950 understanding changed to make asymmetric and fragmented plan types.

1. INTRODUCTION

Building facades are perceived immediately and are the most important part of architecture which creates connectivity between human with buildings and buildings within city. The facades of architectural spaces in city carry information to human by stylistic characteristics at first; human gets the information by seeing, perceives the building and makes sense about it. An important element of the city is its public buildings which are functionally extrovert, expressing the power of government through the facades by their physical and social situation. In this article, through the history of Turkey's republic, public (governmental) buildings, generally, ministry buildings, located in Ankara, on urban identity, forms, and facades of those in chronological order examined by visual analysis and their historical order, are analyzed according to Gestalt, Rudolf Arnheim, Henry Sanoff, Kevin Lynch and Jürgen Jeodicke principles.

2. VISUAL PERCEPTION AND PERCEPTION PSYCHOLOGY

The world is full of visual images and human perceives them to make sense of surroundings. Seeing, hearing, smelling and touching are the most important feelings for feel the surroundings and interpreting it, but most of the information taken from surrounding is done by sense of seeing. Therefore, informing about site start by seeing and visual qualities gain more importance. Architecture is an artistic current in which the visual qualities are dominant and the architect is obliged to evaluate these visual influences. [1]

Nowadays, architects consciously provide the relationship between people, city and structure through visual perception; therefore the concept of perception is an important issue in the study of foundation and environmental behavior.

2.1. VISUAL PERCEPTIONS

The development of the human visual world begins with visual perception. Impressions about the outside environment are made with the sense of sight. Visual perception is the perception and processing of information from sensory and mental processes [2]. It divides visual perception into biological and psychological processes; from a biologic point of view, the forms of the individual perceive the image

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complexity of events and objects physically, but when viewed from a psychological point of view, the complexity of the image in the individual's perception makes the process of visual perception and emotion about them [3].

2.2. FACADE ELEMENT AS AN ARCHITECTURAL VISUAL PERCEPTION AFFECTING

Facade of the building is the most striking component of it. Facades are the outer shells of the buildings which make a connection with the city. In other words, building's facade is a transition zone between the inside and the outside which form boundaries of the urban space. Facades are the architectural elements where the city user has the most connections with and first communicated visually and sensibly. Even if a person does not enter the building, he can touch it while walking from the front and see it from the distance because outer shells of buildings does not belong just to itself, also to the community and the region of that building. The facade which makes the visual communications is an indicator of semantic values besides the functional relations. The facade, which is a demonstration of construction, communicates with the environment through signs it carries. About the individual structures, users and the features of the city, receive the information by the way of seeing, perceive it and make sense. [4, 5].

2.3. VISUAL PECEPTION ANALYSIS METHODS IN ARCHITECTURE

2.3.1. VISUAL ANALYSIS APPROACH IN URBAN SCALE (KEVIN LYNCH)

Kevin Lynch says in his book of "Visual perception in urban scale" that the public image of each city is formed by gathering the individual images of people and have wholesome relation with individual environmental and can be in cooperation with other people by other cities. The perception of each person is specific to himself, but it is not related to the group's illusions; in different environments it can be compulsive, sometimes entirely inclusive [6]. The perception of urban space can be gathered under five different headings from physical elements (Table 1).

Table 1.*Kevin Lynch analysis principles*

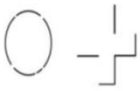
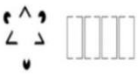
Path	Edge	District	Node	Landmark
				

2.3.2. VISUAL ANALYSIS APPROACHES IN BUILDING SCALE

2.3.2.1. GESTALT PRINCIPLES

In visual perception, there are certain conditions for the mind to be able to understand the many images presented. There are different ways in which these conditions take place; the first one is Gestalt theory. According to Gestalt theory, objects come together in a certain order and are explained by mental schemes formed by the elements of this order in perception [7]. According to the Gestalt theory in the field of visual perception, it consists of all the parts and the individual perceives everything as a whole, but the parts can not reflect one whole, while they are chosen according to the whole property. Basically, the Gestalt principles related to the visual perception are trying to explain the process of grouping items that are arranged separately in the visual environment so as to form visual structures [7]. This explains how the visual elements are combined for the perception of Gestalt theory as follows:

Table 2.*Gestalt analysis principles*

Figure/Ground	perfection	Proximity	Similarity	Closure	Continuity
					

In addition, Gestalt principles affecting architecture are considered as rhythm, symmetry-asymmetry-equilibrium, emphasis on focus point, scale-ratio and unity-completeness.

2.3.2.2. RUDOLF ARNHEIM PRINCIPLES

Gestalt psychology was accepted in the art by Rudolf Arnheim in the 1920s. Arnheim belevies that the concept of perception is fundamental and that perception is a very important function and result in arts development education [8]. Factors affecting visual perception from the view of Arnheim comprises: size, format, form, isolation, density, color, orientation, position and profundity.

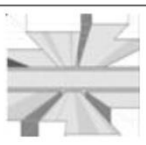
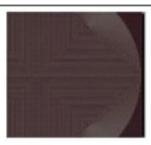
Table 3.*Rudolf Arnheim analysis principles*

Size	Format	Form	Isolation	Density
				
Color	Oryantasiyon	Position	Profundity	
				

2.3.2.3. HENRY SANOFF PRINCIPLES

Perception and interpretation of physical environment is a complex process involving the interaction of human physiology, experiences, developments and cultural values. Understanding the individual visual environment, objects and the relation between objects and environment are based on several physical properties as: texture, size, linearity, aerial, continuity and transition [9].

Table 4.*Henry Sanoff analysis principles*

texture	size	linearity	aerial	continuity	transition
					

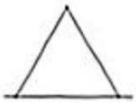
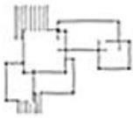
2.3.2.4. ANALYSIS METHODS OF FORM (JÜRGEN JOEDİCKE)

In building design, it is considered that the designer can independently choose the quality of form freely.

The aesthetic effect of the form that forms the product's semantic dimension requires a philosophical interpretation while creating the artistic direction of the building design paradigm. The form defined as "shape", "visual-external significance", "way of putting pieces together to form a whole", in the dictionary, can be interpreted in different ways according to various opinions [10].

2.3.2.5. POLICY PRINCIPLES OF FORM

Table 5. *Jürgen jeodike analysis principles*

Square-Greek democracy	Rectangular-Roman oligarchy	Pyramid-Egypt monarchy	Central plan - Ottoman central administration	Square rectangle composition - federal state	Rectangular-economic fonder
					

2.3.2.6. ECONOMIC COMMENTARY OF FORM (SOCIO- ECONOMIC)

According to this interpretation, both the building forms, the building pattern and the urban issues, are the reflection of the socio-economic dominance in society or of a different production order. With similar interpretations, socio-economic interpretations of trends in architecture history (such as eclecticism and brutalism) are made [10]. Based on J. Jeodicke political analysis and political changes in our country, in 1st and 2nd national periods public buildings compositions were single-piece central and symmetrical after the 1950s, multi parts and asymmetrical construction are determined moreover democracy seemed to be more influenced.

2.4. VISUAL EVALUATION STUDY OF PUBLIC BUILDINGS IN ANKARA

In the contemporary world, public affairs, especially in capital cities, are formed within a holistic program. These buildings, which contribute the silhouette of the capital are the apex point of architectural design and become a symbol of the world. Ankara is the administrative center where it is desired to leave an eastern world and head for a rational world. It is not just to be expected from this city, but to become a capital city that can fulfill all the functions of world understanding and reflect its proper way of life [11].

Table 6. *Evaluation table of public buildings by Kevin Lynch [12].*

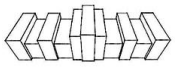
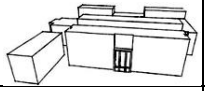
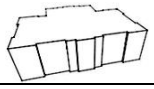
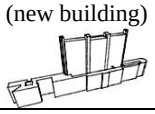
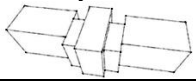
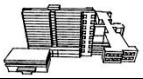
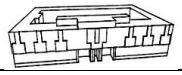
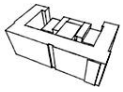
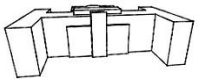
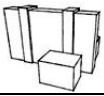
	1. Grand National Assembly (1921), provides landmark feature.		2. Grand National Assembly (1924), provides landmark feature.
	Ministry of Finance (1925), provides landmark feature.		Ministry of Culture and Tourism (1927), provides landmark feature.
	Ministry of Health (1927-29), provides landmark feature.		Ministry of National Defence (1928-31), provides landmark feature.

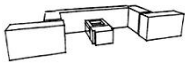
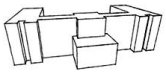
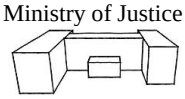
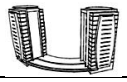
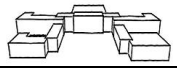
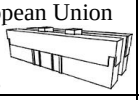
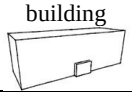
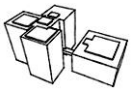
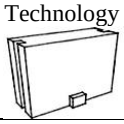
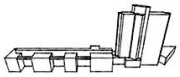
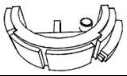
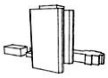
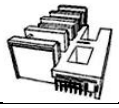
	General Staff (1929-30), provides landmark feature.		Court of Accounts (1930), provides landmark feature.
	Ministry of the Interior (1932-34), provides landmark feature.		Ministry of Public Works and Housing (1933-34), provides landmark feature.
	Prime Ministry (1934-37), provides landmark feature.		Ministry of Justice (1936-39), provides landmark feature.
	3. Grand National Assembly (1938-40), provides landmark feature.		Parliament assistant building (1938), provides landmark feature.
	Ministry of National Education (1969-70), provides landmark feature.		Ministry of Science, Industry and Technology provides landmark feature.
	Ministry of Foreign Affairs (1984-88), provides landmark feature.		Ministry of Economy (1985-93), provides landmark feature.
	Ministry of Labour and Social Security (1992-93), provides landmark feature.		Ministry of Energy and Natural Resources (1993), provides landmark feature.
	Court of Cassation provides landmark feature.		Court of Accounts (new building) provides landmark feature.
	Turkish Land Forces provides landmark feature.		Turkish Naval Forces provides landmark feature.
	Turkish Air Force, provides landmark feature.		Ministry of Culture and Tourism (new building), provides landmark feature.
	Ministry of Forest and Water Management, provides landmark feature.		Ministry of Environment and Urban Planning provides landmark feature.
	Ministry of Justice (new building), is not a landmark.		Ministry of Family and Social Policy, provides landmark feature.

	Ministry of European Union Affairs, is not a landmark.		Ministry of Youth and Sports, provides landmark feature.
	Ministry of Food, Agriculture and Livestock, provides landmark feature.		Ministry of Finance (new building), provides landmark feature.
	Ministry of Customs and Trade, provides landmark feature.		Council of State provides landmark feature.

According to the result of K. Lynch's perception analysis in urban scale and table related to it, because of public buildings position they can easily be perceived by city users and became a landmark.

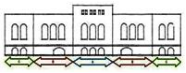
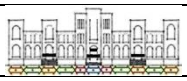
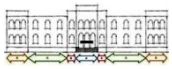
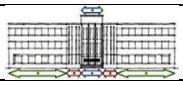
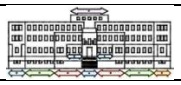
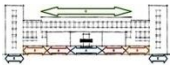
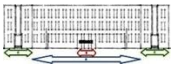
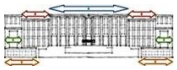
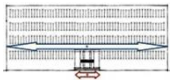
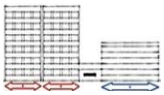
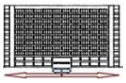
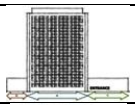
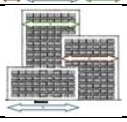
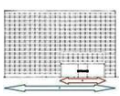
TABLE 7. *Evaluation table of public buildings by Gestalt [12].*

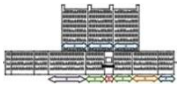
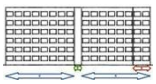
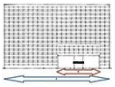
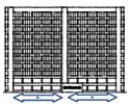
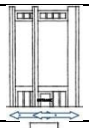
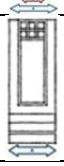
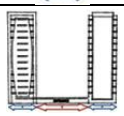
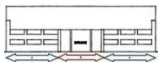
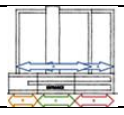
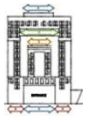
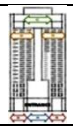
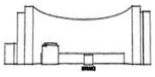
Buildings	Rhythm	Symmetry	Focus point	Size	Unity	Buildings	Rhythm	Symmetry	Focus point	Size	Unity
1. Grand National Assembly 	●	●	●	○	●	Ministry of Labour and Social Security 	●	●	○	●	○
2. Grand National Assembly 	●	●	●	●	●	Ministry of Energy and Natural Resources 	●	●	○	●	●
Ministry of Finance 	●	●	●	●	●	Court of Cassation 	●	●	○	○	●
Ministry of Culture and Tourism 	●	●	●	●	●	Court of Accounts (new building) 	●	●	○	●	●
Ministry of Health 	●	●	●	○	●	Turkish Land Forces 	●	○	○	●	●
Ministry of National Defence 	●	●	●	○	●	Turkish Naval Forces 	●	○	●	○	●
General Staff 	●	●	●	○	●	Turkish Air Force 	●	●	○	●	●
Court of Accounts 	●	●	●	○	●	Ministry of Culture and Tourism (new building) 	●	●	○	○	●

Buildings	Rhythm	Symmetry	Focus point	Size	Unity	Buildings	Rhythm	Symmetry	Focus point	Size	Unity
Ministry of the Interior Affairs 	●	●	●	●	●	Ministry of Forest and Water Management 	●	●	●	●	●
Ministry of Public Works and Housing 	●	●	●	●	●	Ministry of Environment and Urban Planning 	●	●	●	●	●
Prime Ministry 	●	●	○	●	●	Ministry of Justice (new building) 	●	●	●	●	●
Ministry of Justice 	○	○	○	○	●	Ministry of Family and Social Policy 	●	●	●	●	●
3. Grand National Assembly 	●	●	●	●	●	Ministry of European Union Affairs 	●	●	●	○	●
Parliament assistant building 	●	●	○	○	●	Ministry of Youth and Sports 	●	●	○	●	●
Ministry of National Education 	●	○	○	●	●	Ministry of Food, Agriculture and Livestock 	●	●	●	●	●
Ministry of Science, Industry and Technology 	●	●	○	○	●	Ministry of Finance (new building) 	●	●	●	●	●
Ministry of Foreign Affairs 	●	○	○	●	●	Ministry of Customs and Trade 	○	●	○	●	●
Ministry of Economy 	●	○	○	●	●	Council of State 	●	○	○	●	●

At the scale of the building, table by Gestalt principles show that the features such as rhythm, symmetry, and unity are generally seen in compositions.

Table 8. *Evaluation table of public buildings by Rudolf Arnheim [12].*

Buildings	facades	Size	Format	Form	Isolation	Density	Orientation	Position	profundity
1. Grand National Assembly		○	●	○	○	○	○	○	●
2. Grand National Assembly		○	●	●	○	○	○	○	●
Ministry of Finance		●	●	●	○	○	○	○	●
Ministry of Culture and Tourism		○	●	●	○	○	○	○	○
Ministry of Health		●	●	●	○	○	○	○	●
Ministry of National Defence		●	●	●	●	●	●	●	●
General Staff		●	●	●	○	○	○	○	●
Court of Accounts		○	●	●	○	○	○	○	●
Ministry of the Interior Affairs		●	●	●	○	○	○	○	●
Ministry of Public Works and Housing		●	●	●	○	○	○	○	●
Prime Ministry		●	●	●	○	○	○	○	●
Ministry of Justice		●	●	●	○	○	○	○	●
3. Grand National Assembly		●	●	●	○	●	○	○	●
Parliament assistant building		○	●	●	○	○	○	○	●
Ministry of National Education		●	●	●	○	○	○	○	●
Ministry of Science, Industry and Technology		●	●	●	○	○	○	○	●
Ministry of Foreign Affairs		●	●	●	○	○	●	○	●
Ministry of Economy		●	●	●	●	●	●	●	●
Ministry of Labour and Social Security		●	●	●	○	●	○	●	●
Ministry of Energy and Natural Resources		●	●	●	○	○	○	○	●

Buildings	facades	Size	Format	Form	Isolation	Density	Orientation	Position	profundity
Court of Cassation		○	●	●	○	○	○	○	●
Court of Accounts (new building)		●	○	○	○	○	○	○	●
Turkish Land Forces		●	○	●	●	●	●	●	○
Turkish Naval Forces		●	○	●	○	○	○	○	●
Turkish Air Force		●	●	●	○	○	○	○	●
Ministry of Culture and Tourism (new building)		●	●	●	○	○	○	○	●
Ministry of Forest and Water Management		●	●	●	○	○	○	○	●
Ministry of Environment and Urban Planning		●	●	●	○	○	○	○	●
Ministry of Justice (new building)		○	●	●	○	○	○	○	●
Ministry of Family and Social Policy		●	●	●	○	○	○	○	●
Ministry of European Union Affairs		●	●	○	○	○	○	○	●
Ministry of Youth and Sports		●	●	●	○	○	○	○	●
Ministry of Food, Agriculture and Livestock		●	●	○	○	○	○	○	●
Ministry of Finance (new building)		●	●	●	○	○	○	○	●
Ministry of Customs and Trade		●	○	●	○	○	○	○	●
Council of State		●	○	●	○	○	○	○	●

According to the table by Rudolf Arnheim principles, public buildings generally large and have profundity features moreover own easily perceived shapes and forms.

TABLE 9. *Evaluation table of public buildings by Henry Sanoff [12].*

Buildings	Appearance	Texure	Size	Linearity	Aerial	Doku kayması	Continuity	Transition
1. Grand National Assembly		●	○	○	○	●	●	●
2. Grand National Assembly		●	○	○	○	●	●	○
Ministry of Finance		●	●	○	●	●	●	○
Ministry of Culture and Tourism		●	●	○	○	○	○	○
Ministry of Health		●	●	○	○	○	●	○
Ministry of National Defence		●	●	○	○	●	○	○
General Staff		○	●	○	●	○	○	○
Court of Accounts		●	○	○	○	○	●	○
Ministry of the Interior		●	●	●	●	○	●	●
Ministry of Public Works and Housing		●	●	●	●	○	●	○
Prime Ministry		○	○	○	○	○	●	○
Ministry of Justice		○	○	○	●	○	●	○
3. Grand National Assembly		○	●	●	●	○	●	○
Parliament assistant building		○	●	○	●	○	●	○
Ministry of National Education		○	●	○	○	○	○	○
Ministry of Science, Industry and Technology		●	●	○	●	○	●	○

Buildings	Appearance	Texure	Size	Linearity	Aerial	Doku kayması	Continuity	Transition
Ministry of Foreign Affairs		●	●	○	○	○	○	○
Ministry of Economy		○	●	○	●	○	●	○
Ministry of Labour and Social Security		○	●	○	●	○	●	○
Ministry of Energy and Natural Resources		○	●	●	●	○	●	●
Court of Cassation		●	●	○	●	○	●	○
Court of Accounts (new building)		○	●	○	○	●	○	●
Turkish Land Forces		●	●	○	●	○	●	○
Turkish Naval Forces		○	●	●	●	○	●	●
Turkish Air Force		○	●	○	●	○	●	○
Ministry of Culture and Tourism (new building)		○	●	○	●	○	●	○
Ministry of Forest and Water Management		○	●	○	●	○	●	○
Ministry of Environment and Urban Planning		○	●	○	●	○	●	○
Ministry of Justice (new building)		○	○	○	●	○	●	○
Ministry of Family and Social Policy		○	●	○	●	○	●	○
Ministry of European Union Affairs		○	○	○	○	○	●	○
Ministry of Youth and Sports		○	○	○	●	○	●	○
Ministry of Food, Agriculture and Livestock		●	●	○	○	●	○	○
Ministry of Finance (new building)		○	●	○	●	○	○	○

Buildings	Appearance	Texure	Size	Linearity	Aerial	Doku kayması	Continuity	Transition
Ministry of Customs and Trade		●	●	○	○	●	○	○
Council of State		○	●	○	●	○	●	○

With the help of H. Sanoff visual principles and the result of evaluation table, ministries and administration buildings are generally perceived by the influence of texture, scale, and continuity.

3. CONCLUSION AND RECOMMENDATIONS

In this article, it is aimed to analyze the visual composition of public buildings (ministries, general directors) in Ankara from Republic foundation till now. 36 samples selected from Republic era, were analyzed in two scales, urban scale, and building scale. In urban scale, Kevin Lynch analyze methods are used to investigate the position of building in the city for visual perception and whether there is enough space around the building for being a landmark or not. For building scale, the perceptual psychology-geometric approaches of Gestalt, Rudolf Arnheim, Henry Sanoff and Jurgen Jeodicke are used to analyze the building forms and facade composition with terms related materials and decorations. Each analytical approach is tabled separately and evaluated from the photographs and drawings of the buildings.

According to the analysis of urban scale, it can be said that public administration buildings such as ministries and general directors, can easily be perceived by people who use the city because of the buildings positions and constitute landmarks because of these specifications attaches importance by the people who live in Ankara. Based on the analysis of the building scale, symmetry dominates on the geometrical composition of the management buildings structured in the first and second national periods (1.Grand National Assembly, Ministry of Finance, Ministry of Culture and Tourism, Ministry of Health, Ministry of National Defence, General Staff, Ministry of the Interior and Ministry of Public Works and Housing). It is seen that in the buildings by the foreign architectures (Bruno Taut, Ernst Egli and Clemens Holzmeister) in the interim period, are dominated by symmetry but in some others, symmetry partially disrupted (1.Grand National Assembly, 2.Grand National Assembly, Ministry of Finance, Ministry of Culture and Tourism, Ministry of Health, Ministry of National Defence, General Staff, Court of Accounts, Ministry of the Interior, Ministry of Public Works and Housing, Prime Ministry, Ministry of Justice, 3.Grand National Assembly and Parliament assistant building).

Although symmetrical buildings continue from the 1950s, asymmetric and freer structured buildings are seen and based on J. Jeodicke political analysis of the form and political changes in our country, single-piece central and symmetrical buildings were determined (Ministry of Foreign Affairs, Ministry of Energy and Natural Resources, Court of Cassation, Court of Accounts, Turkish Land Forces, Turkish Naval Forces, Turkish Air Force, Ministry of Forest and Water Management, Ministry of Youth and Sports, Ministry of Customs and Trade and Council of State).

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