

## ORIGINAL RESEARCH PAPER

# Recognition of Urban Squares categorization by Using USCCM Matrix

*H. Danesh Pajouh<sup>1</sup>*

*1--Department of Civil, Art and Architecture, Faculty of Urban Planning, Science & Research Branch, Islamic Azad University, Tehran, Iran*

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**ABSTRACT:** A categorization system is an approach, and at the same time, a general process for generating groups of ideas, objects, or concepts that all recognize them, while at the same time differentiating one into a whole. Urban square, as the main and urban space, needs a comprehensive understanding of the categorizing structure. The routine of urban squares classification approaches, as represented by theorists, has a formal or content-oriented construction and rarely has both of these dimensions. Only the stated categories do not really have the comprehensiveness to have a full-fledged methodology, and virtually all the standards that can be extracted by reverse engineering, for square recognition, lead the audience to some degree of ambiguity and complexity. The purpose of this research is to explain the new type of view and the criteria for the cognitive approach of one phenomenon, which can provide a complete categorization, which in this study is called the phenomenological category of the urban square, which is characterized by Urban Square Comprehensive Cognition Matrix that capability Applies to. The type of research is analytic-developing, an extension that is also used to explain the type of product used. With the use of this matrix, one can consider all aspects of the form and content in the square and in some way inject the meaning into its structure. This matrix, on the one hand, takes the criteria of cognition and on the other side covers the urban areas and also, if used for several types of squares, can be used as a means of comparing the quality of urban squares and their ranking. The matrix is an evolving of the criteria mentioned in the research of urban squares researchers, according to which the universality of the USCCM matrix can be confirmed. Finally, by patterning this category, the criteria mentioned in the study for evaluation and analysis of the urban square are also discussed in future studies.

**Keywords:** categorizing, urban square, square cognition, phenomenological categorizing, comprehensive matrix

**RUNNING TITLE:** Urban Square Catagorization

### INTRODUCTION

A categorization system is an approach, and at the same time, a general process for generating groups of ideas, objects, or concepts that will all recognize them and at the same

time differentiate a whole into perception. Classification systems are very useful for defining similarities between non-distinctive elements so that the differences between them can be relatively obscure.

 \*Corresponding Author Email: [H.Danesh@ut.ac.ir](mailto:H.Danesh@ut.ac.ir)  
Tel. +98 9356022383

A number of approaches to categorizing

urban squares presented by the theorists are summarized in this study. In 1959, Paul Zucker identified the square for its explanation and analysis, which makes it possible to apply the analysis. The categorization of Zucker, shown in the following figure, is far more impartial than the ones mentioned in this research, but as an example, it can present many of the urban square concepts.

Like many theorists, Zucker (1959) focused on the historic European squares that were built during the medieval or Renaissance period, which evoked the current character of the city's space over time. He differentiated all the squares based on the constituent elements and the position of the features added to their quality. The enclosed square is the ideal type of square. (Haidelich, 2017)

The nuclear square has a central attribute: the defeated square acts as a frontage to a building, while in some cities, open spaces are connected to a collective square. Other researchers in urban squares have been categorized differently; Jan Ghel and Lars Gemzoe (2000) distinguished between the main square of the city, recreational squares, promenades square, traffic squares and memorial squares, which categorized based on the instrumental functions of the squares. Nigel Coates (2003) squares; squares of ceremonial, churchyard or cathedral, social, residential, courtyard, with parks and shopping streets that focus more on events and events occurring on the square based. Stephen Carr et al (1992) Also, they have categorized the squares based on central, group and commemorative urban squares. researchers like Alexander Janicijevic and Ashihara also have a similar classification system; Alexander Janicijevic (2011), with a psychological look, called psychological and geographical response, adapted from PPS, urban squares into categories: social, ceremonial, religious, traffic, yard, Residential, street, shopping centered and parked, Mathew Carmona (2010) somewhat classifies anti-spaces, dividing urban squares into categories. (Danesh Pajouh and Jeddi Farzaneh, 2018)

These types of categories may be very different, but it can be said that they have the same structure. In general, for a municipality, it is

considered necessary to give a comprehensive classification so that it can consider all aspects of form and content and have some kind of meaning in its structure. This kind of approach can be further achieved in the form of looking at a phenomenon and arrive at a more comprehensive understanding of the phenomenological approach.

### Research Background

It can be said concisely that Content-oriented holders such as Camilio Sitte (1889) have spoken of public squares and categorized according to the location of the city's main buildings in urban space; Paul Zucker (1959) is also one of the most prominent researchers have categorized the squares types into enclosed, recessive, nuclear, group, and irregular square in a structure. Valentin Hadliish (2017) has divided urban squares according to the variety; Hall Square, Living Room, Primary, and Public Space. The other group of researchers also looked at the Form-oriented in the division of the squares; Joseph Stubben (1890) spoke of the traffic squares, modern intersection, and circular polygon, starring Marcus and Francis, by category the main form of this classification is the square eclipse with subspaces, which is a kind of combination of the Street Square, and the axis of the square. It has a knot that has even taken place in the environment. The main difference between this classification is the ecliptic of the square with the spaces of motion, which has some kind of combination of axis and node that has even considered the affordance of the environment. Rob Krier (1979) lists his classification according to the intersection of the street and the square; a central intersection with a vertical angle on one side, a non-centered intersection with a vertical angle in one side, an intersection in a corner with vertical angles and intersection in the form pointing diagonally to various angles, Spiro Kostof (1991) divides the squares into triangular or triangular forms, trapezium, rectangular, L-shape, circular, elliptic, and semicircular in shape according to the geometric basic form. Other thinkers also consider the form and content of the square in its entirety and have presented their classification based on the quality and quantity derived from the square.

But one has to admit that the kind of look of the people mentioned in the square phenomenon does not have the comprehensiveness of a fully-fledged methodology and practically all the reverse engineering methods that are used to identify the square of this type of category have entered a crisis Has been. In order to achieve this, we need to refer to two scholars. One has made the square subject to a standard type, a more successful category, and another has introduced more functional criteria for recognition. [John Lang \(2017\)](#) categorized itself into a kind of form and content of the metropolitan phenomenon in the following ways:

- Based on the type of ownership of 5 kinds
- Based on the target type, 15 kinds
- Based on the type of instrumentation and basic physical properties of the four kinds
- Based on the aesthetic properties of 3 kinds

[Sophia Wolfram \(2015\)](#), based on this kind of look, cites six criteria for recognizing the square, which can be categorized into a distinct one, for which his cognitive criteria are: Time of origins, Base shape, size, functions, Performative potentials and morphological qualities that these criteria can be accepted as desirable as a cognitive system. But due to a general review of all the categories, the type of perspective and the criteria that are used in the cognitive process, we can provide a complete categorization that is presented in this research with the name of the square phenomenological classification, which can be used with the matrix mentioned.

## METHODOLOGY

This research is analytical-developmental and at first, by using library resources (documents) and according to the collection and examination of the concepts and categories of the subject of social node, such as the square and after reviewing and critically reviewing, the category The phenomenological urban squares is based on a matrix of 10 cognitive

criteria, each of which is subdivided according to the criteria. Considering the presentation of a comprehensive urban square recognition matrix as well as an applied approach, all criteria will be applicable to the recognition of any kind of square after reviewing the theoretical foundations in the form of a 10-column matrix.

## LITERATURE REVIEW

### *Urban Square Comprehensive Cognition Matrix*

Given the general concepts presented in theoretical foundations as well as the new classification based on the concept of comprehension of cognition, a matrix can be used as a tool for the recognition of any kind of square. On the one hand, this matrix has cognitive criteria, and on the other hand, it will have metropolitan areas. This matrix can be used as a comparative tool in the square of urban areas when used for several squares. The explanation is that the matrix is an evolutionary matrix of the criteria mentioned in the research by Wolfram, John Lang, and other researchers, according to which the universality of the USSCM matrix can be confirmed. This type of matrix has 10 columns; ten criteria are used to recognize the city square as components;

base shape

In this section, the basic forms that can be considered as some of the squares studied below are divided into six categories by researchers, each represented by a specific symbol (Table 1).

Tab 1: Criteria and Indexes of Base shape in USCCM Matrix

Icon	Shape type	Index
	Rectangle	The square is shaped like a regular rectangle.
	Trapezoid	The square is presented as a symmetric trapezoid.
	Funnel shape	The square is tight and tight and forms an open bowl.
	Rounded shape	The outer lines of the square are curved, elliptical, or circular.
	Stellar shape	The shape of the square is cut off as a symmetrical point in the center with the radial streets of the axis.
	Spatial passage	The square is designed as a direct passage

sizes

In this criterion, the expansion of the area of the square is classified as a factor and is divided into 4 distinct identifiers of the total number of squares considered in most European countries, there are sizeable squares; an area of less than 5,000 square meters, an area ranging

from 5,000 to 15,000 square meters, between 15,000 and 25,000 square meters, and a size of over 25,000 Square meters. In this way, in most cases, the squares are very large or rectangular, or a combination of space and non-geometric shapes. (Wolfrum, 2015) (Table 2)

Tab 2: Criteria and Indexes of Size in USCCM Matrix

Icon	Shape type	Index
	Small	Maximum 5000 square meters
	Medium	From 5,000 square meters to 15,000 square meters
	Large	From 15,000 square meters to 25,000 square meters
	Extra Large	More than 25,000 square meters

Configuration

The configuration criterion in the cognition of the urban square is more indicative of the arrangement of the shaping spaces, and the

presence of regular and irregular shapes in which creates a series of urban spaces creates the shape of a space such as a square. (Lang & Marshall, 2017) (Table 3).

Tab 3: Criteria and Indexes of Configuration in USCCM Matrix

Icon	Shape type	Index
	Official	Regular (classic) configuration
	unofficial	Has an irregular configuration
	Regular	Close to basic geometric shapes
	group	A chain of squares

**Enclosure**

In this criterion, most of which is based on Zucker’s (1959) research, the types of

enclosures taken from elements; the wall, the floor and the skyline can be one of the most important criteria for square recognition. (Table 4)

**Tab 4:** Criteria and Indexes of Enclosure in USCCM Matrix

Icon	Shape type	Index
	Closed	Closed by clear and powerful walls
	Closed around buildings	Closed by a building
	Sunken closed	Inserted below the level of the streets around
	amorphous	Open and with poor walls

**Decoration**

This criterion refers to the design of urban square and notes the elements and qualities that are on the walls, landscape, floors, and

urban furniture. Icons, trees, lanterns, urban furniture, and waterfalls are the elements that create much of the character of the square, both in terms of a place for presentation and a showcase for thinking. (Table 5)

**Tab 5:** Criteria and Indexes of Decoration in USCCM Matrix

Icon	Shape type	Index
	Nuclear and non-nuclear	Has a central element in the square
	Flat	Uniform flooring and objects in between
	Animated	Has small walls, benches or surface differences

**Antiquity**

In this criterion, the factor of history is considered as one of the factors and is about different qualities, form, buildings, architects, sizes and, in all cases, a section called the date and time of the emergence of squares. In this section, the date of the creation of the square is mentioned, and about the squares that have undergone changes over time and for various reasons, the periods of time related to the

redevelopment of designs, destruction caused in events such as wars or the renovations that have taken place in the process of restoration, maintenance and maintenance of the square and important buildings based therein and the time is related to each one. This criterion, as a component of personality categorization, plays an important role in recognizing the urban square. (Table 6)

Tab 6: Criteria and Indexes of Antiquity in USCCM Matrix

Icon	Antiquity type	Index
	Ancient	The present form has been designed in ancient times (generally ancient Rome)
	Medieval	The present form has been designed in ancient times (generally ancient Rome)
	new era	Modern-day projects, dating back to the 16th century, clearly illustrate the idea of a general-oriented design and has been reframed in contemporary authenticity with modern thinking.
	the 19th century	The square is part of the secondary urban text in the industrial construction of the modern age.
	Since the 20th century	The squares, most of which have been designed or redeveloped at this time, are generally formed in the course of urban renewal projects.

Ownership

In this matrix, the ownership criteria fall into general, Quasi-public and semi-public

categories. (Newman, 1972), which is based on a more general structure, five types of it can be cited. (Table 7)

Tab 7: Criteria and Indexes of Ownership in USCCM Matrix

Icon	Ownership type	Index
	Public	Public domain, public access at any time with the default for activity
	Quasi-Public	Private property, public right at any time with the default for activity
	Semi-Public	Public domain, public access at any time with limited activity
	Semi-Private	Public domain, public access at any time with limited activity...
	Private	The owned private property, members' access rights (properties) at any time without the default for activity

Morphological qualities

An analysis of morphology reveals urban designers to local patterns of development and the process of change in context. The main work in place is based on the analysis of how the evolution and evolution of the traditional texture evolved. Morphologists have shown that biological complexes can be studied in terms of several key elements. These key elements are Conzen (1960) in this form: land use, building structures, separation pattern, and communication network. In England, the process of changing the construction of a medieval building with a fence in narrow and

longitudinal parts perpendicular to the straight or curved path is well seen. Because the first part that was constructed in the piece was adjacent to the street, the development of the piece was formed in the block environment. (Conzen, 1960).

Loyer (1988) refers to the development and consolidation of urban fabric in the 18th and 19th centuries in Paris, the process of developing industrial cities in the nineteenth century and the formation of suburbs in the twentieth century in a similar way (Whitehead, 1992). In many new countries of the world, there is no trace of fencing around the segments

of a raster communication network: [Mouden \(1985\)](#) looks at the evolution of the shape of a building block, separation piece, and building patterns in the neighborhood of San Francisco's Alamo Square.

Some buildings, churches, cathedrals, public buildings, etc., will be more durable because of wider investments in material design, construction, and decoration ([Moudon, 1985](#)). These types of buildings may be particularly meaningful for residents and visitors and sometimes symbolize the city. In the absence of control criteria, other buildings will survive if they are to adapt to new needs and changing needs. And that's where the buildings feature variability buildings that last over time generally have different uses or a focus on user experience. For example, a city houses can first be a single-family residential unit, then become an office unit, and eventually become part of a student dormitory. The urban block defines a network of open spaces and is a determining factor for the communication network. In addition to displaying and providing access to a property view, it provides the public with a network of overlapping areas of motion and social domains. (For example, the outer space is the space that embraces the people's economic, social, and cultural exchanges and activities. This social space is considered to be a part of the general realm, which is compatible with the space of the alley, which is a social space. The pedestrian is interwoven with social interaction, while the movement of the cavalry is mere. Most forms of social encounter and interaction when the car stops appears and provides a central point at the destination along the way. These are the main methods of displacement on foot or by a horse. The areas of motion and social spaces Have a significant overlap.

With the development of various ways of moving, areas related to movement and social activities are divided into cavalry spaces and pedestrian movement (social space).

Leon Krier defines four types of urban spaces: three of them are traditional urban spaces. The fourth type of urban space is modernist. (1) Urban blocks are the result of communication

networks (streets and squares). The pattern is categorically typologically. (2) The pattern of streets and squares is the result of block placement. Block shapes are categorized in this mode. (3) The streets and squares, in this case, have a completely formal shape. Public spaces are fully categorized. (4) Buildings, in this case, have official species, but the location of the buildings is completely accidental in space. ([Leon Krier, 1990](#))

Contrary to [Sitte \(1889\)](#) and [Zucker \(1959\)](#) who relied on the aesthetic aspects of spaces, Leon Krier emphasized the geometric foundation of space. He criticized modern urban spaces and preferred traditional spaces and forms and identified four urban space systems. The morphological qualities are in fact a form of mass and space so that this kind of displacement of masses in space can create qualities that can better be the square of the city itself, which is the intersection and the heart of these urban discharges (Table 8). These qualities are related to the shape of the square, which is considered as urban texture considering buildings and other elements of space.

Index	Morphological Quality type	Icon
	Entrance	The square is part of the entrance to the city.
	Frontage	The square is located in front of the dominant building (the dominant element of space), which is considered to be an airplane with an effective spatial cone.
	Expansive space	(According to Camillo Sitte) - The broad square is shaped along its long axis, which represents important buildings affecting the space.
	Deep space	(According to Camillo Sitte) - The deep square of the square is shaped along its long axis, with a building at the end of the axis, which is somehow in the depth of the square.
	Multi-branch pole	Several paths are disconnected in the square, which is a pedestrian and cavalry streamer.
	Square joint	Or the main part of its attachments, in the sense of two or more simultaneous space systems that represent the structure and paths of joining the square.
	Intersection	Two different morphological systems are in opposition to each other in the urban structure that creates an environment.
	Inner city	The opposite buildings, often enclosed, give the interior space, even if they have different designs. This character is often used in part of the square to be used as a general effect.
	The hall	The sense of enclosure and compact proportions formed from a square formed by a regular, often rectangular geometry, has an integrated and unified height from the skyline of opposite buildings.
	Yard (enclosed area)	Originally, the yard is a complex of buildings, and this open space is used as a public square.
	Land (arena)	A set of objects on the surface that created relationships between the two, and the shape and size of the buildings, extending freely in the square.
	Decorative square	The layout and furniture of the city, as well as the type of vegetation used, has been decorated with character.
	Garden	The character of the square is generally formed by vegetation.
	view	Under the exiting and often high-profile position, it creates an overall square of view and a scene of visions that are more in pristine paths.
	Widespread	In relation to the wide floor, the periphery of the buildings in the square seems to be low, which ultimately can be attributed to a large attribute to the square.

Tab 8: Criteria and Indexes of Morphological qualities in USCCM Matrix

#### Function and Performative Potentials

The functional aspect of space consists of two things: how spaces work and how city designers can design better spaces. The use of space in terms of social and visual traditions of

urban design, each with a certain operational perspective. For example, it is stated that it is only during a long march that designers can sense their existence in the real experience of a city environment. (Carmona et al., 2003) Since

spaces make possible and easy operations, the urban design should be accompanied by an awareness of how people use these spaces. Well-designed urban designers generally learn, based on the initial experience, on urban spaces, places, and environments.

Many opinions, such as Jane Jacobs, focusing on the social structure of urban spaces (the life and death of the great American cities, 1961) in the cities of North America or Jan Ghel, taking into account the dimensions of formation and the lives of people in urban spaces, (Living Between Buildings, 1971) in Scandinavia and William H. White, in New York, with regard to the psychological and sociological dimension, as well as concepts such as security and identity (Social Life and Urban Spaces, 1998). These writers include Clare Cooper Marcus and Vendy Sarkissian, focusing on the quality structure of urban spaces that people expect to be building as their users (housing design if people are concerned, 1986) and the public space project (how can I Changing the atmosphere), and guidelines for creating successful public spaces (1999) all rooted in the relationship between functions and space.

lovatt and O'Connor (1995), Zukin (1995) and others have written about spaces that are on the verge of spaces, spaces that lie in the midst

of everyday life outside the ordinary rules of outer space, where cultures Different meet each other and stand in opposition. The discovery of the environment may include participation in show programs and participation in the community, such as participating in lunch concerts, art exhibitions, street exhibitions, festivals, shows, markets, social events and marketing over time and various ceremonies. These show programs may include annual events such as the Edinburgh Festival, the Notting Hill Carnival of London, and the New Orlean's Mardi Gras.

Carr et al. (1992) state that in addition to being meaningful (allowing people to establish strong relationships between their own private living space and the larger space) and being democratic (protecting the rights of all users and making space available to all) groups and providing freedom in practice) Urban spaces must also be responsive, that is, they are designed and managed to meet the needs of users. These spaces should be responsive to five basic needs: comfort, comfort, inactivity, active engagement with the environment, and the ability to explore the environment. Frequently good spaces are more than just a requirement. Therefore, based on these bases, one can derive the criterion of functional capacities from the theoretical framework (Table 9) (Table 10)

Tab 9: Criteria and Indexes of Morphological qualities in USCCM Matrix

Index	Function type	Icon
	Commercial	The square is also a shopping mall for business and pleasure with its surrounding buildings.
	Traffic	The character of the square is subsequently influenced by the passageway.
	Residential	There are significant proportions of buildings in the square, for example, a local area with residential buildings.
	Dramatic	The square has, in its essence or in relation to important buildings, a credible performance.
	Public plans	The general and often cultural functions of the square buildings influence the square and character of the square.

Tab 10: Criteria and Indexes of Morphological qualities in USCCM Matrix

Index	Performative Potential type	Icon
	Strolling	Without the need to have a destination, strollers walk around the square without aiming alone.
	Outdoor	Sidewalks are generally on the seafront (Corso), the shape of the square causes upward and downward mobility, which is usually adjacent to the water.
	Scene	The square is designed to be viewed and seen in accordance with the architectural design.
	Ceremonial	In accordance with the layout and furniture of the city, the square is intended to provide ceremonial performance.
	Enter	As a room, one finds a sense of enthusiasm in the person's square. As inputs and outputs of square reactions are considered.
	Meeting	Meeting with acquaintances, roaming for some time, and then leaving space, is indeed a frequent occurrence in the square.
	Convene	The platform has a sense of political and social activity, rallies, and rallies, and offers a special concept of this.
	Empty	Often, the square lacks any stimuli of activity or a particular behavior.

These capacities are related to the square of excellence associated with the types of activities and behaviors that are most evident in the square structure architecture.

### CONCLUSION

The category of these researchers, in the same evolution in the category of their views and similarities and contradictions with each other, in some cases, also suffers from a defect. So that the weaknesses of a type of category are in fact the point of strength of another category. Due to the difference in the approach of the researchers and their corridors as well as the interpretation of some, the audience who intends to study these categories has no choice but to use the absolute use of a categorized system for the city square. It can be conceded briefly that the categories presented above form a cross-domain that has already been proposed by Norberg Schultz on phenomenology in architecture, and can be categorized as a form or form of view. However, the type of view of the individuals mentioned in the square phenomenon does not

have the comprehensiveness necessary for a complete cognitive approach, and practically all extractable criteria have a relative absolute deficiency for recognizing the urban area of these types of categories.

In addition to introducing the epistemic typology of the urban square as a comprehensive cognitive classification, in evolution, for each one, a kind of method and evaluation measures were proposed for each type that introduced the categorization and recognition of the structural square comprehensively and introduced an introduction to the design of more practical methods for assessing urban squares as in the evaluation methods such as HSE and AGE and Star Graph, there is a diverse application of the evaluation method, it is possible to study this important issue in the upcoming research and to provide a research to explain a general structure.

## REFERENCES

- Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2003), Public place and urban space. Architectural Press, Oxford, London
- Conzen, M.R.G. (1960), "Alnwick, Northumberland: a study in town plan analysis", Institute of British Geographers Publication 27, London, George Philip
- Danesh Pajouh, Hamid. Jeddi, Farzaneh. Omid. (2018), Urban squares: from literature, recognition to evaluation, Azarakhsh Publication, Tehran, Iran
- Ghel, Jan, (2011), Life between Buildings, Using public spaces, Washington, Covelo-London, Island Press
- Hadelich, Valentin. (2017), Quality by Design: The Venustas of urban squares, Objectifying cause and effect in the design and success of urban squares, University of Bauhaus Press, Weimar.
- Jacobs, Jane. (1961), The Death and Life of Great American Cities. New York: Random House.
- Lang, Jon. Marshal, Nancy. (2017), Urban Squares as Places, Links and Displays, Successes and Failures, Routledge, New York, USA
- Leon, Krier. (1992), Architecture and Urban Design 1967-1992, Richard Economakis, editor, Academy Publications, London.
- Marcus, Clare & Francis, Carolyn (1998), People Places, Design Guidelines for Urban Open Space: Second Edition. John Wiley and Sons, Inc. New York
- Moudon, Anne Vernez. (1985). Built for Change: Neighborhoods Architecture in San Francisco, The MIT Press,
- Newman, Oscar. (1972), Creating Defensible Space: crime prevention through urban design, New York: Macmillan, USA
- Whitehead, T 1992): Expressions of masculinity in a Jamaican sugar town: mplications for family planning programs, in Whitehead T and Reid B(eds.): Gender Constructs and Social Issues. Chicago: University of Illinois Press
- Whitey, H. William, (2001), The Social Life of Small Urban Spaces, Conservation Foundation, Washington DC. Published by Project for Public Spaces.
- Wolfrum, Sophie. (2015), Squares, Urban Spaces in Europe, Birkhäuser Verlag GmbH, Basel, Switzerland