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COGNITION OF URBAN PLACES: TRANSLATING THROUGH DIAGRAMS

A B S T R A C T

The continuous theoretical development of the research area of spatial cognition is not accompanied by the practical application of the set postulates. Research challenge is recognised within the development of an appropriate way to translate the conclusions and relations of spatial cognition into a clear graphic system that enables better communication and cooperation of related disciplines. The hypothesis of the paper is that the theoretical conclusions of the analysed concept can be translated into space through visual reinterpretation – graphic processing used as a tool for review and translation. The research is conducted in two parts - the first analyses the historical development of theoretical thought about the relationship of spatial cognition and diagrams in architecture, while the second segment explores contemporary theoretical standpoints through six characteristics of schematic reasoning and validates them through relevant case study. This research aims to examine and define the process of conceptualisation of diagrams in the context of assessing cognitive variables of space. The diagram develops from a simplified graphic indication of space into an active participant in the modification of the urban environment. Research outcome is the definition of four schematisation principles, which describe concise cognitive potentials for illustrating the impact of space on the user.

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INTRODUCTION

Research Motivation

Intangible elements of urban surroundings have a great impact on the overall experience of space, but are difficult to precisely define and utilise due to the subjectivity of spatial experience and the complexity of physical processes that define them.[1] Schematisation of space allows the author to include various exploratory categories, such as space, time, object, senses or materiality in one spatial discourse, making it a quality tool for critically (re-)examining space. Representing urban environment through schematisation visually defines sets of transformable relations between built structure, observed context and the user. The focus of this paper is not on presenting the initial research problem and the end goal, but on illustrating the process through which specific patterns of analysis are formed in order to identify the driving potential of the diagramme. The premise of the research is defined through examining the instrumentalisation of diagrams in architecture in order to recognise specific conditions in the abstraction of the urban territory. Diagrammatic representation of space emphasises architecture as a transdisciplinary field, because it adopts knowledge and methods of related disciplines into its own research methodology. Diagram expands from a simplified scheme of space into a research hypothesis – trigger of urban context transformation.

The Scope Of The Research

The analysis focuses on understanding diagrammes as a generator of spatial knowledge within the field of spatial cognition. The research within this paper is based on the topic of schematic reasoning, i.e., understanding diagrams as a mediator between theoretical conclusions in the field of spatial cognition and architecture design praxeology. While visual representation through diagrams mediates data and knowledge, diagrammatic reasoning uses them as a tool of direct thought manipulation, guidance, hierarchy and means of interference.[2]

The analysis is conducted in two parts: the first presents a historical overview of the use of diagrams in spatial analysis, with an emphasis on its' instrumentalisation, while the second segment is based on contemporary use of diagrams in spatial research observed through aspects of schematic reasoning. In order to test the theoretical conclusions of spatial cognition in a real environment, the second part of the paper will focus on a case study conducted through diagram as a primary tool. The topic of the case study will

analyse the street front as the first perceptual contact of users with space in a dense urban context. Through the case study, micro-ambiences that participate in the observer's perceptive experience are singled out and processed based on the recognised building elements of space perception, thus opening a polygon for further context research.

Research Design

Relevant aspects of schematic reasoning are based on the work of Sybille Krämer and the author's definition of six basic aspects of schematic reasoning that shape the relationship between urban space and the author of the diagram. The aim of the research is to recognise the patterns of spatial conceptualisation process, when approaching the problem with the diagram as a primary aid in reasoning. Assuming that diagrams play a key role in illustrating theoretical conclusions, schematisation is seen in this paper as a tool for visualising relations and theoretical knowledge and translating them into the urban environment. The outcome of the research is to define specific directions and recommendations to the author of the diagram in aiding the transfer of theoretical conclusions of spatial cognition into real space. The set hypotheses will be tested through a case study of Kosančićev Venac, more precisely its street front - silhouettes observed from the river. The area was chosen because it represents a complex environment – layered heritage, form and ambient. Moreover, it participates significantly in forming a recognisable urban silhouette of the capital.

1. THEORETICAL FRAMEWORK: SCHEMATISATION OF SPACE

Visual interpretation of environment experience allows us a clearer understanding of the observed form or spatial state. The diagram defines sets of discontinuous relationships that are an indication of spatial potentials that can be activated.[3] It can be concluded that the interpretation of space through a diagrammatic environment representation focuses on the topics of continuity and interaction. The methodology of environment schematisation strives to achieve a better relationship between users and its surroundings and has the potential to transform architectural practice and the way we think and interpret the urban environment. The initial research focus on the topic of attention and spatial cognition is attributed to Cartesian learning, which emphasises that the user's spatial knowledge is based on the purity and clarity of the perceived stimuli.[4]

Defining the schematisation of space and diagrams as tools for interpreting the relationship between users and space was established in the 1920s within the framework of Gestalt theory.[5] The key figures in defining the Gestalt school and

theoretical standpoints are Kurt Koffka, Max Wertheimer and Wolfgang Köhler.[6] The theory of visual interpretation of the environment is defined as an attempt to recognise clear patterns within the set of unorganised stimuli received from the environment that build the user's ability to acquire and understand a meaningful perception of urban conditions.[7] The role of architecture within the presented theory is recognised through understanding science as a product that seeks to improve the relationship of users with the environment. Gestalt school students, such as Christian Norberg-Schulz, point out that the relationship between theory and practice in architectural research needs to be improved in order to understand the relativity of user-space relationship.[8]

The Gestalt theory had a strong influence on the discussion of the visual interpretation of space in the 1960s.[9] Christian Norberg-Schultz officially establishes the term schematisation of space, defining it as a way in which the user perceives and interprets the environment, as well as constructs a mental image of the urban structure.[10] Schematisation of the environment, i.e., diagrammatic representation of recognised spatial determinants is defined as an interdisciplinary phenomenon relying, apart from architecture, predominantly on semiology and psychology. The Norwegian architect points out that research through diagrams helps achieve a clearer understanding of the concept of architectural totality from the construction, scale, detail or context point of view.[11]

A new perspective in the interpretation of spatial analysis develops during the 1970s and introduces phenomenology to architecture and related disciplines.[12] Norberg-Schulz announces a turning point in the way we interpret visual perception, defining it as a concretisation of the patterns and spatial interrelationships we observe from the environment, making them an integral part of the observer's everyday life.[13] Furthermore, the phenomenological perspective of presenting the relationship between users and space is also introduced into geographical analyses of the environment. Geographer Edward Relph defines the uniqueness of the environment as a persistent unambiguity and identity that allows one space to be different from others.[14] Relph emphasises the importance of spatial identity through the interpretation of the environmental uniqueness that allows the user to distinguish one territory from another. In his theory of spatial identity, established in 1976, he dissects the phenomenon into

(1) the physical environment,
(2) activities, ambiences, and events, and
(3) individual and collective meanings created through experience and intention.[15]

Contriving an idea of space in the domain of geographical research is important because it emphasises the relevance of studying the unique notion of space, as well as the physical manifestations that dictate that impression.

Literature overview concludes that schematisation as a tool abstracts space, representing the urban environment through its key characteristics. In addition to Relph's research, conceptual thinking about space through its building factors from the aspect of the experience of space is predominantly represented in architectural research. Concepts that abstract the environment in various ways enable its schematisation and pattern forming as a way to use diagrams in architectural research of spatial cognition. Kevin Lynch's theory of spatial identity defines a unique image of the city through five basic elements of space:

(1) path,
(2) edge,
(3) district,
(4) node, and
(5) landmark.[16]

Edward Hall defines cultural space through

(a) fixed elements of space - boundaries and barriers,
(b) semi-fixed elements - programme settings and events within space, and
(c) informal space - cultural patterns.[17]

Gordon Cullen in his book Townscape describes the foundation of space perception as

(1) optics - the way we see the environment,
(2) space – our relationship to the environment, and
(3) content - the 'fabric of cities': colour, texture, scale, style, character, personality, and uniqueness.[18]

The presented architectural theories originated from 1960 to 1970s and illustrate the need for a discussion of the experience of space and the potential for implementing the knowledge of spatial cognition in architectural discourse. Defining the building elements of spatial experience opens the possibility for its diagrammatic presentation with the aim of translating theoretical conclusions into spatial plan.

Researchers that shape the theoretical discourse of the 21st century continue the work of their predecessors, focusing on the formal illustration of intangible variables of space. Contemporary research paths emphasise the driving potential of space schematisation, believing that the definition of graphism as static completely limits its catalytic character. Architect Sean Lally presents, interprets and produces the atmosphere through recognising, controlling and directing atmospheric spatial qualities. As one of the basic limitations of the progress of modern thought on the practice of translating the intangible into space, he cites the use of digital tools which are widely applied to optimise and improve the shape of the object without regard to other spatial elements; advances in the visualisation and simulation of atmosphere, energy, heat, are usually reduced exclusively to design optimisation.[19] Lally points out that these spatial variables should not be neglected, but used as catalysts for spatial change.

Architect Marc Schoonderbeek examines the potential for the application of drawing techniques, such as diagrams, sketches, and maps in architecture. He believes that the schematisation of space is no longer considered as a tool for documentation (i.e., an indicator of development), but becomes an instigator of future action (i.e., an initiator of development).[20] Schoonderbeek points out that architectural design processes would benefit greatly from breaking down the cultivated mysteries of our surroundings into basic elements that are understood as an activation of the drawing, making it easier to achieve this demystification.[21]

1.1. Exploring Diagramme As A Contemporary Architecture Tool

Contemporary theoretical foundation that explores the transformative potential of diagrams in architectural discourse is recognised in the work of architects Peter Eisenman and Stan Allen. Their work is significant because it uses the diagram as an aid in reasoning. Diagrammatic reasoning involves the use of diagrammatic representations to assist information processing; distinguishing internal use of a diagram (visual imagery) and external use of a diagram (diagram drawing as an aid to reasoning).[22] Architect Eisenman defines the diagram as a tool through two modalities:

> (a) the diagram as an analytical tool with the aim of presenting the architectural work through new types of observations and
> (b) the diagram as a generative tool participating in the creation process and a catalyst for defining architectural intervention.[23]

Generative diagrams encourage the author to look at graphical information and complex processes through problem abstraction. The role of diagrams in the creative process of architectural intervention is to deviate from the obvious solution. If we look at the diagram as a tool in the presented context, it can be concluded that the role of the diagram is to interpret and improve the established and limiting design patterns. Eisenman points out that the generative potential of the diagram is also reflected in the ability to 'separate shape from function, form from meaning, and architect from process.'[24]

Similarities with the theoretical basis of Eisenman can be recognised in the research work of Stan Allen. Allen additionally affirms the diagram as a tool for interpreting and defining architectural work, emphasising that its potential is in the possibility of abstracting author's spatial reasoning. He distances the diagram from spatial schemes and graphics, but underscores the catalytic role of potential formal configurations.[25] Allen points out that although a diagram can serve a structural or programmatic purpose, its primary role is recognised in overcoming organisational problems.[26] He defines the instrumentalisation of diagrams in the context of architectural research as a programmatic disposition in space that is deprived of the established dilemmas of the relationship between form and function and form and content.

2. DIAGRAM INSTRUMENTALISATION

Allen's work has contributed to the development of critical thought on the topic of diagrams as a research instrument in the second half of 20th century. The author points out that the operational use of diagrams does not represent an illustration of geometry or form, but becomes a mediator between idea and realisation.[27] Diagram defined in this way examines the essence and potential for further interpretation of the initial idea into material and geometry. The focus of the analysis through the diagram is on the process of conceiving and abstracting the spatial intervention, not on the final product.

The process of thinking through diagrams represents a link between abstraction and the concrete, i.e., theory and practice. The interaction between points, line and shape defined through schematisation on a two-dimensional surface serves both as a medium for representation and as a tool for exploring theoretical structures created by graphical or mental operations.[28]

2.1. The Basic Thesis Of Diagrammatic Cognition

Researching diagrams as a tool for a better understanding of space from the aspect of spatial cognition interprets them not only as a set of symbols, but a unique visual language system with its own spatial logic. Certain aspects of the drawing can be described orally, but by no means fully understood without visual conceptualisation. Through theorising of diagrams with the purpose of scientific knowledge, Sybille Krämer's classification clearly shows how diagrams form the semiotic basis of human cognition.[29] Krämer defines six characteristics of diagrammatic cognition, conceptualisation and inference, on which the methods and principles of research through drawing are based (Table 1, p. 206).[30]

3. REFLECTION ON DIAGRAMMATIC REASONING: A CASE STUDY

The presented characteristics of schematic reasoning define the way in which diagrams are used as a tool in interpreting and analysing urban structure. As the focus of this paper is on observing diagrammatic reasoning as a process that translates theoretical conclusions of spatial cognition into practice, this chapter will present a case study with a focus on validating the contribution of diagrams in implementing spatial cognition conclusions in the design process.

Kosančićev Venac is recognized as a spatial, cultural and historical entity of the old city centre, which largely participates in the detection of the unique city silhouette through its prominent physical and cultural position in the heart of Belgrade. Viewed in this way, the Kosančićev Venac's urban ensemble participates in the formation of a modern identity through the gathering of the multi-layered character of the environment into a single urban zone.

Criteria for the analysis of the quality of perceptual experience will be defined through the translation of theoretical conclusions of spatial cognition into appropriate geomorphological, functional, ambient and formal values. The basic parameter in the interpretation of the experience of space is defined through examinations of the intensity of sensory experience when perceiving the characteristics of the environment. In accordance with the previously defined, the examination of objective characteristics of perception can be performed by analysing:

(1) the volume of objects defined by influencing the perceptual sequence of perception;
(2) the distance of perception through the formation of specific relationships of observed elements; and
(3) function of objects – factor that affects the overall appearance and expected urban composition.

The case study examines the assumption that our perception of space in the urban environment is based on a sensory encounter with the boundary of perception - the street front of the built structure. By placing the facade of the building as an object of research, it leads to the recognition of physical manifestations of the intangible elements of our impression of space. Abstracting the street front through a diagram leads to the recognition of impalpable and physical environment within a common research apparatus. By objectifying the process of perception within tangible spatial characteristics, it can lead to the translation of theoretical conclusions of spatial cognition into the physical environment. With focusing on three physical characteristics of space that represent real interpretations of intangible sensory experience –volume, distance, and programme, we can form a unique two-dimensional drawing hierarchy that focuses the diagrammatic analysis on set task.

Examining the street front through the three previously defined parameters of perception allows us to clearly map the existing environment with a focus on its sensory characteristics (Figure 2, p. 207). The analysis of space with the focus on the perceptive character of the physical environment translates the intangible into objective and proportionate spatial categories. Investigating the hypothesis within the heterogeneous context of the capital opens the possibility for further application of the formed research model in different contexts. In the graphic overlap of the intangible, certain zones stand out - micro-ambiences that are subject to further interpretation and analysis. Defined micro-environments are: (a) dominant zone - spaces of prominent spatial, programme and communication values presented through a line as a graphic expression; (b) activity zone - cultural-historical units that build layers of the observed context, visually represented through overlapping surfaces and textures; and (c) pauses - spaces without significant spatial or programme values represented through voids in the street front.

Next chapters will focus on decomposing the final drawing into key stages of the mental and drawing process in order to illustrate the path from theory to practical manifestation in space.

3.1. Forming Spatial Concepts Through Two-Dimensionality

Perception of two-dimensional shapes and symbols conditioned through a clear graphic expression could be used as the basis for interpreting the urban environment. Rudolf Arnheim argues that in the perception of form lies the beginning of spatial concept definition.[31] Diagrams that strive to adequately represent the cognitive aspect of spatial comprehension focus on sensation, perception, and experience. The presentation of these qualities through visual language is not only based on the scope of the presented intervention, but also on the effect or impression that analysed study should achieve on the user of the space.

The first step in the graphical interpretation of the visually perceived is to translate the spatial scope into a two-dimensional representation. At this stage, information from the environment is already being filtered, but no selection is made in relation to the thematisation of the diagram itself. Within the analysed case study, the two-dimensional representation includes a drawing of the urban front - the visual boundaries of the Kosančićev Venac perception.

3.2. Directionality: Urban Continuity

The representative character of diagram is oriented towards the topology of drawing and enables orientation; thus it is part of the epistemic drawing function.[32] Directionality in the process of forming diagrams implies the selection of relevant spatial aspects in relation to the set research topic. It is very important to establish an adequate hierarchy of research criteria, which will be transferred to the drawing hierarchy – separating the important from the insignificant.

The case study was themed in accordance with the set research criteria:

(1) volume,
(2) distance, and
(3) programme.

The manifestation of these categories in the real environment is graphically presented through volumetric analysis of the built structure, graphic analysis of the city silhouette, and programme analysis of set location (Figure 3, p. 207).[33]

3.3. Graphism: Visual (Con)Sequence

The process of defining diagrams and interpreting the perceptual process of the user has a clear graphical (con)sequence, which explores several variables in order to define the optimal final product. Empirical differences between real spatial distances, complexity of objects and their conditional relationships are not significant, as they are reinterpreted in the graphical and mental process of diagram formation. After setting a clear direction for graphic analysis, the next step is to present the diagram in a way that adequately illustrates set criteria. Graphism implies finding a sufficient visual language that unequivocally indicates the set research topic. The analysis of Kosančićev Venac was defined through two types of graphic expression, combining the criteria of volume and distance into one category due to the similarity of the elements of analysis established in the previous step (Figures 4 and 5, p. 208).

3.4. Diagram As Spatial Syntax

The syntactic nature of the diagram is reflected in its ability to convey a message and communicate clearly with the observer. The choice of an adequate visual language for presenting the analysis greatly influences the way in which it is perceived. Graphic inscriptions are also often part of diagrammatic thinking - any narrative located in a limited area can carry the characteristics of diagrammatic thinking. The overall syntactic nature of the diagram is reflected in its ability to turn words into a visual language that unambiguously communicates with the interlocutor (Figure 6, p. 209). This step in the process of conceptualising the diagram allows us to critically observe the environment through debate and exchange of opinions on a graphic polygon that is clear and usable to all.

During the case study, analysis criteria were formed based on the previously observed building elements of space perception. These criteria find their analogies in the physical environment and thus become tangible elements of spatial analysis. Although the syntactic nature of the diagram is closely related to graphism and requires comprehensive readability and comprehensibility, it was necessary to categorise theoretical conclusions in order to clearly direct the other points of the diagrammatic process.

3.5. Referentiality

Diagrams are not self-referential, but always touch on certain elements from the environment - context, object, event, and concept. The analysis touches on the

set assignment or given spatial or theoretical framework and largely participates in the formation of the diagram topic - the research task. Reference is important because it defines a well-founded theme of analysis through schematisation. In addition, it helps form a research hierarchy by filtering key and relevant research parameters. The reference of the case study is reflected in the first part of the paper - a historical and theoretical review of the relationship between the theory and practice of spatial cognition in architecture. Through the graphic analysis of the selected space, the set hypothesis is tested in a real environment, creating a basis for further research and verification.

3.6. Operability

Diagrams have a specific function, whether it is practical, theoretical or ideological. They do not objectively illustrate a given object or process, but present it in a way that allows for its additional interpretation. The diagram can be operationally related to aspects that are outside its current field of interest and thus cover a wide range of research topics. Therefore, diagrams can carry different degrees of abstraction, scale, and detail.

The final diagram in the process - the silhouette of Kosančićev Venac is graphically interpreted with the focus on volumetric analysis, distance between spatial elements and programme disposition (Figure 7, p. 209). The diagram is operational for further research because it allows the author to critically evaluate the existing space with reference to the historical layers of cultural heritage. Presenting the past and present through a graphical representation makes the diagram operational for future interventions based on the theory applied in the physical environment.

CONCLUDING REMARKS: SCHEMATIZATION PRINCIPLES

Visual tools of modern spatial research must be transformed in line with new paradigms. Despite the rapid development of the theory of spatial schematisation from the 1960s to the present, the diagram as a tool experienced a developmental delay conditioned, among other things, by the development and improvement of technological resources that have further expanded the scientific field with new theoretical questions. Furthermore, the task of structuring uniform theoretical questions in relation to the referenced research problem became more difficult. Schemes, diagrams and maps have to some extent been transformed into graphisms of infinite possibilities of representation, which deviate from the

initial goal.[34] The outcome of the research in this paper are key principles and recommendations, derived from the simultaneous analysis of theoretical foundations and practical use of diagrams with the aim of defining cognitive potentials and the impact of space on the user.

> (1) Schematisation of the atmosphere through two-dimensional diagrams enables space, built structure, context and atmosphere to be viewed equally within a single spatial narrative;
> (2) The diagram represents the beginning of concept formation;
> (3) The diagram as a tool enables visual consistency of the observed information that is then available for further interpretation;
> (4) Diagram as a tool in architecture allows us to synthesise the past, present and future. The graphic representation of the existing context represents all the layers of the past frozen in the contemporary moment. This schematisation of space opens the possibility for critical re-examination and discussion, after which we create a vision for future intervention and interpretation. Static representations of space that build the various phases of diagrammatic thinking become only segments of the dynamic tool that makes up the diagram.

These key principles and recommendations represent the basis of formalising spatial experience in architecture. Further applicability of these postulates depends on overcoming three identified research limitations: imprecision, subjectivity, and the problem of generality. The process of articulating multi-dimensional elements into a two-dimensional plane carries the potential for inaccuracy. Future utility of the presented process must also examine the influence of subjectivity on the relationship between a diagram's creator and diagram's user – the diagram has to be the objective mediator. The generality problem is reflected in the amount of information that can be examined within the diagram; it is an advantage, but also a limitation through the possibility of overly simplifying the processed variables, thus creating a general image of space.

Future research trajectories will focus on testing and examining the application of cognition in architecture in order to confirm the relevance and applicability of this method, with a focus on design praxeology. The potential of diagrams as a tool is reflected in the ability to illustrate different spatial and functional information in an abstract and structural way. The obtained material can thus be interpreted, redefined, mapped and coded in order to be instrumentalised in the further work process. The process of instrumentalisation represents a qualitative

and visual manipulation of graphically illustrated information in search of a new formal input. An overview of the development and complexity of research through a diagram in the last 30 years illustrates its transformation from a still image of the environment into a driving research tool that is recognised as a catalyst for spatial interventions.

NOTES

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SPOZNAVANJE URBANIH MESTA: PREVOĐENJE KROZ DIJAGRAME

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Kontinuirani teorijski razvoj istraživačke oblasti prostorne spoznaje nije praćen praktičnom primenom postulata. Istraživački izazov je prepoznat u razvoju odgovarajućeg načina da se zaključci i odnosi prostorne spoznaje prevedu u jasan grafički sistem koji omogućava bolju komunikaciju i saradnju srodnih disciplina. Hipoteza rada je da se teorijski zaključci analiziranog koncepta mogu prevesti u prostor vizuelnom reinterpretacijom – grafičkom obradom koja se koristi kao alat za pregled i prevođenje. Istraživanje se odvija u dva dela – prvi analizira istorijski razvoj teorijske misli o odnosu prostorne spoznaje i dijagrama u arhitekturi, dok drugi segment istražuje savremena teorijska stanovišta kroz šest karakteristika šematskog rezonovanja i validira ih kroz relevantnu studiju slučaja. Ovo istraživanje ima za cilj da ispita i definiše proces konceptualizacije dijagrama u kontekstu procene kognitivnih varijabli prostora. Dijagram se od pojednostavljene grafičke indikacije prostora razvija u aktivnog učesnika u modifikaciji urbane sredine. Ishod istraživanja je definisanje četiri principa šematizacije, koji opisuju sažete kognitivne potencijale za ilustraciju uticaja prostora na korisnika.

KLJUČNE REČI: ŠEMATSKO REZONOVANJE, PROSTORNA KOGNICIJA, VIZUELNA INTERPRETACIJA, ARHITEKTONSKI CRTEŽ, PERCEPCIJA

COGNITION OF URBAN PLACES: TRANSLATING THROUGH DIAGRAMS

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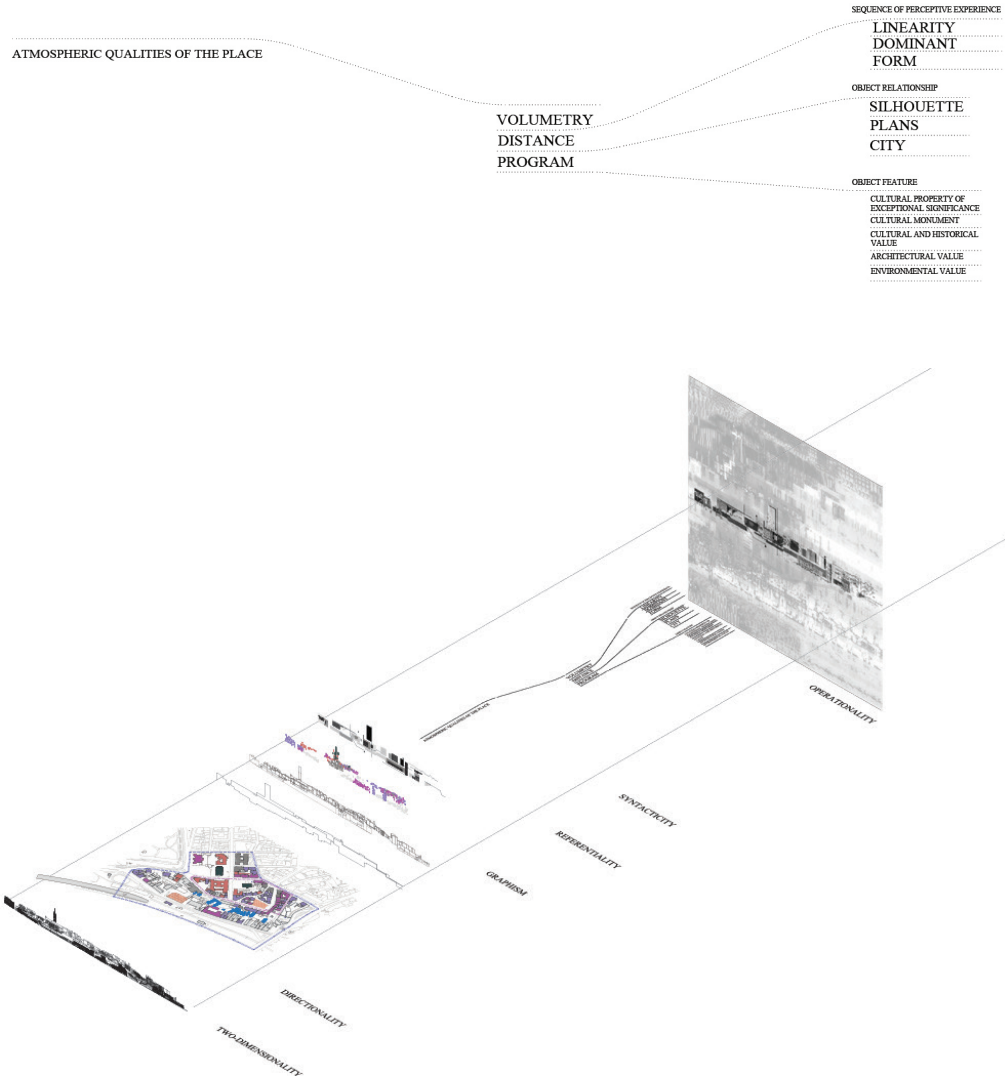
CHARACTERISTICS OF DIAGRAMMATIC COGNITION	DESCRIPTION
Two-dimensionality	The diagram is not based on time conditioning, but on a hierarchy of spatial factors. While the other senses receive stimuli as successive sensations, the eye perceives multiple spatial elements simultaneously. This simultaneous presence, which is unique to seeing, has epistemological weight. The potential lies in recognizing relationships, proportions, and patterns in an abundance of multiplicity. Visual perception analyses our cognitive power through insight.
Directionality	The position of the body in space provides an elementary orientation in the environment, creating a basic structure of relations directing user up and down, in front of and behind, inside and outside, which establishes universal relations of order. The renunciation of the depth dimension, namely the reliance on the two-dimensionality of the surface for order and arrangement, enables the clearer formation of the basic schemes of what can be topologically connected.
Graphism	Lines form an archetypal definition of clear outline and justification of form. The line represents the foundation of operational images.
Syntacticity	Diagrams are not just static representations of the environment, but require additional interpretation and reading. We cannot simply see the diagram as a drawing, but interpret it as the result of a clear process.
Referentiality	Diagrams also represent the relationships between facts, whether of an empirical or theoretical nature, and detect their meaning. Reference is the foundation from which "visual claims" are defined.
Operationality	Signs, graphs and maps are not just a representation, but a space for interpreting, observing and exploring what is represented. Diagrams are not only a visual medium, but also a tool and instrument of reflection.

UP: Table. 1. Characteristics of Diagrammatic Cognition.

UP: Fig. 2. Diagram analysis of the street front of Kosančićev Venac.

DOWN: Fig. 3. Kosančićev Venac elevation.

UP: Fig. 4. Kosančićev Venac: graphic analysis.
DOWN : Fig. 5. Kosančićev Venac: forming the visual language.



UP: Fig. 6. Theoretical standpoints and their analogies in physical space
DOWN: Fig. 7. Synthesis diagram