EXPERIMENTAL APPROACH
TO URBAN DESIGN
writing and testing
the criteria

supervisor
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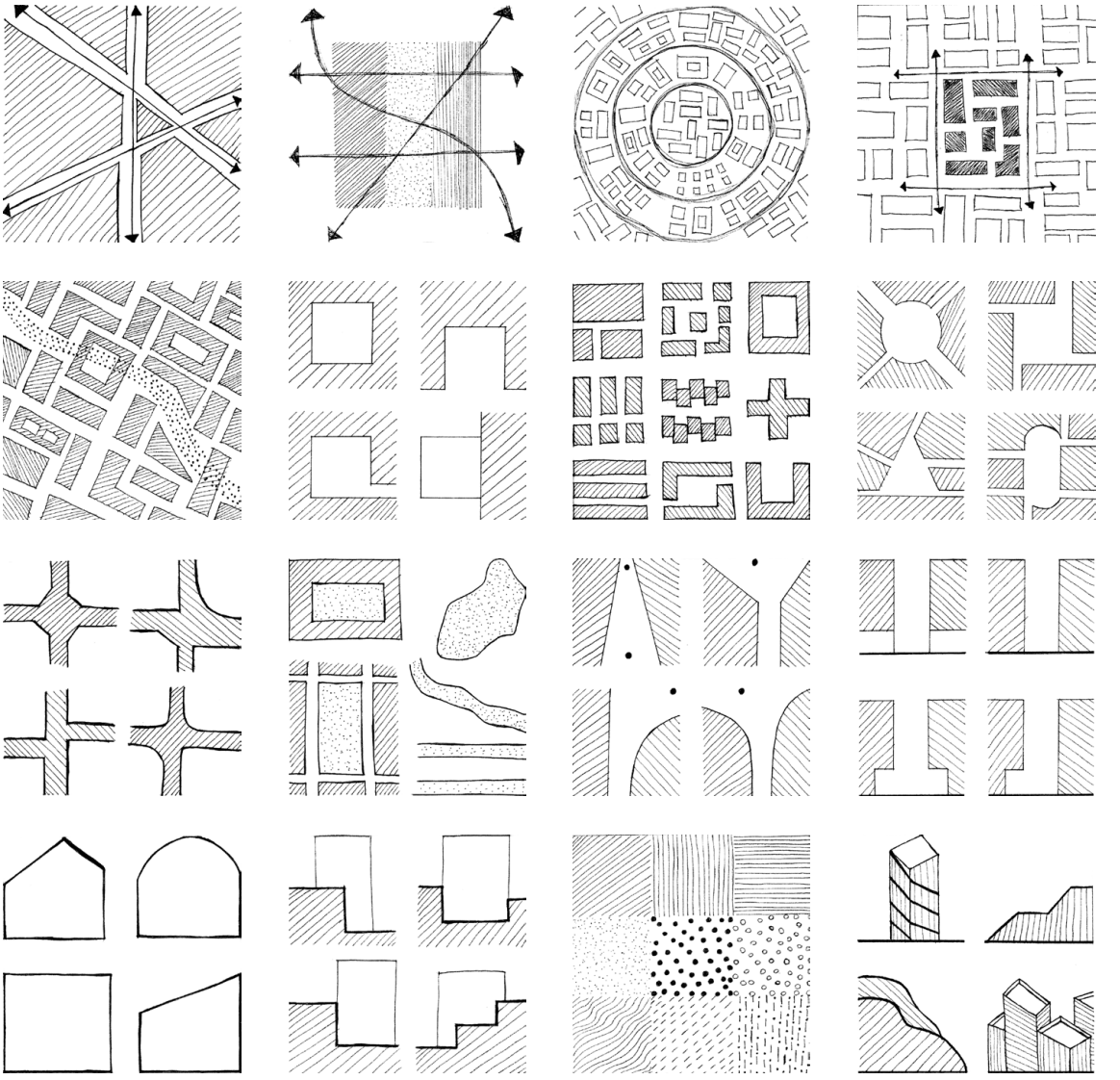

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EXPERIMENTAL APPROACH TO URBAN DESIGN: WRITING AND TESTING THE CRITERIA

Master's Thesis
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ABSTRACT

The study, which started by questioning the concept of space, proceeds through the dynamics of creating space and the emergence of design as a voluntary behavior. As a result of these inquiries, research questions emerged.

The study continues by examining the basic design concepts and how these concepts are used in the field of urban design, the relationship between architectural space and urban space, and composition over urban space.

In addition to design, the study, which includes the perspectives of urban theorists, continues with case studies selected as a result of a systematic elimination to examine different urban compositions.

The sketchbook, which started simultaneously with the questioning of the concept of space, in which the ideas and visuals of the urban elements were processed, was simplified in parallel with this process and an urban design criteria was obtained. After these criteria, which changed the course of the project, specific site in Mantova was chosen as a venue to test them.

By developing an approach based on the unique data presented by the field, these criteria were tested with the created master plan.

The main purpose of the study, with the criteria determined over a selected place; is to experience how to start, to develop and to end an urban design.

Key words: urban space, urban composition, urban design approach, urban design theories, master plan process

ASTRATTO

Lo studio, partito dalla messa in discussione del concetto di spazio, procede attraverso le dinamiche di creazione dello spazio e l'emergere del design come comportamento volontario. Come risultato di queste indagini, sono emerse domande di ricerca.

Lo studio prosegue esaminando i concetti base della progettazione e il modo in cui questi concetti vengono utilizzati nel campo della progettazione urbana, il rapporto tra spazio architettonico e spazio urbano e la composizione sullo spazio urbano.

Oltre alla progettazione, lo studio, che comprende le prospettive dei teorici urbani, prosegue con casi di studio selezionati a seguito di un'eliminazione sistematica per esaminare diverse composizioni urbane.

Il taccuino, iniziato contemporaneamente alla messa in discussione del concetto di spazio, in cui sono state elaborate le idee e le immagini degli elementi urbani, è stato semplificato parallelamente a questo processo ed è stato ottenuto un criterio di progettazione urbana. Dopo questi criteri, che hanno cambiato il corso del progetto, è stato scelto un sito specifico a Mantova come luogo per testarli.

Sviluppando un approccio basato sui dati unici presentati sul campo, questi criteri sono stati testati con il piano generale creato.

Lo scopo principale dello studio, con i criteri determinati sul luogo selezionato; è sperimentare come iniziare, sviluppare e concludere un progetto urbano.

Parole chiave: spazio urbano, composizione urbana, approccio al design urbano, teorie del design urbano, processo di master plan

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First of all, I would like to thank my dear professor Carlo Peraboni, who gave me his valuable time whenever I needed it and contributed to the development of my study with his knowledge and support.

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INTRODUCTION

This study is an example of experiencing an urban design process. The basis of the study is how the criteria which created in parallel with the theoretical readings will be applied in the selected site in Mantova.

The study basically consists of five main parts. The first part, Chaper 0, contains questions about the origin of the study and questions to be answered throughout the study. Literature research was done at this stage.

The second part, Chapters 1 and 2, provides a summary of the focus and bibliography. Ching, Bacon, Krier, Sitte and Kasprisin are the authors of the major sources of Chapter 1; while Cullen, Lynch, Alexander, Brown and Jacobs are the authors of the main sources in Chapter 2.

Chapter 3 includes case studies that were selected as a result of the research conducted in parallel with the first and second parts and examined in terms of urban composition.

The criteria that emerged as the product of a sketchbook with the readings and researches made since the beginning and that changed the course of the study are presented in Chapter 4.

Chapter 5 is the section where an urban design experiment is made as a result of all these studies and the questions of the study are tried to be answered.

The aim of the study is not to make a definite judgment, but to see how to proceed on this path.

CHAPTER 0

0. LOGIC of the STUDY: FUNDAMENTAL DEFINITIONS and RESEARCH QUESTIONS

The motivation for the emergence of this study is some questions in my mind about urban design. While these questions are fundamental questions of urban design such as “how to start”, “how to develop” and “how to end”, these questions themselves pioneered the emergence of other questions and determined the structure of the study.

When we talk about an urban design, we are primarily talking about an urban space. Before defining the urban space, it would be appropriate to examine the question of: What is space?

Since its existence, humanity tends to create space involuntarily or willingly. The basis of this tendency to create space is an instinct of protection. Some xamples of creating this space are carving a tree hollow or perching under a rock. Today, the need for protection still forms the basis of our space-making activities in modern cities. To put it simply, bus stops are simple structures that we designed to protect ourselves from climatic conditions and they form a defined space.

Space is changeable, fluid. Bacon states that:

> *“…each act or moment of time is preceeded by a previous experience and becomes the threshold for the experience to come. If we acknowledge that an objective of life is achivement of a continuous flow of harmonious experiences, than the relationship of spaces to one another, as experienced over time, becomes major design problem…” (Bacon 1967, 19)*

Space is a phenomen that exists within the sequences of experiences. The perception of space varies from person to person, we all create “spaces” in modern life without realizing it. For example a person standing still on the side walk and blocking the passage, makes other people create new routes means he/she defines a space.

Despite the relative perception of space, the easiest and most common way to begin the definition of space is to classify it as indoor-outdoor. This classification leads us

to the questions of “what is architectural space” and “what is urban space”. At this point, we see that it is not that easy and/or correct to classifyas indoor-outdoor.

It is difficult to talk about the clear boundaries of architectural space and urban space. It would not be correct to reach a general opinion about where one starts and the other ends. From time to time, there may be cases where the urban space and the architectural space are intertwined. For example, if uncontrolled access to the inner courtyard of a building block is possible, it can be discussed whether this space is private or public. Urban space is public, but architectural space can be either public or private according to its function. In this case, can this space be called an urban space rather than an architectural space?

Bacon states that:

> *“ Architectural form is the point of contact between mass and space. Where the philosophical interrelationship between these two elements is unclear, so will form of the archtitecture be unclear. By defining the point of juncture between mass and space, the architect is making a statement about the interrelationship of man and his universe.” (Bacon 1967, 16).*

In order to eliminate this dilemma, the designer must make a decision and act accordingly. If the aforementioned designer or designers work separately on an urban and architectural scale, coordination should be ensured among each other.

When focusing on the interior of architectural spaces, two main elements can be mentioned: *corridor* and *rooms*. While rooms are the spaces where actions take place, corridor is the space that connects these spaces. The same logic is also present in the urban space.

Any area between buildings in settlements can be defined as urban space, when aesthetic measures are not observed (Krier 1991, 15). The two basic elements of the urban space are *streets* and *squares*. While squares are the spaces where the actions take place, streets are the spaces that lead to this place. Squares are the most important places of urban space that have survived from history to the present. Krier states that:

> *“In all probability the square was the first way man discovered of using*

urban space." (Krier 1991, 17).

Although there are functional differences, typologically, the square is a partially sheltered, open space surrounded by buildings. While it was generally seen as an agora, forum, mosque courtyard as a function in the past, today it is more of a market place.

Streets, unlike squares, are functional spaces that have formed involuntarily with the development of settlements, often without symbolic value. While the basic function of streets, which is to transport people from one place to another, has been preserved, the way of transportation has changed over time. While its qualities such as width and floor covering were arranged for horse-drawn carriage traffic, it has evolved to carry motor vehicle traffic today.

Besides streets and squares, we can easily say that most of the cities are covered by architectural objects. These architectural objects are perceived as "forms" by people in urban spaces they are in. The areas outside the contours of these forms are the place where they are located, that is, the urban space in this sample. According to Bacon:

"The basic ingredient of architectural design consists of two elements, mass and space. The essence of design is the interrelation between these two." (Bacon 1967, 15).

In fact, is it possible to talk about a space without forms, and an urban space without masses?

Form; It can be perceived in different ways according to shape, dimensions, color and texture characteristics. Assuming that every object in the space is a pile of points, more than one point is needed for the formation of a form.

Mass forms have relations with the urban space at different scales. In addition to the characteristic of the form, its effect on the environment in which it is located in the urban space is also very important. According to Ching:

"At an urban scale, we should carefully consider whether the role of a building is to continue the existing fabric of a place, form a backdrop for other buildings,

or define a positive urban space, or whether it might be appropriate for it to stand free as a significant object in space." (Ching 1979, 104)

If we go back to the first question "how to start an urban design". With the urban design becoming a separate discipline, there are some debates about who the designer should be. Urban planner, architect, landscape designer are the main actors that come to mind first.

While making urban design for a particular area, the perspectives of the main responsible or responsible persons form the backbone of the design, although different actors work together. Urban design is made on paper in two dimensions in a bird's eye view. In the first stage, urban composition is important. However, the third dimension should be considered with feedback throughout the design phase.

Figure 0.1 A random, Unfinished City Texture

While searching for answers to the questions, “how to develop” and “how to end” an urban plan, it would be better to search answers for the following questions:

1. Is it possible to define urban design criteria that we can work with them in the different situations?

2. How should the relationship between urban scale and architectural scale be established?

3. How to use composition rules without creating uniformity/monotony?

4. Is it possible to achieve a sense of wholeness/unity with a single design?

CHAPTER 1

1. COMPOSITION and URBAN SPACE

In this section, from a simple composition on paper to an architectural composition; then its reflections in the urban area will be mentioned. Applications of the same basic composition principles at different scales will be examined.

1.1. Design Elements

In any discipline, the basic elements to be used in design are the same. Whether the design is on paper or digitally, the use of these elements is inevitable. The fact that these elements are transformed and organized in different ways reveals the design.

1.1.1. Primary Elements

The basic elements of the design are respectively derived from each other; point, line, plane and volume. These elements can not be perceived unless they find a physical correspondence in space, only their projections occur in the mind. There is no physical criterion such as height, length, width in the definition of the point, it only determines a position in space. Theoretically, there is no mention of a form or shape of the point. Its existence can only be mentioned in a visual field. The point is static, It dominates the elements around it where it is in the center. To embody the existence of the point, the two ends of the line, the intersection of two lines, the corner points of a plane or volume, or the center of a field can be mentioned. (Ching 1979, 2-4)

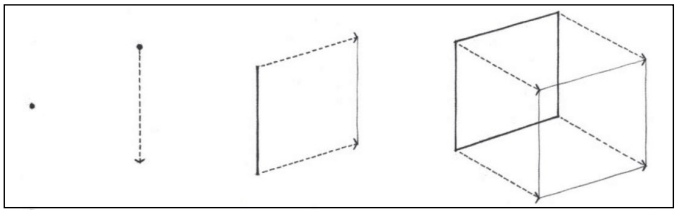

Figure 1.1 Point, Line, Plane and Volume

Klee describes this derivation as follows:

> *"All pictorial form begins with the point that sets itself in motion... The point moves . . . and the line comes into being—the first dimension. If the line shifts*

to form a plane, we obtain a two-dimensional element. In the movement from plane to spaces, the clash of planes gives rise to body (three-dimensional).

...

A summary of the kinetic energies which move the point into a line, the line into a plane, and the plane into a spatial dimension." (Klee 1961, 24).

According to the rules of space geometry, two points determine a ray. The ray is infinite, directional. Part of this ray is the inward line and one can speak of a length, it is directional. At least three points are needed to determine a plane. The plane is a form; length, width and area can be defined. By dragging this plane in space, a volume is obtained. Theoretically, while the length and width of the point cannot be mentioned, the line can only be mentioned in length, it has no width. It needs a thickness to be visible.

1.1.2. Form and Shape

Form and shape are two intertwined terms. The shape is the plane defined by the contours of a form and visualized in the mind. Our rate of perception of the shape changes according to the relationship of the form with the area it is in and the nature of the contour that separates the form from the surface on which it stands. Ching states that:

"While form often includes a sense of three-dimensional mass or volume, shape refers more specifically to the essential aspect of form that governs its appearance—the configuration or relative disposition of the lines or contours that delimit a figure or form." (Ching 1979, 34)

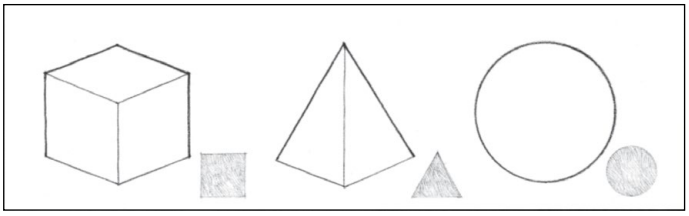

Figure 1.2 Forms and Shapes

According to Gestalt Theory, when the mind perceives a form, it reduces it to a simple form. The shapes that the human mind can easily perceive and which are also basic in geometry are circle and the triangle and square which can be inscribed

infinitely in a circle. (Ching 1979, 38)

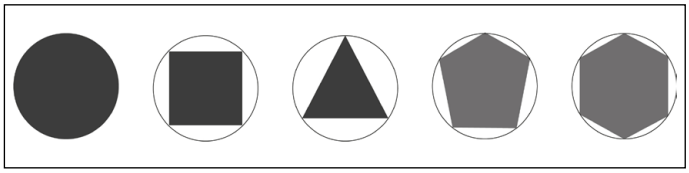

Figure 1.3 Basic Shapes Derivations

According to Ching:

> *"Form is an inclusive term that has several meanings. It may refer to an external appearance that can be recognized, as that of a chair or the human body that sits in it. It may also allude to a particular condition in which something acts or manifests itself, as when we speak of water in the form of ice or steam. In art and design, we often use the term to denote the formal structure of a work—the manner of arranging and coordinating the elements and parts of a composition so as to produce a coherent image" (Ching 1979, 34).*

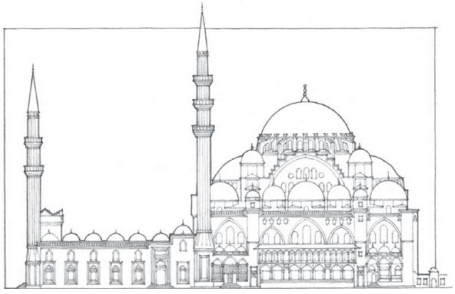

Figure 1.4 Suleymaniye Mosque

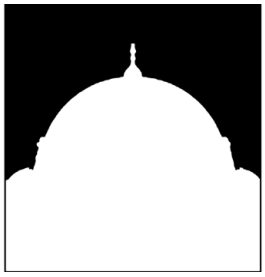

Figure 1.5 Perception of Mass

In order to make the definitions more concrete, the following words of Bacon can be included:

> *"Architectural form is the point of contact between mass and space ... Architectural forms, textures, materials, modulation of light and shade, color, all combine to inject a quality or spirit that articulates space. The quality of the architecture will be determined by the skill of the designer in using and relating these elements, both in the interior spaces and in the spaces around buildings." (Bacon 1967, 16)*

1.2. Composition of Elements

While explaining the composition of the elements, the book of C. K. Ching, *Architecture: Form, Space and Order,* is to be mentioned. Examining the architectural counterpart of the organization and order of the elements is a bridge in the transition to the urban scale.

1.2.1. Relationship and Organization

Under the *organization* title Ching has discussed the *spatial relationships* under four situations: Space within a Space, Interlocking Spaces, Adjacent Spaces and Spaces Linked by a Common Space.

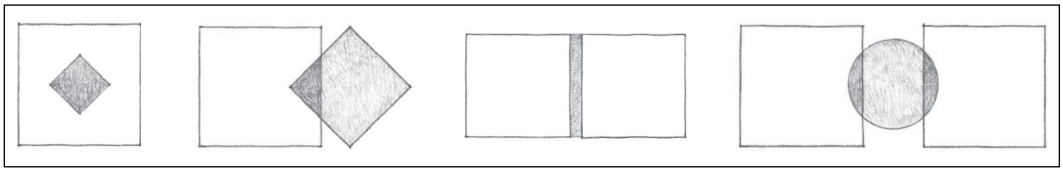

Figure 1.6 Spatial Relationships

Space within a space, is the type of spatial relationships that *"the larger, envoloping space serves as a three-dimensional field for the smaller space contained within it."* (Ching 1979, 198). In this type of relationship, a direct connection can be established between the exterior and the space inside, but while the exterior is related to the exterior environment, the interior space is only in relation to the volume surrounding it. To reach this relationship, between the two spaces, a clear differentiation in size is necessary.

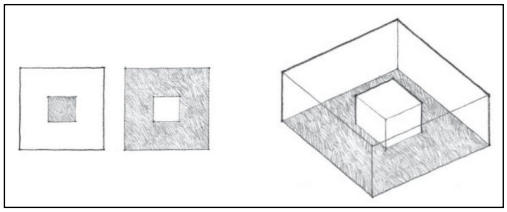

Figure 1.7 Space within a Space

The two spaces may be in the same form as each other, but facing different directions. In this case, it creates a secondary axis system in the intermediate space.

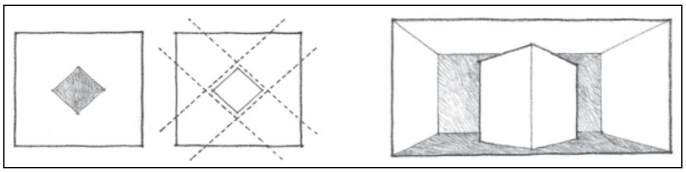

Figure 1.8. Spaces in the Same Form

If the two spaces are clearly of different forms, this emphasizes the contained space and increases its emphasis as a freestanding volume.

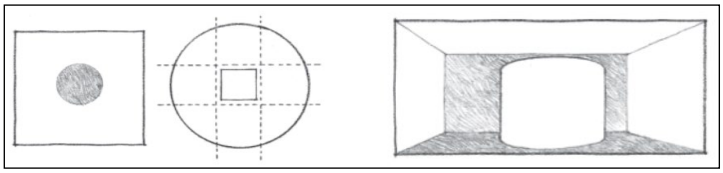

Figure 1.9 Spaces of Different Forms

Interlocking spaces result in the emergence of a new space in the middle, as the two spaces are partially intertwined. Ching described interlocking spaces in three different situations which are *"the interlocking portion of the two volumes can be shared equally by each space"*, *"the interlocking portion can merge with one of the spaces and become an integral part of its volume"* or *"the interlocking portion can develop its own integrity as a space that serves to link the two original spaces" (Ching 1979, 200)*.

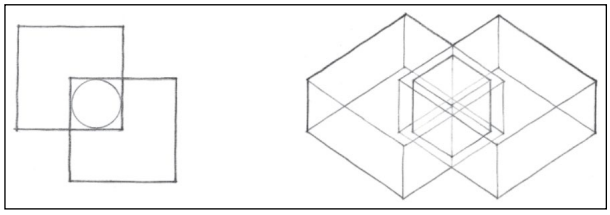

Figure 1.10 Interlocking Spaces

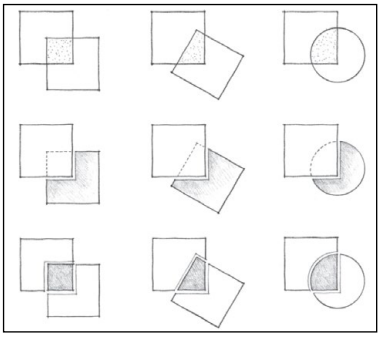

Figure 1.11 Variations of Interlocking Space

Adjacent spaces, which is the most common type of spatial relationship, *"allows each space to be clearly defined and to respond, each in its own way, to specific functional or symbolic requirements."* (Ching 1979, 202). The level of visual and spatial continuity between two adjacent spaces depends on the nature of the plane that separate and also connect them.

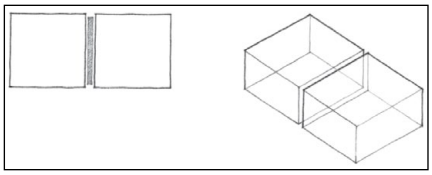

Figure 1.12 Adjacent Spaces

According to Ching (Ching 1979, 202), the separating plane takes place in the space it is in, in four ways: It can prevent the visual and physical transition between the two spaces; it can stand in the space as a singular volume. It can be defined as rows of columns, providing strong visual and spatial continuity; It can be placed in such a way as to create a level difference between two spaces, and it can create contrast with the surface material and texture.

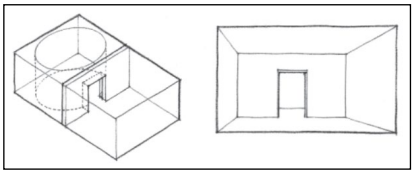

Figure 1.13 Preventive Plane

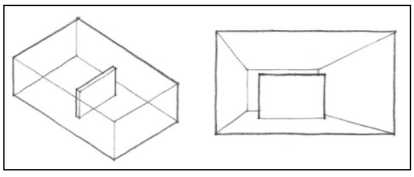

Figure 1.14 Singular Volume

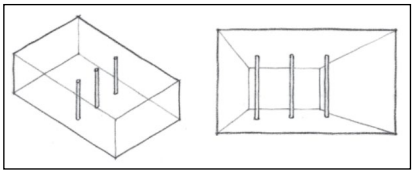

Figure 1.15 Rows of Columns

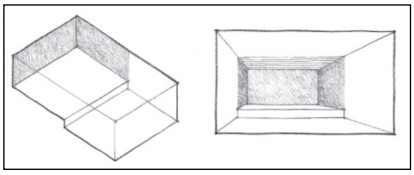

Figure 1.16 Level Difference

Spaces linked by a common space, occurs when spaces that are at a distance from each other establish a connection through a third space. The nature of the third space, which they use as a common space, plays a role in determining the visual and spatial relationship between the first two spaces. To express its linking function, the intermediate space can differ in form and orientation from the other two spaces or all three spaces can be equivalent in size and shape (Ching 1979, 204).

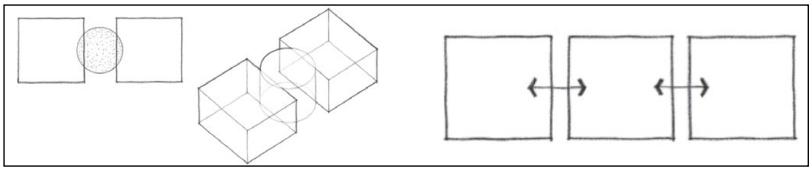

Figure 1.17 Spaces Linked by a Common Space

The intermediate space itself can become linear in form to link two spaces or join a series of spaces which have no direct relationship to one another.

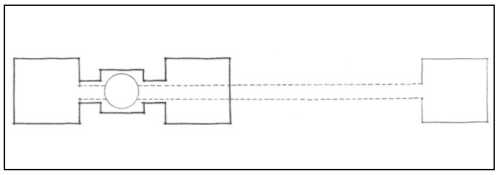

Figure 1.18 Linear Intermediate Space

If the intermediate space is large relative to the spaces it connects, it becomes dominant and assumes the role of organizing the spaces around it. On the contrary, if the intermediate space is relatively small and not clear in form, it can become a residual space.

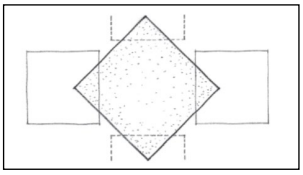

Figure 1.19 Large Intermediate Space

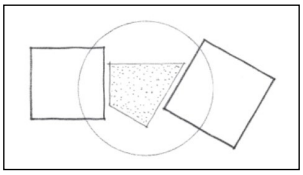

Figure 1.20 Small Intermediate Space

After examining the spatial relationships, Ching explans *spatial organizations* under the five types: Centralized Organization, Linear Organization, Radial Organization, Clustered Organization and Grid Organization (Ching 1979, 207).

Before explaning each type of spatial organization, looking through the work *Composition of Nine Squares*, created for the Bauhaus Design Course, by Joost Schmidt.

In the work of Scmidt, it is seen that each nine composition consists of nine equal squares. The different relationships that the squares establish with each other have led to the emergence of different compositions from each other. The composition in which the squares do not come into contact with each other, the composition in which some of them come into contact with each other, and the compositions where all of them come into contact with each other are observed. Although each composition basically consists of simple equal squares, it creates different perceptions. The counterparts of these compositions in architectural and urban space will undoubtedly be revealed in connection with functions and needs.

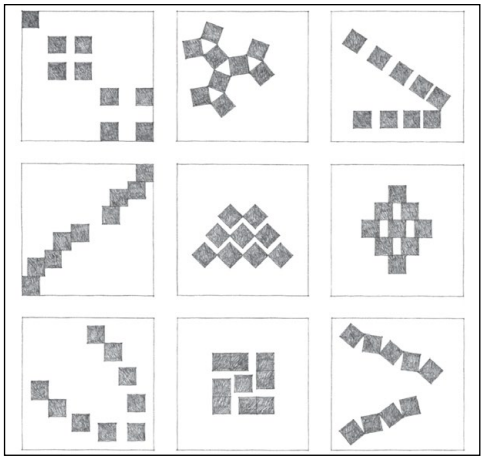

Figure 1.21 Composition of Nine Squares

Starting with the **centralized organization**, it is the spatial organization type that *"a central, dominant space about which a number of secondary spaces are grouped." (Ching 1079, 207).* A centralized organization is stable and the centrali unifiying space is generally regular in form and large enought in size to gather a number of secondary spaces about its perimeter. These secondary spaces may be equivalent to one another in form and size or they may differ from one another in form and size in order to respond to individual requirements of function (Ching 1979, 208).

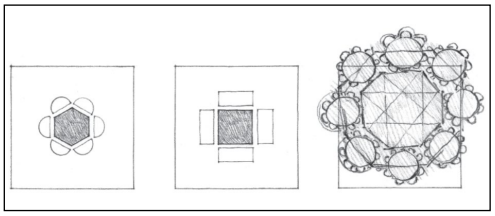

Figure 1.22 Ideal Church by Leonardo da Vinci

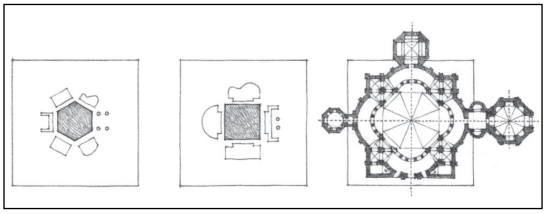

Figure 1.23 San Lorenzo Maggiore

Linear organization, is the type of spatial organizations that *"a linear sequence of repetitive spaces." (Ching 1979, 207).* A linear organization consists essentially of a series of spaces which are usually repetitive and alike in size, form, function. Even in the situations that the spaces are differ in size, form and function of each space along the sequence has an exterior exposure. Spaces can be directly related to one another or be linked through a distinct linear space. Spaces, which are more important functionally or symbolically, can be observed in linear organization, with differences in size or form, as well as differ in location in the organization. To limit the growth of the linear organization, it can be determined by a dominant space or articulated

entrance as well as can be merged with another building form or the topography of its site. Linear organization is flexible and can adapt to the conditions of its location. If we think on an urban scale; it can maneuver around a pond or a row of trees, shaped according to the topography, and oriented according to the sunpath and the view (Ching 1979, 218-219).

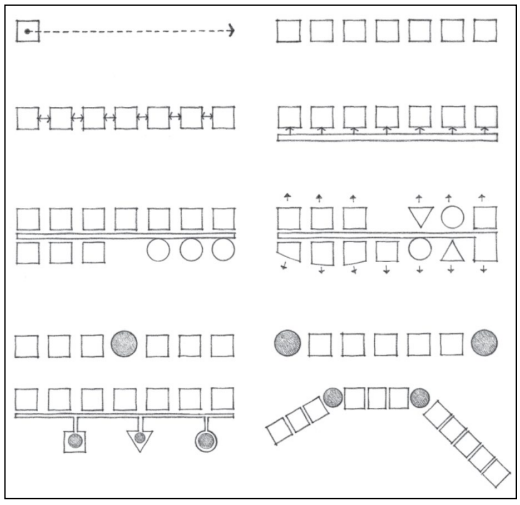

Figure 1.24 Linear Organizations

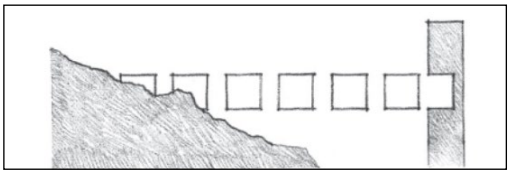

Figure 1.25 Linaer Organization by Topography

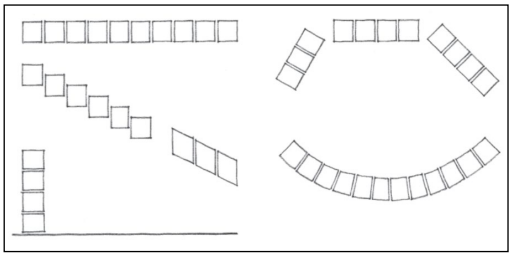

Figure 1.26 Linaer Orientations and Maneuver

Radial organization, is the type of spatial organization that *"a central space from which linear organizations of space extend in a radial manner." (Ching 1979, 207).* It combines elements of both centralized and linear organizations and consists of dominant central space which is generally regular in form. From that central space, number of linear organizations extend in a radial manner. These linear arms may be similar to one another in form and lenght or differ. While centralized organization is an introverted scheme, a radial organization is an extroverted plan that reaches out to its context and it can extend and attach itself to a specific element or a feature of its site with its linear arms.

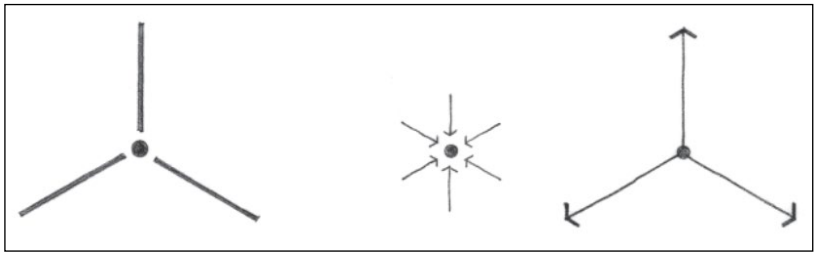

Figure 1.27 Radial Organizations

Clustered organization, is the type of spatial organization that *"spaces grouped by proximity or the sharing of a common visual trait or relationship." (Ching 1979, 207).* Physical proximity is the basis to relate spaces to one another. Form of a clustered organization is flexible due to its patterns not originating from a rigid geometrical concept and this allows it accept growth and change without affecting its character. It usually consists of repetitive, cellular spaces that have similar functions, shape and orientation. In case of its spaces are dissimilar in size, form or function, they relate to one another by proximity or visual ordering device such as symmetry or axis. To give importance a space in the clustered organizatin, symmetry or axial condition can be used to emphasize it as well as differing in size and form (Ching 1979, 234).

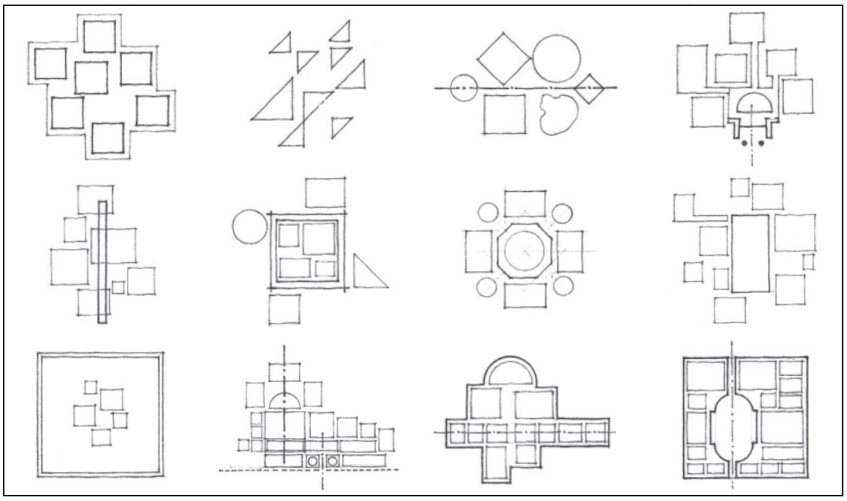

Figure 1.28 Clustered Organizations

Grid organization, is the type of spatial organization that *"spaces organized within the field of a structural grid or other three-dimensional framework." (Ching 1979, 207).* In grid organization, spaces and forms are seen to be interrelated in a three-dimensional grid system. Regularity and continuity of its pattern, power the organization. The grid system is usually obtained by repetition of axes parallel to each other and at right angles. In this way, repetitive, modular spaces emerge.

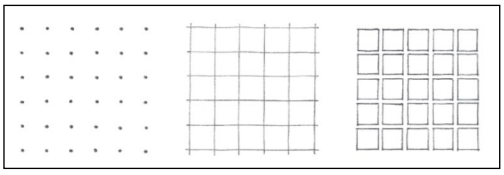

Figure 1.29 Grid Patterns

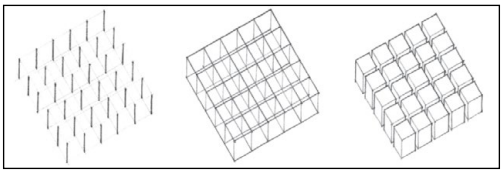

Figure 1.30 Three-dimensional Grid Patterns

Even if the cells dissimilar in size, form or function, a stable set or field of reference points and lines establish by its pattern. Thanks to its repetitive structure, removing, adding or layering modules does not disrupt the grid organizational structure. An irregular grid can be obtained by changing the distances of the repeating lines in both directions. To define aa major space or accomodate a natural feature of its site, a grid pattern can be interrupted. A portion of the grid can be discolated and rotated. A grid can be transformed grom a pattern of points to lines, to planes and to volumes. Within the field of grid, isolated spaces can occur. These spaces, regardless of their disposition, if seen as positive forms will also create a set of negative spaces. (Ching 1979, 242-243)

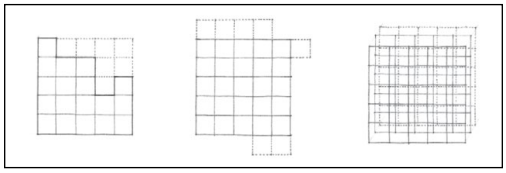

Figure 1.31 Grids: Subtraction, Addition and Superimpozition

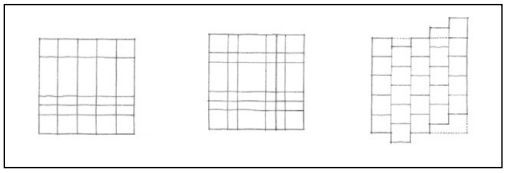

Figure 1.32 Grids: Hierarchial Set of Modules

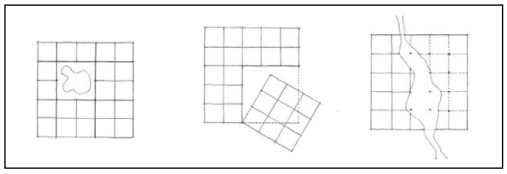

Figure 1.33 Transformations of a Grid

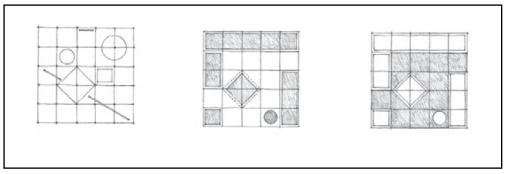

Figure 1.34 Spaces within a Grid

1.2.2. Order

In his book, Ching classified seven ordering principles in architecture. These are axis, symmetry, hierarchy, datum, rhytm-repetition and transformation. In this chapter, it is considered four of them, which are the principles that we can observe in urban spaces: *Axis, Hierarcchy, Datum* and *Rhytm-Repetition*.

Ching states retionale for the order in design as:

> *"Order without diversity can result in monotony or boredom; diversity without order can produce chaos. A sense of unity with variety is the ideal. The following ordering principles are as visual devices ... to coexist perceptually and conceptually within an ordered, unified, and harmonious whole." (Ching 1979, 350).*

Starting with **axis**, is *"a line established by two points in space, about which forms and spaces can be arranged in a symmetrical or balanced manner." (Ching 1979, 351).* An axis is a line in space determined by two points. Although it is actually an image in the mind and invisible to the eye; it can be powerful, dominating and regulating device. The visual strength of the axis is determined by the relations of the spaces on it with each other.

By definition, both ends must end with a form or a space. In urban space, it can be end with a square or a monumental building and it has quailites of lenght and direction, promotes views along its path. The strength of the axle is related to the accentuation of its edges. The emphasis of the edges can be made with lines and textures on the ground plane, or with forms on the vertical plane. A symmetrical arrangement of forms and spaces can create the axis (Ching 1979, 352).

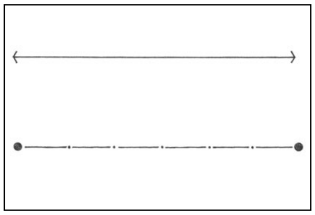

Figure 1.35 Existance of an Axis

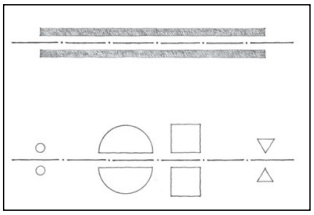

Figure 1.36 Axis and Arrangements

Ching has grouped the elements located at the two ends of an axis and connected to each other by that axis and corresponding to the urban scale in four different ways: *" elements or centralized building forms, facades or fronts, preceded by a forecourt or similar open space, well-defined spaces, generally centralized or regular in form, gateways that open outward toward a view or vista beyond." (Ching 1979, 353).*

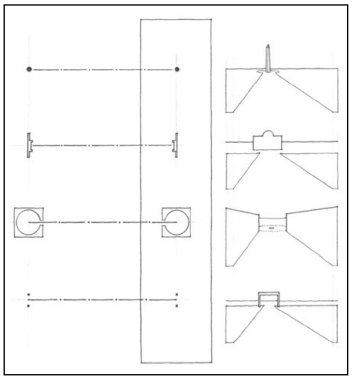

Figure 1.37 Terminations of an Axis

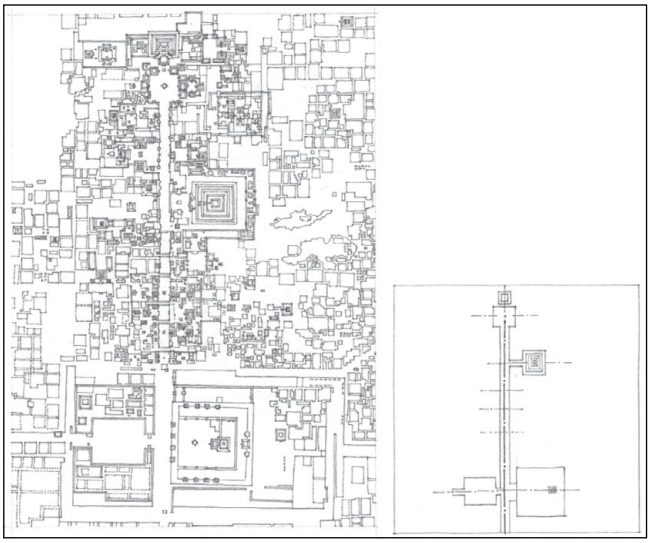

Figure 1.38 Axis: Teotihuacan, City of the Gods

Hierarchy is *"The articulation of the importance or significance of a form or space by its size, shape, or placement relative to the other forms and spaces of the organization." (Ching 1979, 351).* If it is desired to attach a special meaning to a form or area and to show its importance, it should be emphasized visually. This visual highlighting can be done in three ways: exceptional size, a unique shape and a strategic location. In all three cases, the form or area to be emphasized in the hierarchical order will be dramatically different within the organization. It is possible to have more than one element to be emphasized, but if different meanings are attributed to them, they should differ according to their degree of importance (Ching 1979, 370).

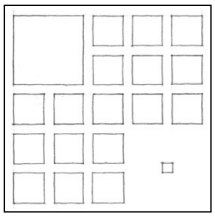

Figure 1.39 Hierachy by Size

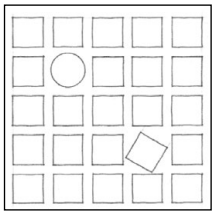

Figure 1.40 Hierarchy by Shape

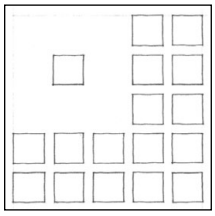

Figure 1.41 Hierarchy by Palecement

Hierarchy by size, generally seen as the form or space that is wanted to be emphasized takes place in larger dimensions. On the other hand, the fact that it is noticeably smaller in size within the organization also makes it emphasized. Hierarchy by shape can be seen as, the shape of the form or area to be emphasized be in a different geometry, or in the same geometry but in a different direction. Spatial hierarchy is

created by positioning the form or space to be emphasized in the organization in a way that draws attention to itself. Ching defines four locations in the organization to be emphasized by hierarchy by placement: *" the termination of linear sequence or axial organization, the centerpiece of a symmetrical organization, the focus of a centralized or radial organization, being offset above, below, or in the feroground of a composition." (Ching 1979, 371).*

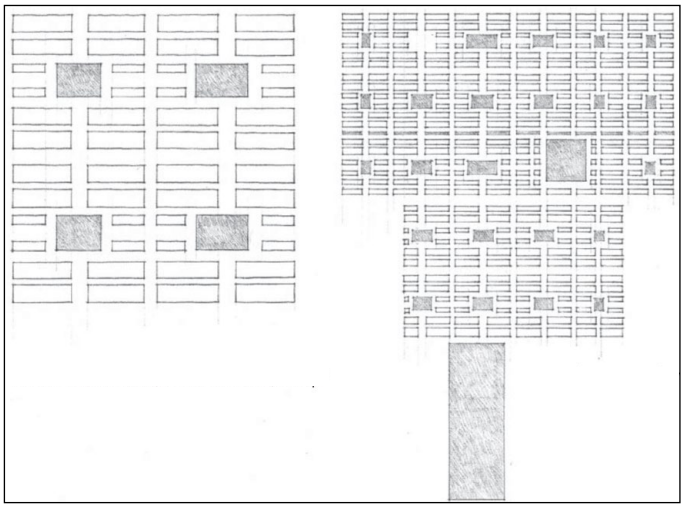

Figure 1.42 Hierarchy: Plans of Savannah, Georgia: 1733 and after 1856

Datum is *"a line, plane, or volume that, by its continuity and regularity, serves to gather, measure, and organize a pattern of forms and spaces." (Ching 1979, 351).* Ching likened the datum to the lines of a musical stuff which provides the visual basis for reading notes.

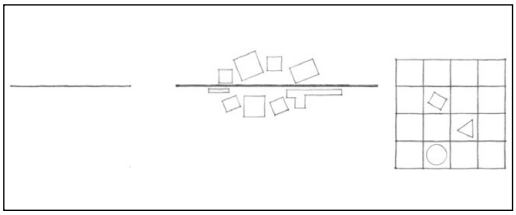

Figure 1.43 Datum: Line

A linear datum must have sufficient visual continuity to cut through or bypass all of the elements in the organizationi, to be an effective ordering device. Planar or volumetric datum must have sufficient size, closure and regularity to be a gathering or embracing device for the elements in the organization.

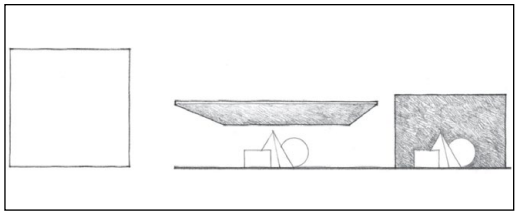

Figure 1.44 Datum: Plane

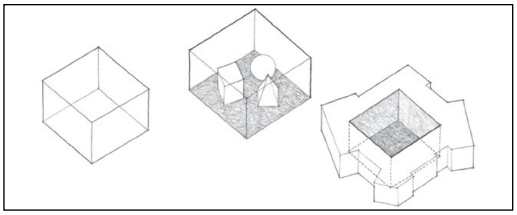

Figure 1.45 Datum: Volume

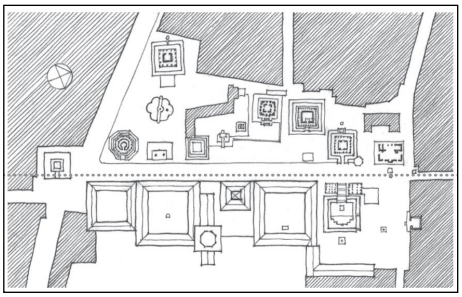

Figure 1.46 Datum: Durbar Square, Patan, Nepal

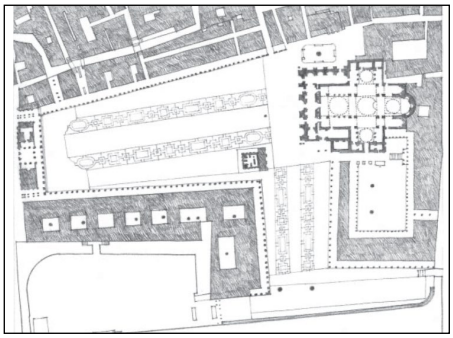

Figure 1.47 Datum: Piazza San Marco, Venice

To explain **repetition**, defining the **rhythm** as *"a unifying movement characterized by a patterned repetition or alternation of formal elements or motifs in the same or a modified form." (Ching 1979, 351).* Visual characteristics of elements or their proximity to one another are decisive to group the elements in random composition. The principle or repetition, utilizes these groups to order recurring elements in a composition.

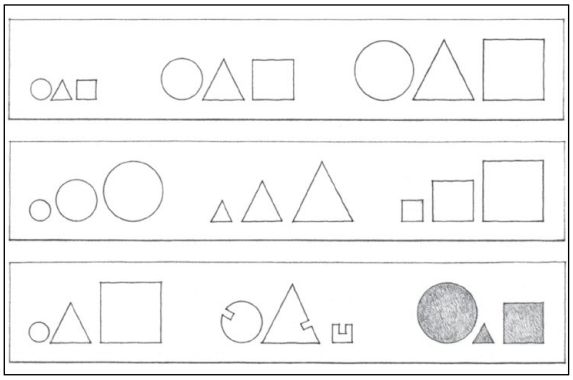

Figure 1.48 Repetitions: by Size, Shape and Detail Characteristics

Figure 1.49 Repetition: View of Villa Hermosa, Spain

1.3. Urban Space and Design

Urban design is always an “act of will”, compared to creating space. As Carmona stated:

> *“The origins of urban design as an ‘intentional’ activity of shaping places for people have ancient roots. Conscious hands have been shaping urban form since Neolithic times, with settlements that might be characterised as cities emerging from 3000 BC in Mesopotamia, India, China and Egypt; each deliberately shaping sophisticated urban environments for people.” (Carmona 2021, 9).*

1.3.1. Origins of Urban Design

Hippodamos (498-408 BC) is known to be the first city planner in history, with the application of the grid plan system, one of today’s modern planning methods, in the city of Miletus, where he was from. The implementation of the grid system was carried out as a result of the destruction of the city by Persian attacks in 479 BC.

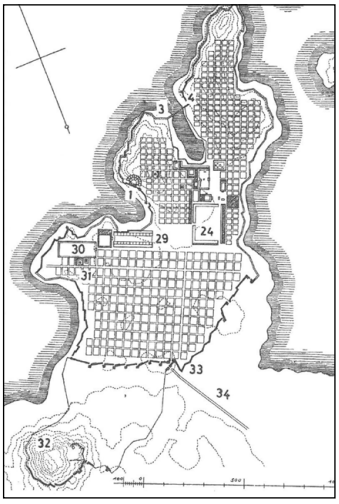

Figure 1.50 Miletos

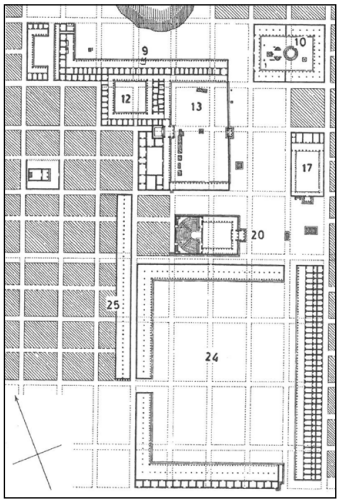

Figure 1.51 Miletos Grids

It is beileved that Hippodamos planned the ancient city of Piraeus in 445 BC and the ancient city of Thourioi in the present day Taranto Bay in 445 BC, according to the same principles (Akurgal 2014, 358).

Another ancient city in the same geography where the grid plan system is seen

is Priene, which was rebuilt in the 350 BC. Although Priene is not attributed to Hippodamos, it is thought that the plan of the city was influenced by Miletus. Akurgal described Priene as follows:

> *"Priene was built in the Hippodamic system. In this type of city plan, the streets intersect each other at right angles. The oldest and most beautiful example of the plan in question among the cities of the Hellenic world can be seen here. The atmosphere of the city is still preserved in the main, well-preserved city plan. With its avenues and streets lined with buildings, it looks as old as it was in ancient times." (Akurgal 2014, 341).*

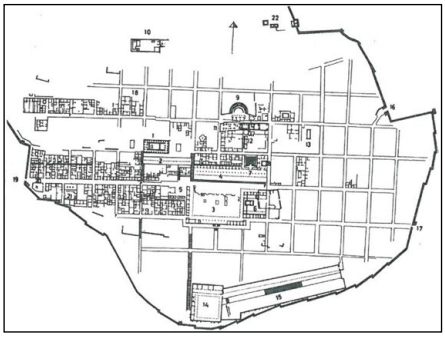

Figure 1.52 Priene

Although the title of the "first city planner" was given to Hippodamos with the grid plan system he applied, it is seen that this system was applied in settlements older than his time.

Zernaki Tepe (Hill of Zernaki) is one of the examples. It is located in the north of Lake Van in eastern Turkey, as opposed to Priene and Miletus, which are located on the Aegean coasts. Zernaki Tepe described by Sevin as:

> *" Zernaki Tepe is a rocky limestone hill rising between 60m (1830m) and 130m (1889m) above the fertile plain around the city of Erciş,not far from the northern shore of Lake Van. Upon this hill are to be found some remains of a fairly large town built on the Hippodamic principle, which is generally accepted as being both Urartian in origin and one of the earliest examples of grid planning." (Sevin 1997, 173).*

Zernaki Tepe, which was attributed to the Urartians until a certain date, is thought

to belong to the pre-Urartian period as a result of later archaeological finds.

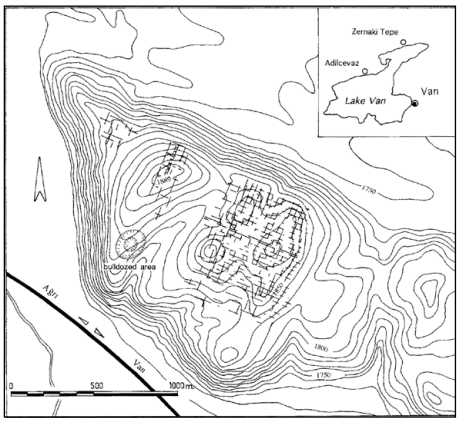

Figure 1.53 Zernaki Tepe

Based on the existence of the Urartians in 1000 BC, it can be said that the grid plan system applied at Zernaki Tepe was long before Hippodamus. It is possible that the grid plan system was applied in different places at different times. However, until the finds were fully elucidated and the plan system there was attributed to a single person, Hippodamus took his place in the literature as the first city planner in history.

1.3.2. Composing in Urban Space

All cities, wheter ancient or modern, designed as a whole or developed spontaneously over time, have their own unique composition. Under this title, different urban compositions which belongs to different periods of time, with different development trends are examined.

Starting with a definition of urban composition:

> *"An urban composition represents a form of the city in which it gets a formal order, so that the shape of any urban ensemble is not linked to a random phenomenon, but to an intervention mastered and understood as such. For the city, the urban composition represents what the architectural composition represents for a building." (Almusaed and Almssad 2020, 1).*

Miletos: Composing in gridal organization

Miletos' city plan is an example of how forms can be dynamically composed within a rigid gridal organization. Public spaces have formed their own compositions within the gridal system that constitutes the residential areas of the city. Three different approaches of three different periods can be seen in this composition: Greek, Hellenistic and Roman. The philosophy of each of these periods emerges in the differentiations in the forms of the masses and the use of open space.

Figure 1.54 shows that in Greek works, the minimum construction principle is seen, in which the use of free space is maximized, the court is defined by rhythmic columns to be connected with the harbor without being enclosed or confined. Hellenistic works of the second century BC, symmetry in architecture was emphasized and open spaces were given a more formal character. In Roman works belonging to the second century AD, all projecting arms were incorporated into colonnades surrounding the courts. While each function has its own architectural expression, individual use of rectangular forms is seen in all of them (Bacon 1967, 61).

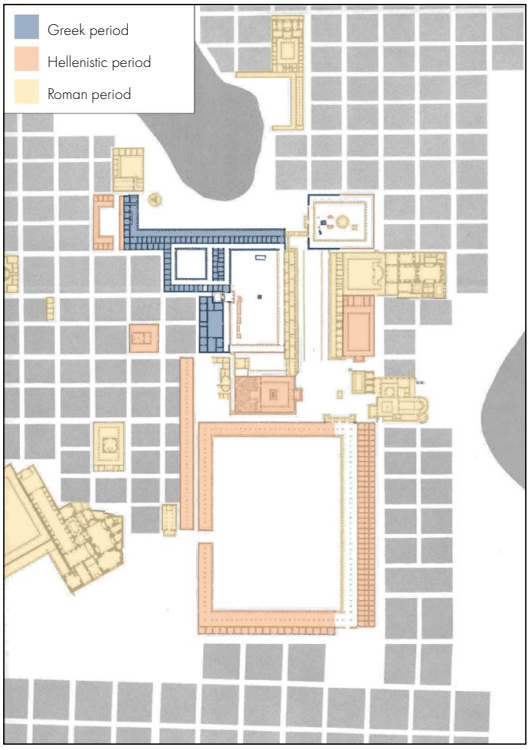

Figure 1.54 Composition of Miletos

Athens and its agora

The development of Athens was shaped along the Panathenaic Way. The Panathenaic Way was designed more as a road connecting regionally sacred places than an ordinary city street. It was the central backbone from which commercial, industrial and political activities formed the basis of the life of the city. The location and size of the Parthenon can only be understood in relation to the entire Panathenaic sequence (Bacon 1967, 53).

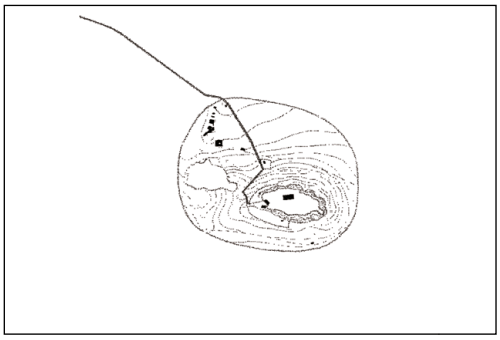

Figure 1.55 Growth of Athens: 600-479 BC

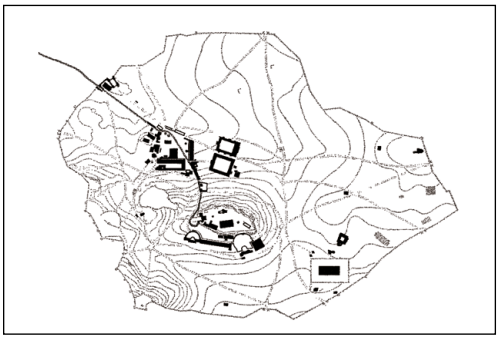

Figure 1.56 Growth of Athens: 600 BC - 287 AD

There is a parallelism between the development of Athens as a whole and the development of the agora. The construction of Hephaestus played a role in the formation of the Agora. The deliberate choice of Hephaestus' position, not to the highest point, but to create a space between itself and Panatheic Path, created a point in space and laid the groundwork for the emergence of the agora (Bacon 1967, 53-54).

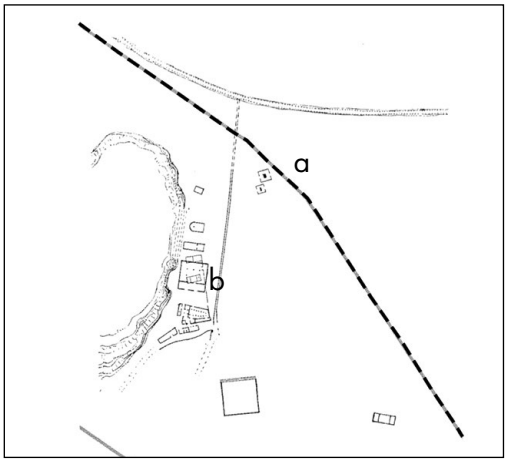

Figure 1.57 Athnes Agora: 500 BC

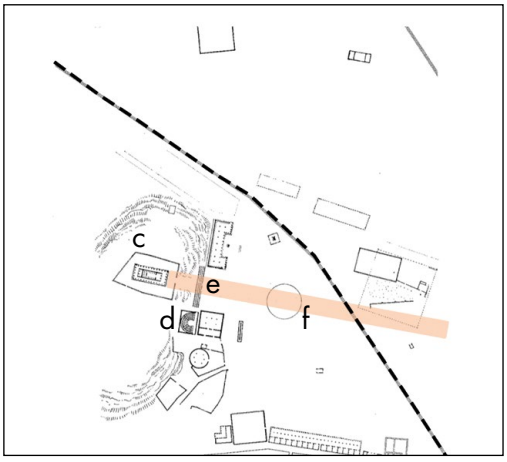

Figure 1.58 Athens Agora: 420 BC

Figure 1.57 shows the Panathenaic Way (a) and its position to existing buildings. The Hephaisteion has not been built yet, but the amorphous shape of the agora can be felt. On the south of the road, the old bouleterion (b) and on the north of it three temples can be seen. Figure 1.58, the form of the agora can be seen more clearly after the Hephaisteion (c) was built. Hephaisteion began to act as an "ordering element" here. A semicircular new bouleuterion (d) was built behind the old one. The linear elements located right next to it are the steps (e) and serve as a viewing terrace for the orchestra area (f) represented by the circle in the center of the agora. At the same time, these steps are a visual base for the Hephaisteion temple. (Bacon 1967, 57)

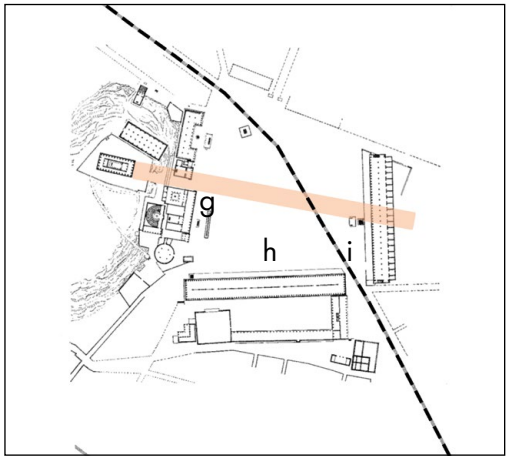

Figure 1.59 Athens Agora: Hellenistic Period

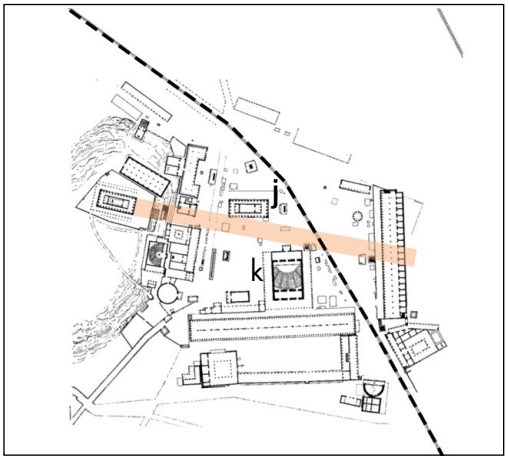

Figure 1.60 Athens Agora: 2nd Century AD

Figure 1.59, the agora has reached the full maturity of its development. The old bouleuterion has been replaced by a metroon (g). The south stoa (h) was rebuilt at a different angle. Thanks to this new angle, the agora has become a more defined space. Perpendicular to this new stoa, The Stoa of Attalos (i) was built, representing the eastern border of the agora. The two stoas, with their strong rectangular forms, are two important elements in the urban fabric. In the Figure 1.60, it is seen that the clear image of the agora is lost with the construction of Temple of Ares (j) and odeon (k) as a result of the increasing pressures of civil life (Bacon 1967, 57).

The fact that the Panathenaic Way as a linear element and the Hephaisteion as a point element are the leading roles in the development of an urban space shows the importance of correct positioning. They were the two pioneers of compositional development of the agora.

Design order of Ancient Rome

While the Greeks were constructing the flow of life as an organic unity and building their cities in the same direction; The Romans divided their cities according to their functions and divided their cities into separate units and established them in a rationality. Just as the Roman Empire was administratively divided into cities and provinces, the urban design structure of classical Rome was not based on a unity, but a city was formed by the accumulation of individually designed buildings (Bacon 1967, 71).

Bacon states that it's illuminating to compare the design approach that underpinned the city of Rome during its two major developmental periods. Classical Rome and Baroque Rome. Bacon expresses Classical Rome as "pressure" and Baroque Rome as "tension". In the classical Roman urban texture, which is shown in Figure 1.61 as it existed in the third century AD, gigantic monumental structures with official geometric designs can be seen. Rome's design was based on the interconnection of masses by sheer inertia. The forms have expanded to a size that will give texture and richness to the entire width of the topography, but there are no design elements on the same scale as the total area. The early city is an example of an accumulation of harmonious elements that create an effect of unity due to its similar themes. Nearly one thousand three hundred years later, the urban texture in the Baroque Roman period which is shown in Figure 1.62, represents the opposite of Classical Rome. Buildings in Baroque Rome are often smaller but their overall design impact is large. Bacon expresses this as the creation of points in space fixed by the vertical masses of obelisks and the tension between these points (Bacon 1967, 72-73).

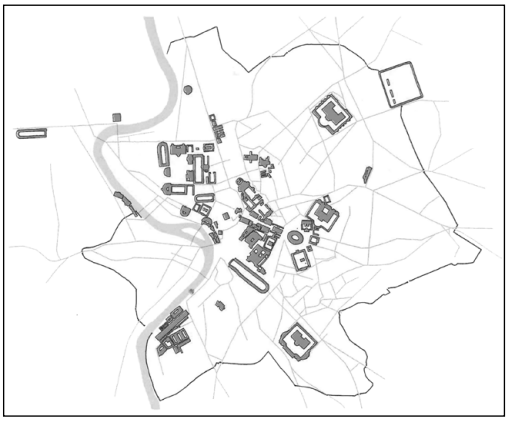

Figure 1.61 Classical Rome Scheme

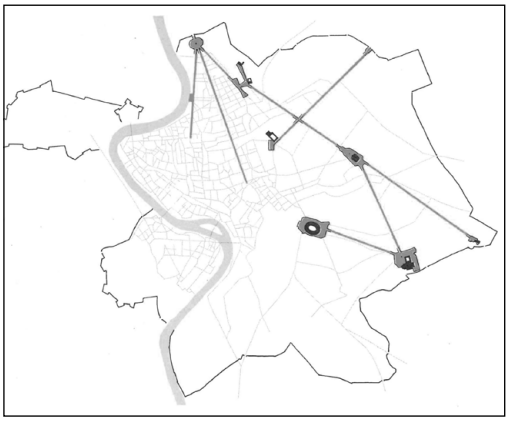

Figure 1.62 Barock Rome Scheme

Forma Urbis, a map carved in marble found on the wall of a building in the Forum, showing Rome from the third century BC, and the Nolli Map made by Giovanni Battista Nolli in 1748, showing the Roman urban fabric; in addition to the differences in the urban texture of their periods, they also reveal the urban perception with the way they are expressed. Forum Urbis, shows an approach to design in which the exterior and the interior are integrated. Column systems placed in a rhythm indicate function and give a sense of order. The various parts of the map show a wide variety of forms in rectangular, circular, semi-circular or free form. These forms also have the common rhythm of the columns. In the approach of the Nolli map, exterior and interior public spaces are integrated. While buildings considered private are shown in black and do not provide details, buildings considered public are white, such as streets and squares, depicted with walls and column systems. In this map, the rhythmic module is seen inside buildings that are considered public (Bacon 146-147). Display techniques reveal the awareness of private and public space as well as changing and layering urban textures.

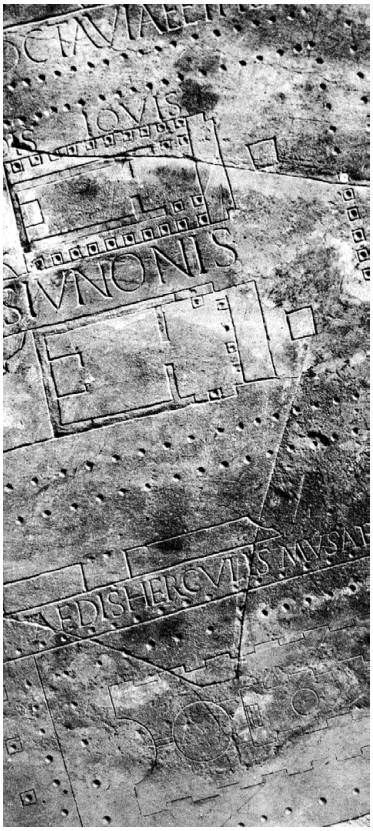

Figure 1.63 Forma Urbis

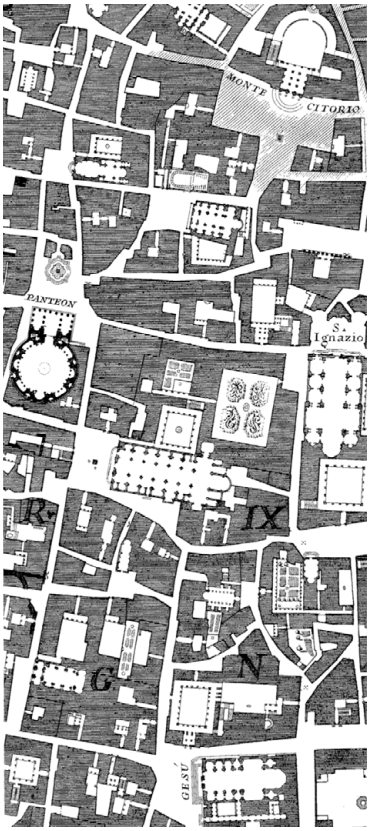

Figure 1.64 Nolli Map

Mantova as medieval design

With the fall of the Roman Empire, buildings of the scale seen in classical Rome disappeared from the Western European scene. Small medieval cities emerged, producing textures based on rational principles, whose designs would reach their climax centuries later (Bacon 1967, 79).

Bacon describes the engraving of Mantova below as:

> *"The engraving of Mantua... shows how this image is held together as the city expands outward. Here the symbolic image of the city as a whole, expressed in the cathedral spire, is recalled in the spires of the parochial churches and civic buildings spread throughout the town. By this method of design dispersal, unity between the scale of the neighborhood and the scale of the city is achieved, and a kind of design reverberation is set up which gives great richness to a city, and which is brilliantly exemplified in Venice." (Bacon 1967, 79).*

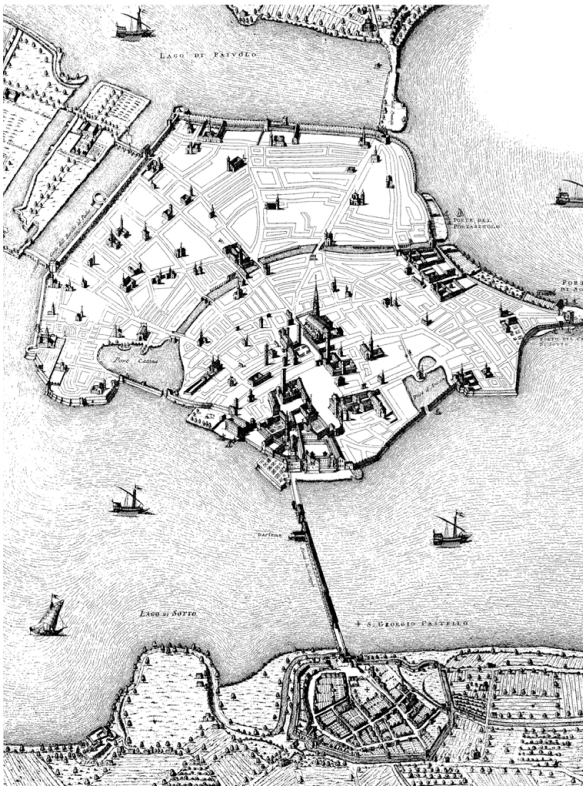

Figure 1.65 Engraving of Mantova, 1704

Public spaces of cities: Squares and streets

The square is likely to be the first way man discovered to use the urban space. In its simplest form, it emerged by surrounding houses around an open space. In this arrangement, a high degree of control of the interior is achieved. Over time, this type of courtyard gained a symbolic value and was chosen as a model in many sacred places. The street emerges as a result of the spread of houses built around a square. It has a more defined functional character than the square. There are very few instances where it operates as an autonomous isolated area, for example, villages set up along a street. It should be perceived as part of a network. They have been designed in different scales in line with the changing needs of historical cities (Krier 1991, 17).

Krier, in his book *Urban Space* which published in 1991, talkes about typical functions of urban spaces and he argues that *"the activities of a town take place in public and private spheres. The behavioural patterns of people are similar in both. So, the result is that the way in which public space has been organised has in all periods exercised a powerful influence on the design of private houses." (Krier 1991, 17).* Over time, the use and symbolic values of the squares in accordance with the purpose of their construction have also changed. Considering the appropriate functions in the present day, these are primarily trade, as well as establishment of public adminstrative offices, community halls, libraries, theatres, cafes, bars etc. There should be functions that can serve twenty four hours in central squares while the residential use should not be excluded (Krier 1991, 19).

Before Krier, Camillo Sitte, in his book *The Art of Building Cities* which is published in 1945, examined the relations of squares with buildings, monuments and other squares in their immediate surroundings. Also he examined open centers enclosed character and form and expanse of the public squares through European cities. He says that:

> *"In the South of Europe, and especially in Italy, where ancient cities and ancient public customs have remained alive for ages, even to the present in some places, public squares still follow the type of the ancient forum. They have preserved their role in public life. Their natural relationships with the buildings which enclose them may still be readily discerned. The distinction between the forum, or agora, and the market place also remains." (Sitte 1945, 8).*

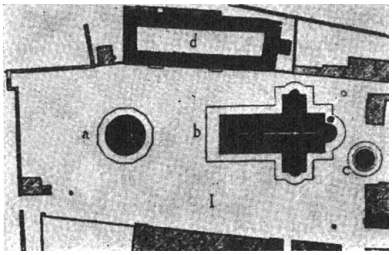

Figure 1.66 Pisa: Cathedral Square

Figure 1.66 represents Cathedral Square in Pisa and Sitte says that Pisa's cathedral square is its Acropolis because *"includes everything that people of the City have been able to create in building religious edifices of unparalleled richness and grandeur." (Sitte 1945, 9).*It contains baptistry Saint Jean (a), Cathedral (b), Campanile (c) and cemetery Campo Santo (d).

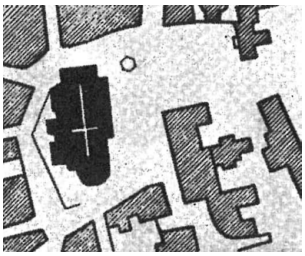

Figure 1.67 Autun: Saint Louis Plaza

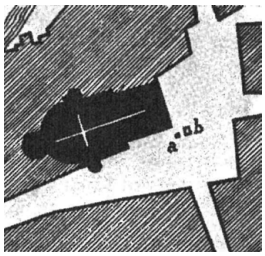

Figure 1.68 Padua: Piazza del Santo

Figure 1.69 Padua: S. Giustina

In the examples Figure 1.67 to Figure 1.72 that shown, fountains and monuments are not located at places of intense traffic use, nor at the center of public places, nor on the axis of a monumental portal. Each site has its own historiacal importance and according to this historical development of the public square varies. Selection of the center of a public square for the placement of a statue, was never established as a principle by ancients, which could be possible to see in modern cities (Sitte 1945, 14).

Figure 1.67 which represents Saint Louis Palaza in Autun, France; it is seen that the placement of cathedral is not centric, it is placed at the side of the street and the Fountain of Saint Lazare is also follows the axis of the street. Figures 1.68 and 1.69 show examples from Padua which the monuments are set back with one or more sides against other buildings. At Piazza del Santo, Column (a) and Statue of Gattamelata (b) stand beside the antrance to Cathedral of Padua (Sitte 1945, 15-16).

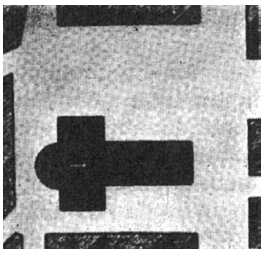

Figure 1.70 Lucca: S. Michele

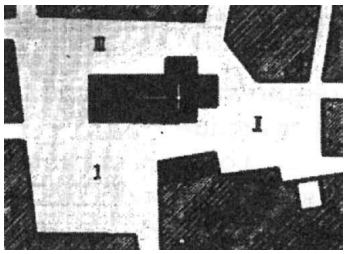

Figure 1.71 Vicenza

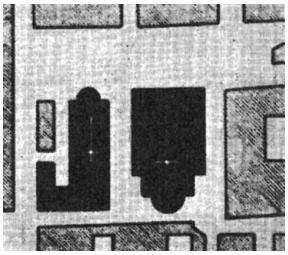

Figure 1.72 Brescia

In the examples of Lucca, Vicenza and Brescia; it is seen that the monuments are not setted back against other building instead of they are setted back following the axis of the surrounding buildings as giving free space (Sitte 1945, 17-18).

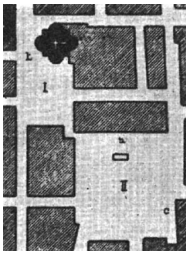

Figure 1.73 Parma

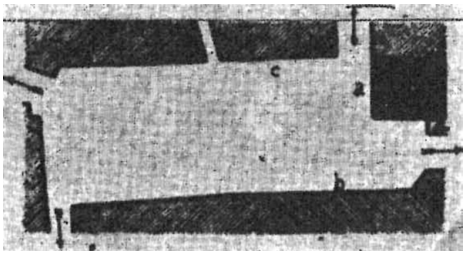

Figure 1.74 Mantova: Piazza S. Pietro (Piazza Sordello)

Sitte says that the old squares produce a *collective harmonious effect* because they are uniformly enclosed spaces. In the Figure 1.73 and 1.74 examples of enclosed squares are shown. In the example of Parma, Piazza d.Steccata and Piazza Grande are two enclosed spaces. There are no direct visual contact between them but they are connected by a passage. Piazza S. Pietro (today Piazza Sordello), is a single enclosed space which there are multiple accesses. Cathedral San Pietro (a) is faced to the square but placed a side, not interrupting the flow of the space.

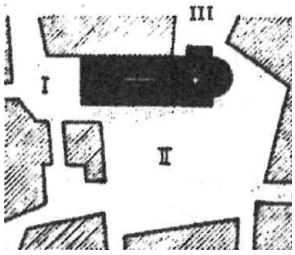

Figure 1.75 Modena: Legna, Grande , Torre

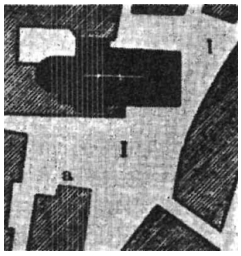

Figure 1.76 Perugia: Duomo, dei Papa

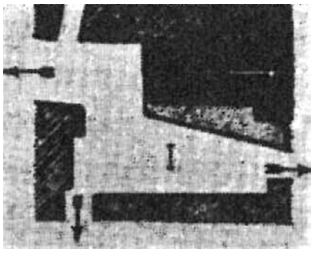

Figure 1.77 Mantova: Piazza Erbe

Examples shown in the figures from 1.75 to 1.77, are the groups of squares which

have connections to each other. In these examples, the connections between the squares are in flux. In the Mantova example, only Piazza Erbe is seen, and while it has a direct connection with Piazza Andrea Mantegna, it is connected to Piazza Sordello and Concordia via the street (Sitte 1945, 35-36).

After the square examples, if we go back to Krier's determinations about modern streets, which are universally seen as areas for public circulation and recration, in purely residential areas. Krier says that *"street space can only function when it is part of a system in which pedestrian access leads off the street." (Krier 1991, 20).*

Krier exemplifies the intersection of the square and the street through four different types:

"1. Centrally and at right angles to one side.
2. Off-centre and at right angles to one side.
3. Meeting a corner at right angles.
4. Oblique, at any angle and at any point of entry." (Krier 1991, 28).

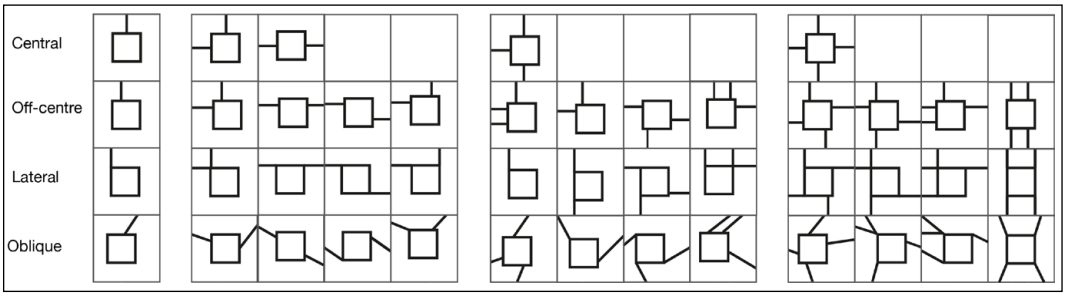

Figure 1.78 Intersections of Street and Square

In the scheme, combinations are grouped through the place of the intersection and number of the streets that connects to a square.

Krier argues that:

> *"In formulating a typology of urban space, spatial forms and their derivatives may be divided into three main groups, according to the geometrical pattern of their ground plan: these groups derive from the square, the circle or the triangle." (Krier 1991, 22).*

It is known that circle, square and triangle are basic shapes, which derived from each

other. Krier, suggests a scheme for summarising morphological classification of urban spaces. In the scheme six modulating factors are presented: *Angling, Segmentation, Addition, Merging, Overlapping or Amalgamation* and *Distortion* (Krier 1991, 28-29).

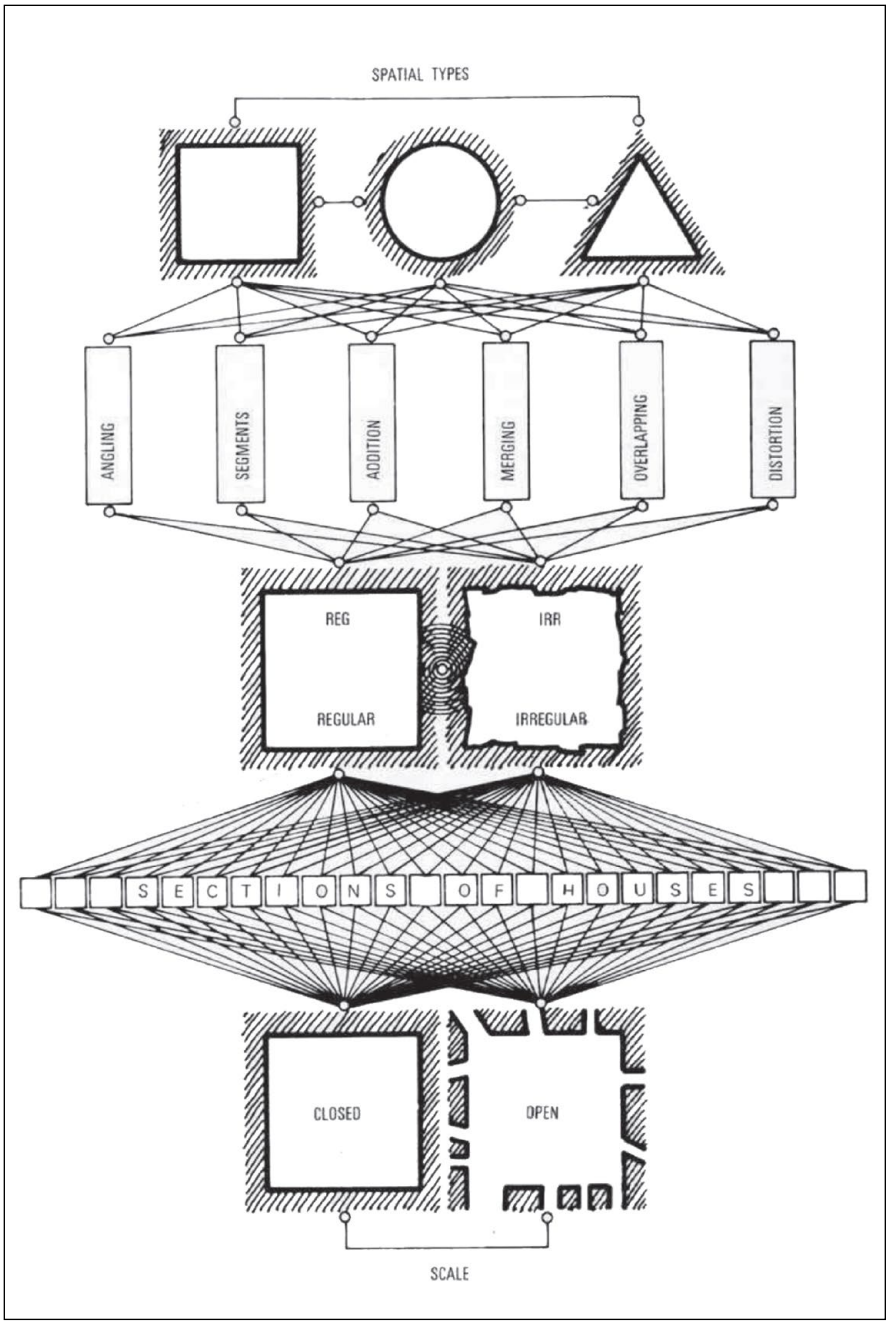

Figure 1.79 Morphological Classification of Urban Spaces

Texture of cities: Blocks and buildings

Block is *"the original cell of every urban design structure. It defines the networks of routes around its edges and the building plot structure in the middle. The latter determines the ryhthm of the buildins at the perimeter of the block."* while the building is *"the second basic element of urban design" (Krier 2003, 11).*

Krier, in his book *Town Spaces*, he compares the old cities with their new states and discusses the positive aspects and failures of their development. In cities that develop spontaneously over time, the network of streets is the supporting structure that determines the development of the cityscape. This network and the building blocks which are the basic components of every urban structure, have a tight and homogeneous structure in the center and expand towards the edges. The dimensions of the blocks are proportional to the dimensions and widths of the buildings (Krier 2003, 10).

He also underlined the importance of urban planning and design as well as the expression of buildings in the third dimension:

> *"Knowing all the conceivable urban space typologies and the variety of possible façade designs in public spaces are further necessary prerequisites. An intelligent urban ground plan on which ugly buildings have been erected will be unattractive far both residents and visitors. On the other hand, a simple grid pattern layout without spatial suspense can be made into an architectural event through the use of beautiful building façades. Indeed, the greatest enjoyment is derived from the combination of both qualities." (Krier 2003, 12).*

Mass forms have relations with the urban space at different scales. In addition to the characteristic of the form, its effect on the environment in which it is located in the urban space is also very important.

According to Ching:

> *"At an urban scale, we should carefully consider whether the role of a building is to continue the existing fabric of a place, form a backdrop for other buildings, or define a positive urban space, or whether it might be appropriate for it to stand free as a significant object in space." (Ching 1979, 104).*

Composition at block and building scale

Ron Kasprisin, in his book *Composition of Complexity*, exemplifies the principles of composition over city blocks and buildings. These compositions and their elements parallel the basic design elements described at the beginning of the chapter and their organization thereafter.

Kasprisin, defines design elements as "the nouns" which are which are basically dot, line and shape; design principles as "the verbs" which are alternation, angle of view, axial movement, balance/symmetry, bridging, datum, dominance, gradation, harmony, merging, transformation, repetition, rhythm etc.

He underlines that these "*principles result from centuries of artistic exploration and andw apply directly to most aspects of design, including urban design." (Kasprisin 2011, 38)* and they are rules for conducting not universally but by fundamental laws that explain an action. They assist the designer to activate objects or elements into arrangements and compositions (Kasprisin 2011, 38).

According to these principles, some of the examples are presented at the scale of urban blocks:

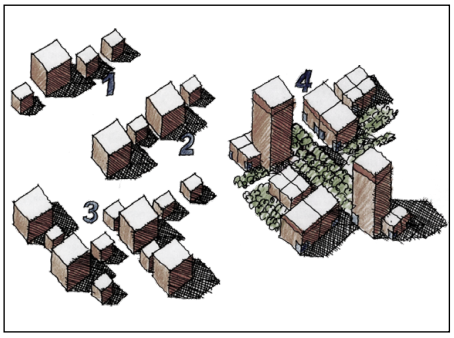

Figure 1.80 Alternation

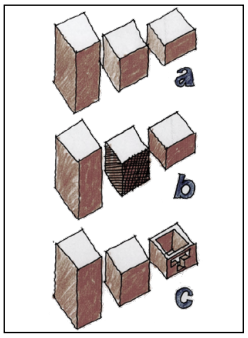

Figure 1.81 Dominance

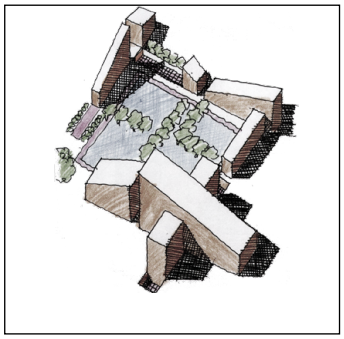

Figure 1.82 Harmony

In Figure 1.80, it is seen that two different clusters of alternating forms (1 and 2) and their combination (3). In the same figure it is represented the application of the same principle in larger-scale developments (4). Figure 1.81 represents dominance which is seen as dominance by size (a), dominance by tone or value (b), dominance by difference (c). Figure 1.82 represents harmonical composition in an urban block.

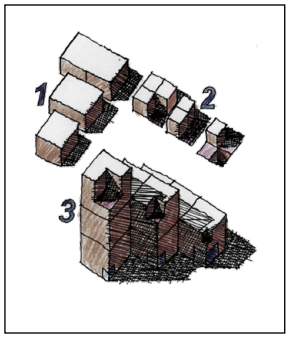

Figure 1.83 Gradation and Repetition with Variety and Value

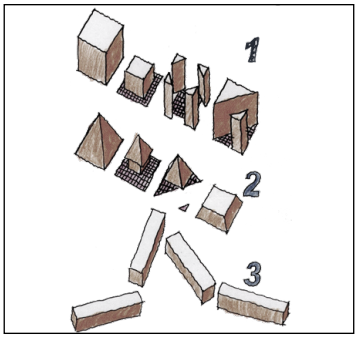

Figure 1.84 Repetition with Variety and Manipulation of Primary Shapes

Figure 1.83 shows cubes in different sizes (1), positive and negative quarter volumes (2), vertically graded volume (3) while Figure 1.84 shows repeated shapes with differing manipulations of volume,corners etc. (1 and 2) and repeating rectangular volume differing placements and axial directions.

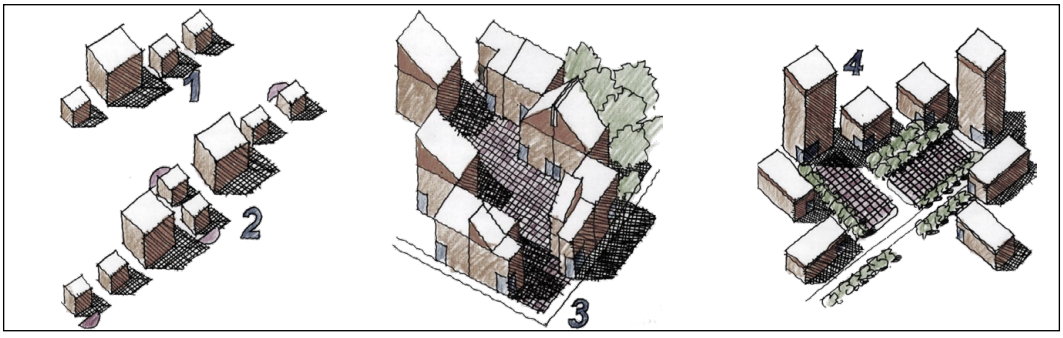

Figure 1.85 Repetition with Variety and Rhythm

Figure 1.85 represents repetition with variety and rhytm. Cubes are repeated of varying sizes with a specific rhythm: small-large-small-small (1) and combination of two clusters with a rhythm: small-small-large-small (2). It seen a housing site of three clusters of the same repetition with formal and volumetric varieities in the same rhythm (4).

Kasprisin defines composition as:

> *"Composing is to put something in proper order and form, assembling a physical entity from small relacional groupings or systems and cheir larger relationships; it is an aeschetically unified arrangement of small systems for*

a defined period of time (periodicicy). Aesthetics of course are relative to culcure and social agendas, and are major variables in composition-dependent upon the trialectic of culture, space, and time. In design, a composition is che arrangement (organization and scructure) of elements in relationship representing a meaning or story, a spatial metaphor, with the process of its "making" evident in the composition, articulaced in its physical dimensions or state." (Kasprisin 2011, 45).

According to Kasprisin, in a composition, there are two types of relationships: *organizational* and *structural*. Operations and functions of a composition are organizational; the nature of the assemblage of those organizations into a physical whole is structural (Kasprisin 2011, 47).

He describes the structural relationship in a composition as the following:

"The structural relationship aspect in a composition assembles the functional and operational relationshios into a physical spatial composition, using forms to combine function and site context ş nto a meaningful spatial metaphor... In a design, there is usually one structural composion that is dominant out of numerous smaller assemblages, framing other smaller or supporting structures. Complex compositions have multiple structures in relationship, all performing a supportive action of a larger action" (Kasprisin 2011, 48).

For complex compositions; square, circle and line become structuring mechanisms rather than elements or shapes. Circle, square, line and/or axis can be accepted as basic structural compositions. They provide dynamic frameworks for giving specification to organizations (Kasprisin 2011, 51).

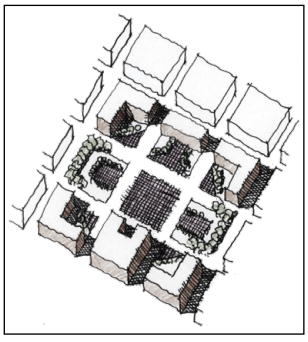

Figure 1.86 The Square

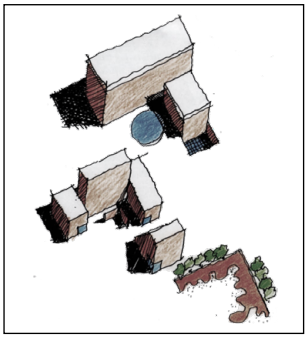

Figure 1.87 The "L"

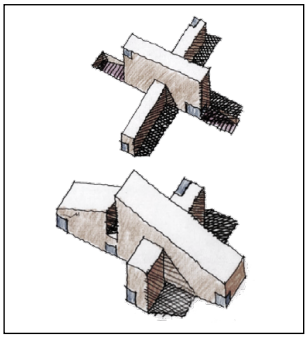

Figure 1.88 The Cross

In the figures 1.86 to 1.88, they are shown square composition and “L” and cross examples which are derived from the square. Square is a powerful structuring form which can be a base for varieties of compositions (Kasprisin 2011, 53-56).

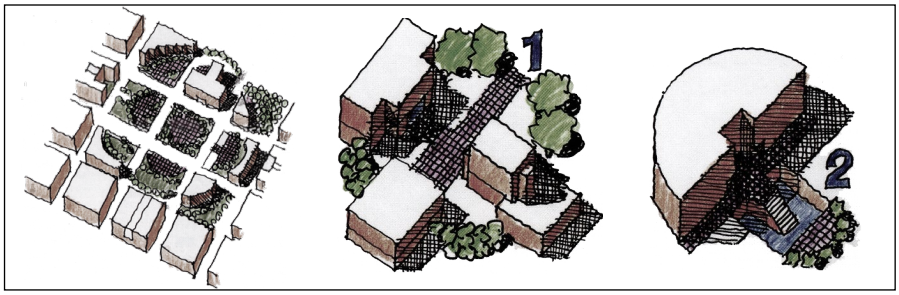

Figure 1.89 The Circle

Figure 1.89 represents circle which is also a powerful compositional structure and its derivatives. They show varieties in size (1) and a circle-square combination with positive and negative levels (2) (Kasprisin 2011, 58-59).

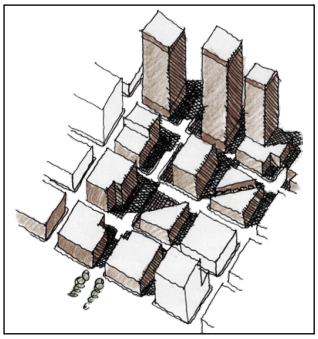

Figure 1.90 The Axis

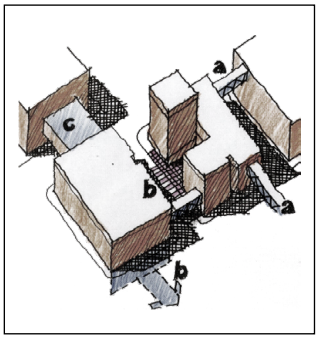

Figure 1.91 Bridging

Figure 1.90 represents axis which is a powerful linear force that assambles functional relationships within and along its movement and direction. In an urban scale, it can be perceived as a street or a river axis that cuts streets at another angle in a grid system. It is directional and provides orientation in the dense urban texture it is in, and serves as a reference (Kasprisin 2011, 61). Figure 1.91 shows bridging examples in a small composition. The bridging is a form of visual connection. It can be used to connect two buildings in the same function or two or more buildings in different functions. It can be passage to another level of another building or directly connect outside. The bridging device itself can be a space for a specific function. It can be transparent or solid. Generally creates spaces beneath.

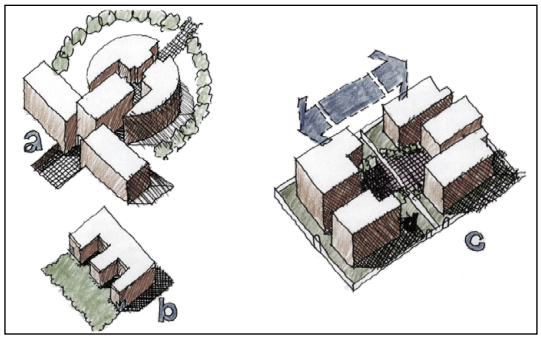

Figure 1.92 Interlocking Structures

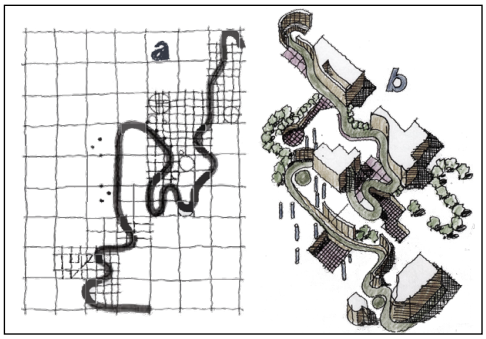

Figure 1.93 Ghost Structures

Figure 1.92 shows examples of interlocking structures which work well with positive and negative relationships. Interlocking can be summarised as integration of two or more shapes into one another along their edges. Interlocking rectangular forms with circular form (a), interlocking open spaces with mass form (b), and interlocking composition of independent forms around a space (c) are represented. (Kasprisin 2011, 67). Figure 1.93 shows ghost or transparent structures. The curvilinear form is represented upon a grid of varying size squares (a) which in the urban space occurs as a green path around the buildings (b). This gridal base is acts as ghost structure for the green path and is an example to form-based implementation (Kasprisin 2011, 70).

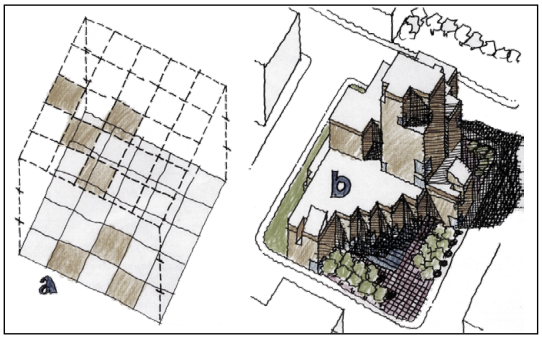

Figure 1.94 Three-dimensional Grid Framework

Figure 1.94 shows three-dimensional grid frameworks and how masses organised within. This framework (a) acts as guide and is useful to carve out responsive forms in an urban context. It is seen that a single mass rises with different movements horizontally and vertically. It is seen that subtractions are made in places and exist dynamically in the fixed grid system with different heights. This is an another example of form-based implementation (Kasprisin 2011, 70).

Kasprisin states that:

> *"Compositional structuring assembles elements and principles into meaningful form. Based on the complexities of the environment, manipulating form to respond to complex stuations is also an integral part of design." (Kasprisin 2011, 81).*

He says that transformation principles are key design for urban complexity and there are ways to change or manipulate form: *Dimensional, Subtractive, Additive, Integrative or Merging* and *Bridging* (Kasprisin 2011, 81).

In the *dimensional transformations*, one or more measurements change. This can be seen as a square transforms into a rectangle or becomes a larger or smaller one. If the aim is maintaining parent identity, all relative components can only be made larger or smaller (Kasprisin 2011, 81).

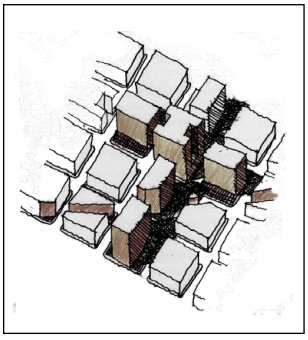

Figure 1.95 Cross and Axis

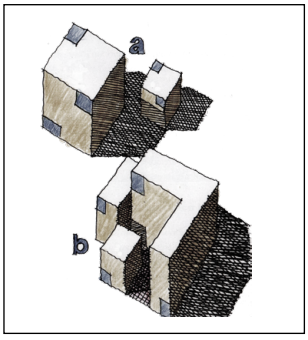

Figure 1.96 Cubes

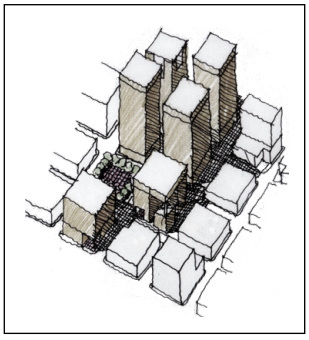

Figure 1.97 Cubes in the Urban Pattern

Figures 1.95 to 1.97 examplifies dimensional transformations. Figure 1.95 represents alternating the dimensions of axial shapes. In Figure 1.96 it is seen that a cube transformed into a smaller one (a) and a small cube superimposed by a bigger one which is turned into a surrounding one by removing a part (b). Figure 1.97 represents variety of urban cube transformations which parent idedntity maintained (Kasprisin 2011, 82-83).

Substractive tranformations occurs as taking away a portion of an element or volume. The substraction should stop in order to retain original identity of the form, in a certain point. If decides to continue the identity changes into something else (Kasprisin 2011, 83).

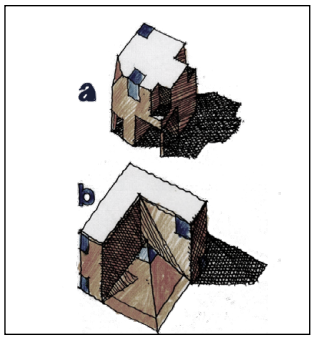

Figure 1.98 Substractive Transformations

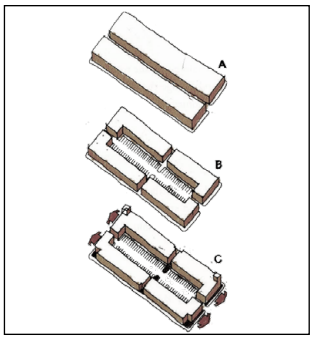

Figure 1.99 Substractive Zoning

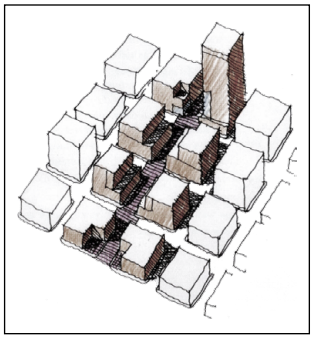

Figure 1.100 Substractive Urban Block

In the Figure 1.98 it is represented a cube which became a two-story house (a) and a pyramid that emerged from the cube which is defined by the boundaries of a void (b). Figure 1.99 shows how zoning mass for a block (a) transformed into a form-based zoning concept by subtracting portions of the mass to create interior parking areas (b). In more detail pedestrian enclaves added (c). In the Figure 1.100 it is represented subtractive urban block massing which volumes are subtracted from larger building masses to dramatize a key pedestrian axis.

In the *additive transformations* maintaining the original identity of the primary form is the key principle and consists of changing a form by adding to an ezisting one (Kasprisin 2011, 83).

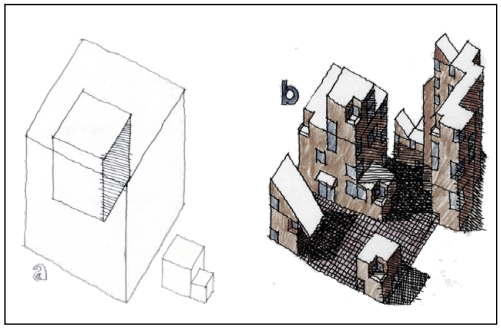

Figure 1.101 Additive Transformations

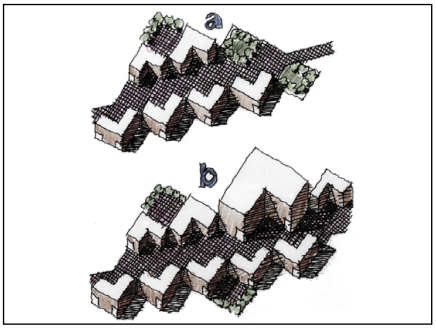

Figure 1.102 Additive Transformations of a Composition

In Figure 1.101 it is represented a simple additive transformation of a small cube changing into larger one (a) and cube additions to a main cube to define larger cube as a void (b). Figure 1.102 shows a grid structural composition with a diagonal axis that contains buildings and courtyards assembled by the grid and axis (a) and transformation of a structural composition by adding both a dimensional change to

the basic building form and added basic forms along the axis (Kasprisin 2011, 86).

Merging transformations occurs by bringing two or more elements, volumes, or spatial relationships together in contact at and within the edges or peripheries. New characteristics are created within edges and key aspects of each parent are maintained. By merging, the complexity of composition can be increased by introducing hybrids from the parents alongside them (Kasprisin 2011, 87).

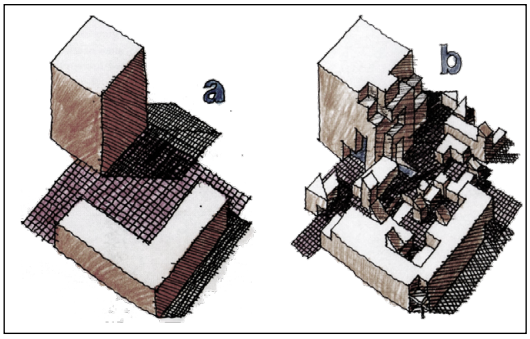

Figure 1.103 Merging Transformations Abstract Compositions

In the Figure 1.103 it is shown that two masses combination of different types which one of them is a high cube and the other is lower L shaped (a). After merging process, it is seen that the overall mass is maintained where the merged area absorbs as additive transformation the subtractive one.

Bridging is connecting two or more elements, volumes or spatial relationships by contrasting or conflicting in nature while preserving key principles of each relatinship (Kasprisin 2011, 92).

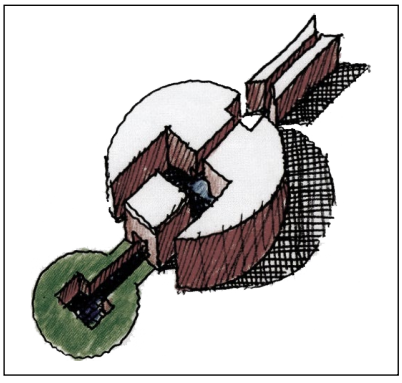

Figure 1.104 Bridging: Making Connections

In the Figure 1.104 bridging transformation composition example also includes superimposition. The main mass which is a circle interlocks with the depressed rectangle (Kasprisin 2011, 93).

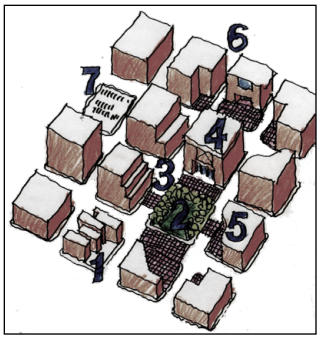

Figure 1.105 Urban Edges

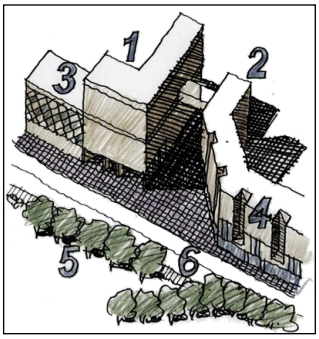

Figure 1.106 Edge Opportunities

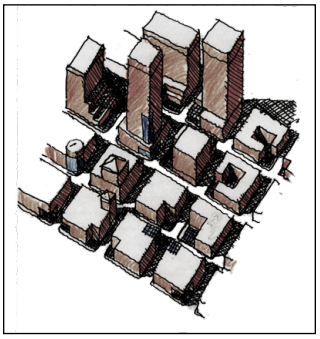

Figure 1.107 Urban Corners

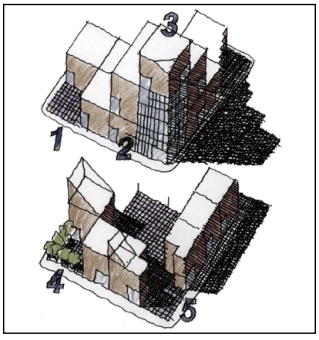

Figure 1.108 Corner Opportunities

After presenting the transformation types, if we look at the architectural details that can affect the urban space in the composition of the masses, it can be said that *"the urban composition relates to the concept of the city as an object of artistic work." (Grunskis 2010, 139).*

Figures 1.105 to 1.108 shows edge and corner details of the buildings in compositions. As the final words, related to these representations, Grunskis argues that:

> *"...a town and its spatial and layout structures are developed as completed piece from the beginning to the end ... the concept of Urban Composition is used speaking about the layout and space compositional regularities of architectural and urban complexes, as well as urban public spaces." (Grunskis 2010, 139).*

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CHAPTER 2

2. URBAN DESIGN in CONTEMPORARY CITIES

The emergence of the urban design as discipline is based on a series of symposium conferences held in 1956 at Harvard University by Josep Lluis Sert (1902-1938), Dean of Harvard Graduate School of Design and the founding member of CIAM (Black 2019, 15).

Some of the many attendees of the conferences: Jane Jacobs, who was not yet famous at the time, and well-known Edmund Bacon and Lewis Mumford were also present. Participants agreed that the distinction between the "art of building" and the "systematic nature of planning" is not sufficient to build new cities or rehabilitate existing ones. In both the United States and Europe, hopes and ideas for a new discipline devoted to urban design were on the agenda, thanks to CIAM, which had focused attention on urbanization since the early 1940s. (Krieger 2009, 113).

Sert's aim was to create a definition for "urban design" to make it a bridge between architecture and planning. As a result of conferences, two definitions were put forward by Sert: *"is that part of city planning which deals with the physical form of the city."* and *"the most creative phase of city planning, in which imagination and artistic capacities play the important part."* (Krieger 2009, 114).

The effort to define urban design continued after Sert's definitions as well as before. The definitions made by theoricians of different disciplines, from their own perspectives, reveal different dimensions of urban design. According to Kasprisin:

> *"Urban design is a broad term with many interpretations: design is generally understood to deal with physical quality and aspects of the environment, such as the spaces betwee n buildings, the relationship of buildings to open space, and the larger structure of cities as defined by the infrastructure of utilities, streets, and block layout.*
> *...*
> *Definitions of urban design vary dramatically depending upon the background(s) of the designer or physical planner, from geography to landscape architecture, to architect, to sociology." (Kasprisin 2011, 10).*

The meaning of the words "urban" and "design": *"urban describes the characteristics of*

towns or cities, while design refers to such activities as sketching, planning, arranging, colouring and pattern making." (Carmona 2021, 9). Kasprisin gives the definition of "urban" as: *"characteristic of the city as distinguished from the country"; "constituiting a city or town." (Kasprisin 2011, 11)*. Rather than "urban design" Kasprisin says that he prefers using the term "community design" which defines a group of people in association or in social units within a space that is not scale-specific (Kasprisin 2011, 11).

There is no definite judgment about whether urban design is an art or a science, it contains systematic actions. There are many different theories, both sociologically and conceptually, about how these systematic actions should be.

2.1. Theories, Theoricians and Arguments

Selected theories focusing on the design aspect of the process, which are related to the research questions of the study, are discussed.

Starting with **Townscape**, as a term, means *"the visual appearance of a street" (Black 2019, 47)*. In the townscape approach, two names that lived at different times come to the fore:

Figure 2.1 Camillo Sitte

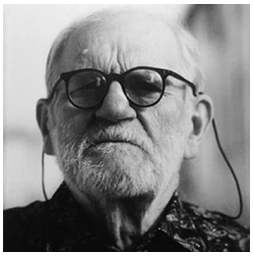

Figure 2.2 Gordon Cullen

Camillo Sitte (1843-1903), is seen as a pioneer of townscape approach. In his book *The Art of Building Cities*, Sitte argues that *"monuments and public buildings should not be placed in spaces, but should be at their adges, helping to define them." (Cowan 2021, 6).* His urban design principles, based on the ideas, perceptions and experiences of a person who moves through a city.

Gordon Cullen (1914-1994), played a leading part in developing the townscape approach. In his book *Townscape,* Cullen argues that, if we design the towns from the view of the moving person, which would be a pedestrian, *"it is easy to see how the*

whole city becomes a plastic experience, a journey through pressures and vacuums, a sequence of exposures and enclosures, of constraint and relief." (Cullen 1961, 12).

Cullen likens buildings put together to people gathered together. He said that just as a collective joy emerges when people come together, a visual pleasure emerges that none of them can give alone, when buildings come together. He says that the building he encounters after turning the corner while wandering among a group of buildings may be surprising, but this is *"a reaction generated by the composition of the group not by the individual building." (Cullen 1961, 9).*

Cullen argues that when entering the spaces created by a group of buildings, be included in that group and this creates the perception of *"I am inside IT"* or *"I am entering IT"*. In another example Cullen gives, he says that the scale of the temple, which is standing in a void, cannot be perceived when looking at it, and when it is seen together with other buildings (small houses), the difference emerges and the temple turns into a tower. He calls this *"difference in meaning between bigness and towering"* as "measure of the relationship" (Cullen 1961, 9-10).

He speaks of the *art of relationships* whose purpose is to take and combine all the elements that create the environment, *"in such a way that drama is released." (Cullen 1961, 10).* For these elements such as buildings, trees, nature, water, traffic, advertisements; Cullen argues that demographers, sociologists, engineers, and traffic experts work together and put forth a tremendous amount of effort, but the result is soulless, boring cities. He says that scientific solutions are based on *averages*, and that's why we need to free ourselves from the belief that the *"excitement"* and the *"drama"* we seek will emerge from scientific research by itself. To achieve this it is necessary to *"manipulate within the tolerances"* whose aim is not to dictate either the shape of the town or environment (Cullen 1961, 10).

Cullen defines vision as something that awakens our memories and experiences, that can bring out emotions within us that are powerful enough to disturb our minds. Cullen describes *serial vision as "the pedestrian walks through the town at a uniform speed, the scenery of towns is often revealed in a series of jerks or revelations." (Cullen 1961, 11).* He argues that, if the environment is going to produce an emotional response, with or without our will, we should try to understand that it happens in three considerations: *Optics, Place* and *Content* (Cullen 1961, 10).

In terms of *optics*, Cullen says, the human brain responds to contrasts, a vivid contrast is felt and the city is made more visible. He splits the city into two elements from an optical point of view: existing view and emerging view. *Place* is concerned with people's reactions to the position of their body in its environment. Cullen exemplifies this situation as the involuntary subconscious perception of "I am outside IT, I am entering IT, I am in the middle of IT" when a person enters a room. At the urban scale, same consideration is valid for a street or a square but in this case "here" and "there" perception arises which by a skilful relationship between these two create the greatest townscape effects. Cullen related *content* to the fabric of towns which are colour, texture, scale, style, character, personality and uniqueness. He says that old towns are made up of differences in style, material and scale, and he argues about the misconception that it is necessary to get rid of this complexity in order to make a new city, and that this is possible with symmetry, balance, perfection and conformity, which are popular urban planning concepts. Cullen says that, in order to create collective benefits, manipulation of nuances, scale, style, texture, colour, character and individuality, is possible, and he continues with interplay of "this" and "that" which are the environment resolves itself into, not in the conformity. (Cullen 1961, 11-14).

In summary, Cullen states that:

> *"We discovered that the human being is constantly aware of his position in the environment, that he feels the need for a sense of place and that this sense of identity is coupled with an awareness of elsewhere. Conformity killed, whereas the agreement to differ gave life. In this way the void of statistics, of the diagram city, has been split into two parts, whether they be those of Serial Vision, Here and There or This and That. All that remains is to join them together into a new pattern created by the warmth and power and vitality of human imagination so that we build the home of man." (Cullen 1961, 14-15).*

Figure 2.3 Kevin Lynch

Imageability with it's five elements, put forward by **Kevin Lynch** (1918-1984), in his book *The Image of the City* which is published in 1960. Imageability is *"that quality in a physical object which gives it a high probability of evoking a strong image in any given observer." (Lynch 1960, 9)*. Lycnh says that it might also called *legibility* or *visibility.* It's five elements are: *paths, edges, districts, nodes* and *landmarks*.

Paths "are the channels along which the observer customarily, occasionally, or potentially moves.". Streets, walkways, transit lines, canals, railroads are some examples of the paths which are the predominant elements in the images of many people. People observe city while moving through paths. *Edges "are the boundaries between two phases, linear break in continuity.".* These phases may be shores, railroad cuts, edges of developments and walls. They are linear elements which are not used or considered as paths by the observer. However edges in the role of holding together generalized areas like as in the outline of the city by water or wall, they are not as dominant as paths in the images of people. *Districts* "are the medium-to-large sections of the city, conceived of as having two-dimensional extent, which the observer mentally enters *"inside of," and which are recognizable as having some common, identifying character".* Some people describe their cities by imagining them through districts. It is about the characteristics of the city as well as the individual. *Nodes "are points, the strategic spots in a city into which an observer can enter, and which are the intensive foci to and from which he is traveling." (Lynch 1990, 41).* Junctions are the primary nodes, street-corner hangout or an enclosed square which are simply concentrations, also can be nodes according to their importance. *Landmarks "are usually a rather simply defined physical object: building, sign, store, or mountain.".* They are another type of point-reference which are external that observer does not enter within them. Some of them are distant ones which can be seen from many angles and distances like isolated towers, domes, hills. Others are primarly local, only visible in restricted areas and from certain points like store fronts, trees or doorknobs (Lynch 1960, 41-42).

Lynch, in his book *Good City Form*, published in 1984, he defined seven criteria for *"good"* cities and settlements. Before presenting them, he underlines that *"it would be foolish to set performance standarts for cities...Situations and values differ." (Lynch 1984, 111).* He calls first five as *"dimensions"* and last two as *"meta-criteria"* which non of them singular, all refer to a clustered qualities. These seven are: *Vitality, Sense, Fit, Access, Control, Efficiency and Justice.*

Vitality is the degree to which the form of the settlement supports the vital functions,

the biological requirements and capabilities of human beings. *Sense*, is the degree to which the settlement can be clearly perceived and mentally differentiated and structured in time and space by its residents and the degree to which that mental structure connects with their values and concepts. *Fit*, is the degree to which the form and capacity of spaces, channels, and equipment in a settlement match the pattern and quantity of actions that people customarily angage in, or want to engage in. *Access*, is the ability to reach other persons activities, resources, services, information, or places. *Control*, is the degree to which the use and access to spaces and activities, and their creation, repair, modification, and management are controlled by those who use, work or reside them. *Efficiency*, is the cost, in terms of other valued things, of creating and maintaining the settlement. Justice, if the way in which environmental benefits and costs are distributed among persons. (Lynch 1984, 118)

Lynch explained that meta-criteria (efficincy and justice) are distinct from the five criteria (vitality, sense, fit, access and control) that precede them. Meta-criteria *"are involved in each one of the basic dimensions, thus they are by no means independent from them." (Lynch 1984, 119).*

Figure 2.4 Christopher Alexander

Pattern language, is created by **Christopher Alexander** (1936-2022) and described in his book *A Pattern Language: Towns, Buildings, Construction* which is published in 1977. The structure of the netrwork is explained before in his book *The Timeless Way of Building,* which is published after but the introduction to *Pattern Language.* In his book Pattern Language, he argues that people can draw for themselves. He thought about the relationships between different scales of the city -which are neigborhood, street, buildings, fine details- and wanted to show how the city could be shaped by these relations (Cowan 2021, 14). As the title of the book suggests, Alexander created a "language". He explains the rationale for creating this language as:

"*...towns and buildings will not be able to become alive, unless they are made*

by all the people in society, and unless these people share a common pattern language, within which to make these buildings, and unless this common pattern language is alive itself." (Alexander 1977, x)

Patterns are entities that are the elements of the language. Each pattern describes a problem which can occur in environment many times. Patterns then describes the core of the solution to that problem. Solutions can be used a million times over but the rule is not doing it in the same way twice. The language offers 253 patterns as a whole which can be combine in infinite variety. No pattern is an isolated entity, it can exist supported by other patterns. A pattern is inside a larger pattern, combined with others of its own size, and contains other patterns. This relation means *"when you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at that one place becomes more coherent, and more whole..." (Alexander 1977, xiii).* The solutions are expressed in an abstract way, giving only the basic relationship field. The reason for this is to ensure that the solution can be adapted to local conditions and to one's preferences. Alexander stated that this is not always possible, that some solutions are more true and accurate while others are never effective in solving problems.

Petterns are grouped according to the scale relations. In the first part it is defined patterns of "town/community", second part "groups of buildings and individual buildings" and third part "buildable building". Principle is moving always from larger patterns to the smaller. Patterns of town or community can never be "designed" or "built". Some of these patterns are: independent regions, the distribution of towns, agricultural valleys, mosaic of subcultures, neighbourhood boundry, ring roads, access to water, industrial ribbon, carnival, small public squares, animals and so on. Secong group, *groups of buildings and individual buildings* are can be "designed" and "built". Some of them are: building complex, main building, long thin house, main entrance, roof garden, building fronts, stair seats, indoor sunligh, couple's realm, a place to wait and so on. In the third and last group of patterns *buildable building* tells how to build in detail: structure follows social spaces, good materials, roof layout, ground floor slab, wall membranes, column place, soft inside walls, seat spots, climbing plants, ornament and more (Alexander 1977).

Wholeness, which is always been consideration of Alexander, explained in his book *A New Theory of Urban Design*, which is published in 1987, he states that: *"...we propose a discipline of urban design which is different, entirely, from the one known today.*

We believe that the task of creating wholeness in the city can only be dealt with as a process. It cannot be solved by design alone, but only when the process by which the city gets its form is fundamentally changed." (Alexander 1987, 2). He says that when we look at old, beautiful cities, we are impressed by the feeling of being "organic" and that this quality is not present in the cities built today. The reason for this that -neither architecture, nor urban design, nor city planning- there is no discipline that can sets out to create it. The feeling of "organicness" is *"an accurate vision of specific structural quality which these olf towns had . . . and have." (Alexander 1987, 2).* Alexander continues as follows:

> *"Namely: Each of these towns grew as a whole, under its own laws of wholeness . . . and we can feel this wholeness, not only at the largest scale, in the houses, shops, markets, roads, parks, gardens and walls. Even in the balconies and ornaments." (Alexander 1987, 2).*

He attributes the fact that no discipline can achieve "wholeness" due to the fact that no discipline has yet tried it. He argues that city planing is only concerned with the implementatin of certain ordinances, while architecture is concerned with the problems of individual buildings and urban design is concerned problems only as aesthetic issues and thinks that they can be solved at the visual level. On the other hand, he says that the term "urban design" is strong enough to deal with the city as a complex, in three dimensions instead of two, and that is seen as a discipline that can take responsibility for the wholeness of the city, among all disciplines, and therefore it is included in the title of the book (Alexander 1987, 3).

Alexander argues that they introduced a new discipline of urban design that was completely different from what is known today. They *"believe that the task of creating wholeness in the city can only be dealt with as a process." (Alexander 1987, 3).*

According to him, the idea of a growing whole in traditional towns has four certain fundemantal and essential features: growing piecemeal, being unpredictible, being coherent and full of feeling. Growing piecemeal is growing bit by bit. Being unpredictable is due to the fact that it is not known how it will continue or where it will end after it starts to form. It is coherent because not fragmented and its parts are also whole. Full of feeling because *"the wholeness itself touches us, reaches the deepest level in us, has the power to move us, to bring us to tears, to make us happy" (Alexander 1987, 14).* On the other hand, he argues that modern development of urban practice does not

have these features. He says that its growing piecemeal character does not contribute to growing wholeness and it is merely piecemeal, produces unrelated acts. The growth is not unpredictible because most often controlled by conceptions, plans, maps and schemes. It is generally not coherent because *"there is no deep inner coherence, which can be felt in every door-way, every step, and every street." (alexander 1987, 15).* It is clear that it has not full of deep feeling (Alexander 1987, 14-15).

Going back to the book of Alexander, *Timeless Way of Building,* he expresses his fundamental idea as these words:

> *"The fact is that the difference between a good building and a bad building, between a good town and a bad town, is an objective matter. It is the difference between health and sickness, wholeness and dividedness, self-maintenance and self-destruction. In a world which is healthy, whole, alive, and self-maintaining, people themselves can be alive and self-creating. In a world which is unwhole and self-destroying, people cannot be alive: they will inevitably themselves be self-destroying, and miserable." (Alexander 1979, 25).*

Figure 2.5 Denise Scott Brown

Denise Scott Brown (1931-), with Robert Venturi (1925-2018) developed alternatives to the Modernist design sensibility of their time. Their aim was to show how urban design and architecture could be enriched by popular culture and how masterplaning could be inspired by historical and urban context (Cowan 2021, 13).

Brown's famous book *Learning From Las Vegas* (later published as Learning From Las Vegas: The Forgotton Symbolism of Architectural Form), which she wrote together with Robert Venturi and Steven Izenour, is seen as a classic of postmodern design theory. The origin of the book is based on the 1968 trip that they made to Las Vegas with their students. The reason to choose Las Vegas as a research are that Las Vegas is a new city built into a void in the middle of the desert and it is an archetype of

landscape and urban sprawl which was common to see in most of the American cities. Their study is shaped by the "symbolism" of architectural forms. Regarding their study, Brown said:

> *"We started our study with investigations of the character of the symbols that could best communicate over the vast space of the American strip; we continued with analyses of the buildings behind the signs and what they could communicate symbolically at different scales. Finally, we turned to symbolism at the traditional scale of architecture for pedestrians. Here, ornament and decoration become a major interest." (Brown 2009, 16).*

During the study, their suggestion was "*looking back at history and tradition to go forward"*. Their initial analyses comparing strip phenomena with historic European architecture and they defined the method as *"going from Rome to Las Vegas"* and after *"from Las Vegas back again Rome"*. *"Las Vegas is the Strip what Rome is to the Piazza." (Venturi 1972, 18).* This journey allowed them to learn again from historical architetcure through a reappraisal of its symbolism and decoration which are ignored or forgotton. The connection they established between Las Vegas and Rome enabled them to reinterpret modern architecture and examine the break with the traditional. In this way, they incorporated previously neglected parts of the American suburban landscape into the architecture. During the comparisons, they matched the vast space of the A&P parking lot with the expanses of Versailles and the activity on the Las Vegas Strip with that on the medieval market street (Brown 2009, 15-17).

Another criticism in the book is that the architects ignore the existing landscape and try to create a landscape again instead of evaluating and glorifying the existing one. As they stated:

> *"Architects are out of the habit of looking nonjudgmentally at the environment, because orthodox Modern architetcure is progressive, if not revolutionary, utopian, and puristic; it is dissatisfied with existing conditions. Modern architecture has been anything but permissive: Architects have preferred to change the existing environment rather than enhance what is there." (Venturi 1977, 3).*

They argue that modern architects have abandoned the tradition of iconology that combines painting, sculpture and graphics with architecture, and infact that the

ornaments in old buildings contain messages beyond decorative contributions. They examine the architecture of communication over as the sign of Motel Monticello in Las Vegas, which is visible from the highway before the hotel. They define the image of the road as "commercial strip" which is a "chaos" and not has obvious order in its landscape. As they stated:

> *"This counterpoint reinforces the contrast between two types of order on the Strip: the obvious visual order of street elements and the difficult visual order of buildings and signs. The zone of the highway is a shared order. The zone off the highway is an individual order. The zone off the highway is an individual order. The elements of the highway are civic. The buildings and signs are private. In combination they embrace continuity and discontinuity, going and stopping, clarity and ambiguity, cooperation and competition, the community and rugged individualism."*

Another concern of Brown is the inability to establish a connection between the research and design parts, which is usually seen in planning studios, and the desire of students to leave the research part as soon as possible and move on to the design phase. Brown syas that she has developed an interdisciplinary studio named "Form, Forces and Functions", whose theory explains that the forms of cities as defined by architects are dependent on functions as well as the forces in the natural environment, society and technology, with the aim of introducing architects to the non-architectural aspects of cities. (Brown 2009, 72). Regarding the narrowness of the disciplinary perspective:

> *"Put a group of architects, urban designers and planners in a sightseeing bus and their actions will define the limits of their concerns. The architects will take photographs of buildings or highways or bridges. The urban designers will wait for that moment when three are juxtaposed. The planners will be too busy talking to look out of the window." (Brown 2009, 51).*

Figure 2.6 Jane Jacobs

Jane Jacobs, writer and urban activist, best known for the *The Death and Life of Great American Cities*, which is published in 1961 and amongs the most influential books in the history of planning and urbanism. Beside what a place looked like, also her considerations been about how it worked. Her book attacked contemporary planning practice at the time and advocated for mixed-use neigbourhoods. She has brought a different perspective by defining the essential complexity of urban life and promoting the street as the focus of urban life (Cowan 2021, 10).

Jacobs says that her book was instantly understood by *"foot people"* because essential information of the book comes from their concerns, experiences and own enjoyment; on the contrary, the book had not have influence on car people. She attributes the reason for the failure of cities, based on the information she obtained through interviews with architecture and planning students, that they were trained as anticity and antistreet designers, whether they are foot people or car people.

She introduced her book as *"an attack"* which targets *"current city planning and rebuilding"* and *"the principles and aims that have shaped modern, orthodox city planning."* . In general terms*, "how cities work in real life" an "what practices in rebuilding can promote social and economic vitality in cities"* are the fundamental questions of her book (Jacobs 1961, 5).

Jacob describes successful and unsuccessful neighbourhoods as the following:

> *"A successfull city neighbourhood is a place that keeps sufficiently abreast of its problems so it is not destroyed by them. An unsuccessful neighbourhood is a place that is overwhelmed by its defects and problems and is progressively more helpless before them." (Jacobs 1961, 146).*

Jacobs defines the streets and their sidewalks as: *"the main public places of the city"* and *"most vital organs."*. She says that streets and sidewalksby theirselves are nothing, just an abstractions, they become meaningful by the buildings which are surrounding them and she argues that: *"If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull." (Jacobs 1961, 37).* She explored the use of sidewalks from three different perspectives: safety, contact and assimilating children. She argues that when the streets are safe, the city will be a safe city free from barbarism, and this will happen thanks to people communicating with each other on the streets. Likewise, the presence of local people on the streets and their familiarity with each

other are effective in the safety of children.

Another consideration of Jacobs is "generating diversity" in the cities. She expresses that as first and the most important question about planing cities is: *"How can cities generate enough mixture among uses-enough diversity-throughout enough of their territories, to sustain their own civilization?" (Jacobs 1961, 188).* According to her, to generate diversity in the streets and districts of the city, there are need for: *mixed primary uses, small blocks, aged buildings* and *concentration*. First, the district must serve more than one primary function. This ensures that there are different people on the streets at different times, as an indicator of a successful city. Second, most blocks must be short to create alternatives to ensure fluidity and to enable people to interact with the city by giving them the right to choose their routes. Third, in the district there must be old buildings vary in age and their conditions. Since the construction costs of new buildings are high, their expenses are also high and businesses such as chain stores, chain restaurants and banks may prefer; it is economically difficult for small, local businesses to house in new buildings. Four, the distrcit must have a sufficiently dense concentration of people. Although, high dwelling densities have a bad name in orthodox planning, are so important for most city districts and their future developments.

With her words *"A city cannot be a work of art." (Jacobs 1961, 485),* Jacob's aim is to explain confusion between art and life, which causes dissappointing cities. To clear up this confusion, it is important, in arriving at better design strategies and tactics. Every artist in every field of art makes selections from "abounding materials of life" and presents them in her work under her own control. If selectivity, organization, and control are self-consistent, it becomes art. The same process applies to cities (Jacobs 1961, 485-486).

Alexander R. Cuthbert, in his book *Designing Cities*, which is first published in 2003, he argues that the design of urban space cannot be encompassed by any single theory. States that: *"...the fact that Urban Design as a discipline has been unable to develop any substantial theory which it could call its own." (Cuthbert 2006, ix).*

He says that it is not clear urban design concept because it is not clear what the term "design" constitutes and what kind of knowledge is required to participiate in designing cities.

2.2. Process of Urban Design

To explain the urban design process, the diagram in the book *The Urban Design Process* which is published in 2019, is taken as a basis. The scheme has been put forward as a result of studies conducted at Manchester University for many years.

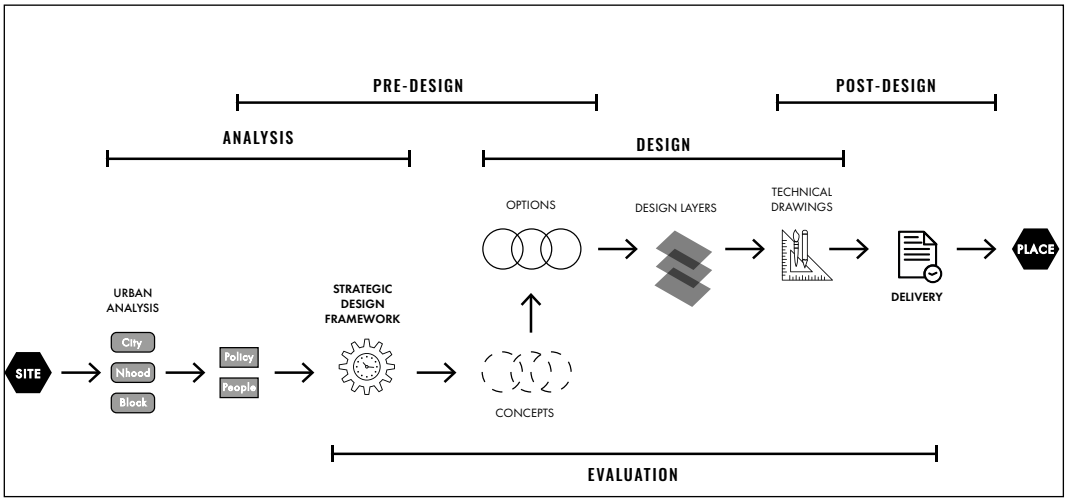

Figure 2.7 Urban Design Process

The process follows a "stages of work" pattern which is similar in all design disciplines. These stages are: *Analysis, Pre-Design, Design and Post-Design*. Although the scheme is linear, the steps are flexible and adaptable as each project site has its own characteristics. While the process is shown in sequential steps, there are steps in which evaluations back through are also seen. It has been clearly stated that the diagram is intended to be a guide, a roadmap for designers, it never gives an idea about the design, just informs the designer to make more appropriate decisions, the design is made by the designer. The aim of the process is to create a reliable base where each stage informs the other and where designers and stakeholders participate in the decision processes with a flexible, transparent and holistic approach (Black 2019, 36).

The process represented in the scheme, works from initial site through final place. Strategic design framework, ties the analysis, the design development and detail together. This framework is developed through primary and secondary analysis which are *urban analysis* and *policy-people*. The framework then informs the evolution of the design through concepts and options. The layers make this work in practice.

(Black 2019, 38)

Black defines the delivery of the final design as:

> *"The delivery of the final design is a complex process, and this section concludes by considering the role of the other design disciplines, as well as the multiple realities that will impact on the process in the real world." (Black 2019, 38).*

Analysis

It is suggested that the analysis of the project site should be done in three stages/ scales: city, neighborhood and block/site. For each of these analyzes at different scales, it is mentioned that the designer must both do location-base analysis by visiting the side and surroundings, and desk-based analysis by utilising digital materials. Three methods have been proposed as a simple guide for managing these analysis processes: *scoping, sensing* and *synthesising* (Black 2019, 41).

Scoping is looking carefully at the variables identified at each scale and investigating them in depth on the particular site and also its surrounding context. Scoping involves visiting the site and surroundings on multiple occasions. Visiting on different days and times, in different weather conditions and on different activity days will provide different data. *Sensing* is identifying the key elements within these variables and to understand the ones most relevant to the site with their positive and negative aspects. It involves making value judgments about their findings in order to distinguish primary factors related to the site and its surroundings. By the end of this phase, the designer will have created a clear picture of the site and context by producing graphics that represent these critical findings. *Synthesising* is bringing together the key findings from each variable to obtain a single piece of analysis. To provide a clear conclusion on the scoping and sensing, it involves the creation of multi-variable graphics. Synthesising results in three principle graphics across the three scales: *Strategic Location Map (city), Contextual Appraisal (neigbourhood)* and *Opportunities and Constraints Plan (site)* (Black 2019, 41-42).

The strategic location map, at the city scale, provides information on the general location of the area within the city. This information includes connections of the site with the city's infrastructure such as main roads, railway, tram, metro connections, bus stops and city centre. (Black 2019, 42)

Contextual appraisal, at the neighbourhood scale, consists *arrangements*, *networks* and *features*. *Arrangements* includes land/building use, green spaces, public vs. private, grain, height/width ratio, density, natural features, urban morphology, historical analysis etc.; *networks* includes roads/routes, pedestrian/cycling paths, public transport, green/blue infrastructure, public realm utilities both public and community, facilities, permeability etc.; *features* includes architectural style, materials/palerres, visual connections, key views, listed buildings, frontage, housing typologies, streetscape, maintenance, 24-hour city etc. (Black 2019, 45).

Opportunities and constraints plan, at the site/block scale, consists *record*, *evaluate* and *consider.* Starting with *record,* includes site measurements, acces to site, disabled access, site levels, topography, land use, building heights, parking, street furniture, lighting, materials, vegetatipon, utilities connection, climatic conditions etc.; *evaluate* consists views/vistas, shading/sun path, noise pollution, building quality, planning restrictions, history of site, heritage assets, green infrastructure, movement/ circulation, activity, public vs. private, negative/positive space, typologies, street patterns, edge conditions, enclosure, permeability etc.; *consider* includes 2D vs. 3D, vehicle vs. pedestrian, natural vs. human made, massing, symmetry, balance, variation hierarchies, transparency, complexity, scale, proportion, quality etc. (Black 2019, 71)

Policy and People

Black explained the rationale behind placing the "policy and people" stage after the urban analysis as:

> *"is simply that having an in-depth detailed knowledge of the site across the three scales discussed allows for a more engaging consideration of the policy. Understanding the local neighbourhood and site context ensures the policy is read in direct respect of the site in question, giving a more insightful interpretation." (Black 2019, 89).*

Public participation should play a central role in the designer's learning about the place and the people who make up those spaces. Consultation, keeping in mind that the general public are not design-trained and lack the relevant technical skills, it should not be about presenting design for comment or feedback (Black 2019, 93-94).

Strategic Design Framework

Strategic design framework consists of three elements: *vision, objectives* and *strategies*. *Vision* is "*a clear and concise description of mid-to long-term future plans or aspirations for the site... expresses characteristics and provides a distinctive image of the place or its potential." (Black 2019, 99).* The vision, which is not always necessary, generally included to attract people and activity, when the site is being developed. The necessity of vision depends on the site's size, location and development plan. *Objectives*, *"are general and flexible statements that begin to break a vision down into manageable elements." (Black 2019, 99)*. They should be clearly related to the contextual analysis and be achievable. Objectives are usually text based. *Strategies*, *"are not themselves design, but rather they consider the objectives in terms of the real-world physical elements associated with the site and its surroundings." (Black 2019, 99).* They are directly related to the objectives. Strategies should be visual and easy to understand.

SWOT analysis which requires to seperate the key findings into categories as strengths, weaknesses, opportunities and threads, should be done in strategies phase. Strategies inform the design process but do not design. They are also helpful to test the options and final proposals. (Black 2019, 100-103)

Concepts and Options

While concepts are the range of different ideas that form the backbone and foundation of a design project, design options are usually focuse on the preferred concept to shape buildings, blocks, spaces and networks. Concepts visualize with blobs and arrows to give the general ideas and they are flexible (Black 2019, 103).

However designing is a creative field, the designer can be simultaneously flexible and innovative but designing is also a tecnical field that the designer should stay within the rigid structure of technical standarts. (Black 2019, 109)

Design Layers

Design layers are described by Black as *"the blueprints for a proposal, they are the elements that come together to make the design work in pratice and it is the balance between them that quality place-making occurs." (Black 2019, 110).* At this stage, preferred design option

starts to commit to detailed design.

It is classified nine layers as: *Urban blocks, public realm, green infrastructure, routes, movement, buildings, corners, frontage/access and service/provision* and last one is *character.* First four to think across the city scale while last five are at the site scale (Black 2019, 110).

Technical Design and Detail

Once the preferred option altered according to the considered design layers to ensure them shape a feasible and workable scheme, technical design and detail can be provided. Technical drawing, not required to include minor details which will be produced separately in detailed drawings in architectural and landscape drawings (Black 2019, 133-134).

Delivery

The skills and collaborations of other design professionals and stakeholders, must engage with the final design before moving to delivery. Other main design professionals are: planners, architects, landscape architects and engineers as well as the clients must be in collaboration (Black 2019, 139-142).

2.3. Scale of Urban Design and Masterplaning

The fact that urban design is considered to be on a scale between urban planning and architectural building, and that it does not have a clear definition, still causes the concept of scale to be confused. Carmona has made the following comment on this subject:

> *"In fact urban design operates at and across a variety of spatial scales and so while considering urban design at particular scales might be a convenient device, it detracts from the notion of places as vertically integrated 'wholes'." (Carmona 2021, 10).*

Lang says that the diversity of urban design, by its nature, depends on which of the product types is implemented and which procedure is followed. In his book *Urban Design: A Typologogy of Procedures and Products* which is published in 2005, he

aargues that there are four generic types of urban design work. These typologies are created based on the procedure that is followed and/or control of an only designer or a team over the process. although they are not classified according to the scale of the application, they also contain information about the scale of the design. These four types are: *Total urban design, All-of-a piece urban design, Piece-by-piece urban design and Plug-in urban design.* (Lang 2005, 27)

He defines these four procedural types as the following:

> *"**Total** urban design where one team is in control of the whole project. **All-of-a-piece** urban design where one team creates a master, or conceptual, plan and writes guidelines for the development of individual sites within that plan by different entrepreneurs and their architects. **Piece-by-piece** urban design where proposals to get specific activities into an area are controlled by zoning codes and incentives and penalties. **Plug-in** urban design in which infrastructure elements are used as catalysts for development." (Lang 2005, 44).*

While Lang saying that there is no sharp distinction between these categories, he argues that the first two procedural types form the basis of urban design practices in the historical process.

Related to the procedural types, he also defines four product types. He relates, n*ew towns* to total urban design; *urban precincts* (of which there are many types, new and renewed) to all-of-a-piece urban design; *elements of infrastructure* to piece-by-piece urban design and *individual items* (clock towers, monuments, works of art and cruosity objects) to plug-in urban design.

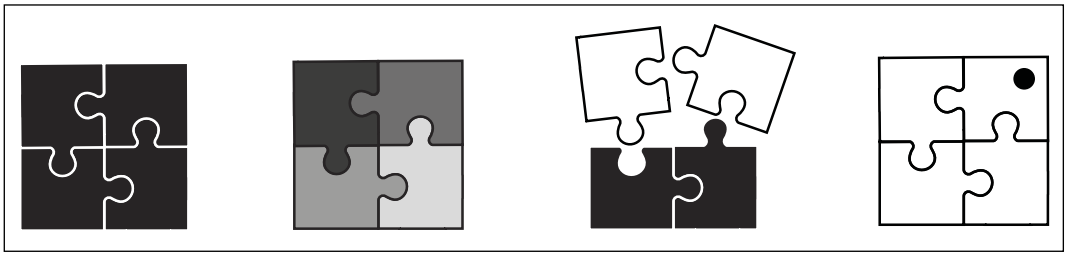

Figure 2.8 Abstraction for Urban Design Types: Total, All-of-a-Piece, Piece-by-Piece and Plug-in

New towns are, to purists, settlements created from scratch and deliberately on land that has not been built before. It should provide all the necessities of life and

create employment. They can range in scale and importance from small company towns to capital cities. Almost all have been either total or all-of-a-piece urban designs. Presincts are smaller areas of cities. They are new, predominantly residential and on the edge of the cities. Presincts may be for commercial, residential, or for entertainment uses, but many of them are seen as mixed type. Some of them have been built as total designs; others have been all-of-a-piece designs. (Lang 2005, 44-46)

The masterplaning process can be classified under both (total urban design and all-of-a-piece urban design) procedural types. There is no clear distinction of scale. It can be said that all urban design processes pass through similar basic stages, although they are independent of scale.

2.3.1. Masterplanning

Masterplanning is a long process, of which masterplan, is one part. It is a process which is collaborative and multidisciplinary. It formulates planning and design principles for an area. These principles relate to environmental, social and economic impact of development and also to three-dimensional physical form. Master plan's role is to show how these principles can be implemented (Cowan 2021, 155).

Definition of master plan is given by Cowan as:

> *"A strategic, spatial guidance document that records the masterplanning process." (Cowan 2021, 155).*

Cowan states that masterplanning process generally follows these stages:

1. *Accepting the brief (inception)*
2. *Revising the brief in discussion with rhe client (vision)*
3. *Agreeing the community and stakeholder involvement strategy*
4. *Appraising and analysing the context and conditions*
5. *Devising a set of planning and design principles*
6. *Devising a strategic framework*
7. *Drawing up a set of options*
8. *Selecting a preferred option*
9. *Detailed design*

10. Planning the phasing, timing, funding and delivery (Cowan 2021, 158).

In the inception stage, the team that will undertake the master plan process is selected. In the vision stage, the stakeholder, communities, and the team ask questions about what will be achieved as a result of the process. In the participation of community and stakeholders, which is the third stage, it should be ensured that the right people participate and that resources can be used effectively by all parties. In stage four; site and site assessment, regulation review and feasibility assessment should be done. Planning and design principles prepared with the data from the fourth stage will form a basis for the detailed design to be applied in the next stages. With the strategic framework, the essential plan elements are determined for masterplan's porposal. In the seventh and eighth stages, the optimum features are selected among the different proposals prepared according to the principles determined as a result of the appraisals. Then the detailing of the chosen masterplan follows the process. As the last stage, delivery of the masterplan, depends on financial arrangements, the phasing and timing of development, the planning process, and the legal and regulatory framework (Cowan 2021, 158-161).

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CHAPTER 3

3. CLASSIFICATION of MASTER PLANS and CASE STUDIES

Within the scope of the study, more than fifty master plans*, made in different years, in different locations, in different scales and approaches, were examined. In the first stage, these master plans were eliminated to be discussed in more detail, and they were reduced to twelve plans. During the elimination, the plans made after 2000 were taken into account. In addition, criteria such as the compositional diversity of the plans, their relationship with their surroundings, and their unique approach were decisive. The fact that the selected plans had different qualities from each other was also effective in the elimination process.

During and after the screening process, the master plans were evaluated only on the basis of the plan. Urban morphological features were taken into account at a perceptible level at first glance. For this reason, it is not correct to make a definite judgment about social life.

While creating the table with twelve plans, they are classified under three main sections. The first of these sections is environmental elements. The presence and quality of the water element and the use and quality of green areas are classified under this section. The second section is urban morphology. The compactness of the settlement, the structure and combination of the streets, the shape and diversity of the urban blocks are classified under this title. The third topic is links and borders. Under this section, there are connections with the existing settlement, the relationship with the rural, the existence of urban heritage elements and whether there is a defined border and growth potential.

* Msheireb Downtown Doha Masterplan - Allies and Morrison + AECOM + ARUP; London Olympics Park - EDAW + ARUP + WS Atkins; Burgos Masterplan, London Olympics Park, Lyon La Confluence, Wissenhauser HOF, Wasserstadt Solothurn - Herzog & de Meuron; Zanders, Naerheden, Haunstetten The Learning City, Saho Die Kieler Kante, IFC Moscow, De Draai - Karres & Brand; Almere Oosterwold, Bastide Niel, Almere Floriade, La Grande Mosaique, A101 Urban Block, Schenzen Super Window, Schenzen Super Streets - MVRDV; Al Dayaan Health District Masterplan, Bogota Centro Administrativo Nacional, Papendrop, Uithof, Almere Masterplan, Scalo Farini, Made in Pleyel, Gold Coast Cultural Precint, Prince Bay, Changchun Jingyuse Cultural and Leisure District, Global Financial Centre on the Bund, Qianhai Port City, Ile Seguin, Quartier Joliot Curie Masterplan, La Defense Masterplan, Apraksin Dvor, Les Halles, White City, Penang Tropical City - OMA. (Selected plans are indicated in the Master Plan Classification Table.)

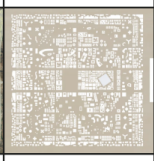
Office		COBE	AS + P	OMA	Dominique Perrault	Albert Wimmer
Location		Bremerhaven, Germany	Abuja, Nigeria	United Arap Emirates	Schenzen, China	Augsburg, Germany
Year		2019	2014	2006	2020	2021
Master Plans						
		Bremerhaven Werfquartier	Centenary City	City in the Desert	Green Handan Manifesto	Haunstetten
Environmental Elements	Use of Water Element	sea as a contour and divider	path and divider	pool	path	lake, path
	Use of Green	central area	path, area	park	homogenious, city park	homogenious, city park
Urban Morphology	Compactness	-	-	+	-	-
	Streets	linear	gridal	gridal	gridal	grids in different orientations
	Urban Blocks	rectangular derivatives, "L" shapes	rectangular derivatives	rectangular derivatives, different shapes	rectangular derivatives, squares, different shapes	mainly "L" shape derivatives
Connections and Boundaries	Connection with Existing Seettlement	+	-	-	+	+
	Rural Connection	-	+	-	-	+
	Heritage Remainings	shipyard	-	-	industrial	-
	Defined Boundaries	+	-	+	+	-
	Growth Potential	-	+	+	-	+

Figure 3.1 Classification of Master Plans Table

The approaches of the remaining nine studies are summarized, with three selected case studies for further review. In alphabetical order, the first of these is Centenary City.

The leading office AS+P describes the project as:

> *"The AS+P master plan envisages dense central areas set within a system of windmill-like arterial roads, that formulated a central core and heart of the new district. In combination with an iconic skyline it seeks to responsibly act as a counterpart to the impressive natural topography of the site. The overall city layout of grid-iron streets was also a formal reference to the central areas of Abuja, and thus to its idea as a city." (URL 1).*

MADMA	ASTOC	Manda Works	Renzo Piano BW	Sasaki	MVRDV	Karres en Brands
Moscow, Russia	Incheon, Seoul	Malmö, Sweden	Milan, Italy	Minsk, Belarus	Moscow, Russia	Oberbillwerder, Germany
2014	2018	2021	2005	2013	2014	2018
						
IFC Moscow	**Incheon Harbour**	**Jägersro**	**Ex-Falck Area**	**Minsk Forest City**	**Serp & Molot Factory**	**The Connected City**
sea as a divider	sea as a contour and divider	lake	lake, path	lake	-	loop and paths as a divider
as a boundary	city park, water front area	homogenious, city park	large area	parks, city parks, homogenious	paths, homogenious	loop and paths, homogenious
-	-	+	-	+	+	-
gridal	gridal	organic	linear	grids in different orientations	linear in different orientations	linear
rectangular derivatives	"L" shape derivatives, different shapes	open blocks, irregular "L" shapes conjugations	"U" shapes derivatives, singular squares	rectangular derivatives, trapezoids	rectangular derivatives	rectangular derivatives, different shapes
+	+	+	+	+	+	+
+	-	-	-	-	-	+
-	shipyard	-	steel factory	airport	steel factory	-
-	+	+	-	+	+	-
+	-	-	+	-	-	+

Figure 3.2 Centenary City Plan

Figure 3.3 Centenary City View

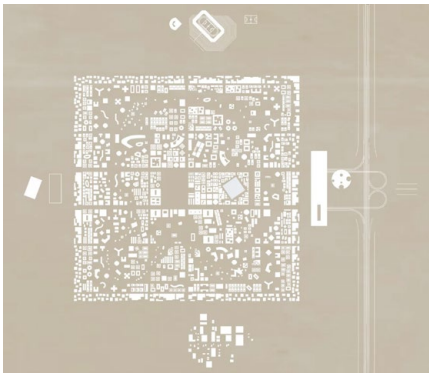


Figure 3.4 City in the Desert Plan

Figure 3.5 City in the Desert View

City in the Desert is the only projects which is not have any relations with surroundings. What distinguishes this project from other projects is that it was designed in the middle of the desert, without taking any reference from the environment. Looking at the borders of the plan, a perfect square form was obtained.

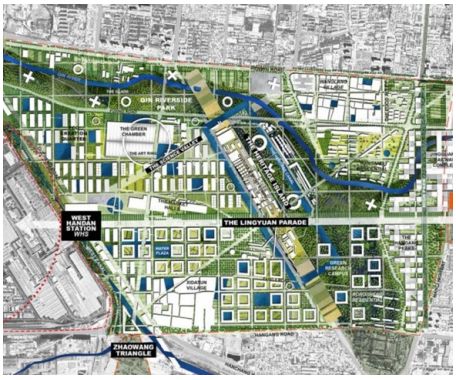


Figure 3.6 Green Handan Manifesto Plan

Figure 3.7 Green Handan Manifesto View

Green Handan Manifesto, has been shaped in a very dense urban texture, in an industrial area, together with the industrial heritage. Dominique Perrault Architecture describes the development of the project as follows:

> *" The study develops an urban development strategy both adapted and flexible. The area concerned, which represents about a quarter of the surface area of the historic city, is made up of very heterogeneous built elements and an important industrial heritage. This heritage formed the starting point for the urban project, as did the geographical reality of the site, which guided the design process and the functioning of the new district." (URL 3).*

Figure 3.8 Haunstetten Plan

Figure 3.9 Haunstetten View

Abert Wimmer Architecture explains the Haunstetten master plan approach as:

> *"The winning design is characterized by a concise green center, which will be the cement for secure social interaction. The public space is precisely defined and creates identity and is flanked by attractive buildings to experience community.*
>
> *...*
>
> *The character of the new city district is largely determined by the "green belt" that stretches from north to south and connects the area with the existing city forest. The lake as an identity-establishing element forms the central middle of the green belt." (URL 4).*

Figure 3.10 IFC Moscow Plan

Figure 3.11 IFC Moscow View

IFC Moscow is planned to be financial center. Looking at the plan, rectangular zones are clearly seen. The sea acts as a divider between these zones. Significant typological differences are observed between the zones.

Figure 3.12 Incheon Harbor Plan

Figure 3.13 Incheon Harbor View

The Incheon Harbor, its linear planning to the sea and the linear park area in the middle can be seen. building blocks/buildings are of various shapes, delimited by a straight line.

Figure 3.14 Ex-Falck Area Plan

Figure 3.15 Ex-Falck Area View

Ex-Falck Area is one of the master plans which has strong connection with industrial heritage. Renzo Piano Building Workshop describes the projects as:

> *"The plan is based on three fundamental principles: Firstly, the sensitive redevelopment of the site's great 'temples of labour'. These icons of industrial archaeology are being conserved as guardians of the site's history...Secondly, these industrial buildings play a part in establishing the urban grid called for by the masterplan. Without changing their fundamental structure, their renovation include the insertion of new functional volumes, making the buildings attractive to future tenants. Thirdly, the essential re-linking of the two Sestos – the historic city and the former industrial site. This is accomplished by removing the 'Falck walls', the fences that surrounded and*

defined the old industrial area, physical barriers that separate the factory site from its immediate surroundings…" (URL 7).

Figure 3.16 Minsk Forest City Plan

Figure 3.17 Minsk Forest City View

Minsk Forest City master plan, which is developed with the remainings of an airport heritage, described by Sasaki Architects as:

"Founded on state-of-the-art ecological and urban strategies, Sasaki's master plan for Minsk City celebrates the rare opportunity to transform an existing 320-hectare urban airport site into a dynamic, attractive, and sustainable new district for the city of Minsk, Belarus. The master plan provides a 24/7 vibrant, diverse, and balanced mixed-use program that celebrates the unique airport heritage, while also re-integrating regional ecological, vehicular, and public transport networks. The master plan brings Belarusian landscape heritage, ecology, and contemporary sustainable living together to create a compact urban district in the urban context of Minsk." (URL 8).

Figure 3.18 Serp & Molot Factory Plan

Figure 3.19 Serp & Molot Factory View

As the last master plan in the table, Serp & Molot Factory, which is developed with remainings of old steel factory, described by the office MVRDV as:

> *"...By taking the characteristic factory streets, buildings and objects as starting points, a new layer is added to the neighbourhood... Large factory halls are replaced by urban blocks that follow the footprint of the old factory with additional green courtyards. By partitioning the blocks further into segments and applying different densities the plan diversifies the area. Ground floor spaces are reserved for public facilities and retail. This leads to a vivid, green, complex and highly dense urban plan which strongly respects the character of the site." (URL 9).*

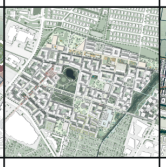
Office		COBE	Manda Works	Karres en Brands
Location		Bremerhaven, Germany	Malmö, Sweden	Oberbillwerder, Germany
Year		2019	2021	2018
Master Plans				
		Bremerhaven Werfquartier	Jägersro	The Connected City
Environmental Elements	Use of Water Element	sea as a contour and divider	lake	loop and paths as a divider
	Use of Green	central area	homogenious, city park	loop and paths, homogenious
Urban Morphology	Compactness	-	+	-
	Streets	linear	organic	linear
	Urban Blocks	rectangular derivatives, "L" shapes	open blocks, irregular "L" shapes conjugations	rectangular derivatives, different shapes
Connections and Boundaries	Connection with Existing Seettlement	+	+	+
	Rural Connection	-	-	+
	Heritage Remainings	shipyard	-	-
	Defined Boundaries	+	+	-
	Growth Potential	-	-	+

Figure 3.20 Case Studies Table

While choosing theree case studies among the twelve master plans, it is considered to choose plans with different quailifications in each section of the table. Plans do not have the same feature, all three together, in any criterion, except having connections with existing settlements which is a criterion sought in plans to be case studies.

Looking at the plans, one of the first notable points is their relationship with water. The element of water is an important part and guiding element of the composition in all three plans. The second noteworthy data is the urban blocks. While more regular and rectangular blocks are observed in Werfquartier, irregular shaped and disordered blocks are observed in Jagersro, urban blocks that are very different in scale and shape are observed in The Connected City.

All three master plans have connections with existing settlements. While only The Connected City has rural connection, only Werfquartier has heritage remainings which is a shipyard.

Although each plan has a defined boundary, it is marked negative for The Connected City because there are no existing elements to limit its development on the side where it is connected to the countryside. On this side, the boundary is denoted by the water element. It is positively marked because there are existing settlements in parts of the Werfquartier that are not adjacent to the water, and Jagersro is surrounded by the existing settlement from all sides. Inversely, the development potential of The Connected City is marked as positive while it is negative for the other two plans.

The scale was not the first determinant in case study selection. Although Jagersro occupies a relatively smaller area than other plans, it has been deemed worthy of examination because the urban blocks are different from all other master plans.

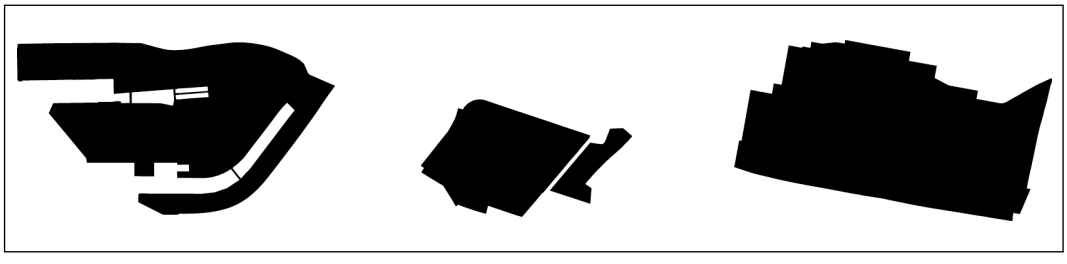


Figure 3.21 Areas of Masterplans: Bremerhaven Werfquartier, Jägersro and The Connected City

3.1. Case Study 1: Bremerhaven Werfquartier

The design realized by the team COBE, in collaboration with SHP and Transsolar, is the winner project as a result of the competition dated in 2020 for the port area in Bremerhaven, Germany. Bremerhaven is located in the state of Bremen and means “Port of Bremen”. As the name suggests, the area is in a very important location. The importance of the area is that has many industrial heritage buildings. The aim of the municipality is to revive this idle area together with the heritage and to create a new city life.

Figure 3.22 Map View of the Area: Bremerhaven Werfquartier

Figure 3.23 Masterplan: Bremerhaven Werfquartier

3.1.1. Vision and Approach

In the future, for the shipyard district is aimed to become an attractive place to live and work with regional appeal. The most important ingredients for the special and livable recipe are the blue, the green and of course the urban. This close interlocking of these three components in the shipyard district offers enormous potential for a new, diverse and creative district with a high quality of life, which will benefit the entire city of Bremerhaven - citizens, companies and visitors.

The urban planning concept forms a holistic, blue-green integration of the city, port, and previous and future users. There are no bad sides to the shipyard district – you either live in the countryside or by the water. This proximity to the water and the green in combination with the proximity to everyday needs such as leisure activities, shopping facilities, schools and day-care centers forms the framework for a livable and sustainable lifestyle *(Rahmenplan 2022).*

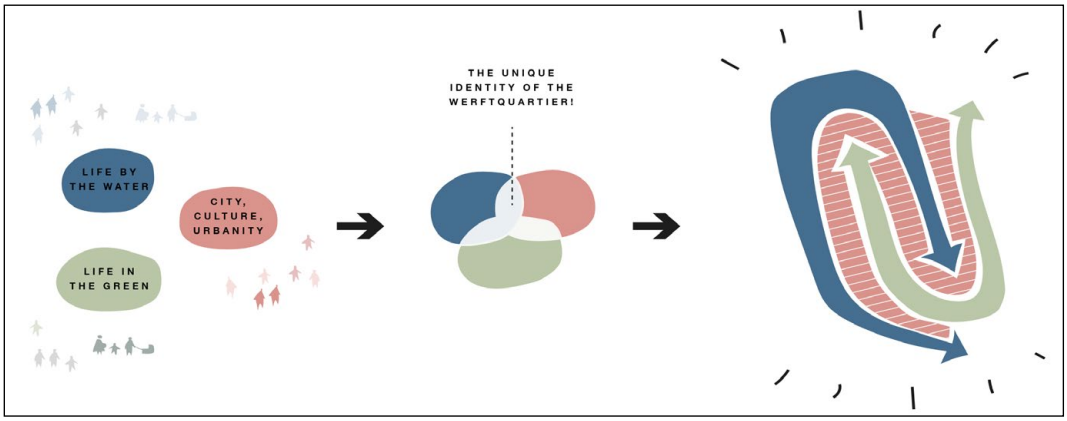


Figure 3.24 Vision for Bremerhaven Werfquartier

The core of the shipyard district comprises a planning area of around 73 hectares with around 600,000 m2 of new development. The development of such a large area requires, on the one hand, a robust plan structure that allows a certain degree of flexibility for future development, and, on the other hand, maintaining and strengthening the existing qualities and characteristics of the place in order to secure the identity of the future quarter.

The structure consists of three equally important levels that make the shipyard district unique: the blue, the green and the building structures. Each of the levels is characterized by special features, such as the end-to-end harbor promenade, the green city pockets and the post-industrial settlements – and these special features form the basis for life in the new quarter. These three “ingredients” ensure a robust master plan and together create a lively city on an equal footing, where meeting points and synergies between people, industry and the city are created *(Rahmenplan 2022).*

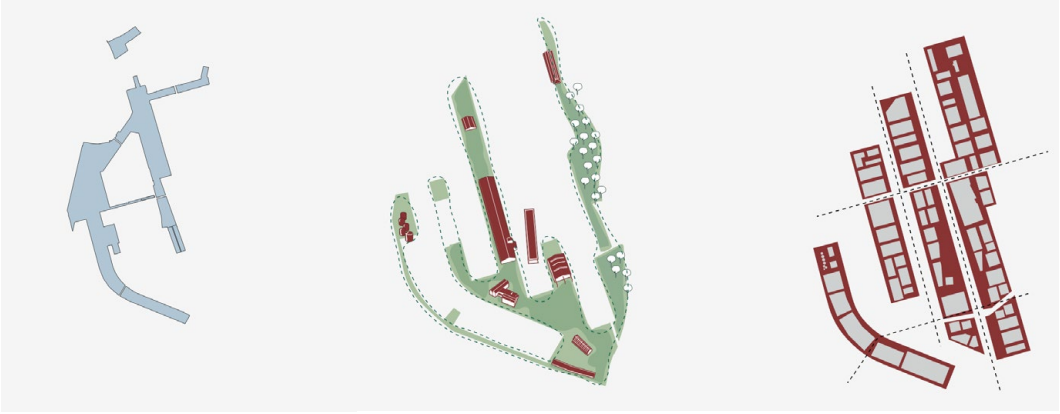


Figure 3.25 Proximities: Water, Green and Town

Proximity to the water : Today the quays are mainly used for research and industry. The transformation of the district should also make it possible to live by and on the water in the future, and various leisure activities should take place on and in the water. The great potential of the water and the harbor should be initiated from the start, for example by establishing water sports in the inner harbor basin or by making the 6 km long continuous promenade accessible to the public. Both have an identity-forming effect, both for the residents and for visitors, and make the blue a new attraction in Bremerhaven.

Proximity to the green: The so-called green fingers form a uniform structure that connects both the quarter and small and large recreational areas between the different urban areas form. The green fingers are aligned to form fresh air corridors for all urban areas to avoid urban heat islands in summer. At the same time, they serve as safe local pathways that residents can use to move freely - for example to day care centers and schools, all of which are located

in or along the green area.

Proximity to town: The new city structure consists of robust and flexible development zones based on the grid structure of the port and on the visual relationships to the water or to the green recreation areas. The zones have the potential for the development of a diverse city with e.g. a densely populated city center around the shipyard basin, a residential area with social neighborhoods on the Külken peninsula or creative retreats with opportunities for experimentation at Kreativkai *(Rahmenplan 2022).*

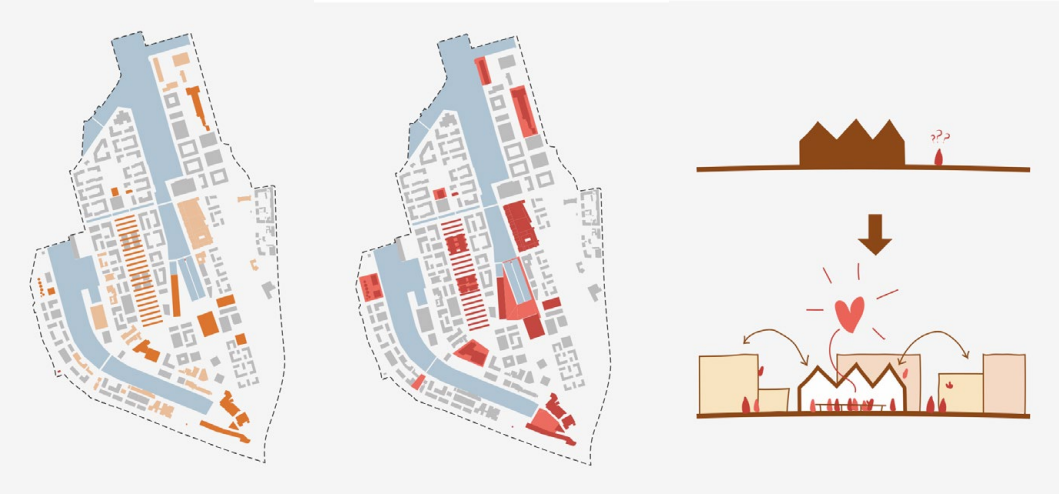


Figure 3.26 Overview Reciept, Catalysts-Free Spaces and Integration

The shipyard district should be a district that promotes a sense of community in the districts and offers active and cultural attractions. One of the most important prerequisites for good community is that both formal and informal meetings can take place between the different residents. The Werftquartier is therefore planned with a focus on the development of smaller districts with their own social or cultural catalysts. The catalysts are existing buildings that stage and preserve the district's DNA. Their transformation and commissioning will help kickstart the development of the area *(Rahmenplan 2022).*

Overview receipt:
An important component of the shipyard quarter are existing buildings that are preserved, renovated or put to new use.

Catalyst and free spaces:
Distinctive historical buildings and elements as catalysts are grouped with important public open spaces and create clear urban hierarchies.

Integration of historical inventory
The existing stock serves as the initial spark for new life in the shipyard district. Preserved building structures then fit in between the new buildings *(Rahmenplan 2022)*.

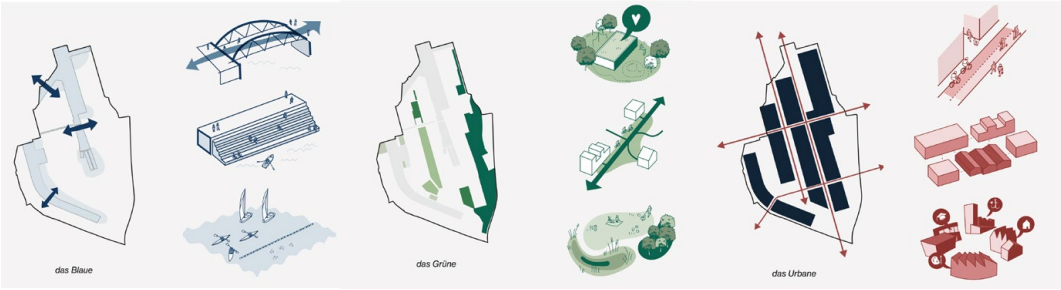


Figure 3.27 The Blue - The Green - The Urban

The Blue

To build bridges: Three new pedestrian and bicycle bridges connect the shipyard quarter internally and with the surrounding parts of the city

Closer to water: The expansion of a public promenade along the quays, with selective access to the water, enables residents and visitors to have a more intensive harbor experience.

On the water: The utilization of the port - where possible taking into account commercial shipping - brings new activities on and below the surface and gives the shipyard district a unique quality as a place to live and work.

The Green

The social green: The green fingers also bring the district together socially. Social functions such as kindergartens, schools, sports areas or community centers are positioned in the bands of open spaces.

Green connections: Natural diversity for people and animals The recreational and open spaces extend along and between the individual neighborhoods and thus network the quarter. Mobility within the area is therefore always possible in a natural setting in the countryside.

Green diversity: Each finger of the green hand, which forms the network of open spaces in the Werfquartier, characterizes very individual green spaces. This biological diversity and number of biotopes ensures variety and biodiversity.

The Urban

Car-free movement areas: The mobility concept within each neighborhood focuses on short distances. In this way, many transport areas can be designed to be traffic-calmed, child-friendly and livable.

Old and new together: In the building structure for the shipyard district, the continued use and conversion of the existing building is just as important as the new buildings. Flexible construction phases allow the weaving of old and new together in the new buildings. Flexible construction phases enable the weaving of old and new into a modern quarter with a legible history.

Unique Neighborhoods: Each part of the Werfquartier has its own individual character. Different typologies, materials, existing uses and open space designs create unique neighborhoods in which one can feel at home *(Rahmenplan 2022)*.

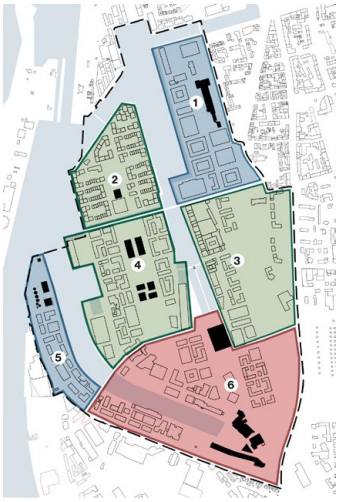


Figure 3.28 Neighbourhoods

Figure 3.29 Storeys

The building structure is naturally divided into different neighborhoods, all of which derive their identity from traces of the existing building and the environment. Each neighborhood will be developed independently with local squares and meeting points, mobility hubs and catalysts. At the same time, they also contribute to the overall dynamism of the area so that there is an exchange between urban and local, formal and informal areas. The typologies in the plan also vary, reflecting the context and differences in the program. They leave room for complex mixed-use developments consisting of existing commercial, residential and commercial buildings - all within one building area - and for experimental housing typologies such as multi-generation houses on or near the water.

The shipyard quarter is divided into six neighbourhoods:
1. Campusviertel (Campus District)
2. Külkenhalbinsel
3. Parkviertel (Park District)
4. Hallenviertel (Hall Quarters)
5. Kreativkai (Creative Quay)
6. Hafenherz (Hert of the Harbor) *(Rahmenplan 2022).*

A robust development plan with flexible construction sites and development steps must be guaranteed. A flexible plan makes it possible to develop the districts separately and at the same time ensure the quality of the individual districts during the construction of the neighboring districts. For example, the blue and green fingers serve as essential buffer zones between the urban fingers during the construction phases. The urban fingers are designed in such a way that existing buildings can be integrated into the urban grid. This structure gives a certain flexibility for a sustainable and inventory-oriented transformation of the area. Even if the flexibility of the phased expansion of the area is guaranteed, the following steps are recommended to promote the revitalization of the area and to stage the existing industrial identities:
1.The catalysts serve as a trigger for the entire development of the valuable district.
2.The formation of connections to the environment is crucial for the first phases.
3. The existing streets serve as a basic grid for the expansion and create access to the quarter.
4. A flexible urban structure with buffer zones ensure a high quality of life during the construction phase.
5. Self-sufficient neighborhoods (Rahmenplan 2022).

Pre-Zones

The term “pre-zone” is a planning tool to consider the interface between ground floor zones and urban space early in the planning process, e.g. between the public promenade by the water and the edges of buildings. It can assume different widths, from a pure characterization of the facade to an area between building and public space.

The pre-zone areas make city life more attractive and ensure both privacy and a smooth transition between public and private areas. The interface is personalized, animated and activated.

The overriding urban planning concept with the blue, the green and the urban is also reflected in the concept and the formulation of the pre-zones. The blue zones in front of the promenade are characterized by a high level of publicity and serve, for example, as a buffer for living. The green finger aprons are naturally green, and the urban finger aprons offer a variety of possible formulations to inspire future investors and planners (Rahmenplan 2022).

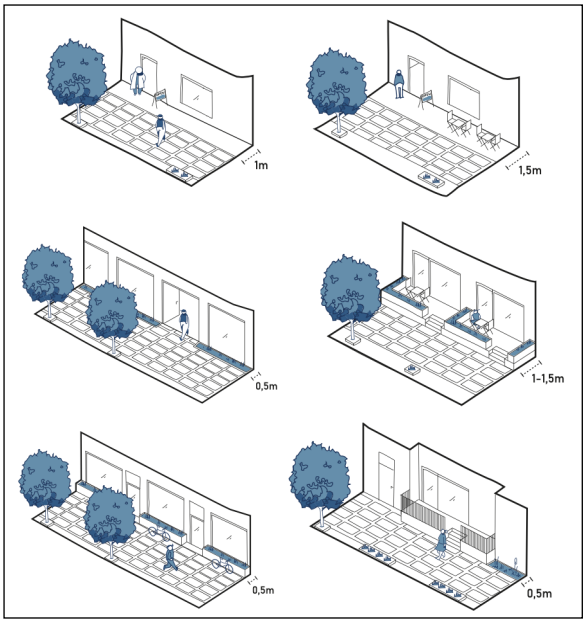


Figure 3.30 The Blue: Commercial-Office-Residential

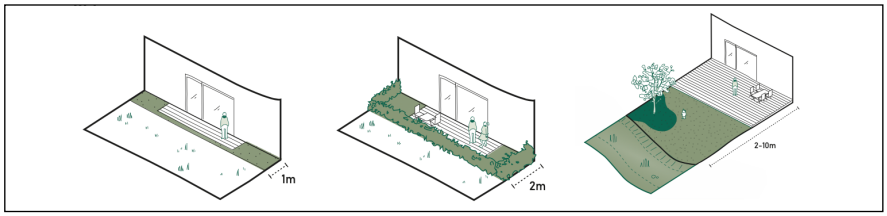


Figure 3.31 The Green: Residential

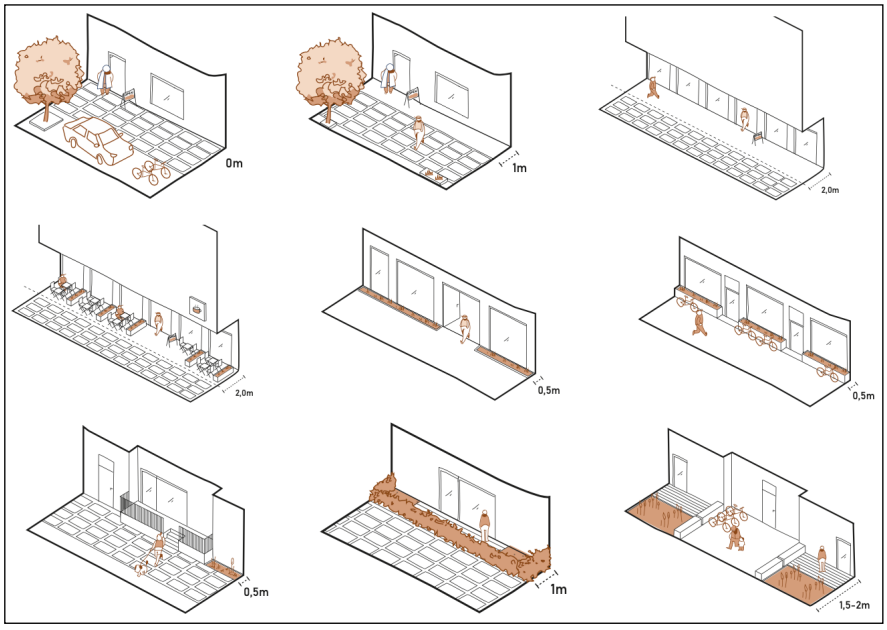


Figure 3.32 The Urban: Commercial-Office-Residential

In the areas along the public water promenade, the pre-zones play an important role in enlivening and activating the area.

The pre-zones to the green are intended to reinforce the green and communal character. They make city life more attractive and ensure privacy and a smooth transition between public and private areas.

The pre-zones to the green are intented to reinforce the green and communal character. They make city life more attractive and ensure privacy and smooth transition between public and private areas (Rahmenplan 2022).

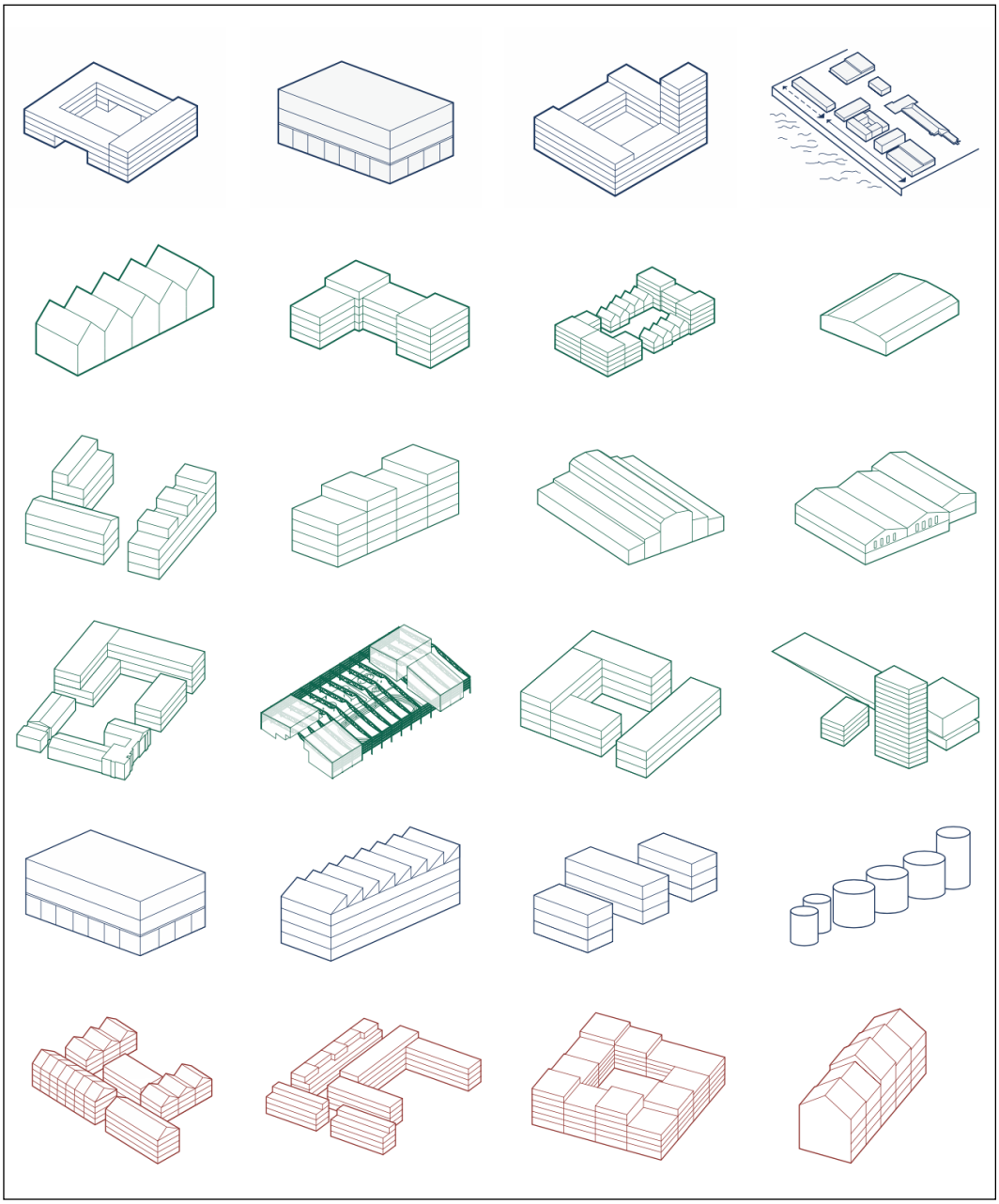


Figure 3.33 Building Typologies: Six Neighbourhoods

Figure 3.34 Campusviertel

Figure 3.35 Külkenhalbinsel

Figure 3.36 Parkquartier

Figure 3.37 Hallenviertel

Figure 3.38 Kreativkai

Figure 3.39 Hafenherz

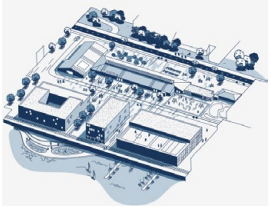


Figure 3.40 The former freight yard

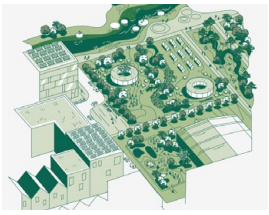


Figure 3.41 The green center

Figure 3.42 The green center 2

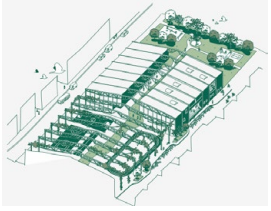


Figure 3.43 The green center 3

Figure 3.44 The art hub

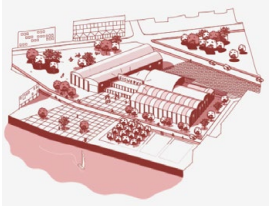


Figure 3.45 The ice works

Figure 3.46 The Green Center on the Külkenhalbilsel

Figure 3.47 The Former Steel Construction Hall

Figure 3.48 Connecting with The Blue

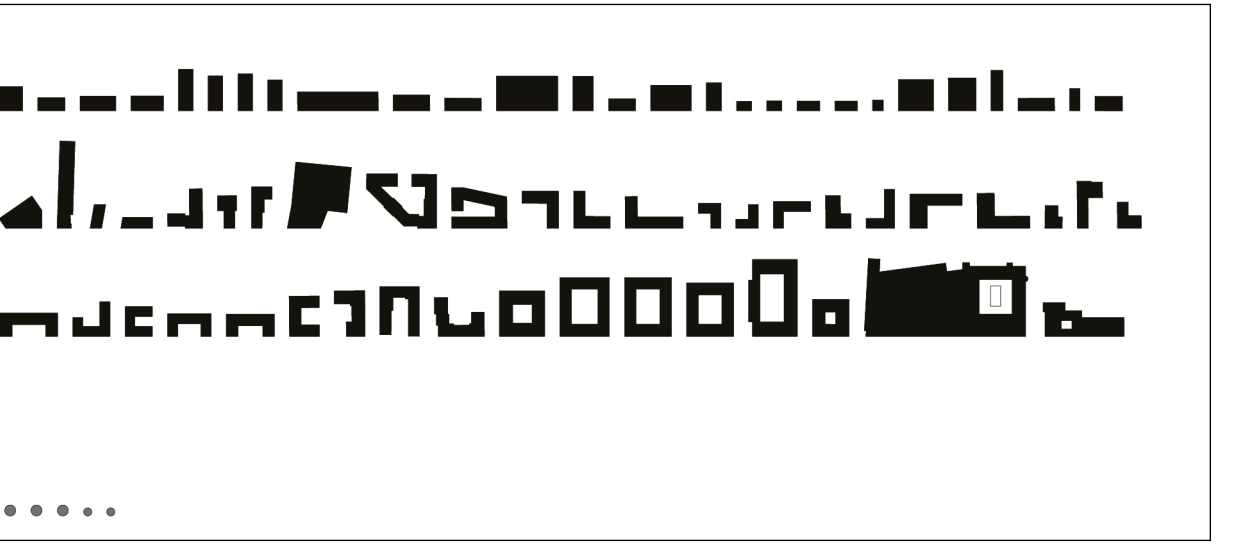
Figure 3.49 Open Space

3.1.2. Composition of Elements

The general urban composition of Bremerhaven Werfquartier consists of:

Rectangular derivations (78)
Irregular shapes (15)
L shape derivations (24)
U shape derivations (19)
Big blocks with patios (9)
Existing indsutrial heritage buildings (22)

Figure 3.50 Elements: Buildings and Blocks of Bremerhaven Werfquartier (scale: 1/10.000)




nodes
continuous axis

Figure 3.51 Analysis of Bremerhaven Werfquartier Masterplan (scale: 1/10.000)

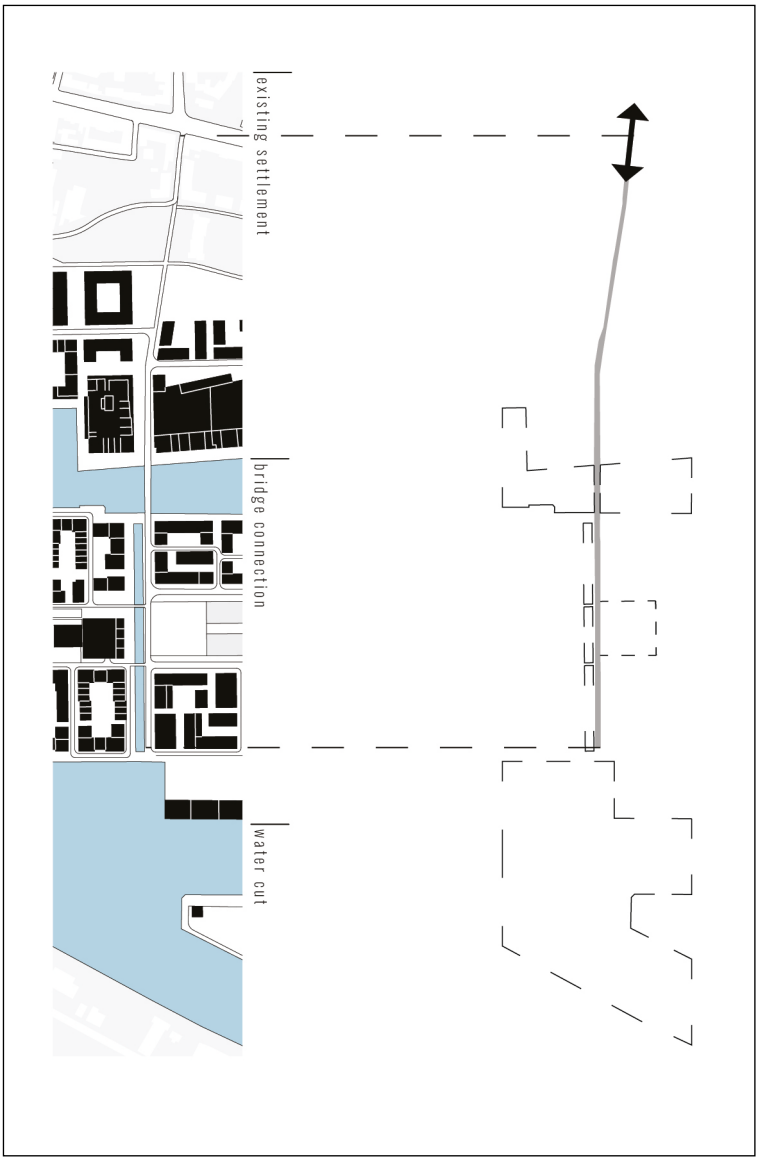


Figure 3.52 Bremerhaven Werfquartier: Axis (scale: 1/10.000)

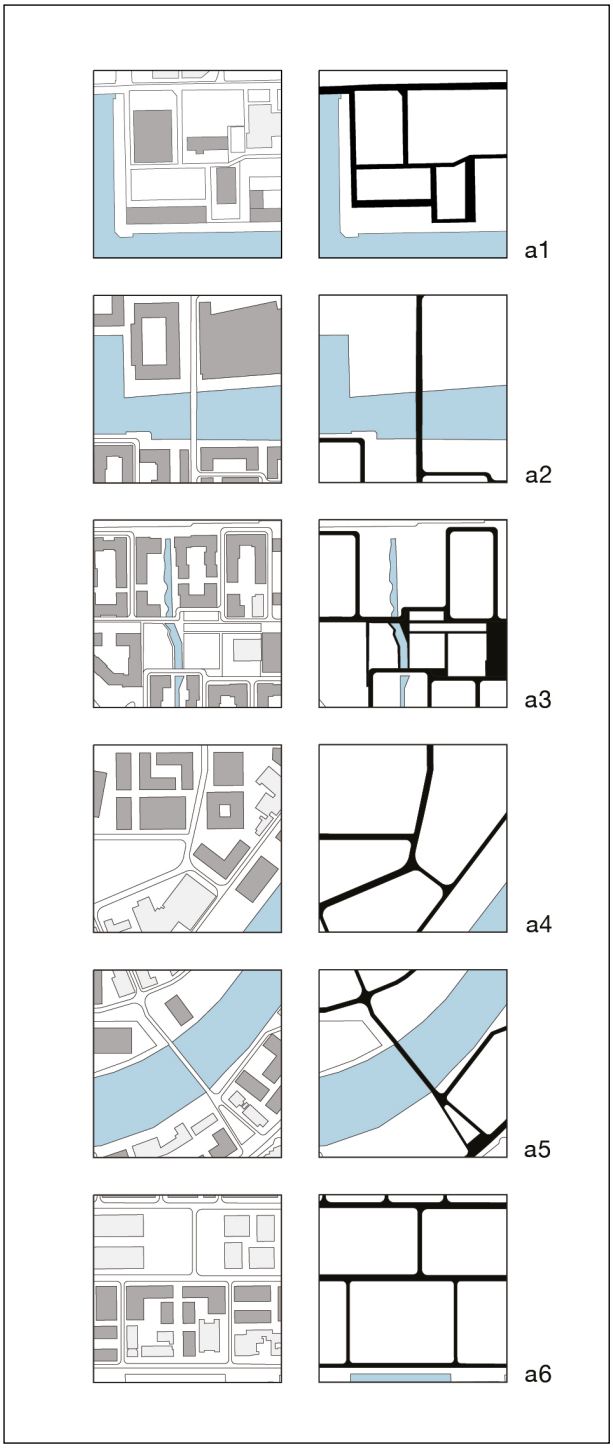


Figure 3.53 Bremerhaven Werfquartier: Streets (scale: 1/10.000)

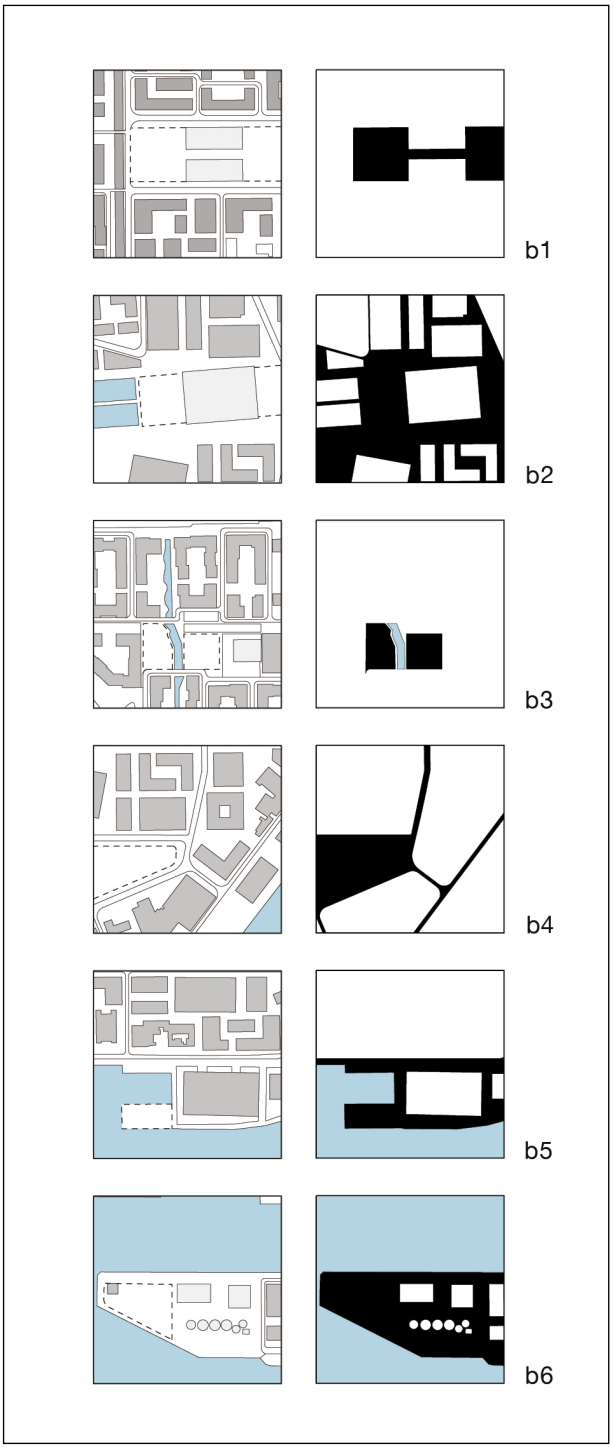


Figure 3.54 Bremerhaven Werfquartier: Squares (scale: 1/10.000)

Streets

a1: Rotated rectangs texture
a2: Linear passage over water
a3: Irregular gridal texture
a4: Organic, sparse texture
a5: Linear connection over water
a6: Shifted grids

Squares

b1: Two connected squares
b2: Two squares seperated by a builging
b3: Two facing squares seperated by water element
b4: Big, corner square
b5: Small square over water
b6 Big square as peninsula

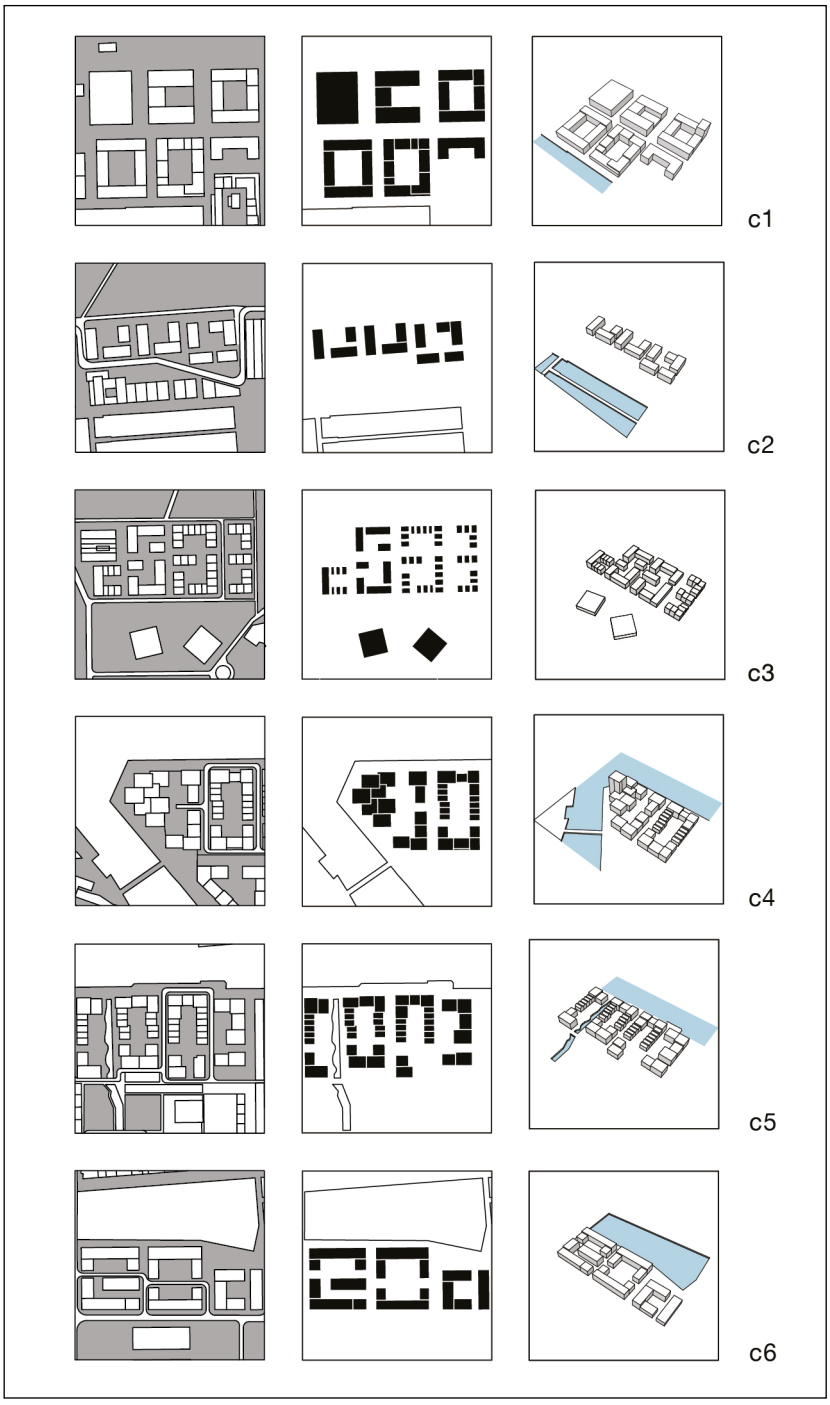


Figure 3.55 Bremerhaven Werfquartier: Typologies 1 (scale: 1/10.000)

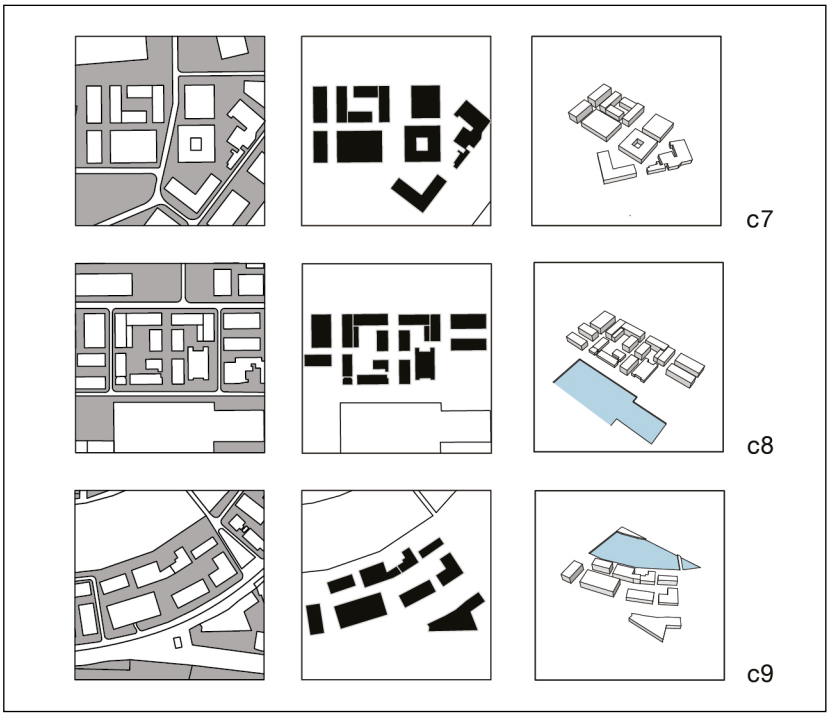


Figure 3.56 Bremerhaven Werfquartier: Typologies 2 (scale: 1/10.000)

Typologies/Blocks

c1: Rectangular blocks types
c2: Composition of small rectangs
c3: L shape combinations
c4: Repetitions by different sizes
c5: U shapes by repetitions of small buildings
c6: U shapes combinations
c7: Simple shapes combinations
c8: Irregular composition
c9: Composition shaped by water element

3.2. Case Study 2: Jägersro

The design realized by the Manda Works in 2021, in collaboration with Trivector and Starkstad, which was one of three teams commissioned to propose a development strategy, currently (2023) is under the jury elevation. Site is located in Jägersro, Malmö. With the move of Jagersro Racetrack to the area immediately adjacent to it, 46 hectares of land will be emptied, and an opportunity has arisen for the establishment of a new neighborhood. Site relations and urban life is explained by Manda Works as:

> *"Given Jägerso's peripheral position in the city, the goal of creating a new mixed-use neighbourhood that elevates its context is essential. This development will both grow from, and create its context. The site will be developed over several decades and therefore requires a clear, but flexible strategy to guide the process and execution of the masterplan. Our masterplan outlines a clear framework established around spatial connections that are deeply rooted in the existing context, yet flexible enough to adapt to the dynamic needs and challenges of the development process. The masterplan establishes a bold underlying framework that highlights and celebrates the essential fundamentals of good urban life, a mixed and walkable urban fabric, compelling landmarks and vistas, generous social and ecological parks and corridors, surprising and integrated combination of urban program, a variety of housing typologies, sensible and strategic density and soft streetscapes prioritised for pedestrians, cyclists and buses." (URL 12).*

Figure 3.57 Map View of the Area: Jägerso

Figure 3.58 Masterplan: Jägerso

3.2.1. Vision and Approach

Manda Works, developed their vision by discovering the existing assets and opportunities that surround the site. Thanks to the interesting variety of parks, cultural destinations, neighbourhoods, and anchor points, which new development could find inspiration and introduced new synergies by linking them together. They expressed the result as "hidden gems in local sequences" which are number of destinations and everyday sequences. These gems are organised to maximise the opportunity for social encounters, contact with parks and landscapes, and community-based economic and cultural development. While introducing new characters and identities to Jägersro; the sequences, spaces, and points strenghten what is there today (URL 12).

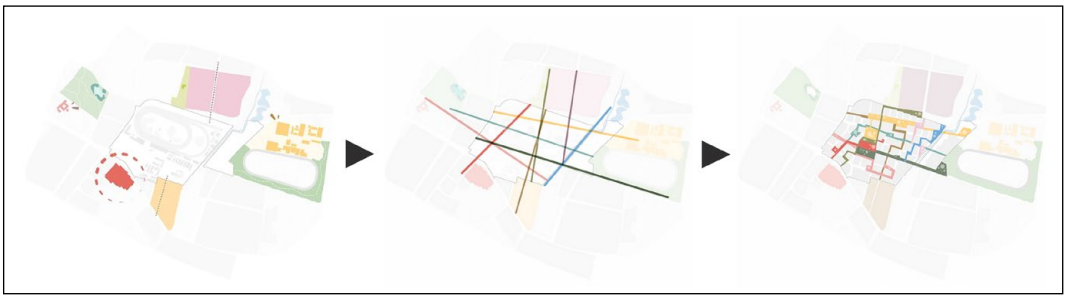


Figure 3.59 Vision for Jägerso

They expressed their vision scheme in three steps:

> *1. Identify Values: Assets and opportunities around Jägersro are important cornerstones to the area's growth, what can we find in what exists today?*
> *2. Cultivate Qualities: Anchor, connect and imagine a network of qualities that weave together existing places, destinations and landmarks with future potentials.*
> *3. Find the Hidden Gems: Develop destinations and create inspiring everyday sequences that introduce new experiences, character and identity to the district! (URL 12).*

The eclectic mix of existing qualities surrounding the site are the essentials of the structure for the division and connection of the masterplan. Site's connections, assets, qualities, microclimates, densities, and potentials are considerated for developing a clear urban structure.

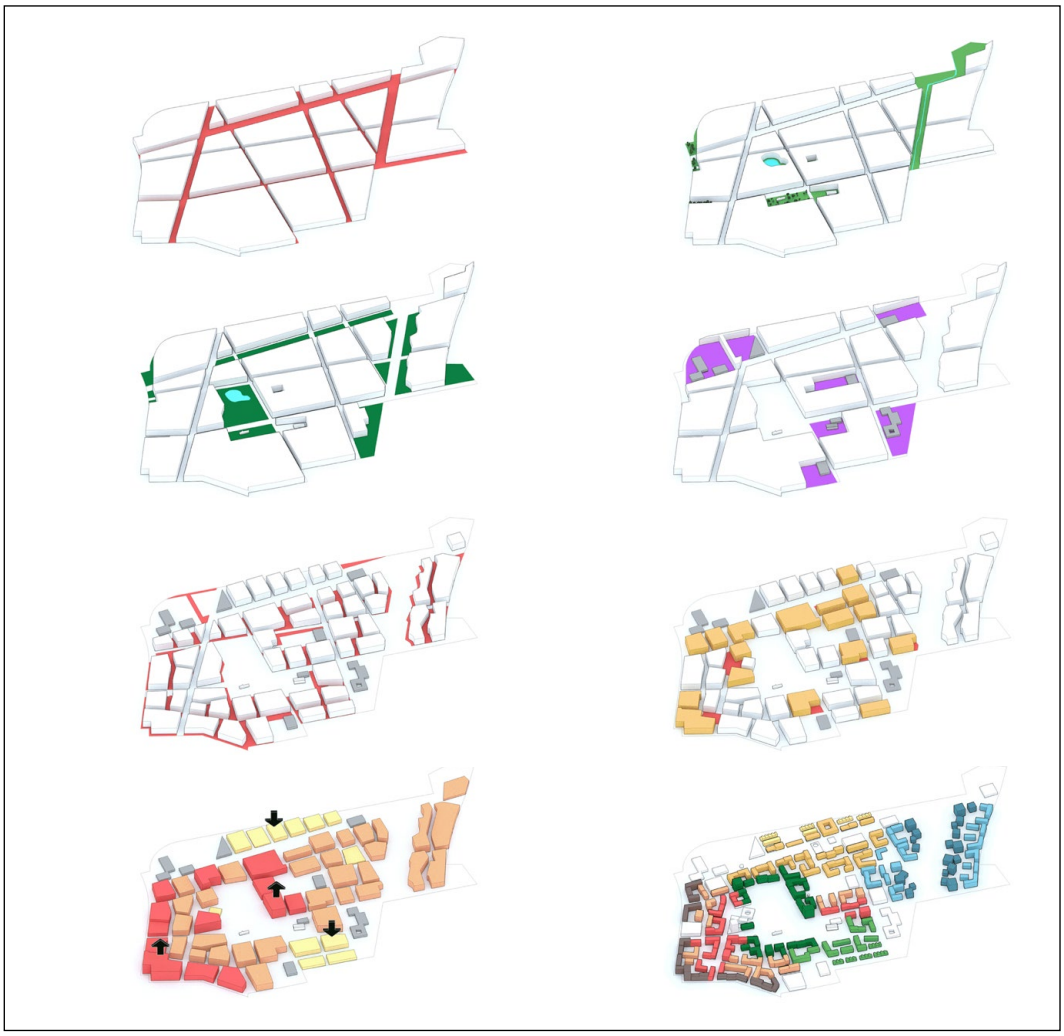


Figure 3.60 Development Process of Jägersro

They define this development process as *"framework for a balanced city"*. Connections, assets, quailies, microclimates, densities and potencials of the site, are the considerations through developing a clear urban structure.

As seen in the Figure 3.60, in the first stage, it is seen that the main axes are created by taking the environment as a reference while in the second stage, the existing natural elements were revealed in the axles and the remaining structural areas. In the third stage, new ones were added to these natural elements in the area. In the fourth stage, primarily public buildings were positioned. In the fifth stage, the building blocks were roughly determined, while in the sixth stage they were classified according to

their functions. In the seventh stage, while the decisions regarding the floor heights are taken, it is seen that the building blocks have taken their final organic form in the last stage.

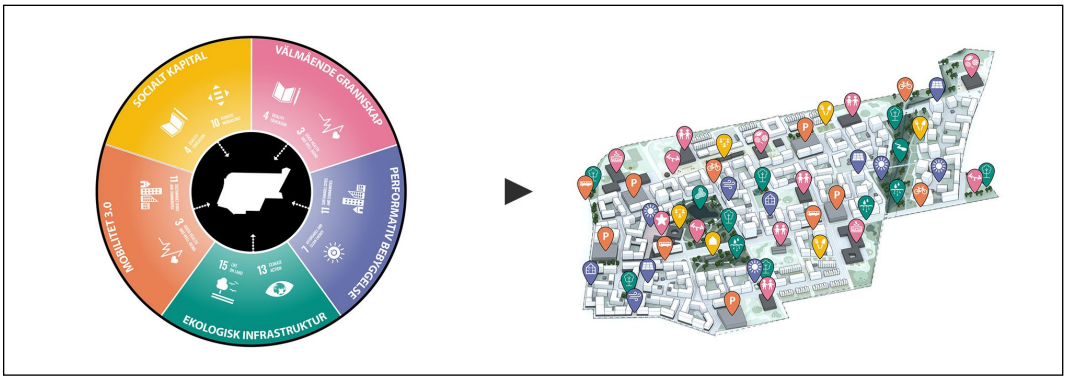


Figure 3.61 Five Strategies

Project consists five strategies for sustainability: *Prosperous Neighbourhood, Performative Buildings, Ecological Infrastructure, Mobility 3.0* and *Social Capital.* Their aim is to create sustainable Jägersro and to maximise the impact and success of the district's targets, they translated general ambitions and strategic targets into specific spatial interventions.

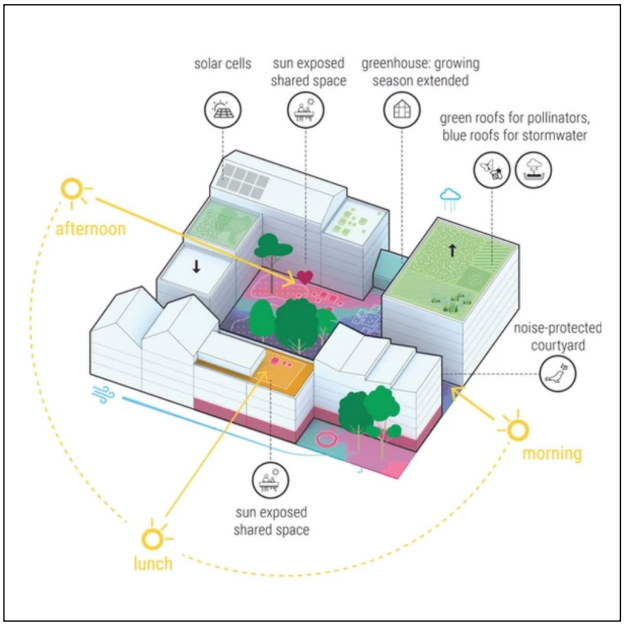


Figure 3.62 Microclimate: Block

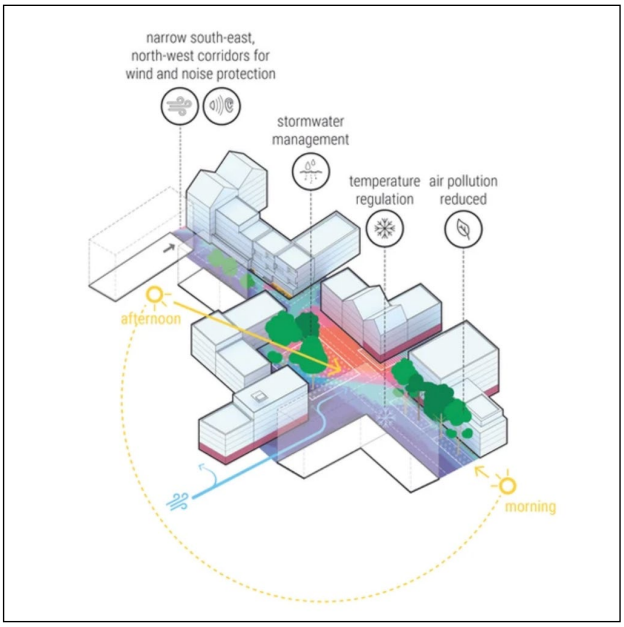


Figure 3.63 Microclimate: Street

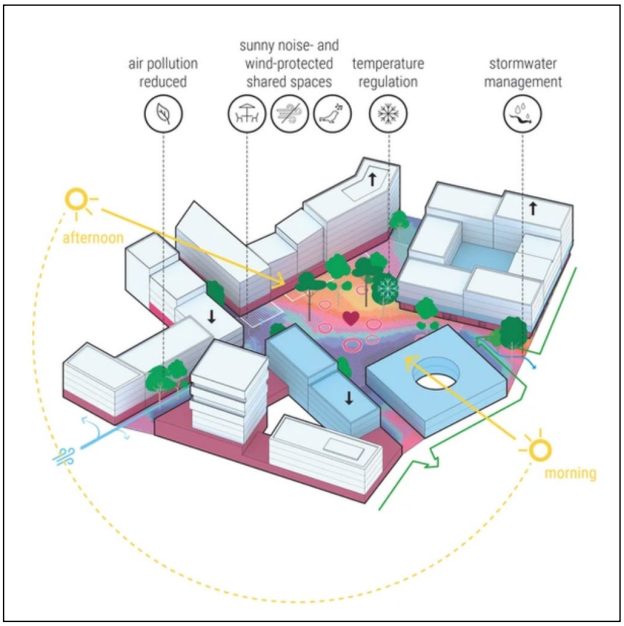


Figure 3.64 Microclimate: Space

As seen in the Figures 3.62 to 3.64, for block *"The careful placement of massing opens up sunny pockets in the urban block structure. Roofscapes and greenhouses serve as communal assets in summer and winter"*, for street *"Buildings are organised to protect streetscapes from*

winter prevailing winds, and pocket plazas expand the public realm to allow the sun in.", and for space *"District-scale public spaces and parks have been located and oriented to maximise sun access and wind protection."*. They argue that the urban structure is optimised for local sun aand wind conditions which is essential in the Swedish urban context. Starting point for the evolution of the architecture and landscape is considering orientation, massing and form of public spaces and building blocks. The volumes surrounding public spaces have been orginised to protect spaces against prevailing winds and sunlight. Without sacrificing infrastructural performance, the streetscaapes are defined by multifunctional surfaces that allow for the infiltration of stormwater. To create a vibrant urban life and pleasent urban courtyards and roofscapes to enjoy, the location and placement of massing and density have been carefully considered (URL 12).

Also Figures 3.62 to 3.64 shows how the forms of the masses and how they combined in a block. Flat roofs, hipped roofs and a single block which consisting different heights with a inner courtyard are seen as the types that shaping the streetscape and by cretaing variety they breaking the monotony. Following figures provide realistic visualizations about life in Jägersro:

Figure 3.65 The Knowledge Axis

Figure 3.66 Jägersro Park

Figure 3.67 Shared Greenhouse

Figure 3.68 Jägersro Square

Figure 3.69 Humane Streets

"The Knowledge Axis: A Community garden centre provides the ideal location for residents to exchange materials, resources, ideas and inspiration around gardening and urban cultivation. Jägersro Park: The large urban park at the heart of the masterplan serves as the district's green lung, providing function both as a recreational landscape and stormwater infrastructure. Shared Greenhouse: Shared communal spaces with the block structure offer residents space to meet, host events, or stimulate local entrepreneurship. Jägersro Square: The central urban square provides a social heart for the new neighbourhood. The community library building injects the space with creativity, learning and experimentation. Humane Streets: The streets are green, cycle-friendly, and urban. Retail and commercial spaces are placed strategically to elevate and activate the public realm." (URL 12).

Figure 3.70 View of Jägersro

3.2.2. Composition of Elements

The general urban composition of Jägersro consists of:

Simple geometrial shapes (68)
L shapes derivatives (21)
U shapes derivatives (10)
Blocks with patios (7)
Irregular shaped open blocks (12)

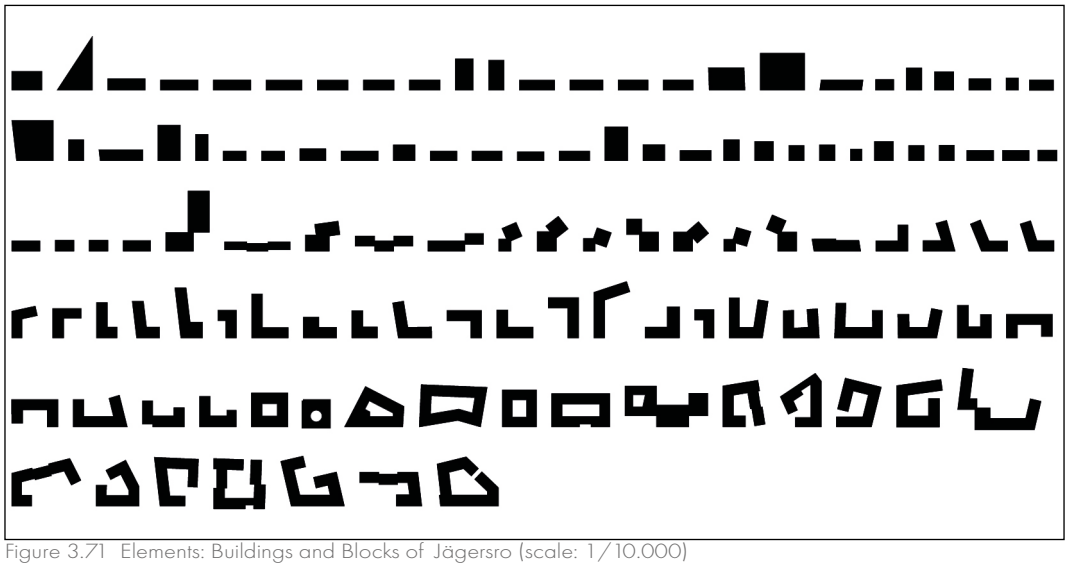


Figure 3.71 Elements: Buildings and Blocks of Jägersro (scale: 1/10.000)

Figure 3.72 Analysis of Jägersro Masterplan (scale: 1/10.000)

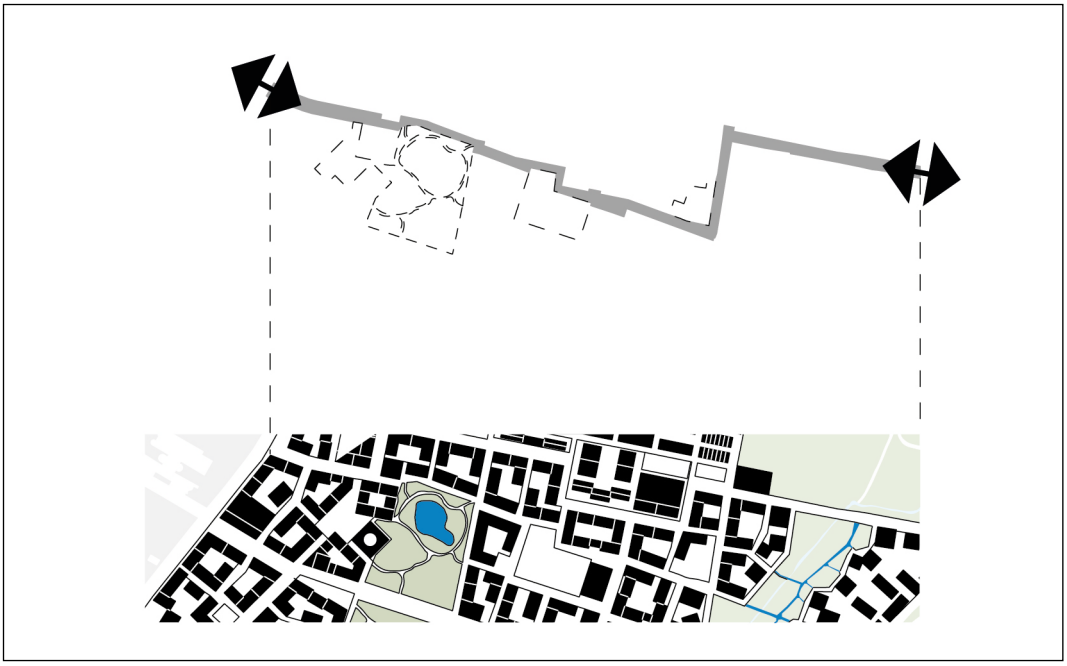


Figure 3.73 Jägersro: Axis (scale: 1/10.000)

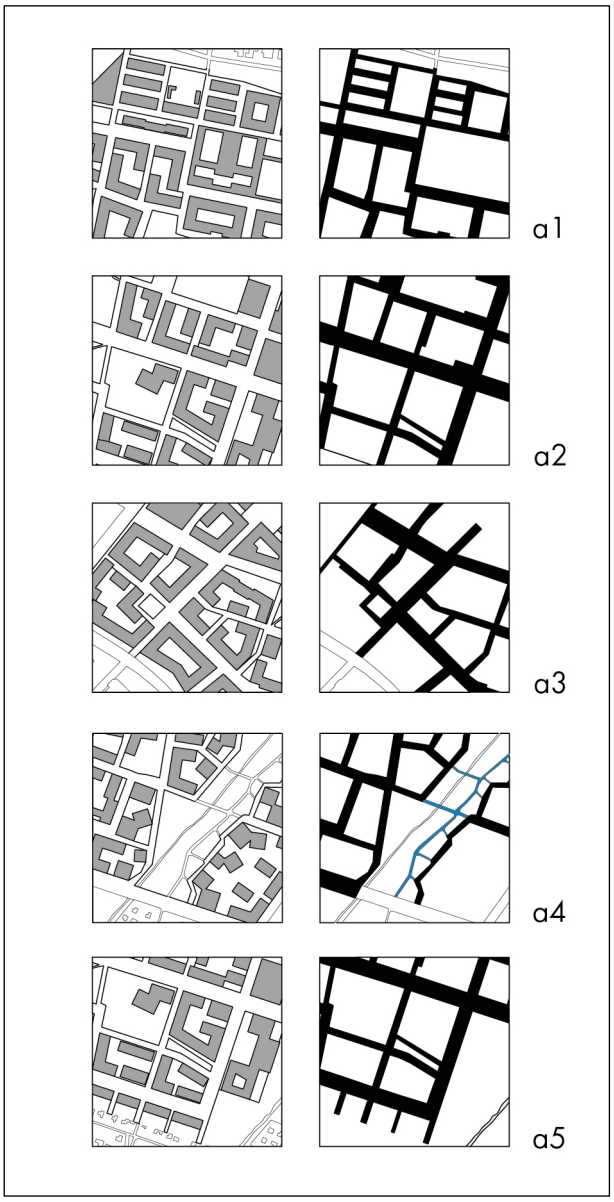


Figure 3.74 Jägersro: Streets (scale: 1/10.000)

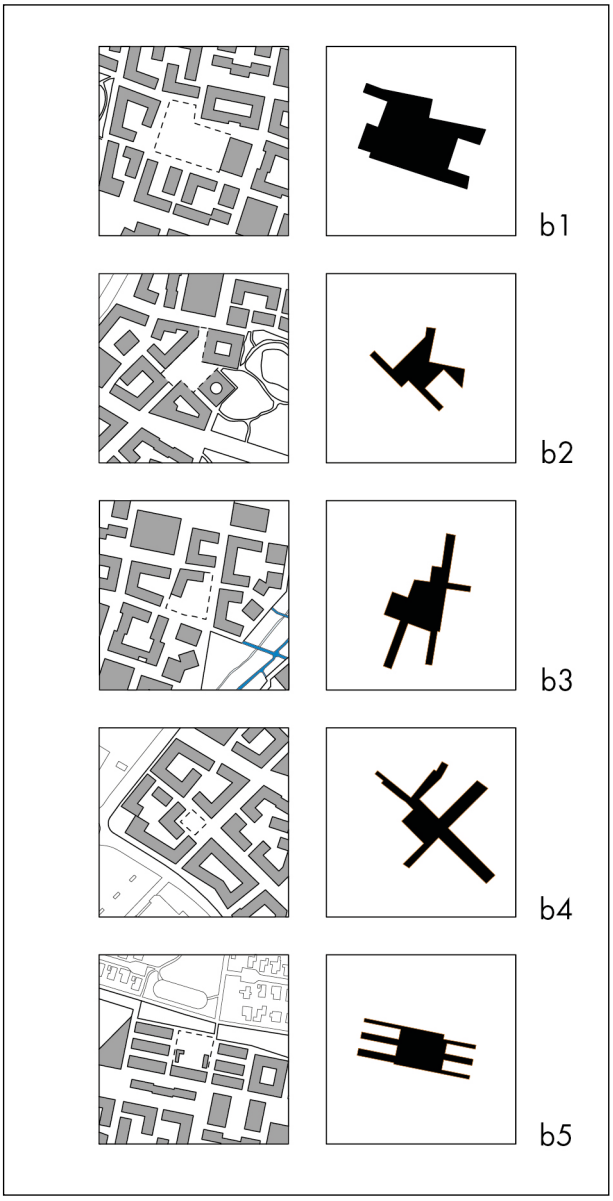


Figure 3.75 Jägersro: Squares (scale: 1/10.000)

Streets

a1: Parallel short streets
a2: Two differet gridal texture
a3: Different oriented streets
a4: Streets in relation with water
a5: Big gridal texture

Squares

b1: Big square attached to a single building
b2: Enclosed irregular shaped square
b3: Square formed by a L shape building
b4: Small square surrounded by 3 sides
b5: Square with multiple street views

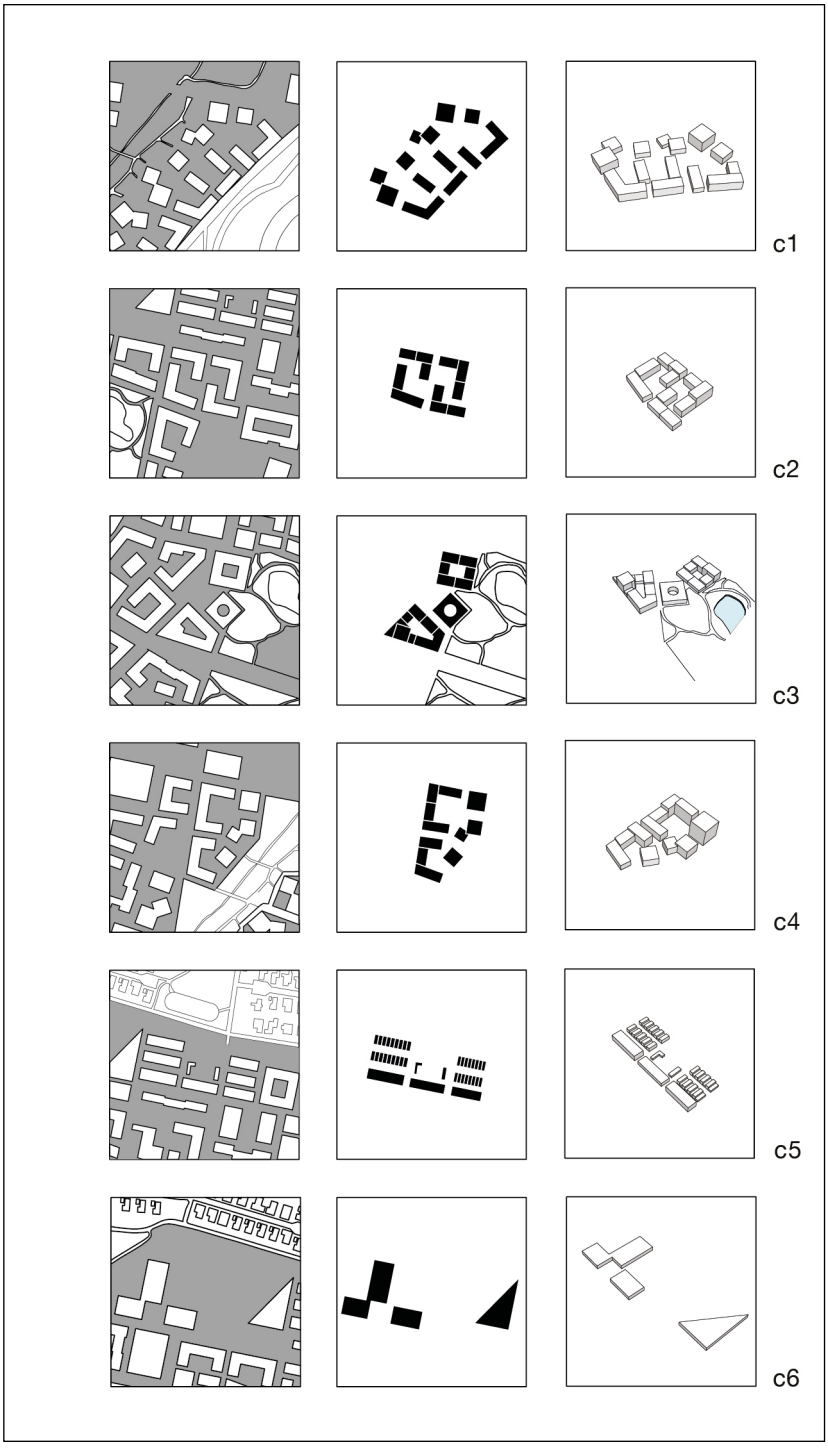


Figure 3.76 Jägersro: Typologies 1 (scale: 1/10.000)

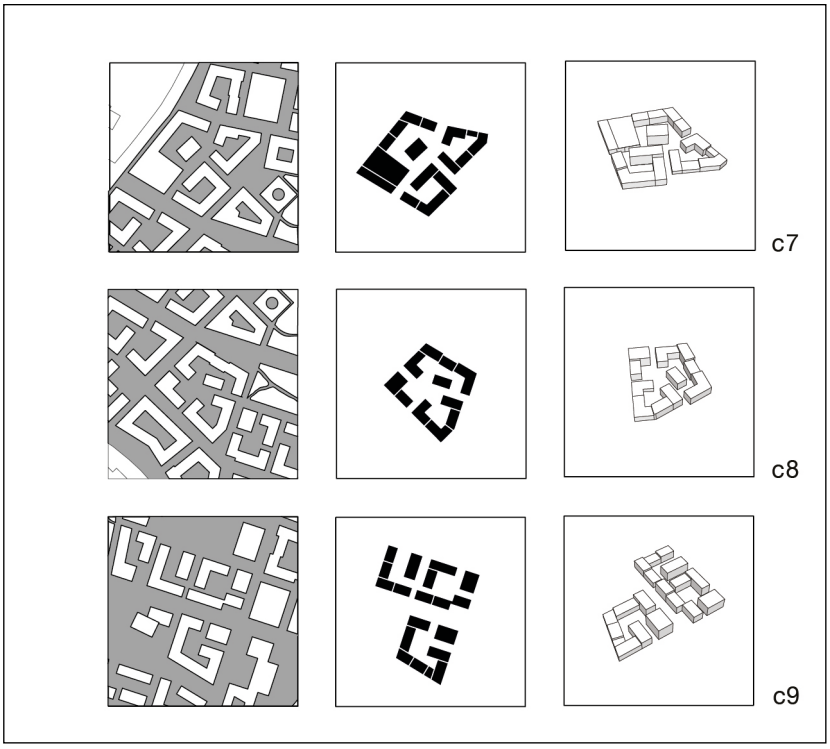


Figure 3.77 Jägersro: Typologies 2 (scale: 1/10.000)

Typologies/Blocks

c1:L shapes, rectangs and squares
c2: L shape combinations
c3: Big blocks with courtyards
c4: U shapes combined with squares
c5: Repetitions of equal rectangles
c6: Solid geometric shapes
c7: Irregular shapes combination
c8: Irregular shapes combination
c9: Irregular shapes combination

3.3. Case Study 3: The Connected City

The Connected City, a master plan designed by the team Karres en Brands in collaboration with ADEPT and Transsolar, is the winner project as a result of the competition and approved in 2019 for the area area in Oberbillwerder, Hamburg. The project, which will cover an area of 124 hectares, is important as it will be the 105th district of Hamburg after completion. The aim of the project is explained in the master plan report by IBA Hamburg as:

> *"It is set to be something quite special: liveable and attractive, inclusive and integrated, environmentally friendly and sustainable. Oberbillwerder aims to provide space and a home for different population groups, with plenty of diversity in terms of background, income, age and life situations. It seeks to create lively neighbourhoods through high-quality building projects by cooperatives, building groups, and private and public property develo- pers. The area will include not only homes, but also a range of work- places, educational institutions and social and recreational facilities."*

Figure 3.78 Map View of the Area: The Connected City

The land of the planning area is owned by the City of Hamburg and part of the Bergedorf Marshlands. The importance of the area is that comprises the cultivated Billwerder landscape and the former Billwerder ribbon farm.

Figure 3.79 Masterplan: The Connected City

3.3.1. Vision and Approach

The aim of The Connected City is; connecting the new with the existing, combining past and future, strengthening present elements of quality and making these the starting point for a new, liveable city where urban lif and the landscape are linked together. It is also a model district as Active City which the City of Hamburg's strategy to enable its residents to live an active health-conscious lifestyle (The Connected C.: Oberbillwerder MP, 2019).

The vision is described as three sentences:

> *"1. Agricultural land without reference to the surrounding residential areas*
> *2. The district must not be an island*
> *3. The Connected City-an integrative planning approach" (The Connected C.: Oberbillwerder MP 2019, 15).*

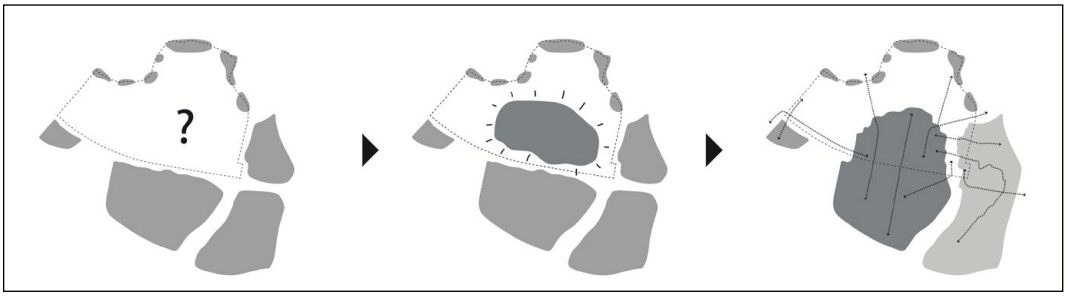


Figure 3.80 Idea Scheme of The Connected City

The development of the project is described as *"Development based on the location itself"* and explained as the following:

> *"The creation of Oberbillwerder marks the continuation of urban development in the Hamburg marshlands, while supplementing the neighbouring districts and Quarters. At the same time, the new district is embedded in the cultivated Billwerder landscape and Hamburg's overarching Green Net- work, made up of expanses of open landscape and green belt.*
>
> *The basic structure of Oberbillwer- der takes its cue from the land- scape and is based on agricultural cultivation in the form of narrow, elongated parcels of land (Hufen) that run north to south, and the ditches that drain the water from*

Figure 3.81 Green-Blue Developments

them. This rigid structure is broken up by the vestiges of historic water- ways, which run in an east–west direction. The interlocking of these two elements forms the Green Loop: a green ring that will inter- connect the new district and take on a variety of functions." (The Connected C.: Oberbillwerder MP 2019, 16).

Green and blue systems are the structures of the project as seen on Figure 3.81. Rest of the project is shaped around these green-blue system.

The development of the project is revealed in detail with the diagrams shown in Figure 3.82 (page 130). Zoning, distribution of floor numbers, density, high-rise buildings as triangulation, squares, axes, visual axes are some of these. Showing buildings whose ground floors belong to public use shows that, while creating the masterplan, architecture was simultaneously considered and included in this process. In addition, building typologies varying depending on zones and functions are grouped and presented.

Figure 3.82 Project Schemes

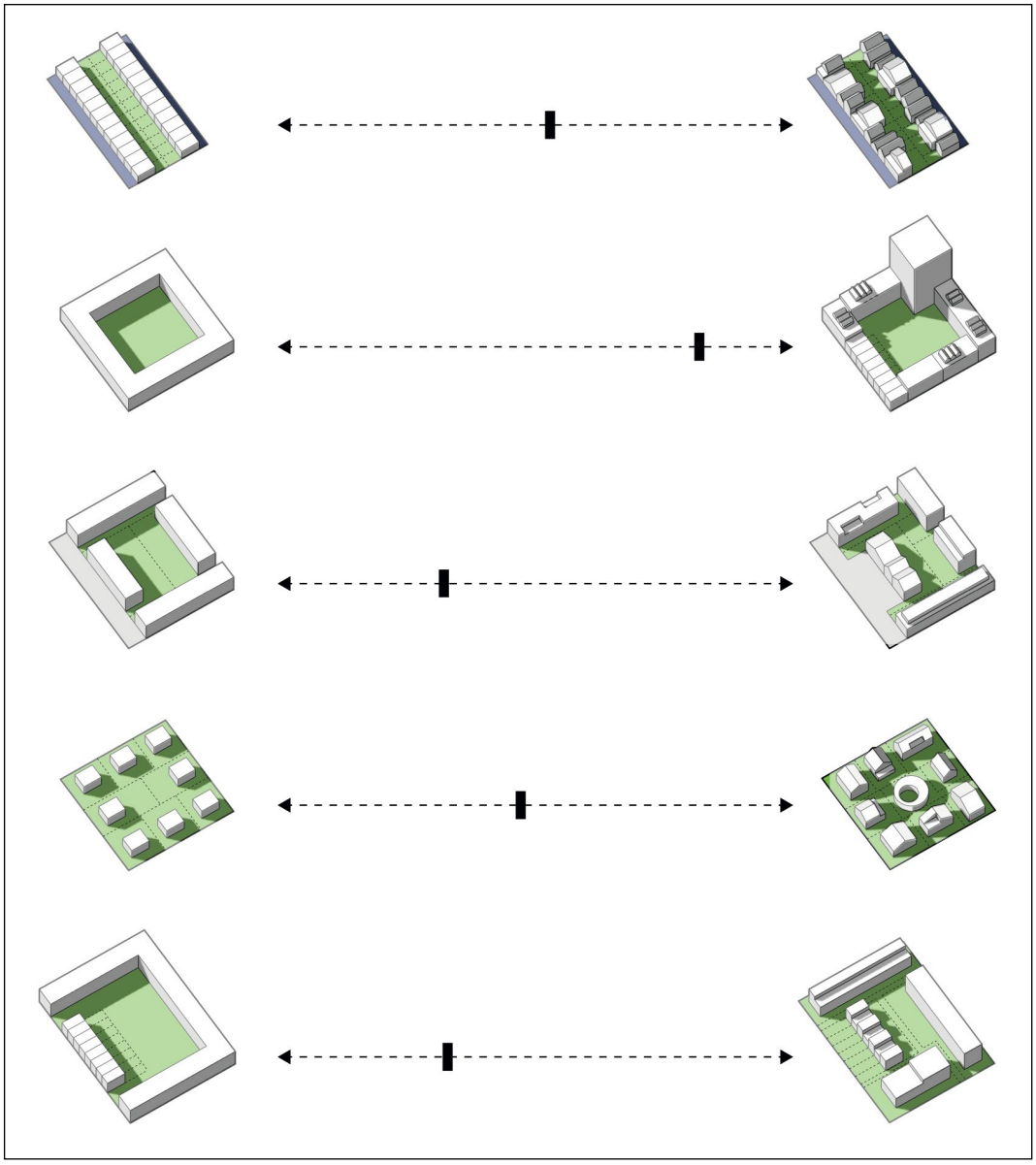


Figure 3.83 Building Typology Developments

Figure 3.83 shows general building typologies that vary according to zones and how they developed from the initial simple design to their final form. In order: Blue Quartier, Station Quartier, Green Quartier, Garden Quartier and Park Quartier.

Figure 3.84 Centrak Square in the Station Quarter

Figure 3.85 Blue Quarter

Figure 3.86 Green Quarter

Figure 3.87 Park Quarter

Figure 3.88 Transition to the Landscape in the Garden Quarter

Figure 3.89 Green Loop

Figure 3.90 Activity Park

Figure 3.91 Quarter Square in the Station Quarter

Figure 3.92 View of The Connected City

3.3.2. Composition of Elements

The general urban composition of The Connected City consists of:

Big blocks with patios (22)
Linear elements (8)
Irregular shapes (6)
L shape derivatives (46)
Rectangular derivatives (582)

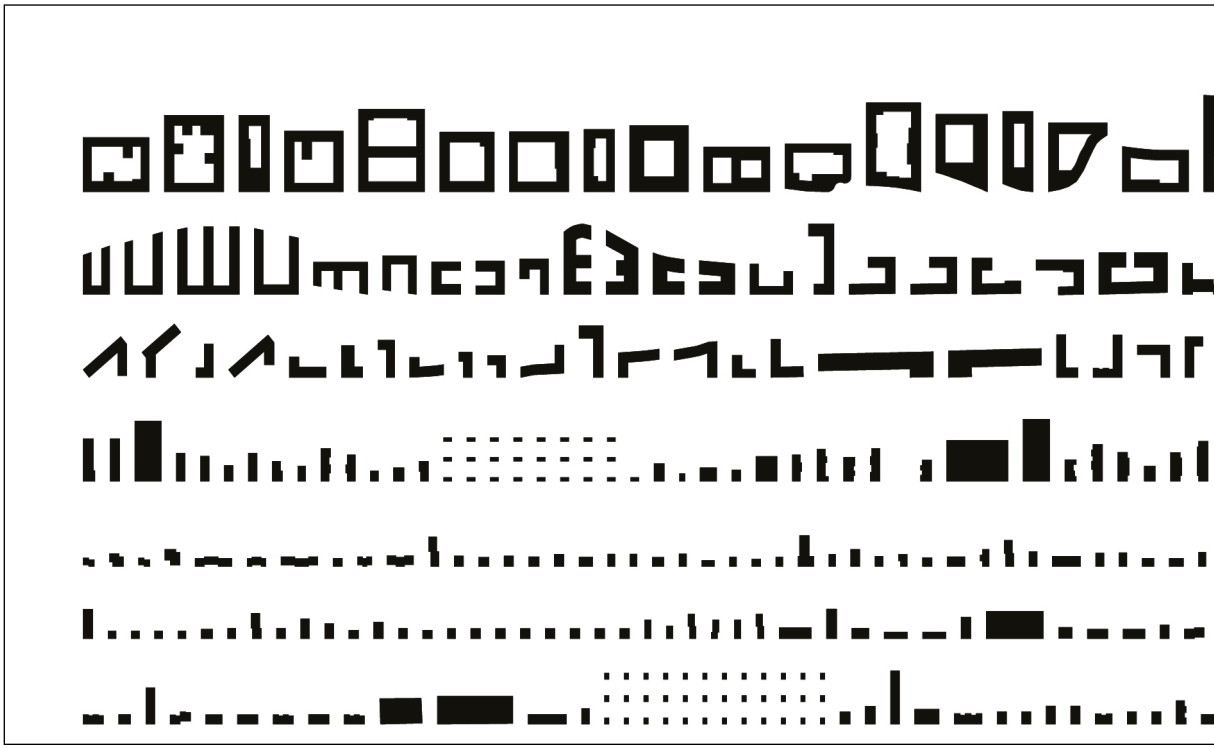
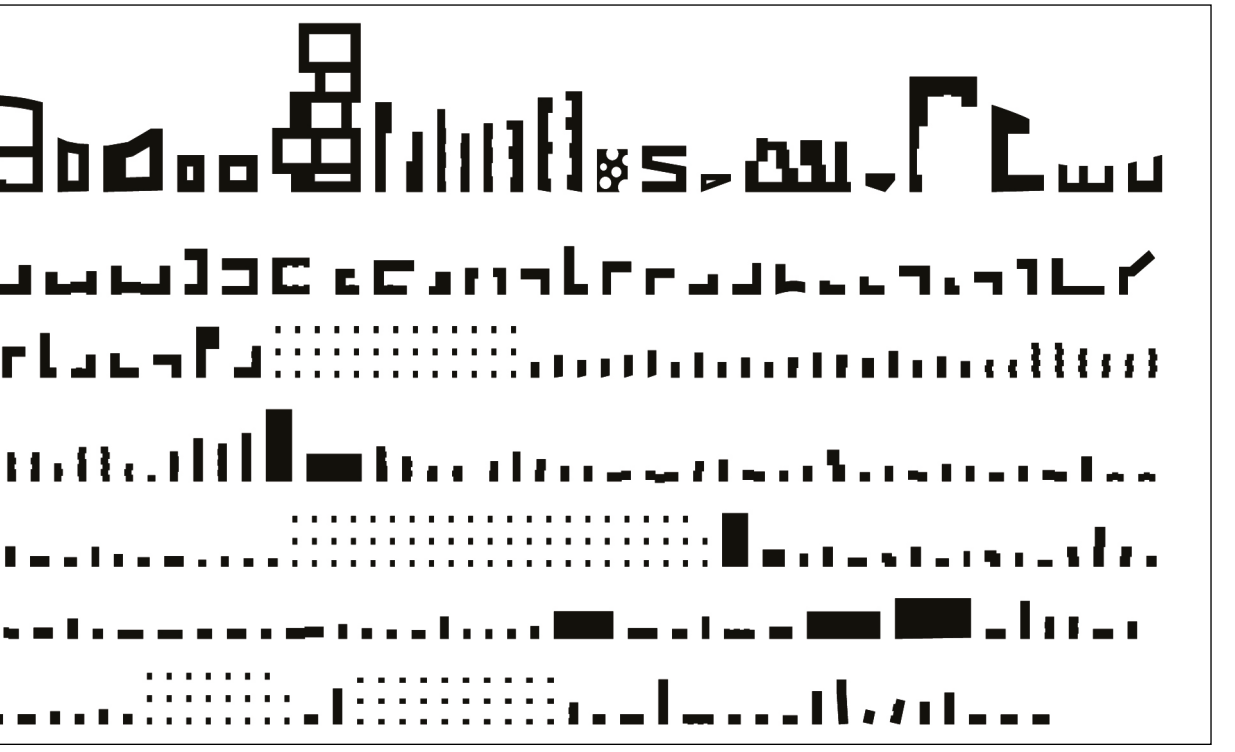


Figure 3.93 Elements: Buildings and Blocks of The Connected City (scale: 1/10.000)




nodes
continuous axis
connections

Figure 3.94 Analysis of The Connected City Masterplan (scale: 1/10.000)

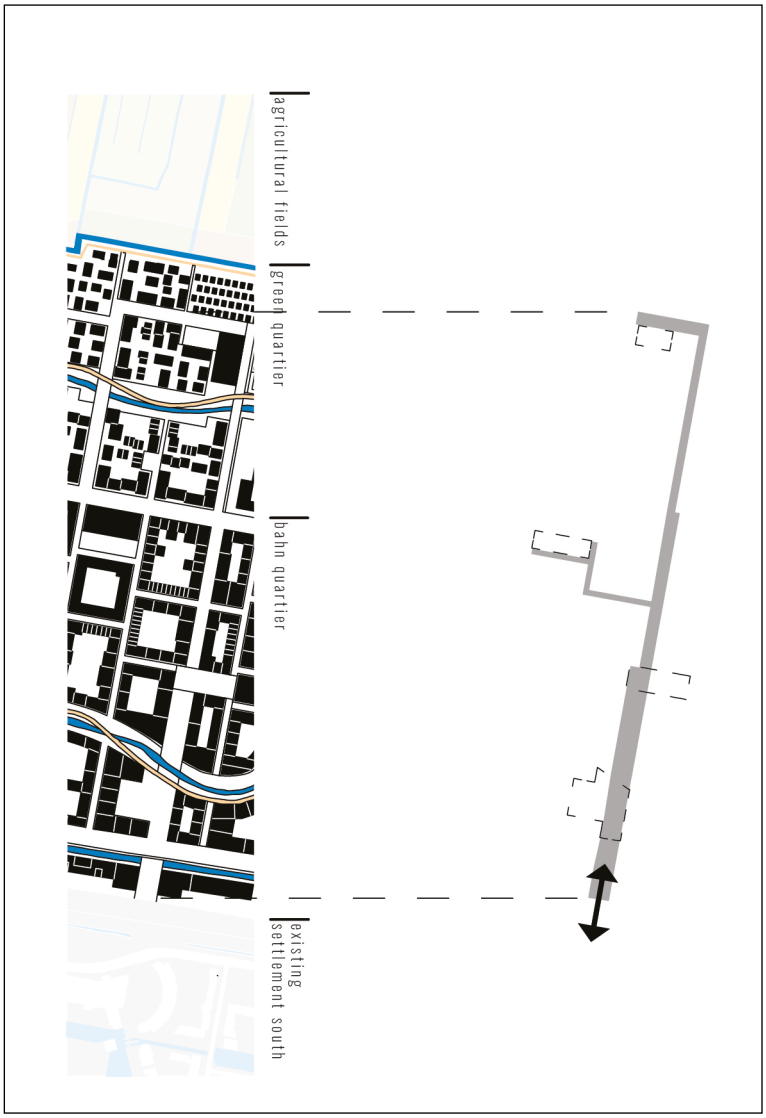


Figure 3.95 The Connected City: Axis (scale: 1/10.000)

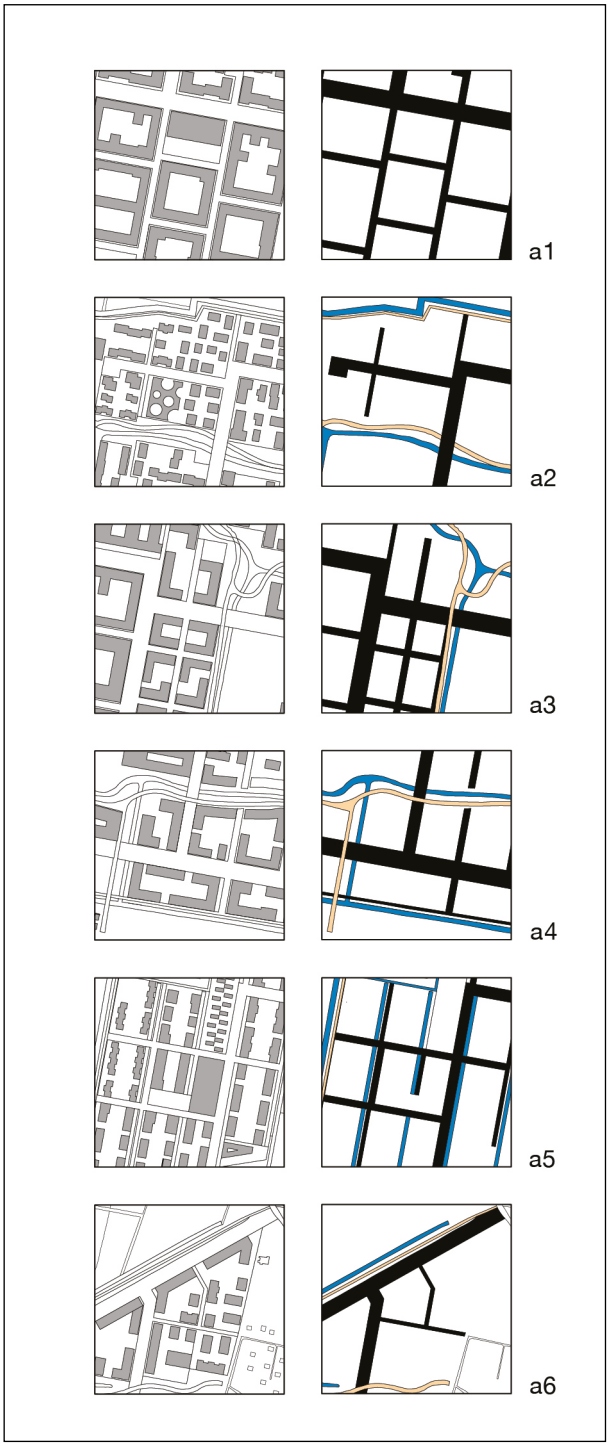


Figure 3.96 The Connected City: Streets (scale: 1/10.000)

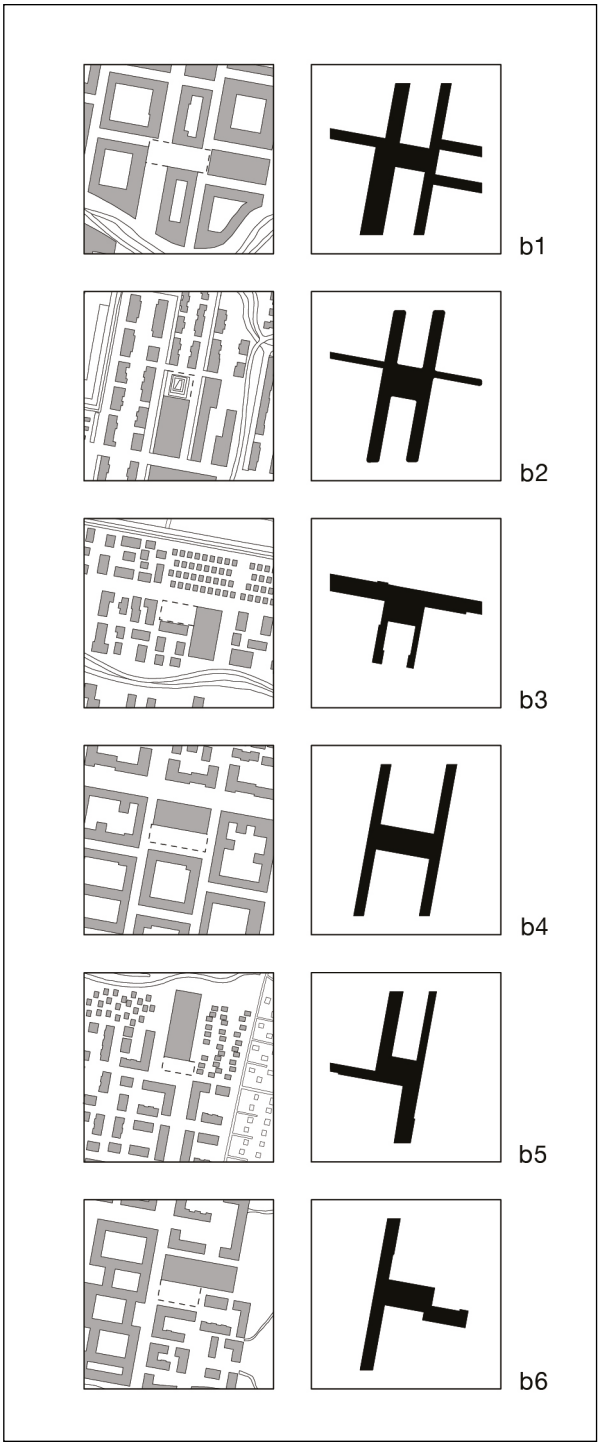


Figure 3.97 The Connected City: Squares (scale: 1/10.000)

Streets

a1: Shifted grid texture
a2: Dead end streets
a3: Small grid surrounded by big streets
a4: Perpendicular streets with water and path
a5: Streets along with water
a6: Different oriented streets

Squares

b1: Square surrounded by five buildings
b2: One side attached square
b3: Two side attached square facing to main street
b4: Square attached to a same size building
b5: Small square attached to a big building
b6: Small square connected to courtyards

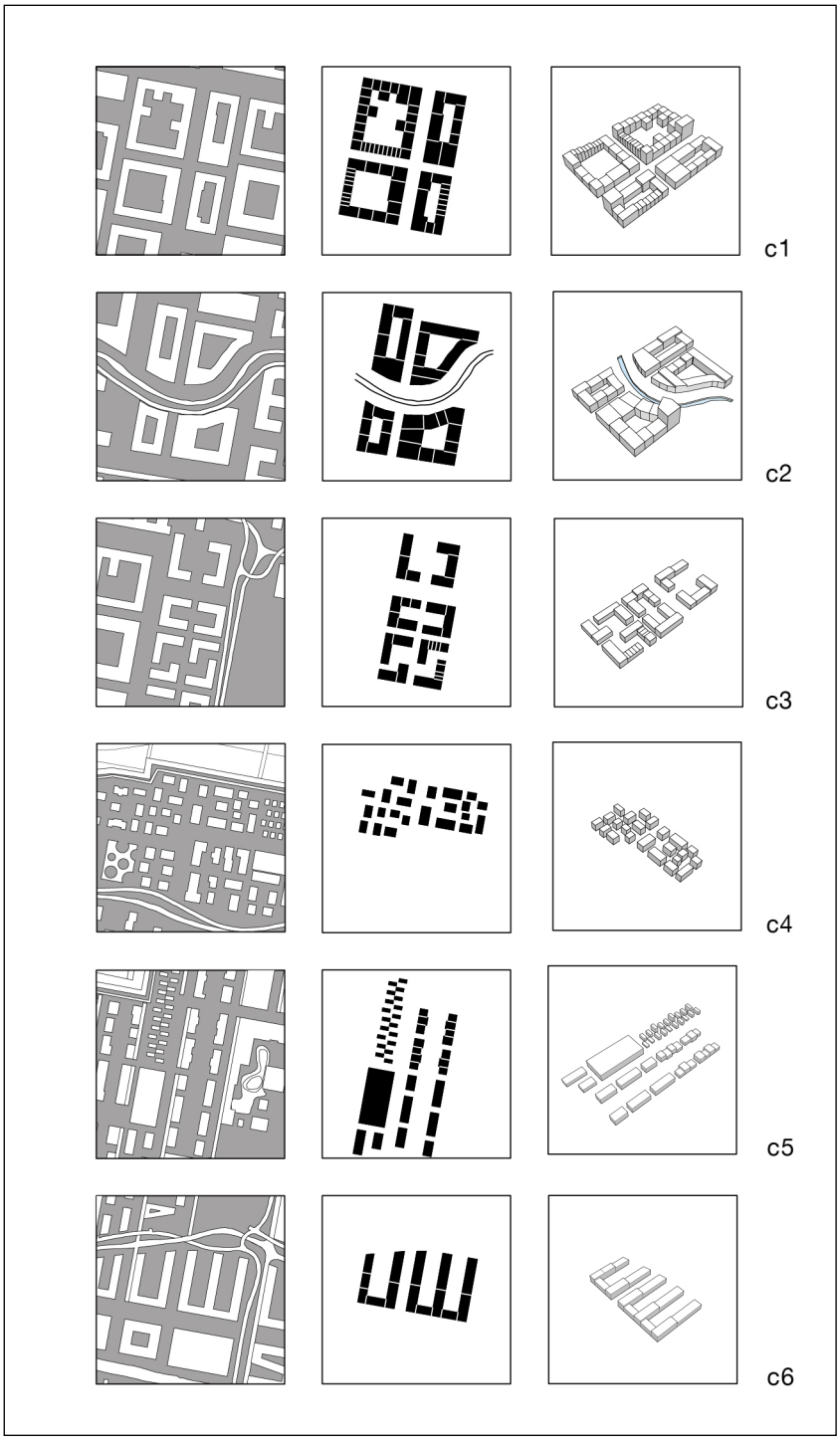


Figure 3.98 The Connected City: Typologies 1 (scale: 1/10.000)

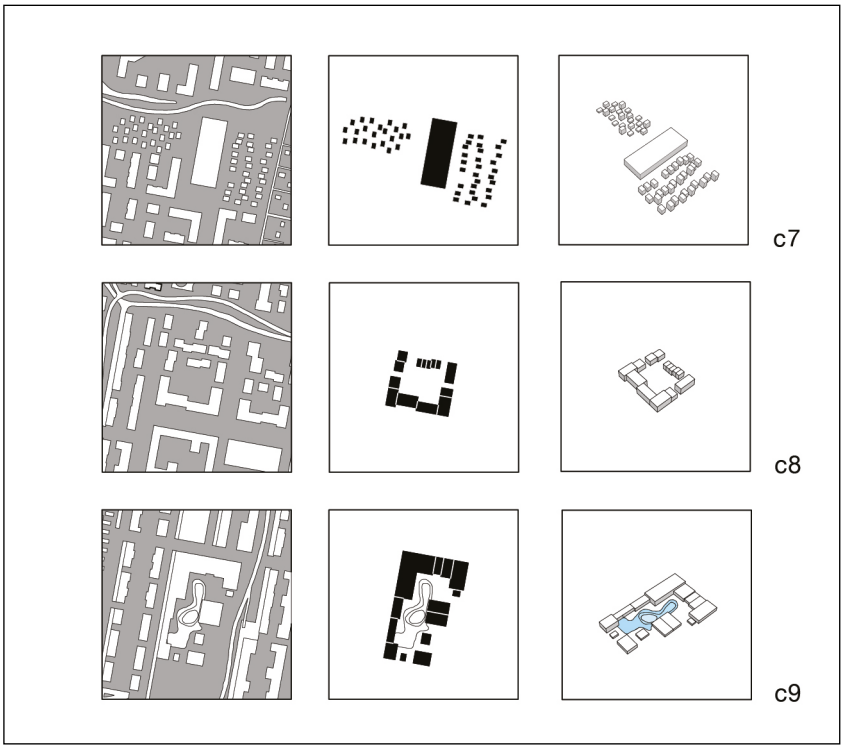


Figure 3.99 The Connected City: Typologies 2 (scale: 1/10.000)

Typologies/Blocks

c1: Big blocks with courtyards
c2: Buildings following the water shape
c3: L and U shapes combinations
c4: Small rectangs cluster
c5: Different size rectangs in linear organization
c6: U shapes combination
c7: Dominating big rectang between smallers
c8: Different size rectangs creating enclosed space
c9: Irregular shape organization

Project Presentations, Masterplans and Brochures

Oberbillwerder: Hamburg's New District (EN)
(Accessed in November 2022 from: https://www.iba-hamburg.de/files/downloads/Projekte/Oberbillwerder/Brochure-engl-Oberbillwerder-Version-2021.pdf)

The Connected City: Oberbillwerder Masterplan (EN), January 2019
(Accessed in November 2022 from: https://www.oberbillwerder-hamburg.de/wp-content/files/Masterplan_Oberbillwerder_WEB.pdf)

Rahmenplan: Werfquartier in Bremerhaven, March 2022
(Accessed in November 2022 from: https://www.bremerhaven.de/sixcms/media.php/94/Rahmenplan+final_red.pdf)

Werfquartier Bremerhaven (EN)
(Accessed in November 2022 from: https://www.werftquartier-bremerhaven.de/Docs/Werftquartier-Bremerhaven-EN.pdf)

Sitography

URL 1:
https://www.as-p.com/projects/project/centenary-city-masterplan-246/show/

URL 2:
https://www.oma.com/projects/city-in-the-desert

URL 3:
https://www.perraultarchitecture.com/en/projects/3602-green_handan_manifesto.html

URL 4:
https://www.awimmer.at/haunstettensüdwest

URL 5:
https://www.madma.nl/projects/ifc_moscow/

URL 6:
https://astoc.de/en/projects/competitions/seoul-incheon-harbor-redevelopment

URL 7:
http://www.rpbw.com/project/masterplan-for-the-ex-falck-area

URL 8:
https://www.architectmagazine.com/project-gallery/minsk-forest-city

URL 9:
https://www.mvrdv.com/projects/7/serp--molot-factory

URL 10:
https://www.bremerhaven.de/de/verwaltung-politik-sicherheit/stadtplanungsamt/werftquartier.86877.html

URL 11:
https://www.werftquartier-bremerhaven.de/werftquartier/lageplan

URL 12:
https://www.mandaworks.com/jagersro

URL 13:
https://www.karresenbrands.com/en/project/the-connected-city

URL 14:
https://www.iba-hamburg.de/en/projects/oberbillwerder/overview

CHAPTER 4

4. EXPERIMENTAL APPROACH: UNITY COMING from UNIQUENESS

This approach is the product of a sketchbook created while theoretical research was going on. The notebook, in which the thoughts and drawings about what should be found in a city are processed, has changed the scope of the study. Sketched ideas were screened and grouped. Those who remained in the last stage were accepted as criteria to be tested with the master plan to be made.

These criteria include phenomena that we can see in almost every city. The main purpose of the study is how to apply these criteria in a place-specific manner.

Within the scope of this study, the south of Mantova was chosen as the pilot area. In the Chapter Five, it is tested how these desicions based criteria will be implemented on a site-specific basis.

4.1. Primary Decisions as a Base

Before starting any physical urban design process, "What kind of life is desired?" the question should be asked specific to the site. To answer the question, there must be a basic information about the site regarding to its qualifications. With regard to the answer, basic functions should be determined and than optinal functions can be decided.

In the phase of transition to physical design, it is possible to proceed by taking references from geography and existing settlements if any, or to make an independent design by completely rejecting it.

In this stage, criteria consists of six decisions. While the first four will turn into purely physical decisions that will form the basis of the design, the last two are decisions that should be considered with these decisions but can be applied after.

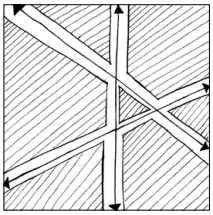


Figure 4.1 Main Axis

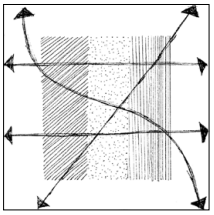


Figure 4.2 Zonning

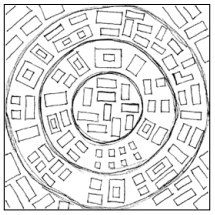


Figure 4.3 Rings

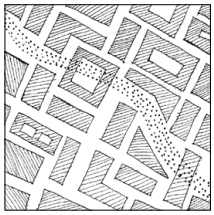


Figure 4.4 Path

Functioning Main Axis

Assigning functions to axes instead of zones will make it easier for everyone to access every function. After the functioned main axles are created, the divided areas are obtained. This patchwork forms the basis for the next steps. This divided base is the space which allows to design freely by considering the functions of the roads.

Homogenious Zoning

When creating zones, it must be ensured that each main function goes to each zone. Zoning should be done so that the main axles pass through each of them. Separating the zones according to the characteristics of the public spaces instead of separating them according to the typological features of the buildings will allow people from different profiles to live in the same zone, while also giving the zones a functional difference.

Transportation Rings

Public transportation can be planned in rings, so that the transportation distance to each area can be made equal.

Pedestrian Path

As long as possible, uninterrupted pedestrian-bike paths should be created. This path can pass under buildings or through blocks. The location of this road is of strategic importance. It can accommodate multiple different functions depending on its length. In addition to being used for transportation purposes, it should also accommodate many public and cultural functions. Although it is thought of as a separating element, it should be considered as a unifying-gathering transit area.

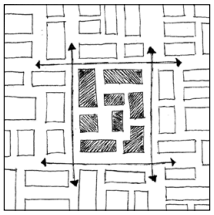


Figure 4.5 7/24 Spaces

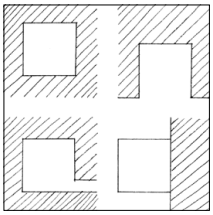


Figure 4.6 Public Spaces

7/24 Live Spaces

Reserving and securing living areas 24/7 is a must for vibrant city life. It will also provide a sense of security for people to know that there are public spaces where they can reach other people anytime. In addition, the existence of such regions can be effective in reducing the migration rate of the young population.

Varieities of Public Spaces

It can be classified public spaces according to privacy conditions. Creating different type of public spaces serves more people.

Conditions of privacy can be diversified with the relations of public spaces within the urban fabric. An area within a completely enclosed building block can be used by the occupants of the building block. Again, an area that is located in a closed building block and can be reached by a passage will serve more people, but less than an area with a single facade facing the street. An area surrounded by roads on all four sides is weak compared to others in terms of privacy conditions. Function, shape, materials are elements for creating diversity.

4.2. Secondary Decisions

The second part of the design phase consists of the criteria that will shape itself after the general decisions in the first phase. These criteria are roughly classified as urban scale and architectural scale. While the criteria under the urban scale are the ones that can be read when looking at the plan, perspective is needed to read the criteria under the architectural scale. Although classification is made, all criteria are interrelated and multidimensional. The first five criteria can be perceived at the urban scale, and the last five criteria at the architectural scale.

4.2.1. Urban Scale

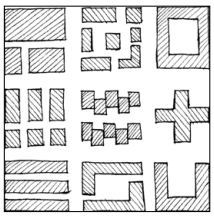


Figure 4.7 Blocks

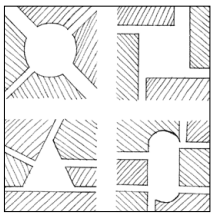


Figure 4.8 Squares

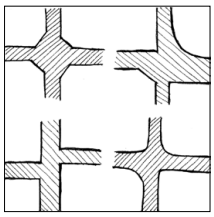


Figure 4.9 Junctions

Type of Blocks, Buildings and Apartments

Different type of blocks, buildings can serve to different needs of people. Also by creating different type of apartments in one building can make people from different profiles live together.

Variety of Squares

Separating squares with contours, shape, elements and materials used give character to urban spaces. The square in which it is located should give clues about the life in that part of the city. The main feature that distinguishes the zones from each other should be the function of the squares as the main public areas.

Variety of Intersections / Junctions

The differences in the intersections of the streets eliminate the feeling of walking in the same place, give a clue about the current location and make it easier to find the way. street junctions can also be designed considering that they will host functions that need easy access. It should be solved in a way that vehicles, bicycles and pedestrian traffic can use it together.

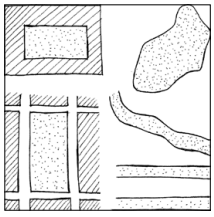


Figure 4.10 Greens

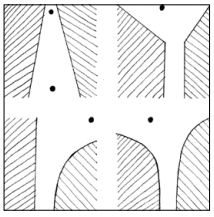


Figure 4.11 Angles

Green Types and Functions

Creating different types of green spaces serves people of different profiles. Factors such as area, plant type, urban furniture, shade ratio play a role in the selection of green areas by the people. Green spaces can also be classified according to their physical relationships. The green area within a building block, green area surrounded by roads on all four sides or a linear green area on the roadside can be the types of green spaces. Cities should also have green areas that are not regulated and left natural.

Angles for View

Creating angles in streets and squares make people see the beyond and give the sense of curiosity to go through the space. The widening angle invites people by creating vista, while the narrowing angles can fulfill the same function by focusing. The focal point can be a monument, a statue or a relic.

4.2.2. Architectural Scale

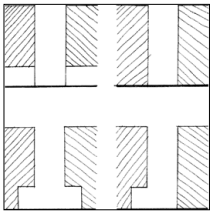


Figure 4.12 Ground Levels

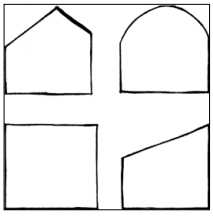


Figure 4.13 Roof Forms

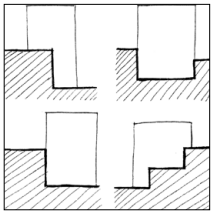


Figure 4.14 Topography

Ground Level Relations

The relations established with the street at ground level are determined by the function on the ground and the physical relationship of the building with the urban area. These relations can be diversified, such as the ground floor of the building being directly related to the street, the ground floor retracting to form a space behind arcades, creating a passage in the building block and inviting people inside from the street. The privacy of the residences on the ground floor is also an issue that needs to be addressed.

Roof Forms

Roof forms can also give idea about the life in that part of the city and be the guide for people while finding way according to the skylines. Roofs also shape the silhouette of a city and play a role in creating the identity of the city. Considering this effect of the roofs, decisions regarding the 3rd dimension should be made in certain parts of the city.

Topographical Decisions

Topographical decisions can create different usages for space and grading can be necessary for dividing the functions according to the physical shape of the city. In a flat topography, elevation can be made with natural elements, or urban areas of different qualities can be created by leveling with hard materials.

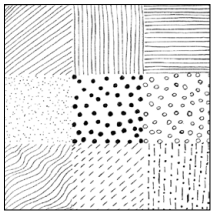


Figure 4.15 Textures

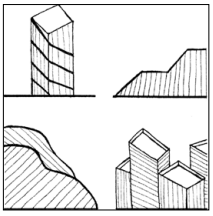


Figure 4.16 Observation Points

Identical Textures

Textures on the pavements, squares, walls, facades of the buildings can take the role of pathfinder and give identification to the urban spaces.

Observation Points

Creating observation points on the top of the buildings' or making structures, towers for this purposes also creates landmarks for the visitors. Grading topography can also be used for this purpose.

4.3. Notes for the Criteria

· Each criterion should be considered specific to the site.

· Scope of criteria can be changed and expanded.

· The order in which the criteria are applied may vary.

· Some criteria can be combined.

· The application of the criteria does not always require a special effort, some criteria may arise as a result of other criteria.

· It may not be necessary to apply every criterion.

· Each criterion may not be visible in the master plan, and its visibility may vary according to the scale.

In summary, the aim should not be the exact application of the criteria, but how these criteria are evaluated specific to the site.

CHAPTER 5

5. TESTING the CRITERIA in MANTOVA

In this chapter, it will be shown how the criteria determined in the previous chapter are applied specifically to the selected site as a result of theoretical readings and case studies examined.

The reason for choosing Mantova as the project area is the interesting morphological scenes that emerged and changed as a result of the interrelationship of its natural structure and historical background. Today, it still offers a multi-layered substrate by containing its natural, historical and morphological traces.

5.1. Mantova and Area

The project site is located in the city of Mantova of Lombardia region in Italy and borders the region of Emilia Romagna and Veneto.

Figure 5.1 Lombardia Region in Italy

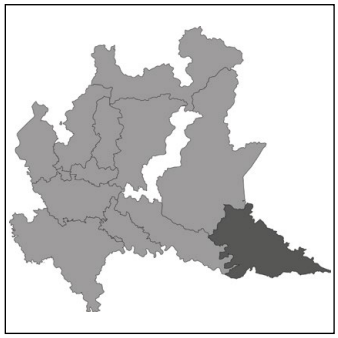


Figure 5.2 Comune di Mantova in Lombardia

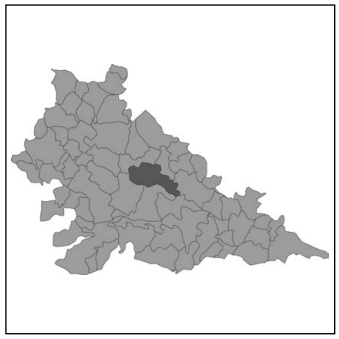


Figure 5.3 Mantova City in its Comune

In 2008, Mantova's historic center was declared by UNESCO as a World Heritage Site together with Sabbioneta. In 2016, Mantova was designated as the Italian Capital of Culture and in 2017, it was selected as the European Capital of Gastronomy, which is included in the Eastern Lombardy Region together with the cities of Bergamo, Brescia and Cremona.

Mantova is a peninsula in Po Valley. In parallel with its history, its relationship with the waters and the city form have changed considerably. Today, Mantova is surrounded by three artificial lakes called Lago Superiore, Lago di Mezzo and Lago Inferiore which refer to "big, medium and small". They are separated by two bridges connecting the peninsula to the mainland on the opposite shore.

Paiolo, is the fourth lake which was dried in the 18th century, has a great effect on the changing form of the historic city and is very important for the selected project area.

Before examining the city history of Mantova in the light of old maps, the current aerial photograph of Mantova shown in Figure 5.4 is presented. In order to facilitate the tracking of the old maps, the existing or lost elements that played an important role in the formation and change of the urban structure of Mantova are indicated.

Three lakes, Rio, what is now the street, the old Fossa Magistrale, Palazzo Te as a reference point, and the river from the lost Paiolo lake; they are important references in the examination of maps belonging to different periods with different directions and display formats.

In addition, although not mentioned on the map, it can be observed that some road networks have been preserved and some traces remain. The Percorso del Principe, which is the road connecting to the back of Palazzo Te, and the roads seen in the area to the south are also seen on old maps, but are also very important for the project.

Figure 5.4 Aerial View of Mantova (Accessed in April 2023 from Google Earth)

5.1.1. Urban History of Mantova

Mantova is located in the center of the Po Valley, the main plain area of Italy, which is also suitable for cultivation. The fertility of the soil and the abundance of water have ensured the existence of human settlements since ancient times. At the same time, water has become a defensive element in certain periods. The dominant determinant in the development of Mantova has always been its relationship with water. Some transformations take place in their natural course, while others, such as centuries of set work, have been brought about by humans. Mantova can be described as three elements: *The Cultivated Territory, The Water* and *The City* (Caprini in: Bersani 2007).

It is thought that before the 8th century BC there were no flooded basins near the city, but low-lying areas that were submerged. It is known that in the 8th century AD, the area with the existing Mincio lakes was flooded and new geographical scenarios for human settlements were formed. Possibly, there was a decrease in the speed of the water flow in Roman times, and when the plants on the Mantova ridges retained the water, a swamp was formed and the eutrophication process of the unhealthy plain began. Presumably between the 8th century BC and the 2nd century AD, Mincio dug and widened the alternate route through the Paiolo valleys. It is thought that contemporary works, which were generally carried out in the Roman period, were carried out in the same periods, such as opening the canals to make the region healthier. In the 12th century AD, efforts were made to make the city more sheltered from all four sides. One of these studies by Alberto Pitentino is to increase the width of the reservoir by increasing the depth of the basins and especially the Lake Superior. By raising the levels of the Mezzo lake and other stretches of water, Mincio is protected against the flooding of the Po. Since the 12th century, studies have been carried out to improve the condition of the area. Although the accumulation of clayey sediments by the movement of water and the movement of plants make interventions difficult, interventions in the modern era have generally been aimed at preventing eutrophication by mechanical drainage (Caprini in: Bersani 2007, 11).

It is the general opinion that the first settlements that led to the emergence of the city were always located on the mainland particles, which are at high altitudes. Low altitude areas are periodically flooded. In the current state of Mantova, Piazza Sordello is the place where the highest and first settlements are seen.

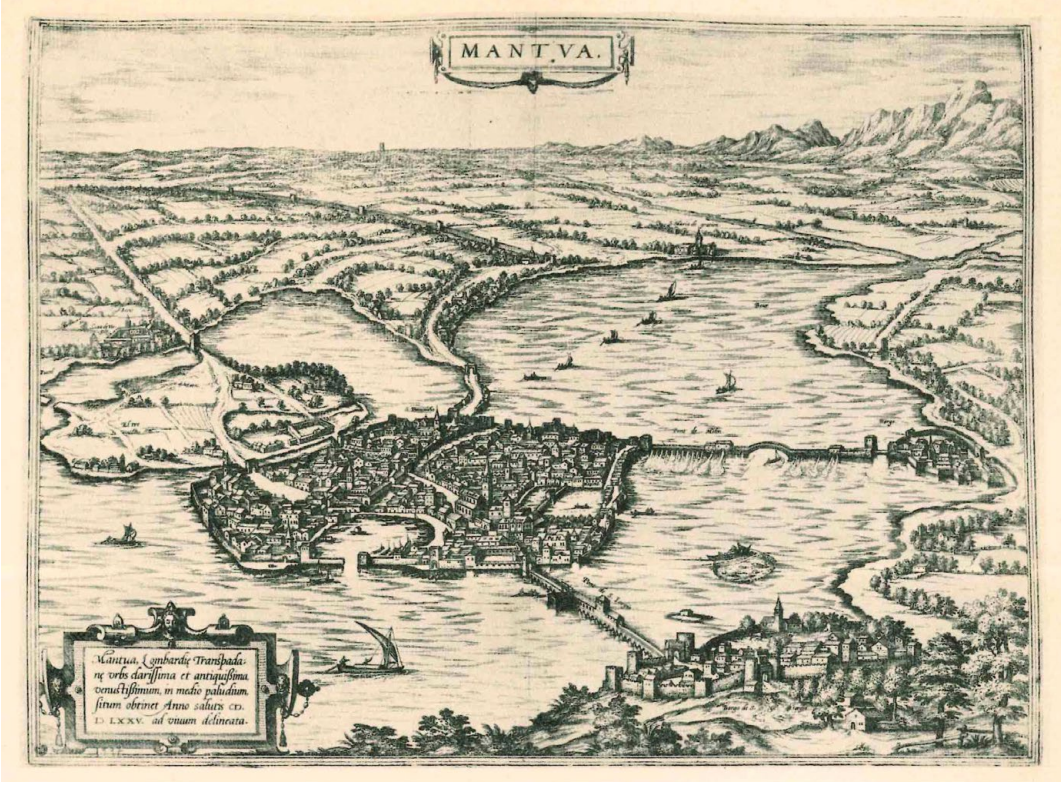


Figure 5.5 Mantova Perspective Plan Printed in Cologne, 1575

Formation of the city of Mantova can be summarised in three circles of walls. The formation of the first circle is based on the construction of the Palazzo del Podesta and the Palazzo della Ragione in the Broletto and Erbe squares in the 12th century and surrounded by the city walls. The second circle is the walls along the river built in 1352, in which the ancient suburb is also located. At the end of the 1100s, Ponte dei Mulini, which serves as both a dam and a bridge, was built as a result of the engineering work done by Alberto Pitentino. By controlling the flow rate of the water with its twelve mouths, Mulini also controls the River, Lake Paiolo and the channel that transfers the water to Mincio from the west. Thus, the city-water-land relationship was defined, and Mantova took the city-island form with its large water basins and four bridges surrounding it. The third and largest fortification walls, called the Magistral Walls, were built in the 15th century. As the city expanded south of the river, the city walls were surrounded by the Fossa Magistrale, a new waterway fed from Lake Superior. In the current state of the city, there is Ponte dei Mulini in the northwest, Ponte di San Giorgio in the southeast, Ponte dell'Acquarucio in the northwest and Ponte del Redevallo in the south (Caprini in: Bersani 2007).

Figure 5.5 in page 127, shows one of the first known representations of this city form, by perspective map which dated to 1575. On the next page, Figure 5.6 shows Mantuae Descripto, by engineer Gabriele Bertazzolo, which is perfected later in 1628 (Fig 5.8). Four bridges, fortigfied bridgeheads, buildings and roads are represented in both maps. Palazzo Te, which was built between 1524 and 1534, is included on these maps but its place is not seperated and not became an island yet.

Before looking Urbis Mantua Descripto which is perfected version of Mantuae Descripto, looking to Figure 5.7 which shows a map dated to 1734, is useful to understand city-water-land relationship. Although it was drawn much later than Bertazzolo's maps, it is simpler as it does not show buildings. However Palazzo Te is not represented, its site is now an island. Water bodies, lands and bridges are sufficient to describe the form of the city.

Figure 5.8 (on pages 130-131) shows Urbis Mantua Descripto, thanks to Bertazzolo, represents a lot of details of the city for the first time. Palazzo Te is already located on an island, roads network is clear to see and the buildings are well represented. Rio, clearly distinguishes the old city from its Renaissance extension. It is the last map printed before the city falls in 1630 and luckly transmits a lot of information about urban history of Mantova.

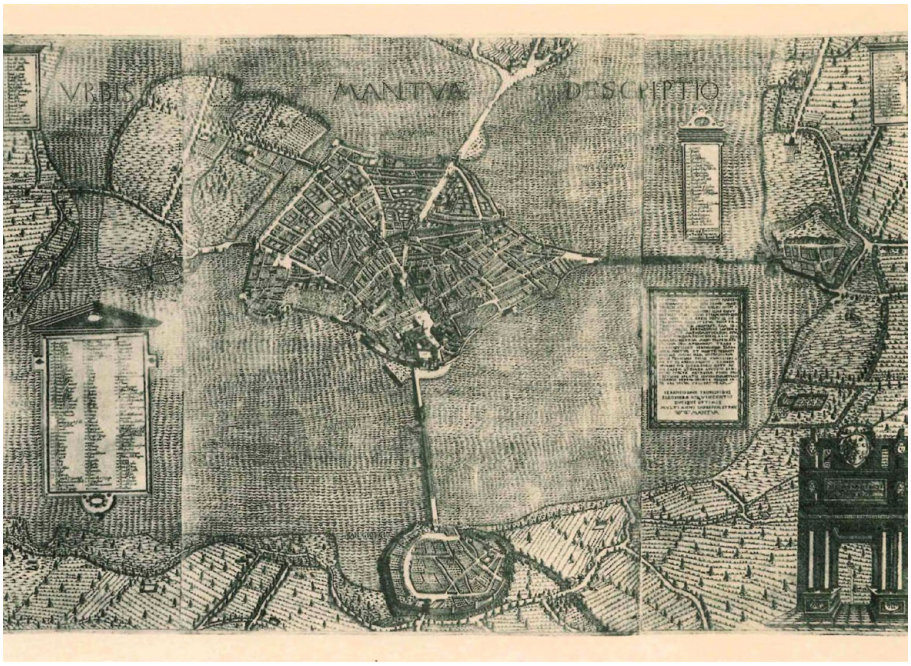


Figure 5.6 Mantuae Descripto: Perspective Plan of Mantova Drawn by Gabriele Bertazzolo, 1596

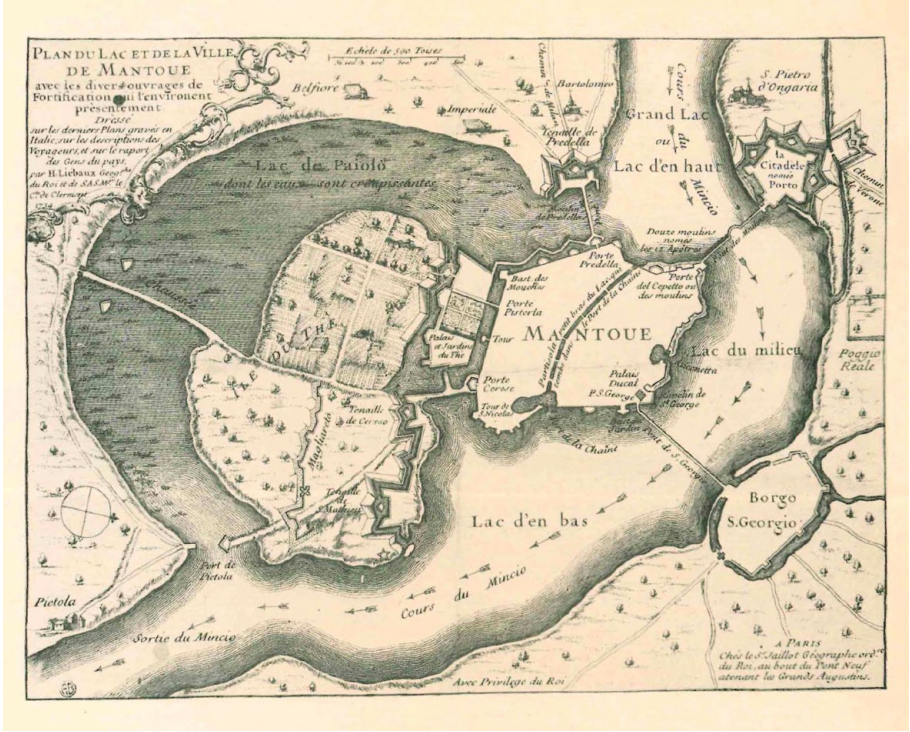


Figure 5.7 Topographic Plan of the City and Its Surroundings Engraved by H. Liebaux and Printed by the Firm Jaillot, 1734

Figure 5.8 Urbis Mantua Descriptio: Perspective Plan of Mantova Drawn by Gabriele Bertazzolo, 1628


VA. DESCRIPTIO
LAGO DI SOPRA
LAGO DI MEZO
PORTO FORTEZZA
POGGIO REALE
S. GIORGIO CASTELLO
LVOGHI NOTABILI DELLA CITTA DI MANTOVA

The historical period described on Urbis Mantua Descripto of 1628, is approximately the beginning of the 15th century and the late 17th century, coinciding with the reign of Gonzaga. In this period Mantua became the capital of a small state, rich in agricultural products, important for trade and decisive for the political balance of Italy. And it is an essential period for the history of the city, since it was precisely in that period that the urban structure, probably already drawn in its borders with the expansion to the third circle made in the early 15th century, was perfected and consolidated through a series of 'episodes' so numerous and significant as to be astounding. The progressive transformation of the castle into a palace; the adventure of Sant'Andrea and the school of Alberti; the conformation of the "Percorso del Principe" with the Casa del Mantegna, the Church and the Palace of San Sebastiano; the island and the Palazzo del Te by Giulio Romano are just some of these episodes whic are also critical for shaping the project of this study (Caprini in: Bersani 2007).

When we look at the maps examined, the separation of city-water-land, which constitutes the unique city structure of Mantova, is clearly revealed in all of them. Another remarkable point is the separation of the two main lands as a city-garden. The land to the south of the city was arranged as gardens and agricultural areas. A remarkable detail here is that the cardo-documanus roads have been observed since the map of 1575.

If we look again at the 1734 map, which is the last one in historical order among the maps examined so far, the fact that Lake Paiolo is depicted as dark, unlike other lakes, is a symbol that the area has started to become swampy. The shrinking of Port of Ancona is another noticeable change.

In the following process, the structure that constitutes the characteristic of the city has been distorted in the maps followed. Mantova is no longer an island-city, but a peninsula. In the map of Giocoma Pinchetti dated 1799, shown in Figure 5.9, it is seen that Lake Paiolo filled up and area became Valle Paiolo. Porto Ancona has also filled an become a space in the city. Porto Catena has shrunk into a closed bay, Porto Cerese is started to filled. The waters narrowed between the island where Palazzo Te is located and the old island forming the gardens. Lago di Mezzo and Lago Inferiore are reduced to watercourses. While Figure 5.10 shows the city of Mantova and the project area more closely on the same map, it expresses the same situation of the area in different ways on the following maps.

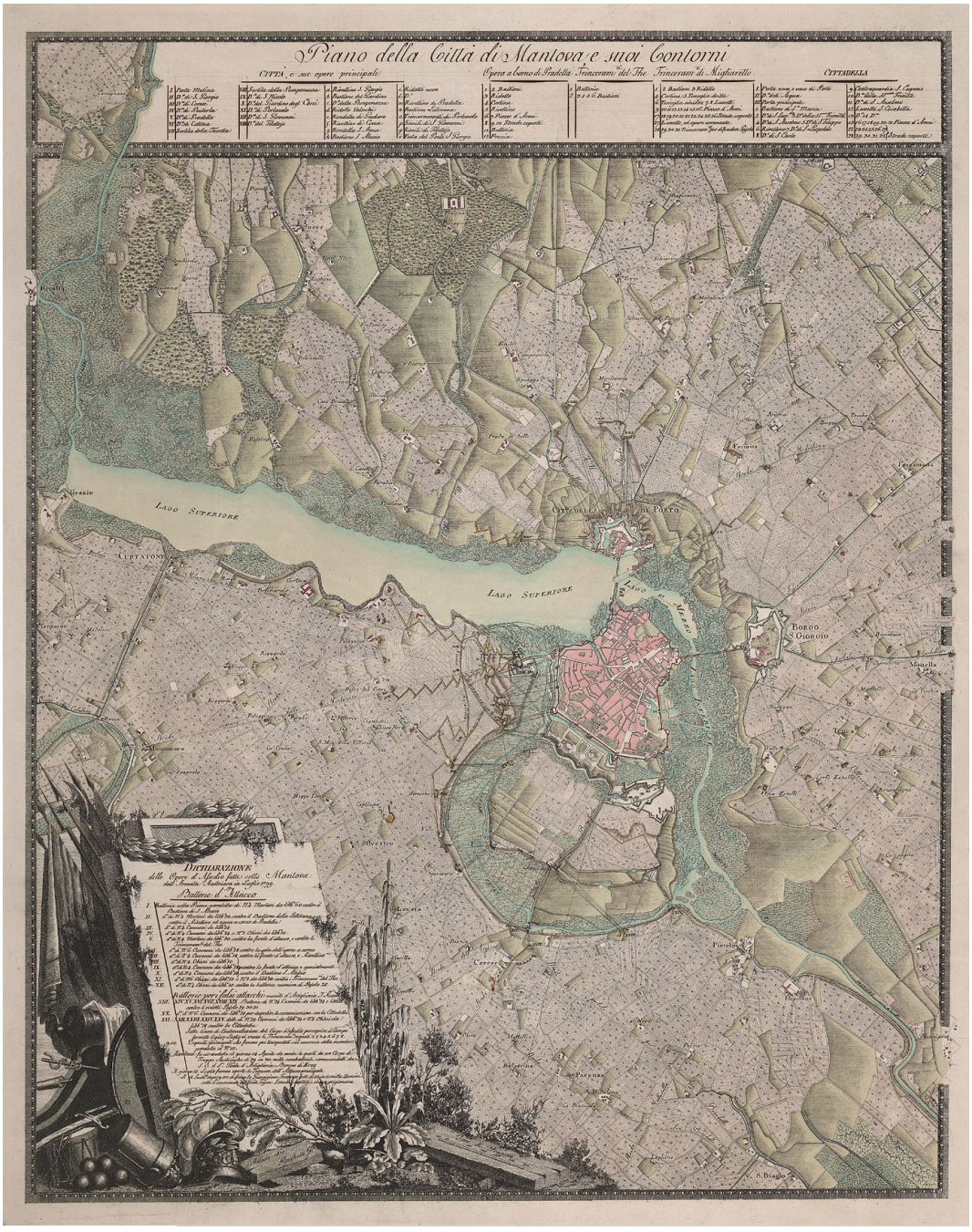


Figure 5.9 Plan of the City of Mantova and Its Surroundings by Giacomo Pinchetti, 1799

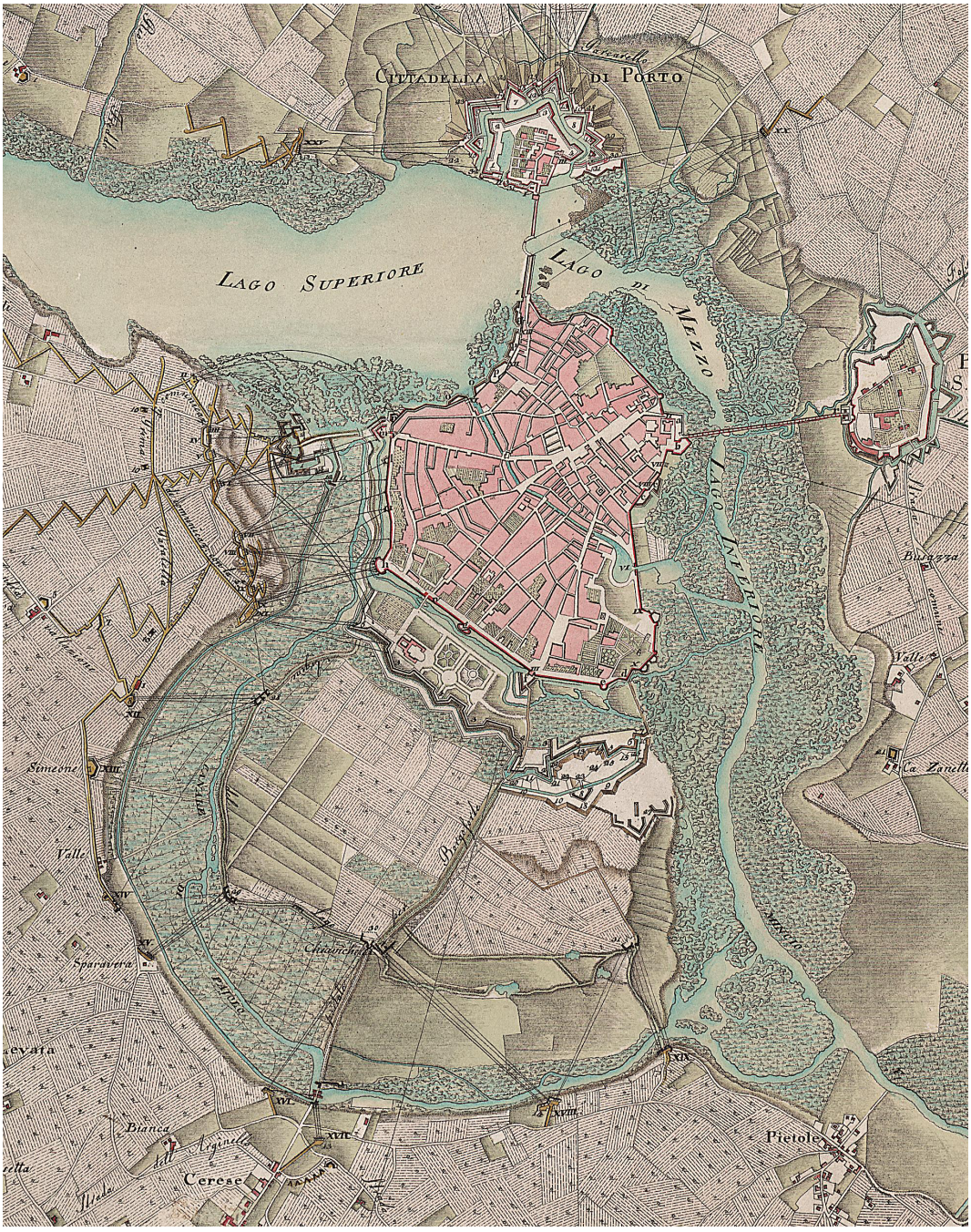


Figure 5.10 Mantova and Project Site in the Map of G. Pinchetti, 1799

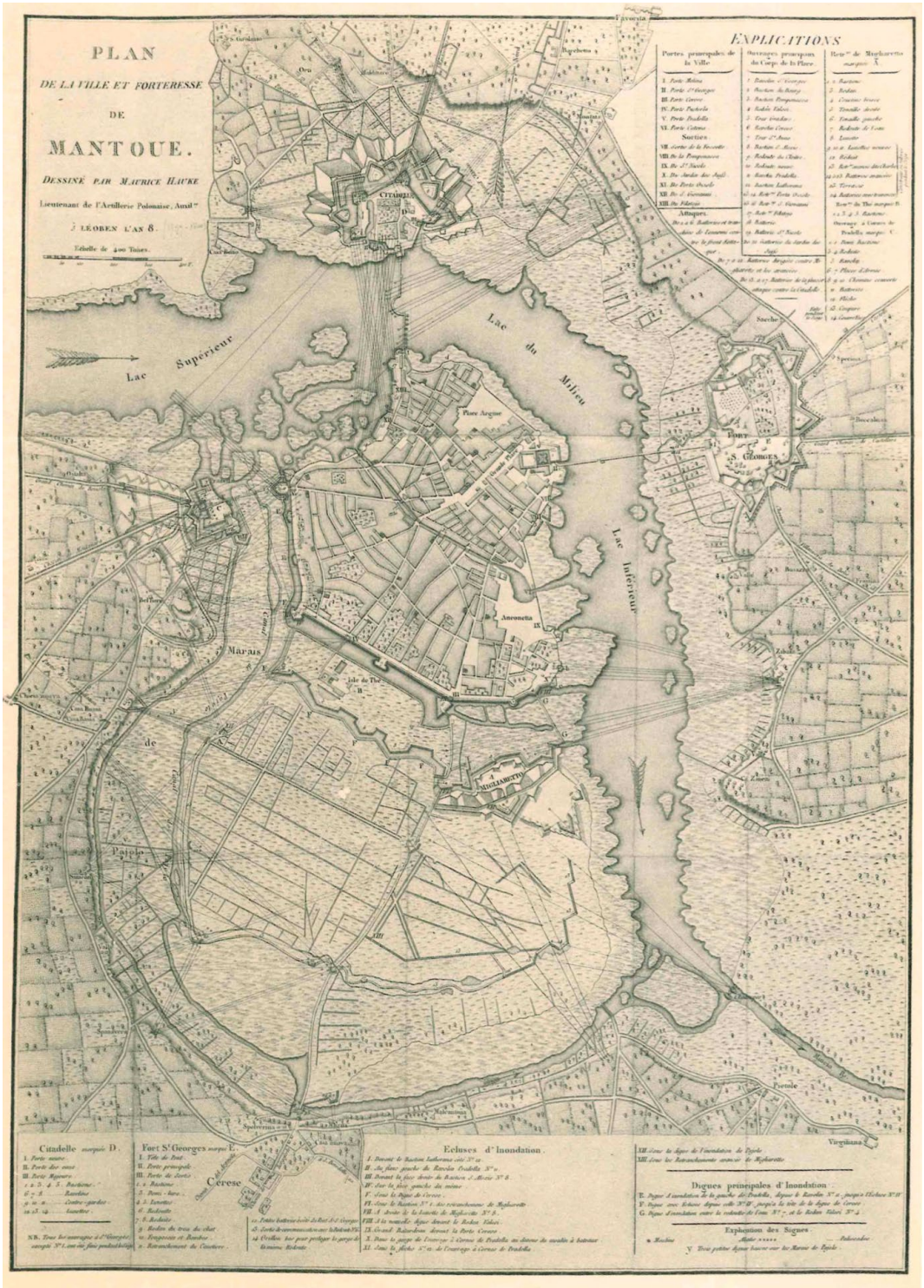


Figure 5.11 Topographical Plan of Mantova Drawn by Maurice Hauke, Engraved by Groux, 1800

The historical map of the 19th century, shown in Figure 5.12, is a threshold before the urban fabric of Mantova reaches its current situtaion (Figure 5.4 on pages 154-155), with major influences such as the arrival of the railway and the construction of the station at the end of the 19th century. Although it shows almost the same period with the maps dated 1799 and 1800, it is seen that Piazza Virgiliana has taken shape. Buildings and their courtyards are indicated as a display technique, and the city walls are emphasized. The parcellation in agricultural areas and channels in the Paiolo Valley are shown.

Continuing maps are dated after 1900s. Figure 5.13 shows the military map of 1909, which not indicates buildings but city walls, connections and natural elements. In this map Valletta Valsecchi is remarkable as a new settlement. In the 1958 map shown in Figure 5.14, it is observed that the field traces in and around Campo Trincerato which is completed in 1812 by Napoleon, are almost the same as the map shown in Figure 5.12 and are more detailed. On the map dated 1979-80 shown in Figure 5.14, the train station is now located. The city will begin to evolve into its present form with its connections. Figure 5.15 shows an unimplemented urban development plan of 1926, including Valle Paiolo.

Figure 5.12 Mantova and Surroundings: Austrian State Archive, 19th Century

Figure 5.13 Piano D'Insieme, 1909

Figure 5.14 Pianta della Citta di Mantova, 1958

Figure 5.15 Pianta della Citta di Mantova, 1979-80

Figure 5.16 Piano Regolatore di Massima (Not realized development plan), 1926

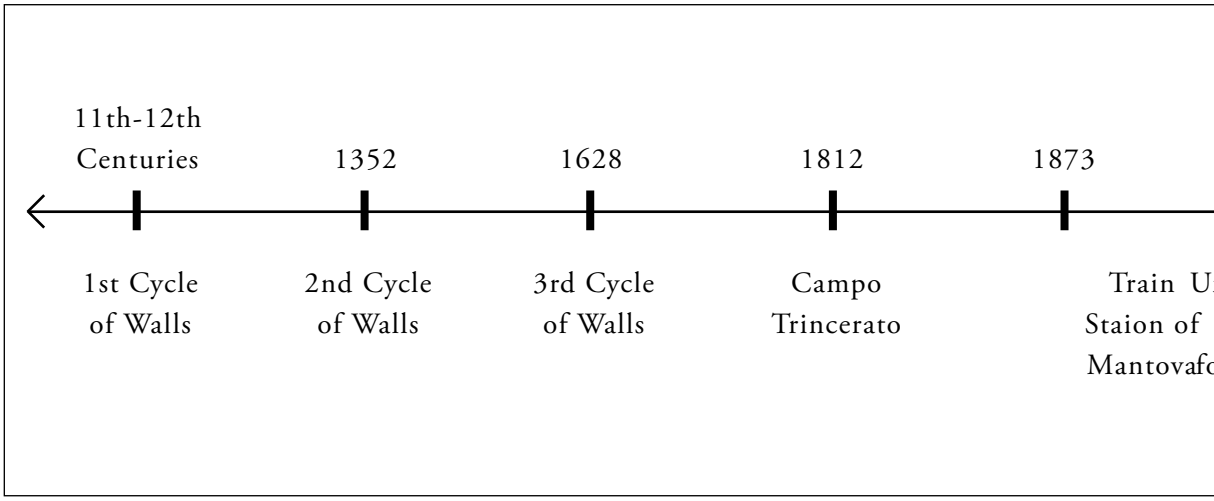
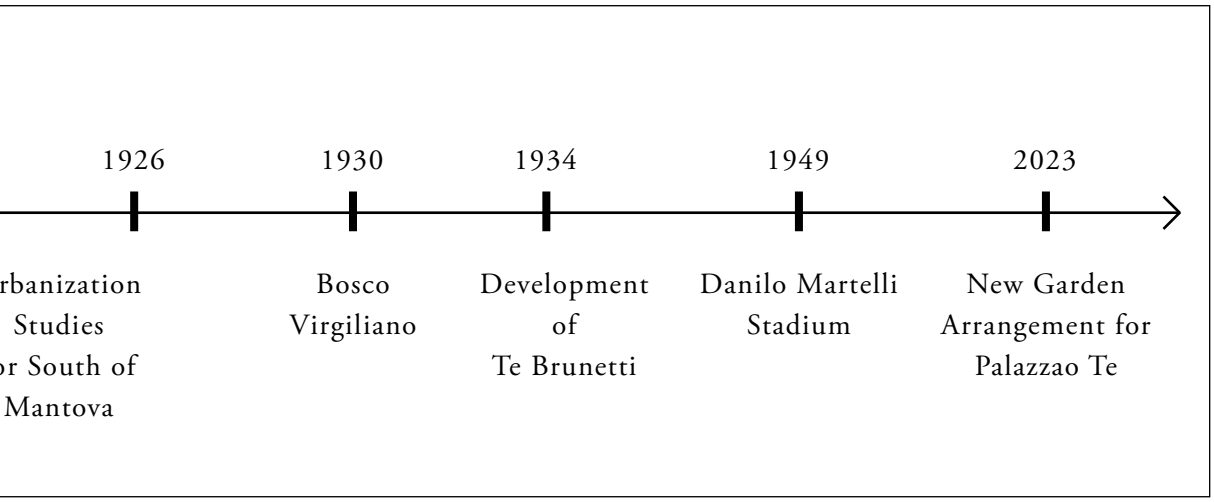


Figure 5.17 Brief Actions: Urban Mantova and Surroundings of Valle Paiolo


1926
1930
1934
1949
2023
rbanization Studies or South of Mantova
Bosco Virgiliano
Development of Te Brunetti
Danilo Martelli Stadium
New Garden Arrangement for Palazzao Te

5.1.2. Project Site and Analysis

The project site covers the area south of Palazzo Te with gardens and agricultural fields and the Paiolo Palley formed by the old Lago Paiolo. Miglioretta and Bosco Virgiliana are located in the east of the area while Cerese and Levata settlements are located in the south. In the west, it is surrounded by the urban texture formed by the expansion of the historical city of Mantova. In the southeast, the Pietole Fortress and agricultural fields stretch after it.

The reason for choosing this area as a site is that it is in a position to meet the growth need of the city in line with the criteria of urban age and that it will provide an interesting base for the natural and historical elements it has and the way their traces treat the area.

It is aimed to create references that will guide the development of the project by examining the current situation of the area in comparison with the 1799 Pinchetti map (Figure 5.14) and the 19th century military map (Figure 5.15). The data that stands out at first glance at the maps is that the road that starts from the old Porto Cerese, which is now the stadium in place, and continues south past Campo Trincerato, is still one of the important axes connecting the city to the outside which is named Via Parma. The road system just south of Palazzo Te,

Figure 5.18 Aerial View of the Project Site and Surroundings (Accessed in April 2023 from Google Earth)

which intersects each other in the cardo-documanus system in old maps, has also been preserved. In addition, the traces of the city walls and bastions that were visible more clearly on the military map of the 19th century can be read.

Some of the data that cannot be read from the maps but can be understood by field trips are as follows: While construction is very rare in the area, most of the buildings in the agricultural areas are abandoned. The buildings on the edge of Via Parma are structures belonging to trade-production activities, some of them are idle.

In the city, whose topography is quite flat, there is a level difference between the east and west of Via Parma. There is a pedestrian underpass connecting the two sides.

There is no access between the area where Bosco Virgiliano is and the lake shore, there is also a level difference here. There is a walking route at the highest point, and this route aligns with the lake in the area just north of the Forte Pietole, where the regulator built in the 19th century is located.

The old canal south of Palazzo Te has been replaced by the railway. As a linear element, the railway has taken over the task of separating the old town from the gardens from the canal. There is also

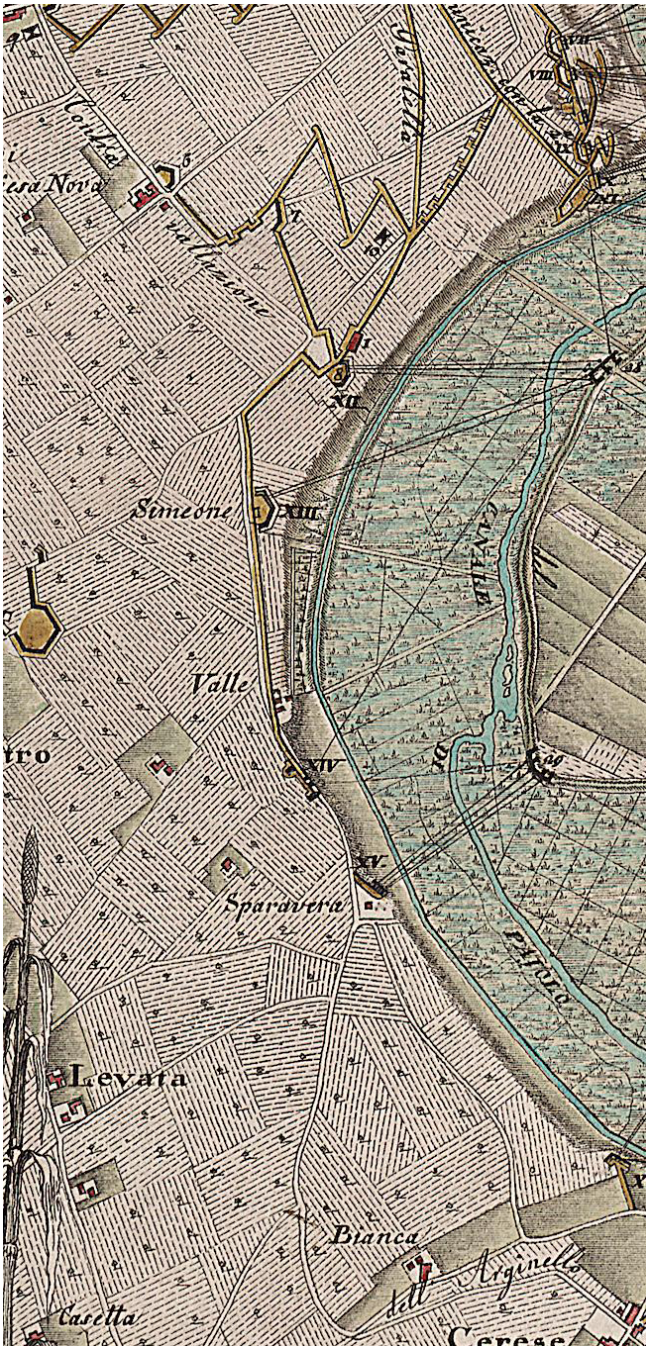


Figure 5.19 Project Site and Surroundings in the Map of Giacomo Pinchetti, 1799

another underpass here. This underpass, at the point behind Palazzo Te, connects the old Percorso di Principe, the axis of today's Via Principe Amedeo, between the city and the area.

Most of the green areas seen in the area mostly on the old Paiolo Lake, are places of industrial poplar production.

Forte Pietole has no connection with the city, it is isolated. Although it is a historical building, it does not constitute an attraction point for tourists. The agricultural fields in the south offer a unique view.

While the area is connected with the city from north to south, it has no physical connection with the urban fabric in the west.

The 19th century military map shown in Figure 5.20 is based on the visualization of the impressions for concrete analysis. Figure 5.21 (on pages 180-181) shows the matching data. This data includes borders, paths and traces.

Figure 5.20 Project Site and Surroundings: Austrian State Archive, 19th Century

Figure 5.21 Matching Traces

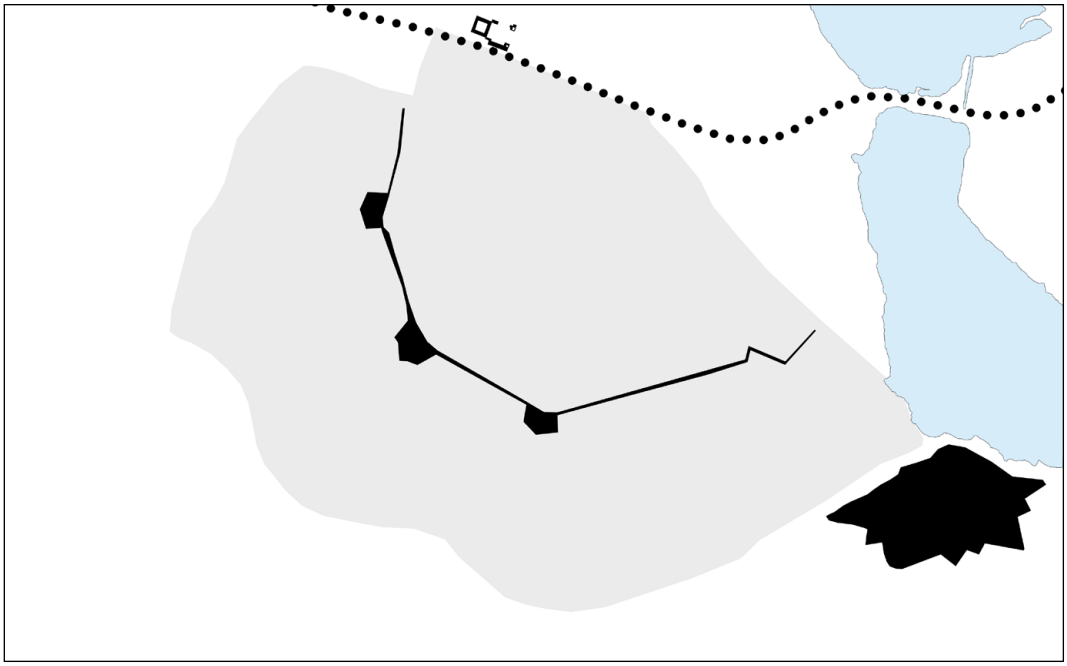


Figure 5.22 Matching Traces: Palazzo Te, Railway as a New Border , City Walls and Pietole area

The data obtained by superimposing the two maps are:

• Railway is the new border in the place of old canal which seperates Palazzo Te island from the Paiolo.
• Traces of Campo Trincerato walls which were old borders, turned into roads while traces of the bastions can be observed, but they do not have a counterpart in urban life.
• The two small lakes to the east of the area are natural water bodies left over from the old Paiolo. (they are visible in Piano D'Insieme map of 1909, on page 170).
• The main road with a north-south axis, which can be seen on the map dated 1575 and connects Paiolo to the historical city, fulfills the same task.
• From the road system in the cardo-documanus structure, which can be clearly observed from the map dated 1734, only the east-west axis has survived and preserved its function. Instead of the one with a north-south axis, a footpath to the east has survived to the present day.
• A path connecting Pietole to the main road still exists, but cannot be used to reach Pietole, which is idle.
• In the continuation of the road where the walls are transformed, an old path continues to Bosco Virgiliano's area from a high elevation.
• Since the area was water in the past, there are few traces around the Paiolo Canals.

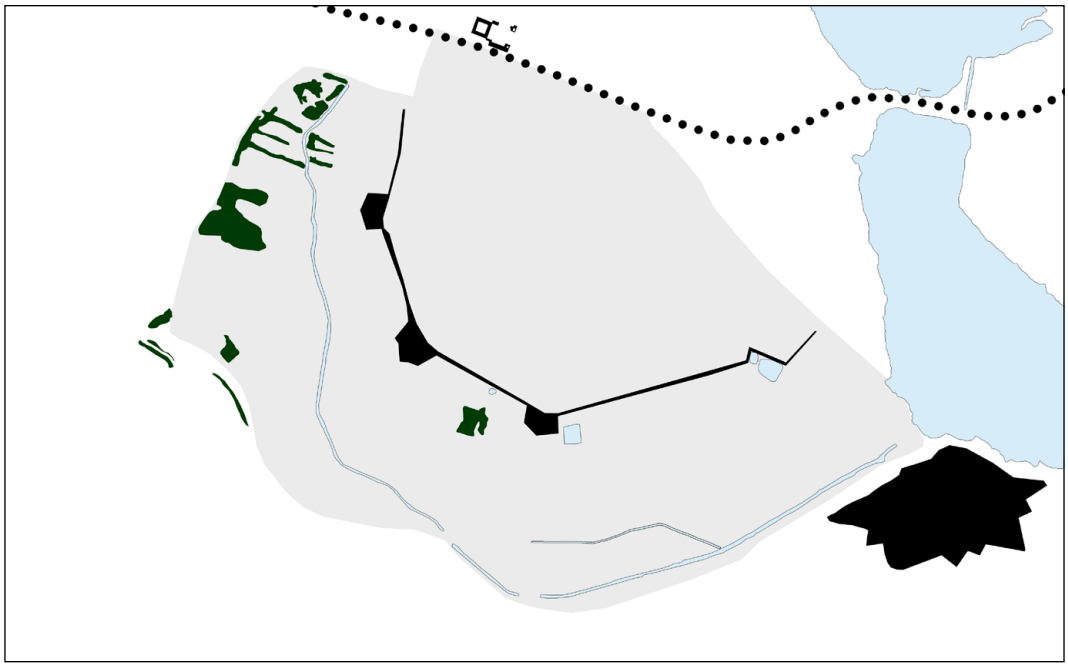


Figure 5.23 Matching Traces: Canals, Lakes and Trees

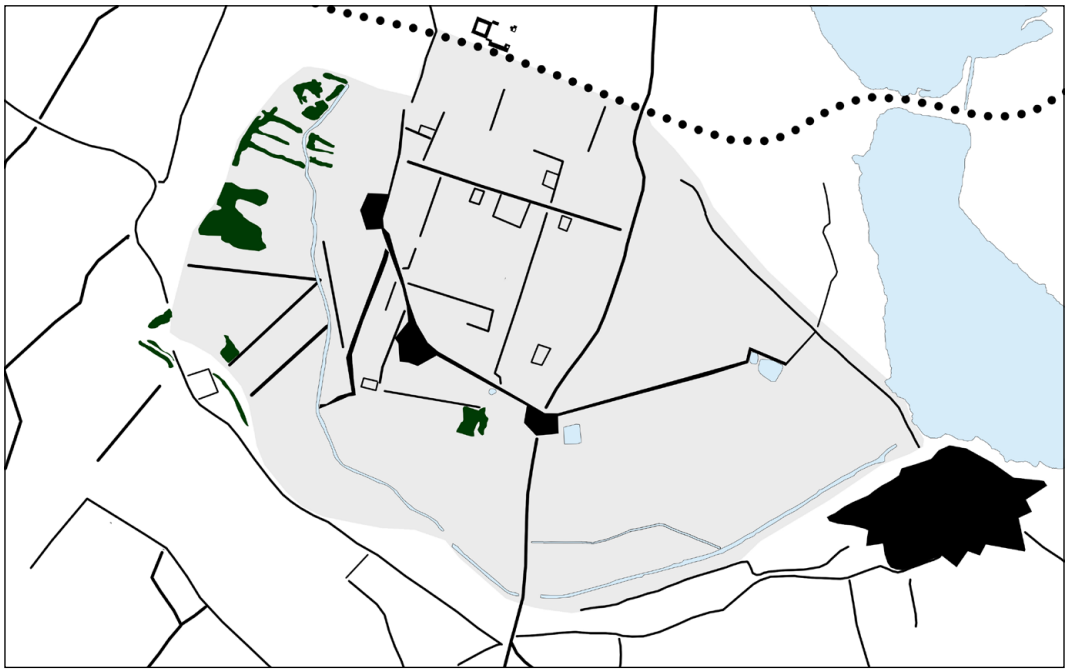


Figure 5.24 Matching Traces: Roads and Field Lines-Paths


House of Giulio Roman
MANTOVA
Casa Mantegna
Civic Museum of San Sebastian's Palace
Palaz
Settlement
Historical Building / Place and Museum
Natural Heritage
Agricultural Area
Other
Industrial/ Productive Area
Agricultural tourism
Abondened House/Building
Bus Stop
Agricultural Landscape
Existing Connections
Existing Connection to Designed Pedestrian Path
Railway
Walking Path
Underpass
Level Differences
Old Paiolo Lake
Agricultural Lands
Paiolo River
fish ponds
industrial forest
Production/ Retail Area
MAGRI
LEVATA
Agricultural Lands
CERESE
0
300m

Figure 5.25 Existing Point and Linear Elements on the Site and Surroundings

Figure 5.26 Te Brunetti

Figure 5.27 Old Trincerato and Migliaretto

Figure 5.28 Underpass from Palazzo Te

Figure 5.29 Ruin

Figure 5.30 House in Use

Figure 5.31 Natural Park Area

Figure 5.32 Bosco Virgiliano and Pietole

Figure 5.33 Abondened House Complex

Figure 5.34 Industrial Forest

Figure 5.35 Small Lake Remaining

5.2. The Project: Uban Drippings to Agricultural Calling

Based on the information obtained as a result of the field analysis; Traces from the past, trees under protection and natural thresholds were taken into consideration in determining the vision and approach of the project.

5.2.1. Vision and Approach

"What kind of life is desired?" before deciding how to implement the initial criteria, question has been asked. Unique to the site; It is aimed to create a city life where agriculture is integrated with it and the importance of the urban history, natural richness and landscape is emphasized.

Vision

Three sentences are determined as the vision of the project:

Connect with Old City
Create Diversity in Homogenity
Integrate All with Green Entity

According to the vision and determined criteria, direct physical connection with the historic city center was the first key desicion to start the design. It is essential that the city does not fall into monotony, that it presents different urban landscapes, the diversity and homogeneous and continous distribution of functions. While applying the vision and criteria, the whole area is connected to each other without interruption thanks to the green lines and shapes.

Approach-es

The site has been addressed with 4 different approaches:

1. Urban extension
2. Intersection
3. Landscape Connection
4. Preservation

Palazzo Te and Bosco Virgiliano serve as a reference for the *urban extension* approach. The areas where the urban extension approach is seen are Te Brunetti and the east side of Via Parma, which divides the area into two in the north-south direction.

While continuing the residential settlement in Te Brunetti, an urban park was designed in Migliaretto, which is located east of Via Parma and south of Bosco Virgiliano. In the band where the sports fields are located, the function has been preserved. In the area immediately to the right, an agriculture-botany training center has been designed as a continuation of the environmental education center (Parcobaleno) in Bosco Virgiliano.

The *intersection approach* is seen in the former Trincerato area. The reason for this is accepted as the intersection of all functions due to the presence of agricultural lands, private houses and production facilities in the area. This area is a transition between the city and agriculture, so the Gastronomy Center is positioned in here by following the traces from the past.

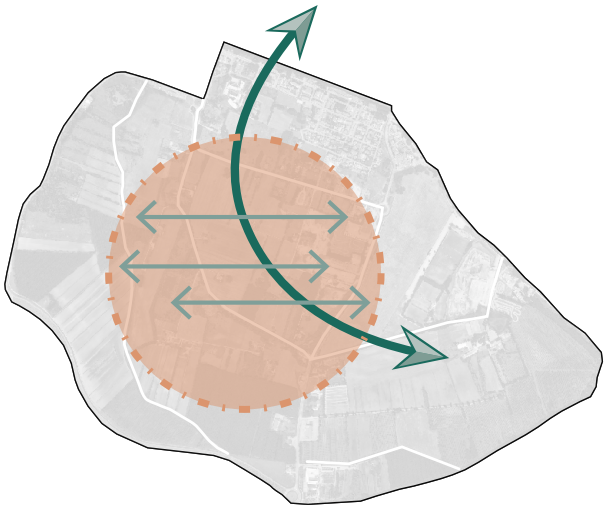
The direct physial connection with the old city, the green path, is starting from the urban extension approach and passes through the intersection part and connects the urban park which is also in the urban extension area.

Landscape connection approach covers the area outside the urban extension and intersection, up to the Paiolo canals. The purpose of this approach is for people to connect directly with the landscape. Observation towers, decks and panoramic deck are built in this area. A natural park with a different approach from the urban park was also designed in this area.

In the area after the Paiolo channel, there is a *preservation approach*. In these areas, pedestrian-bicycle paths were constructed from place to place, and any other intervention was avoided.

In short, it can be summarized as:

"A city emphasized with Urban History, Gastronomy and Agriculture"



CONNECT with OLD CITY

CREATE DIVERSITY

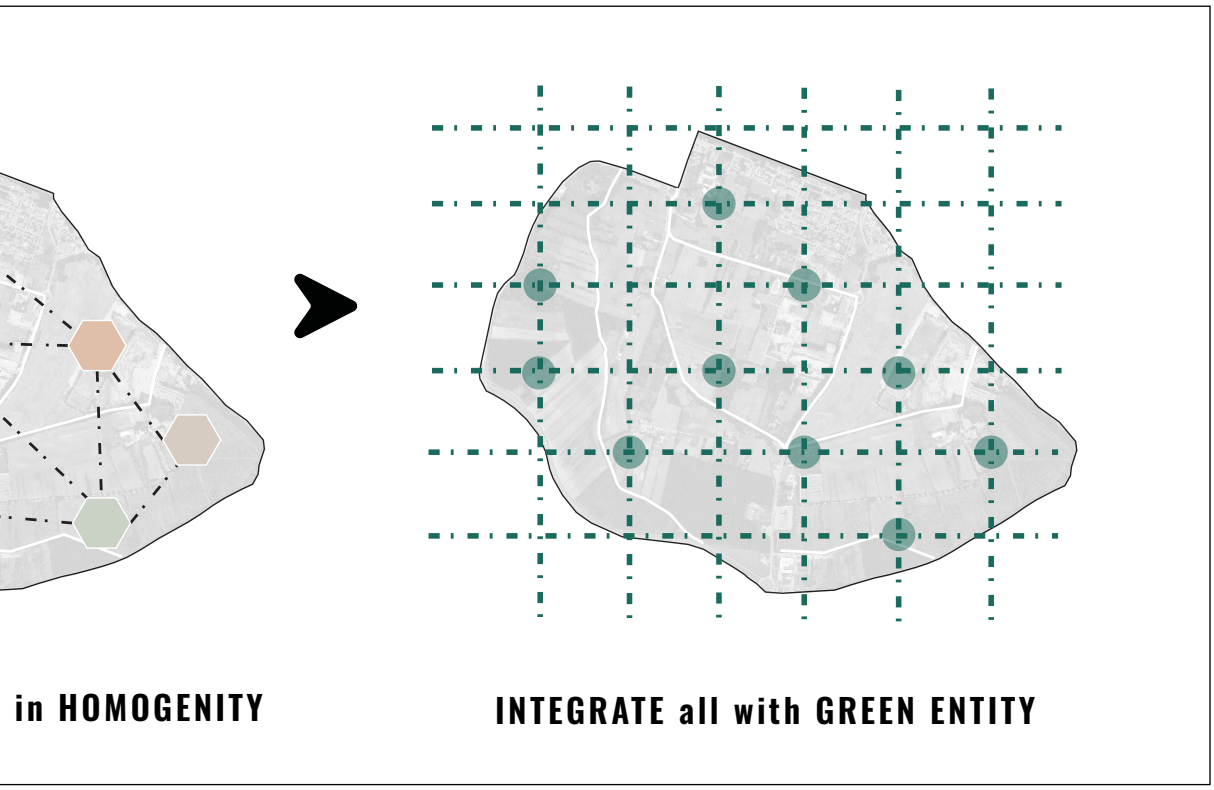


Figure 5.36 Vision Scheme

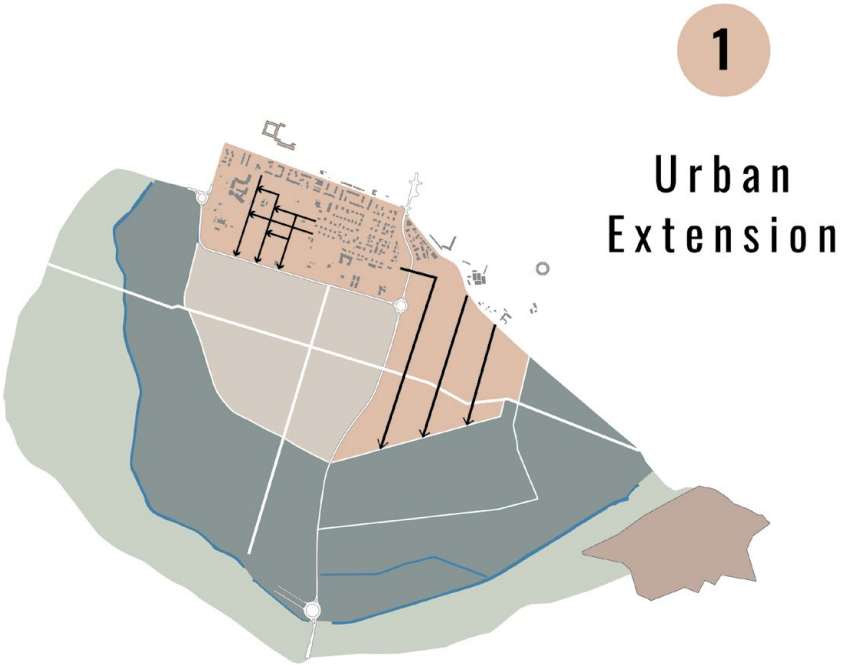


Figure 5.37 Approach 1: Urban Extension

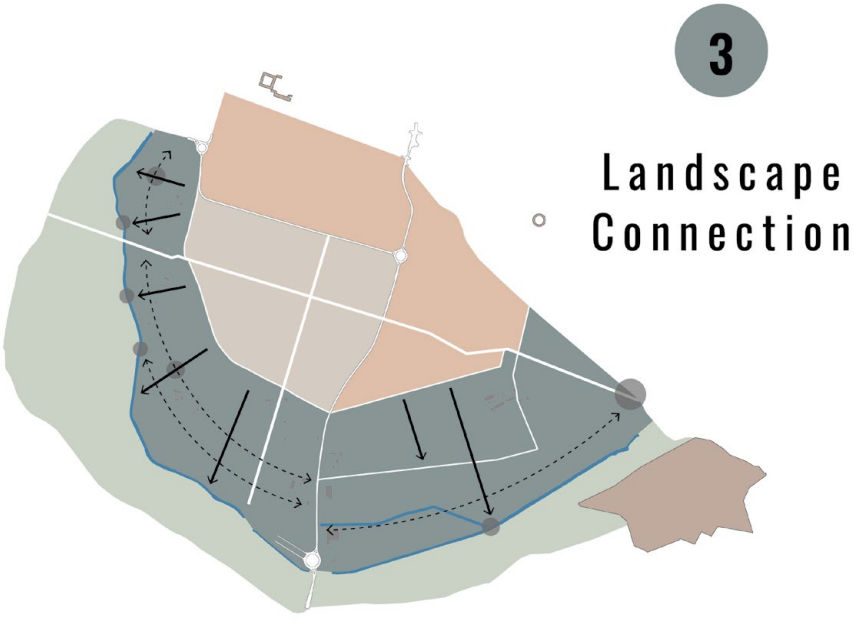


Figure 5.38 Approach 3: Landscape Connection

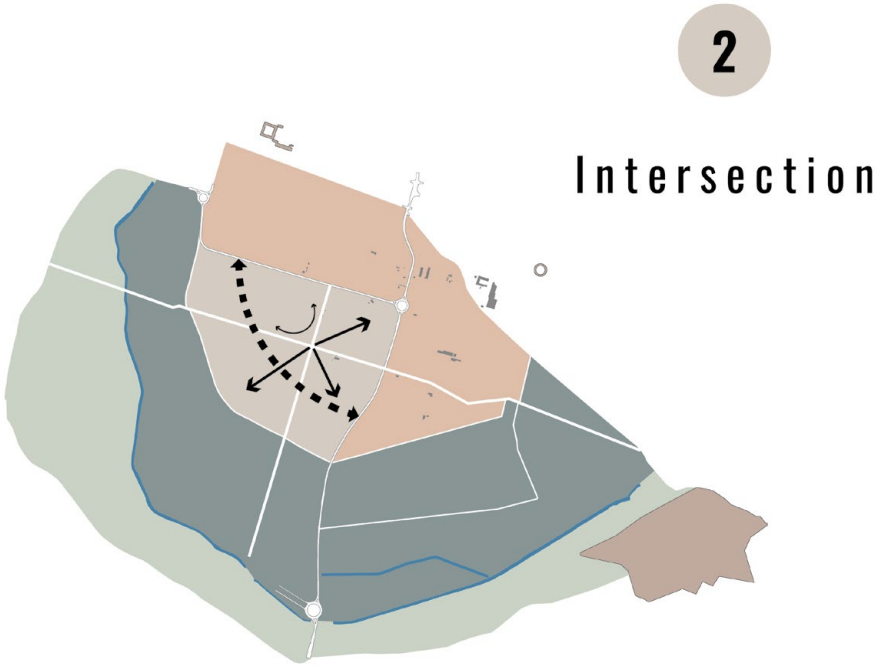


Figure 5.39 Approach 2: Intersection

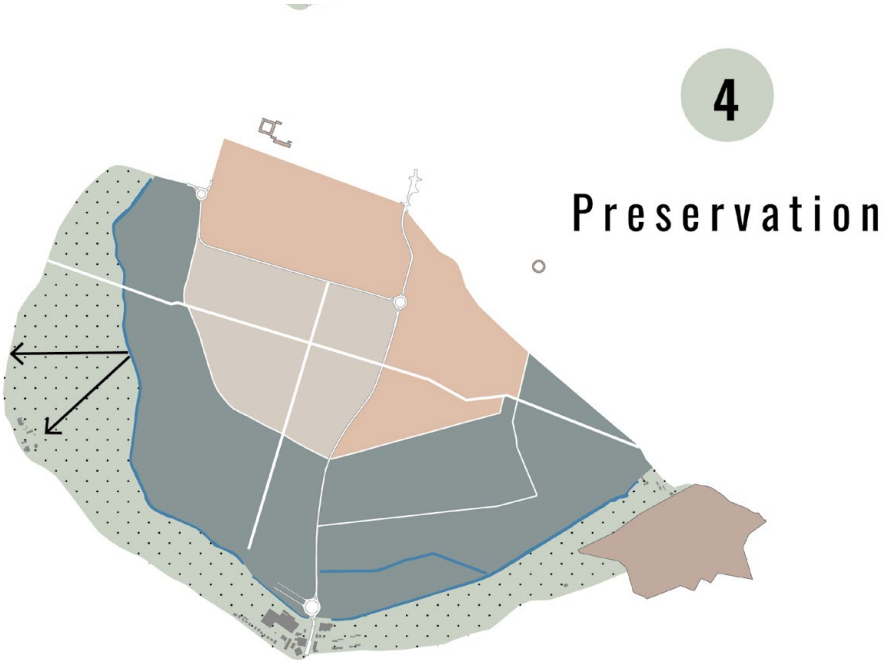


Figure 5.40 Approach 4: Preservation

5.2.2. Master Plan and Criteria in Details

In the master plan created with four different approaches, the criteria can be found spreaded in the site. The most obvious of these is the green path in the intersection area.

Another striking feature is the contrast created by the natural park designed in the landscape approach area to the west of the site and the urban park located in the urban extension area to the east of the site. These two parks meet some of the criteria by having different types of green areas and different types of squares.

The parks seen in the north and south are surrounded only by trees, and their interiors are left as green areas so that they can host various events. It is another type of green space in addition to natural park and urban park.

In the master plan, zoning was not done, instead it was found more appropriate to deal with the area with different approaches.

The whole area is connected by green paths, green lines and shapes form the main elements of the design.

The criteria under the architectural scale section can be observed in three-dimensional models.

Figure 5.41 Master Plan

Figure 5.42 Natural Park

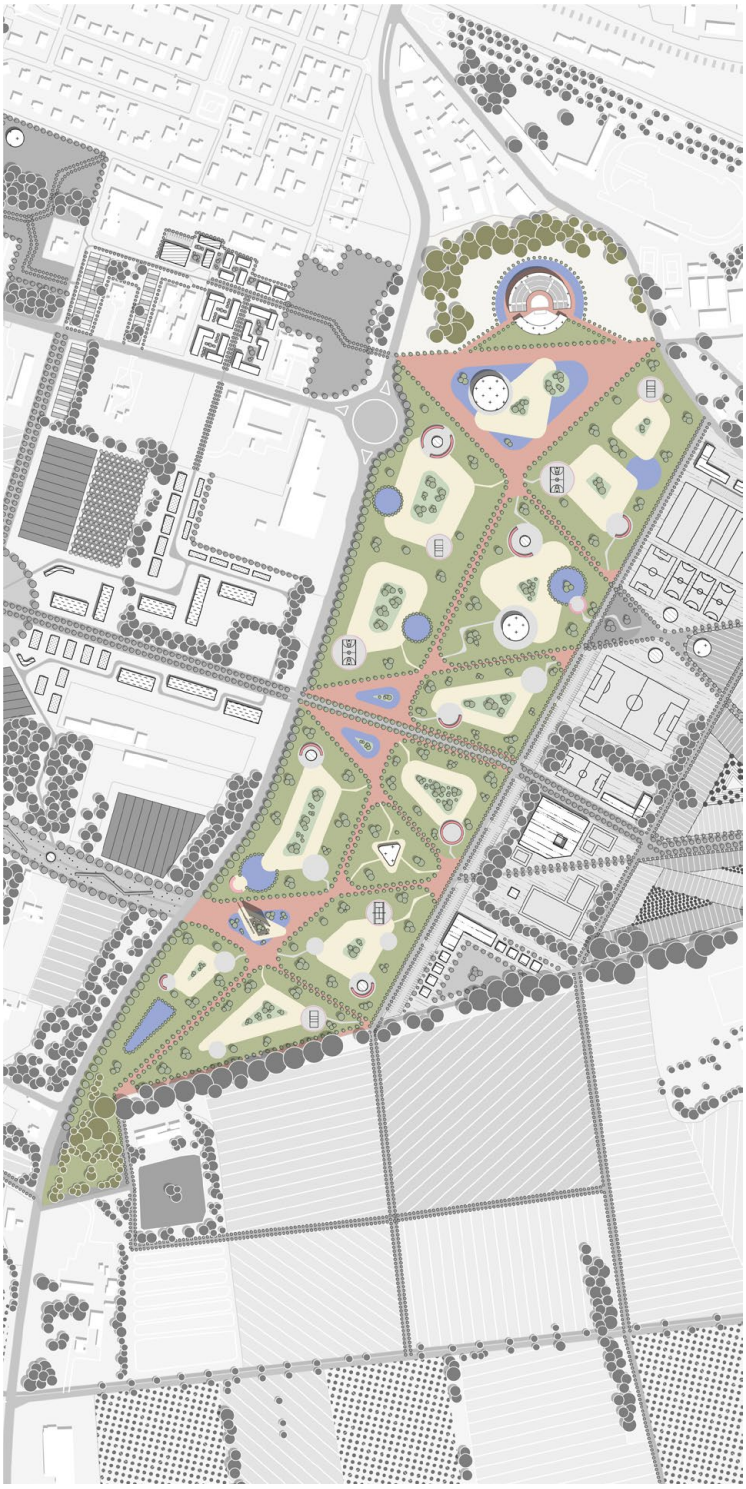


Figure 5.43 Urban Park

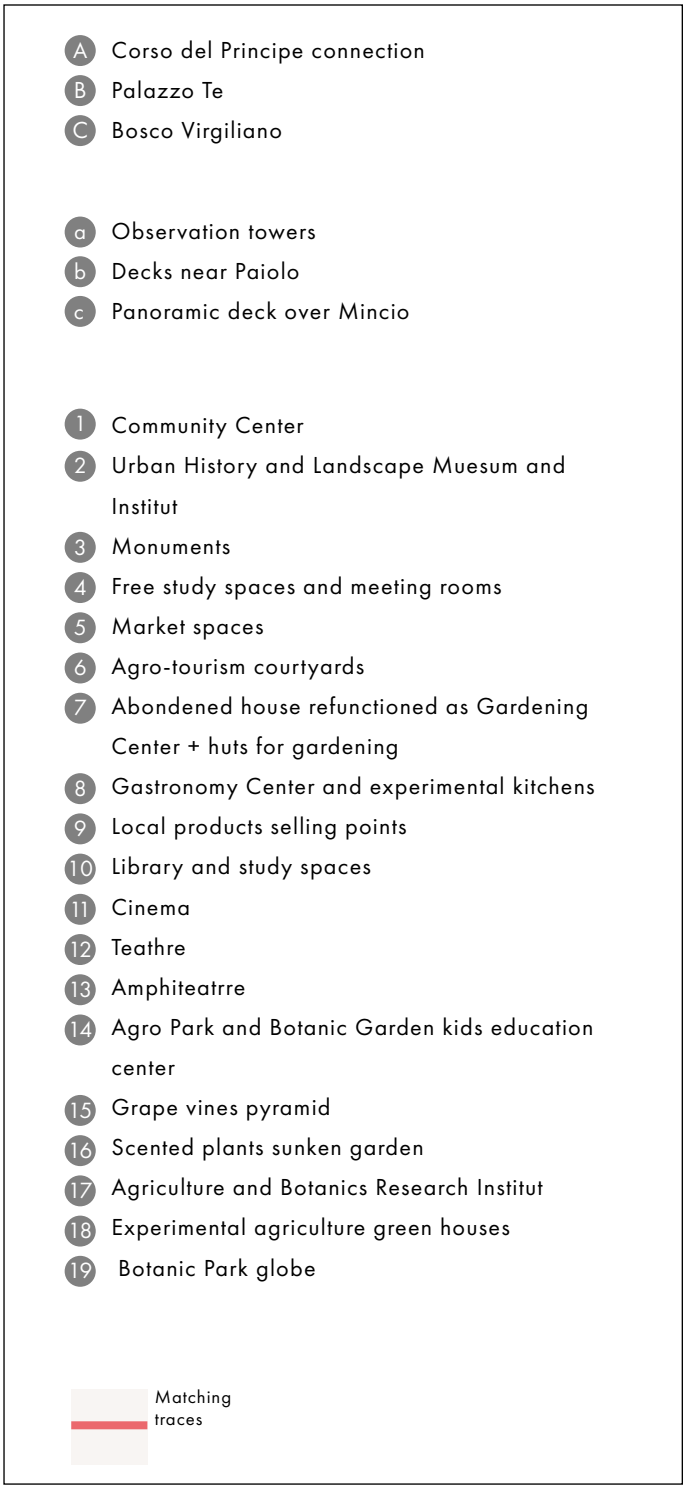


Figure 5.44 Indicated Numbers and Traces Legend

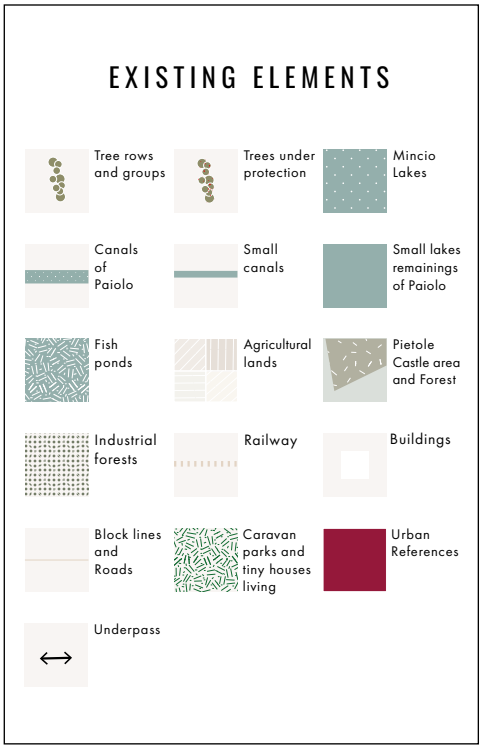


Figure 5.45 Existing Elements Legend

Figure 5.46 Design Elements Legend


A
B
1
2
3
4
5
6
7
8
9
a
b

Figure 5.47 Zoom-In to Master Plan


b
b

Figure 5.48 Master Plan Part One (scale: 1/5000)


b
a

Figure 5.49 Master Plan Part Two (scale: 1/5000)


5
13
12
11
14

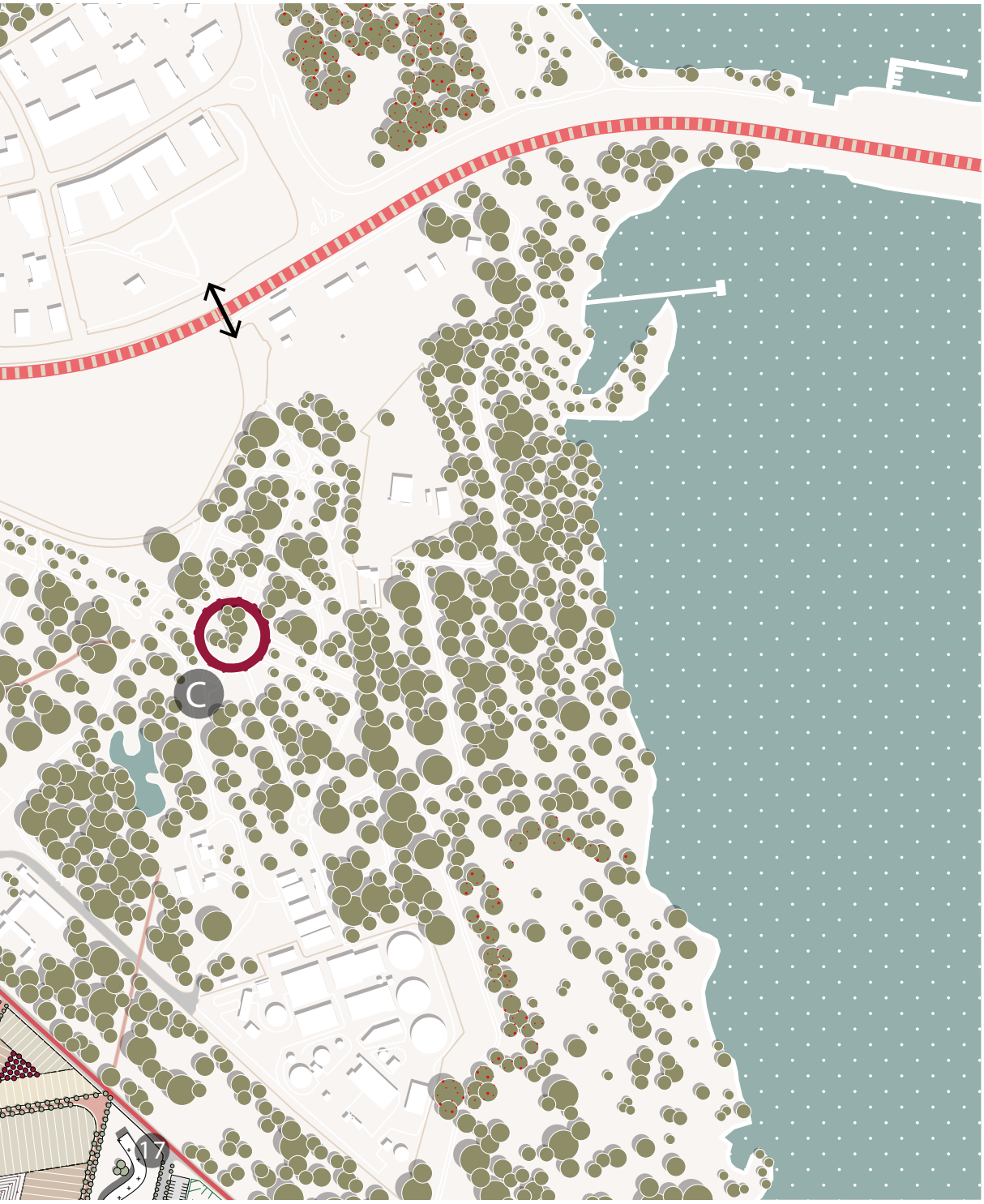


Figure 5.50 Master Plan Part Three (scale: 1/5000)

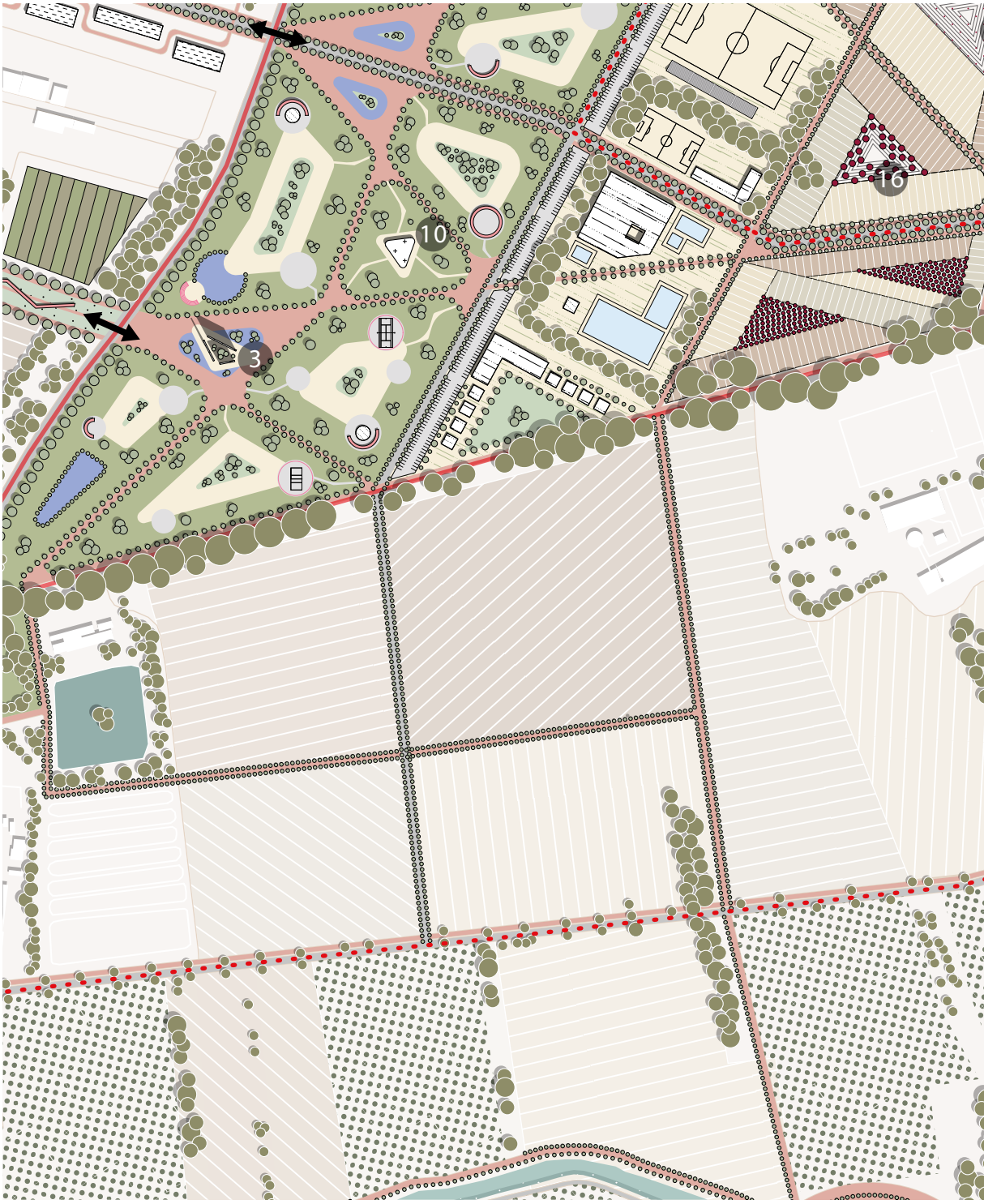

10
16
3

Figure 5.51 Master Plan Part Four (scale: 1/5000)

Figure 5.52 Urban Extension: Composition of Te Brunetti

In this residential area, which is the continuation of the existing settlement of Te Brunetti, different types of buildings are organized in different combinations to form inner courtyards. While the hub is a gathering area where information about the area can be obtained and tickets can be purchased when necessary, the mobility hub is a unit where people can leave their vehicles and rent bicycles.

There is a monument in the park, which is located in the continuation of the underpass to which Palazzo Te is connected, as it is the entrance to the whole area. Three stones of the monument symbolizes: Urban History-Gastronomy-Agriculture.

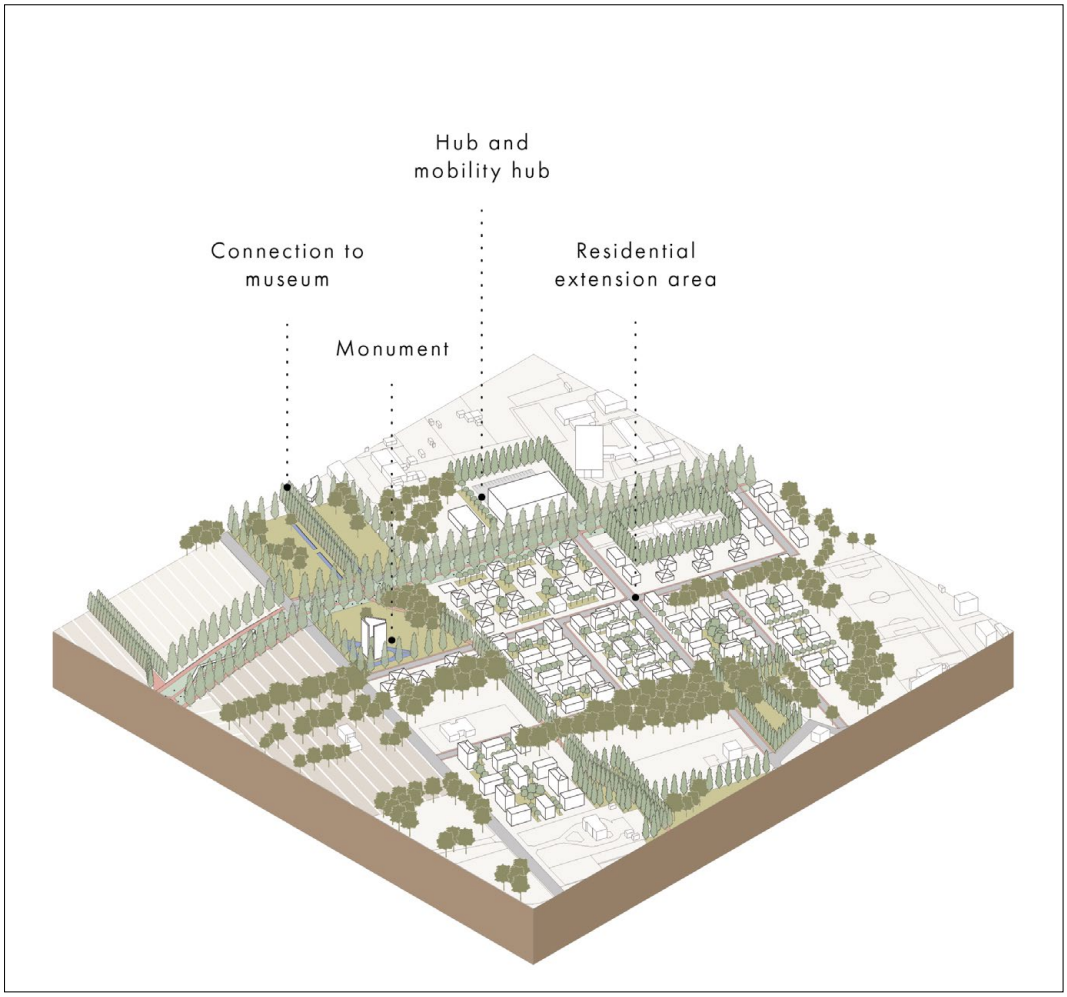


Figure 5.53 Isometric View 1

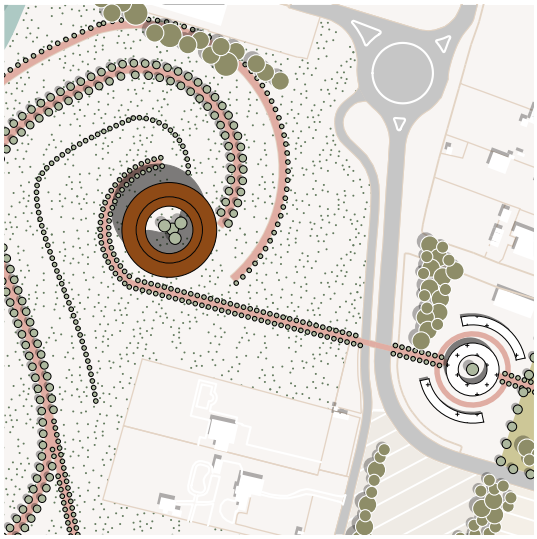


Figure 5.54 Connection Between Urban and Landscape

In this frame, the physical connection between the areas handled with two different approaches can be seen. The museum-institute building located in the continuation of the urban extension and the main observation tower located in the natural park area, which is handled with the lanscape connection approach, are directly connected by the path.

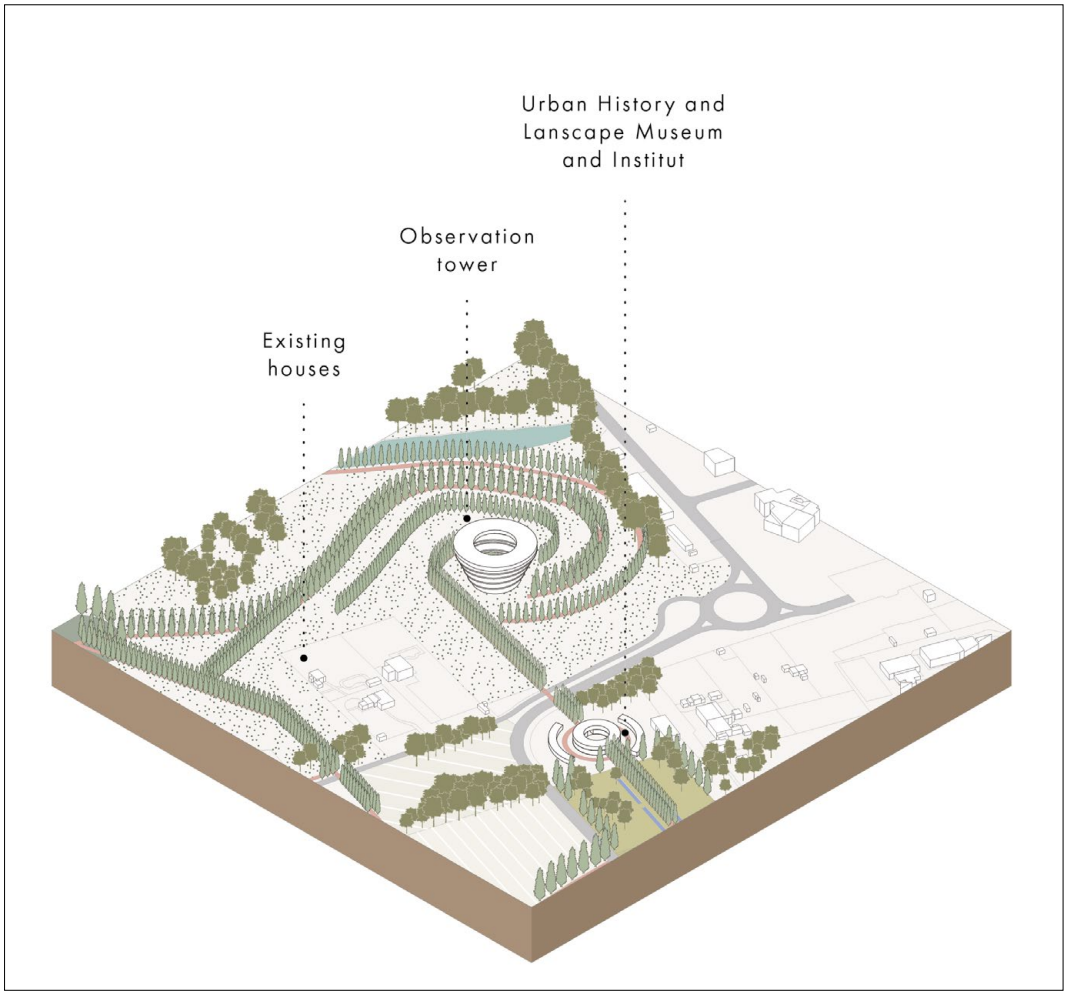


Figure 5.55 Isometric View 2

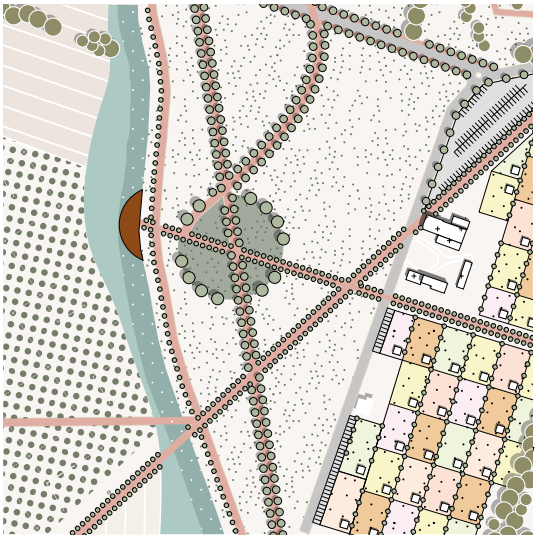


Figure 5.56 Green Shapes: Lines and Nodes

The node formed by the intersection of paths connecting different focal points is designed as a green square. This node is connected to the observation deck, which is the element of the landscape connection approach. The paths connected linearly from the urban extension and intersection areas, as seen in the previous frame, progress in harmony with natural elements with organic forms in the natural park.

The continuation of the area of existing private properties including vegetable gardens is designed as vegetable gardens that can be rented annually, huts are placed to be used for gardening works, there is no residential function. It is suggested that the old building complex, which is in ruins, should be restored and used as a garden center.

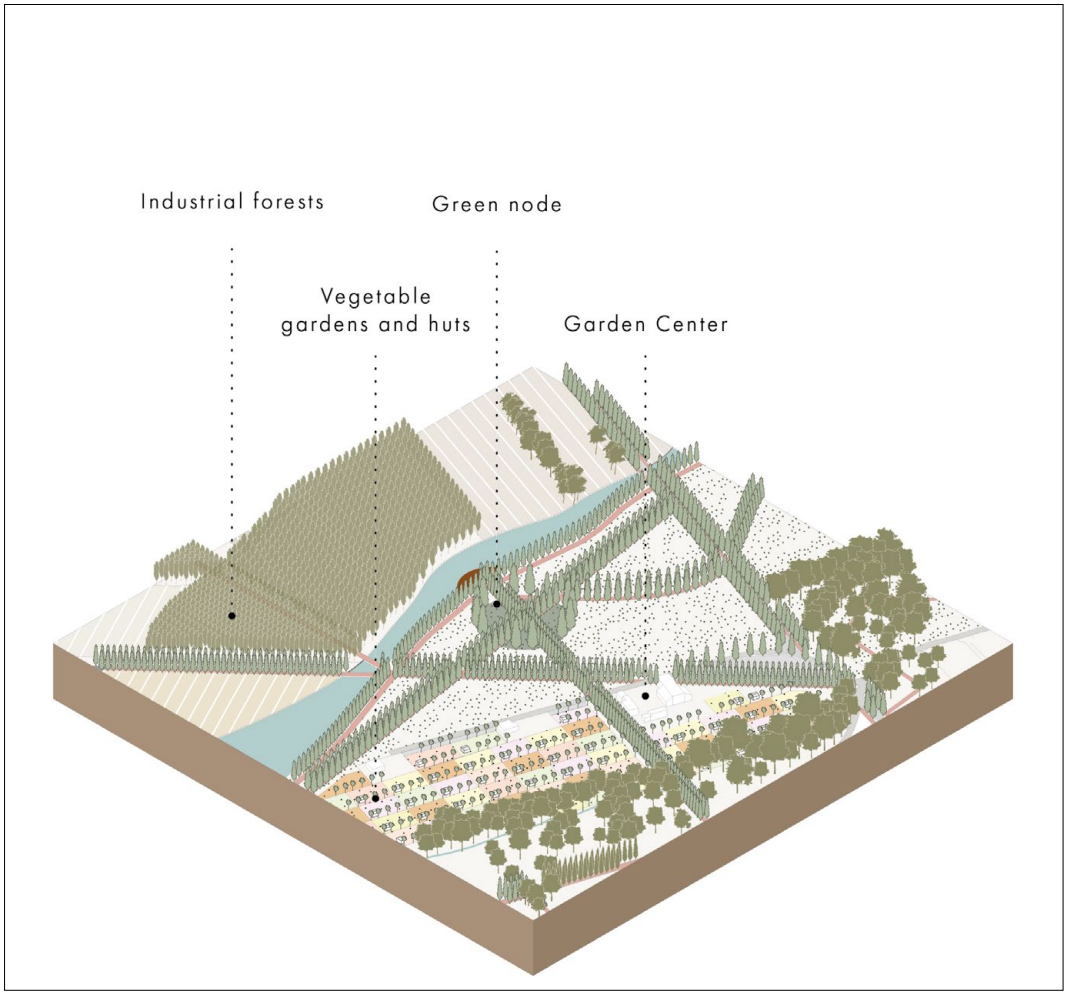


Figure 5.57 Isometric View 3

Figure 5.58 Central Node: Distribution to Functions

The central green node in the intersection area is located in the center of the main axes that distribute to the whole area in the north-south and east-west directions. This node also serves the paths to the gastronomy center and local products market and agricultural production area. The residential extension area is visible to the northwest of the node.

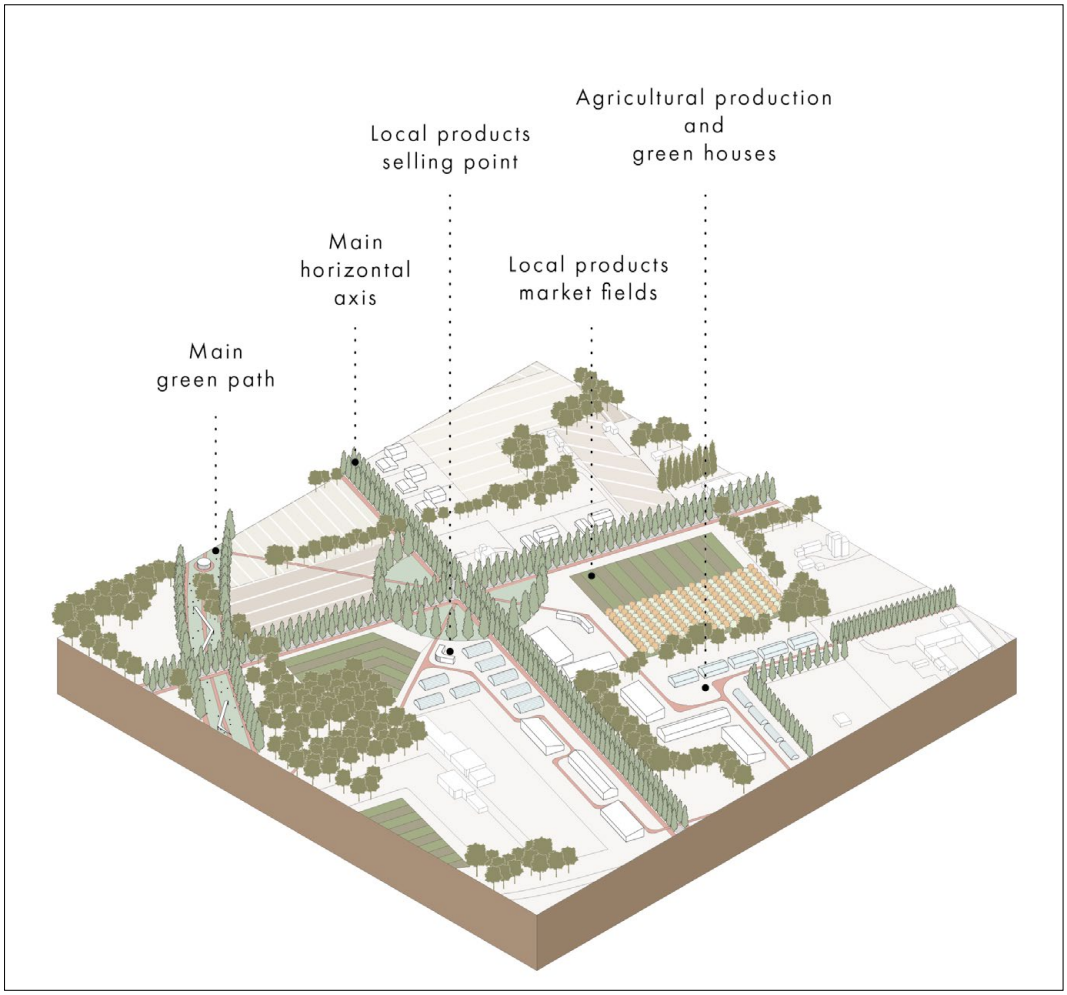


Figure 5.59 Isometric View 4

Figure 5.60 Intersection: Gastronomy Center

The gastronomy center, which is shaped around an existing residence in the agricultural area, is a unit located in the intersection area and connecting urban and agriculture. The central building with an inner courtyard and its four kitchen-restaurants are allocated periodically to experiment different tastes. Its own agricultural areas, on the other hand, provide direct use of both local and different products.

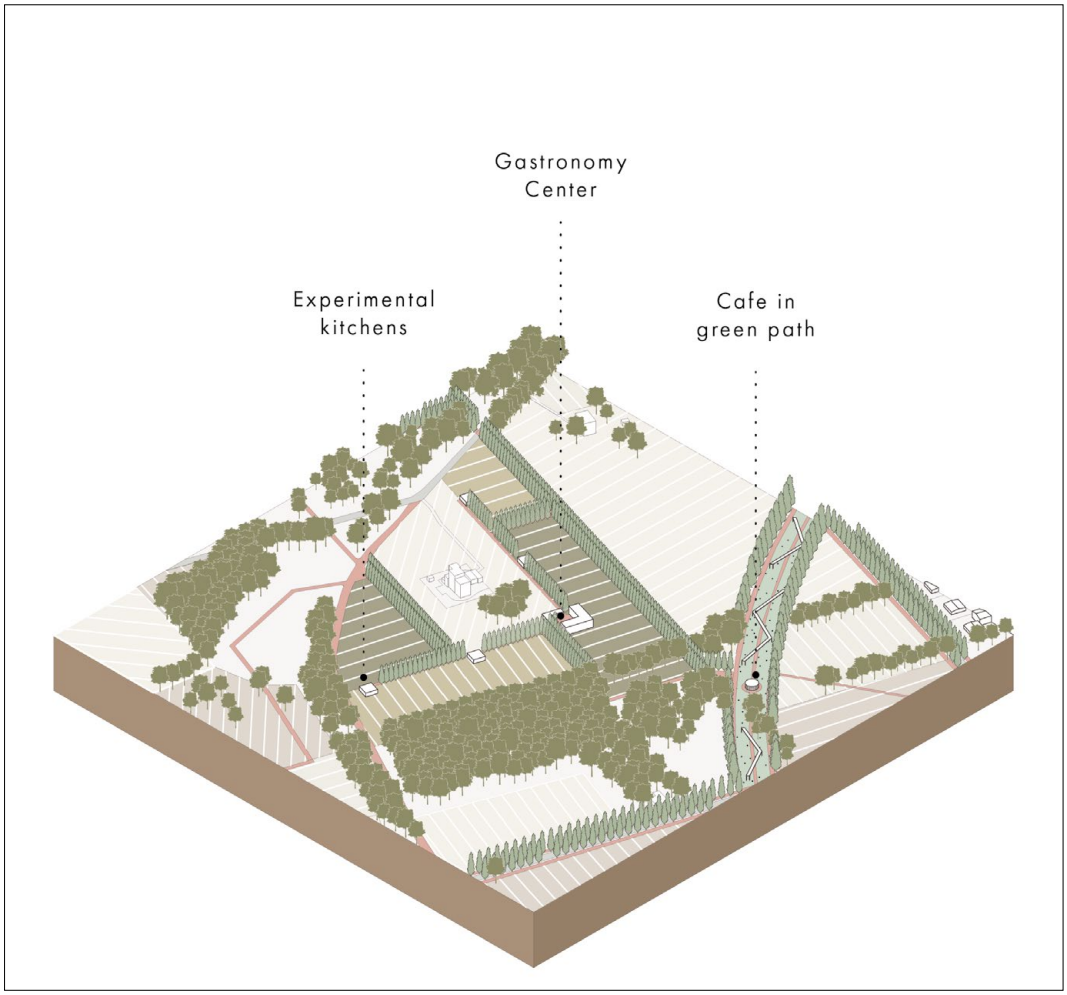


Figure 5.61 Isometric View 5

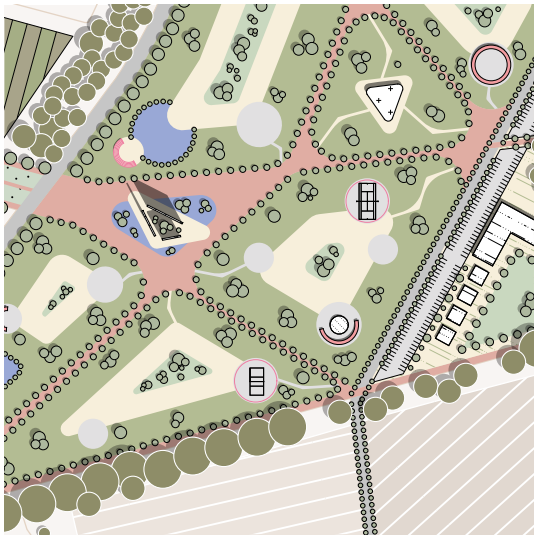


Figure 5.62 Urban Extension: Multifunctional Urban Park

The park, which is an urban extension, is completely organized with green pockets and hard surfaces with different functions, unlike the natural park. There is an existing pedestrian-bike underpass crossing from Te Brunetti to the urban park. Along with the new main axle vehicle road in the east-west direction, the pedestrian-bicycle flow is also provided by passing through the center of the park with a new alleyway. In addition, the new pedestrian-bike underpass at the point where the green path connects to the park opens to a higher three-stone monument. Thus, both ends of the green path have turned into reference points.

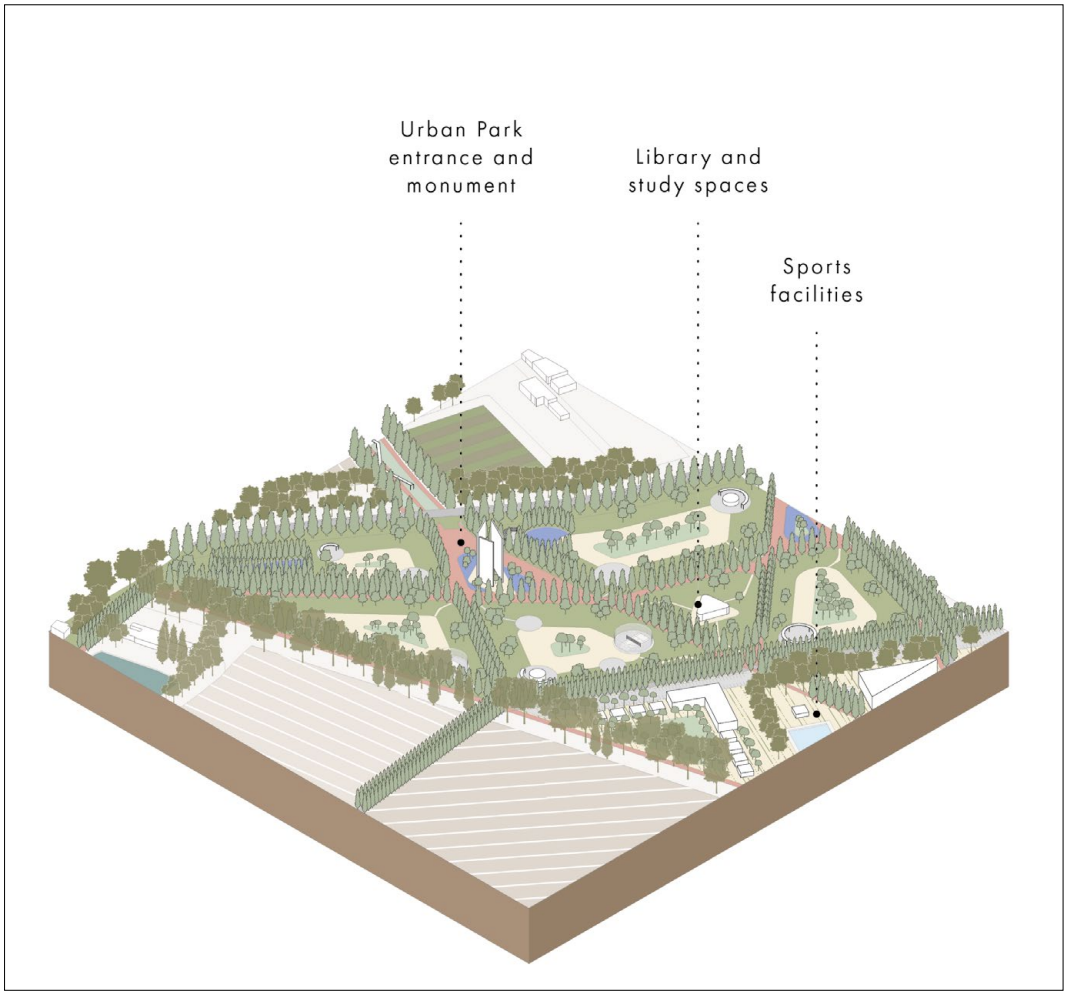


Figure 5.63 Isometric View 6

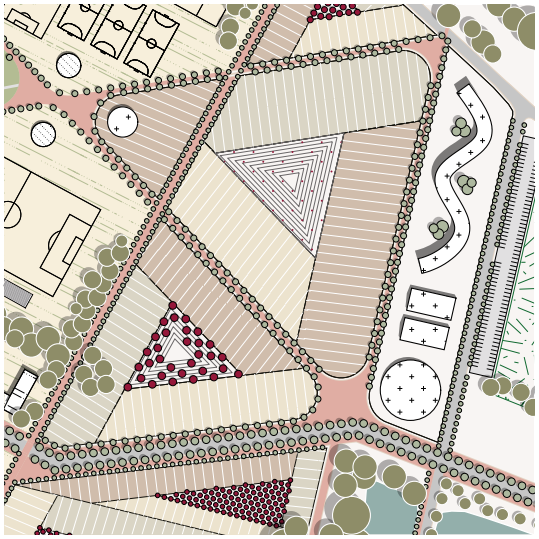


Figure 5.64 Urban Extension: Agriculture and Botanics Park

Another urban extension, Agriculture and Botanics Park, is the continuation of the botanical education area in Bosco Virgiliano and is a threshold for the transition to agricultural land. Different agricultural practices are seen in the area, which serves both educational and recreational purposes.

The sports band located just west of it was created as an urban extension with the development of the existing sports fields.

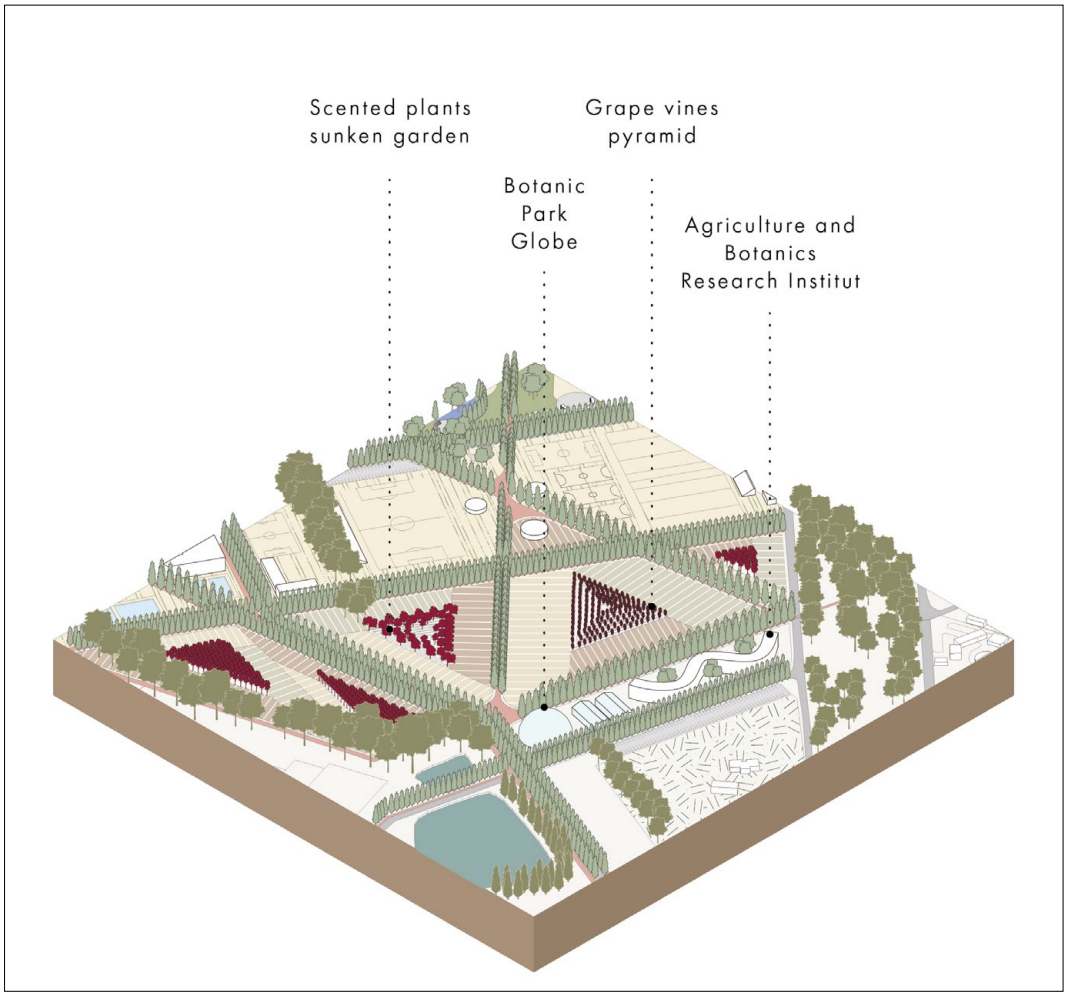


Figure 5.65 Isometric View 7

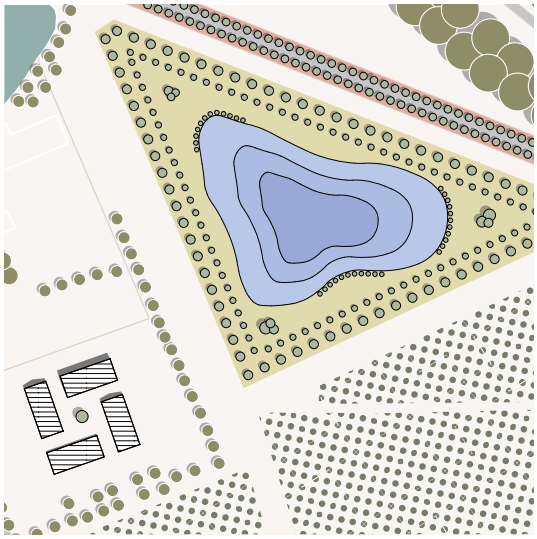


Figure 5.66 Landscape Connection: New Lake Area

The most radical intervention made with the landscape connection approach is seen in this area. The swimming lake, designed in the industrial forest area, offers what other lakes in the area cannot provide. The lake area, designed in accordance with the natural shape of the area, is emphasized with trees.

Agricultural tourism is supported by placing an agricultural court in a natural pocket formed by existing cypress trees.

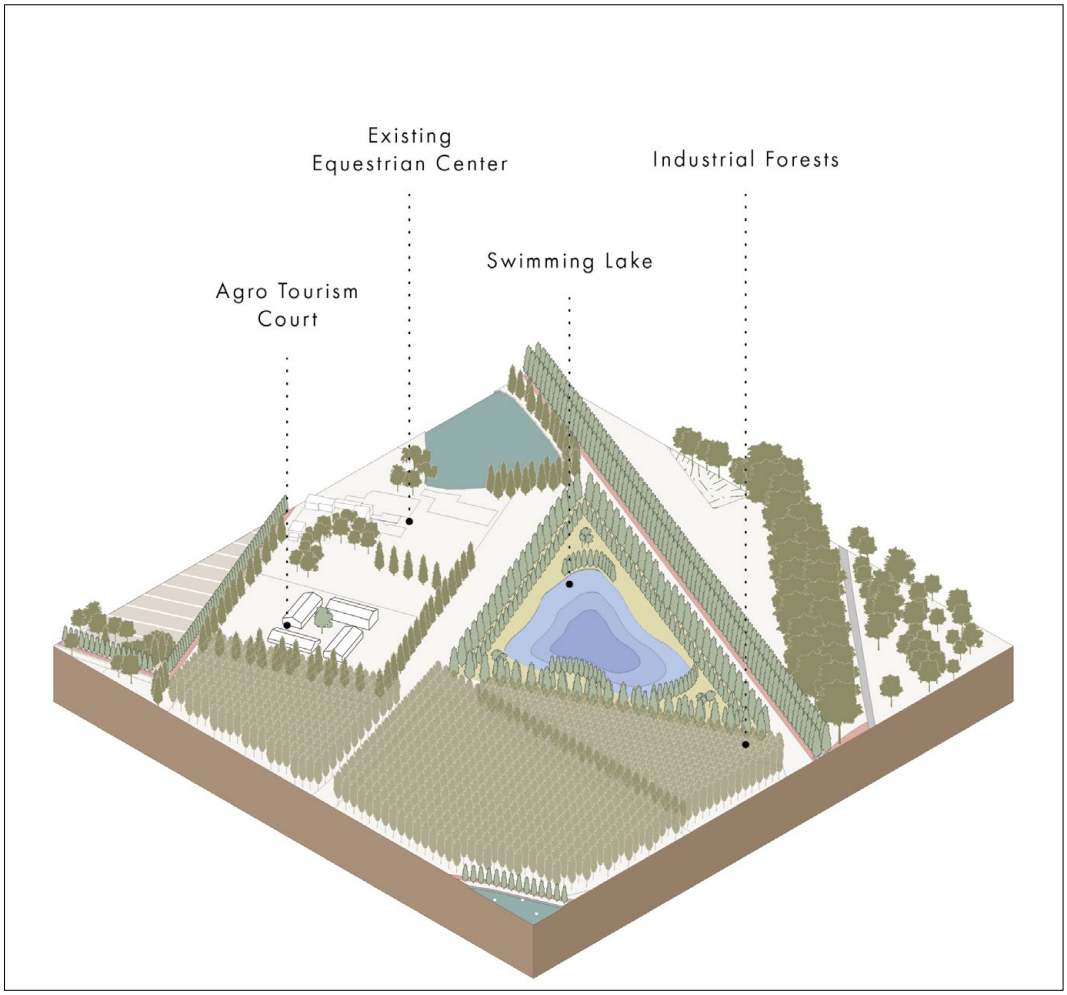


Figure 5.67 Isometric View 8

5.2.3. Composition of Elements

Abstractions have been made in order to see the different compositions that make up the elements in the master plan as a whole.

In Picture 5.68, all the buildings and structures designed in the project are presented together with the existing trees and the designed trees. Industrial trees and Pietole Forest are not included.

What is observed here is that the dominant texture in the area is formed by trees, and buildings and structures accompany this texture.

In Figure 6.69 to 5.72, green textures are presented in layers. Existing trees (except industrial trees), design trees, design green and agricultural areas, and finally the texture formed by the superimposition of all are shown, respectively.

Afterwards, the shapes formed by the design trees and their relations with the existing trees, the relations between the buildings and the trees, and the different road textures were examined through the piece textures.

Figure 5.68 Buildings-Structures with All Trees

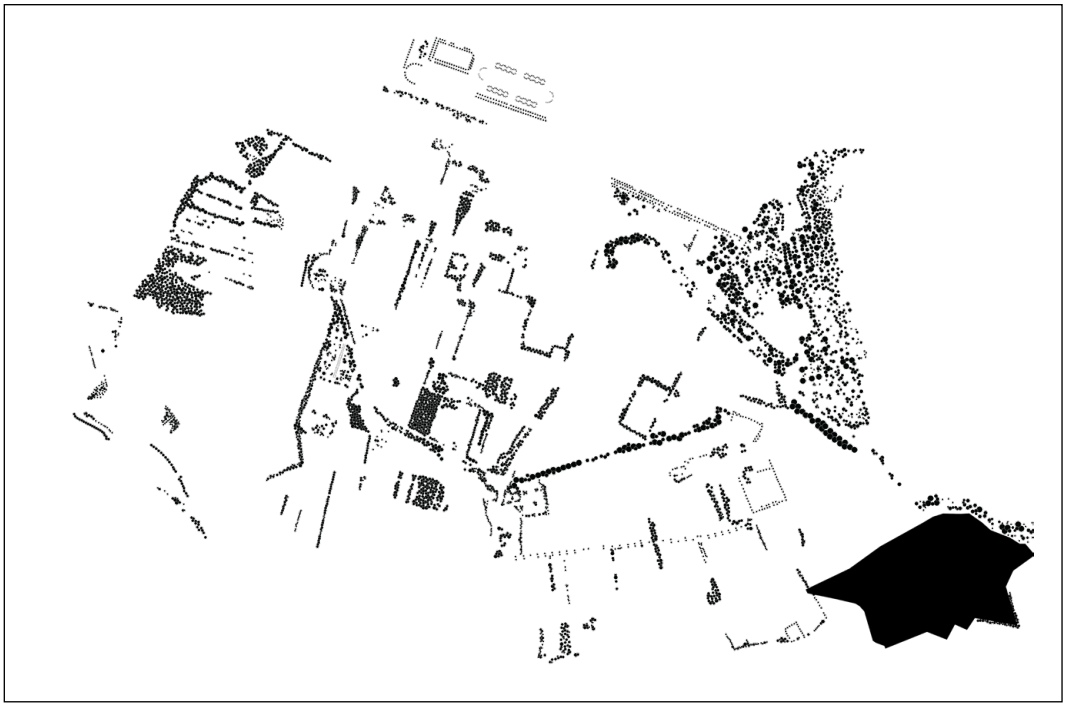


Figure 5.69 Existing Trees Texture

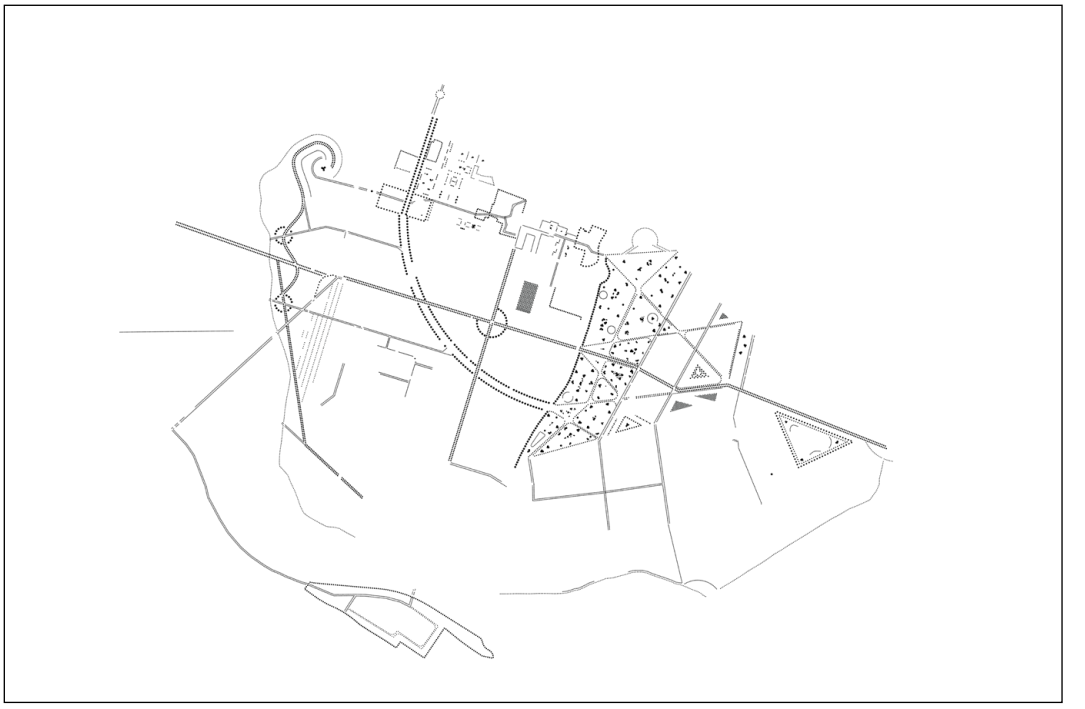


Figure 5.70 Design Treees Texture

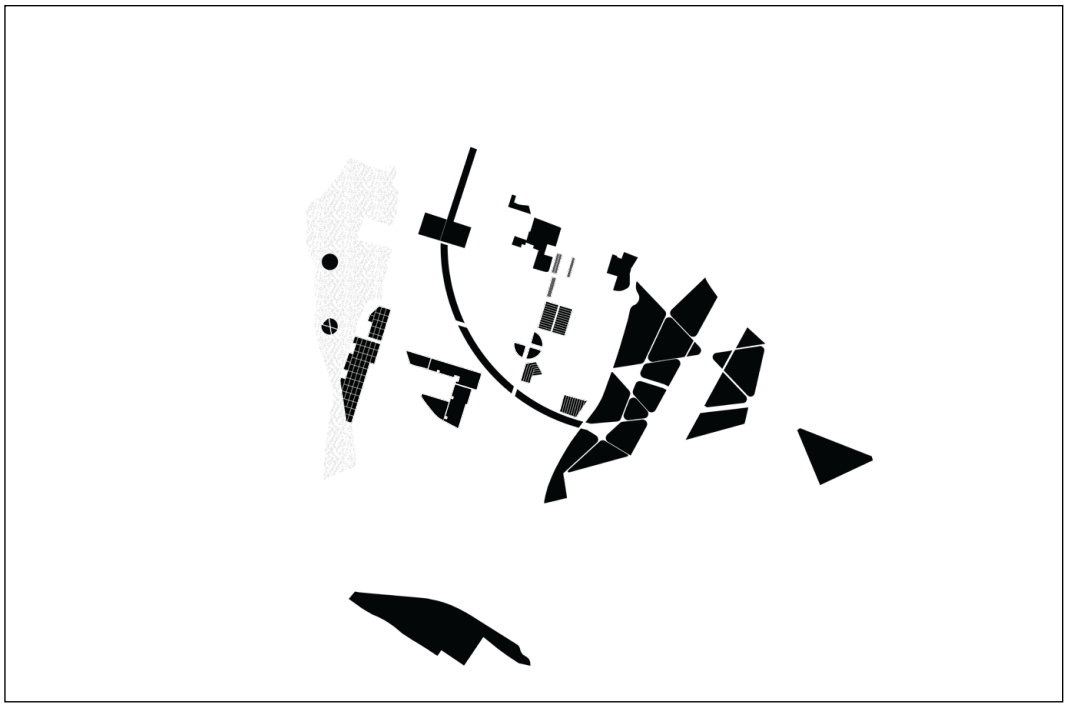


Figure 5.71 Designed Green and Agricultural Areas Textures

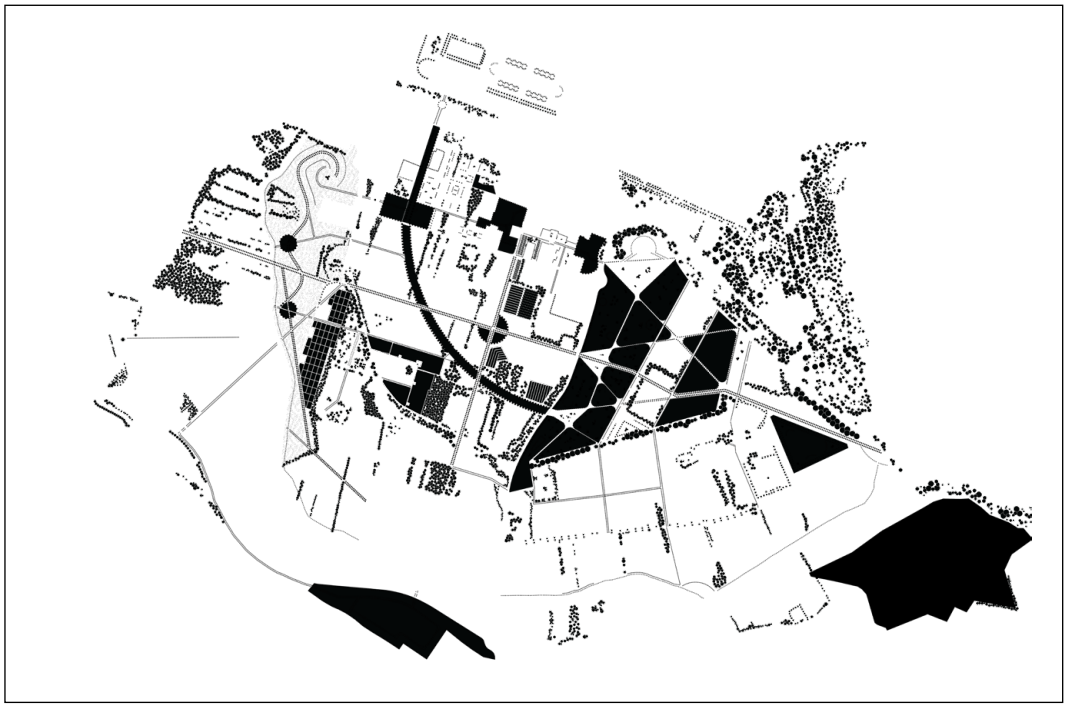


Figure 5.72 Superimposition of Textures

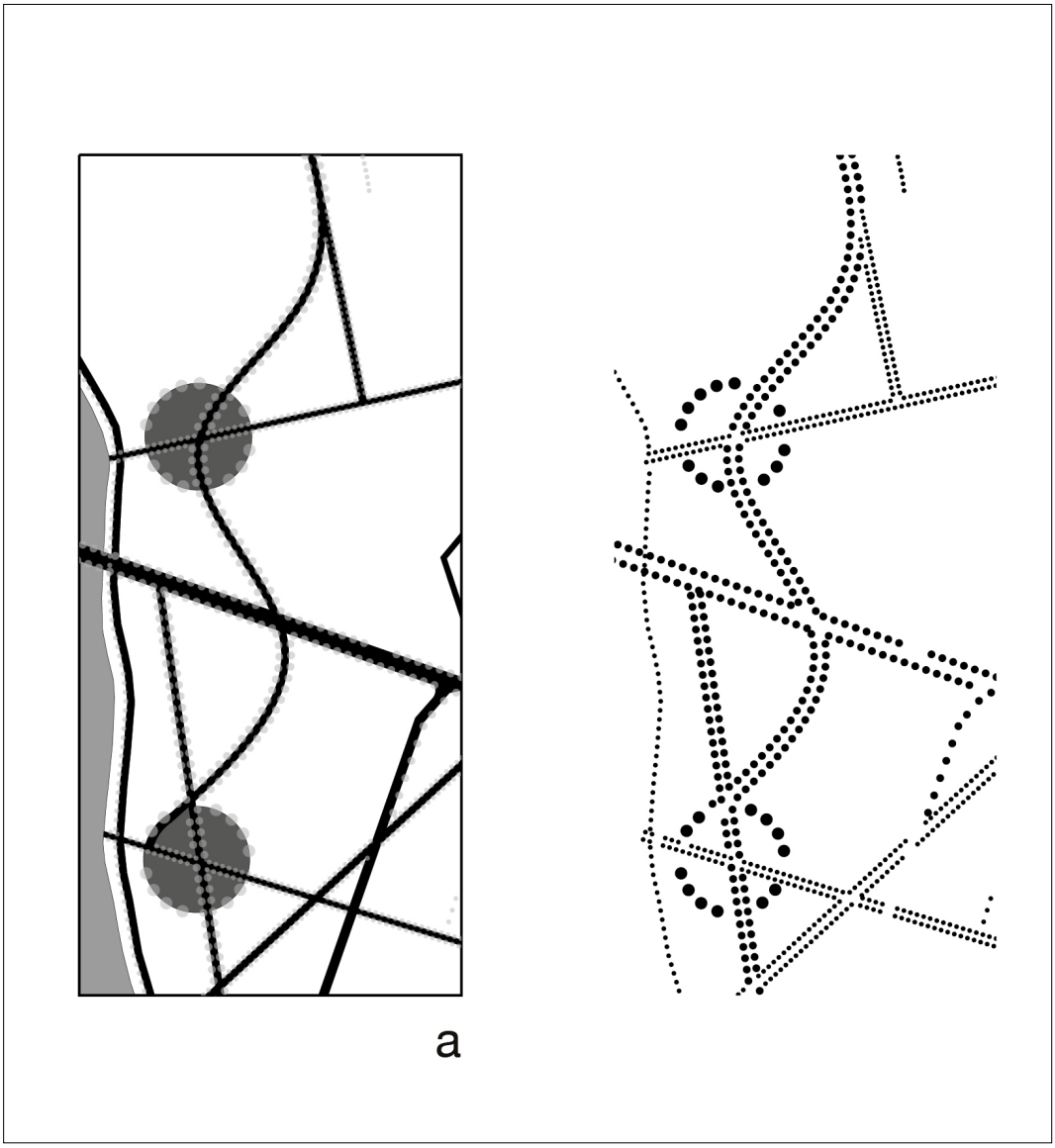


Figure 5.73 Texture a: Natural Park

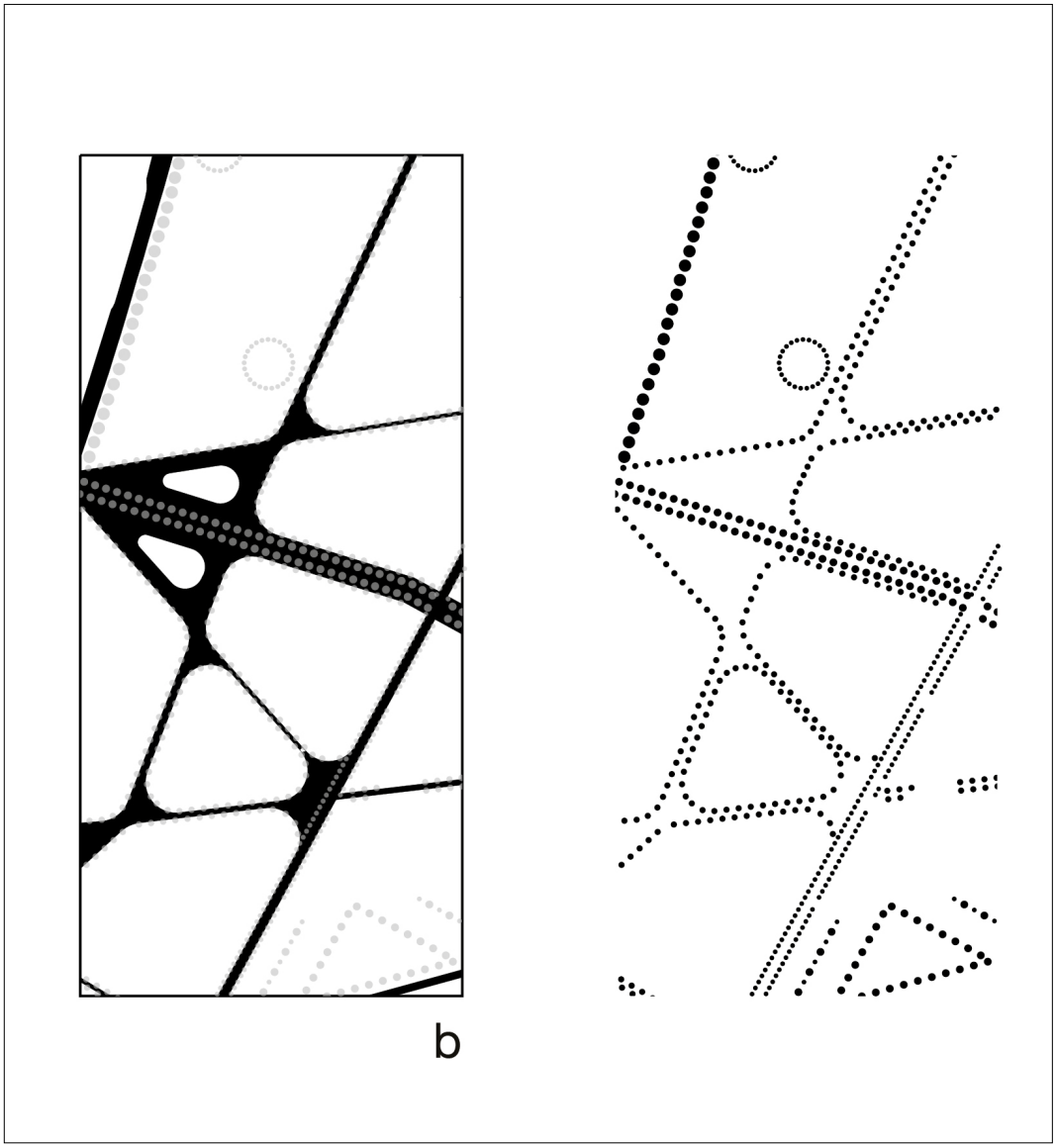


Figure 5.74 Texture b: Urban Park

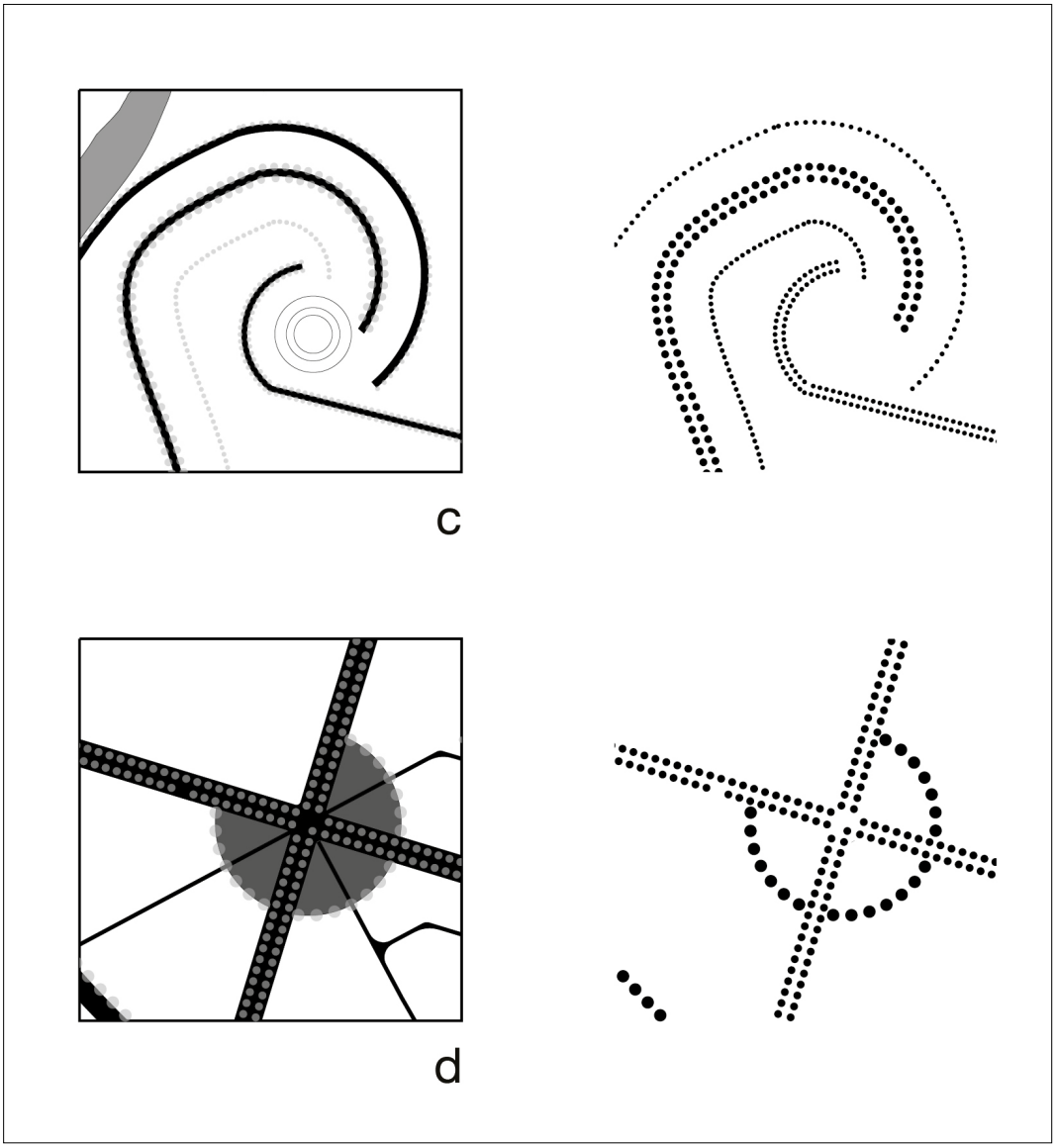


Figure 5.75 Textures c and d

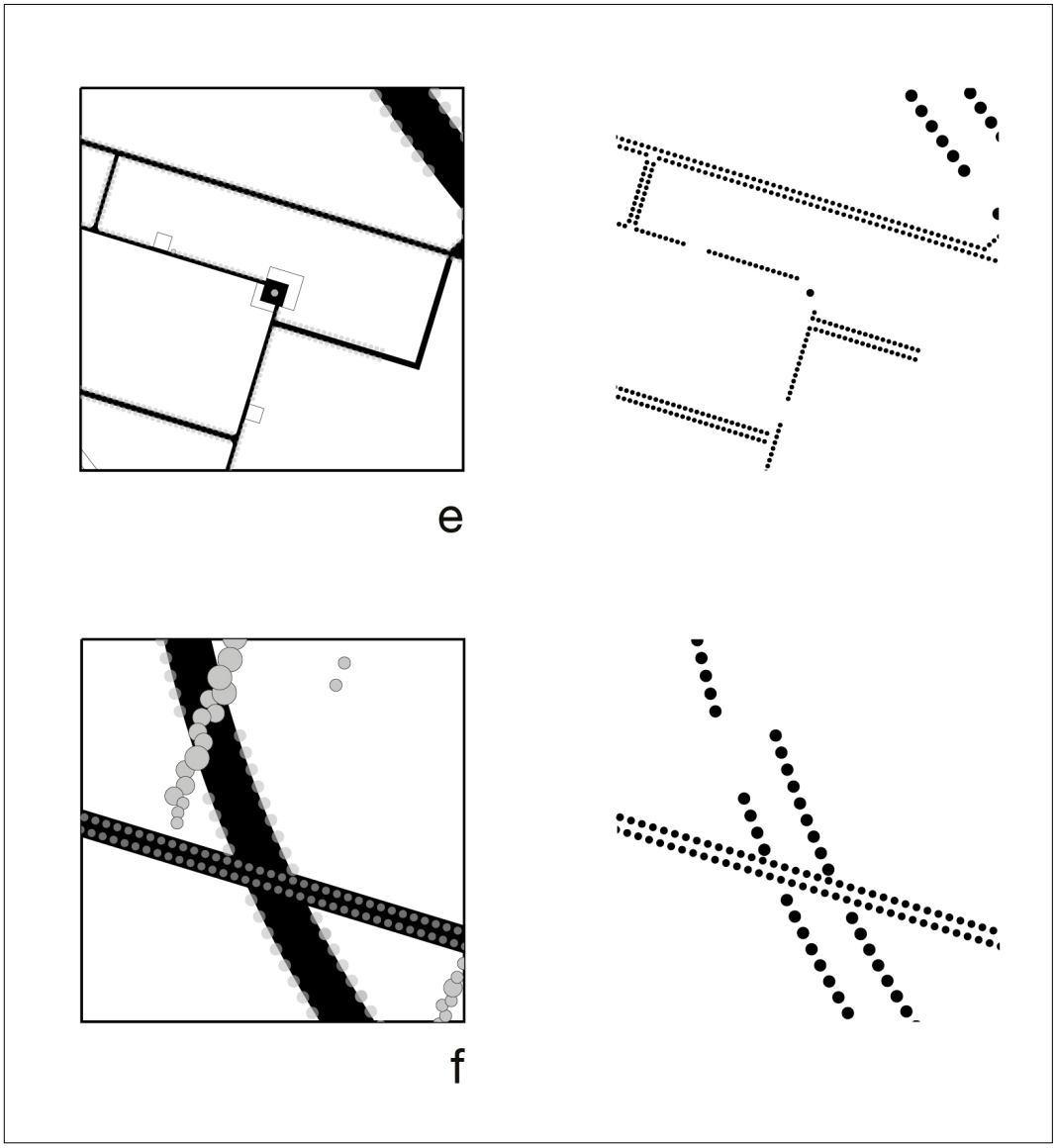


Figure 5.76 Textures e and f

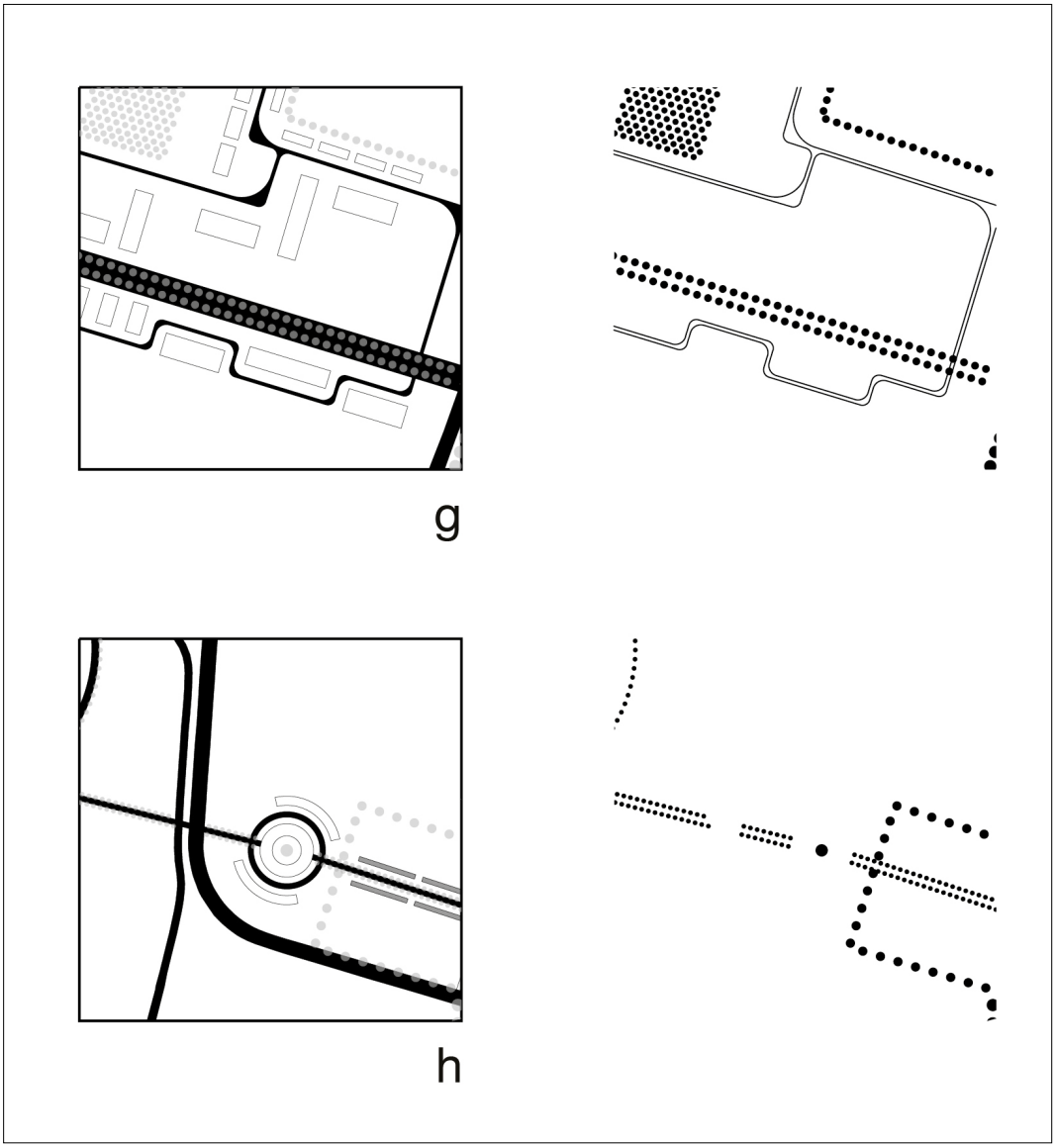


Figure 5.77 Textures g and h

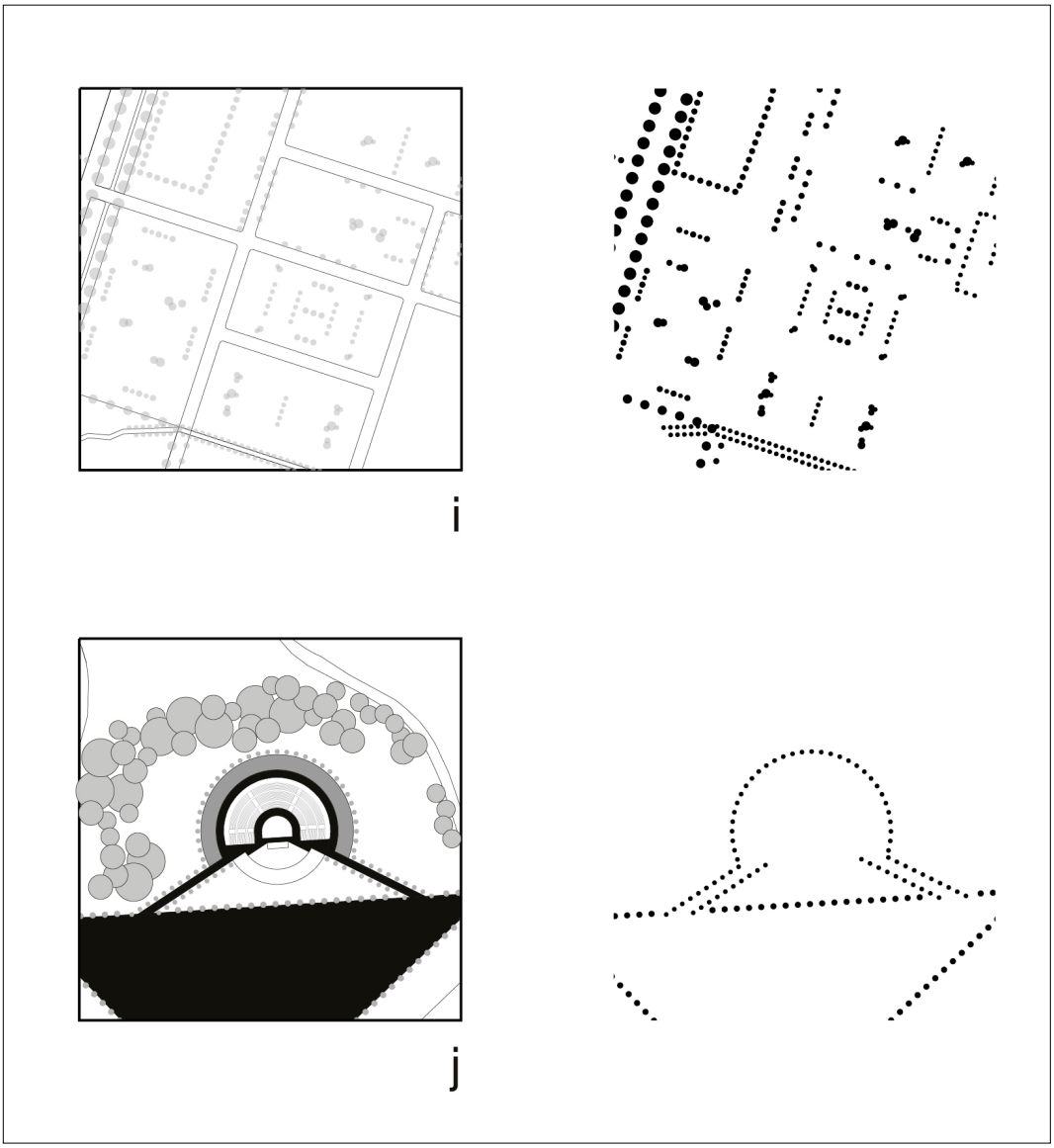


Figure 5.78 Textures i and j

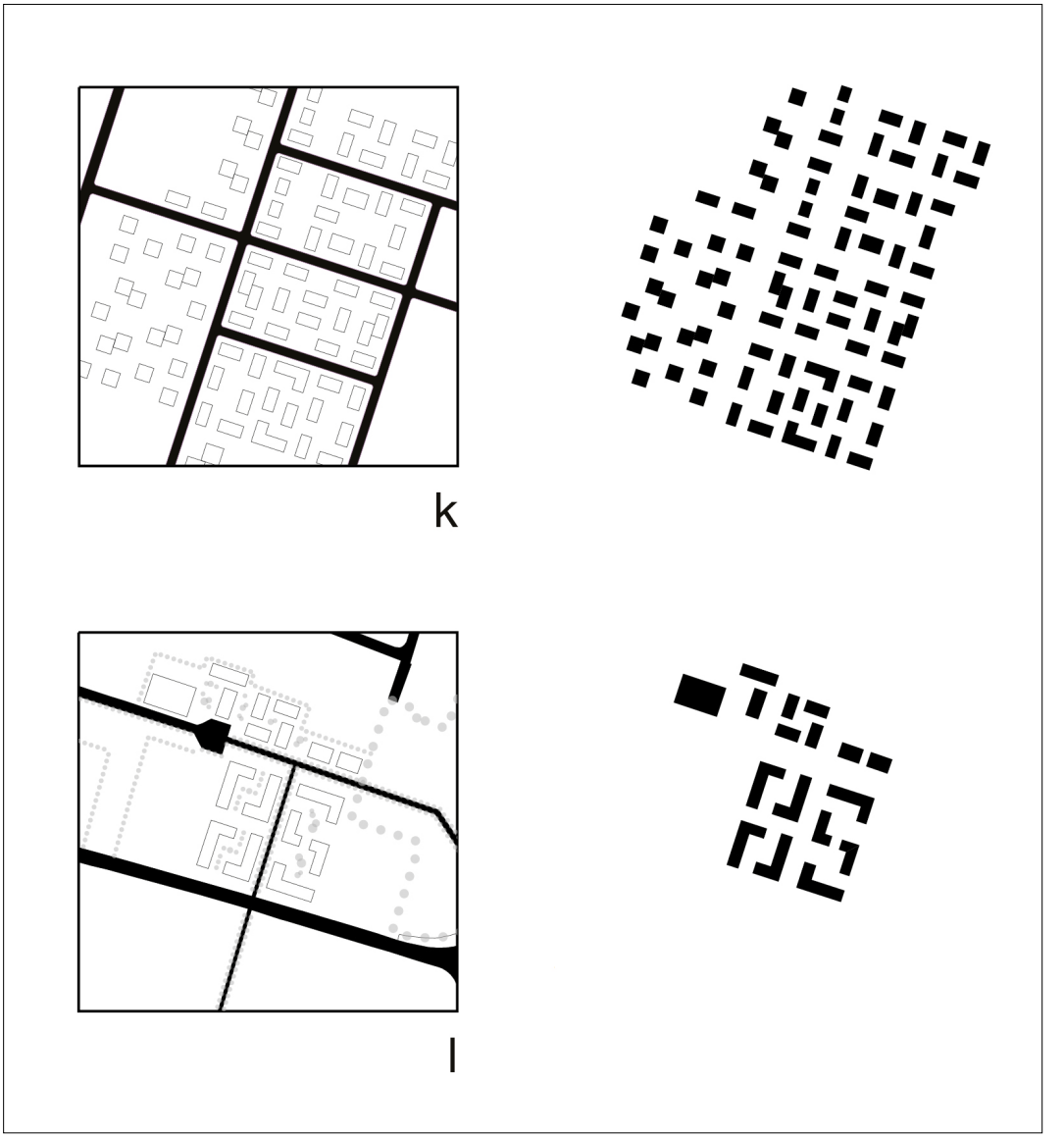


Figure 5.79 Textures k and l

a: Linear and curvilinear paths and nodes are the spaces theirselves and they intersect in different ways.

b: Different oriented linear paths create various shaped spaces within them.

c: Example of how linear organizations of paths turn into a centralized organization by surrounding an observation tower.

d: Radial organization which roads and paths distrubuting from a green node.

e: Linear organization by parallel and perpendicular paths.

f: Two different kind of paths examplify interlocking spaces.

g: Path which is defined by the organization of buildings.

h: The museum and institute buildings which are that attached to a linear organization, they are examples of interlocking spaces by the enstitut buildings surrounds the museum building.

i: Extended road texture creates grids but without builgings it is not defined organization of trees.

j: This can be accepted as radial organization which paths direct to amphiteatre.

k: Clustured organization which includes repetitions. Organizations are not clear without road texture, infact all has its own organization in the block.

l: L shape organizations creating courtyards.

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CONCLUSION

If the research questions mentioned in the Logic of the Study section are discussed over the urban design process experienced in the chosen site in Mantova, and presented as a result:

1. Is it possible to define urban design criteria that we can work with them in the different situations?

The fact that most of the determined criteria in this study are the phenomena that can be seen in any city makes it possible to apply them in almost every situation. Some of the criteria are about creating diversity, so they can be adapted. For example, creating different green areas and squares are criteria and can be interpreted appropriately according to the situation. However, the application of some criteria may not make sense. For example, transportation rings cannot be recommended in a linearly developing city. Another one is zoning. The project was not advanced by zoning in the tested area, but instead, different approaches for different parts were determined. When the project is examined, the zones cannot be mentioned. As stated in Chapter 4, Notes for the Criteria, site-specific applications are possible with different solutions, as the criteria are flexible and adaptable.

2. How should the relationship between urban scale and architectural scale be established?

Architectural objects included in the project and seen in the master plan are: buildings, observation towers, light structures and decks. The relations of these structures with the urban area are based on their location and functions. To exemplify through the master plan:

· The residential buildings in Te Brunetti are an extension of the area, and their dimensions and heights have been determined with reference to existing buildings. Their scales are between existing large blocks and single dwellings. Since it is a new settlement, the composition of the buildings is free. The inner courtyards formed by the residences offer new public spaces.

· Since the hub and mobility hub have larger masses compared to the residences, the space next to the existing school building was preferred in the location selection.

· The Urban History and Landscape Museum and Institute buildings were formed and positioned in accordance with the curve of the existing road, which is an old

trace. The continuation of this form can be seen in the observation tower it connects with. The path between the two buildings is the one which connects the urban extension area and the landscape connection area. Considering this path together with the museum building, a slit was created on the ground floor of the building for the continuity of the path.

· Agricultural production buildings are placed in a staggered manner as they are large masses and pedestrian paths are fluidly constructed around them. In this way, the feeling of heaviness created by the buildings was eliminated and the area was reduced to a more human scale for people walking around.

· Another striking example showing the relationship between architectural scale and urban scale is the amphitheater. To the north of Miglaretti, the classical half-circle is in the form of an ancient aphiteatre, positioned within the semi-circle formed by the existing trees. This form is connected with urban park paths, and a semi-circular path and also water element is constructed around it. In this way, the feeling that the building has always been there is created.

· Comparing the three-stone monuments in the park and urban park in Te Brunetti, the monument in the urban park is larger and higher. This is because the urban park is a larger area and is lower in elevation, and different scales are used to give the monuments the same feeling.

While making the master plan, data such as topography, trees, waters, existing road connections should be considered, while at the same time the forms of the buildings to be located in the vicinity should be considered in accordance with their functions and how they will be connected to the environment.

3. How to use composition rules without creating uniformity/monotony?

The approach that has continuity throughout the master plan area is green paths and nodes. Paths and squares were created with design trees, and the area was connected to each other. This design principle, which is seen throughout the plan, differs in different areas. The difference between natural park and urban park is the most obvious example of this. The design paths created with trees follow the existing water and tree elements with organic forms in the natural park area. Non-path ground is left natural, hard floors are not designed. On the other hand, in the urban park,

vehicle road connections and pedestrian paths are connected with the environment and self-generated triangular forms are designed as singular. The hard floors are arranged with geometric shapes and different functions are included. Again, while design trees are seen around the paths, there are also more randomly placed trees on the inside. Another example is the design paths of the Gastronomy Center. The paths from which the traces from the past are taken as a reference are also indicated surrounding by rows of trees. Here, unlike other areas, paths are perpendicular to each other and forming grids.

4. Is it possible to achieve a sense of wholeness/unity with a single design?

The integrity of this project, as mentioned before, is the greenways and green areas implemented throughout the master plan. All of these areas determined by row trees are interconnected. The goal is for a pedestrian or cyclist to explore the entire area with virtually no road interruption. It is thought that this is achieved by green paths/roads.

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“While searching for answers to the questions, “how to develop” and “how to end” an urban plan, it would be better to search answers for the following questions:

1. Is it possible to define urban design criteria that we can work with them in the different situations?

2. How should the relationship between urban scale and architectural scale be established?

3. How to use composition rules without creating uniformity/monotony?

4. Is it possible to achieve a sense of wholeness/unity with a single design?”

nilsu usta

October 2023