LANDSCAPE ARCHITECTURE
FORM AND MATTER

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Presentation

The word landscape is currently used to describe very different realities which, often times, are worlds apart from its original meaning, which is linked to rural areas. The adjectives that usually precedes the word help clarify its meaning and broaden the conceptual framework in which such landscape is located. Thus, we can refer to interior landscapes, musical landscapes, artistic landscapes, poetic landscapes or human landscapes.

For this reason, this book by Javier Pérez Igualada satisfies a first need, that of pin-pointing the conceptual framework in which the concept of Landscape Architecture resides. A discipline that deals with the analysis and assessment of the environmental and formal (in the sense of "form") material conditions of the landscape, but always focused towards the creation of open spaces through design and the implementation of specific techniques.

This book by Pérez Igualada offer a broad and systematic vision of the different aspects that come together in Landscape Architecture, based on relevant examples of contemporary landscape culture.

The morphological aspects display the conceptual continuity of landscaping with the world of art and architecture, evidencing the fundamentally cultural nature of landscape design. Many of the best landscape designers have been painters or architects all at once, and so it would not make sense that the formal universe set in motion to design parks or gardens was different from the one used in artistic or architectural production, beyond the influence that the techniques that define it materially have on the form.

Hence the importance in this work of the role played by plant and mineral materials in the creation of the landscape. Both of them impose rules that arise from their own nature and from the techniques available for their production, transport, installation and maintenance.

This point, perhaps, is the one that most clearly manifests the multidisciplinary nature of landscaping or, more specifically, the necessary participation of different professionals dealing with the production and conservation of plant species, the environmental conditions and the necessary infrastructures to make possible the interventions involving the definition, modification or conservation of the landscape.

In this field, Javier Pérez Igualada once again shows the breadth of his knowledge, presenting the right examples for each of the concepts presented, so that this publication can help those who require useful training for professional practice, while also being appealing to those who approach it due to their interest in understanding the interpretive keys of contemporary landscape culture and the love of nature.

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Director of the School of Architecture of Valencia

Introduction

Landscape design: Visual art or environmental science?

Landscape is currently one of the most disputed cultural and professional territories, from different disciplines related to analysis and design of the physical environment. According to Marc Treib, landscape design can be placed at the intersection of three main axis, each of which supplies different basic materials or content sources: the environmental axis, which includes ecology, topography, hydrology, horticulture and natural processes; the cultural axis, that integrates social and historical aspects; and the formal axis, whose basic elements are form, space, design patterns and materials (Treib, 2001).

Formal axis is predominant in the work of Burle Marx and in the architects of the American landscape school of the fifties, such as Thomas Church, Garrett Eckbo, Dan Kiley and Lawrence Halprin, who integrated in landscape design the visual and spatial discoveries of contemporary art and architecture.

The beginning of the prevalence of the environmental axis in landscape design can be associated with the publication in 1969 of Design with Nature, by Ian McHarg, who proposed a methodology based on a multidisciplinary analysis, and an emphasis on processes and overlay maps, that pretended to be scientific and also ethically superior. To McHarg, in fact, the question of design was already solved: the eighteenth century English landscape garden represented the correct way to design with nature, while Renaissance or Le Notre gardens were examples of submission of nature to man, an imposition of Euclidean geometry to landscape (Herrington, 2010).

In the 80s and early 90s, as a reaction to the then prevailing analytical and naturalistic approaches that stemmed from McHarg´s ideas, some landscape architects, as Laurie Olin, Peter Walker and Martha Schwarz in the U.S., or West 8 in the Netherlands, decided to rely their work to a large degree on formal definition parameters.

More recently, in the work of architects such as George Hargreaves and Michael Van Valkenburgh, among others, formal (occasionally associated with Land-Art) and ecological aspects overlap as arguments of landscape design, feeding each other.

The concept of Landscape Urbanism, proposed in the late 90s by Charles Waldheim and James Corner, relies also on the idea of a landscape design based at a time on the three thematic axis mentioned above: ecological, cultural and formal.[3]

This publication deals with landscape design from form and matter, composition and construction, and the visual and tectonic standpoints. This is intended to create an essential handbook for students who are exploring landscape design, encouraging them to delve into the aspects of formal definition and constructive materialization that represent the perspective of the architectural discipline in any field of the design project, be it buildings or open spaces.

The book is structured in two sections, devoted to form and matter respectively. The section focusing on form –after a typological classification of green spaces– outlines the general bases of the formal definition and the compositional elements that intervene in the design of open spaces, and each of these elements is analyzed separately: paths and places, walls and fences, plant material and forms of water.

In the section dedicated to matter, the elements through which open spaces are built are analyzed in successive chapters: the modelling of the land, the choice of plantations, pavements and curbs, irrigation and drainage systems, lighting, furniture and microarchitecture. Both sections conclude with the analysis of some projects.

However, to approach landscape design from form, a previous warning must be given. When we talk about forms in architecture we still have Le Corbusier's definition: "L´architecture c´est le jeux savant, correct et magnifique des formes sous la lumiere". But nature lacks the formal stability of architecture.

If we place ourselves in the territory of landscape, inside of that adjectived architecture called in English "landscape architecture", things are a bit different, for two main reasons: forms are essentially horizontal and, furthermore, they change over time. But this is precisely what makes the forms of the landscape unique, which inevitably seduces us every summer, every autumn, every winter and every spring.

J.P.I.

3. WALDHEIM, Charles, ed. *The landscape urbanism reader*. New York: Princeton Architectural Press, 2006.

FORM

SHAPE OF GREEN SPACES

NUCLEAR

LINEAR

LIMITSLESS
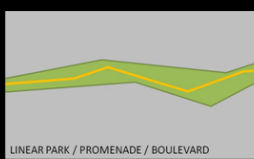
LINEAR PARK / PROMENADE / BOULEVARD

LINEAR PARK / PROMENADE / GREEN BELT

GREEN CORRIDOR

LINEAR PARK / RIVERBED / RAVINE

WATERFRONT

GREEN CORRIDOR

URBAN

URBAN EDGE

EXTRA-URBAN

TYPES OF OPEN SPACES

Shape of green spaces

Green spaces can be classified in many different ways. From an environmental standpoint, classifications based on the characteristics of plant communities, climate or geomorphology are proposed, distinguishing between natural spaces, anthropized spaces or urban green spaces.

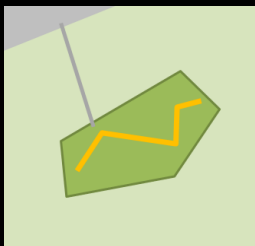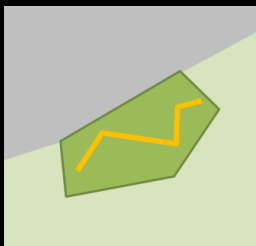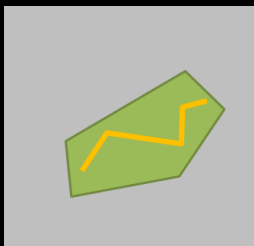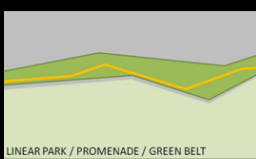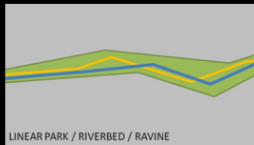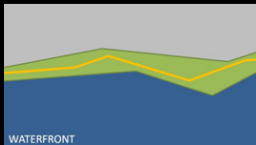From the point of view of urban planning legislation, green spaces are mostly regarded as public spaces or facilities, differentiating between general systems (reserves and protected natural parks) and, in urban areas, green areas which are common in development planning, distinguishing between parks, gardens or play areas, depending on the surface and the intended use for the same.

In this chapter we will study the types of green spaces from a different perspective: that of their general morphology as open spaces.

The approach to the landscape from the form is what characterizes design disciplines such as architecture and urban planning. From this perspective, three basic forms in green spaces can be identified: nuclear, linear and limitless.

Green spaces with a nuclear shape are those whose surface forms an isolated patch, which can be either small or large. These spaces are similar to the concept of patch that Forman establishes for landscape ecology (Dramstad, Olson, Forman, 1996), although here we will analyse them from the point of view of form.

Linear green spaces are those that form a linear belt, with a greater or lesser surface or width and a variable layout. They are both a longitudinally developed surface and a path. Furthermore, they can also be similar to another element of Forman's model: the corridor.

Lastly, limitless green spaces are those in which the extension of the same is not associated with a surface. They are interventions in the landscape, which are not related to transformations of the natural landscape.
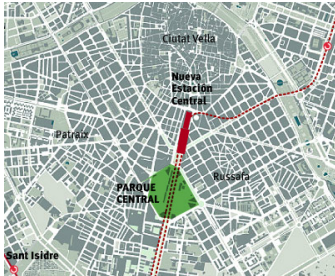
Urban nuclear green space. Parque Central, Valencia.

Nuclear green spaces of the urban edge. Bois de Boulogne and Vincennes. Paris.

Nuclear green spaces

Nuclear or concentrated green spaces can be classified, depending on their location, into three groups: urban, urban edge and extra-urban.

Urban nuclear green spaces comprise those spaces that are surrounded on all sides by consolidated urban fabric. Hence, these spaces are the classic urban parks, which depending on their function and surface area can be either central parks (serving the entire city), district parks, neighbourhood parks (serving a neighbourhood) or gardens.

Concentrated green spaces on the urban edge are those located on the city limits with the surrounding territory. In most cases these include the great parks that arose on the limits of compact cities, due to a lack of sufficient space to create them inside, such as the Bois de Boulogne and Vincennes in Paris, or the Jardines del Real in Valencia.

Concentrated extra-urban green spaces are those parks that are separated from the limits of the consolidated urban fabric, to which they are connected only through transport infrastructure (paths, metro, rail or soft mobility routes). They comprise large metropolitan parks, which serve the central city and its satellite nuclei or the existing protected natural spaces outside the city.

Nuclear green spaces. Types depending on their location.

Linear green spaces

Linear green spaces can also be divided into three types, depending on their location: urban, urban edge and extra-urban. Furthermore, within these groups, we can distinguish between the linear green spaces that are associated with water and those that are not.
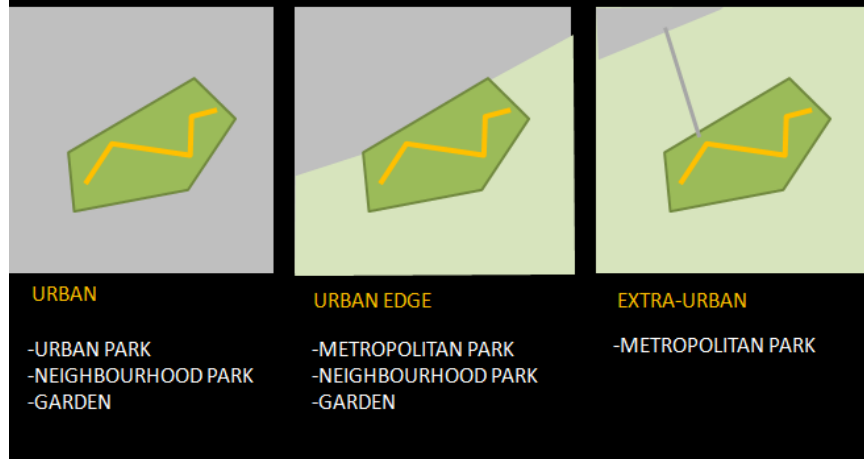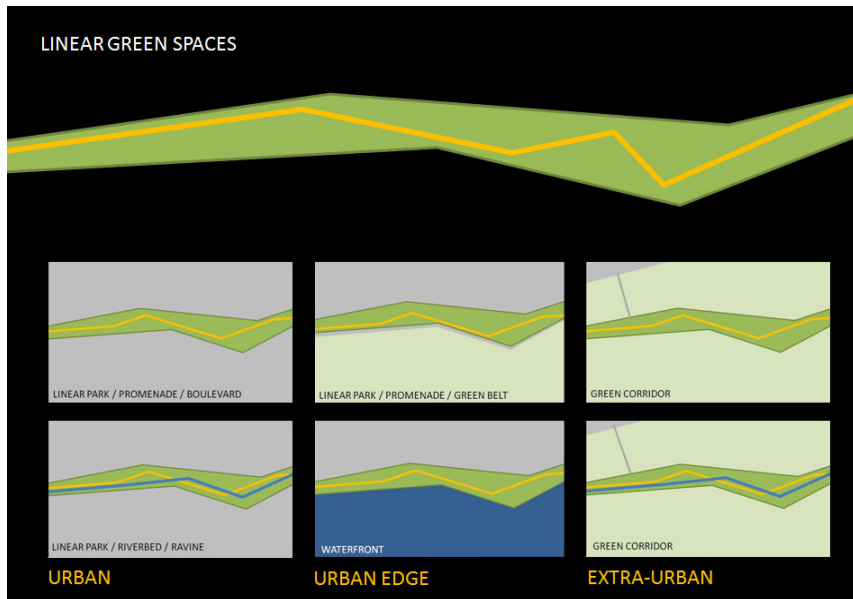
Linear urban green spaces comprise those spaces that are surrounded on all sides by consolidated urban fabric. Namely the linear parks that cross the cities, such as promenades, boulevards, riverbanks or ravines.

Linear urban edge green spaces are those located on the city limits, next to the surrounding territory, so that one of its sides is in contact with the urban fabric and the other is open to the countryside or to water. They are linear parks, green belts or promenades on coastlines.

Linear extra-urban green spaces are those that run through the land outside the urban limits, forming green corridors that can also be associated with waterways (ravines and rivers).

Linear green spaces are key in landscape design, since they are the quintessential connecting elements which allow concentrated green spaces to be linked together to jointly form an integrated system of open spaces.

LINEAR GREEN SPACES

LINEAR PARK / PROMENADE / BOULEVARD

LINEAR PARK / PROMENADE / GREEN BELT

GREEN CORRIDOR

LINEAR PARK / RIVERBED / RAVINE

WATERFRONT

GREEN CORRIDOR

URBAN   URBAN EDGE   EXTRA-URBAN

Linear green spaces Types depending on their location and the presence of water.

As we have pointed out, **urban linear green spaces** are belts of variable width that cross urban fabrics and are surrounded on both sides by them. Its layout can be rectilinear, curvilinear or polygonal, and its width can be constant, as in a boulevard or tree-lined promenade, or variable shape, as in a linear park.

Furthermore, within linear urban green spaces we can distinguish between green spaces with and without water, such as permanent watercourses; riverbeds, or temporary ones; ravines. The surface of "dry" linear green spaces is usually at the same level as that of the urban fabric they cross, while linear green spaces with water usually display marked differences in level with respect to the city, due to the position of the rivers and fluvial channels, whose bed is always below the inhabited areas.

The first linear urban green spaces of a certain size were tree-lined boulevards of the 19th century and, later, the Olmsted parkway system, were the projected trace, rectilinear or with smooth curves, was the prevailing one. But when urban design begins to be conceived from the landscape, it is the shape of natural elements such as rivers and ravines that guides and determines the urban morphology.

SHAPE OF GREEN SPACES + LOCATION

LINEAR
URBAN

WITHOUT WATER   LINEAR PARK / PROMENADE / BOULEVARD

WITH WATER   LINEAR PARK / RIVERBED / RAVINE
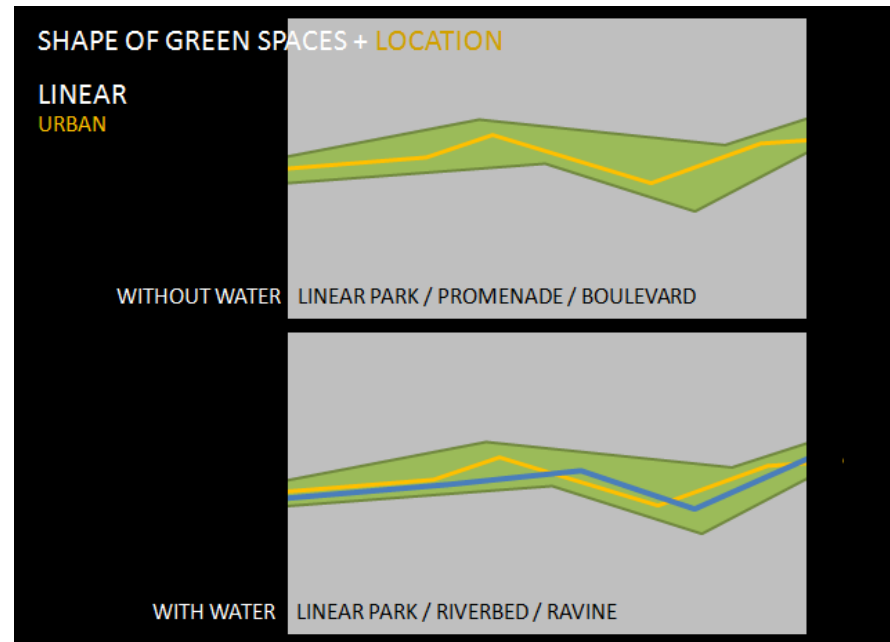
Linear urban green spaces. Types.

Meanwhile, **urban-edge linear green spaces** located on the limits of the city with the surrounding territory are in contact with the urban fabric only on one of their sides, since, on the other side, the peri-urban territory or the body of water is located, in the case of river edges, lacustrine plains or coastal areas.

Perimeter linear parks have occasionally been associated with the idea of a green ring or belt, that is, a belt that limits urban growth, marking a limit between the city and the countryside that, often times, has ended up being exceeded over time.

Linear urban edge green spaces play a particularly important role when they accompany a ring path along its perimeter route to the urban fabric. In this situation, continuous linear green spaces make it possible to mitigate the negative environmental impact of the infrastructure (noise, pollution, lights), both with respect to the urban fabric and the peri-urban land.

The other type of linear urban edge green spaces are, as pointed out, those linked to water fronts, which appear when the city is located next to a lake, a wide river or next to the sea, such as promenades of the coastal fronts.

River bank of the Fluviá river, Besalú (Gerona).

Ronda de S'Agaró path. Castell- Platja d'Aro. RGA Arquitectes, 1999-2001.
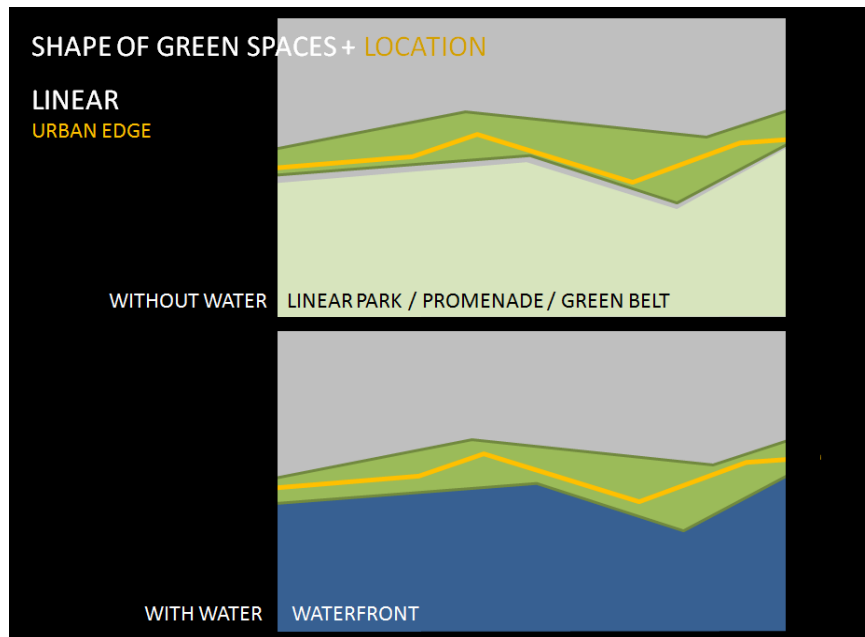
SHAPE OF GREEN SPACES + LOCATION

LINEAR
URBAN EDGE

WITHOUT WATER   LINEAR PARK / PROMENADE / GREEN BELT

WITH WATER   WATERFRONT

Linear green spaces of the urban edge.

The third group of linear green spaces, depending on their location with respect to the urban fabric, are the **extra-urba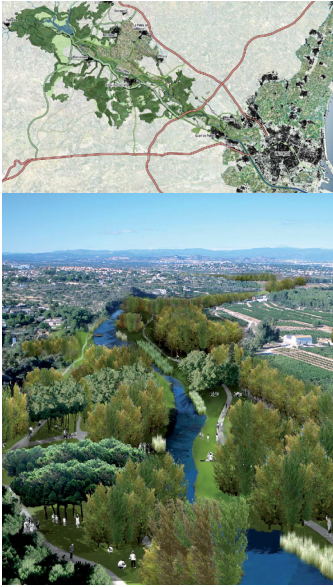n linear green spaces**, which are those that run through the territory, outside the city limits, creating green corridors that are generally linked to watercourses (ravines and rivers), although they can also be linear green spaces linked to transport infrastructure.   These linear extra-urban green spaces are not usually set up as public parks in the sense of an urban context, but rather are considered as spaces associated with the natural surroundings.

River banks and ravines are linear extra-urban green spaces associated with the irrigation and drainage of the territory, which can be arranged as natural parks or preserved in their original state. Due to their continuous nature, they play a key role as natural ecological corridors for flora and fauna.

The extra-urban green corridors associated with transport infrastructures (paths, railways) have a different nature depending on whether the infrastructure is in operation or in disuse. In the first case, the main role of the linear green space is usually to mitigate the environmental impact of the infrastructure. While, in the second case, it is a green corridor in its own right.

SHAPE OF GREEN SPACES + LOCATION

LINEAR
EXTRA-URBAN

WITHOUT WATER   GREEN CORRIDOR

WITH WATER   GREEN CORRIDOR
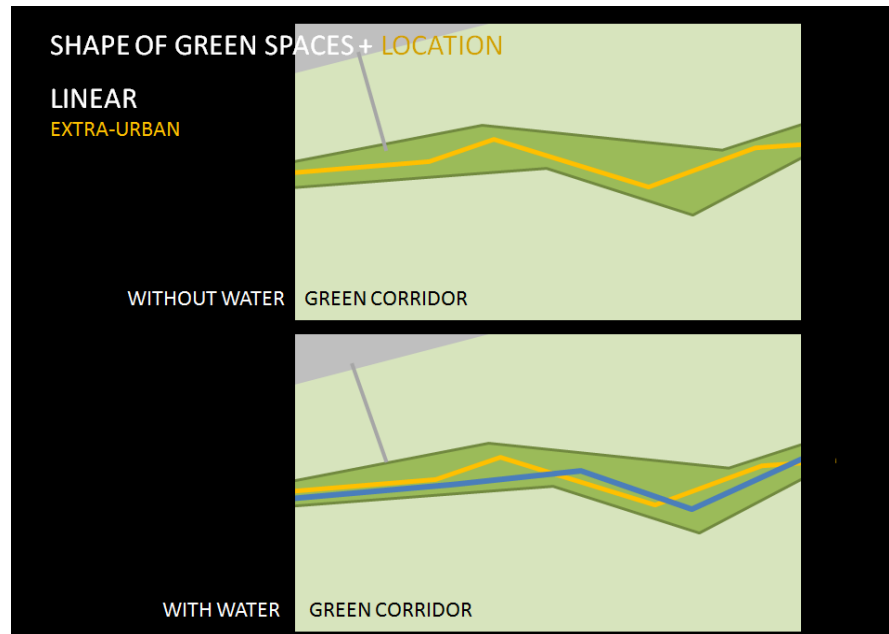
Linear extra-urban green spaces.

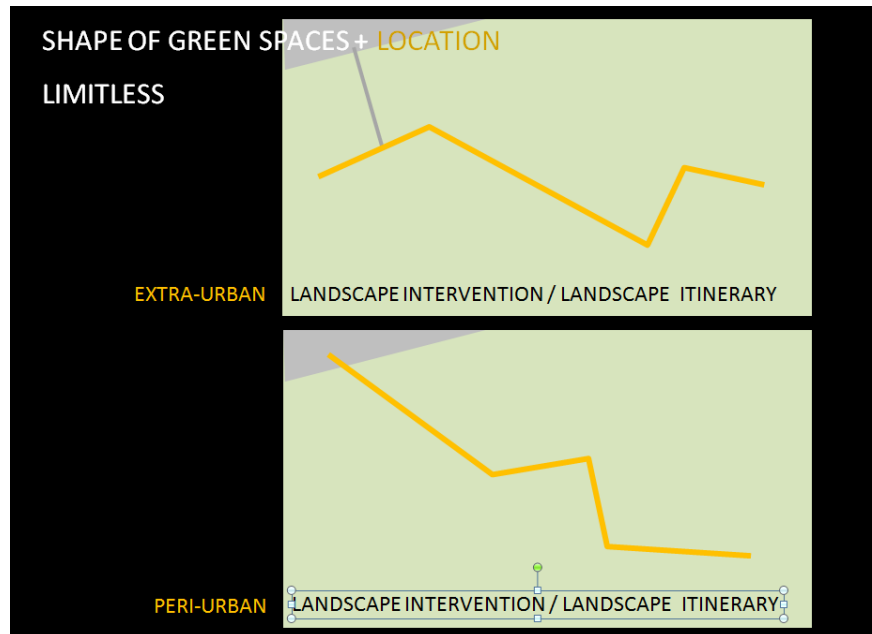## Limitless green spaces: interventions in the landscape

Interventions in the landscape do not always entail a transformation of its surface, as it can be limited to setting up itineraries that enter and run through it without modifying it. These landscape itineraries can be classified as peri-urban or extra-urban, depending on their degree of continuity with the urban pedestrian routes or axes.

In short, interventions in the landscape seek to revitalise it by making it possible to access it. Such an access to enjoy the landscape requires, in order not to distort it, a careful design of the elements that make it up, both in terms of layout and materials.

A good example of this careful design of the intervention in the landscape is the environmental restoration action carried out in the Tudela-Culip area, in Cap de Creus, which involved the demolition of the existing buildings of an old vacation club (Club-Med), bringing the land back to its original state, but incorporating a number of paths and signs that allow you to enter a rocky coast area of singular beauty, allowing it to be contemplated and, in a certain way, amplifying its aesthetic potential as a natural space.

Intervention in Tudela-Culip area, Nature Park Cap de Creus (Girona). M.Franch, J. T. Ardévols, 2010.

SHAPE OF GREEN SPACES + LOCATION

LIMITLESS

EXTRA-URBAN   LANDSCAPE INTERVENTION / LANDSCAPE ITINERARY

PERI-URBAN   LANDSCAPE INTERVENTION / LANDSCAPE ITINERARY

Limitless green spaces: interventions in the extra-urban and peri-urban landscape.
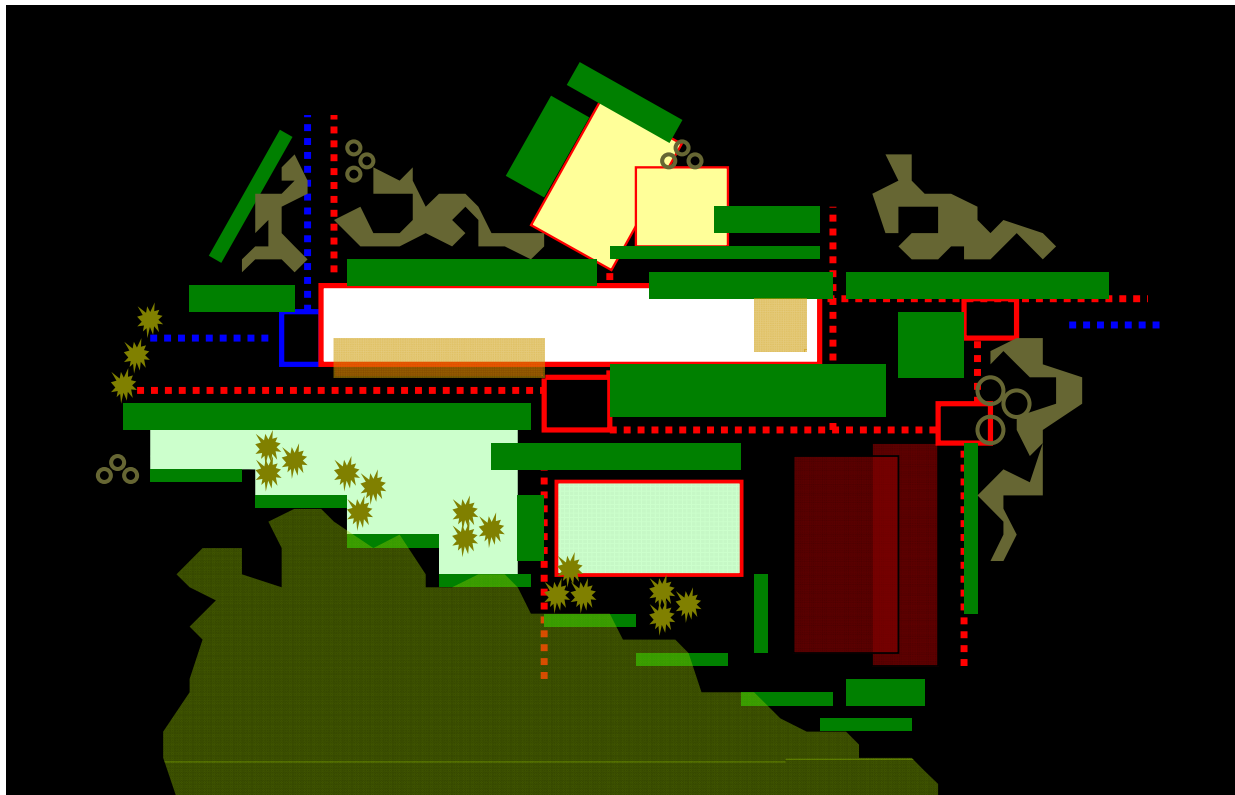
Composition: space + mobility + plant material + architectural elements. Extension of Ayora garden, Valencia. J. Pérez Igualada.
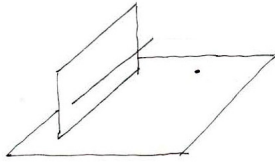
FORMAL BASES AND COMPOSITION ELEMENTS

Landscape design as visual art: form and composition

This chapter focuses on exploring the bases in which the elements that make up the formal axis in open space design are structured.

The creation of forms occurs differently in artistic disciplines, such as painting or sculpture, and in design disciplines such as architecture or landscape. In the former, the artist directly creates the forms and materializes the work, usually with his own hands. In the latter, the author creates shapes indirectly, through a design or project, in which various collaborators can intervene. The design is not the work, but a tool to be able to build it, a process in which other additional agents intervene. The project is, in short, an instrument that makes it possible to tackle the creation of large forms (a building, a park), whose materialization is not within the reach of a single person.

Both direct artistic creation and indirect creation through the design are modalities of the visual arts, hence they share a basic approach: both study the elements of form and the abstract principles from which these elements are organized to obtain the desired effects.

It must be taken into account, in any case, that the Vitruvian triad of *firmitas*, *utilitas* and *venustas* is applicable to the design of open spaces, as in architecture. Unlike what happens with painting or sculpture, in landscaping design shapes are not defined solely to create artistic objects, but are elements that must be suitable simultaneously from an aesthetic, functional and constructive point of view.
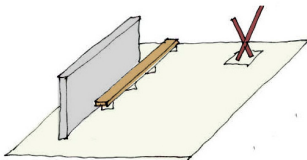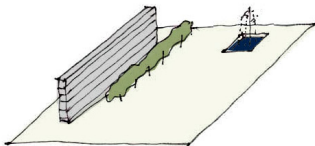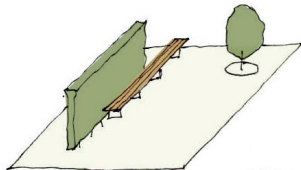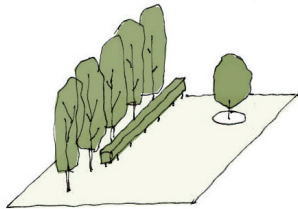
Forms. Conceptual and visual elements of design: attributes and compositional role

Point, line, plane, and volume are primary geometric concepts: they do not exist as shapes in the physical world, but are mathematical abstractions. They are also the conceptual elements that underlie any design (Wong, 1979).

But designers cannot work with concepts, they need visual elements. These visual elements are real objects in the physical world, which have **attributes**: a specific shape, size, color and texture.

Thus, a fountain, a sculpture or a singular tree are forms that can be recognized as points in a composition. A hedge, low wall, or bench are forms that are visually perceived as lines, and a wall, tall hedge, or set of trees are forms that are perceived as vertical planes.

In the design of open spaces, as visual art, the precise definition of the visual elements of the design, that is the forms and their attributes of size, color and texture, which are generally associated with its material nature, occupies a central place.

These shapes can play various **compositional roles** in the design of open spaces. Kevin Lynch, in *The image of the city*, distinguished five elements in the visual form of the city: paths, edges, districts, nodes and landmarks. Adapting this classification to the visual form of green spaces, we will identify five possible compositional roles associated with forms:

Path: linear routes that connect places

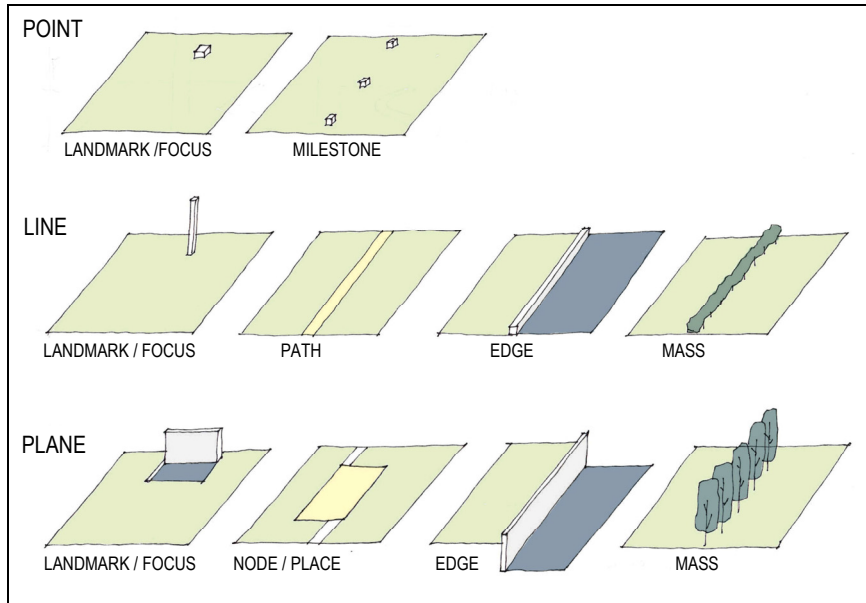Edge: linear element that marks a discontinuity on the surface or in space.

Patch: Mass, stain or volume, identifiable as a differentiated element.

Place: Node, surface element where paths converge.

Landmark: Strategic or referent point, singular or serial.

The concept of patch (stain), borrowed from landscape ecology by Forman and Godron, complements that of place (node), since it allows differentiating between elements that imply a void (place) and those that designate the fullfilled one (mass). In this classification, the district by Lynch does not appear, since it is equivalent to a large size patch.

We will now analyze the relationship between the basic forms (point, line and plane) and the compositional roles that they can assume in the project. The range of possible compositional roles varies for each of these forms, as we shall see.

20

POINT

LANDMARK /FOCUS   MILESTONE

LINE

LANDMARK / FOCUS   PATH   EDGE   MASS

PLANE

LANDMARK / FOCUS   NODE / PLACE   EDGE   MASS

Form as line, point and plane: possible roles as a composition element.

Point

As a conceptual element, a point is a dimensionless entity: it has no width or length and indicates a position in space or an intersection between two lines. As a visual element, on the other hand, a shape is perceived as a point when its size is comparatively tiny concerning the frame or ground. This shape can be regular or irregular, large or small, since its perception as a point is relative: it depends on the field that we consider.

As for the compositional roles, those usually assigned to punctual forms are those of landmark or milestone. As a landmark, punctual forms can induce significant transformations by placing them in one position or another within a particular visual field.

These transformations become evident if we draw what we can call lines of force generated by the point, as concentric circles around the point or straight lines that intersect at the point, orthogonally or obliquely. A point located in the center of gravity of the ground implies stability, metrical regularity concerning the ground edges, and symmetrical equilibrium. On the other hand, an eccentric point position implies instability, as asymmetric interactions appear with respect to the center and the ground edges.
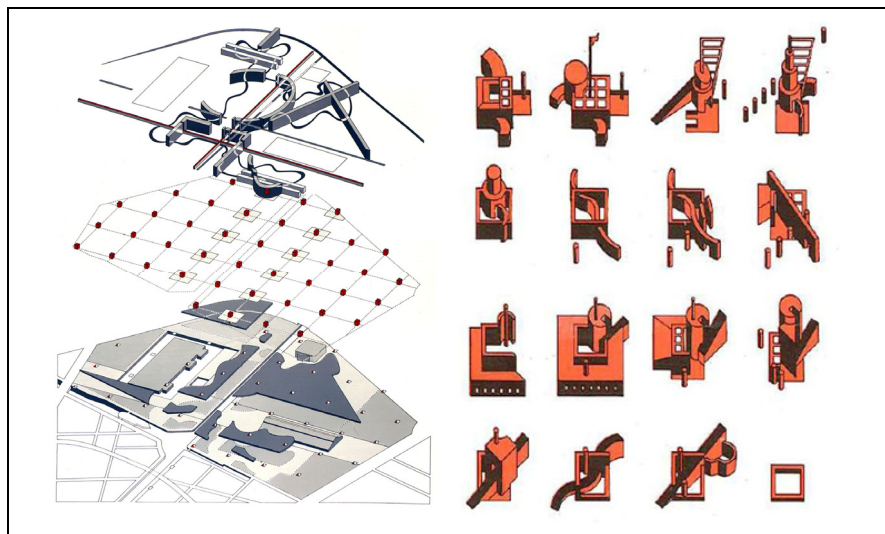
21
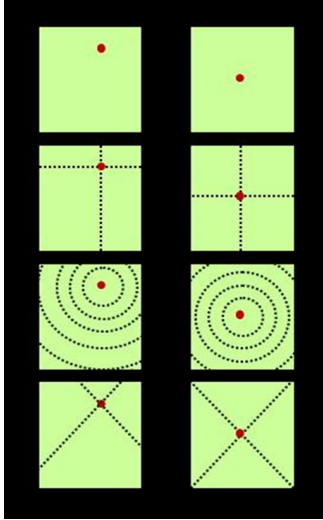
Point in a ground.

The characterization of a shape as a point is relative, as it depends on the scale of the frame: the same shape can be perceived as a point in the general composition when the frame is large and as a volume if we consider a small scale frame. An example of this can be found in the *follies* at La Villette Park by Bernard Tschumi, which from a closer view are buildings designed as cubic volumes of different shapes while, at the same time, as a whole, they are just red dots with a compositional role as milestones, structuring the park´s general plan as nodes of a virtual grid.
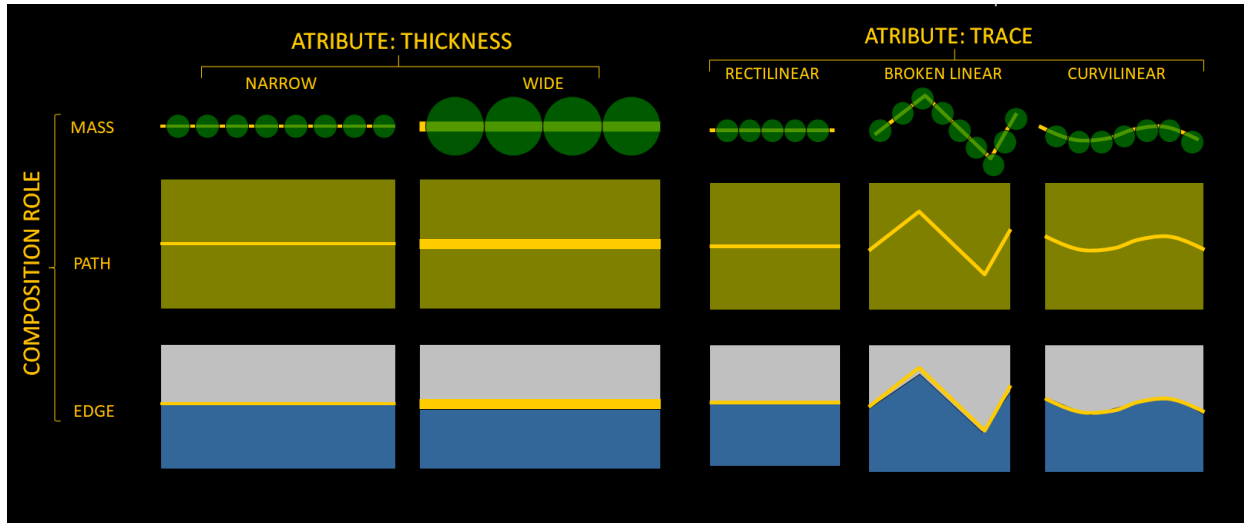
Line

Conceptually, a line is a set of points, the result of the movement of a point, and has length but no width. As a visual element, however, a shape is perceived as a line when the length is its dominant dimension.

The parameters that can be used to classify linear shapes are thickness, trace, contour, and slope. In terms of thickness, linear shapes can be narrow or wide. As for the trace, we can distinguish between lines with a rectilinear trace, a curvilinear trace, or a broken trace. Regarding the contour, we can distinguish between lines with regular or irregular edges. Finally, due to their inclination with respect to a horizontal surface, linear forms can be vertical, horizontal, or oblique.

La Villette Park, Paris. Bernard Tschumi, 1982.

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	ATRIBUTE: THICKNESS		ATRIBUTE: TRACE		
COMPOSITION ROLE	NARROW	WIDE	RECTILINEAR	BROKEN LINEAR	CURVILINEAR
MASS					
PATH					
EDGE					

On the other hand, linear forms can act as focus, path, edge, or mass in terms of compositional role. A focus is an element that stands out in the visual field as an object; a path is an element that crosses the visual field, an edge is an element that separates two different fields, and a mass is a volume within the visual field.

The repertoire of linear forms that we can use in design is the result of blending the two aspects mentioned: the parameters of the linear form (thickness, trace, contour, and inclination) and its compositional role (focus, path, edge, or mass). These forms can also have different size, colour, and texture attributes.

So, for example, the attributes of thickness (wide or narrow) or trace (straight, broken, or curvilinear) can be assigned to elements that fulfill different compositional roles, such as a set of trees (a mass), a path that crosses a meadow (a path), or a wall or element separating land and water (an edge).

As with the point, the characterization of a form as a line is relative, and depends on the scale and type of frame. Thus, for example, an alignment of trees can be a line if we consider the composition in plan and a plane in elevation.

The use of a specific type of line over another is relevant concerning composition, which we will examine later in the sections dedicated to geometry and the organizing principles of visual form.

Linear forms: crossing the attributes of thickness (narrow-wide) and trace (straight, broken, and curvilinear) with the compositional roles of mass (trees), path, and edge.

Plane

As a conceptual element, a plane is an unlimited, thickness-less two-dimensional surface generated by a moving line. As a visual element, the forms that are perceived as flat are two-dimensional, while they are not unlimited, but have a contour or edge and also a thickness and an inclination. What characterizes them as planes is the predominance of two of their dimensions compared to the third: they are elements that are perceived as surfaces.

The contour of a plane is defined by the polyline that delimits it, which can have a rectilinear, curvilinear, or broken trace, and which generates a regular, irregular, or mixed border. The thickness of the flat shape is related to its material composition: a retaining wall, for example, is a flat shape that can be wide or narrow depending on the type of material used to build it. Finally, due to its inclination with respect to a horizontal surface, there are vertical, horizontal, or inclined planes.

As for their compositional role, planes are forms that can serve in composition as focus, node, edge, or mass. A plane can be a focus when it stands out in the visual field as a two-dimensional object; a node is an identifiable surface as a distinct element within a visual field; an edge plane is an element that separates two different fields; and a mass is an irregular surface plane.

The repertoire of flat forms that we can use in design is the result of blending the two aspects mentioned: the parameters of the flat form (contour or edge, thickness, and inclination) and its compositional role (focus, node, edge, or mass). These forms can also have different size, colour, and texture attributes.

As with the lines, the characterization of a form as a plane is relative, and depends on the scale and type of frame. For example, a retaining wall is a plane in elevation, while in the plan it appears as a line.

Volume

As visual elements, the point, the line, and the plane are three-dimensional forms: they all have volume (width, length, and height). We perceive lines when length predominates over the other two dimensions, and planes are perceived when two dimensions predominate over the third.

In a point, this predominance of some dimensions over others does not exist. Therefore, it can be argued that a volume, as a form, is equivalent to a point, although of a large size with respect to the field in which it is located.

Figure and ground

A figure is a closed flat area, created using lines, textures, or colour, located in a field. It is visually perceived as a separate entity with specific characteristics that identify it and differentiate it from the field. A figure is a designed element, while the field is the ground on which the designed figure stands out.

The figure-ground relationship, however, can be visually inverted. Then the figure ceases to be perceived as a presence –as an object floating on the field– and becomes an absence, an emptying of the field, which becomes a figure instead of a background.

The ambiguity of the figure-ground relationship derives fundamentally from the three-dimensional visual reading of superimposed layers that we make of the two elements, as we assume that the hidden parts of the ground continue to exist below the figure. This ambiguity can be present in the figure itself. When superimposing another rectangle on a rectangular base shape, the resulting figure maintains its consideration as a figure, as a designed object superimposed on the field. However, the figure-ground relationship is visually inverted if a rectangular portion is cut out of the rectangular base shape.

Colour

Colour theory is a complex matter beyond this text´s scope. For this reason, we will merely mention the main attributes of colour: hue, brightness, and saturation. The hue or tone reflects the nature of the colour itself, the brightness or value indicates the light intensity, and the saturation indicates the purity of a colour.

The chromatic circle is used to classify colours. Twelve colours are distributed (the three primary colours and their mixtures), and complementary colours are those located at opposite ends of the diameters of the chromatic circle. When two complementary colours are overlapped, a maximum visual intensity is obtained in each of them, and a separate and differentiated perception.

Texture

Texture is a property associated with the surface of objects and is has both a tactile and visual quality. As a tactile quality, texture is perceived by touching objects. In contrast, visual texture refers to the effects of light on a given surface. It has relevant design implications related to the perception of depth: rough textures make the object move forward to the background, while smooth textures make it fall back.
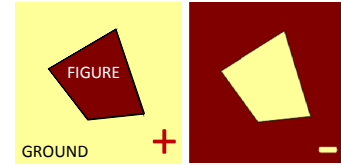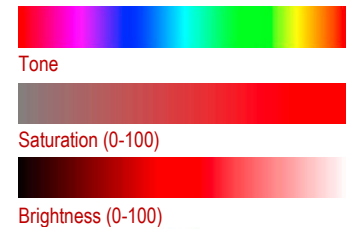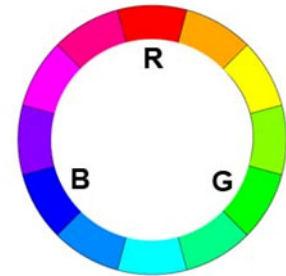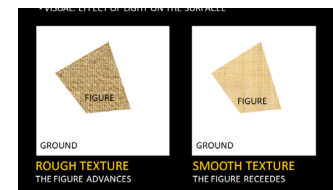

Figure and ground.

Tone

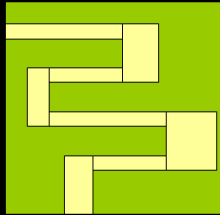Saturation (0-100)

Brightness (0-100)

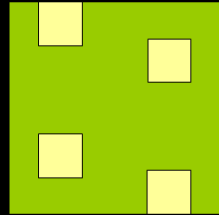Colour attributes: tone, saturation, and brightness. Chromatic circle, RGB model.
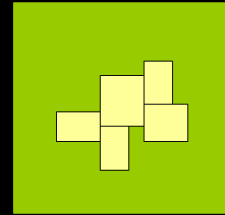

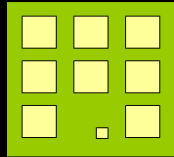Rough and smooth texture.
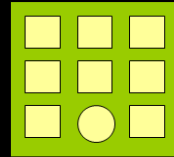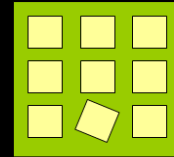
CONTINUITY — REPETITION — PROXIMITY

UNITY

FOCAL POINT: SINGULAR ELEMENT OF THE COMPOSITION, DIFFERENT FROM THE REST
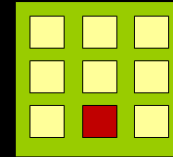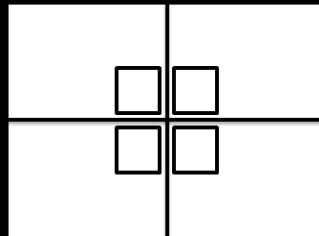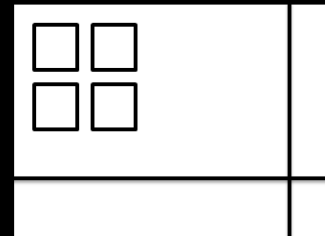
SIZE — SHAPE — ORIENTATION — COLOUR

TYPES OF DIFFERENCES

ÉMPHASIS/FOCUS

SYMMETRIC BALANCE — ASYMMETRIC BALANCE

BALANCE

Structure: principles of organization of forms

Designing open spaces is not simply defining shapes and juxtaposing them. If you seek to create a coherent and aesthetically interesting composition, it is essential to define a structure, that is, a way in which the shapes are organized or related to each other. The organizing principles of forms, according to Motloch, are unity, emphasis or focus, balance, scale and proportion, rhythm, and simplicity.[1]

Unity

Unity means that the elements of the composition are visually related to each other in such a way that the whole prevails over the sum of the individual parts. Unity brings coherence and readability to a composition, and its lack thereof makes it appear cluttered and fragmented.

The main procedures to increase visual unity in a composition are continuity, repetition, and proximity. Continuity refers to the uninterrupted presence of some elements throughout the entire composition. The repetition of a particular element, whether a line, a shape, a colour, or a texture, is the basis of the underlying order in many compositions. The proximity between the elements is another factor that provides unity by visually associating these elements.
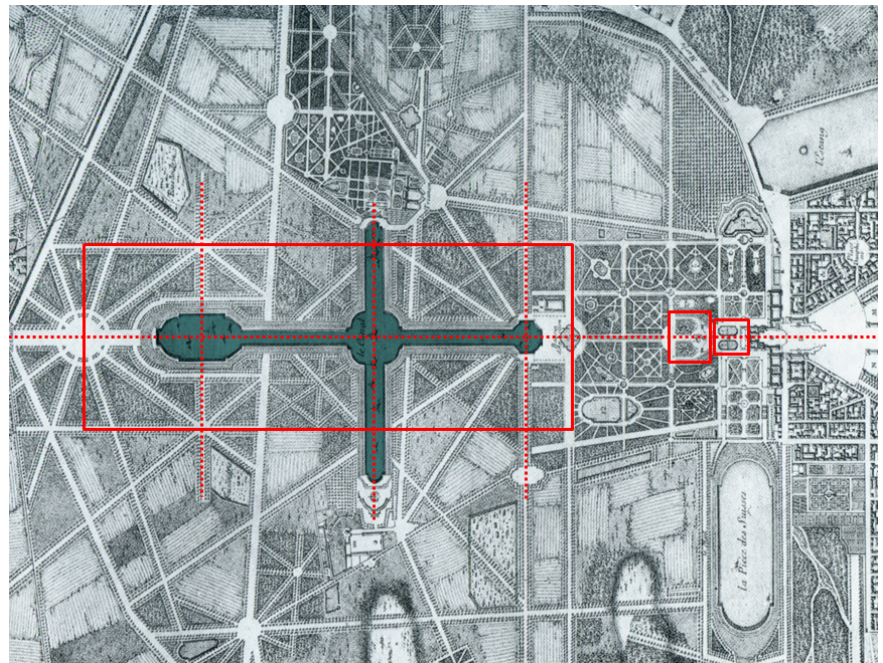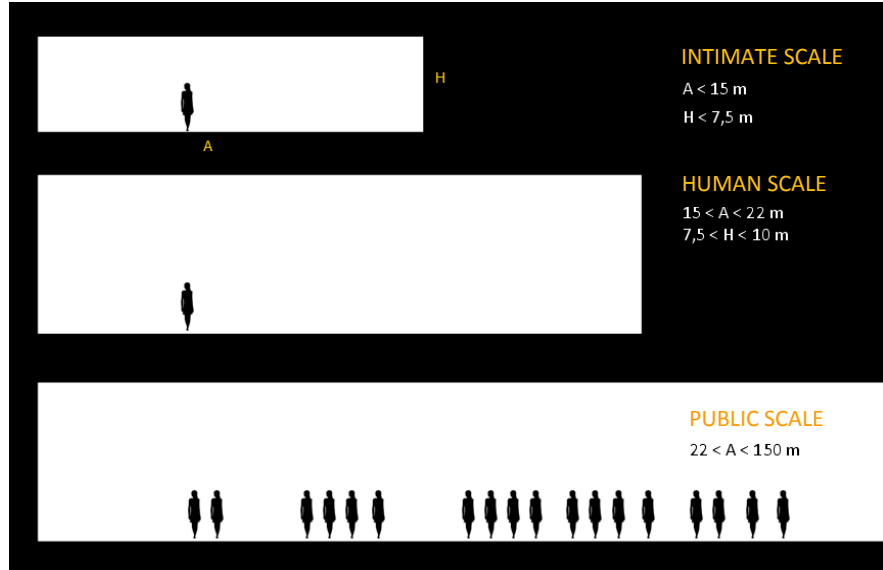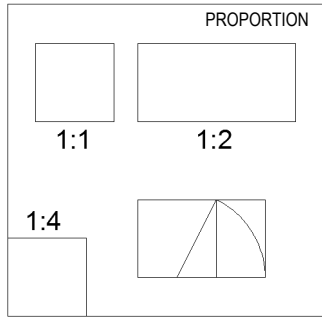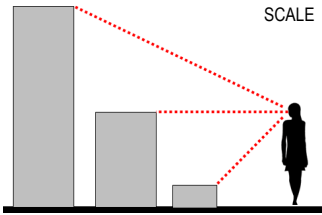
Emphasis or focus

We call emphasis or focus the design strategy consisting of highlighting or individualizing a particular element of the composition, which becomes a focal element of the same. The focal element can be distinguished due to differences in size, shape, orientation, or colour with respect to the other elements. Focal elements in a composition should be few if their potential to add emphasis or variety to a single composition is to be maintained, since too many focal points can destroy compositional unity.

Balance

A composition is in balance when the visual weight of its elements is balanced. The balance is symmetrical when the procedure to compensate the visual weight consists in creating a central axis where the same element is repeated on its sides. On the other hand, an asymmetric balance consists of compensating for the visual weight of the elements by other procedures, using various variables, without resorting to their repetition. Symmetrical balance is the simplest and most effective way to generate an order in the composition, although it is also the most static. The asymmetrical, more dynamic balance is also more challenging to obtain since combining different variables requires a more elaborate composition and greater control of the form from the design.

1. The book *Introduction to Landscape Design* (Motloch, 2001) has been used as the main reference for the sections about structure and geometry in this chapter.

SCALE

PROPORTION

1:1 1:2

1:4

INTIMATE SCALE
A < 15 m
H < 7,5 m

HUMAN SCALE
15 < A < 22 m
7,5 < H < 10 m

PUBLIC SCALE
22 < A < 150 m

Anamorphism in the grand basin. Versailles Gardens, Paris. André Le Nôtre, 1661-1687.

Scale and proportion

Scale and proportion are two different ways of looking at the relative size of the elements in a composition.

Scale takes into account the size relationship between an element and human measurements. Thus, depending on their dimensions, there are spaces on an intimate, human, or public scale.

Proportion considers the size relationship between the parts of the elements, between the elements, or between these and the whole set. Proportion systems have played an essential role in the history of architecture. The golden section, for example, considered as the ideal relationship between the sides of a rectangle, is the basis of a system of proportions widely used since the Renaissance. Le Corbusier's Modulor is based on this system, which takes the idealized human body as its measurement standard.

However, the proportion of an element is not static, as it depends on the observation point from which we perceive it, so it is possible to manipulate it from the design. To this end, one procedure is that of *anamorphosis*, which consists of intentionally deforming physical reality to ensure that the perceived reality is the desired one, as it occurs in the *grand basin*, the magnificent central pond in the gardens of Versailles, by Le Nôtre. This pond has a cross plan, with a sheet of water located on the axis of symmetry of the composition, while the other is placed transversely. From the garden´s central axis, we see three octagonal widenings of the sheet of water, one at the beginning, another at the junction with the transverse canal, and another at the end. Each one of them has been projected in a larger size than the previous one so that they are perceived from the central axis as elements of the same size.

Rhythm

Rhythm is associated with the diversity of forms in which the successive appearances of a given element in a composition take place. Similarly to music terminology, we can distinguish between rhythms based on repetition or alternation, uniform rhythms or syncopated rhythms, linked rhythms (l*egato*), or hectic rhythms (*staccato*).

Simplicity

Simplicity means, in short, economy of means: achieving the maximum visual effect with the minimum number of elements. It is the goal behind Mies van der Rohe's well-known motto: *Less is more*. In a composition, simplicity should not be confused with a lack of ideas. On the contrary, it is a difficult goal, which requires additional design work.

REPETITION   ALTERNATION

UNIFORM   SYNCOPATED

LEGATO   STACCATO

RHYTHM

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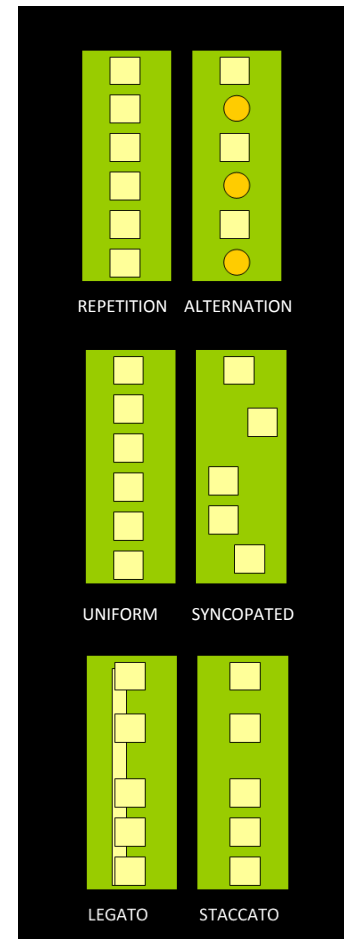
Composition based on an orthogonal rectilinear geometry. Dan Kiley, Miller House Garden. Columbus, Indiana, 1957.
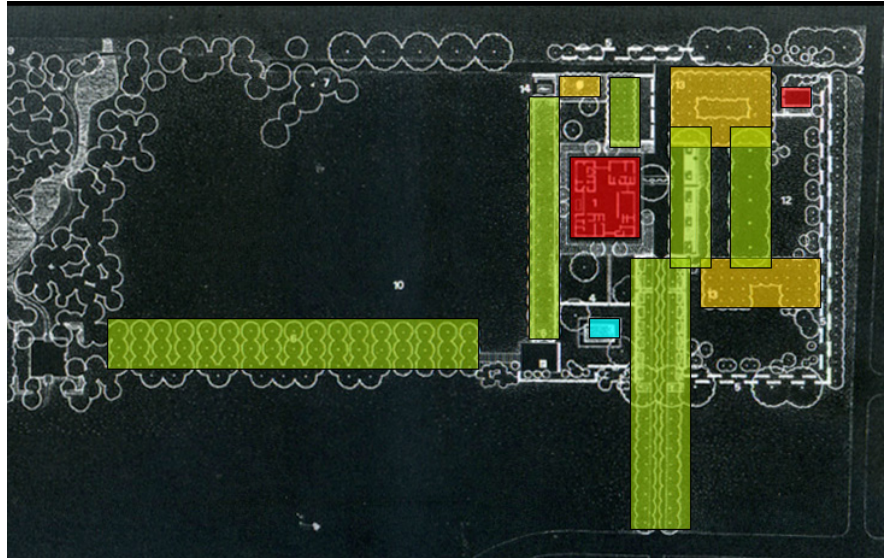
Composition based on an orthogonal rectilinear geometry not aligned with the frame. Extension of the Ayora garden, Valencia. J. Pérez Igualada, 1998-2001.

Geometry

In the Western world, Euclidean geometry has been the rational basis of architectural design since ancient times. In recent times, non-Euclidean geometries, such as natural, fractal, or chaotic geometries have been added.

We can identify four basic types of Euclidean geometric bases: the orthogonal rectilinear ones, the oblique rectilinear ones, the curvilinear ones, and those composed by combinations of the previous ones. Each of them is associated with characteristic generating forces that allow the elements of a composition to be provided with a unitary formal vocabulary (Motloch, 2001).
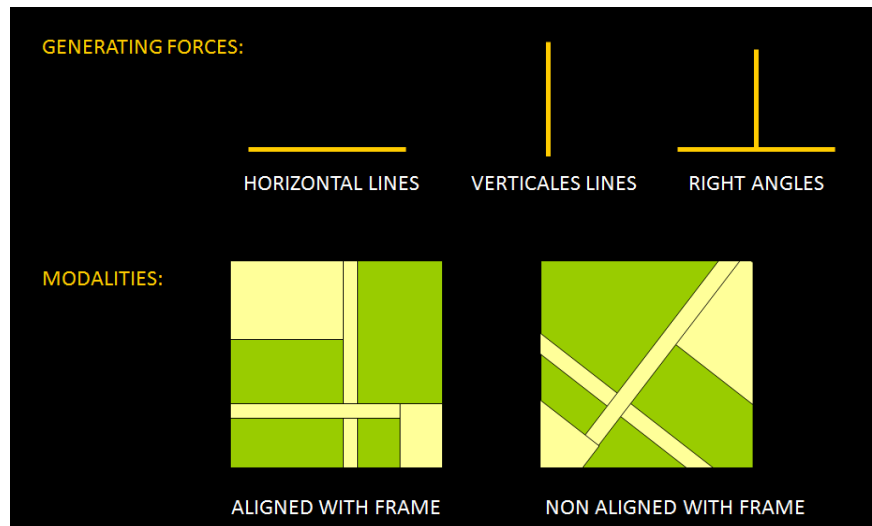
Orthogonal rectilinear geometry

The forces that generate an orthogonal rectilinear geometry are vertical and horizontal lines and right angles. They are static forces, which entail balance and a stable relationship with respect to gravity. For this reason, rectilinear orthogonal compositions are a sraightforward and effective ordering mechanism and have a high degree of formal unity and cohesion. However, they can also be monotonous when based solely on symmetry and repetition.
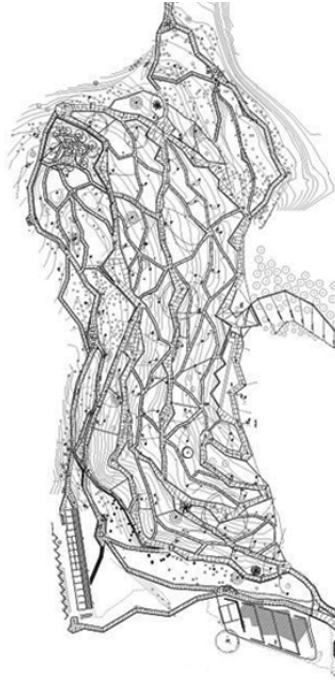
Some of the resources to introduce dynamism in compositions with an orthogonal geometric base are the asymmetrical balance of shapes or the arrangement of the elements in a way in which they are not aligned with the frame, so that they come to be perceived as diagonal objects although maintaining orthogonality between them.

The formal garden forces architecture upon the landscape; the informal garden forces the landscape upon architecture. Neither does anything toward the basic problem of garden design: the integration and harmonization of the structural geometry of man with the biological growth and freedom of nature. This can´t be done by holding them apart and calling one formal and the other informal. The fundamental fallacy seems to be that a choice between the two extremes is necessary. The argument has been to take either biology or geometry; why not biology plus geometry?

Garrett Eckbo. *Landscape for living,* 1950.

GENERATING FORCES:

HORIZONTAL LINES   VERTICALES LINES   RIGHT ANGLES

MODALITIES:

ALIGNED WITH FRAME   NON ALIGNED WITH FRAME
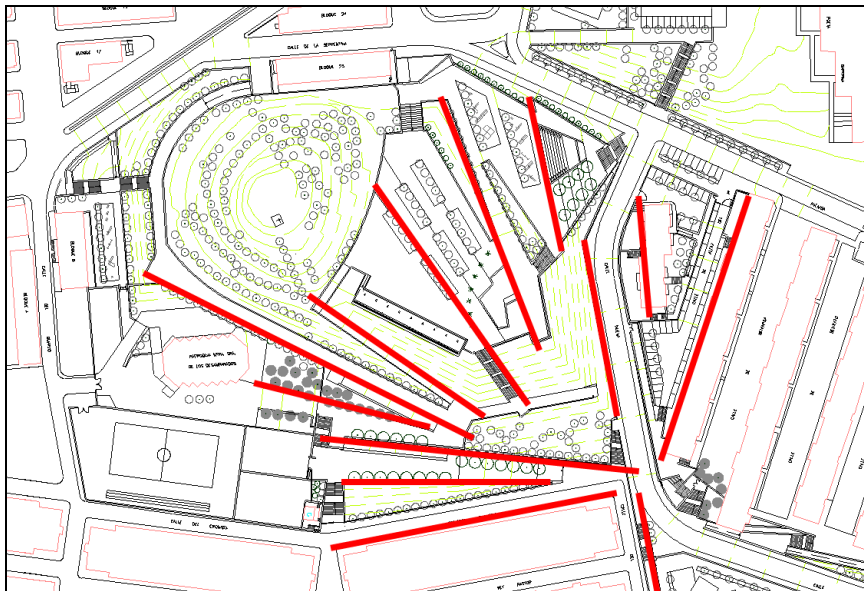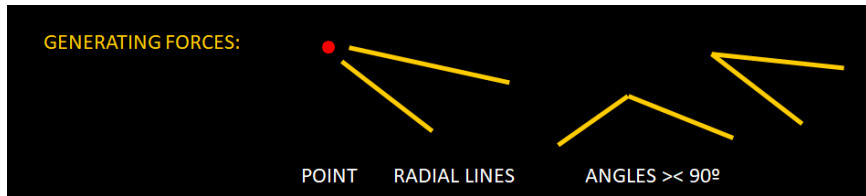
ORTHOGONAL RECTILINEAR GEOMETRY.

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Composition based on an oblique rectilinear geometry, both horizontally and vertically. Botanic Garden, Barcelona. C. Ferrater- J.L. Canosa, B. Figueras, 1999.

Oblique rectilinear geometry

The generating forces of an oblique rectilinear geometry are the radial lines that originate from a point and the angles other than the right angle (more open or more closed than 90º). They are rectilinear compositions in which the lines are not vertical or horizontal but oblique.

Angular rectilinear compositions are more complex than orthogonal ones as an ordering mechanism. They are always dynamic compositions, not aligned with the framework, which implies imbalance and instability, and therefore require greater formal control to obtain unity.

There are no parallel lines in oblique rectilinear geometry, but rather almost parallel lines generated by very acute angles. The oblique lines in space also imply an unresolved relationship with gravity, which produces visual tension.

GENERATING FORCES:

POINT   RADIAL LINES   ANGLES >< 90º

OBLIQUE RECTILINEAR GEOMETRY

Composition based on an oblique rectilinear geometry. Pedro Goitia Park, Alicante. J.L. Cabanes, A. Malonda, J. Pérez Igualada, F. Picó, 1992-95.

33
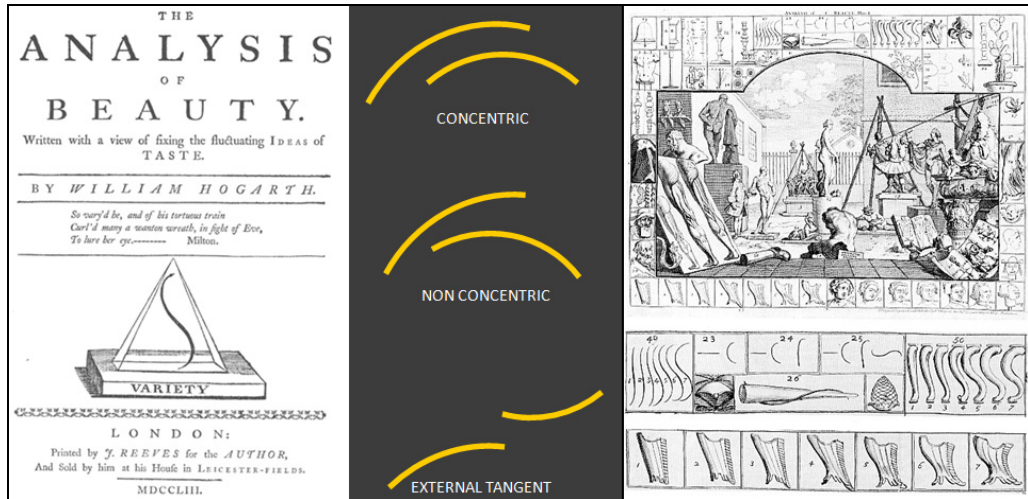
Hogarth, The Analysis of Beauty. Circumference arc tracings.

Western Beach Promenade, Benidorm. Preliminary design model. Carlos Ferrater – Xavier Martí, 2002-2009.

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Curvilinear geometry

The layout of a circle with a given centre and radius is the basis of curvilinear geometry, whose generating forces are a point (centre), a curved line (the arc of the circle), a straight line (the radius), and the right angle defined by the arc and the radius.
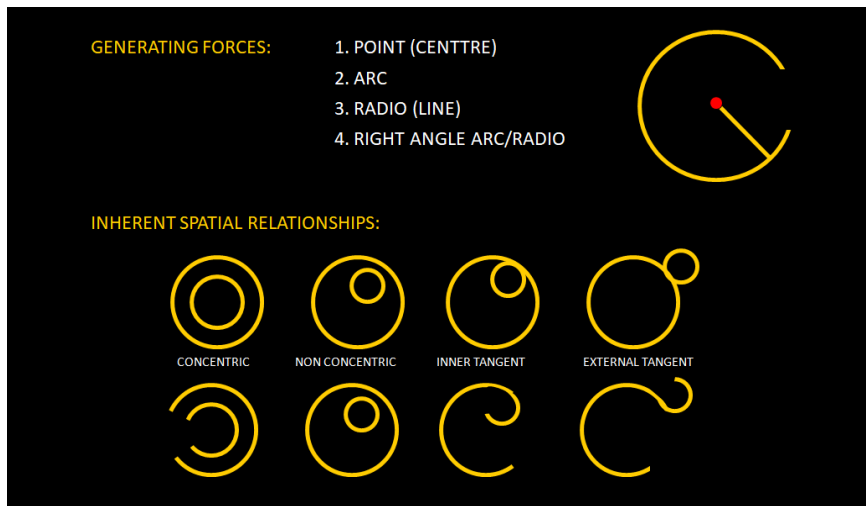
Several basic geometric relationships can be set out between two circumferences. They can be concentric, when their centres match, or non-concentric, when they do not coincide. Among the non-concentric circles, tangent circles are of particular interest, as we can distinguish between external and internal tangency.

Compositions based on curvilinear geometries can have full circles as their main element, with arcs of circumference that link them, as in the TMB Depot Park, by Coll-Leclerc. However, it is more common that the curvilinear traces present in a composition are fragments of circumferences with very large radii. In this case, we can identify three basic patterns of relationship between the curvilinear traces: Parallel traces, generated by concentric circumferences; non-parallel traces, generated by non-concentric circumferences; and winding traces, generated by circumferences with external tangencies, such as those used by Ferrater and Martí in the project for the Eastern beach promenade in Benidorm.

In his book The Analysis of Beauty, Hogarth shows how these winding traces, which form a kind of stylized letter 's', are present in numerous forms in nature. Among them, there is one that Hogarth describes as "line of beauty", considering it as specially harmonius in its proportions.
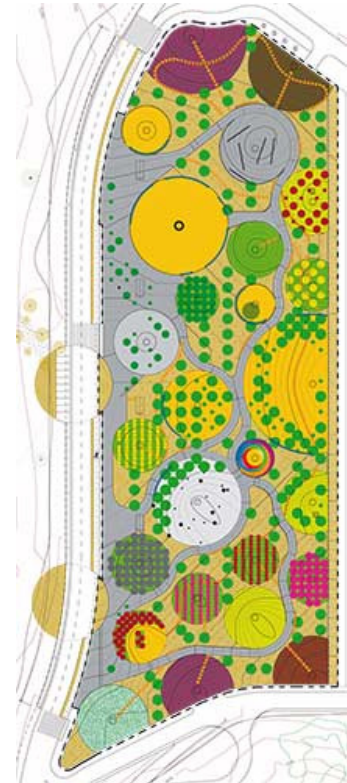
Composition based on a curvilinear geometry. TMB depot park, Horta (Barcelona). J. Coll – J. Leclerc, 2010.

GENERATING FORCES:
1. POINT (CENTTRE)
2. ARC
3. RADIO (LINE)
4. RIGHT ANGLE ARC/RADIO

INHERENT SPATIAL RELATIONSHIPS:

CONCENTRIC   NON CONCENTRIC   INNER TANGENT   EXTERNAL TANGENT

CURVILINEAR GEOMETRY

Para seguir leyendo, inicie el proceso de compra, click aquí