

## **COMPOSITION OF A PLAN OF AN ARCHITECTURAL COMPLEX**

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It may be proved that the space should be composed in a certain and not other manner for specific needs and objectives so that its form was not accidental. The composition is a very important part of creation - the knowledge of its rules (following them or their intentional violation) conditions the success of each project. Despite its significant role, it is often marginalized and regarded as a set of rigid rules, dead rules. In this paper, I will try to prove that it is a false belief and the knowledge of the theory is the key to the conscious application of various elements of spatial composition and helps in the process of creation. In the first part of this series we will deal with the elementary rules - with the issues of composition of urban planning.

Keywords: plane composition, plane surface, principle, rule, design

### **1. VOCABULARY**

The elaboration refers to architecture, urban space, in which the man moves around, and the vocabulary of its composition is not completely defined. It is necessary, therefore, to clarify the scope and scale of the spatial system which will be analysed.

### **2. OBJECT, SURROUNDINGS AND OBSERVER**

It is essential in this case to state that every object is somehow composed and as such it influences its surroundings visually after it has been introduced into it. What is the impact and how to understand the concept of surroundings? Most generally, a building object, a part of space of the physical environment constituting its surroundings, and an observer compose three main elements of the system in which the visual perception process takes place.

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Both the object and its surroundings are characterised by a series of physical features which may be perceived visually such as shape, size, colour, texture, proportion, transparency, space, articulation, decoration and other. In terms of composition, the features take the form of points, lines and planes that are component parts of the plan compositions. This set of features is referred to as the visual character.

The observer is a designer, creator and in this sense - the user of the space. The observer has the potentials to embrace the whole space with just one glance. Looking at a building object together with its surroundings, it is clearly possible to see and evaluate the structure of the arrangement of other objects and communication systems around. Attention is paid to architectural elements.

Any types of obstacles around the observer who halts at a certain point, create a kind of "interior", regardless of the absolute sizes of the perceived pitch of the surroundings. The spatial interiors may be of various types - organized or random, large or small, natural or man-made. Dimensions of each interior can be specified on a two-dimensional plan, which allows precise analysis of their forms. Situations in space, in an urban space particularly, repeat due to the occurrence of similar restrictions.

### 3. PLANE SURFACES

The considerations of composition are rooted in topics discussed by W. Kandinsky, and presented in details in the book "Point, line, plane". "Its content can be, more or less accurately transposed into the means of expression of other artistic disciplines" says the theorist [1]. Personally, I think that the Kandinsky's theory should be the starting point for any deliberations on the plane construction. Having read it, it is hard to disagree with this opinion, therefore it will be discussed in its basic form at this point. First of all, W. Kandinsky says that every artist feels "living breath" of the image before starting their work, and that there is "something of the crime" in fraudulent breach of the surface. The plane of the picture is understood in terms of a material surface which is a substrate surface of the image content. "Everything which is not necessary for the expression of the picture content, i.e. anything which would interfere with its reception, the artist has to remove from the picture frames". "Such selected elements of composition should be arranged in such a way that the composition should fill the surface of the picture well and it should be completely enclosed within the picture frames" [2]. For the architectural considerations the term **plane surface** (PP), (similar to the picture surface (PO) by W. Kandinsky) referring to material and simultaneously abstract basis for its content. A totally objective arrangement of the elements on the plane, i.e. a completely objective PP can not be understood arbitrarily. Absolute objectivity can not be achieved.

It is extremely essential to understand that the nature of the PP, i.e. its shape and boundaries, is independent of the designer's possibilities. In practice, we cannot influence it. We must distinguish between the schematic PO and the dimension diversity of the PP in reality. This fact is a source of immense possibilities of composition.

#### 4. BOUNDARIES OF PLANE SURFACES

The plane surface PP is limited with "frames" - the external **boundaries (GP)** of the plane surface, which is a closed system consisting of, e.g., two horizontal lines and two vertical lines which form polygons, broken lines or curves, etc. that define it as a composition independent of the environment (Fig. 1).

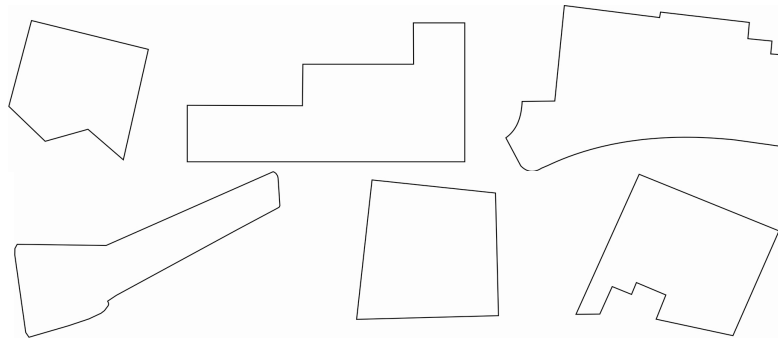


Fig. 1. Examples of plane surfaces PP and their boundaries GP

A broken line representing the nucleus of the plane boundaries, consists of two sections and an angle. The right angle is constant in magnitude, it only changes the direction. In the case of the most regular structure, it forms a square. The simplest broken line may be complicated by attaching to it a few other lines. As a result, broken lines forming polygonal boundaries, from the simplest to the most complex, may be formed as a result of all sorts of combinations. They may be a combination of obtuse angles with equal arms, may consist of obtuse and acute angles with equal or unequal arms, obtuse, acute or right angles, etc. The more the length of the individual sections of a broken line vary, the more complicated boundary lines are formed. Inexhaustible diversity of forms of the boundary lines is owed to arches, which never lose a kind of relationship with a wheel, no matter how distant, since they convey its characteristic features and tensions. However, the boundaries are not just lines, which "frame" the plane surface. The boundaries are primarily the surface limits within which the designer has to put everything that he needs to express the content of the project.

In the art sciences, we often hear the sentence that an image is a slice of nature enclosed in the frame", just as a reflection is in a mirror, which we set on

an object. However, everyone understands that the section can not be a piece of nature cut out from the world around us thoughtlessly and without any deliberate selection.

It is one of the basic conditions for each composition, and not just image composition, since this is not only a painted image, but each composition that has its own "frames" in which it has to "fit". A slogan is typed in the banner frame, seasonal decorations may be framed with the edges of the walls, the exhibition of books is framed with the cabinet, the architectural frames of a building are the frames of the plan view, and in an urban environment - the boundaries of the land plot (Fig. 2) etc. Regardless of the type of composition and the shape of a frame, the general principles for composition shaping in a limited framework will always be the same [3].

## 5. WHAT IS A COMPOSITION OF PLANE SURFACES?

A two-dimensional plan may contain the "leaven" of spatial qualities or can prevent their formation. Looking at a two-dimensional plan which determines the land disposition and its basic division, it is possible to trace the opportunities it will present for the formation of the third dimension, which in the eye of the observer will transform itself into the walls of houses, streets and square. However, the plan is not the only basis. Similar plans may provide the base for different architectural complexes. In the architectural scale, in the scale of an interior even if it is complex and merges with other interiors, the basic elements of composition are any urban forms on the plane surface. What is the composition of the drawn plane? Putting it as simple as possible: it is the set of forms on the image surface forming the closed entity. Then the question of the principle of this system may be raised. The answer is: it is the arrangement of forms counterbalancing each other.

Everyone understands, what "arrangement of forms" means, since everybody is endowed with some kind of sense of order, which allows them to arrange the furniture in their rooms or objects on their tables in an "aesthetic" manner.

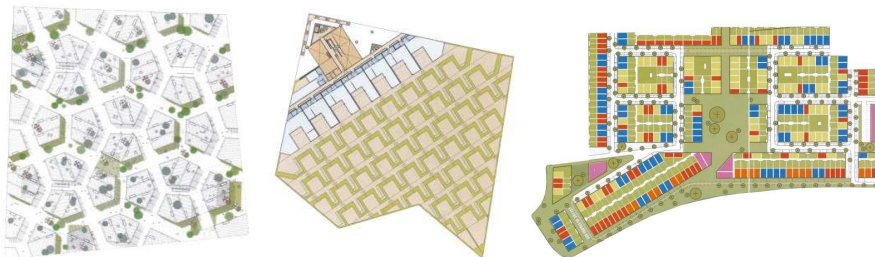


Fig. 2. Examples of functional plans on the surface of the PP plan.

However, in the case of the so-called plane surface, this is not the matter of usual order of objects in terms of everyday dimension. It is the matter of arranging the forms on the plane with respect to the rules of abstract perception, which govern in the particular plane. The concept of **balance** is the most essential for a good and harmonious composition. Equilibrium (a Latin word for “balance”) is almost synonymous with the concept of good composition. In the evaluation process, which is applied to any work, the presence or absence of the equilibrium in the image is the criterion equally important as other criteria such as: the colour selection criterion (deliberate and interesting colours), well-drawn shapes, interestingly solved spaces, etc. Balance is a state of “reconciliation” between conflicting forces which wrestle with each other in the composition. R. Arnheim [4] writes: “In a balanced composition, all the factors, such as the shape, direction, location, determine each other so much that no change seems possible, and the entity receives the nature of a necessity, in all its parts.” When the composition does not reveal signs of support for the forces balancing each other, it “becomes incomprehensible”, and the work seems accidental, and therefore unsatisfactory. The forces need to be determined and then the concept of balance will become almost obvious in the process of image creation [1].

## 6. BASIC PRINCIPLES OF PLAN COMPOSITION

There is a number of principles that govern the relations between the forms created in the space and the man's experience. If the relations are proven, it will be possible to draw conclusions from these observations to consciously create similar and derivative relationships, and to apply such solutions in urban composition to act on an observer in the manner intended by the designer evoking feelings, moods and tension according to the need and function of the spatial system. Numerous elements of the urban composition are simple, well-known and almost obvious phenomena, resulting from equally simple rules and geometric structures.

- The principle of equilibrium [f], which upholds the order on the plane, prevents the forms from chaotic arrangements. The balance on the plane is like scales, weights of which are the forms differing in sizes and the “weight” of the function.
- The principle of symmetry which allows obtaining a perfectly balanced composition, i.e. such composition which parts on either side of the axis are the same or very similar.
- Principle of rhythm is the repetition of certain phenomena or forms at regular intervals on the plane.

The rhythm of the urban composition is the repetition of the same or similar spatial elements, if the shapes and dimensions interact with each other harmoniously. It may also be the result of deliberate calculation, which combine the size with the directions of the line.

## 7. TYPES OF PLANE COMPOSITIONS

Majority of the literature elaborations, basing on the arrangement of elements, mention types of compositions which are opposite to each other, in which opposing tendencies collide. The semantic contrast is even enhanced when they are put in pairs. The type is determined on the basis of “all or nothing”. If the circumstances indicated by the type occur, they are either important and so force to accept the resulting judgement, or not. Out of two opposing compositions, one must be invalid.

The most common definition of the composition nature is the definition: **static or dynamic**. A static composition we may name the one which has a strong base, which has the advantage of horizontal lines and especially vertical ones where the weights are evenly distributed (Figure 2.).

“Compositions of that kind are formed just like a bridge, or a house: it can possess some diagonal and curved lines, but the whole unit has to be well embedded ...” [3]. Static composition is usually stretched on some geometrical figure - circle, triangle, rectangle - readable for the viewer at first sight. It can be built on the axis of symmetry, but not necessarily. There are no diagonal elements in the composition, since any deviations from vertical or horizontal directions are perceived by the human eye as a movement. In past centuries, it was a favourite composition of planes, the contents of which corresponded to the overall system. The opposite to it that is, a dynamic composition - has a multiplicity of directions, usually diagonal - giving the impression of movement (Fig. 2).

In the dynamic composition, the system is “exploded” from inside by an invisible force that makes you feel a kind of aesthetic concern. There is another type of classification - another pair of opposing systems of composition: **closed** and **open**.

A closed composition is - as the name suggests - a system of forms organized in an inseparable whole. It must not be changed, since there is a concern that it will scatter. In this composition, every square inch is justified and subordinated to the whole (Fig. 3). An open composition is an option in which some space is left for the recipient to interpret.



Fig. 3. An example of a composition of a closed plane and its relation with a three-dimensional space. Tatiana Bilbao/mx.a. Guadalajara. Mexico 2006-2010.

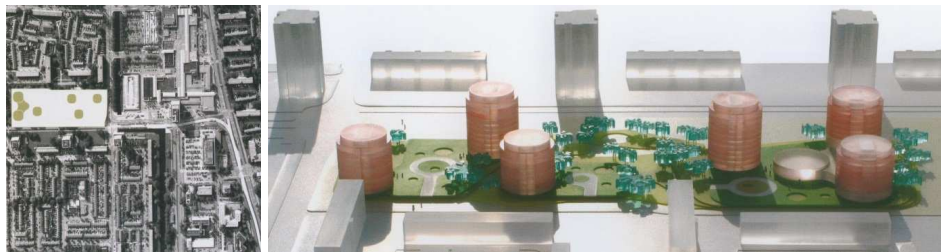


Fig. 4. An example of a composition of an open plane. VMX Architects. Schalkwijk, Haarlem. Holland 2006-2010.

An open plane composition may include a plane which was thought to be based on a single central axis – e.g. horizontal. The horizontal element may constitute a communication axis around which minor horizontal, vertical or oblique elements “are organised” symmetrically. Such a composition is called “open” since it may be (in a limited way) supplied with new elements, and its format may be even increased (expanded) on the sides (fig. 4.).

In short, a walkway that runs with a repeated pattern, a space that has no end, a fragment of a forest, lawn, which goes further somewhere else, these all are open compositions. The third pair of opposing compositions are systems that have a central point (dominance) and the ones which are deprived of one. Compositions without a dominance assume that each fragment of the image is equally important. It is absolutely balanced with divisions and no part of the plane is more important than other. A composition that has a dominance (or a composition with an accent e.g. elliptic or circular), is such an arrangement of the plane where some part is particularly highlighted – with a dominance, or with an element which stands out for its special form [5]. The fourth pair of opposing composition is a geometric composition or an unrestricted one. The geometric composition is based on the mutual relations of the shape. A geometric composition will be called such, where the perceived elements are connected with lines, circles, and other geometric figures. An unrestricted composition carries the impression of random location of its elements . Mutual relation are not strong.

We will deal with an unrestricted composition where the system of forms is deprived of any overriding hierarchy, and will constitute a chaotic structure.

## **8. PRINCIPLE, RULE; SUPPORT OR IMPEDIMENT?**

About the rules, or if preferred architectural composition rules, many treaties and books have been written throughout the centuries. Some of them gave a precise indications of proportions of cornices columns and capitals, how to divide elevations where to place window and door openings, while others, minutely examining the function of each building, taught how to design post offices, railway stations or schools. In the design compositions there is a difference between a rule and a principle. Although, precise definitions of the words “rule” and “principle” are extremely difficult to formulate. And any of the cited bibliography does not contain definitions of these terms. Some authors explicitly state that formulating a commonly accepted definition is not possible (hence various people understand these terms differently), while others take the implicit assumption that these concepts are familiar to anyone and thus differentiated intuitively. It seems that the distinction between the rules-based and principles-based composition standards is not well defined and can be interpreted in different ways.

The rule indicates how something is to be done, formalizes the operation. For example, the division of important elements into equal parts, lines that cross at the same point, static system of construction, the balance of horizontal and vertical directions, etc. The composition follows clear and precise records.

Rules remind us, what to pay attention to and help us to prepare the ground for what can develop into a valuable work. They are to be followed in order to focus our attention onto what could restrain or help the composition. They were built on the basis of practical experiences that have worked for more than a thousand years, not only in architecture but also in painting, drawing, prints, and sculpture. In the process of work conception, when the creator is looking at the motif on the plane, the next step is to find the right point of view and to compose the picture elements in a closed area of the plane. The formation of a lively and close relationship between the designer and the motif is not only the general rule, but also a necessity. Any change in the plane elicits other emotions in a sensitive designer. The best composition is the one which evokes the strongest emotions. If we start to think about the rules of composition at this point, we impose an intellectual structure on our composition. If we decide to improvise basing on our sensitivity rather than compose, the same structure disturbs our lively relationship with the found motif, prevents us from looking at it and creates an unnecessary distance between us and the object to be designed. Then the structures of the composition, may only disturb not help! If we decide



that composing is intellectual, rather than sensitive and emotional. Then the elements of the plane may act not only according to what they represent, but also according to their physical properties. For example: shapes and sizes, location and orientation, form and its outlines, texture, colour and shades. Then the structures imposed on the composition allow us to understand the basic principles of using the language of forms and spatial organization and mutual relationships between a building and the environment, they only help us.

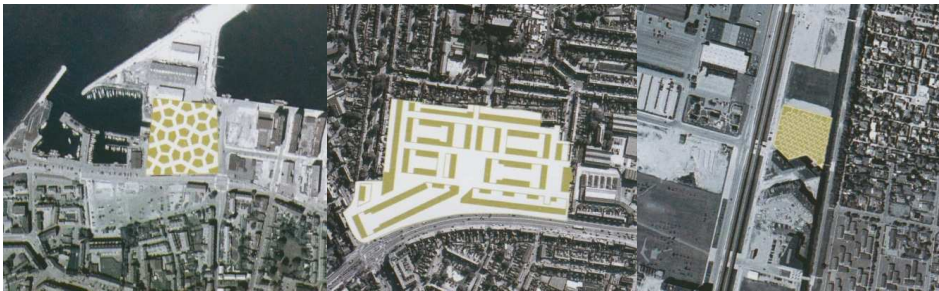


Fig. 5. Plans of designed modern architectural complexes within an existing building:  
 a) BIG Holbaek. Denmark 2006-2010, b) FUNDC Eindhoven. Holland 2004,  
 c) PLOT=BIG+JDS Copenhagen. Denmark 2005-2008.

The only thoughts that come to mind are: What shape is formed by the boundaries of the plane? Is the arrangement of the plane geometrical or unrestricted? Is it horizontal or vertical? What is happening in the vicinity of the plane? In practice, it is likely that we will be able to find answers to the questions by just reading the surroundings of the plane (Fig. 5).

## 9. SUMMARY

A plan of an architectural complex, regardless to the technique it is performed and regardless to the fact if it resembles or not the real world – must be composed in a systematic and orderly manner. There are no two plans composed equally, or even similarly, but there are some rules of composing the elements which form the image.

While composing a plane, two threads are the most important:

- Our sense of the relationship between the components of the composition of the plane. These relationships are not only emotional, but first of all physical.
- Our response to each element of the plane. The reaction which is dependent on what the element represents, and on its physical properties.

In the design practice, the use of intuition in urban composition is under the pressure of economy and construction technology all over the world and often for illusory benefits. And as much as the economic analysis and technical-economic indicators were almost brought to a baroque state, the composition, as

a factor consciously used by a designer, is applied very rarely. This is a real misfortune, since the image of the picture is always based on the compositional scheme which puts in order all the elements of the subject, even very complex. Composite diagrams are the starting point for further work [6]. However, in spite of their frequent intuitive use in urban practice, it may be frequently observed that in the cases where intuition and the sense of space fail, there is awkwardness or even major errors in the designed solutions. The understanding of the principles of the plane composition and acquiring the skills to use the elements of composition consciously, will always give answers to the question: why? Why a particular space was created, why was it given this particular shape under these particular conditions.

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### KOMPOZYCJA PLANU ZESPOŁU ARCHITEKTONICZNEGO

#### Streszczenie

Można dowieść, że przestrzeń winna być komponowana tak, a nie inaczej dla określonych potrzeb i wytyczonych celów tak, aby jej forma nie była przypadkowa. Kompozycja jest niezwykle istotnym etapem tworzenia – od znajomości jej reguł (stosowania się do nich bądź świadomego ich łamania) zależy powodzenie każdego projektu. Pomimo swej niebagatelnej roli, często jest marginalizowana i uznawana za zbiór sztywnych, martwych zasad. O tym, że jest to fałszywe mniemanie, a znajomość teorii jest kluczem do świadomego stosowania różnorodnych elementów kompozycji przestrzennej i pomaga w prawdziwie twórczym procesie, postaram się dowieść w niniejszym opracowaniu. W pierwszej części tego cyklu zajmiemy się elementarnymi jej prawami - problematyką kompozycji planu urbanistycznego.