ARCENG
INTERNATIONAL JOURNAL OF ARCHITECTURE AND ENGINEERING

ISSN
2822-6895

Article Arrival Date

03.12.2025

Article Published Date

20.12.2025

Exploration of Contemporary Space Dynamics: Spatial Design[1]

Çağdaş Mekân Dinamiklerinin Ortaya Çıkartılması: Mekansal Tasarım

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Özet

Bu çalışmanın ana amacı çağdaş mekân dinamiklerine odaklanmak ve geleneksel mekân strüktürlerinden farklı olarak günümüz çağdaş esnek kullanıcı dostu, gün ve gün gelişen çağdaş mekân strüktürlerini ortaya çıkartmaktır. Mekânsal tasarım geleneksel mekân strüktürlerinden farklı bir şekilde mekânın dinamikleri olan, esneklik, zamansal büyüyebilme, konvekste, gibi parametreler ile çağdaş geçirgen esnek hafif mekânsal sınırların tasarımına odaklanır. Mekânsal tasarımda mekanlar arası sınırlar geleneksel yöntemlerden çok farklı olarak, duvar ve kapı ilişkisi ile değil, tasarımsal esnek öğeler ile sağlanır. Mekânsal tasarımın algıya dayalı bir tasarımdır, dolayısıyla oldukça hafif, esnek, geçirgen v e çok çeşitli dinamikler mekânsal tasarıma dahil olabilir. Gestalt algı kuramı ilkeleri mekânsal tasarımın ana kurgusunu oluşturarak, her türlü kompozisyona bir düzen ve estetik katar. Bu yüzden mekânsal tasarım algı kuramına dayalı olarak, mekân sınırlayıcılarını; noktasal elemanlar, düzlemsel elemanlar, kot farklılıkları, renk ve doku farklılığı, mobilyalar, 3 boyutlu mekân strüktürleri, aydınlatma ve baş üstü düzlemleri olarak asma tavanlar olarak sınıflandırır. Dolayısıyla mekânsal tasarım farklı mekanları bu sınırlayıcılar ile tanımladıktan sonra yine geleneksel oda-koridor mekân organizasyonu ilişkisinden farklı bir mekânsal organizasyon ile mekanları ilişkilendirir; derinlik, yoğunluk ve iç-içe geçme. Yeni mekân sınırlayıcılara ve mekânsal ilişkilere ek olarak mekânsal tasarımda grup mekân karakteristikleri olarak; gece ve gündüz kompartmanları, tekil mekân karakteristikleri olarak servis kompartmanları ve yeni mekân tipleri olarak; eşik, ikili, tekrarlı, ara, niş ve açık mekanlar olarak çağdaş mekân tipleri sunar. Bu çalışmada mekânsal tasarımın tüm dinamikleri ile tanıtılması ve örnekler üzerinden açığa çıkartılması amaçlanmış ve günümüz çağdaş, esnek, kullanıcı-dostu, değişebilen ve dönüşebilen, farklı senaryolara adaptasyon yeteneği yüksel çağdaş mekân dinamikleri sunulmuştur.

Anahtar kelimeler: Mekansal tasarım, Esneklik, Çağdaş mekanlar

Abstract

The primary objective of this study is to focus on contemporary spatial dynamics and, unlike traditional spatial structures, to develop contemporary, flexible, user-friendly, and evolving spatial structures. Spatial design focuses on the design of contemporary, permeable, flexible, lightweight spatial boundaries, incorporating parameters such as flexibility, temporal

[1] This study was presented as a conference paper at the 6th ASES Kayseri Congress on December 3, 2025.

ISSN
2822-6895

scalability, and convexity, which are inherent to spatial dynamics. In spatial design, boundaries between spaces are established not through walls and doors, but through flexible design elements, significantly different from traditional methods. Spatial design is a design based on perception, and therefore, it can be quite lightweight, flexible, permeable, and incorporate a wide variety of dynamics. The principles of Gestalt theory of perception form the fundamental foundation of spatial design, bringing order and aesthetics to any composition. Therefore, based on perception theory, spatial design categorizes spatial boundaries as point elements, planar elements, elevation differences, color and texture variations, furniture, three-dimensional spatial structures, lighting, and overhead suspended ceilings. Therefore, after defining different spaces with these boundaries, spatial design associates these spaces with a spatial organization different from the traditional room-corridor relationship: depth, density, and interconnectedness In addition to new space boundaries and spatial relationships, it presents contemporary space types in spatial design, including group space characteristics such as day and night compartments, individual space characteristics such as service compartments, and new space types such as; liminal, dual, repetitive, intermediate, niche, and open spaces. This study aims to introduce spatial design in all its dynamics and reveal them through examples. It presents contemporary, flexible, user-friendly, changeable and transformable, and highly adaptable to different scenarios.

Keywords: Spatial design, Flexibility, Contemporary spaces

1. INTRODUCTION

Accordingly Ulrich Exner and Dietrich Pressel spatial design is defined as; ‘’*Spatial design can be generally defined as any type of active spatial appropriation, whether it is a room or a landscape. At the center of this group is space as a relationship, perceived sensorially and cognitively, between things, bodies or elements of the activated nature. Below, we discuss human perception of the built and natural environment, the characteristic phenomena of space, and the means and elements available for designing it’’(Exner&Pressel,2021).*

Thus as defined by Exner and Pressel, spatial design is the art of occupying spaces, differently from traditional cell-to-cell type configurations, spatial design aims to create contemporary, flexible, adaptable, multi-functional, human-based space design. Spaces can be quickly respond to changing user and usage scenarios and re-produced again again. Spatial design is a perception based design, it has close relation with gestalt design laws, such as; similarity, proximity, symmetry, good continuity, figure-ground relations. As highlighted by Exner and Pressel (2021) spatial design and perception relations which is called spatial perception defined as; *‘’The prerequisite for any spatial design and its effect is the human sensory and cognitive perception of the surrounding environment. All of the sensory stimuli conveyed by space are processed by the brain, which influences how an individual feels, behaves, and moves. Humans are believed to possess up to thirteen senses, including the five main senses of sight, hearing, touch, smell, and taste, as well as balance. Some people do not have access to all of the senses or are not able to perceive or fully perceive certain sensory stimuli such as light or sound. The sense of equilibrioception is responsible for perceiving gravity, and therefore spatial verticality, as the constant orientation in space’ (Exner&Pressel,2021).*

Spatial perception serves our basic orientation without our need to absorb all the spatial characteristics completely. We are constantly using new spaces in our daily lives. Much of a space’s information is processed so quickly by the senses and the cognitive system that it automatically influences our behavior without the need to first activate our thinking process. The human processing of perception and information quickly allows space to appear cozy or uncomfortable, claustrophobic or protective, without perceiving the spatial characteristics

ISSN
2822-6895

individually. We know the moment we enter a café whether we like the atmosphere or not.

1.1.Perception

Our visual field normally consists of heterogeneous elements that differ in shape, size, color, or orientation. To better comprehend the structure of a visual field, we tend to organize its elements which are perceived as figures and negative elements which provide a background for the figures. At the scale of a building, we tend to read the configurations of walls as the positive elements of a plan. The white space in between should not be seen simply as background for the walls, but also as figures in the drawing that have shape and form. The form and enclosure of each space in a building either determines or is determined by the form of the spaces around it. In the theater in Seinajoki by Alvar Aalto, we can distinguish several categories of spatial forms and analyze how they interact. Each category has an active or passive role in defining space. (Ching,1996) (Figure 1)

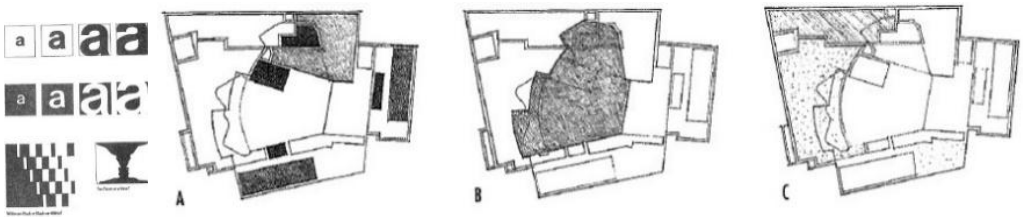

Figure 1. a) Letters are seen as dark figures against the White background of the paper surface, b) Alvar A. Alto,Theather in Seinajoki

1.2.Form Defining Space

This part illusturates space identifiers both horizontally and vertically such as; all sort of horizontal and vertical planes.

1.2.1. Horizontal elements defining space: a) Base Plane: A horizontal plane lying as a figure on a contrasting background defines a simple field of space. This field can be visually reinforced in the following ways. b) Elevated base plan: A horizontal plane elevated above the ground plane establishes vertical surfaces along its edges that reinforce the visual separation between its field and the surrounding ground. Section of Farnsworth house: Piona Illinois, 1950, Mies van Der Rohe. The Farnsworth house was constructed to rise above the flood plain of the Fox River. This elevated floor plans, together with an overhead roof plane, define a volume of space that hovers delicately above the surface of its site. (Ching,1996) (Fig.2)

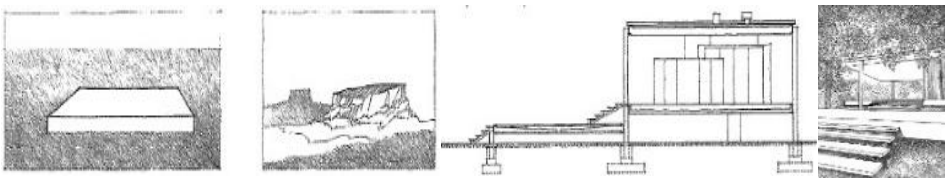

Figure 2. a) Base Plane, b) Elevated base plan

c) Depressed Base Plan:A horizontal plane depressed into the ground plane utilizes the vertical surfaces of the lowered area to define a volume of space. The degree of spatial continuity between a depressed field and the raised area surrounding it depends on the scale of the level change. d) Overhead Plane: A horizontal plane located overhead defines a volume of space between itself and the ground plane. Since the edges of the overhead plane establish the boundaries of this field, its shape, size and height above the ground plane determines the formal qualities of the space. Glass house, New Canaan, Connection, 1949, Philip Johnson. The roof plane can be the major space-defining element of a building and visually organize a series of forms and spaces beneath its sheltering canopy. (Figure 3)

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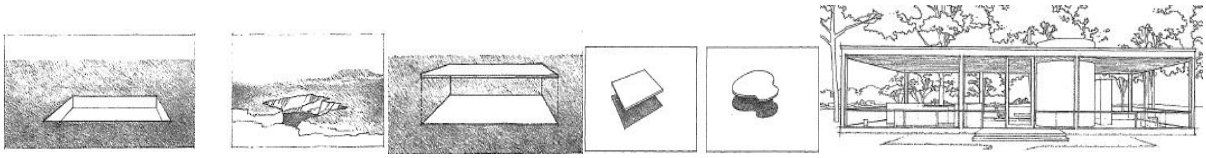

Figure 3. a) Depressed Base Plan, b) Overhead Plane, c) Glass house

1.2.2. Vertical elements defining space- space as a 3-dimensional architectural element

Vertical forms have a greater presence in our visual field than horizontal planes and are more instrumental in defining a discrete volume of space and providing a sense of enclosure and privacy for those within it. a) Vertical linear elements; define the perpendicular edges of a volume of space. b) Single Vertical Plane; articulates the space on which it fronts. c)L-shaped plane; a L-shaped configuration of vertical planes generates a field of space from its corner outward along diagonal axis. (Ching,1996) (Figure 4-5)

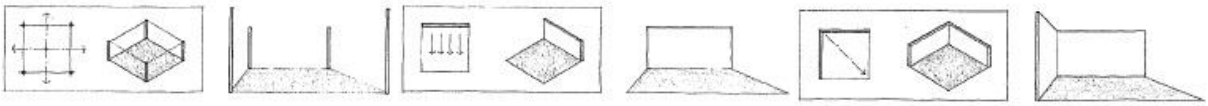

Figure 4.a) Vertical linear elements, b) Single Vertical Plane, c) L-shaped plane

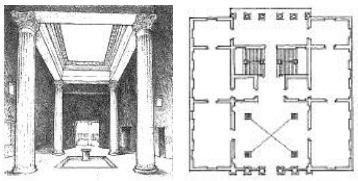

Figure 5. a) The four columns not only supported the vaulted ceiling, and the floor above but also adjusted the dimensions of the rooms to Palladian proportions.

1.3. Organization of Form and Space

This part presents the basic ways the spaces of a building can be related to one another and organized into coherent patterns of form and space. a. Space within a space: A large space can envelope and contain a smaller space within its volume. Visual and spatial continuity between the two spaces can be easily accommodated, Moore house, Orinda, California,1961, Charles Moore, Glass house, New Canaan, Connecticut,1949, Philip Johnson. b. Interlocking spaces: An interlocking spatial relationship results from the overlapping of two spatial fields and the emergence of a zone of shared space. When two spaces interlock their volumes in this manner, each retains its identity and definition as a space. Villa at Carthage, Tunisia 1928, Le Corbusier. c. Adjacent spaces Adjacency is the most common type of spatial relationship; it allows each space to be clearly defined and to respond, each in its own way, to specific functional or symbolic requirements. (Ching,1996) (Figure 6)

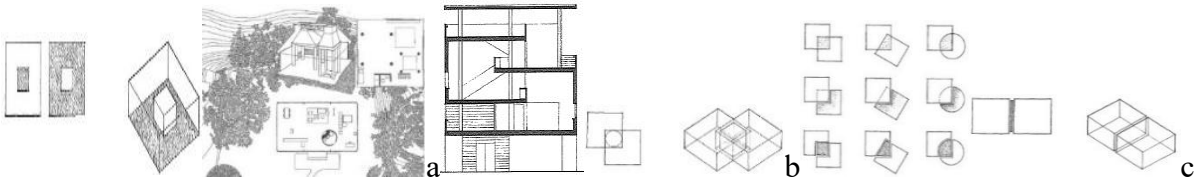

Figure 6. a) space within a space, b) interlocking spaces, c) adjacent spaces

d. Spaces linked by a common space: a) Two spaces which are separated by distance can be linked or related to each other by a third, intermediate, space. b) The visual and spatial relationship between the two spaces depends on the nature of the third space with which they share a common bond. The intermediate space can differ in form and orientation from the two

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2822-6895

spaces to express its linking function. c)One-half house (project) ,1966, John Hejduk.(Ching,1996) (Figure 7)

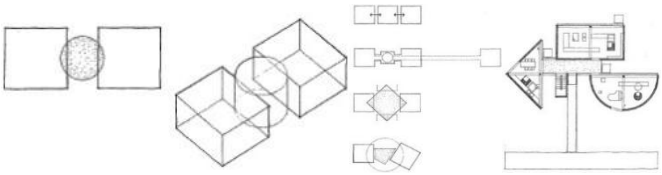

Figure 7. Spaces linked with a common space relation illustrations

2. SPATIALITY DEFINITIONS

Aristotle defined space as a container of things; we would thus be occupying a succession of all-embracing envelopes ranging rather like Russian dolls from those that are 'within the limits of the sky' to the very smallest. Hence space is necessarily a hollow limited externally and filled internally. There is no empty space; everything has its position, its location, and its place.

2.1. Elements of Spatial Definition

Architectural space is born of the relationship between objects or between boundaries and planes which do not themselves have the character of object, but which define limits. In modern architecture, the principle of regular, parallel, interrupted walls and spaces has been applied to the main perpendicular space. It is one of the ways in which architectural space is created. (Figure 8)

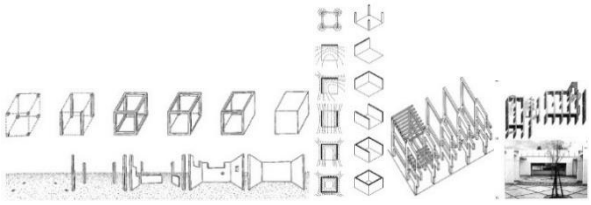

Figure 8. Different spatial fields on the same square plan produced by varying spatial elements.

a. Depth of space

The most common and effective indicators of depth perception are; on the one hand, the effect of perspective with, notably texture gradient, on the other, phenomenon which tells us that an object partially hiding another must be front of it. Working with frontal planes wherein respective distance is small and ambiguous, certain architects of the Modern movement exploited not only the effects of shallow space but also the phenomenon of transparency resulting from the disappearance and fragmentary reappearance of one plane behind another.(Ching,1996)(Figure 9)

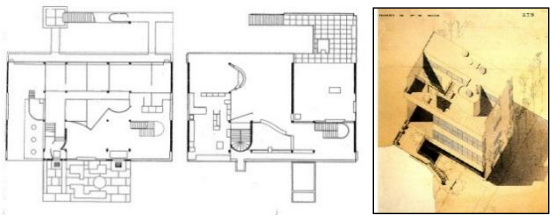

Figure 9. Le Corbusier (1887-1965). Villa Stein-de Monzei, Garches, first-and second-floor plan study, b)Le Corbusier's Villa Stein-de Monzie , Garches, axonometric, 1927.

b. Density of space

Space does not only have depth: it is also more or less dense. When greater density is the goal,

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2822-6895

we can modulate distances by intermediary ‘stages of depth’ brought closer together. This is generally the case when we work with shallow space, but we can also create density in deep space: the Cordoba Mosque with its ‘forest’ of columns is a deep space of extraordinary density. Conversely, the design for extension of the Bibliothèque Nationale by Boullee characterized the absence of density with a sparse, unitary space. (Figure 10)

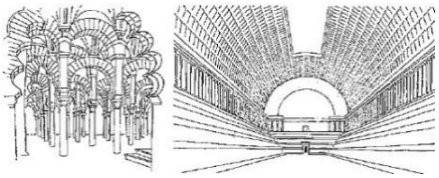

Figure 10. (Left) Dense space: interior of the Cordoba Mosque, (Right) sparse unitary space: design for the reading room of the Bibliotheque Nationale, E.L.Boutte, 1785

c. Opening space

One of the fundamental oppositions making it possible to distinguish types of architectural space is that they can either be closed/introverted and concentrated upon themselves, or open/extroverted and centrifugal. While mass is concentrated, space is closed. The degree of its enclosure depends on more than the quantity and size of openings; when we wish to create a space opening to the exterior, we try to make it less explicit. Hence, there is direct connection between notions of explicit and implicit space and the degree of opening or closure. We can use the principles of one to achieve the other. (Figure 11)

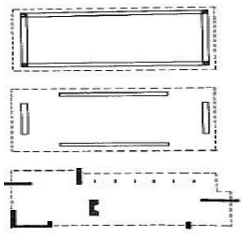

Figure 11. These instructional diagrams by Allen Brooks show Frank Lloyd Wright’s contribution to a new spatial conception: starting with the elimination of corners, he continues by altering the initial spatial geometry, displacing or pivoting segments of the geometric envelope by 90 degrees in order to organize the spatial continuity to his liking.

d. Spatial juxtaposition and interpenetration

Elements of spatial definition and openings characterize type of spatial relationships; indeed, they determine the degree to which a given space is autonomous or linked to other spaces. We can pick out two basic types: juxtaposition and interpretation. Juxtaposition insists of autonomy. Our language has a great number of terms that are, in principle, only applicable to a relatively well-defined closed space-room, bedroom, cell, hall and corridor all tied to the notion of privacy and exclusion from other spaces. Spatial interpenetration creates continuity from one space to another from the moment an important element of definition-wall, ceiling, floor-appears to belong to two or more spaces. (Ching,1996) (Figure 11-12)

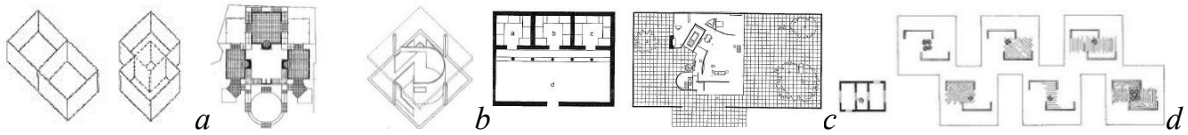

Figure 11. a)Juxtaposition and interpenetration, b) Spatial juxtaposition c) Juxtaposition, d) Spatial juxtaposition and interpenetration

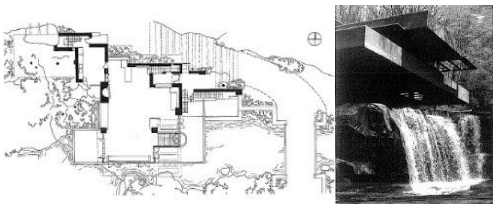

Figure 12. Deconstruction of the box',Kaufmann House (falling water), Frank Llloyd Wright,1936.

3. EXPLORATION OF SPATIAL DESIGN

3.1.**Dynamics of Space: Use / Usage / User Triology**

USER/HOUSEHOLD/CLIENT CHARACTERISTICS AND LIFESTYLES	NECESSARY EQUIPMENT AND ACCESSORIES FOR SPACES	ACTIVITIES AND REQUIRED SPACES
USER	USAGE	USE

Table 1.USER-USAGE-USE interaction

As can be seen from the scheme, space organization is a complement which; *subject /user* is human motivations and aims, *complement/usage* is space elements and components, and *predicate/use* is human activities. In other words, *space organization* is the place where subject's activities due to subject's aims and motivations have been realized under proper space conditions. Responsible systems of space organization alternately ensure interior harmony. So, it can be said that system of space balance can be provided with dynamic process. Here the space elements and components such as light, color, texture, furniture, decoration, form the proper and identical interior space for subject. (Oyman Ş.,1996)

As indicated in the table-2, space organization that develops over 'subject-complement-activity' concept;

1st one human factor on space organization includes important topics such as; social-cultural arrangements individuals place in general orders, socio economic status of subject's /individuals, the education level, and professional area and lastly lifestyle, philosophy of life and expectations of the individual/user,

2nd one focuses on complement includes analyses of; fixed, semi-fixed, mobile, technological features, anthropometric/ergonomic and prosemik features, number of elements, required areas, standards, and formal and symbolic values,

Lastly 3rd part of space organization concept 'activity' includes, cultural-social significance of the activity, performer of the activity, interaction between individuals, routine of activity, required area for activity, and activity period-time-session. As understood from the table, space organization and creation is a dynamic process affected by 'human, activity and components.

HUMAN	ACTIVITY	NECESSARY EQUIPMENTS AND ACCESSORIES FOR ACTIVITY
a) social-cultural arrangement and place in general order, ethnic groups etc	a) cultural social significance of the event. b) who perform the activity, role	a) attribute can be fixed, mobile, semi-mobile b) technological order and level

ISSN
2822-6895

b) social-economic status (income level-education-professional area-age-gender etc) c) Philosophy of life, lifestyle, values & attitudes, expectations, level in the process of cultural change.	distribution, role definition c) quality of activity individual, physical interaction d) routine of activity, density, communication quality e) necessary space/areas and standards f) activity period, time, session	c) number of elements, required area and standards d) anthropometric/ergonomic and procsemic features e) formal and symbolic values

Table 2. Dynamic balance definition of space: 'space: user-complement/usage-predicate/use' relationship

3.2.Group Characteristics of Spaces and Contemporary Space Types

Group spaces are; public compartments that are defined with spaces which strongly have integration relations that all daily activities occur in one place such as; entrance, kitchen, living room, terraces, whilst private compartments exhibit spaces for night and individual usages generally such as; 'bedroom, dressing room, bathroom'. Public compartments exhibit multi-functional spaces together in an open plan. These spaces are implicitly defined and consist of different functional spaces with semi-transparent partitions and mobile furniture. For example, public compartments are formed by implicitly integration of; 'entrance + kitchen + living room + dining room + study room' spaces without any walls between. (Figure 12 a-b)

Figure 12. a)38.7m2 My-Via 414 Mix-Use Project Izmir

Figure 12. b)Next Level B59 1+1 70-100 m2 category

On the other hand, contemporary (new) space types create group zones and compartment organizations as public/private and there are six space types totally in the study: liminal, dual, niche, repetitive, in-between and open spaces. These space types gather in the spatial organizations and create compartments as space groups and each space type has a different feature. Liminal spaces work like passages, at especially the smallest houses that connect outside with inside and at larger types they become halls with closets and bathroom connections. Dual spaces exist in public compartments and act as multifunctional spaces such as, a dining room transforms into a study room, or living room transforms to bedroom from time to time. In-between spaces exhibit fold in and fold out features, thereby they can be disappeared in the organization, in addition, they are used at both public and private

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compartments. Niche spaces are open version of enclosed spaces and repetitive spaces show similarities with sizes and forms; lastly open spaces are terraces that can integrate with the house's interiors with sliding doors.(Figure 13 a-b)

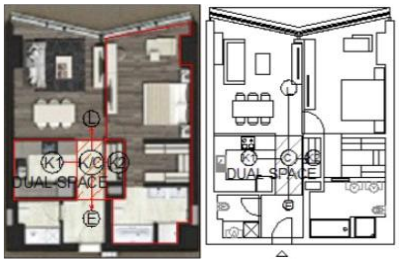

Figure 13. a) Dual Function and In-between Spaces that Act as Circulations

Figure 13. b) In-between Space

3.3. Spatial Identifiers

These identifiers act as interior walls of traditional space organizations which able to create sub spaces in one big open space implicitly, without cutting fluidity of spaces increases flexibility of interiors with highly integrated spaces instead of segregated closed spaces of traditional organizations.

The spatial identifiers have been classified under 6 in the study as;

1.Nodal partitions (columns) (flexibility)

2.Vertical planes (flexibility + expandability)

3.Fix-furniture (convexity)

4.Level changes (flexibility + expandability)

5.Material differences (flexibility + expandability)

6.Three dimensional (3d) space modules/structures

7.Over head plane (ceilings) & Artificial Lighting & Acoustics

3.3.1. Nodal partitions (columns)

A vertical linear element, column or tower, establishes a point on the ground plane and makes it visible in space. When centered in space, a column will assert itself as the center of the field and define equivalent zones of space between itself and the surrounding wall planes. (Ching, 1996)

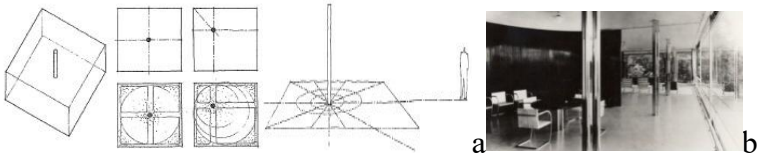

Figure 14. a) A column in the space, When offset, the columns will define hierarchical zones

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of space differently by size form, and location.b) Steel columns and glass made façade from dining room view

3.3.2. Vertical planes (free standing walls)

A single vertical plane, standing alone in space, has visual qualities uniquely different from those of a freestanding column. A vertical plane has frontal qualities, its two surfaces or faces front on and establish the edges of two separate and distinct spatial fields. (Figure 15)

Figure 15. a) Vertical Plane, b) Barcelona Pavilion, Mies van der Rohe

3.3.3 Fix-Furniture

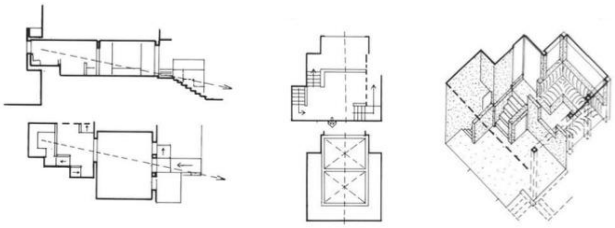
Furniture has space definition ability in open spaces and creates sub-spaces in which different functions occur. As seen at figure 23, Philip Johnson's glass house project, there is one open space and there are sub-spaces such as; dining, working, sleeping, and cooking, living spaces in that one big space which is made of glass facades. Here the separation of different functional spaces is achieved just by using fix-furniture in a very weak way. (Figure.16)

a)Multi-functional fix furniture, they separate spaces and have functions, b) Glass house, New Canaan, Connecticut, 1949, Philip; Sub spaces are formed with in one big open space with fixed furniture

Space defining fixed furniture: bathroom, table, study desk, bed closet, floor material of the living area, rectangle and circler columns

3.3.4. Level Changes

Raising a horizontal base plane makes a big difference in a large spatial organization. By elevation differences, edges are formed, spatial flow obstacles thereby spatial boundaries are determined. (Ching, 1996). Adolf Loos' raum plan dwellings are marked by a maximum of three-dimensional compactness and a concentration of length, width and height.(Figure 17 a-b)



a b

Figure 17. a) Raum Plan, Adolf Loos, Moller house, Vienna, b) Raum Plan _Moller House Adolf Loos

3.3.5. Material Differences

The surface articulation of the ground or floor plane is often used in architecture to define a zone of a space within a larger context. A. Different floor and ground coverings define different spaces. (Ching F., 1996), B. Different floor and ground coverings that define different spaces. (Ching, 1996) (Figure 18)

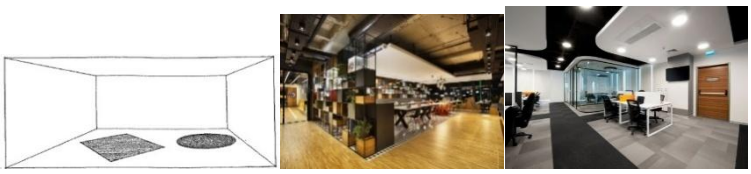


Figure 18. material differences can define circulation and main zones

3.3.6. 3D_Three-Dimensional Space Modules Structures

3-dimensional space structures can be also degrees from weak to strong, its difference from other space identifiers is to exhibiting floor, wall, ceiling borders all together. Thereby, space structures are the strongest space identifiers weakly, they can be developed from pure geometric forms such as; cube, core, prism, domes, vaults, etc. and they can create 3 dimensional sub-spaces in one big space.(Figure 19)

Figure 19. Three-Dimensional Space modules/structures, Source: www.koleksiyon.com., www.nurus.com.

3.3.7. Overhead plane (ceilings) & Artificial Lighting

Overhead plane can define very simply a different functional space by its form visually. The ceiling plane can also be detached from the floor or roof plane and become a visually active element in space. (Figure 20)

Figure 20. Ceilings and lightings that define the space.

4. CASE STUDIES

4.1. Households Characteristics & Housing space

This part consists of households' characteristics and housing space such as;

(1) Household characteristics & lifestyles

(2) Activities & required space

(3) Necessary equipment & accessories

To reveal spatiality of recent day's small housing units, firstly, household characteristics have been investigated by their 'dynamic, diverse, dual' features variegated in recent decades. Johnston (1970) described dynamics of small households as; flexible, changeable,

transformable living cycle which is connected to age, family life cycle, distance between work & house and migrant character.

Diverse characteristics as mentioned by Balamir (1995) are household typologies such as; 'one person, two people, two friends, a couple, a male parent with a child, a female parent with a child, three people sharing a house, a couple and a child'. Thirdly, dual characteristics appear as 'female/male, working/non-working, old/young, poor/rich, student/graduated, technologic/traditional, native/tourist. Diversity changes due to number, relationship, gender, age and social status of households such as one/two/three, family/couple/housemates, male/female, young/old, student/worker high/medium/low income.

4.2. Spaces of Recent Day's Diverse Small Housing Units

Today's small houses are accommodated; living space, dining space, bedroom/s, kitchen, bathroom, guest wc/bath, storage spaces and terraces with diverse typologies for diverse scenarios (table.2-3). These typologies can be classified as; '1+0, 1+1, 1+1+1, 1+1.5, 1+2'.

(1) 1+0 type; small house spaces; open plan living space with dining/studying/sleeping activities, with open kitchen, bathroom with/without terrace.

(2) 1+1 type; living space with dining/studying/resting activities, 1-bedroom, open kitchen, bathroom with/without terrace.

(3) 1+1.5 type; living space with dining/resting activities, 1 bedroom, a niche space for study, and open kitchen, bathroom with /without terrace.

(4) 1+1+1 type; common use open plan living space with dining/study/resting activities, 1st bedroom , 2nd bedroom, and open kitchen, bathroom with/without terrace.

(5) 1+2 type; living space with dining/studying/resting activities, 1st bedroom, 2nd bedroom and open kitchen, bathroom with /without terrace.(Table 3)

Households Characteristics & Housing space relationship					
	Scenario of the small housing unit	**Household characteristics and lifestyles**	**Required Space for Activities**	**Equipment & accessories**	**Spatiality**
1	Female/male Student, Alone living young adult	One household careerism +consumerism	1+0 1+1	Camouflage units Adaptable furniture Permeable partitions	flexible spaces union spaces
2	A couple, Two students/friend,	Two households Familism+ careerism+ consumerism	1+1.5, 1+2, 1+1+1	Solid partitions Permeable partitions	multi-purpose spaces union spaces niche spaces
3	A couple and a child, Three friends', Housemates	Three households Familism+ careerism+ consumerism	1+2	Solid partitions Permeable partitions	compartment spaces union spaces niche spaces

Table 3. Households Characteristics & Housing space relationship

4.3. Spatial Characteristics Recent Day's Diverse Small Housing Units

Spaces of small housing units, today, gain some spatial characteristics by usage of necessary equipment and accessories such as;

(1) Living spaces transform to flexible spaces by usage of disappearing and kinetic units such as, living space/bedroom

(2) Kitchens/bathrooms/guest wc/bath/closet rooms transform to compact spaces by usage of fix equipment,

(3) Living/dining spaces and open kitchen become union spaces by permeable partitions and low-height furniture arrangement due to not blocking contact in the space,

(4) Dining spaces with table can be used as assembly/study space and become multi-purpose spaces by usage of adaptable furniture,

(5) Bedrooms become compartment spaces by usage of solid partitions and includes more than one space, act as mono-space such as master bedroom of unusual types are connections of three spaces: bedroom, closet room, bathroom' .

(6) Kitchens/bathrooms/laundries/guest wc/baths are serving spaces as; it is the separation between 'served' and 'serving' spaces that the order imposed on space creates stable nuclei that allow flexibility in the determination of the served, inhabited spaces, which are free from accessory spaces, whether technical or functional.' (pg.112), [31]

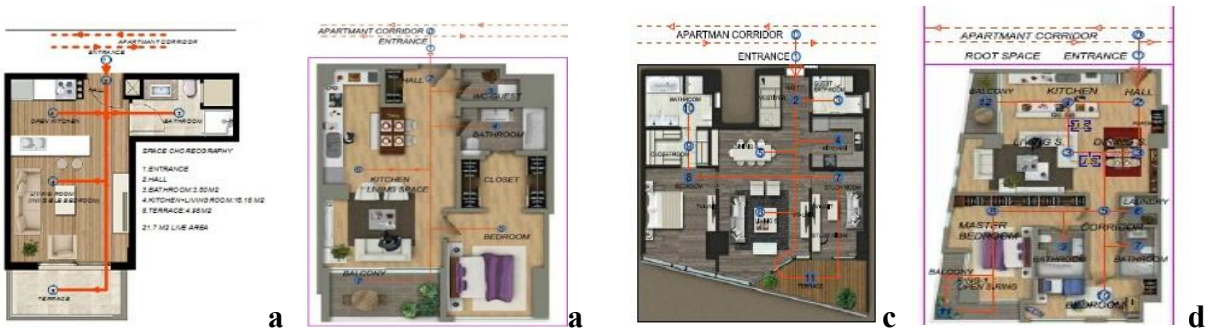
(7) Living spaces gain temporal characteristics by modifying itself and providing a different and reversible use such as 1+0 type living spaces used as bedroom at nighttime.

(8) Rings between spaces: As Hillier and friends (1996) indicated each spatial or architectural unit, through its topologic border features must be 'closed surface' or 'ring'. Units that have their own borders are named 'closed', without borders are named as 'open'. [36]

(9) Private/public spaces: As Avi Friedman indicated, public zones are used by household members and their guests and typically include the dining room and living room. Semi-private zones consist of areas that are used by the household and occasionally by guests such as the kitchen and the powder room. Finally, private zones such as bedrooms and bathrooms are only used by households and placed in far zones. (pg.65)

4.4. Exploration of the Spatial Design Over 4 Different 1+1 Type Houses

4.4.1. Plans of the selected 4 houses



a **a** **c** **d**

a.Myvia 414 1+0, **b.**Bomonti-Modern 1+1**, c.**Next Level 1+1.5, **d.**Bomonti-Modern Palas 1+2

4.4.2. Spaces

a. My-via 414 1+0, 22 net area ; Living space + kitchen: 16 , Bathroom: 3.7 , Hall: 2, terrace:4, Total minimum dwell space: 21.95 m2, One household

ISSN
2822-6895

b.Bomonti-Modern 1+1: 78.45 m2 net area, Gross area 92.93,Antre:4.0,Kitchen:10.63,Living space:25.11, Bedroom:22.39, Bathroom:6.72, Laundry:2.76, Balcony:6.23, One-two-three households can accommodate

c.Next Level 1+1.5 : 112.5 m2 net area net area113.05 , Gross area 151, Open area 10.97, Walls 37.95, Hall:8.4, Guestbath:7.16, Kitchen:8.17, Living space:36.61, Studyroom:14.07, Masterbedroom:11.19, Terrace:10.97, One-two-three households can accommodate.

d.Bomonti-Modern Palas 1+2, Net area 135.5 , Hall 8.06, Corridor 7.52, Kitchen 15.63, Livingspace 38.37, Masterbedroom:27, Masterbathroom:6.5, Bedroom-2:13.42, Bathroom:5.34, Balcony-1:4.58, Balcony-2:6.01, One-two-three households can accommodate.

4.4.3.Activities

1.Open plan, one room concept. Living, resting, dining, sleeping, tv watching studying activities at one room. Serving spaces: Open kitchen bathroom

2. Living, dining, studying at living space. Cooking, preparing food at open kitchen. Sleeping at bedroom.

3. Open plan living space with 1 bedroom., U type semi-open kitchen, dining space, living space in one open space, and study in 0.5 space. Bedroom with a bathroom and closet room. Serving spaces are high quality concept: laundry, open kitchen, guest wc/bath.

4. Open plan living space with 2 bedrooms, master and kids' bathrooms. Open kitchen ,dining space, living space, study space in one open space. Master bedroom with a master bathroom and closet room. Bedroom with study and closet niches. Serving spaces: laundry, open kitchen, guest wc/bath.

4.4.2.Equipment&Furniture:

1. Open kitchen with compact units; storages, and tops. Camouflage bed unit hidden in the wall.

2. Furniture: Flexible, compact, multi-functional. Serving spaces: compact units as storage, closet room, kitchen modules. Served spaces: flexible units' beds, coaches. Multi-functional units: tv module, dining/studying table **Clothing's:** Floors: coffee wood, dark grey granite. **Partitions:** solid walls between spaces, furniture between living-dining-kitchen. **Lighting:** daylight and artificial light.

3. Furniture: Flexible, compact, Multi-functional furniture. Serving spaces: compact units as storage, closet room, kitchen modules. Served spaces: flexible units' beds, coaches. Multi-functional units: tv module, dining/studying table **Clothing's:** Floors: dark grey wood, white granite, **Partitions:** solid walls between spaces Furniture between living-dining Sliding wall/door between 0.5 space and living space. **Lighting:** daylight and artificial light.

4. Furniture: Flexible, compact, multi-functional furniture. Serving spaces: compact units as storage, closet room, kitchen modules. Served spaces: flexible units' beds, coaches, kids bed & study niche. Multi-functional units: tv module, dining/studying table. **Clothing: Floors:** Light coffee wood, grey granite, **Partitions:** Solid walls between spaces, furniture between living-dining. **Lighting:** Daylight and artificial light.

5. CONCLUSIONS

In the article, spatial design has been introduced by highlighting main design principles such as; gestalt perception theory,human based design principle as adapatation to diverse changing scenarios, flexible design that ensures quick transformations of spaces, multifunctional usage patterns and transformations,new spatial identifiers instead of walls-door-corridor relations, permeable, soft, camouflouge space equipments that create sub-spaces in one big space, this spatial identifiers mainly differ from traditional borderssuch as especially at public spaces; art installations, spatial scenarios, color-material usages, perception based identifiers. new space types introduced in the paper as the multifunctional,dual usages, niche spaces. compartment characteristics of spaces formed by soft spatial identifiers and new space types , mainly public-private and work compartments. As a conclusions, in the study , contemporary space design titled as **'spatial design'** has been explored by basic principles, samples and theories. And its aimed to shed a light for future architectural space designs.

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