CONSTITUTIVE MOTIVES IN LIVING SPACE ORGANISATION

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Abstract. Constitutive motive represents a concept of organization of living space. It can appear in the form of element, area, space or principle, i.e. it can be material or intangible. Constitutive motives have always been present in space organization domain, in vernacular construction and architecture. Their importance and appearance have changed in time, as the systems of social values changed. The decision on the selection of constitutive motives in the conception of the housing unit structure primarily depends on the subjective view of the creator, but also on numerous other contextual factors. This paper aims to review and examine innovative interpretation of their constitutive role in modern architectural practice. The goal is to examine the most significant motives in organization of the living space, as well as to offer suggestions for their theoretical systematization.

Key words: architecture, living space, concept, constitutive motive, housing unit structure

1. INTRODUCTION

The first reference to the term “constitutive motive” in housing architecture is connected to the theoretical concepts of the architect Darko Marušić, according to which constitutive motive is a cohesive factor and the essence of the architectural concept. In a spiritual sense, it stands for pivotal force, a message or leading idea as the key of the concept, while in a material sense, it can be an element, surface or space (Marušić, 1999a:3). In terms of housing space, constitutive and integrative motives of the organizational concept have a role in articulating, collecting and uniting other space into an apartment or house unit. In multi-storey buildings the primary communication is the core with lifts and staircases, in apartments this is the lobby, dégagement or hall, and on an urban level it is the street or the square. However, this does not exhaust the scale of opportunities. The decision which constitutive motive to
select in the concept of housing unit structure primarily depends on the subjective attitude of the creator, but also on numerous other contextual factors. By relying on Marušić’s standpoint, Mirko Stanimirović and Goran Jovanović analyzed the influence of the loggia motive in contemporary housing architecture, and compared it with the motive of porch in the traditional house (Stanimirović, Jovanović, 2010:129). In addition to these authors and others who dealt with individual aspects of this topic (Abass, Hakim Ismail, Solla, 2016; Biondić, 1999; Alfirević, Alfirević Simonović, 2016b; Bajlon, 1979; Memken, Garber-Dyar, Crull, 1997; Rapoport, 2007; etc.), until now there has been no significant theoretical examination of the constitutive motives in organization of living space, which makes this topic current at present. Starting from the supposition that the constitutive motives include factors, both material and intangible, with an integrating role in forming the structure of different levels of space in architecture, the aim of this paper is to review the most significant constitutive motives in organization of living space, as well as to offer suggestions for their theoretical systematization.

2. Constitutive Motives

Constitutive motives have always been present in the space organization domain, in vernacular and general in architecture. In most cases, constitutive motives stemmed from the system of values shared in a community. A group of people who lived in one community, regarded certain elements such as the well, spring, meeting point, etc. as places of particular value, where the community gathered, used these elements collectively and treated them in a particular manner. Some constitutive motives that existed in the past and were part of tradition and lifestyle lost their significance in modern societies, due to the changes in the value systems. Constitutive motives such as the wells, drinking water fountains, hearths, etc. which, from the current viewpoint, could be regarded as “traditional”, but not obsolete, were replaced by “contemporary” motives, such as a fireplace, a dining room, a balcony, or even by a TV set. According to Darko Marušić, characteristic constitutive motives of a housing unit structure are: a) dining as a form of extended communication, b) open space (loggia), c) technical block (kitchen, toilet and bathroom), d) biological rhythm (day-night), e) generational division, f) circular connection and g) flexibility (Marušić, 1999b:6‒8). Starting from the existing review of the most significant constitutive motives in housing architecture which are neither particularly defined in time or space, nor systematized, this research deals with their reexamination and considers innovative interpretation of constitutive role they have in contemporary architectural practice.

2.1. Inner courtyard

The motive of inner courtyard is one of the oldest constitutive motives in architecture. Although it belongs to the group of traditional motives, it is still very current in modern architectural practice. The comparison of examples of traditional houses with inner courtyards and their modern counterparts, the main difference that becomes evident at first sight is the importance of inner courtyard in formation of the basic concept of unit structure. The use of atrium was in the past characteristic of situations when there was a stressed need for security and separation from excessive insulation in hot climates, in contemporary practice this element is the reflection of introverted desire for privacy (Abass, Hakim Ismail, Solla, 2016:2561). In order to say that an architectural object has
an inner courtyard as a constitutive motive, the basic condition is that all rooms within the unit are directly or indirectly lit through a central atrium. This concept of space organization was mostly present in the traditional house with inner courtyard (Rapoport, 2007:59). Contemporary houses with atriums are mainly not of the introverted type, i.e. they are not oriented only towards the inner courtyard, but at some points open towards their surroundings. The central position of the atrium with living space distributed around edges and oriented exclusively towards the center, indicates a clear change in the concept which was based on the constitutive motive of the inner courtyard.

The above mentioned approach was evident in the project of Solar Atrium House in Topola (Studio Alfirević, 2013), while the Earth House in Yangpyeong-gun (BCHO Architects, 2009) has the inner courtyard relocated to the peripheral part of the unit, which shifted the orientation of the main living space towards a single direction—the recessed yard. (Fig. 1a, b) Most examples with inner courtyards have a unit concept which includes orientation of rooms towards one center. However, there are examples, such as unrealized project of the Houses with courts (Mies van der Rohe, 1931) and the Weekend House in Usui-gun (Ryue Nishizawa, 1997), where the living space is oriented towards two, even three atriums. (Fig. 1c)

2.2. External “transient” space

Open spaces, such as terraces, loggias, balconies and porches, which are somewhere between the interior and the exterior, are very frequent elements of housing units. However, their role in generating the whole is not of essential importance, as they are considered secondary spaces, having in mind that frequency of their use is of low intensity. Still, in practice, there are concepts which regard the existence of external “transient” space of most importance (Stanimirović, Jovanović, 2010:130‒131). One of the oldest shapes that applied this motive are traditional Japanese houses, where a covered porch (engawa) represented the extension of the living space as a terrace which offered unobstructed views of the natural surroundings or the zen-garden (Tadej, 2011:8). A similar principle was used in conception of the Wee House in Santa Rosa (Alchemy, 2016), which exhibited communication between the two spatial and functional units, and this communication had the function of the terrace at the same time. (Fig. 2c) The Motive of the loggia is of primary importance in the concept of units in the Housing Tower Y in Kragujevac (Dragoljub Bakić, 1978). The author thought that the central positioning of the loggia with shielding formation of the rooms around it, will achieve
a higher level of individuality and reduce the fear of heights which often accompanies taller objects (Bakić, 2012:28–31). (Fig. 2a) The dual role of the covered terrace in Zachary House in Louisiana (Stephen Atkinson, 2012), is at the same time segregating and uniting, which originates from its position between two functional blocks. (Fig. 2b) The space which is used as the entrance hall-communication and the terrace. A similar twofold character is found in the apartment in Bili Brig Housing in Zadar (Nikola Bašić, 1991), cited by authors Marušić, Stanimirović and Jovanović, where a loggia plays the role of entrance to both the apartment and the outdoor living room.

Fig. 2 Motive of external “transient” space: a) Housing Tower Y, Kragujevac, Dragoljub Bakić, 1978; b) Zachary House, Louisiana, Stephen Atkinson, 2012; c) Wee House, Santa Rosa, Alchemy, 2016 (Source: author’s private collection)

2.3. Multi-use space as the core

One of the rooms in a house or an apartment can become the constitutive motive of the whole unit, in a situation when, due to particular reasons, it has a specific dual or multiple use, which is why its position is mainly central, dimensions stressed and the importance for the concept primary. This approach to space organization of a unit can be noticed in apartments with a central plan (the so-called “salon apartments”), built between the two world wars in Serbia. (Fig. 3a) Central anteroom had an important role in the organization of “salon apartment”, as it was used as extended communication with the dining room. The

Fig. 3 The motive of multiple-use room as the core: a) Typical „salon” apartment, Belgrade; b) House Yagiyama, Sendai, Kazuya Saito Architects, 2012; c) Library House, Tochigi, Shinichi Ogawa, 2012 (Source: author’s private collection)
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A room was of representative character and was used on special occasion for gatherings and celebrations (Nestorović, 1955:247–270; Alfirević, Simonović Alfirević, 2013:41–47). The application of open plan is more and more frequent in contemporary concepts of apartment organization, where the core of the unit consists of a combined room without partitions, most often in the form of incorporated living room, dining room and kitchen. The other rooms are adjoined to the primary core independently or in blocks. In the House Yagiyama in Sendai (Kazuya Saito Architects, 2012), the position of the central room is given to the ceremonial living room, which underlines its importance in family life and gatherings. (Fig. 3b) On the other hand, the Library House in Tochigi (Shinichi Ogawa, 2012), the central motive comprises multiple-use room which integrates the functions of the living room, the dining room and the library, while the other rooms are arranged peripherally. (Fig. 3c)

2.4. Natural or architectural accent

Accents in architecture include a wide range of natural and artificial elements, which, within a certain context, are stressed due to their characteristics and can be adequate motivators for formation of the concept of unit organization. The hearth, as one of the oldest constitutive motives, in its somewhat changed form, is still present in contemporary architecture, in the form of fireplace or furnace. The fireplace was a particularly important constitutive motive in unit organization of the prairie houses by Frank Lloyd Wright. It was placed in the center or close to the center of the composition and was emphasized as the center of a family gathering area (Koile, 2006:276). The most significant examples of this approach include Robie House in Chicago (Frank Lloyd Wright, 1909), and Darwin-Martin House in Buffalo (Frank Lloyd Wright, 1905). (Fig. 4a) A very frequent natural motive in the formation of the concept of unit organization is a tree found on the original location, which, due to its aesthetic and other characteristics has a protective role, as the house is constructed around it, which makes the tree the key accent in space. Characteristic examples illustrating this tendency are the Shell House in Kitasaku (ARTechnic Architects, 2008) and the Tree House in London (6a Architects, 2013). (Fig. 4b, c) In both examples, the concept of unit organization was the result of consideration for the tree, by forming the loose façade lines and directing the interior views towards the exterior accent.

Fig. 4 Motive of natural or architectural accent: a) Darwin-Martin House, Buffalo, Frank Lloyd Wright, 1905; b) Shell House, Kitasaku, ARTechnic Architects, 2008; c) Tree House, London, 6a Architects, 2013 (Source: author’s private collection)
2.5. Technical block

Constitutive motive of a technical block or the installations core emerges as the consequence of an attempt to group and optimize installations in space, which in practice meant joining the bathroom and the toilet, the bathroom and the kitchen or all three spaces into one. Within one housing unit, the technical block can exist in different positions: a) in the center, as a free unit; b) in the middle, with one or more walls inside the living space; c) “leaning” against one of the walls separating the space from adjoining living space (Kubet, 2015:161). If the technical block is situated in the middle zone of the living space, it can have a circular connection in the form of internal communication which constantly or occasionally connects the space around the core into one whole (Živković, Jovanović, 2012:27). When the technical block is formed around the partition from the adjoining apartment, the rest of the living space is formed in accordance with other motives, such as differentiation of functions, flexibility, etc.

Characteristic application of this constitutive motive is present in the apartment 40 sqm Refurbishment in Tel Aviv (Sfaro Architects, 2011), where the technical block connects the kitchen and the bathroom, and the circular connection is enabled by occasional opening of the sliding doors, which gives the impression of larger space within a smaller apartments. (Fig. 5a) Abstract House in Hiroshima (Shinichi Ogawa, 2002) has a technical block formed around the center of the base, but due to its linear proportion and configuration of the living space, its main role is to separate the daily from the night zone, although there is an option of achieving a circular connection. (Fig. 5b) A more complex space structure based on the same motive is found in the Villa Norrköping in Sweden (Sverre Fehn, 1964), with all auxiliary content integrated in the center of the house (toilet, bathroom, kitchen and pantry), while the peripheral zone is reserved for living space, which forms a clear concept of “space within space” (Alfirević, Simonović Alfirević, 2016b:30). (Fig. 5c)

![Fig. 5 Technical block motive: a) 40 sqm Refurbishment, Tel Aviv, Sfaro Architects, 2011; b) Abstract House, Hiroshima, Shinichi Ogawa, 2002; c) Villa Norrköping, Sweden, Sverre Fehn, 1964 (Source: author’s private collection)](image-url)
2.6. “Circular” connection

“Circular” connection<sup>1</sup> is a form of internal communication in a living space, aimed at establishing continuity of connecting the rooms in a row and minimizing or neutralizing the impression of cramped space (Živković, Jovanović, 2012:27). The application of this constitutive motive is characteristic of smaller apartments and housing units with more complex structures and a larger number of rooms. In smaller apartments, the motive emerges as the consequence of an attempt to achieve a psychological perception of a larger space, while in larger apartments it aims to deepen the perspectives inside the apartments and achieve representative effects such as baroque enfilades, as the circular connection is often linked to parts of other communications (Wook Seo, Sung Kim, 2013:79). In most cases, the formation of a circular connection in the living space appears around centrally positioned technical block, although there are numerous examples when it is placed around one of the utility rooms, such as walk-in closets, pantries, staircase, etc. (Bajlon, 1979:39‒42). There are fewer examples of the cases where the main living space is connected to a continuous system of a row of rooms. According to Dragan Mecanov, a circular connection cannot be established in apartments which lack adequate grouping in space organization, i.e. where the direction of entrance movement interrupts access to some rooms (Mecanov, 2008:143).

A characteristic example of occasional circular connection is Housing for young people in Can Caralleu (Peris & Toral, 2008), where the center of the space is the bathroom, while further down in the apartment, next to the entrance, there is a kitchen and the dining room. The circular connection disappears when the sliding doors next to the bedroom is closed. (Fig. 6a) The Ant-house in Shizuoka (mA-style architects, 2012) was named after the concept of space within a space, where inside the central part of the house a smaller perforated house was formed and its boundaries define the core of the living space. Inside the core, there is a toilet, bathroom, pantry, staircase, sitting space, while all around it there is an uninterrupted circular connection making it possible to perceive the sculptural motive of the core. (Fig. 6b) The Retirement House in Kent (Alison and Peter Smithson, 1959), utility rooms are not grouped into one whole, but are freely arranged in space, which

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1 Along with the term “circular connection”, architecture uses other terms too, such as circular “enfilade”, “continuous circulation”, “concentric circulation”, etc. which all stand for the same idea—the option of free, uninterrupted movement within the living space following a clearly defined trajectory.
stresses the motive of occasional circular connections that can be established in several places by opening the doors between different rooms. (Fig. 6c)

2.7. The view on the surroundings

Organization of the unit based on grouping and orienting living space towards natural motives in the surrounding, comes from creator’s aspiration to use a highly aesthetic level of the view from the interior towards one or more directions, which more or less, as a consequence leads to the concept of external openness of the plan. Openness of the plan resulting from this concept can be: a) total – when it includes the whole living space, with the exception of sanitary rooms; b) sector-based – when it includes just the daily block; c) partial – when it refers to certain rooms within a flat, but not entire blocks; and d) controlled – when the application of flexible partitions, the connection can open or close according to the need (Čanak, 2013:67). On the other hand, openness of the living space towards the views in the surroundings, does not depend only on the internal arrangement of the rooms and the level of “diffusivity” of the façade, but also on the level to which the space opens to immediate surroundings of the object, which is determined by SOI index (Spatial Openness Index).²

Some of the most significant constructions illustrating the use of this motive in the definition of the concept are the Glass House in New Canaan (Philip Johnson, 1949) and the Farnsworth House in Plano (Ludwig Mies van der Rohe, 1951). (Fig. 7a) Natural surroundings of the object were of utmost importance to both examples, since it enabled the architects to establish total plan openness (internal and external). A representative example of one-sided openness of space to its surroundings is the Crescent House in Winterbrook (Ken Shuttleworth, 2000), showing a curved shape of the daily block which directs all views from the inside towards the picturesque segment of immediate surroundings. (Fig. 7b) The motive of directed views was directly determined by the crescent shape of the residence. A particularly characteristic example is the Princeton House in Princeton (Levenbetts, 2014), whose compact primary from, at first sight, does not suggest the concept of the view as its starting point. However, all the windows on the object are distributed that was that certain views of the immediate natural surroundings from the interior are perceived as framed paintings, which indicates the presence of constitutive motives. (Fig. 7c)

Fig. 7 Motive of view towards the surrounding: a) Glass House, New Canaan, Philip Johnson, 1949; b) Crescent House, Winterbrook, Ken Shuttleworth, 2000; c) Princeton House, Princeton, Levenbetts, 2014 (Source: author’s private collection)

² Spatial Openness Index – SOI includes a spherical segment of the surroundings volume, visible from a certain point in the space (Fisher-Gewirtzman, 2010:434).
2.8. Function differentiation

Function differentiation includes the widest group of constitutive motives in residential housing, as it is directly related to meeting the basic human needs. The use of motives of differentiation of functions is primarily encouraged by different needs and ways of using space. The rooms within the residential unit can be differentiated according to biological rhythms, by separating the day and night zone, i.e. the rooms with different regimes and intensities of use during the day (Marušić, 1999b:7). Complex residential units, with larger number of functions, are frequently differentiated into: individual and common areas (shared by family members), reception areas (for receiving guests) and utility areas (for servants) (Cunha, Trigueiro, 2005:37), or they are differentiated based on the gender of children, areas reserved for children and parents, etc. (Bajlon, 1979:45). Less frequently, when there is a need to organize the unit for three generations within one living space, it is possible to differentiate the rooms according to the age of users (Montgomery, 1972:41; Memken, Garber-Dyar, Crull, 1997:87).

A characteristic example of differentiation of function is an apartment in Buhrgrindel Street in Zurich (Theo Hotz, 1985), which illustrates the differentiation according to biological rhythms established through separation of the day and night zone into two parallel blocks connected by the hall. (Fig. 8a) In Moriyama House in Tokyo (SANAA, 2005), the authors utilized a very inventive way to separate living space functions into a spontaneous composition unit, believing that the inter-space between the volume was a strong enough cohesive factor for space integration. (Fig. 8b)

![Fig. 8 The motive of function differentiation: a) Buchgrindel 2, Zurich, Theo Hotz, 1985; b) Moriyama House, Tokyo, SANAA, 2005 (Source: author’s private collection)](image)

2.9. Flexibility

Constitutive motive of flexibility in architecture primarily refers to space changeability, i.e. to conceptual and technical measures used to provide a certain level of changeability of housing space, with an aim of continuous adaptation to the dynamics of family life (Čanak, 2014:75). The application of the flexibility motive can be initiated by different factors, such as: a) changeable number and structure of family members; b) changeable cultural and economic situation of the family, c) changeable subjective factors etc. In numerous studies conducted so far on the topic of space flexibility in architecture, it was established that there is a different intensity of flexibility, i.e. potential, partial, prevailing and total flexibility.
Depending on the applied intensity of flexibility, the motive can be more or less stressed. If the organization of unit applied partial flexibility, it will not be particularly apparent, however, if total flexibility was applied, the concept of organization will be clear and the use of motive more evident. Depending on how the installations were grouped within the technical block, which could be centrally located or leaning against the wall with adjoining rooms, the level of flexibility changes significantly. According to Vladimir Kubet, Olga Carić and Ksenija Hiel, the highest level of space flexibility can be achieved by position of the technical block (Kubet, 2015:162; Kubet, Carić, Hiel, 2010:149), which brings the constitutive motive of flexibility into close relation to the motive of technical block and circular connection.

The motive of flexibility is, in practice, achieved in different ways, by using sliding doors, wall partitions, screens, partitions in the form of furniture, even space units. The examples are numerous, however, some of them, such as the Nine Square Grids House in Kanagawa (Shigeru Ban, 1997), show, in an innovative way, the limiting options in application of this motive. (Fig. 9a) The house has all fitted elements grouped in two elongated blocks, between which there is a square open plan space. The interior can be separated into smaller units, by sliding partitions in orthogonal directions (Alfirević, Simonović Alfirević, 2016a:56).

A particularly characteristic example is the Naked House in Saitama, (Shigeru Ban, 2000), with primary forms of space surrounded by flexible modules – sleeping capsules. The perception of the interior of the house and the character of the unit can be transformed easily by shifting or removing one of the modules. (Fig. 9b)

**Fig. 9** Flexibility motive: a) Nine Square Grids House, Kanagawa, Shigeru Ban, 1997; b) Naked House, Saitama, Shigeru Ban, 2000 (Source: author’s private collection)

3. CONCLUSION

The text discusses a concise review of the most frequent constitutive motives as initial steps in defining the concept of space-functional organization of an apartment or a house. Through analyses of numerous examples, attention was drawn to a variety of constitutive motives in conceptualization of the living space unit. The importance of theoretical consideration of this topic is multiple, because, on the one hand it contributes to the explanation of universal principles in the field of architecture, while on the other hand it encourages a creator to define more precisely the concept of unit in architecture.

Constitutive motive does not necessarily have to be in the center of the unit, nor exclusively of material nature, but it is necessary that its role be primary in forming the concept of living space and in integrating different space level or wholes into one unit. In practice, combining several different motives is most often present, however, it is
significant, for the concept of unit organization, that there is a clear hierarchy between them, even in cases when they are present in groups. It is important to stress that constitutive motives are present in the phase of design of a new object and in the design of adaptation or reconstructions of spaces, even though this happens to a lesser degree.

Current research already established that there are material and intangible constitutive motives. Material motives are connected to concrete natural or artificial elements (multiple-use room as the core, natural or architectural accent, external “transient” space, technical block, etc.), while intangible motives appear as ideas or principles (view towards the surroundings, flexibility, circular connection, differentiation of activities, etc.). Taking into consideration everything stated previously, we suggest that further research focus on the following systematization of basic constitutive motive of units in housing architecture (Fig. 10):

Material constitutive motives:

- a) inner courtyard,
- b) external “transient” space,
- c) multi-use room as the core,
- d) natural or architectural accent,
- e) technical block.

Intangible constitutive motives:

- f) circular connection,
- g) view of the surroundings,
- h) differentiation of functions:
  - according to biological rhythm,
  - according to children’s gender,
  - according to how public the space is,
  - according to generation,
- i) flexibility.

Fig. 10 Constitutive motives in organization of the house unit
(Source: author’s private collection)
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KONSTITUTIVNI MOTIVI
U ORGANIZACIJI STAMBENOG PROSTORA

Konstitutivni motiv čini esenciju koncepta organizacije stambenog prostora. Može se javiti u vidu elementa, površine, prostora ili principa, tj. može biti materijalan ili ne materijalan. Konstitutivni motivi su od leve bili prisutni u domenu organizovanja prostora, kako u narodnom graditeljstvu, tako i u arhitekturi. Njihov značaj i pojava su se vremenom menjali kako su se menjali i sistemi vrednosti u društvu. Odluka o izboru konstitutivnih motiva u konzipiranju sklopa prvenstveno zavisi od subjektivnog stavu stvaraoca, ali i od brojnih drugih kontekstualnih faktora. Ovim istraživanjem se vrši njihovo preispitivanje i razmatra inovativna interpretacija konstitutivne uloge koju imaju u savremenoj arhitektonskoj praksi. Cilj rada je da se razmotre najznačajniji konstitutivni motivi u organizaciji stambenog prostora, kao i da se praži predlog za njihovu teorijsku sistematizaciju.

Ključne reči: arhitektura, stanovanje, koncept, konstitutivni motiv, stambeni sklop.