



Interaction of Durability and Dynamism in Architectural Flexibility: Interdisciplinary and Disciplinary Approaches

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ABSTRACT: Flexibility as an ability to respond to changing circumstances is one of the vital characteristics of the natural and built environment. In the contemporary era, diversity of methods for the execution of architectural flexibility is suggested. But along with contemporary conceptual approaches toward pluralism and uncertainty, it seems that the multiplicity of approaches toward flexibility, not only does not have enough efficiency in providing quality in flexibility, but also their plurality produce a kind of ambiguity about the subject. Considering the conceptual roots of flexibility, this article tries to shift the approaches of flexibility from absolute 'dynamism' to interaction of 'durability' and 'dynamism'. In this relation, considering the interdisciplinary theories and with dependence to architectural theories, the quality of interaction of durability and dynamism is analyzed. Studying theoretical ideas show that the interaction of dynamism and durability is a general reality in different phenomenon and so it can be studied as a transdisciplinary field. According to the results, in an architectural work, durability and dynamism have complementary characteristics. Quality flexibility have effected on reaching dynamic situation through preserving durable concepts and values of architecture. Coexistence of durability and dynamism is dependent on 'change controller'. 'Change Controllers' are not only the preserver of durability and effective in producing unity, but also are the generator of dynamism.

Keywords: Flexibility, Robustness, Durability, Dynamism, Interaction of Durability and Dynamism.

INTRODUCTION

Permanent change of universe features is the source of movement and change in the world and also in the human's life. In such situation, flexibility is one of the basic and fundamental concepts of the nature and functions as a solution toward adaptation to changing situation. Considering the permanent changing in life of an architectural work and the differences in applicant or applicants' needs, flexibility has been an important necessity in architecture since the ancient time. The main motivations of flexibility are categorized in two main branches. The first one is the changing characteristics of human life as an external factor and the second one is the human inner tendency for change, diversity and progress as an internal factor. Accordingly, flexibility is an

approach toward responding to life changes and internal human inclinations. Bently et al. proposed the quality of flexibility under the title of 'robustness'. In this sense, it can affect the dimensions of a certain environment for responding to different usage which is compatible to different aims of people. Such quality caused the places to be used for different purposes and give more choice to applicants (Bently, Alcock, Murrain, McGlynn & Smith, 2003, pp. 5, 157). As a general definition, 'flexibility' is a potential for changing in materials and physics. In architecture and environmental design, it means spatial flexibility for changing and reorganizing built environment to provide new necessities and functions (Einifar, 2003, p. 66).

It seems that paying attention to flexibility is more vital in contemporary world since it is facing fundamental changes in style and rhythm of life. In recent years along with progresses in technologies, there has been great evolution in architectural techniques and also flexibility

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methods. But it seems that these progresses cannot be very effective in providing quality in flexibility¹ unless there has been provided a fundamental context of the defined theoretical structure in this relation.

The aim of this article is to move towards defining the basic concepts of flexibility and its theoretical position by analyzing the interaction of durability and dynamism and the influential factors in this relation.

PROPOSING THE PROBLEM

Dependence on the individualism and the reign of quantity in the contemporary world has caused extension of pluralism and uncertainty tendencies that are gradually replaced the holistic views. David Capon believes that such theoretical flows affect architecture and form a

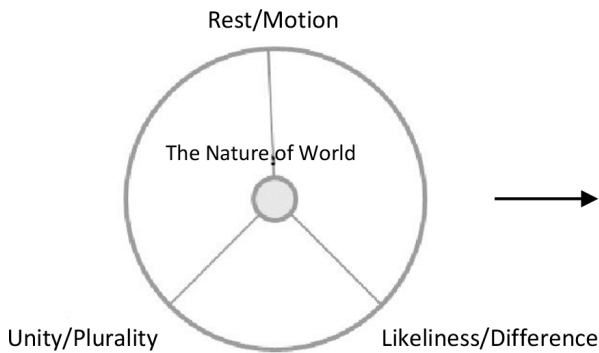


Fig. 1. The Composition of Forces Creating the Nature of the World According to Eleatic Dilemmas (Capon, 1999)

Along with the dominant theoretical viewpoints in the contemporary era, incredulity has been aroused in most of the fields and also in relation to vital concepts such as permeability, durability and their key substructure such as identity, essence, fundamental principles and roots. Such negligence to concepts relating to durability produced a context to pay attention to absolute change or 'dynamism'. In figure 1, there is a visual analysis of aforementioned discussions on the basis of the Eleatic Dilemmas recorded by Plato.

So in studying flexibility, while looking for the potential to adapt with new circumstances and needs,

tendency that emphasize on temporality and inconstancy (Capon, 1999, pp. 164-165). Charles Jencks warns about problems caused by extension of pluralism and believe that in such situation that presents absolute plurality, the ability of decision making would be disappeared and the architecture would come to a dead end (1996, p.75). In such a situation, some aspects of flexibility have common roots with plurality, relativism and uncertainty orientation. This may stems from flexibility aims which pay attention to plurality of applicants, their different and predictable or unpredictable needs over time and in different places. Facing the plurality of variables relating flexibility (such as individual characteristics, social-cultural values, predictable or unpredictable future) has caused ambiguity in this relation and so flexibility meaning and dimensions seems to be vague (Lynch, 1997, p. 214).

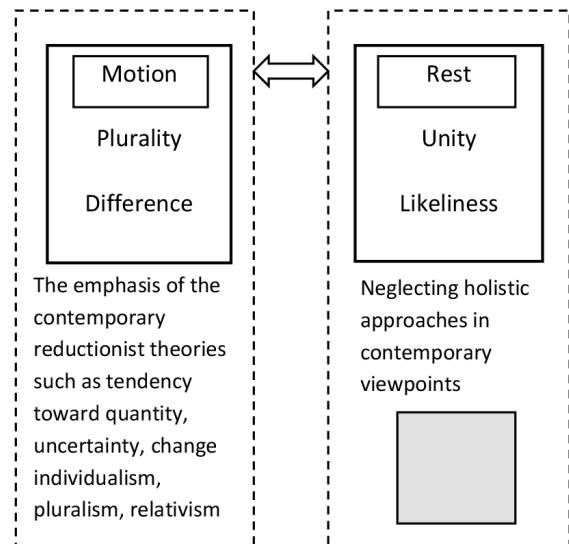


Fig. 2. The Contemporary Unilateral Viewpoint about Universal Forces

it is important to consider that the final aim for the architectural work is to be more effective and so to be more durable over time. On the other word, a design that has enough flexibility is more durable (Lynch, 1998, p. 214). According to Bernard Leupen (2006, p. 20), if we want to have a building which is more durable in time, it is necessary to pay attention to permanent elements more than changing elements. Accordingly, the final target of proposing flexibility is continuity or durability. By this attention, dynamism is short term target that can be credible when it supports the final target which is durability.



Bently et al. proposed seven criteria in 'Responsive Environment' (2003) as the main criteria of evaluating the architectural spaces to be responsive. These criteria are 'permeability', 'variety', 'legibility', 'robustness', 'visual appropriateness', 'richness' and 'personalization'. According to the definitions, 'permeability'², 'legibility'³, 'visual appropriateness'⁴, 'richness'⁵ and 'personalization'⁶ can be categorized under the concept of 'durability' and 'variety'⁷ and 'robustness'⁸ can be categorized under the concept of 'dynamism'. It can be considered that the assumed criteria affecting the responsiveness of architectural spaces have composed characteristics of the interaction of durability and dynamism. Thus, the discussion about the quality of interaction of durability and dynamism is effective for reaching every responsive characteristics like flexibility.

In this regard, the main question is that how the coexistence of durability - that means 'being' and has internal relation with continuity, identity, permanence - and dynamism - that means 'becoming' and has internal relation with change and movement - can be possible. This article believes that this key question is a common question in different field of sciences. 'The perpetuity of universe is based on the balance and interaction of durability and change as two countering forces. It is the 'rest' that gives sense to the 'motion' and the 'change' that gives meaning to the 'permanence' (Ahmadi, 2007, p. 16). This article believes that the question can be pursued as an interdisciplinary or even transdisciplinary subject.

RESEARCH METHOD AND BACKGROUND

The main approach of this research is qualitative. It tries to take advantage of basic theoretical discussions about durability, dynamism and their interaction and thereupon, gets theoretical and applicable results about flexibility. The inductive base of qualitative discussions of the research will be strengthened by logical argumentation. The main means of gathering information is evidential and library based studies.

Regarding the research background, it seems that different theories and experiences with different tendencies have been emerged in recent years. This diversity of ideas shows the importance and urgency of the subject, and on the other hand intensifies the necessity of organizing a holistic approach in order to harmonize different views and clear the ambiguities. The existing researches in this subject are more numerous regarding applied technics and less numerous regarding fundamental theoretical studies. The main researches which have been

published about flexibility in architecture have titles such as 'Portable Architecture' by Robert Kronenburg in University of Liverpool, 'Flexible Housing' by a research group with the supervision of Jeremy Till in University of Sheffield. 'Open Building System' which contains 'System Buildings' and 'Open-Ended design' research Titles has been started firstly by N. J. Habraken as the director of SAR research group. There are also some indirect researches about the subject such as 'Responsive Environments' by Ian Bently et al., 'Multi-Use Architecture in the Urban Context' by Eberhard Zeidler and 'Mixed-Used Development Design' by Alan Phillips.

DEFINING THE BASIC FACTORS OF THE INTERACTION OF DURABILITY AND DYNAMISM IN FLEXIBILITY

Studying the interaction of 'being' and 'becoming', 'permanence' and 'change' or according to this article's terminology, 'durability' and 'dynamism' is one of the basic discussions of philosophic studies. There are different approaches toward this subject in different philosophical schools. According to this article's viewpoint in search of a theory for flexibility, it is looking for an intermediate theory that is paying attention to an optimum balance or interaction between durability and dynamism. Thereupon, it is based on a theoretical basis that believes that 'durability' and 'dynamism' or 'being' and 'becoming' does not have paradox. Yet it demonstrates that 'becoming' is a quality of 'being' which means that having existence and identity do not have any conflict with becoming and changing. But there are necessities that are vital for this companionship.⁹

The lexical root of 'flexibility' comes from 'flexible' that means 'able to change or be changed easily according to the situation' (URL1) and its meaning is 'ability to change or bend' (URL1), 'moving zone around a joint' (URL2). In this regard, the dynamism necessities relating flexibility can be extracted as below:

- Having relation, continuity and linkage in a defined zone while changing happens;
- Paying attention to potentials or abilities for changing;
- and according to this article's logics in part 2:
- Paying attention to the continual identity of the subject while changing.

Accordingly, it is possible to extract the key factors relating the interaction of durability and dynamism in flexibility as: 'changing', 'having relation, continuity and linkage while changing', 'internal potentials' and 'continual identity'. These factors will be the article's



emphasized concepts which have been paid attention to regarding the interaction of durability and dynamism. These factors can be defined as ‘durable context’, ‘change

controller’ and ‘quality of dynamism’ that can direct the next analyses to the final results.

Table1. Extracting Main Factors Relating the Interaction of Durability and Dynamism

Main Factors	‘Continual identity’	Having relation, continuity and linkage while changing	‘Changing’
	‘Durable Context’	‘Change Controller’	‘Quality of Dynamism’

‘Internal potentials’ will be paid attention to after the primary analysis has been done.

It seems that true understanding of ‘controller of change’ as a concept that produces connection between durability and dynamism is vital for this research. The study of the interaction of durability and dynamism in interdisciplinary and disciplinary theories will be done according to these factors in the following parts.

INTERDISCIPLINARY STUDY OF THE INTERACTION OF DURABILITY AND DYNAMISM

Positive coexistence and interaction of durability and dynamism is an ancient subject in the universe. It seems that in every change and movement in the universe, there is a durable and also dynamic dimension. In other word, there is a protective for phenomenon that keeps its character and organization [while change occurs] (Motahhary, 2008, p. 554). This can be studied as a transferrable gene in live organisms that along with directing toward a dynamic and progressive movement, it always preserves the inner harmony (Waddington, 1969).

Here the question is that how can we reach this gene in architecture? It seems that answering this question can lead to a two dimensional solution which is a change controller with the potential for arousing change and progress.

In the following parts, it tries to approach to a more applicable definition of this gene or change controller according to the different theoretical realms.

Mathematics: One of the progressive fields considering the productive regulations is in mathematics. It was considered the concept of ‘pattern’ as an emphasized concept in the mathematics discussions of the 18th century. There is a rule proposed by Gottfried Wilhelm von Leibniz (1646 - 1716) that is “it can be made from limited elements of a structure, unlimited

and uncountable compositions when we use ‘patterns” (Ahmadi, 2004, p. 38).

Linguistics: As Roman Jakobson (1896 - 1982), the Russian linguist, proposed, every context is systematic structure that gives a steady order to its inner literary elements. As he mentioned, the evolution process is a kind of metamorphosis of these elements that is provided through substitution and companionship rules [in this structural organization] (Ahmadi, 2006, p. 79). Noam Chomsky (1928 till now), one of the effective linguistics of the 20th century, shows that how logical structure of the language does not have any contrast with its generic and productive use. His statement: ‘regulation leads the creativity’ is one the important slogan of modern science (Hillier & Leaman, 1972-3, p. 69). “In Chomsky’s terminology what is seen or heard is a ‘surface structure’ which is a ‘transformation’ on a ‘deep structure’. All structuralism researchers assume these levels and relations” (Hillier & Leaman, 1972-3, p. 67).

Structuralism: Structuralism approaches are specially affected by structural linguistics of Ferdinand de Saussure (1857 – 1913) and Claude Levi-Strauss (1908-2009) (Ahmadi, 2004, pp. 16-17). This branch of thought is proposed as an avant-garde movement since 1960 (Lüchinger, 1981). One the most important concepts proposed in structuralism is the ‘structure’ and then the ‘pattern’. The components or elements of the structure relate consistently according to patterns emerge as the consequent of the structure. It can be made unlimited and uncountable compositions by limited elements as a result of the structures (Ahmadi, 2001, pp. 35-38). According to Arnulf Lüchinger’s (1941 till now) definition, structure is a channel series of permanent relations that connects changing and replaceable elements. He introduces two basic rules of structuralism as ‘preserving the whole as well as growth and change’ and ‘the priority of relations to structure’ (Lüchinger, 1981, p. 15).

Gestalt Theory: ‘Gestalt theory’ is the result of researches in psychology and logics since the end of



19th century. The Gestalt psychology was founded by Max Wertheimer (1880 - 1943) in Germany and this branch of psychology was developed gradually by him and his colleagues Wolfgang Köhler (1887 - 1967) and Kurt Koffka (1886 - 1941) in other branches of science (Mohammadzade, 2009, p. 22). The importance of this theory can be understood while we consider that 'Gestalt psychology is the first science of organization in the human sphere' (Hillier & Leaman, 1972-3, p. 44). According to this theory, in every phenomenon as a united 'whole', the relations between the parts and the final composition is important. There are 'wholes' that their behavior is not specified by their single dependent parts. 'Something that causes we can remember a melody even when the components are changed... internal relations and prior processes' (Mohammadzade, 2009, pp. 21-24).

System Theory: System theory, in the sense it is now generally used, originated in an attempt to utilize these lines of thought, principally the thermodynamic analogy and the gestalt concept (Hillier & Leaman, 1972-3, p. 45). Köhler was one of the Gestalt school researchers that believed that a lot of physical systems traverse an evolutionary path to reach the balanced status. This evolutionary path is the process that the system tries to decrease the entropy level or gradually convert the high level of entropy (disorder) to low level of entropy (order) and through which it reaches a sustainable, ordered and also dynamic balance. He called them Gestalt systems (Hashemi Golpaygani & Tahami, 2007, p. 108). Using general system theory, Ludwig von Bertalanffy (1901-1972) claims that it is possible to reach global and holistic laws by studying the process of phenomenon analyzing into its components. It is possible to reach a group of general laws while studying the phenomenon which are systems (Ibid, p. 47). Edgar Morin (1921 till now) as one of the important system theorists declares that the internal stability of a cell or organism in a state of external balance

is the state of permanence and continuity. Although the constitutive components of structures are changing, the structures remain the same (Ibid, p. 71).

Traditionalism: Relating the traditionalism and religious art discussions, there are key analysis about the quality of emerging change and permanence, plurality and unity in nature and traditional architecture and artifacts. 'Not only different forms of Islamic art have common aspects, but also its diversity shows an internal unity like the variance of a musical theme' (Burckhardt in Timelessness & Art, 1991, p. 34). While appearing the Islamic styles, although different nations taste and initiative has different influence in art, but there are deep connections that stems from common spiritual space that associate different piece of works. This change and diversion has happened in a context of consistency and continuity (Nasr in Timelessness & Art, 1991, pp. 48-49).

Naturalism: Using live phenomenon patterns, Robert Lawlor (1939 till now) in his book 'Sacred Geometry' believes that in order to understand the reason of forming constant context of permanent change, it should be studied DNA or in other words, the hidden patterns of spiral waves characteristics. 'The architecture of the universe is defined by invisible and abstract world of geometry' (1989, pp. 1-3). Christopher Alexander (1936 till now) in 'The nature of Order' mentions that 'in the process of systems growth, the geometric structure of cores is preserved on a maximum level and the least disorder has happened. The system moves in a way that the existing structure is preserved and emphasized. This is a considerable process that the cores systems seems as a united whole' (Alexander, 2002, pp. 45-46).

Here in table 2, there is a categorizing approach about the quality of coexistence of durability and dynamism which is mentioned in theories according to predefined factors.



Table 2. Interdisciplinary Study of the Interaction of Durability and Dynamism

Theory	Theorist	Durable Context	Change Controller	Quality of Dynamism
Mathematics	Leibniz	Structure	Patterns	Unlimited and uncountable compositions
Linguistics	Jakobson	Context	Steady order	Substitution and companionship of elements
	Chomsky	Logical structure of language	Regulation	Creativity
Structuralism	Lüchinger	Structure	Preserving the whole as well as growth and change, the priority of relations to structure	Growth and change, changing elements
Gestalt Theory	Wertheimer	United whole	Components internal relations	Changing elements
	Köhler	Physical systems in balance status	Low level of entropy or ordered situation	Dynamic balance
System Theory	Morin	Internal permanence of a cell or organism in external balance status	Structure	Change in constitutive components
	Burckhardt	Internal unity of Islamic art	Common aspects	Diversity of forms
Traditionalism	Nasr	A context of consistency and continuity in appearing Islamic styles	Internal connections due to common roots of spiritual space	Different piece of works
Naturalism	Lawlor	Continuity of natural phenomenon	Geometry	Permanent change
	Alexander	United whole	Geometric structure of the cores	Systems growth

ARCHITECTURAL STUDY OF THE INTERACTION OF DURABILITY AND DYNAMISM

Since the researches about the relation of architecture and other sciences is beneficial but not applicable straightly in the art and technics of architecture (Khomei, 2000, p.259), it is important to study architectural theories

independently regarding the interaction of durability and dynamism.

Developing the gestalt theory analysis in architecture, some architects proposed different ideas in this relation. Rudolf Arnheim proposed the theory of field about architectural spaces: Every building in any situation produces a field of forces around it. The special composition of such field is dependent to the form of its



generator structure (Arnheim, 2003, p. 45). He believes that the order emerges in the world unless a special situation prevents it. The order develops as much as possible. In the lowest level of tension, the entire actions stop and the system stays in balance. In such situation, all the parts can interchange their position without any change (Arnheim, 2003, p. 218). According to Jörg Kurt Grütter, it is the disciplinarian system that gives the architectural entity its unity [in spite of the diversity of components] (Grütter, 2004, p. 551). Districts, paths, edges, nodes and landmarks that Kevin Lynch proposed as the main factors of perception of the city are inspired by Gestalt principles. He believes that 'a complex that is felt by viewer as a unified complex, has components that are dependent to each other and their relation remains constant (Lynch, 1993, p. 154).

According to Ardalan and Bakhtiar, 'originality in the sense of being traditional, has both real characteristics of permanence and change. According to regulations of traditional art forms, permanence is provided as a result of having relation to the prior reason and by the 'Mosol' world. Change is produced from the creative fiction power by presenting new compositions of artifacts, artificiality and functions (Ardalan & Bakhtia, 2001, p. 10).

Christopher Alexander in his book 'A Timeless Way of Building' is inspired by natural patterns and declares: 'as the gens are spread all over the cells, here [in building or city] the pattern language produces a structure, continuity and permanence that surely preserve the building or city as a unified whole despite the changes occur (Alexander, 2002, p. 308). He also states that architecture follows some regulations in its process of forming and continuing life which create the ability of producing unlimited new and unique buildings. It is exactly the same as the power which is provided by ordinary language to makes countless different sentences' (Ibid, p. 145).

Louis Kahn declares that every building should be something that 'it wants to be'. In practice this statement means to create an entity that can change and also can be the origin of growth pattern (Norberg-Schulz, 2007, p. 96). Through comprehending objects entity and their relation in Kahn's different method, he believes in an insight toward 'order' (Giurgola, 2005, p. 2). When he says 'order is', he points to the relation between 'order' and 'being'. At the same time, he believes that "there is a hidden force of creativity in 'order'" (Ibid, p. ص). In the statement 'order is the origin of happiness and joy' (Ibid, p. 2), it can be deduced the relation between 'order' and

'becoming' or 'change'. He also mentions that 'whatever the order is emphasized, the diversity in the projects intensified. He also mentions that the order contains evolution and consistency' (Ibid, p. ض).

Pursuing the expression of 'organic architecture', Frank Lloyd Wright achieved unity and diversity at the same time. 'A major source of this achievement was his mastery of two basic types of order: compositional and thematic. Compositional order supports both architectural unity and diversity by employing traditional elements of design such as balance, alignment, hierarchy, repetition, and rhythm' (Laseau & Tice, 1992, P. 167).

Regarding the quality of making unity among different types of architecture, Christian Norberg-Schulz declares that 'the number of key patterns that the architect has been applied is limited by place and geometric regulation, but the composition and variation types are countless. So the adaptation of building with the paradoxes of the location and the difficult unification among components has been possible (Norberg-Schulz, 2007, P. 527).

John Habraken has maintained the view that the built environment is a living thing and that change within a durable pattern is one of its primary characteristics. 'He and his group explore the possibilities of support structures and infill building as an alternative to mass housing' (Jencks & Kropf, 2007, P. 22).

The words like identity, growth pattern, cluster and substructure has entered into architectural thought during 50th by Alison and Peter Smithson. According to their opinion 'the main problem is how to create internal urban space without losing the general space idea. Different architects have been engaged to this subject during these decades. The proposed solution is the organization of city structure as some free growth pattern. This means to return to the place regulation of composition such as unifying and mass continuity (Norberg-Schulz, 2007, P. 490).

According to Francis Ching, 'the first necessity of deformation is the recognition and comprehension of primary and basic organizing principle. By this regard, along with a series of limited changing and conversion, the main idea can be emphasized without dissolving' (Ching, 1989, P. 382).

Here in table 3, there is a categorizing approach about the quality of coexistence of durability and dynamism which is mentioned in architectural theories according to predefined factors.



Table 3. Architectural Study of the Interaction of Durability and Dynamism

Theory	Theorist	Durable Context	Change Controller	Quality of Dynamism
Gestalt Theory	Arnheim	Every building as a field of forces	The balance of forces or the maximum order	Interchange of components
	Grütter	Architectural unity	Disciplinarian system	Diversity of components
	Lynch	Unified complex	Relation of the components	
Traditionalism	Ardalan and Bakhtiar	Permanence in the traditional art	Regulation of the forms	The creative fiction power about presenting new compositions of artifacts, artificiality and functions
Naturalism	Alexander	Unified whole	Pattern language, regulations	Unlimited new and unique buildings
Single Architects Theories	Kahn	Being	Growth pattern, Order	Wanting, Change, Creativity
	Wright	Unity	Compositional order	Diversity
	Norberg-Schulz	Unity among different types of architecture	Place and geometric regulation	The countless composition and variation types
	Habraken	The living entity of the built environment	Durable pattern	Change
	Smithsons	Identity	Growth pattern, cluster and substructure	Creative internal urban space
	Ching	Emphasizing the main idea	Primary and basic organizing principle	Deformation

EXTRACTING THE COMMON EXPLANATION OF THE CHANGE CONTROLLER

In a summation of mentioned theories, it can be extracted common senses of the ‘change controllers’ that are grouped as below:

- Patterns/ Rules/ Regulations/ Principles/ Relations
- Structure/ System/ Substructure
- Geometric forms/ Order/ Balance

The convergence of these concepts shows the transdisciplinary entity of the discussion. As Hillier and Leaman believes “The concept of ‘transformation’ links ‘structure’ to main theoretical lines in other sciences” (Hillier & Leaman, 1972-3, P. 45).

It seems that these concepts as ‘change controllers’ are the effective factors for preserving consistency and unity.

They can also provide the abstract context for creating form and the source for transmission of values and durable substance during time. Whatever the buildings are developed according to their essence, they will assure the durable and timeless identity (Alexander, 2005). Accordingly, it can be said that the evolution in such domain defined by ‘change controllers’ will be ‘durable dynamism’. According to this statement, the flexibility potential is a subordinate to ‘change controllers’ and it can provide change ability according to the domain that is defined by these factors. So flexibility potential cannot provide free changing circumstances that may disturb the building identity. The positive and durable dynamism will occur when the building and flexibility structure is defined according to identical and substantial values.

Meanwhile, these factors (change controllers) can manage two dimensional aspects if they emerge by



authentic definition extracted from the substantial values. On the one hand, they are the preserver and transmitter of durability factors and on the other, they are the motivator of dynamism. Hillier and Leaman believes that “It is the ‘deep structure’ and ‘transformation rules’ which generate’ the ‘surface structure’” (Hillier & Leaman, 1972-3, P. 67). As Le Corbusier said, ‘The plan is the generator’, so it can be a potential that provides new facilities (Jencks & Kropf, 2007, P. 377). Thus the ‘internal potentials’ that mentions in section 4, can be a dependent factor to ‘change controller’.

For getting more applicable comprehension of the mentioned factors and their relation with flexibility, it is presenting two different flexibility approaches. The first approach is the flexibility provided by ‘open plan’ resulting from modern ‘International Style’ and the other one is the approach which is inspired by the spirit and character of the place. There is an example of each trend in designing office spaces in figure 2 and 3. It seems that the first approach (Fig. 3) has provided free space for responding to the diversity of functions by emptying the physical and conceptual aspects. In other words, the flexibility is provided without considering sense and structure of place through defining ‘change controller’. In this example, the changing domain of the design is extent and it can be converted to different functions. But in practice this design has led to a neutral and equal situation. As Norberg-Schulz believes, ‘the neutral and

equal modern functionalist spaces, has low possibility for emerging diversity of life. In fact, it should be said that the possibility of modern spaces for embedding life is limited. The equal and neutral space of functionalism has provided complete physical facilities. But it should be filled with life. The open world that is one of the great ideas of ultra middle ages era and the human was looking for it from theoretical and physical aspects, has been misunderstood unfortunately by emptiness’ (Norberg-Schulz, 2003, pp. 50-55). Such shortcomings have produced low efficiency and can be harmful for the architecture that demands durability. As the experience of the ‘International Style’ has provoked the public and elites negative criticism.

On the contrary, there are some flexible designs by architects like Herman Hertzberger (Fig. 4) that follow the flexibility approach by creating a structure (or by this article’s terminology ‘change controller’) depending on the place definition and letting the applicants’ mental interpretations to arouse for producing their personal usage of space. In this approach, depending the place essence and order and trying to preserve it, the changing domain does not respond to every function and has limited but defined functional aims. Such order is ‘an order that is hidden in every type of building, an order that its generation and growth defines the solution’ (Norberg-Schulz, 2007, P. 529).

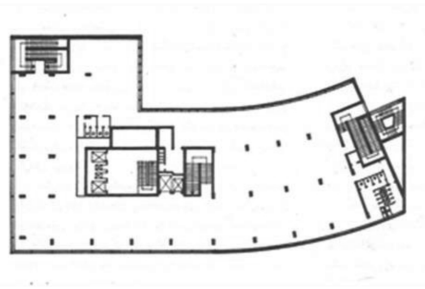


Fig. 3. Columbushaus, Erich Mendelsohn, 1931, the typical plan of office sections

This is a commercial-official building in Berlin. Seven of typical floors are for office function. Since the applicants of the building were not known before, the designer tries to provide the maximum flexibility.

(Benevolo, 1998, pp. 131-133)

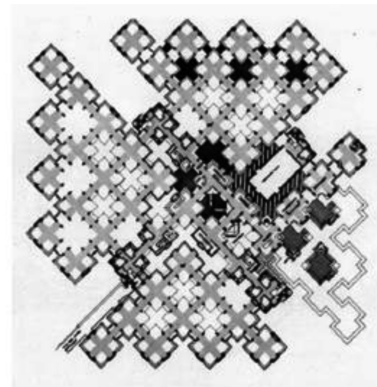


Fig. 4. The Central Beheer Office, Herman Hertzberger, 1995, the ground plan

This building is an office building for an insurance company in Apeldoorn, Nederland. The design is based on the multifunctional spaces that every person can adjust the space according to his use. The design structure is constituted of square modules that can be connected or detached according to necessities.

(Politano, 2006, P. 3)

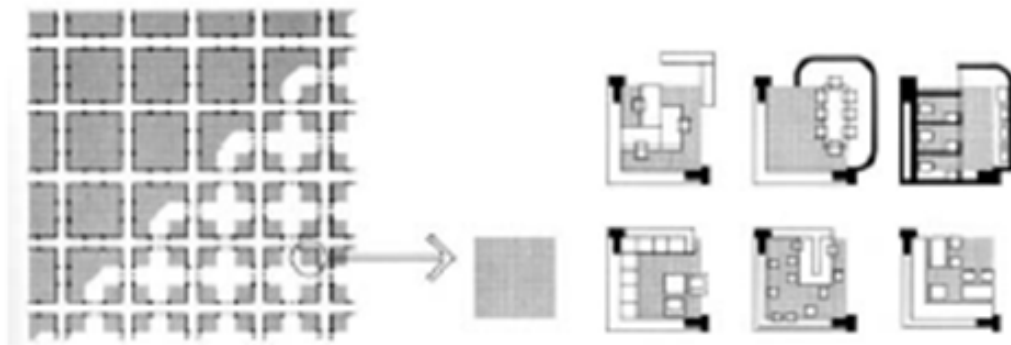


Fig. 5. The Central Beheer Office.
This diagram shows the changing area of the furniture in every structural module.
(Politano, 2006, pp. 3-4)

CONCLUSION

In architectural flexibility, the final aim while providing the adaptability with new circumstances is the continuity or durability through time. In this regard, it is necessary to consider flexibility along with the factors of durability and the interaction of durable and dynamic characteristics. According to the article argumentations, while discussing about flexibility, paying attention to the change and movement should be accompanied by considering the characteristics such as connectivity and being gradual in the time of change, united trajectory, potential and domain of movement. These characteristics are dependent to 'change controllers' which are concepts such as pattern, regulations, relations, structure, geometrical form and order. Considering these concepts and their arousing context, it can be concluded two important insights about the co-existence and interaction of durability and dynamism in the subject of flexibility quality:

- Durability and dynamism are interdependent and inseparable in this sense. They may resemble two sides of a coin or different layers of a single concept that can be emerged in different status during time. Flexibility in architecture should also have the force of dynamism and durability and so can be contained in such two dimensional description. So the dynamism which is resulted by flexibility should obey the regulation of this companionship, otherwise the co-existence of durability and dynamism could not occur. Here the difference between dynamism and transmutation is important. Transmutation is the complete and abstract change without

any dependence to any durable rule, but dynamism works in the domain of durable principles and obedience of 'change controller'. Such organization, as well as having systematic discipline, has the ability of evolution and permanent change. This definition can contain a type of dynamism that directed toward perfection and progress.

- The analysis of the co-existence of durability and dynamism can clarify the two dimensional characteristics of the 'change controller's. On the one hand, these controllers are the unifying and preserving durability factors and on the other, are the generating gene and potential of the dynamism. Thus, while designing flexible architecture, these two dimensional genes should be recognized well and this will led to providing simultaneous durability and dynamism.



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ENDNOTES

1- There has been a more extended analysis in this relation in 'Architectural Flexibility: Roots and Pathologies in Contemporary Architecture' (Gharavi Khansari, 2009)

2- 'Permeability' means the quality that affects where people can go, and where they cannot (Bently et al., 2003, 5).

3- 'Legibility' means the quality that affects how easily people can understand what opportunities it offers (Bently et al. 2003, 5).

4- 'Visual Appropriateness' means the quality that affects whether the detailed appearance of the place makes people aware of the choices available (Bently et al. 2003, 5).

5- 'Richness' means the quality that affects people's choice of sensory experiences (Bently et al. 2003, 5).

6- 'Personalization' means the quality that affects the extent to which people can put their own stamp on a place (Bently et al. 2003, 5).

7- 'Variety' means the quality that affects the range of uses available to people (Bently et al. 2003, 5).

8- 'Robustness' means the quality that affects the degree to which people can use a given place for different purposes (Bely et al. 2003, 5).

9- For more information about this philosophic approach please look: Hasanzade Amoli, 1996.