

A Semiology Approach to Analysis of Form in Contemporary Architecture

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ABSTRACT

Contemporary architectural forms created by various ideas and design techniques have become possible with the advances of computer simulation technology and through construction methods allowing the effective production of repetitive and variable forms with intended materials. Most of these architectural forms are perceptively being simulated and individualized in urban settings. These architectural forms with simulated images reflect the current consumer-oriented society in most countries including Iran. In this research, it is attempted to discuss the role of digital design techniques, as a tool for the active creation of simulated forms in contemporary architecture of Iran, with a semiology approach to the characterization of form in mega projects designed and constructed in urban areas. This approach establishes an association between the images of superficiality and the human sensory experience in a social context, leading to the emergence of innovative forms in contemporary architecture. The results revealed that with the utilization of digital design techniques to produce simulacra, younger architects of Iran have reconfigured the perceptions about architectural forms, thereby enhancing their performance as a landmark in urban settings.

Keywords: Design, Form, Semiology, Simulation.

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1. INTRODUCTION

Exterior forms of buildings have always expressed the unique styles of each era through the appropriate application of social, cultural, and technological backgrounds. An exterior form articulates important subjects such as material characteristics, form creation techniques, and productivity. The expression of form reflects the desire to form geographical and cultural representations of each period's customs. The International Style, representing modern architecture, incorporated white walls and repetitive parts as a major form expression. White walls symbolized purity and the uniform (i.e., repetitive) wall represented mass production, which was facilitated by the Industrial Revolution. Problems in symbolism in modern architecture have resulted from an excessive preoccupation with purity, which has led to a failure to represent societal preferences and technological advancement adequately. This conflict between production and representation is intrinsic to the technology of mass production (Leatherbarrow & Mostafavi, 2005). As a result of technological development at the end of the 20th century, a new paradigm appeared in which advanced media images and advertisements sparked the new phenomena of artificial and virtual designs on architectural forms. Contemporary architectural forms are now covered with images evoking sensory stimulation, which is the characteristic of the modern age of information technology, a consumer-oriented culture, and the widespread use of public and social media. French philosopher, Jean Baudrillard described the focus on consumerism in terms of the phenomenon of simulacra, in which images appear to supersede reality. Thus, objects are transformed into signs and symbols, which are the illusions of reality seeming more real

than reality itself (Baudrillard, 1995).

Innumerable images are now applied to architectural forms with emerging new media, advanced technology related to form fabrication, and new materials. Current digital simulation and design technologies allow the effective analysis, simulation, fabrication, and assembly of virtually constructed architectural images. Notably, this technology reconstructs the unit information of materials and then, removes the individual characteristics and identity of each material to simulate an image. Thus, the desired form effect is achieved with the use of virtual images.

This research tried to discuss that in the contemporary architecture of Iran, digital simulation and design technologies are now an influential tool for the active creation of innovative form images. Furthermore, changes in construction technologies related to the creation of architectural forms, the representation of images, icons and the use of symbols, are discussed with a semiology approach, based on the influence of current globalized society and digital design techniques on architectural trends in metropolitan areas of Iran.

2. THEORETICAL BACKGROUND

2.1. Form Creation and Representation in Contemporary Architecture

Throughout various historic periods of Iran, the construction of the built environment has been a result of progression in cultural values, re-ligious context, political framework, science and technology, and the progress of society as a whole. There always has been a deep relationship between the form (image) of building and the represented meaning of it in Iranian architecture. Different categories of this relationship are sorted and illustrated in Figure 1.

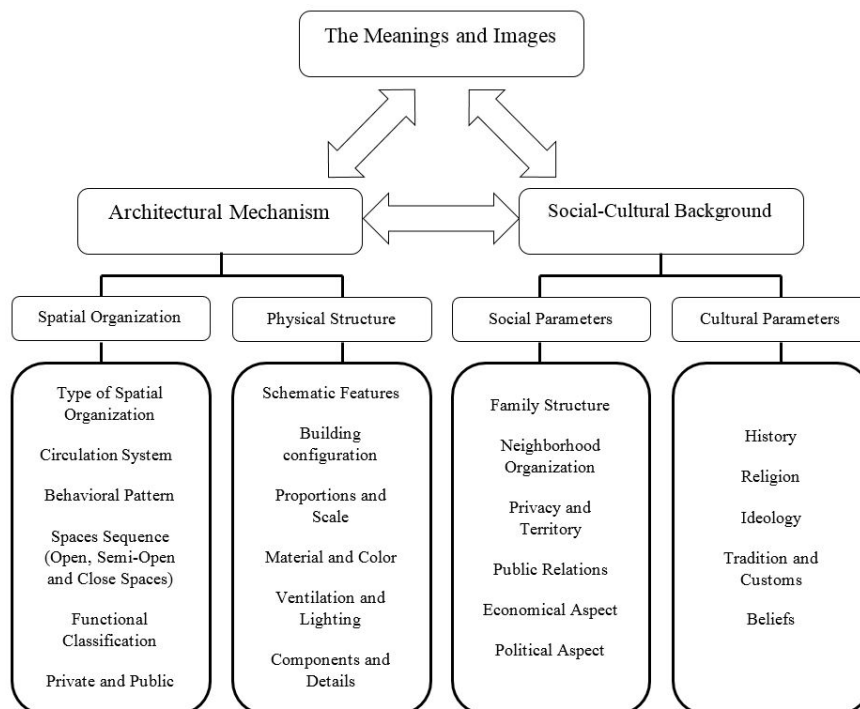


Fig. 1. Conceptual Relationship between Form (Image) and Meaning in Iranian Architecture (Derived from Literature Review)

Following World War I, the availability of building materials and technologies for the standardization of fabrication and construction has spread to countries like Iran. Therefore, most of the young architects have explored a variety of approaches to new forms and methods to architecturally express new functional needs. In addition to the dynamics of economic progress and socio-cultural and geopolitical contexts, contemporary architecture of Iran faced the challenge of finding an individual character that combined the

heritage of historical regional building traditions with the expression for a modern society (Jeon, 2009).

On the other hand, the International Style, an iconic name for modern architecture, typically employed methods eliminating visual sensitivity and appeals to recognition (Ghasemi, 2018). The style has been understood as a standard of modern architecture that uses abstract and geometric spaces and forms without ornamentation and with simple grid geometry, as shown in Figure 2.

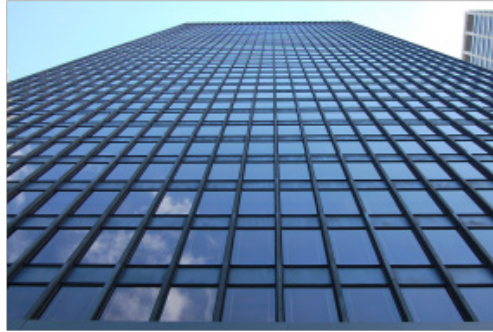


Fig. 2. Seagram Building by Mies Van Der Rohe, New York (1958)
(www.greatbuildings.com)

Buildings constructed before the era of the International Style represented and reproduced outside elements and narratives through architectural media. However, modern architects have refused to rely on mere representation; instead, they have denounced and reorganized the principles of interior composition (Ghasemi, 2018).

Since the modern period, mass production has facilitated the formation of consumer culture, which is the characteristic of contemporary society. The modern period emphasized productivity, but the contemporary period focuses on consumption. In a consumer-oriented society, vision has become the most important human sense. Movies and television, which appeared at the end of the 19th century and mid-20th century, respectively, and various visual media that continue to develop, have generated the term “Society of the Spectacle” (Debord, 2006).

In the Society of the Spectacle, images rather than objects are consumed. Determining how to express oneself by consuming specific objects is an important consideration in contemporary society. The importance lies in the image rather than the function of the object. Baudrillard suggested that contemporary society is ruled by images and symbols of consumerism; i.e., simulation. Simulacra and simulation are best known as images and signs that represent present reality.

Baudrillard claimed that modern society has replaced all reality and meaning with these symbols and signs, suggesting that the human experience is a simulation of reality expressed in four stages: reflection of image, denatured image, absence of image, and no relation to reality. The simulacra referred to by Baudrillard reflect the influence of culture and media in creating perceived reality (i.e., hyperreality). The philosopher believed that society had become so reliant on simulacra and it had lost contact with the real world (Baudrillard, 1995). On the other hand, contemporary society is facing the existential condition associated with simulacra in which one is surrounded by images replacing and taking precedence over reality (i.e., the hyperreal).

Today, symbols represent themselves and create, rather than reproduce, objects. Therefore, reality matches its symbols. This relationship is potentially encoded by the organizational strategy of a mass-producing consumer society. A symbol becomes more real than reality (i.e., hyperreal) as it passes through the four stages of simulacra. Through the processes in which hyperreality surpasses natural reality by symbolism and the distinction between nature and artificiality is eliminated, simulation creates a superficial phenomenon visually and perceptually, as shown in Figure 3.

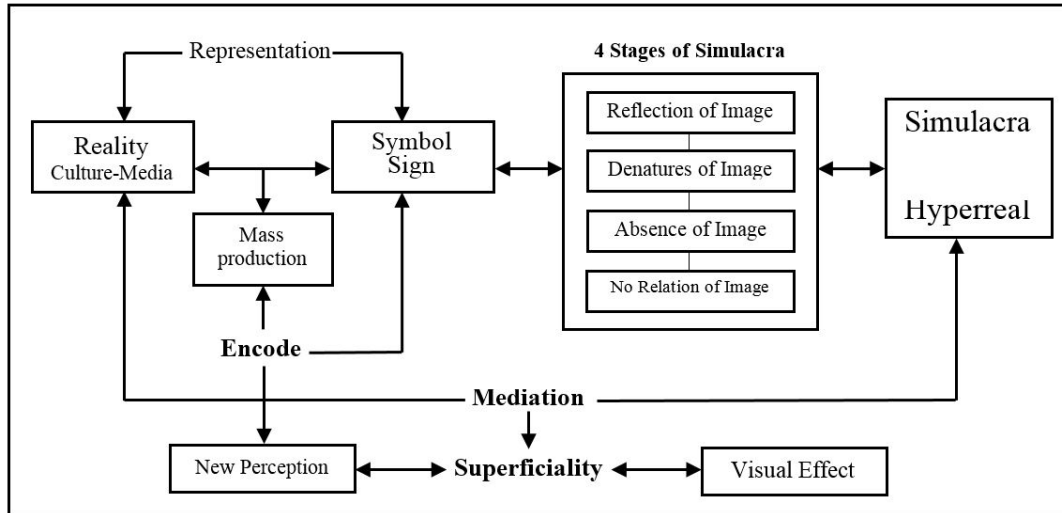


Fig. 3. Conceptual Diagram of Simulacra Creation Process

Often, superficiality is discussed as a characteristic of consumer culture. The term has a double entendre of form exposure and lack of depth. Superficiality implies that, aside from the exposed meaning, any hidden message is no longer important. The contemporary visual culture is based on such superficiality, which brings everything to the form. Consequently, this culture tending to expose things externally has seeped into architectural fields. Invisible elements have been called into visible realms. The desire to visualize every element has made the distinction between internal and external realms meaningless. People have maintained an unflinching interest in the external form of architecture. In the contemporary visual culture, aside from the outwardly exposed building form, any hidden meaning is of no interest. Although industrial production of economic commodities was central in modernity, simulation creates superficiality as a model that leads to today's social order.

The form design of simulacra, which appears as the transformation of superficial images, is based on a combination of immaterial and unrealistic characteristics; thus, the distinction between the real and phantasmal is vague. Simulacra also signify instantaneous events that occur without changing objects or reality. Regarding the creation of form, simulacra can be explained as formal expressions of time, movement, and vector forces that move toward creating a space where events occur continuously. In other words, simulacra can be interpreted as ever-changing.

Gonçalves (2016) stated that data, stimuli and inspiration sources are viewed as particularly associated ideas (Babaei & Khakzand, 2017). Consequently, due to the existing theoretical framework, the process of idea generation through inspiration sources by adaptation to digital design techniques can be imagined in the form of the conceptual model shown in Figure 4.

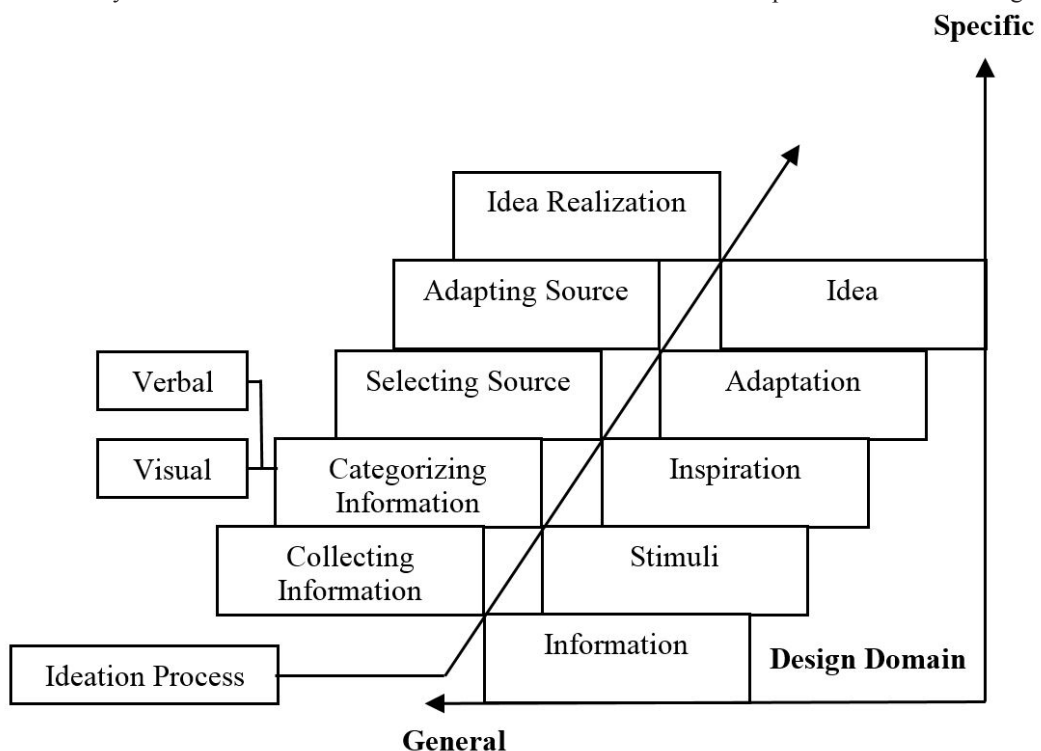


Fig. 4. Generation of Idea and Form in Architecture, Considering the Role of sMeaning and Smiotics (Babaei & Khakzand, 2017)

The form of simulacra, as a medium composed of the immaterial, dismantles the conventional binary distinctions between reality and simulation in virtual reality, between real and imaginary worlds, and between science and art. The contemporary forms in architecture imply the mixing and synthesis of imaginary and real worlds, and science and art, whose boundaries have become indistinguishable.

3. SEMIOLOGY APPROACH TO ARCHITECTURAL FORM

Semiology is a science which deals with the realization and analysis of signs and symbols in all forms and aspects. These aspects include spoken or written languages or non-linguistic forms such as physiologic and biologic signs, semantic signs, value systems, and all forms of motions, moods, consciousness or unconsciousness (Fakouhi, 2008). The recent semiology science is a young and new science, which is introduced in the early 19th century due to philosophers focusing on it especially on linguists' studies. The

semiology method is also utilized for recognizing the significant perception of the communication mechanism. In the philosophical and logical beliefs of ancient Greece and India, semiology is used as a means to study the phenomenon (Ahmadi, 2012).

The modern semiology is the result of an evolution of traditional semiology, which had Greek roots, and this evolution occurred in medieval times. Consequently, this evolution approached the signs having a metaphysical basis to a human basis. The recent semiology is influenced by the works of some scholars such as Charles Sanders Peirce, Ferdinand de Saussure, Levi Strauss, Jacques Lacan, Michel Foucault, and Roland Barthes. Among these theories, those of Charles Sanders Pierce and Ferdinand de Saussure play key roles. Peirce used the term "Semiotics", and Saussure invented "Semiology". Umberto Eco suggested using Semiotics as signs science in natural sciences and semiology in the human sciences (Parsaee, Parva, & Karimi, 2015). A general review of some influential scholars' opinions on the semiology of architectural form is presented in Table 1.

Table 1. Categorization of Semiology Analyses regarding Architectural Form (Extracted by Authors from Scientific Sources)

Philosopher	Categorization and Basic Principals	The Points
Charles Sanders Peirce (1839–1914)	(1) Icon: based on the similarity between sign and object. (2) Index: based on such internal or existence aspects, such as meaning unity between object and sign. • It has two types of indexical signs: a) It has a direct and physical relation to the object (technically) b) It has no direct and physical relation to the object but it still relates to object interpretation (metaphorically) (3) Symbols and public signs: the contract which reveals the relation between the interpretant and the object and the sign basis.	<ul style="list-style-type: none"> • The icon is based on the formal similarity between the signifier and the signified or sign basis and its interpretant. • The icon in the art means the similarity between form and concept (meaning). • Iconic signs are two types (Ahmadi, 2011): • Picture/Image (repeat the relation between object components and elements) • Metaphor (creating a kind of parallel between object components and icon components) • The index depends on the cause-effect relation between the signifier and the signified. • The symbol is a sign in the true meaning. • The symbolic signs give notice about object, apart from any kind of formal similarity or the cause-effect relation or deductive relation with the object. • The icon and index are the current relation between the signifier and the signified but the symbol is the out of time relation.
Charles W. Morris (1901–1979)	<ul style="list-style-type: none"> • Categorizing the signs based on their specific functions: (1) Scientific (2) Esthetics (3) Technological 	<ul style="list-style-type: none"> • The artwork is a particular esthetic sign; it means an icon with its particular values (Ahmadi, 2011). • The iconic signs are signs which are in any way similar to their objects (Ahmadi, 2011).
David Crystal (1941)	The signs can be categorized like this: (1) Auditory – verbal (2) Visual (3) Tactility (4) Olfaction (5) Gustatory (Sasani, 2003)	<ul style="list-style-type: none"> • Categorizing the signs based on the human sensory system (Sasani, 2003).
Functional Semiotologist	Categorizing the signs in these types: (1) Natural indexes (2) Icon (3) Symbol (4) Sign	<ul style="list-style-type: none"> • There is a relation of time and place between the signifier and signified in natural signs and no contracts have determined their relation. • There are no essential relations of time and place or any contracts between the signifier and signified in the icon (Ahmadi, 2012).
Ferdinand de Saussure (1857–1913)	<ul style="list-style-type: none"> • He regarded the symbolic aspect of signs by considering the contractual aspect of signs. • The true sign is a sign which is the relation between its signifier and the signified is optional and contractual (Culler, 2011). • The true sign is the main topic of semiology and the two other signs (icon and index) are considered particularly and as secondary. • The symbol represents the natural relation between the signifier and the signified (Ahmadi, 2011). 	

4. METHODOLOGY

In this study, two major research methods were used including a literature review and a survey for ideas and opinions related to the evaluation of form in contemporary Iranian architecture. The literature review was conducted to collect the theories and accounts regarding the semiology approach to the nature and functions of form, and the reasons behind the application of digital design technologies in the contemporary architecture of Iran. In the survey section, a self-designed questionnaire was developed to identify the opinion of Iranian architects regarding the role of digital design technologies in the form of samples, for which characteristics and methods of selection are presented.

5. SAMPLING AND DATA COLLECTION

In this research, 35 prominent buildings constructed in Iran during the period 2000-2010 were sorted by function. For the convenience of respondents, the scope of the survey was restricted to those buildings which met at least one of the three following criteria:

- 1) they are acknowledged or honored as "prominent buildings" in key Iranian architecture books or journals;
- 2) they are the winners of national or/and international architectural competitions; or
- 3) they have a considerable national or urban value due to their function, location, or client.

As a result of the identification of contemporary buildings according to the aforementioned criteria, 35 cases were identified, among which 32 were selected based on Cochran's formula. In the next step, all 35 buildings were categorized according to their functions. To this end, seven types of buildings (including residential, commercial, cultural, administrative, healthcare, and mixed-use) were assumed. It is also notable that all of the data regarding the physical and

visual specifications of buildings were gathered through library studies, direct observations, and photographs.

To evaluate the architects' perception of the role of digital design techniques, a questionnaire was designed. The questionnaire was composed of 32 items, which reflected 8 major dimensions of architectural form influenced by digital design techniques; namely, proportions, geometry, scale, material, icon, structure, harmony, and symbol. The respondents evaluated and rated the degree of influence of digital design techniques on the creativity of form in the selected buildings with contemporary architecture from their points of view regarding the abovementioned dimensions; where: S refers to Strong role, M Moderate role, W Weak role, and N Neutral role.

To test the validity and reliability of the questionnaire, it was presented to an experimental sample of 30 persons before it was presented to the target architects. All the statistics were estimated using SPSS version 23. Architects' responses were collected on a three-point Likert Scale, which is mostly used as a ranking tool. The questionnaire's questions gave options from which the architects should choose, and these options were given numerical values to be measured, where the ranking given to buildings in each city considering the presence of each of the eight dimensions has varied between "Strong = 3", "Moderate = 2" and "Weak = 1".

The reliability of the applied questionnaire was tested and appeared to be high, through calculating Cronbach's Alpha. This statistic varies from 0 to 1 and is considered the most famous measure of reliability which is based on achieving the same results with the same person upon trying the very same experiments several times. Based on Cronbach's Alpha, validity has also been calculated and showed how suitable the questions were for measuring perception, and is also apparently high, as seen in Table 1.

Table 2. Reliability and Validity of the Questionnaire

Serial	Dimension	The Cronbach's Alpha	Validity
1	Proportions	0.973	0.986
2	Scale	0.954	0.976
3	Material	0.964	0.981
4	Geometry	0.966	0.982
5	Icon	0.964	0.981
6	Structures	0.962	0.980
7	Harmony	0.977	0.988
8	Symbol	0.983	0.991
Total Dimensions of Perception		0.993	0.996

6. ANALYSIS OF RESULTS

To achieve the research objectives, the following statistical methods were applied:

- Descriptive statistics: such as calculating the mean (average) of architects' responses. For all 7 groups of building, the mean of each dimension is calculated.

- Factor analysis: This is an advanced statistical technique used for data reduction to aggregate a great number of variables into one factor. The factor analysis is used to build an index of architects' perception of the dimensions of architectural form.

- Discriminant analysis: This is used to differentiate between juniors and seniors based on their levels of

perception. It is considered a tool for classification of audiences and classifies them into two groups depending on their degree of perception. It predicts that anyone answering the questionnaire can be classified as either a senior or a junior according to his/her answer. Table 2 indicates the mean of architects' responses on the role of digital design technologies in the different dimensions of architectural form, according to the function of selected buildings. In this three-point Likert Scale, the mean ranging from 1 to 1.66 indicates a weak role, a mean ranging from 1.67 to 2.33 indicates a moderate role and the mean ranging from 2.34 to 3 indicates a strong role. According to Table 2, the results revealed that the highest dimension influenced by digital design techniques was the "Symbol" dimension, followed by "Harmony". Besides, the factor analysis technique was used to turn the 8 dimensions of perception regarding the influence of digital design technologies into one index representing the total perception of all dimensions of

architectural form. The two stages of factor analysis were applied: 1. an index of each dimension was built to reduce the architects' responses on buildings in each functional group, which were considered as variables, into one index; and 2. the produced indices were considered as variables to build the final index of architects' perception.

The analysis was done in the following steps. First, an average indicator was computed as the arithmetic mean of responses by measuring the items within each dimension, reflecting the architect's general response on that dimension as a whole. Then, the average number of buildings in each functional group of buildings was calculated.

This operation was repeated to every dimension, and then, the factor analysis was used to build an index for each dimension of perceived influence, allowing a different weight for every functional group of buildings in relation to every dimension.

Table 3. Mean of Architects' Responses on the Dimensions of Architectural form According to the Function of Selected Buildings

Dimensions	Function							
	Cultural	Commercial	Administrative	Educational	Residential	Healthcare	Mixed Use	Total
Proportions	1.5	1.2	0.9	0.8	0.7	0.4	1.0	34.3
Scale	1.6	1.3	1.1	0.9	0.7	0.5	1.1	36.9
Material	1.4	1.2	1.0	0.8	0.7	0.5	1.0	33.8
Geometry	1.6	1.3	1.1	0.9	0.8	0.5	1.1	37.4
Icon	1.5	1.2	1.0	0.9	0.7	0.4	1.1	35.7
Structure	1.4	1.3	1.0	0.8	0.7	0.4	1.1	35.8
Harmony	1.7	1.3	1.1	0.9	0.7	0.5	1.1	37.6
Symbol	1.6	1.3	1.1	0.9	0.8	0.5	1.2	39.0

Table 4. The Factor Loadings of the Indicators for Each Functional Group

Function	Factor Loadings							
	Proportions	Scale	Material	Geometry	Icon	Structure	Harmony	Symbol
Cultural	0.504	0.363	0.417	0.439	0.400	0.530	0.385	0.474
Commercial	0.623	0.646	0.656	0.684	0.587	0.582	0.649	0.689
Administrative	0.765	0.795	0.774	0.850	0.724	0.792	0.802	0.814
Educational	0.892	0.909	0.896	0.916	0.899	0.899	0.902	0.916
Residential	0.840	0.856	0.876	0.829	0.875	0.902	0.876	0.869
Healthcare	0.818	0.855	0.850	0.825	0.842	0.870	0.869	0.849
Mixed use	0.816	0.810	0.806	0.808	0.821	0.851	0.807	0.805
Adequacy Measures	58.05 ^a	58.94 ^a	59.24 ^a	60.61 ^a	56.93 ^a	62.15 ^a	60.05 ^a	61.77 ^a

Table 5. The Component Score Coefficients of the Indicators for Each Functional Group

Function	Component Score Coefficients							
	Proportions	Scale	Material	Geometry	Icon	Structure	Harmony	Symbol
Cultural	0.124	0.088	0.101	0.103	0.100	0.122	0.092	0.110
Commercial	0.153	0.157	0.158	0.161	0.147	0.134	0.154	0.159
Administrative	0.188	0.193	0.187	0.200	0.182	0.182	0.191	0.188
Educational	0.220	0.220	0.216	0.216	0.226	0.207	0.215	0.212
Residential	0.207	0.207	0.211	0.195	0.220	0.207	0.208	0.201
Healthcare	0.201	0.207	0.205	0.195	0.211	0.200	0.207	0.196
Mixed use	0.201	0.196	0.194	0.190	0.206	0.196	0.192	0.186
Adequacy Measures	0.78b	0.805b	0.825b	0.813b	0.797b	0.846b	0.830b	0.849b

In Table 3, the analysis found the factor loadings; which represented the relationship between the full index of perceived influence – for example – and the indicator of each functional group. Also, the component score coefficient was found, which is the share of the indicator of each functional group into the full index of each selected dimension, which is an iterative step repeated for each of the eight dimensions of the perceived influence of digital design techniques. According to the component score coefficients listed in Table 4, Sampling Adequacy was calculated, which reflects how suitable each functional group is for applying factor analysis. It had a minimum of 0.78, indicating that the factor analysis suited the indicators and none of them needed to be excluded from the analysis. Total Variance, another tool for checking how suitable the model is, was calculated from the factor loadings. It had a value for each index with a minimum of 58%, as shown in Tables 3 and 4. This level is acceptable for this kind of study. Finally, factor analysis was applied one more time to calculate the total weight of each dimension and convert the 8 dimensions of perceived influence into one composite index. The factor analysis method

doesn't assume a predefined load of influence from digital design techniques on selected dimensions, but the results built upon architects' responses, yielded that the dimensions have almost close loads.

In Table 5, the factor loadings and the component score coefficients of the 8 dimensions of perceived influence from digital design techniques are demonstrated. The highest load was obtained for "Symbol" dimension (0.989) while the lowest one for "Geometry" dimension (0.968). From Table 5, it can be noticed that the value of sampling adequacy for the architects' perception index is 0.91, which indicates that factor analysis suit all indicators and none of them needs to be excluded from the analysis. Moreover, the Total Variance explained by each one of the indices was about 97%.

An influence index was created with a range of -1 to 1. This range was divided into three thirds to formulate the lowest, moderate and highest levels of influence; where the label "1" represented the lowest level of influence, the label "2" a moderate level of influence and the label "3" the highest level of influence. Then, the frequency distribution of the architects, according to the level of perceived influence, was calculated, as displayed in Table 5.

Table 6. The Factor Loadings of the Indicators and the Component Score Coefficients of the Dimensions of Influence

Dimension	Factor Loadings	Component Score Coefficients
Proportions	0.979	0.126
Scale	0.982	0.127
Material	0.968	0.125
Geometry	0.990	0.128
Icon	0.993	0.128
Structure	0.981	0.127
Harmony	0.988	0.128
Symbol	0.989	0.128
Adequacy Measures	96.8 ^a	0.909 ^b

7. DISCUSSION AND CONCLUSION

Formation and evolution of innovative patterns and images appear on contemporary architectural forms based on the factors like social changes reflected in the methods used by media, advancements in computer simulation, and fabrication technology through computer-aided design and manufacturing, allowing effective and streamlined production as well as innovative use of materials. Rather than conveying, the national or local identity or physical property of each form in contemporary architecture of Iran is individualized and transformed into a visually stimulating form. Additionally, new contemporary architectural forms are virtual, superficial, and immaterial. In fact, contemporary digital design techniques and fabrication technology minimize the representative role of the architectural form and emphasize its virtual effect. Thus, the perceptive gap between production and reality is overcome

by the simultaneity of simulacra and the digitally fabricated forms and surfaces. Digital technological representation has transformed building forms through simulated images that paradoxically offer true sensory experiences.

This research was conducted to investigate the architects' perception of the degree of influence of digital design techniques on the nature of form in contemporary architecture of Iran. The descriptive analysis showed that the respondents (architects) gave high rates to the "Symbol" dimension to be influenced by digital design techniques in the majority of target buildings in different functional groups while they rated the "Material" dimension as the lowest.

The digital design techniques investigated in this paper have been rapidly spread in Iranian architecture, especially among younger architects, while academically, new concepts related to them are still being defined. Certainly, the interpretation of the relationship between sociocultural changes and new

perspectives towards new media and architecture can be analyzed through various viewpoints and complex studies. This study had a unique significance because the method of expression of an architectural form and the degree of influence of digital design techniques were analyzed and the theoretical relationship elucidating the relationship of this technology with

current sociocultural phenomena was discussed. In future research, the application of the digital design techniques in architecture and an in-depth study on the transformation of an architectural form suitable for a particular period shall be carried out to examine the relationship between the architectural and socio-technical transformations of the society.

REFERENCES

- Ahmadi, B. (2011). *The Text-structure and Textual Interpretation*. Tehran: Markaz Publication.
- Ahmadi, B. (2012). *From Pictorial Signs to the Text: Toward the Semiotics of Visual Communication*. Tehran: Markaz Publication.
- Babaei, S., & Khakzand, M. (2017). Adaptation as a Design Method in Architecture, Case Study: A House at Martha's Vineyard. *Armanshahr Architecture & Urban Development*, 10(18), 13-21. http://www.armanshahrjournal.com/article_49197.html
- Baudrillard, J. (1995). *Simulacra and Simulation*. Ann Arbor: University of Michigan Press.
- Culler, J. (2011). *Ferdinand de Saussure*. Tehran: Hermes.
- Debord, G. (2006). *Society of the Spectacle*. Oakland: AK Press.
- Fakouhi, N. (2008). *Urban Anthropology*. Tehran: Ney Publication.
- Ghasemi, E. (2018). The Evolving Role of Digital Technology in Architectural Design. *Online Journal of Engineering Sciences and Technologies*, 1(3), 1-6. <http://www.ojest.ir/issue.aspx?id=6>
- Jeon, Y. (2009). A Study on the Expressional Characteristics of a Spectacle on a Contemporary Architectural Surface. *Journal of Asian Architecture and Building Engineering*, 8(1), 65-71. <https://www.tandfonline.com/action/doiSearch?AllField=A+Study+on+the+Expressional+Characteristics+of+a+Spectacle+on+a+Contemporary+Architectural+Surface&SeriesKey=tabe20>
- Leatherbarrow, D., & Mostafavi, M. (2005). *Surface Architecture*. New York, NY: The MIT Press.
- Parsaee, M., Parva, M., & Karimi, B. (2015). Space and Place Concepts Analysis Based on Semiology Approach in Residential Architecture; the Case Study of Traditional City of Bushehr, Iran. *HBRC Journal*, 11, 368-383. <https://doi.org/10.1016/j.hbrj.2014.07.001>
- Sasani, F. (2003). Multidimensional Semiotics and Art. *Khial (Farhangestan-e-Honar)*, 5, 90-101. <http://www.greatbuildings.com>

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