

The Semantics of Water in Architecture and Applying it in Designing Indoors of Contemporary Houses

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Abstract

Water as one of the most fundamental natural elements throughout history greatly impacts formation and efflorescence of urban spaces and architecture. In the meanwhile, today's the way humans communicate with this redemptive element is changed. In this regard, the method of renewed communication and revival of the culture of water using in architecture requires review of designing methods. The present research attempts to indicate conceptual, functional and esthetic fundamentals of water and analysis of these three systems in the examples of Iran's architecture provides the ground for using ancients' experiences with an emphasis on revival of the three spiritual, material and mental dimensions of water. Then, the use of water in architecture and sight architecture is analyzed and patterns to apply this element to flux of positive energies of residents of these houses based on the Feng Shui philosophy fundamentals are represented and using qualitative and content analysis method, application of the water element in interior decoration and design of houses is studied and discussed. The results of this research show that since the space of today's houses shrank and the designer's hand is not open to use too much water in designing interior space of houses, we should turn to patterns that at least evoke and inspire the feeling of water flow in the living environment. The studies conducted indicate that in order to manifest the concept of water flow in interior design of houses, the only option is not using water fountain. Rather, applying wavy and curved shapes as well as using reflective instruments such as glass and mirror, using home aquarium and applying water colored shots such as wall papers also suggests the concept of water fluidity in a house.

Introduction

If we consider the landscape design as an intelligent composition of elements and natural structures and man-made factors for artistic creation of external spaces, these spaces deal with visual and perceptual aspects of human and form the landscape and consequently they are related to our visual, olfactory and auditory senses. However, about 80% of our perception from the surrounding world depends on visual sense and the role of elements in the favorability of the sight. In this regard, the presence of water in landscapes and sights and the use of water in designing and architecture of sight as an opportunity are highly important for designers (Taghi Zadeh, 2003:73). Water has unique features which represent it as an unreasonable and irreplaceable element in designing landscape. Basic characteristics of water as a material or chemical composition represent it as a source of life for all creatures. Additionally, with regard to different aspects and applications of water we can say that in its simplest form, it is composed of two atoms of hydrogen and one oxygen atom and is considered a fundamental material for the continuation of creatures' and plants' life and become so important that is mentioned in the Holy Quran (Nazar Zadeh, 2006).

Over all, decoration and interior design of residential or work building greatly impacts human behavior and thought. Feng Shui philosophy which is rooted in ancient East also studies this problem from the viewpoint of human's spiritual relation with its surrounding environment (even inanimate entities) (Lee, K., 2006). Although, this philosophy is founded on the five elements of

water, wind, wood, fire and metal and cooperating between them, the literal meaning of Feng Shui is "water and wind" and it means that by mobilizing wind and water and applying material elements in the space, positive energies streams in our living environment and happiness are the simplest gift which are created by it for residents of a house (ibid). Maybe, water can be introduced as the most important element of this philosophy. Water flow in a space by eliminating negative energies and flourishing positive energies causes farewell and joy. Architects manifest happy and comforting impact of water flow in interior places by applying various fountains. But, it should be noted that using wavy and curved shapes with glass and mirror can be applied as a pattern of applying water element in designing interior space of residential houses of Iran.

Research methodology

The method of this research with regard to its fundamental nature is analytical-descriptive and is conducted using analysis and study of relevant resources and library studies. Therefore, after studying and analyzing features, the functions of water element, its examples in Iran's contemporary architecture, its functional aspects in the architecture atmosphere, the semantics of the application of water element in architecture and designing interior spaces were analyzed. Obviously, the research method applied in this research is not based on statistical calculations and it seems that generalizing these results requires more comprehensive and broader research.

The present research seeks to answer the fundamental question of how the element of water in designing the interior space of today's houses to be used in improving the space of modern architecture and what are its administrative limitations? The main hypothesis refers to the presence of water in designing interior space of modern architecture of houses and restating the usability of this element and the positive aspects of giving identity and its energy to improve the space of contemporary houses. Based on the proposed research question it can be said that this research aims at analyzing and determining the indicators of water presence in the structure and space of Iran's architecture and the results in the man-made space. Initially, the semantic features of water over different periods and its feedback in culture especially in architecture are studied and then in order to describe its esthetic foundations, water is studied from three aspects of sensual, formic and sign esthetic. Then the concepts of water esthetic in interior architecture are evaluated and elements of water capacity in designing and its place in interior design of traditional architecture are explained. Then by using natural capabilities of water in interior architecture, restrictions of using it in interior spaces are evaluated and identified and finally, paradigm is provided to use water in designing interior spaces in today's apartments.

Background of study

Due to the importance of water in the culture and architecture of Iran, many researchers have written books and articles in this regard. The scope of researches conducted in this field includes the place of water in the creation system and mythical features of water over time as well as celebrations and customs for water to the methods for extracting and distributing systems and explaining the characteristics of water in Iranian architecture and urbanization. The researchers that conducted studies in this field including Mir Shekaraie (2001) about the role of water in formation of humans' ideas, Alam-ol-hoda (2003) about water in Iranian architecture, Naghi Zadeh (2003) on analysis of the impact of water specifications on Iranian culture and its impact on the formation of living environment, Karamati (2003) about the analysis of the place of water in today's urbanization of Iran, Litkahi (2009) on the relationship between the element of water and the role of divine and clear art with the analysis of place of water in Iranian-Islamic architecture.

Analysis of the esthetic and semantic philosophy of water available in architecture

Fundamentals of water esthetic in Iran's architecture

The subject of esthetic science is to recognize and understand factors that play a role in perception of any object or in its beautiful or desirable experimental process. In other words, esthetic refers to understanding human's power to innovate manifestations which are considered as favorite aspect (Lang, 2004:207). Environment psychologists divide the esthetics into three categories of sensual, formic and semiotic which are based on the ecological approach of perception. If an environment could provide typical behavioral pattern properly, that environment is delightful with regard to esthetics and if experiences provides a favorable feeling, they have a pleasing perceptual structure and suggest enjoyable symbols. Environmental psychologists consider these cases as three main aspects of esthetic environmental experience. These three aspects are studied in the following:

Sensual esthetic of water in the environment

In the esthetic science, sensual esthetic is considered as one of the significant components of individual's response to the environment. Sensual values result from enjoyable senses such as touch, smell, taste, hearing and visual. Environmental psychologists believe that humans do not pay enough attention to senses received from the environment and are aware of a sense when it is out of usual norms and a pleasing sense of existence and non-existence is felt. For example, in situations such as standing near a water fountain and the feeling of cool breeze blow – as a natural element of nature - suggests in the viewer in different forms of space, feelings and sense.

Formic esthetic of water in the environment

Formic value is derived from the sensual discipline of materials. The foundation of this positioning is to pay attention to the visual structure of environment. The issue of formic esthetic is the values of environments' forms and structures and includes the sense of joy from perception of patterns, proportions and figures which are regarded as the formic esthetic issue (Long, 2004:213). Formic figures with regard to esthetic values have unique characteristics and each has a unique feature separately and can suggest different perception in the observer. In the following, formic features of water are in two static and mobile forms and their varied presence in the environment is analyzed and categorized in three concentrated, linear and plate forms.

Semantics fundamental of water in architecture

Based on identification and analysis of four aspects, capacities and features of water in designing environment and architecture of sight can be initially defined in 10 factors as the following:

Symbolic

Symbolic capacities of water are so important for humans and almost the lingua franca of different societies indicates life, purity, serenity, purification, honesty, sincerity, brightness and portraying of the nature. Water is also a sign of change (Monam, 2006).

Dynamicity

As a dynamic element before the soil which is solid element, water has a dynamicity which is capable of gush and flow and passes through narrow channels or is expanded on the ground (Keramati, 2007).

Displacement

Water is also an element with a capacity to move. Landscaping elements or building elements in most cases are mainly stable and present at a defined location and in a certain position and become part of the static identity of that space (Alam Ol Hoda, 2003:18). In contrast mobility of water provides the possibility to move from one place to another and the space of architecture and environment is known as a temporary container for the presence and flow of water which cause the

water to be flowed from one spot to another. Various sights can be created through fluidity and passage of water. Water of rivers has another visual quality within the mountains (Keramati, 2007).

Permanent transformation

In all states of water evolution, it always transforms from one figure to another. From a visual aspect it can be seen that water shows different manifestations but do all of these features of water or other capacities of water show new forms? In its evolution process water can be turned into esteem or ice based on its climatic conditions.

Reflection

Water can be reflective. Characteristic can reflect its surrounding events through its surface mirror, this reflective capacity of water can be seen in most of architecture designs and sight designs throughout history.

Staining and lightening

Clarity and transparency of water makes it possible to manifest favorable colors either as a chemical composition of colors with water or as shining in it. Coloring in days and sun rays and lightening at nights through shining of colorful lamps light or moon are samples of this capacity (Dabiri, 2008:12).

Abrasion and Erosion

Water by its fluidity can carry other flaws, light plants, entities and heavier entities with itself through moving in lower levels. Erosion is another manifestation of this capability of water. Water with all its fluidity, softness and delicacy can erode much harder entities and form them. For example, the depth of rivers and huge stones that are eroded because of water dropping and the holes in them show other capabilities of water over time (Keramati, 2007).

Ductility and shaping

Due to its fluidity, water has the capacity of being shaped. This is one of the most important features of water. Ductility and plasticity, fluidity, hardness, solidity, steaminess as well as the eruption spraying power make other aspects of water visible (Zarkesh and Abdolbaghi, 2012: 13)

Kinetic energy

Water can be led and controlled from higher levels to the ground as a fluid by using the height and designing levels and gravity. Water can be formed differently by suppressing it as spraying and eruption (Monam, 2006).

Cyber geometry and the main elements of design

We can form water into thin plates or as a thin size or as a spot and turn it into a plate. It is one of the other features of water that can illustrate the capability of four main elements of design including spot, surface and volume (Monam, 2006).

In previous sections of this research we analyzed the psychological, esthetic and semantic philosophy of the presence of water element in the architecture. The conclusion of this section is that water has a specific place in relation to human and life environment and how to create this place have always been of great importance in architecture and how is it possible to highlight it in the processes of architecture?

Analysis of the presence of water in architecture of traditional houses

Using the element of water in the interior space of human residences in addition to providing the primary needs of residents, as an efficient tool in the designers' hands is for meeting the climatic and semantic and esthetic needs. Pools in the residential houses depending on their presence in different buildings take different dimensions and forms and are mainly directly related to the social and financial class of the owner and the decorative quality of each house's pool (Razavi, 2003: 27).

What is understood from the analysis of water functional system in residential units in Iran is the presence of water pools in various forms and formats that in addition to meeting climatic needs in an important level is a factor for meeting the esthetic needs of the environment. Also, in most of the cases, pools are an emphasis on the Dais space which itself confirms the previous hypothesis. In addition to these, spring house especially in desert cities such as Kashan plays a significant role in softening the natural conditions for humans. Spring places is specific part of Kashan's houses and are built in the way of aqueduct entering into the city (Abizadeh and Babazadeh, 2013).

Analysis of the structural system of pools indicates same and near portions (10 to 1), between the space of the pool and the yard. On the other hand, by analysis of the dimensions and the proportion of length to the width of the yard and the length to width of the pool in most of the cases, we can represent golden proportion between them (Aminian, 2008:43). In the following table, the functional system of water in residential apartments in Iran is summarized.

Table 1. The structural and functional system of water in residential apartments (resource: author)

Emphatic function of water in the building	Emphasis on the space
The conceptual dimension of water presence in the building	Emphasis on formic esthetic and the width of the pool (material dimension)
The public function of water in the building	Meeting climatic-water wash needs, washing (dishes, cloths, carpet etc.) needs – based on contentment planning which is finally led to garden watering.
Types of water presence in the building	1. Static (as presented in the yard, coastal spring house etc.) 2. Fluid (paths of moving water in the yard or coastal etc.)
Pool form	They have mostly a free and varied form and are manifested in square, triangular and circle designs and with a composition of geometric forms based on rectangular and circle. (free in form)
Length	Mainly in the direction of yard ...
The proportion of length to width of the yard	$1.2 \leq x \leq 1.8$, frequency of numbers near to the number 1.6 (golden number) is higher.
The position of proportion to dais axis	Elongation of pool in line with or along with dais axis
The proportion of length to wideness of the pool	$1 \leq x \leq 4$, frequency of numbers between 2 and 3.
The proportion of the pool area to the yard area	$0.08 \leq x \leq 0.1$, frequency of the numbers near to 0.1 is higher.

A large variety of pool shapes can be seen in houses based on their broadness and affordability of the owner unlike the mosque' pool which are mainly in a simple form in houses. Also, unlike the mosque's apron pools are manifested in the houses' yard in a complete combination with the plant.

Analysis of the role of water presence in designing interior space

Designing interior space in any environment is undoubtedly influenced by environmental and weather factors of the zone. One of the most important factors affecting the way of designing architecture is the type of weather which leads to adapting methods to confront some environmental factors or balancing them. Types of strategies to create appropriate temperature in the surrounding environment is common in Iranian architecture which is achieved by different methods including

use of appropriate materials for each region and the way of designing building. For example, building a deflector or pool house is the most notable methods to confront with hot weather in the summer. Although, by the development of technology and innovation of cooling instruments and dryness of contentment etc. pool house lost their boom however with consideration and referring to ancient architecture, we can reuse traditional methods to create desirable space. In fact, artificial buildings and spaces separate us from the nature nowadays. Water in Iranian architecture especially interior architecture is not conceptually meaningful. However, it can be a reason for designing different spaces.

Patterns for using the water element in designing interior spaces

Nowadays, according to Feng Shouie philosophy designers and architects have fully understood the significant role of water in the flow of positive energy in houses' space and inter it appropriately in the interior spaces (Wie, 2006). As a pattern by designing and including various water fountains and materials which suggest the concept of water in the mind, we can free the mas of stagnant energy in the work and life environment which lead it to appropriate direction (Hong-Key Yoon, 2006: 352). According to Feng Shuie philosophy, critical energies enter and disperse in the building through doors and glass windows by wind (Lazanbi, 2005). Then these energies go in the direction of water, flow and turn into positive energies. Thus, the existence of element of water in interior decoration is a necessary issue. Based on the concepts proposed, in addition to stating some positive aspects of using water element or those suggesting it in designing interior spaces, we try to mention paradigms of this application.

Paradigm1: designing water fountains and their working system in interior designing

Shallow pools which are mostly decorated by some fountains and colored lamps are known as water fountain. Their depth is up to 60 centimeters and based on their designed form are made with different construction materials. Generally, they can be designed in two regular or irregular forms. Using water fountains within the interior decoration of a house is calming and beautiful. So, design of water fountains within the interior space can be used as an element of decoration. For example, if it is important for you to live in a beautiful place and emit positive waves from house's furniture, interior decoration experts recommend you to use water fountains with natural materials such as stone or wood in designing and decoration of houses as long as possible (Lazanbi, 2005). Since stone is considered as a valuable material, sculptor tried to reduce the expense of the product with a less work on stone water fountains. Thus, stone water fountains work like water fountains made of artificial materials and by listening to its sound the nature is suggested in your mind.

Some water fountains in larger dimensions are as high as the wall and some put on the table like small fountains. Interior or prefabricated water fountains have a closed circle of water, and their consumption is as little as esteem. With regard to the simple system of water fountains, they do not require the maintenance and repair operation compared to the favorable scene it presents. For example in the following figures, modern design of door water fountains cause flow of positive energy and creates a sense of self confidence and success in the environment of home or work; or as another example according to the following image by designing and putting wall-hanged water fountains above dinner table and reflection of its light on it, dispersed energies within the house can be lined up with the water flow and downs hilled towards the family members and consequently brings a sense of calmness and happiness.



Figure 1- Increasing self-confidence and sense of success in the living or working space with a modern design



Figure 2- Designing and embedding wall-hung water fountains above dining table or other interior spaces of the house

Paradigm 2: Designing wavy and curved forms in interior design

One of the forms of energy is the one produced by physical form of living environment either naturally or made by humans. The paths to reach doors in the building can be simply the factor to attract and enter energy into it. Direct ways lead to the fast movement of positive energy in the environment and provide more success for the residents of a house (Walters, 2012: 28). The interesting point is that it is the legibility of the physical form of space. When something attracts attention by entering to a place, it means that it transferred its message. The art of interior decoration by the help of Feng Shui philosophy equips the residents with tools to identify and transfer energy and change it if needed. As another modern and practical patterns indicating the concept of mobility and fluidity of energy by the water flow in the interior space of environment, the curved-shaped walls, semi-constrained spaces and design of roofs in a wavy form can be used to create an penetrability sense in people which suggesting the fluidity of energy in them (Walters, 2012: 29).

A sample of this design can be seen in the interior design of Roka Gallery of London whose design is by Zaha. As it can be seen in the plan and pictures of this gallery in the following figures, the curve of walls, semi-constrain spaces and the wavy roofs suggest the sense of penetrability and fluidity in the viewer (Walters, 2012: 29).



Figure 3- Water movement by wavy forms applied in the interior space of Roka gallery in London in 2013



Figure 4- Flow of water and positive energies derived from it by wavy forms applied in interior space of Roka gallery

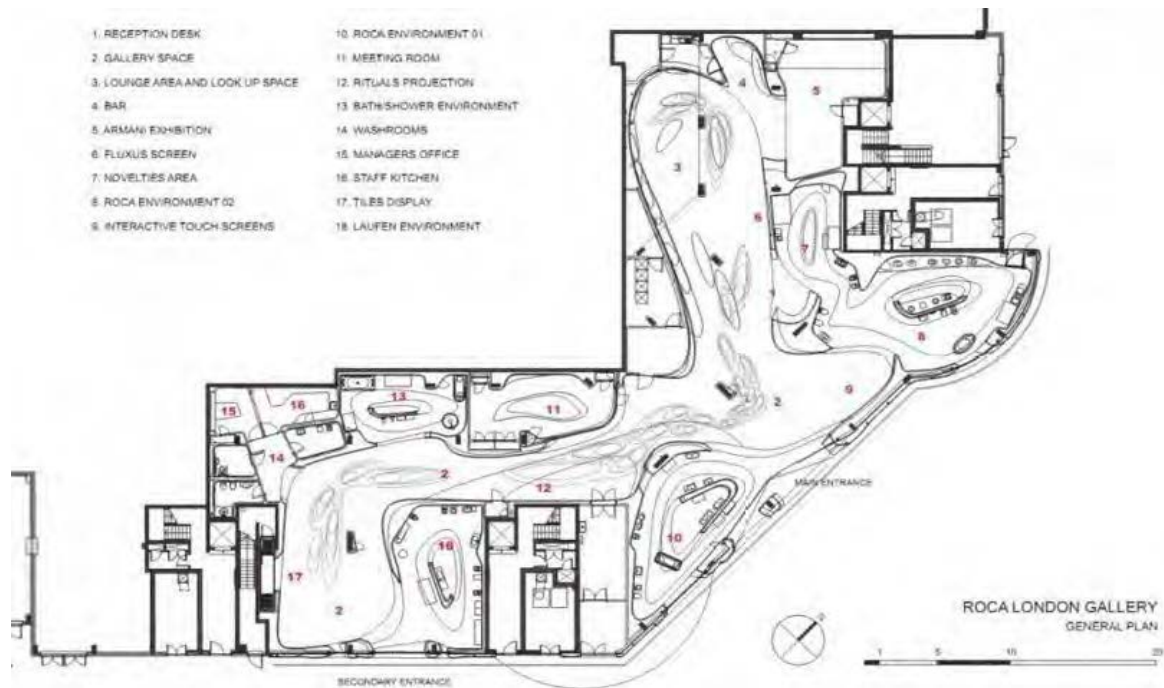


Figure 5- Plan of Roka gallery in London in 2013 with designing wavy and curved forms of walls in interior decoration to suggest a sense of water flow (Walters, 2012: 28)

Paradigm 3: Suggesting the sense of water flow and transfer of positive energies in interior design with the use of glass and mirror

The concept of water can be suggested by using pool, floor, fountain and shiny surfaces reflecting light such glass and mirror in the space of building. Glass and crystal are clear like water and the space behind them is observable. In other words, they do not hinder sight and energy transfer rather by showing the location broader lead to the movement of energy from outside to inside and vice versa. For example, forming glasses and appropriate sorting of crystal parts and lusters lead the light with the flow of energy towards where the residents desire.

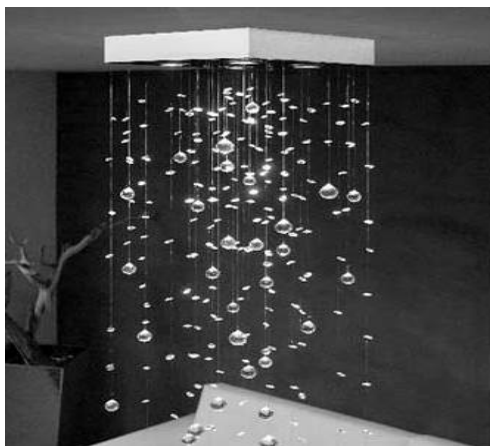


Figure 6- Suggesting the concept of water drop by using unique form of lusters with the house



Figure 7- doubling the house space using mirror

Crystal is derived from the roman term (Krustallos) which means solid light (ice) and its characteristics are similar to the element of water. As another pattern we can refer to another modern replacements of water in the interior decoration of house i.e. mirror. Because mirrors by providing more visual scenery and doubling suggest a sense of freedom and comfort and cause flow of energy in the space spiritually (IIDA, 1999: 14).

Paradigm 4: Suggesting the sense of life by decoration of interior space using house aquarium

One of the methods to achieve comfort is to reach the natural environment, unfortunately nowadays by development of apartment life, the relationship between human and nature is cut and human always tries to fill this gap by taking some parts of nature to his residency. When we talk about the interior space design and decoration of house we mean attaching wall papers and buying big and small decoration. However, sometimes using house aquariums in addition to letting some parts of beautiful environment of sea to the living space we can create a sense of happiness, freshness and life among the residents in this way. Studies show that normally for people who are so sensitive and love to inject a sense of life to decoration, the first choice before them is aquarium.

Psychologists believe that 15 minutes watching aquarium can keep human joyful for 48 hours and increases people's concentration for learning. Apart from that, aquarium can help the beauty of interior architecture. Most of interior designers are just satisfied with predicting a place for putting aquarium and are not aware of the limitations of using aquarium in certain places. Using this pattern (i.e. using aquarium in interior design of house) can create a sense of fluidity and life of water within the house in addition to creating a sense of dynamicity, life and happiness of another kind of living creatures within the living environment.

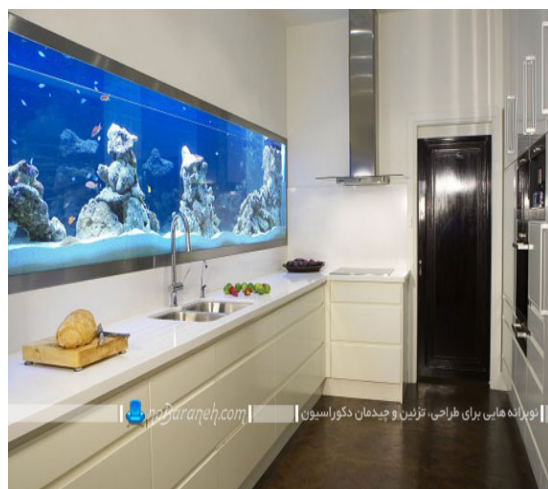


Figure 8- Design, performance and building aquarium in kitchen decoration



Figure 9- Designing and building aquarium besides double staircase

Paradigm 5: Using water color shots such as wall paper and suggesting water flow

This paradigm like previous paradigms is able to show a sense of fluidity and profitability of positive energies derived from water in designing interior space. In the following figures these patterns are shown.

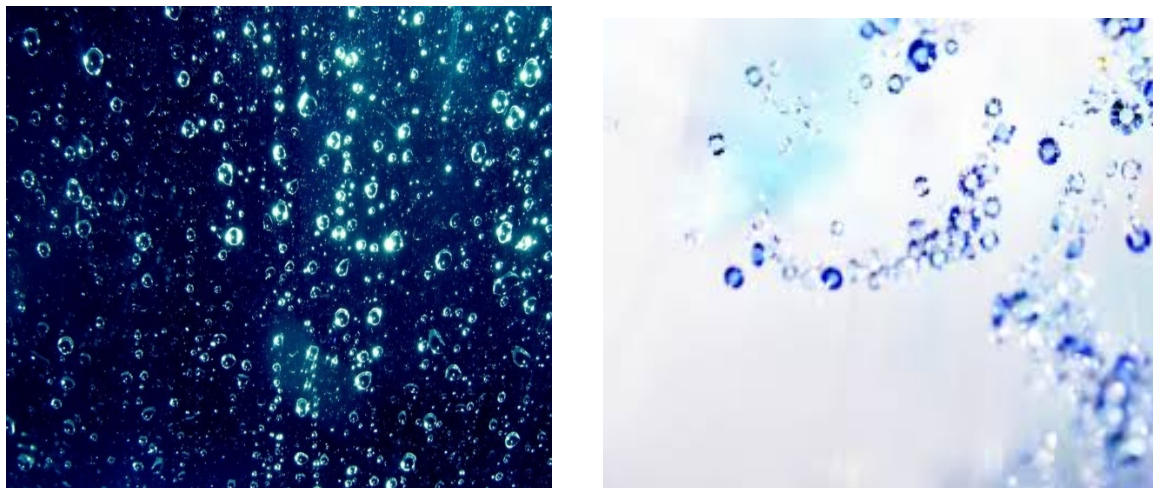


Figure 10. Using wall papers to suggest the crystallization of flow and dropping of water

Conclusion

Nowadays, natural elements including water are eliminated from interior architecture for different reasons. However, the presence of water in architecture in addition to natural effects on creating calm and freshness, causes continuation of spiritual concepts about water in Iranian and Islamic culture. These concepts with their irrefragible link with religious and spiritual viewpoints about dignity, purity and value of water cause the presence of decorative elements in interior architecture occurs with a view to esthetic characteristics and functions, either from visual and sound or semantic beauty. Analysis of water capacity in designing environment and sight shows that water has many capacities to be used in creating desirable environments and similar sights. The matrix of functional, esthetic, conceptual and visual aspect of water can provide ground for numerous ways of manifestation method and presence of water. Awareness of environment designer and landscape architecture of these aspects form one side and environmental conditions of the designing space appliers' needs on the other hand can be a source of numerous ideas and continuous creativity in forming man-made environments and natural areas.

Nowadays, interior designers understand the need to obtain prosperity and the sense of happiness in the nature of humans and believe that as the energy flow from human soul to his living environment, the space of home or work flow a positive wave towards human soul and body. The water element greatly influences the energy flow in home by washing and removing negative energies and moving and dynamiting positive energies. Since nowadays typically the interior space of houses is small and the designer is not limited in using too much water element in designing the interior space of house, thus, we should turn to patterns that indicate the sense of water in the living environment. By using water flow concept, natural capacities of water in interior architecture and the restrictions for applying it in designing interior space were analyzed and evaluated and finally paradigms of using the water element in designing interior space in today's apartments was specified. Studies show that for suggesting the concept of water flow in designing houses, the only option is not types of water fountains; rather applying wavy and curved shapes and using reflecting entities such as glass and mirror and using house aquarium and water color spots such as wall paper can also be used as the element of water in a house.

References

- Abizadeh, E., & Babazadeh, S., (2013). Investigating Presence of Water and its Conceptual Manifestation in Architecture of Courtyard of Fin-e-Kashan Garden. *Journal of Applied Environmental and Biological Sciences, J. Appl. Environ. Biol. Sci.*, 3(8), 88-99.
- Ardalan, N. & Bakhtiar, L., (2000). Sense of unity. Khak publications, Tehran.
- Aminian, S. (2008). Spring house in Kashan. *Proceedings of the Second International Congress on Architectural History of Iran*, Tehran, 2.
- Dabiri., M. & Baharloo, M., (2009). A song and place of water in the human design. *Journal of Landscape Architecture*, 3,
- Haghaiegh, M. (2010). Analysis of water in the perceptual process, based on ecological theory of perception", *Proceedings of the Conference on Architecture*, Zanjan.
- Hong-Key Y., & Lanham M. D., (2012). *The Culture of Fengshui in Korea: An Exploration of East Asian Geomancy*, Lexington Books, University of Sydney.
- Keramati, G., (2003). The place of water in today's urbanism of water in the. Master's thesis, School of Art, Tehran University, Tehran.
- Laznby, G. (2005). Feng shui in simple language, Trans: Shariati, M., Seventh Edition, Sbzan Press.
- Lee K. (2006). *Healing Interior: Using Eastern Design Principles in Hotel Design*", Virginia Commonwealth University, Richmond, Virginia.
- Mirshokraie, M. (2001). The man and the water, anthropological study, National Treasure of water, Tehran.
- Monam, A.R. (2006). The psychological treatment of water in Iranian architecture. *Proceedings of the First Congress of Art Therapy in Iran*, Tehran.
- Nagi Zadeh, M. (2003). Characteristic of Persian culture and its impact on the shaping of environments. *Journal of Ecology*, article 10, 29, 32.
- Nazarzadeh, M. (2006). The value of water in the Koran and Islamic tradition. WWC of Qom province.
- Sadeghi, M., (2007). Water architecture, Master's Thesis, University of Shiraz.
- Alamolhoda H., (2003). Water in Iranian architecture. *Book of the Month Art*, 5, Tehran.
- Shakeri, M., (2003). Water & Persian Garden. *Book of the Month Art*, 8, Tehran.
- Walters, K. (2010). Feng Shui and Neighborhood Development. Master's thesis, Virginia University.
- Wie, E. (2006). Body, mind and spirit: Feng Shui applications for a healing environment prototype, shou jung. Florida state university college of visual arts, theatre and dance.
- Zarkesh, A., & Abdolbaghi, M., (2012). Region Based Classification of Design and Construction Consistent with Climate, *Middle-East Journal of Scientific Research*, 11 (1), 66-76.