

Form usage and Meaning in Architectural Educational Projects

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Received on:24/9/2014 & Accepted on:7/5/2016

ABSTRACT

In architecture, there is a relationship between the forms and meanings. Causal relationship between the meaning of each other's perception, and the perception of the form with the designer. This relation resulted in what students' suffer the most throughout their architectural teaching process which is the difficulty of clarifying the relations during design process, i. e., difficulty of clarifying the relation during architectural design process as intellectual ability to generate design ideas; represented by producing highest number of ideas possible of forms related to a certain designing problem.

The method that has been employed the study of the form and meaning and their perceptions, associating form imagination with its meaning and usage nature to achieve association results. Disparity among architectural students has been distinguished through their tested performance on theoretical architectural design activities.

The phenomenon of associating the form with a certain meaning has been linked to achieving figurative usage through demonstrating the placement of form and meaning and their architectural relationship. Versus The actual usage of the meaning fulfills its role of leading receiver's mind to imagine the meaning unconditionally because of the causal language relationship between the form and its meaning is capable of achieving this purpose.

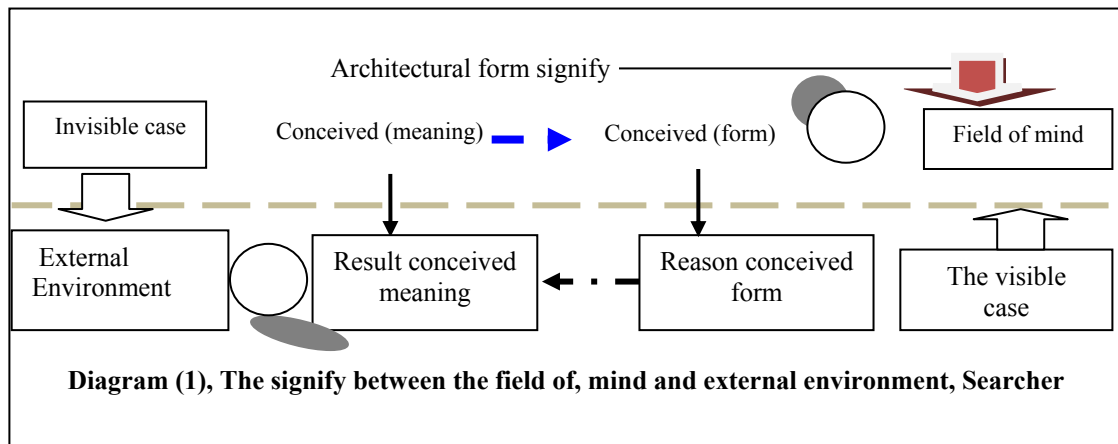
INTRODUCTION

In the field of architecture, it could contain a large number of relations between the group of forms. In addition to the large number of relations between the meanings in any architectural project. Generally, each form is related to a certain meaning which in turn belongs to a specific architectural movement or school. That means when a certain form is being imagined, the imager will try to anticipate predicate its meaning and the function of the final product. However, the association between form imagination and meaning virtualization as well as mind transference from one case into another is the architectural form significance. Jencks indicated that the Signifier is "a form, space, surface or volume and they have effects similar to the effects of color and texture, yet the Signified which is the meaning is the idea (Content) or ideas, and could refer to reference or real function in architectural field" (10,74).

Hence, architectural significance is achieved between;

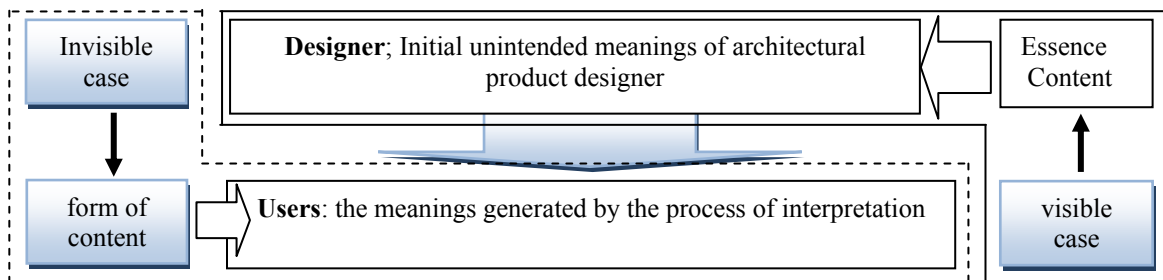
- The form (Signifier) which is, a group of **elements** that has different characteristics and has a role in conveying the meaning, and Change in it affects on the meaning.
- And, the meaning (Signified) which is, a group of values representing an idea or ideas that are affected with the form and contexture change can be achieved.

The causal relation between the conceived meaning and the conceived form, whether it is obvious or not, is achieved in designer's mind. In other word, this relation has a property which exists in a specific part of designer's mind due to the fact that both conceived meaning and form are found in designer's mind as latent (invisible) case, whereas the visible case of the relation is achieved in the external environment field through visible forms. (See Diagram 1).



New what systems?, can be built by abstracting formal elements and forms from its previous architectural significances and reassign them to new significances, thus the presence of buildings, movements, styles and ideas play an assisting role in changing the relations between current and previous projects.

The researcher in the field of architectural teaching can feel architecture student's ability to show this relation and presenting alternative solutions and ideas for specific design problems throughout architectural forms which highlight the creativity of the architectural design process¹. Expressing creativity, nevertheless, is represented through a certain content of the architectural products which consist of a form and essence; the essence is related to invisible symbols, potential functions or human and economic information, while the form is related to new meanings generated by interpreting the architectural product as visible state. This means the ability to define: *the intentional level* in the essence by the designer in the primitive meanings of the product as visible case, and *the unintentional level* of meaning that generated by interpreting process, diagram(2).



¹ John Holland confirms that most students have a combination of six styles (realistic, research, adventurous, artistic, traditional, social) in the world of professions. Holland gauge helps students in search of educational options, which coordinates between the capabilities and interests of students through the theory of professions (8, P.140)

Based on figures above, the statement of the relationship has been related on two levels:

- Designer's role level where the imagination of the form happens through putting intended prime meanings in architectural product as visible mind case.
- The other party role level to imagine the meaning through generated meanings from interpreting process as a potential case related to the external world.

However, this relation resulted in what students' suffer the most throughout their architectural teaching process which is the difficulty of clarifying the relations during design process, i. e., **difficulty of clarifying the relation during architectural design process as intellectual ability to generate design ideas(Problem Search)**; represented by producing highest number of ideas possible of forms related to a certain designing problem. This paper supposes that the difficulty of illustrating the relation has been related to an effective that gives the imagination to the other party.

The method that has been employed in this study is related to the study of the form and imagining the form, associating form imagination with its meaning and usage nature to achieve association results. Disparity among architectural students has been distinguished through their tested performance on theoretical architectural design activities designed by the researcher, throughout the experiment, students' abilities to generate numbers of alternative of ideas and finding solutions for simple design problems of form and meaning relations in the design thesis have been studied for the purpose of this research.

Research Problem and Questions:

The research problem determines teaching students the architectural design reveals understanding clear inadequacy of the relation between form imagination and meaning imagination of students of numerous ideas throughout architectural design stages of thesis designing projects by suggesting ideas concerning the whole thesis or part of it (architectural–confirmative). Some inadequacy parts shown as follows:-

1. What is the source of associating relation between form and meaning and how to configure the desired form in the requested project to demonstrate certain meaning?
2. Is the relationship between form and meaning a causative one. Through ideas that achieve the association between form and a certain function in compatibility of the structural form of building with certain style.

Form visualization leads to meaning visualization by proposing alternatives that achieve basic activities of the structural conformation, in addition to form usage possibility to achieve various architectural conformations of the building or to any element of the project

The research relied on the idea of developing the teaching design course, which determines the privacy of the Iraqi students. and space programming course . the researcher elected specific cases which meet the full requirements for the production of an integrated project for the recipient information;

- Number of students 55 students.
- The exercise, as that students use; the theories that take in the courses; the space program for a specific.
- Use four sheets (A4), with dimensions 21*29.7cm, to give draft design perception of the draft thesis design submitted by the fifth stage.
- The idea achieves for four sheets. One for the site, and three sheets to the selected area of the project (21*29.7*3=1800, drawing scale (1/400). And the space constructivism is equivalent to 28000 square meter maximum).
- Numbers of models developed was 25 projects 45%; 10 project fixed and changed.
- The reduction of the number of students to (5) five of those cases have been proven to have a thesis project. To control to samples of the case study of search.

First: The Relation Nature between form and meaning:

Many architectural studies have dealt with introducing the form and meaning and the relation between them. "Gandelsonas"1980, described the form as "the message that conveys the meaning, while the meaning is the product of certain process on language and language procedure itself ". "Bonta", however, described the form as "a group of elements affecting the meaning and the meaning as a group of values that very affected by progress or change in form and its texture"(7, P.244). On the other hand, Broadbent argued that generating forms brimful obviously with meaning can be achieved by using design analogy,(1,P.146). In addition, in his research (**Meaning & Behavior in the built environment**), "Broadbent" considered analogy as "innovative architectural mechanism, which is a optical means comprises of translating the original form into new one loaded with obvious meaning", (7, P.143).

From the relative relationship between form and meaning, concurrent of the forms existence, and to understanding of the concurrent situation between the forms and meanings, need to know the cases of similarities and differences between developed forms and forms that appear in traditional productions. The form preserves the movement and lines configured in a specific reference, through: The presence of the effects of Local Meaning may be a (common sense); or the presence of another form within the same stereotypes Configurable (14, P.184-185).

Therefore, the process of generating architectural forms does not only affects the relation between forms and meanings, but it also plays an important role in building architectural ideas and concepts, this could be noted when these ideas and concepts are being built by an innovative person who is superior in producing a large number of ideas about a certain topic in specific interval when compared with others. i. e., have good ability to produce innovative ideas and then implementing them (9, P.25).

Innovation requires breaching prevailing systems and thinking outside the box. When dealing with architecture student, innovation could be distinguished throughout the high levels of intellectual abilities which enable to suggest an impressive number of ideas and solutions for the same problem whether individuals dealing with the main concept of the project or any other problem faced while working on the project. In addition, an excellent example from the researcher experiment is when one of them. Architecture student was asked to design a media center project, the designer tried to find some forms which relates to the project and a specific concept in his/her mind. based on his/her understanding and imagination of the forms, ideas and the relations between them the student made two set of figures (outputs) which consists of a number of shapes and forms, one for each stage of the first exercise, see figure 1.

As media can be considered as the recorder and conservative of any civilization, there is no choice but to enhancing the Iraqi media and improving it in order to make it more capable for keeping Iraq identity and facing the new challenges. Since conformation conditions represent media developments that take place in other countries at all levels, the figure produced in the first stage represented the development zone that keeps its Iraqi identity. In the second stage the student produced another concept, the concept was affected by opposite route of deconstructionism this time, as deconstructionism is based on hiding /ignoring the heritage while focusing on creating new ideas and concepts which overweight the old ones, the student tried to focus on the national heritage and keep its value while still be affected with the work of architect Zaha Hadid in deconstructionism, see figure 2.



Figure (1): Stage 1 media center for the development 2008, Searcher



Figure (2): Stage 2 media center for the development 2008, Searcher



Figure (3): Zaha Hadid

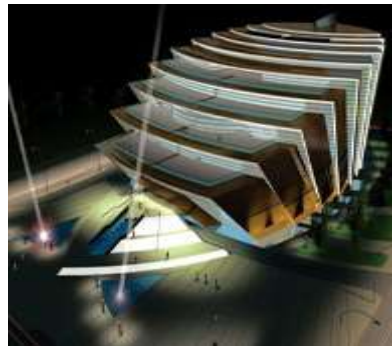
The project showed some similarities to the style of architect **Zaha Hadid** in her controversial concepts and designs which are usually comprise of strange forms and based on the refusal of local architectural heritage the latter could be attributed to the idea that generating the forms and relations arouse from the new different needs associated with the development of human kind and as architecture is responsible for finding solutions and fulfilling these needs, each architect has a special role to come up with new concepts and solutions within each architectural era, figure 3.

Although, ideas and meanings that expressed by the design concept were strongly emphasized, the student showed a different composition due to the effects of preparing the space program, site selection as observed from student's final design and project thesis during the next year, figure 4.

Although the design of Guangzhou Opera House, designed by architect Zaha Hadid, demonstrated the ability to use the national heritage and cultural of the site and at the same time helping in the development the area. This was achieved as being twin rock organ that located in ideal accordance, which reflects the city voyage throughout the date, figure 5. In another case from the experiment, the student showed an interest in the project of Performance Arts Hall in Siredat Island in Baghdad. The project consisted of several cultural buildings, the student's design concept employed the comedy/tragedy masks (happy and sad faces) to represent the contradiction of theatrical drama between comedy and tragedy, and the student used a series of different repeated forms with slanted and curved roofs, figure 6. the end design produced by the same student nevertheless, was a series of profuse contiguous forms that belong to a specific language forming a complementary part of the message of the design concept which indicated that the student needs new understanding of the theoretical and expressive aspects for the project, especially with the formed space from the incline movement towards the top hall, the project center, imitating old Baghdadi spaces, figure 7.



Figure (4): Iraqi Media Center 2009
Searcher



Figure(5): Guangzhou Opera House - Zaha Hadid



Figure(6): Performing Arts Center 2008
Searcher

Based on above, it is safe to say:

- Designer's desire to produce innovative design is similar to the discovery of a scientific fact which changes the scientific understanding system. This because the designer releases himself from all the common rules and traditions to propose futuristic perspective which if supported by other contributions could lead to new completely different cognitive and aesthetic systems.

- Innovative architects are distinguished through their high-level of intellectual ability which enable them to suggest numerous ideas for one single problem as explained earlier in this research

- When searching for the association between forms and meanings as being (signifiers and signified), architecture students are handling a process similar to the process authors and poets need to handle in order to produce hints to readers without really mentioning the idea directly. This is to achieve ambiguity and inclusions which mean pleasure for the observer and richness to the design (6,P.51). In other words form introduction related to meanings and vice versa.

Jencks refers to the architectural form interference (expression level) with meaning (meaning level) in mutual entity called the reference architecture. The relations between these two levels are very complicated, thus he classifies these relations into three types (10, P.104); **Index relations**, such as the one between fire and smoke or the one between window and view; **Icon relations**, in functional architecture, every form refers to function; and **Symbol relations**, which is a relation agreed by the majority of the society.

From the relation between form and meaning, it could be observed that:

- Form gets the meaning from culture, and the form could either express a natural meaning or it does not express any meaning at all (5.P.191). As seen in student's project of *The National Antiterrorism Centre*, figure 8, as the project is relatively new, innovation was employed in design by trying to use untypical forms with the use of unconventional modernistic building techniques and materials to represent modernity of the project. The designer also tried to keep the project main concept present in the design. Thus, as the main concept was about the eternal conflict between good and evil and accordingly highlighting human race achievements, creations and practices leading humanity to the ultimate degree of human advancement and paradise with its agreed features among different societies, the student designed an iconic edifice building with folded flying forms to represent the magnitude of the concept of eternity and paradise.

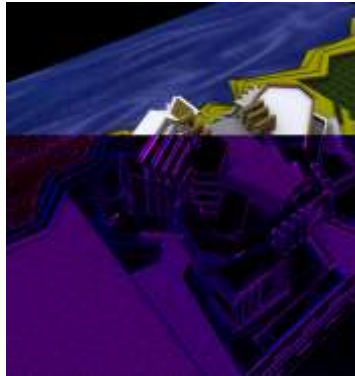


Figure (7):Performance Arts Hall Searcher



Figure (8): The National Antiterrorism Centre. Searcher

- What makes the relation between form and meaning real and natural, is the process of analyzing and understanding the shapes and predicating the meaning. The literal meaning of things is itself full with meanings, and the usual symbolic meaning (form) is a common meaning because it is familiar to all (3, P.50). This is exactly what was achieved in student's project of *National Investment Bank*, figure 9; In this project, the student tried to express bank history and function as a major financial institution by using a number different forms. However, in the final graduation project, the student used a number of mass boxes forms which are hanged and inclined with the nearby street with a dynamic glass tower which reflects street movement; also the main agglomerate is connected to numerous parallel agglomerates which covered with white granite, figure 10.

There are many other cases where the meaning directly depends on the recipient either to change the meaning, to generate new meanings or to make use of form references that carried in the meaning. These cases help in building new meanings and significances, and then embodying them in project concept towards a illustrious project.



Figure (9): investment bank – Baghdad. Searcher



Figure (10): investment bank – Baghdad. Searcher

Second: Form in the process of Generating Architectural Ideas:

Interpreting architectural design process² is considered one of the important issues that concern architecture schools and an important area of research for many researches worldwide

² The goal architecture is to create creative designs intellectually and visually imposing presence. See. (13,P.vii)

(12, P.154-157). Therefore launching the Imagination treats design as both a process and a product. Design is deliberate—a process of exploring multiple solutions and choosing the most promising option. Through an immersion in 2-D, 3-D, and 4-D concepts, students are encouraged to develop methods of thinking visually that will serve them throughout their studies and careers (13, 2011). It is possible to explain architectural design process levels and relations to form building by visualizing the meaning as an increase in the data included within a form is generally associated with an increase in meanings enrichment of form.

From that, the search explains two levels;

1. Figure Source: reaching the requested form for a design project, the ability to think of how to achieve different concepts of certain forms, based on their relations with another form or their place, "The creative thinking is something essential heads any technical skill. Actually, an encourage creative thinking should be followed, (13,P.116) as seen from Louvre Museum Project in Abu Dhabi designed by Zaha Hadid , figure 11.The student's idea main source is a coffee shop through using the coffee cup form which is used to serve all kinds of hot drinks; as well as using cup forms of different sizes, the student used overlapped plate forms which symbolizes the project and its function directly, figure 12.



Figure(11): Louvre museum Abu Dubai



Figure(12): Building café Searcher

2. Form Reference: which means form appropriateness with function or structural form association with particular building style: It requires the architect, as part of the design process, to find relations between objects, architectural elements and forms. This could be observed in the winning design of *Alexandria Library* in ? by the Norwegian architectural office " Snøhetta ", figure 13.? the architecture student at the Iraqi-Egyptian Cultural Center in Cairo worked on a design concept based on elements he lived with such as **Tigris River** by which he tells us a story, figure 14.



Figure(13) of the Library of Alexandria



Figure(14) Egyptian Iraqi Cultural Center. Searcher

In an architectural design project, the form appropriateness for a specific use is achieved only when the design fulfill one of two conditions:: geometric conformation exactitude; or by measuring constructional style. Finding intellectual alternatives shows that these levels don't

end up by design process yet it affect idea preparation stage, design stage and design detailing stage. Based on this, the designer intellectual ability of generating design concepts could be measured.

Third: the relation between Form and Meaning:

Bonta considered the form as an architectural Signifier in addition to the objective and inclusive context; as the form is a set of elements in which changes in the form causes changes in meaning, while the objective context comprises a group of factors which relates to the state and environment where the form is independent of the physical form, so the relationship is a consequent of the nature of the form itself. The inclusive context consists of a group of factors related to the system to which the form belong and is independent from both the form and the objective context; thus the consequent relationship is created by the designer, as well as the changes in both the contexts are also able to produce meaningful changes (2,P.298). This means that investigating the relationship has been associated to two main points and should be checked:

First Point: the Relationship stemming from the nature of the form:

The nature of a relationship between form and meaning has been related to the association between form and meaning caused by the form itself, which gives an impression that form is an internal Significance to the meaning; as in the relationship between pure forms in modern architecture principles, hence, the relationship caused from the nature of modernity principles itself.

So, the falling water house form, figure 15, by virtue of its relation nature to the special function realized from its function, indicated that form denotative to organic architecture meaning is internal not externally acquired.

Nevertheless, this interpretation would conflict with visualizing the form denotative to its meaning and whether their relationship is internally not externally acquired (as an organic architecture); as if the form urges people to visualize the meaning; so, why some are not able to imagine the meanings from the form of Waterfall House? Which means the relationship that arises in human mind between imagination form and visualizing meaning is not based on form nature but on another motive needs to be learned in architecture language.

Second Point: the Relationship stemming from the designer of form:

The relationship between form and meaning, in any architecture school or movement, is established by its designers as they dedicating certain forms for certain meanings, thus building relations between these forms and these meanings. Therefore, this dedication by those architects (creator) which resulted in associating the form to its meaning (design) where the form is a subject and the meaning is its theme. As seen in Ron champ Church were the design was linked to its designer Le Corbusier and his inspiration of this church, figure 16.

Although, the nature of the relationship is still unclear as it assumes that the causal relationship arose as a result of an effort done by the movement architects who dedicated certain forms to certain meanings, however, this raises a number of questions such as; what is the nature of the work done by those architects?, and if the relationship is not internal nor has any prior link, then how can we propose a causal relationship between two unrelated things?, and finally whether it is enough for a movement designer to design a certain form and dedicate it to visualize meaning where forms lost its meanings in deconstruction architecture.

Hence, the research problem is associated with the causal relationship between form and meaning in accordance with a common regulation of that “if imagination of two things has been frequently associated in human mind, a relationship between them would be established and imagining one of them would lead to imagine the other”.

This means that a conjunction between any two ideas even it happens once, is enough for establishing a relationship between them for a much longer time, i.e., if the two ideas were joined in an effective situation (Context). For instance, the relation between arch roofs and Japan, whenever someone imagine Japan the mind will imagine the arch roofs. Another example is Sydney Opera House, designed by architect Jorn Utzon, figure 17, which is associated with Australia through the multiple images are reflected on this form by calling several reactions of many allegories in popular life.

The causal relationship between form and meaning mentioned above resolve the research problematic and enable to interpret this relation by describing it as a result of associating the imagined meaning with imagined form repeatedly, or in an effective situation that led to this association relationship between them.



Figure (15): falling Water



Figure (16): Church of Ron Champ (4, P.418)



Figure (17): Sydney Opera House,(11, p 41).

Fourth: the Association between Form Imagination and Meaning:

The association between form imagination and repeated image in an effective situation produce a relation between them, which resulted in:

1. The forms association with numerous meanings subsequently lead to relationship establishment between them and thus an architectural relationship is established between them.
2. At the beginning, architecture was not associated with forms. What was manifest are caves which generated association between cave form and its meaning to protect man from environmental factors and predators. This was followed with establishing new relations between other forms and their meanings. Some forms were associated with specific meanings via deliberated and conscious process to establish relationship between them.

For instance, most of court buildings have high pediments and huge upwards columns, as justice and courts with huge columns building have resulted in a relationship refer to the column as indication to the court building. This way of design process called generating by placement. The placement is the process by which a form is associated with a meaning; accordingly, mind always jumps to the meaning whenever the form is imagined.

Fifth: Usage:

After associating certain form to certain meaning, form imagination becomes a reason to meaning imagination allowing architects to use architectural relation between them in their design. Also, when an architect wants to express a form to another architect, it is possible to refer to the form that leads to meaning imagination, and when this form is seen by any architect his/her mind will invoke its meaning by virtue of their casual relationship, thereby using the form to arouse its meaning in receiver's mind.

Using the form in its meaning means finding certain form and prepare others mind to invoke to its meaning when they see it. Here the form is called "used" and the meaning called "used"

for" while the designer architects wills is called "usage volition". Every use requires the user (receiver) imagination of the form and meaning, yet:

- 1) Visualizing the form as a reflective mirror of the meaning, and imagining the meaning as an independent approved image. Whereas, visualizing the form is by casting the form in the meaning, i.e., noticing it would be by overlapping process form with meaning.
- 2) It is difficult to use one form for two meanings, because this requires casting certain form in both meanings, which is unreasonable. However, it is possible to unify the two meanings by composing one comprehensive mix out of both meanings and casting the form in that mix, which means using the form in one meaning not in two.

Usage is divided into:

- Actual usage of the form that associated with its meaning and has an architectural relationship due to the placement. Therefore, this actual meaning is called "the meaning".
- Figurative usage which means using the form in another meaning not associated with it but has a similar meaning at some points of the original meaning of the form. For example, the allegory that used to represent the ideas, such as using the sea for science building, pen for educational institutions and praying hands for mosques...etc. The analogous meaning that used to refer to the original meaning is called the "*Figurative meaning*". The relationship between the form and its figurative meaning is a secondary relationship resulting from the initial architectural relationship with meaning because it arouses from the similarity between the real meaning and the figurative meaning.

Conclusion

The phenomenon of associating the form with a certain meaning has been linked to achieving figurative usage through demonstrating the placement of form and meaning and their architectural relationship. The relationship arises from associating the form with meaning repeatedly or in a certain effective situation. Hence, the frequent use of the form with a specific meaning, leads to associating that form with its figurative meaning in designer's mind, this in turn will lead to establishing an architectural relationship between them, whereas:

- The actual usage of the meaning fulfills its role of leading receiver's mind to imagine the meaning unconditionally because of the causal language relationship between the form and its meaning is capable of achieving this purpose.
- Figurative usage, on the other hand, does not lead receiver's mind to the meaning since there is no architectural causal relationship between them as appears from the example of the water or sea form and research center building. Therefore, the receiver's mind requires an explanatory contexture to achieve his purpose of usage. For instance, a building in the sea is a word of the sea contexture and considered as figurative meaning.
- The frequent figurative usage that needs contexture at the beginning has increased using the form to demonstrate a figurative meaning with contexture and repetition and has been established a new relationship between form and the figurative meaning, as a result the form became the subject for that meaning and then it becomes an actual one and does not need a contexture.

Note: exercises of the four stage students (Hamsa Sami, Maria Varoujan, Mohamed Saad, Silva Chant) of the theoretical architectural design subject 2007-2008, have been used, in addition to the final stage projects 2008-2009 of the student (Hamsa Sami, Maria Varoujan, Mohamed Saad, Silva Shant and Mazin Kadhim).

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