Analyzing the Unity Concept in Design on Student Works: A Case Study of Architectural Design Course

Serap Yılmaz [1], Sema Mumcu [1], Tuğba Düzenli[1], Ali Özbilen[2]

[1] : Karadeniz Technical University, Forestry Faculty, Department of Landscape Architecture, Trabzon.

[2].
Eurasian University, Faculty of Engineering and Architecture, Department of Architecture, Trabzon

[3]:
Corresponding Author: serapyilmaz@ktu.edu.tr

Abstract

Unity is the most important principle for achieving order which is the aim of design and success in composing unity means bringing semantic, functional, and visual integrity at the same time. For this reason considering unity in landscape design and its relationship to design elements and principles is essential. In this context Architectural Design Course in landscape architecture departments is especially important. This course includes teaching information on building-environment unity and analyzing interior functions of different buildings and how these functions expanse to outside. In this course a design project, which aims engaging building with its environment thus forming a whole by landscape design focusing on character unity, is developed. In this study unity concept in design and its role on ensuring building-environment completeness is emphasized and its relationship with landscape design is explained through literature research. Through a residential building and its environmental design in Architectural Design course in Landscape Architecture Department of Karadeniz Technical University; how building-environment unity was composed, what kind of and how design elements and principles were used, were explained with visual analyzes of student works. The design elements form-scale-texture-direction which were found to be strongly related to unity concept were analyzed by visual schemas on photographs of student works and how these elements were used with design principles continuity, similarity, repetition, and contrast was evaluated.

When generally discussed similarity was found out as the most common design principle used in the student works, it was seen that students can use this principle with whole design elements. This result shows that similarity is easily comprehended by students and reflected to their designs. Performing the design process through a visionary building design means both improving creativity, and enriching formal repertoires of students. Also this process supports flexibility and each student is encouraged to develop a model in accordance with their design abilities.

Key Words: Landscape Design, Architectural Design, Unity, Basic Design Elements and Principle, Student Works.

Tasarımda Birlik Kavramının Öğrenci Çalışmalarında İrdelenmesi: Mimari Tasarım Dersi Örneği

Serap Yılmaz [1], **Sema Mumcu** [1], **Tuğba Düzenli**[1], **Ali Özbilen**[2]

[1] : Karadeniz Teknik Üniversitesi, Orman Fakültesi, Peyzaj Mimarlığı Bölümü, Trabzon.

[2] : Eurasian University, Faculty of Engineering and Architecture, Department of Architecture, Trabzon

[3] : Corresponding Author: serapyilmaz@ktu.edu.tr

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Abstract

Birlik, tasarımın amacı olan düzenin sağlanmasında en önemli ilkedir ve bunun başarılması tasarımda anlamsal, işlevsel ve görsel bütünlüğün sağlanması da demektir. Bu nedenle peyzaj tasarımında üzerinde durulması ve tasarım elemanları ve ilkeleri ile ilişkilerinin irdelenmesi gereklidir. Bu bağlamda peyzaj mimarlığı bölümlerinde Mimari Tasarım dersi özellikle önemlidir. Bu derste yapı-çevre birliğinin sağlanmasına ilişkin bilgiler aktarılırken farklı işlevlerdeki yapıların iç işlevleri ve dışa açılımları da incelenir. Karakter birliği kavramına odaklanan peyzaj tasarımıyla yapıların çevreleriyle iç içe geçmesi ve bir bütün haline dönüştürülmesini hedefleyen bir proje ortaya koyulur. Bu çalışmada yapı-çevre bütünlüğünün sağlanmasında tasarım ilkelerinden birlik kavramının rolü üzerinde durulmuş; peyzaj tasarımı ile ilişkisi literatür araştırmasıyla açıklanmaya çalışılmıştır. Karadeniz Teknik Üniversitesi, Peyzaj Mimarlığı Bölümü, Mimari Tasarım dersi kapsamında bir konut ve çevresinin tasarımı üzerinden nasıl bir tasarım sürecinde, hangi tasarım elemanların-hangi ilkeler doğrultusunda nasıl kullanılarak, yapı-çevre birliğinin oluşturulduğu örnekler üzerinden yapılan analizlerle anlatılmıştır. Birlik kavramı ile önemli düzeyde ilişkili bulunan tasarım elemanlarından biçim-renk-ölçü-doku-yönün öğrenci çalışmalarında nasıl ele alındığı çalışma fotoğrafları üzerinde yapılan şemalaştırmalar ile analiz edilmiş ve bunların tasarım ilkelerinden süreklilik, benzerlik, tekrar ve kontrastlık aracılığı nasıl kullanıldıkları değerlendirilmiştir.

Öğrenci çalışmaları genel olarak ele alındığında en sık kullanılan ilkenin benzerlik olduğu, bütün tasarım elemanları ile kullanılabildiği saptanmıştır. Bu durum birlik arayışı içinde benzerlik kavramının öğrenciler tarafından daha kolay algılanabildiğini ve çalışmalarına daha rahat yansıtılabildiğini gösterir. Hayali bir konut tasarımı üzerinden sürecin yürütülmesi hem öğrencilerin hayal gücünün geliştirilmesi hem de biçimsel dağarcıklarının zenginleştirilmesi anlamına gelmektedir. Ayrıca bu durum öğrenciler için esneklik sağlamakta, öğrenciler kendi tasarım becerilerine en uygun olan modeli geliştirmeye teşvik edilmektedirler.

Anahtar Kelimeler: Peyzaj Tasarımı, Mimari Tasarım, Birlik, Temel Tasar Elemanları ve İlkeleri, Öğrenci Çalışmaları

1. INTRODUCTION

The fact that the unity between the man-made buildings and the natural environment in which they are located cannot be maintained is a result of ignoring the unity of building - environment in architectural composition. Baker (2014) proposes that, in accordance with the architectural movements which aim to go beyond 20th century modernism, the students in the fields of architecture study hard on the design of the buildings that are in complete harmony with the environment and that have meaningful relations in terms of physical appearance. Ensuring building-environment unity, which is also one of the main purposes of landscape design, means the overlapping of the field study of landscape architecture and that of architecture. In the scope of Architectural Design course in the Department of Landscape Architecture in Karadeniz Technical University (KTU), it is focused on this overlapping field between these two disciplines, and it is aimed at having students acquire the knowledge of providing building-environment unity through landscape design. Steward (2007) clarifies the role of landscape design in maintaining this unity as follows: "One of the primary aims of landscape design is to integrate human technology (residential building or other structures) with its natural environment." Thus, building-environment unity is assured as well as enabling the opening the interior spaces with regards to their functions and aesthetics in a satisfactory way to the exterior ones. Steward (2007) asserts that landscape design combines the elements related to art and science and that landscape designers are supposed to know the designing elements and principles to form landscapes that meet the needs. Among these principles, it is crucial that the concept of unity be specifically emphasized during the environmental design instruction. Unity is the most significant principle to maintain the order which is the purpose of design, and achieving this also means ensuring the unity of meaningfulness, functionality and visuality in design. Therefore, it is highly important to elaborate on unity and to analyze its relationship with design elements and principles in landscape design. Gazvoda (2002) underscores that landscape architects are required to have vast knowledge in the fields of both natural sciences and artistic creativity.

In line with these similar purposes, there are courses of Landscape Architecture and Design, Basic Design Concepts and Architectural Design in KTU Landscape Architecture Education Program. These courses focusing primarily on recognizing design elements and principles, the methods of using these elements in designs and applying them to environmental design, especially considering the concepts of unity, dominance and balance, constitutes the background of Environmental Design Project courses in the upcoming semesters.

Thus, the students are equipped with scientific knowledge in the courses such as Ecology, Plant Recognition and Landscape Materials as well as improving and strengthening their backgrounds related to art and design, and each of them creates projects which consist of the synthesis of their scientific and art know-ledge in other design courses which also take part in their education program.

The course Architectural Design is especially important as part of building - environment unity. In this course, the information related to building-environment is explained while interior functions of buildings which have different functions are examined in addition to their opening to outer space. In particular, with the landscape design that focuses on the concept of "formal unity" or "unity in visual perception", it is aimed to design a project concerning integrating buildings with their environment and transforming them into a whole. Using the landscape design regarding the concept of "unity", students try to integrate a residential building functionally, aesthetically and meaning-fully with the landscape where it is located.

In this context, this study aims to:

- emphasize the role of "unity" which is one of the design principles of providing building-environment completeness

- discuss its relationship with the elements of design,

- explain how to establish building-environment unity by analyzing the samples on the design of a residential building and its environment by analyzing which kind of design process requires which kind of design elements in accordance with the kind of principles and the use of these kind of principles in scope of Architectural Design course in the Department of Landscape Architecture in KTU.

clarify in what kind of process and through which design elements and principles unity is formed and in what ways these design elements and principles are used, making use of the

analyses on samples in the scope of Architectural design course in the Department of Landscape Architecture.

The Concept of Unity and Its Role in Environment Design

Moughtin (1999) defines the role of design as bringing a kind of order into chaos. He also asserts that the designs that constitute architectural composition cannot be formed together with the disjoint elements which are not related to one another in any way, and that these kinds of disjoint architectural and urban designs reflect weak or incomplete ideas (Moughtin, 1999). As a result, in environment design, suggesting an idea completely needs a complete unity.

Unity means that all parts are in harmony, which is that all parts engaged one another in such proportion and connection that nothing can be removed or changed (Moughtin, 1999). Jackle (1987) notes that the whole itself is to be seen before the parts while the parts are being organized to define the unity for a good composition. He clarifies unity as it means that different elements form a whole in a proper harmony; in other words, it has the meaning of constituting one piece visually. The piece which is formed with a number of units should harmonize with one another, should be seen and approached as a single unit. (Jackle, 1987). Bell (2004) highlights that unity is essential to interrelate the parts of the design to one another and to form a whole.

As stated by Graves (1951) unity requires solving the conflict or tension among competing visual powers and integrating them in line with the principle of unity. Unity is ensured by using the components in design in an effective way and describing the main idea with a consistent style (Stewart, 2007).

Unity is a concept which has been frequently studied within the context of environment design, especially in architectural composition. Moughtin (1999) defines unity as one of the most important components of architectural discipline and supports his idea with Roger Scruton's statements: "All influential architects try to create the effect of unity." In architectural unity, building is a completed whole in itself; none of the components is redundant in composition and they are in a size that is predetermined and appropriate (Moughtin, 1999).

Jackle (1987) analyzes the concept of unity in landscape design and he points out that visual elements should have an interior balance and unity in landscape syntax. It is crucial to know that rather than objects themselves, the relationship among them are more important in generating unity (Jackle, 1987). Stewart (2007) describes unity in design as integrating parts in landscape or composition and making them become a whole, and he furthermore underscores that each domain belongs to the whole landscape and should be combined with it. Each element chosen for landscape design should contribute to principal design decisions and serve a functional aim (Stewart, 2007). Bell (2004) proposes that a landscape, which otherwise may become chaotic, is likely to have a unity by using some principles of ordering through design. In such environments designed this way, having unity is very important especially for people to perceive their environments and read it comfortably (Moughtin, 1999). Therefore, it is important to know how unity is ensured through design, which design elements should be used through which design principles and how.

The Relationship among Design Elements, Principles and the Concept of Unity

Some researchers, who consider the concept of unity as the perception of environment by human and its equivalents in terms of urban design, has identified the concepts of the centers or places (proximity), directions or paths (continuity) and areas or domains (enclosure) related to the organizing the city in mind (Moughtin, 1999). Hereby, the roles of the concepts of proximity, continuity and enclosure in ensuring unity are noteworthy.

Jackle (1987) describes the concepts that contribute to the integrity of a landscape in gaining unity as enclosure, balance, focal point and income/outcome. Jackle (1987) also puts emphasis on grouping the objects meaningfully depending upon the principles of proximity, similarity, continuity, contrast and focal point in ensuring unity.

Wong (1993) mentions similarity and repetition in having unity. He also expresses that similarity consists of change based on the fact that natural elements display unity. The elements of a specific natural form - such as cells, sections and layers - generally show similarity. These elements are not exactly the same with their repetitions, but they change individually and transitively to provide a harmony with a general

form and structure. Elements in many different types may exist, and there is similarity among these various kinds of elements. Similarity generates unity. Unity originates with the elements that tightly come together and corresponds to one another. Transitions offer a smooth flow among the elements (Wong, 1993). Hashimoto (2003) addresses proximity, repetition, rhythm and continuity in unity, and he specifies that these are likely to be used any of the design elements like line, form and value.

The most detailed study on ensuring unity in landscape design is "Elements of Visual Design in the Landscape" (Bell, 2004). In this book, Bell (2004) associates the concepts of coherence and legibility defined by Kaplan's to ensuring unity in visual perception. He suggests that the concept of coherence can correspond to the concept of unity because it is the factor that focuses on the idea that all components in a landscape should be attached to one another. Unity also leads to legibility as it is inevitable for a landscape in which unity is ruined to be unreadable (Bell, 2004). Unlike the fine arts in which an artwork can exist without having relationship with its environment, a landscape design should be perceived as related to the location it is in. In order to add a new element to any landscape, the dominant characteristics of that landscape should be taken into consideration. For example, forming topography may create the dominant effect, and the visual powers resulting from this may have influence. In a landscape where the form of topography is curvilinear and fluid, a road which is formed with linear curving movements is unlikely to have a relationship with its environment and as a result of this; there will be disorder and ruined unity. Consequently, this will destroy the visual relationships in landscape and will present an unbalanced visual tension. Arranging hierarchy, ensuring the scale and

balance has the potential of contributing to ordering chaos and providing unity (Bell, 2004). In Architectural Design course, it is paid attention to the effort of harmonizing in terms of colour, shape and style in landscape design according to especially dominant character of landscape, and "formal unity" is particularly sought in student work.

Stewart (2007) explains that formal unity is formed emphasizing a consistent characteristic among the units in landscape. Shape is the most significant visual element in designing formal unity. The repetition of shape or the fact that the shape shows similarities directly inspires the emotion of unity. Visual unity/formal unity becomes stronger when it exhibits similarities in shape and size (Wong, 1993).

Researchers who examine unity emphasize the principles of similarity, continuity, repetition, enclosure and proximity whereas Bell (2004), who addresses also the effect of contrast unlike these principles, indicates that unity tries to present balance and harmonic relationships among a number of principles. He exemplifies this by stating that the contrast in shape, colour or texture can be balanced with continuity or similarity. If an element exhibits a contrast which is very strong, then this results in disunity-ruined unity. As a consequence, the more similarity there is among size, shape, texture and colour, the stronger the unity becomes. Similarly, unless similarity, balance, size and proportion are used flexibly, the harmony in composition will not be lively. It should not be disregarded that tension, rhythm and movement are included in design carefully since this means adding liveliness to design without ruining unity (Bell, 2004). Wong (1993) remarks that occasionally adding contrast in search of unity in design creates tension and visual excitement.

Table 1. Studies on the concept of unity and suggested design principles

Researchers	Design Principles in achieving Unity
Moughtin (1999)	Continuity, proximity and enclosure
Jackle (1987)	Similarity, continuity, proximity, contrast and centrality
Wong (1993)	Similarity, repetition, transition and contrast
Hashimoto (2003)	Continuity, proximity, repetition and rhythm
Bell (2004)	Similarity, continuity , transition, contrast and hierarchy
Stewart (2007)	Similarity

To sum up, it is frequently supported that the use of design elements such as size, shape, color, texture and direction in accordance with

the principles like similarity, repetition, proximity, continuity, transition, contrast and enclosure will ensure unity in visual perception.

It can be asserted that shape is especially the most effective element among these. Moreover, it is specified that it is necessary to use these elements flexibly in terms of these principles, and adding transitions and contrast carefully will make the design more intriguing and lively. Within these elements, the designs which consider building-environment in unity will not only ensure the unity but they also will get more attention aesthetically (Table 1)

In scope of Architectural Design course, while creating their projects, the students are criticized with regard to their degree of being able to use "shape, colour, size, texture and direction" as design elements and the principles of design such as "continuity, similarity, repetition and contrast" in their designs. These concepts are examined on each student's work, and in order to ensure unity more efficiently, the instructor and the student discuss about which element is used and in which way it is used. This process continues by trying the alternatives on the model and by making comments on the student's work again. This process applied in Architectural Design course is explained in a detailed way starting from its first stages. In the other section, the analysis and evaluation of the concept of unity will be done on the final products through diagramming the design elements and principles mentioned above on student works.
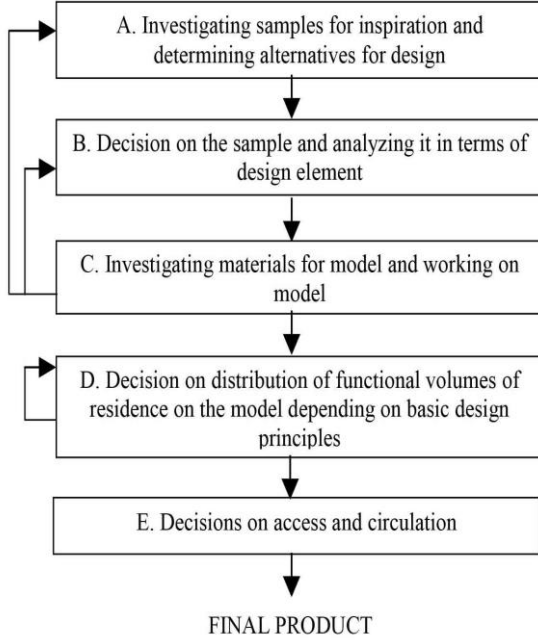
Architectural Design Course, Its Content, and the Process

Architectural Design course, one of the first year courses in the Department of Landscape Architecture in KTU, is perceived as a subject which should be taken into consideration within the context of landscape architecture because of the close relationships of the buildings, which are architectural products, with their environment. Landscape architects cannot design the building in integration with its organic environment which is outer space extension of that building without knowing the shaping of buildings depending on different functions, its opening to outside, the visual and motional access relationships between outer space and the building, and without being aware of the fact that where, how, how often and why to reach that building (Özbilen, 1997). For this reason, this course, aims to teach students interior efficiency of buildings having different functions and the kinds of design approaches to be shown to their environments based on their interior function and efficiency.

To put it another way, in this course, students are informed about the internal processes, activity areas of buildings with different functions (education, health, recreation, housing etc.), their relationships with one another and how and how much they are open to outside. Then, residential buildings which are the most common building types in the world are pointed out, and it is explained what the domains of the residential building are and their relationship with both one another and outside. On the basis of the interior functions of the residential building, the next phases of the course, the students are required to design a residential building which they imagined, without its interior functions, as being just an external cover with a three-dimensional model including their environment. It is aimed to form a design which is integrated with its environment, which means a design in which building-environment / landscape unity is ensured. Thus, students' comprehending the concept of unity by practicing it establishes the main purpose of the course. The teaching method of Architectural Design course which is performed in studio can be defined as follows: "Teaching design as a combination of architectural theory with practical design activities" (Kowaltowski et al., 2010). At first, the students are asked for selecting a sample which is either natural or man-made and which illustrates formal unity to inspire them as yet they have very limited knowledge and stylistic repertoire about the issue of design. While handling the samples, the main criterion is that they are to exhibit an interesting formal (shape/texture/colour) unity. The objective is to utilize the elements of shape-colour-texture-size-direction through the principles of continuity-similarity-repetition-contrast in compositions, to improve the visual repertoire and experience of the students in this aspect and to make the students acquire the knowledge about how to form unity using these.

This design process, which starts when the students bring photos of the samples which appeal to them and which will be an inspiration for them (Figure 1, A), continues with the analysis of the samples (Figure 1, B). In this stage, the stylistic features of the selected model and lineal, textural and chromatic traits of topography of the environment are described, and it is discussed what kind of materials should be used to reflect these into designs. In the following phase, three-dimensional models are developed (Figure 1, C). In this phase, a working model is formed with the help of the success of the model, which is inspired primarily

in terms of style, in reflecting reality. It is made use of feedback from the first phase while constructing this working model if it is necessary,

Figure1. The process in student works in the scope of Architectural design course (cited from Mumcu et. al, 2009)

After completely deciding on the inspired model in this way, it is continued to develop the model by interpreting the basic design concepts, substantially the principle of unity, and the information acquired about the residential building together. (Figure 1, D). Whereas shape, texture, direction and colour, which are the elements of design, are examined according to the samples selected by the students, bringing these together on works is studied on with the help of design elements including continuity, similarity, repetition and contrast. The form conceptions, which have been discussed as three-dimensional with bread-board models in the previous phases, is

designed in the size of 35cm x 50cm in a three-dimensional working area as a scale of 1:100 in compositions in this phase. While students studies illustrates continuity, repetition and similarity in form conceptions, they are criticized in terms of ensuring contrast without destroying the unity, but rather making it more stronger, by making transitions in the whole study area, and they are oriented to have unity in this way. The number and the size of the elements they have used and their distribution in proportion to the size of study area, their duty circle and the similarity of the direction, shape and texture among close parts are constantly analyzed. Then, they are criticized by the instructors in order to improve the balance and unity which are provided by the composition. To ensure unity, depending on selected sample, it is aimed to form textural characters in the whole study area while, relying on the formed distribution, it is also determined which of these will stay as the volume of the building and which as topography. This phase is the longest phase in the general process and, with frequent feedback, it is started over again. The students not only try to build textural analogy of the model they are inspired from, but they also have the purpose of deciding on the location, size and the general distributions of volumes belonging to different functions in buildings in the study area. In addition to unity, balance and domination, the basic design concepts, also come to the fore in the scope of evaluating the distribution of functional volumes of the building. The students are expected to both design a formal unity which is not monotonous by using the principles of similarity and contrast in a balanced way and build a balanced filled-empty relationship.

In the next phase, the distributions of access and circulation are resolved as the locations and sizes of the volumes are identified in the previous phase (Figure 1, E). In this phase, a residential building, which is

Figure 2. Samples from student works which are regarded as successful in the scope of Architectural design course

unified with its environment, is formed. Hereby, the aim is not to design a residential building; it is to provide experience to decide the locations where the volumes of the residential building can be located in this texture without destroying the existing natural environment and to ensure the environment-building unity. The designs are never assessed to be as a residential building design with regard to architecture. They are studied as masses and accepted as just an external cover without being examined internally (Figure 2).
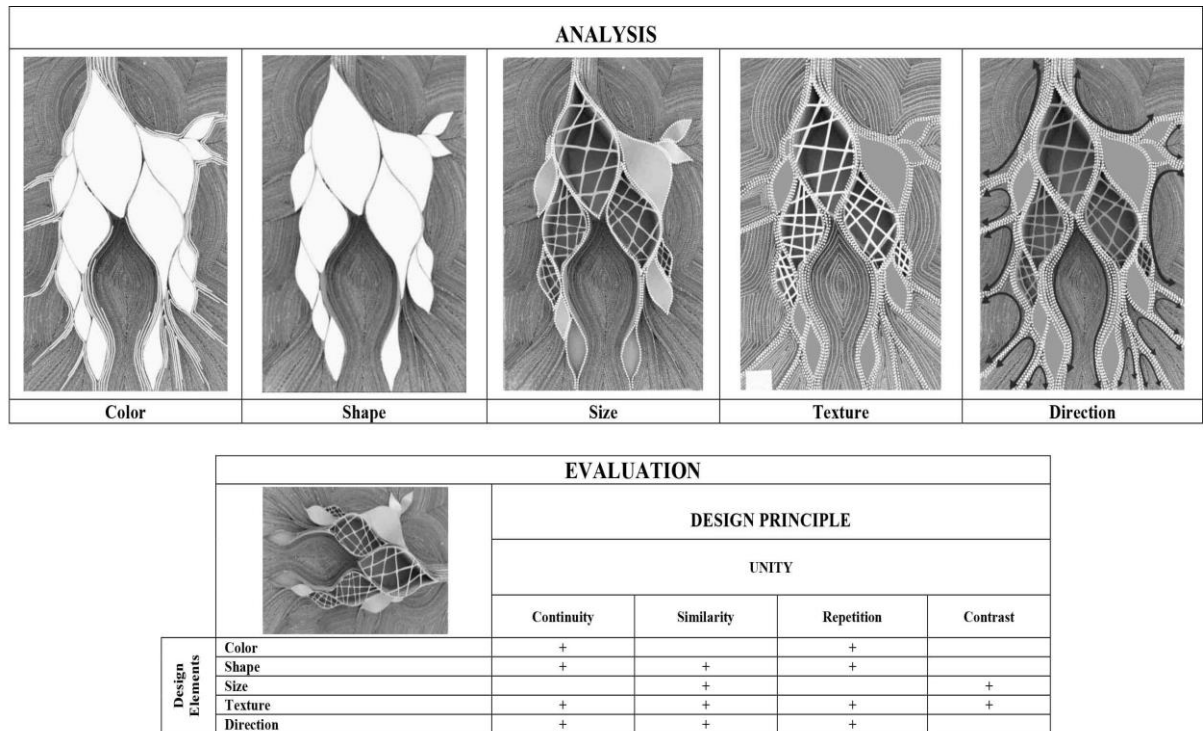
2. Analysis of Unity on Student Work

The kind of design elements and principles used to form the student works whose process is explained above will be illustrated with the help of samples, and the concept of unity will be related to landscape design targeted in the scope of Architectural Design course. Moreover, these analyses carried out by researchers who are the instructors of this course also have the purpose of introducing the process of criticizing-developing the product which is performed with the student in Architectural Design course, examining significant points in this process and sharing the results of it. Accordingly, successful student works are divided into two categories with respect to unity in design in terms of ensuring building-environment unity as well as presenting the concepts of balance and dominance. In the first place, how the design elements shape-colour-size-texture-direction, which is found to be significantly correlated with the concept of unity, is approached is analyzed through schematization on photos of works. In the second place, the way the elements are used, which element is used in relation to which principle via the design principles which are continuity, similarity, repetition and contrast is indicated in the evaluation part. (Figure 3, 4, 5, 6). Consequently, the volumes which are expressed with shape the textural forms that they are generated through coming together, the orientation that they illustrate, colour and size changes are identified on student works. The authors who have at least five-year experience in implementing Architectural Design course have had the evaluations together. When student works are examined on the whole, it is found out that the most frequently used principle is similarity and that it can be used with all design elements (Figure 3, 4, 5, 6). This demonstrates that the concept of similarity in search of unity is likely to be more easily perceived by the students and that they are able to reflect this in their works more easily. It is possible to remark that similarity is one of the most frequently mentioned principles by the researchers who deal with the concept of unity (Table 1). Then it is seen that the principle of continuity and repetition is predominantly used, that contrast is linked with the elements less than the other principles and that the students have the tendency of having contrast especially in size and texture and sometimes in direction. Under the title where the concept of unity is correlated with design elements and principles, while unity is examined, it is pointed out that the principles such as similarity, repetition and continuity are crucial in providing unity and that the necessity of contrast which is presented with transitions is emphasized because it prevents design from being monotonous and it enables balance in design even though it is not so dominant as other principles.
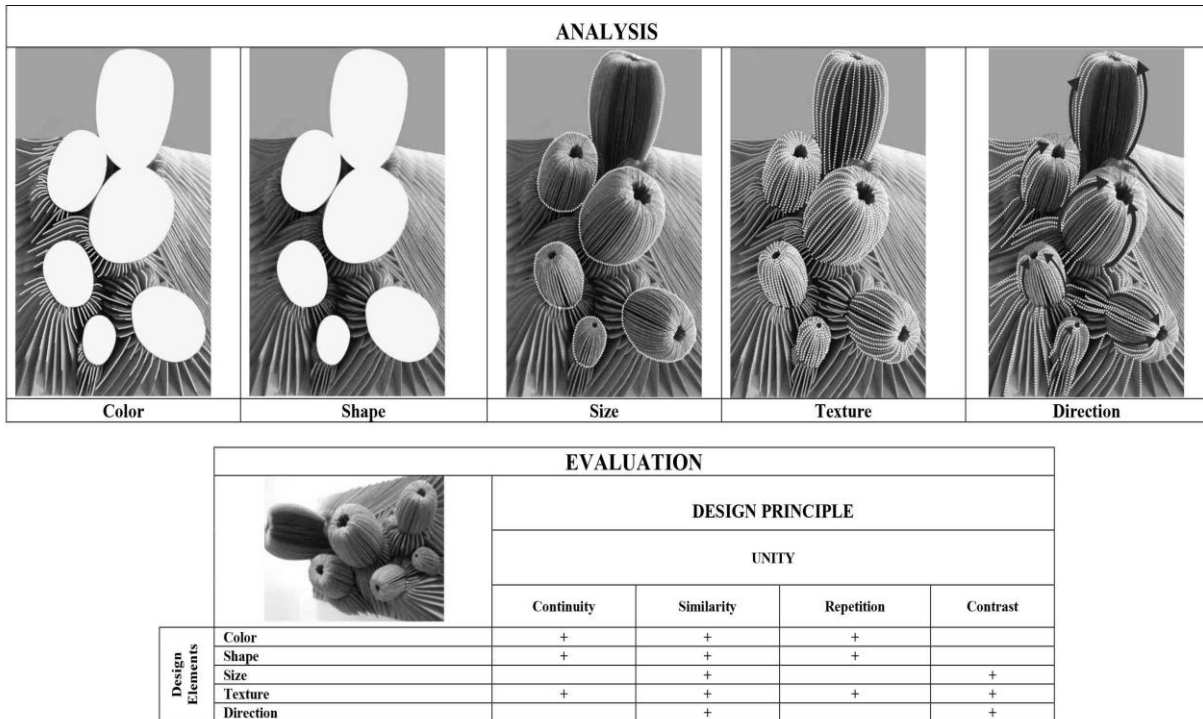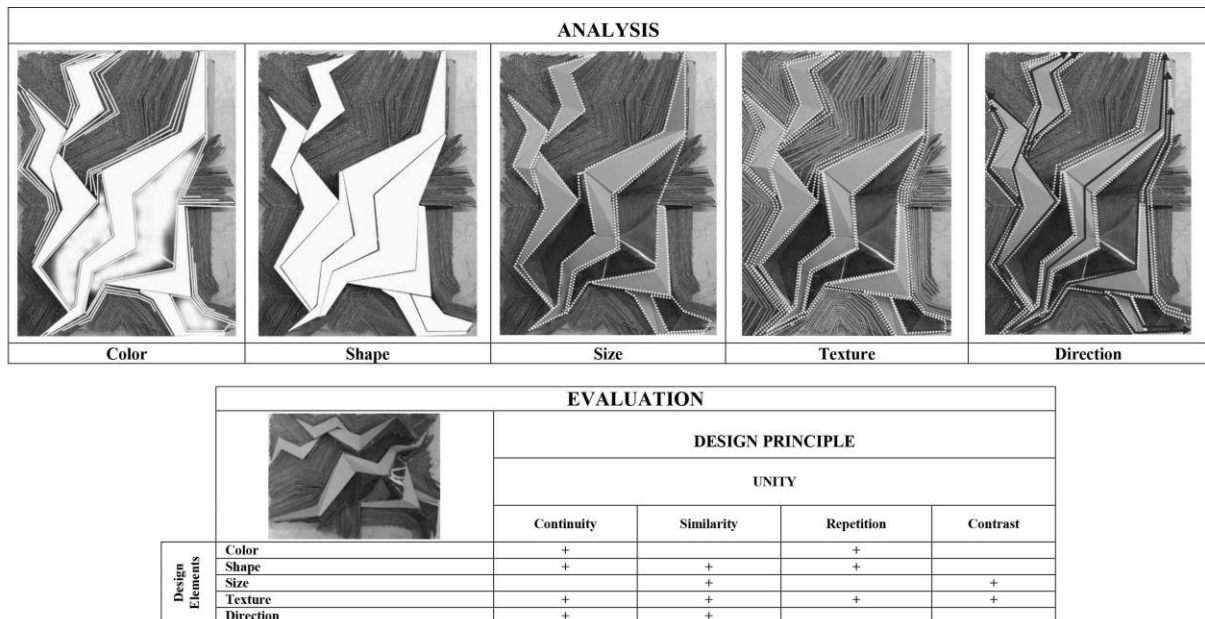
Figure 3. Visual analysis of Student work and evaluation of search of unity in the work with regard to design principles (Parisa Mehdieh, the student)

Figure 4. Visual analysis of Student work and evaluation of search of unity in the work with regard to design principles (Sırrı Yavuz Kurukız, the student)
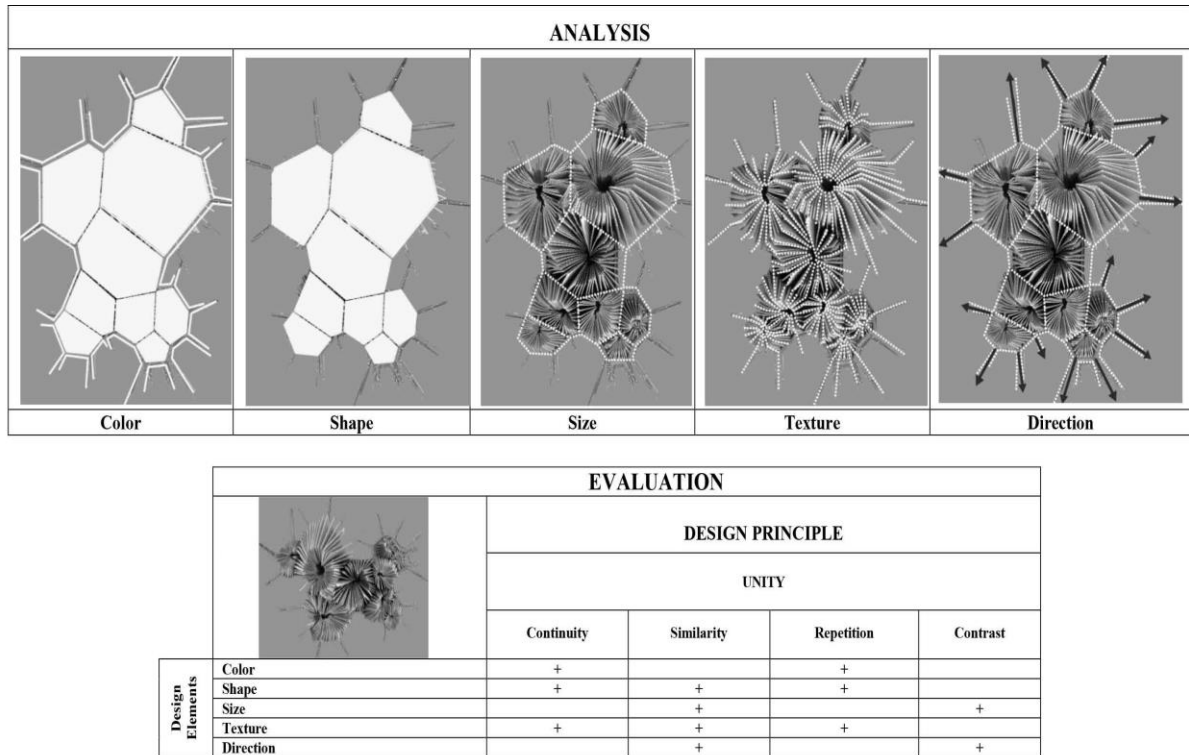
Figure 5. Visual analysis of Student work and evaluation of search of unity in the work with regard to design principles (Fatma Aydın, the student)

Figure 6. Visual analysis of Student work and evaluation of search of unity in the work with regard to design principles (Sema Eker, the student)

3. CONCLUSION

It is fundamental to ensure the unity between the buildings and their surrounding environment in improving the life quality of people while developing cities. This means that the scope of the professional discipline of Architecture overlaps with that of Landscape Architecture. In

the department of Landscape Architecture in KTU, It is considered as a very important mission to educate the students in a way that they become more conscious on this subject and that they are equipped with necessary knowledge and experience, thus aiming to teach landscape design in company with the knowledge of both art and science. Architectural Design course is of importance in line with this objective. In this course, it is elaborated on ensuring building-environment unity in landscape design through the basic principles and elements of design, and it is targeted to teach students partially functional, mostly aesthetic dimension of this unity which is to be ensured functionally, aesthetically and meaningfully. Conducting the process regarding an imaginary building design not only means improving the imagination of the student but enriching their stylistic repertoire as well. Furthermore, this provides flexibility or the students and they are encouraged to develop a model which is the most appropriate for their own designing skills (considering three dimensions, manual skills and forming creative ideas etc.). With the freedom of exhibiting their own understanding of form, via the three-dimensional models, each student experiences and learns the elements of shape, colour, texture and direction, how to bring these together with the principles including repetition, similarity, continuity and contrast and, most importantly, how to have the building-

environment unity. As a result, with the decisions based on design knowledge in the phases of determining in the process of design, the students are enabled to acquire the use of design elements and principles to have dominance-balance unity and to find creative solutions.

The knowledge of building- environment unity aimed to be taught to students through Architectural Design course is not solely important for improving design capacities of students. It is stressed that in the design of building which is the product of architecture and environment that is the outcome of the Landscape architecture, it is not enough to provide unity for buildings via only being open to outside functionally. First and foremost, the students also acquire the knowledge of human-environment relationship considering the visual unity of building- environment, that it makes it easy for people to perceive and read their environment through unity and that this enhances their aesthetic experiences related to their environment. What is more, Architectural Design course and the concept of unity it aims to teach is significant in that they develop a view to the challenges related to the relationship of building-environment / landscape, and they enable students to have a conscious attitude concerning that the landscape around us is integrated.

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