

# Developing Criteria and Design Transformation Process in Designing Landscape Elements Based on Nature and Islamic Principles

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**Abstract-** In designing urban landscape, there is a lack of consideration in integrating the cultural and environmental resources such as local plants to contribute to the material and design production. A clear understanding on the source of an idea, design process, development and design system is therefore needed. This paper examines the potential of systematic design process in producing designed elements based on the nature (local plants) and Islamic design principles, shapes and forms. The design experiment adopted the framework of design transformation process. Questionnaire surveys were conducted with 159 design students to identify the functions of the design transformation process and its effectiveness in the producing design variations. The results indicated the importance of systematic design processes in producing variation in the design. These findings will support a more creative system in designing Islamic urban landscape that displays a unique identity and suit the local environment and culture.

**Index Terms-** Design Process, Tiles Design, Design Transformation, Nature, Culture

## I. INTRODUCTION

This study focuses on analyzing how the transformation process occurs and how to design an effective system with the understanding of nature growth and the Islamic concept. It requires the understanding of the relevant definition of the concept of transformation in accordance with changes in applications and technology, especially in the context of design research. The Quran emphasizes on the importance of unity, which means Muslims were meant to be a united Ummah, which is justly balanced in nature between the legal aspect of religion and the spiritual dimension, as well as between the internal and the external aspect of life. The integration of Islamic spirituality in symbol design, the stability, harmony and prosperity, the way to live in peace through the Quran will be manifested more meaningfully. This potential could be best seen in nature, the main resource in the environment.

Another aspect in a design that one should focus on is the nature growth. It is to examine the way humans observed nature in

design and created systems for creative works. One should study the nature at all levels – from the function and form of biological molecules to the structure and process of tissues and organs, to the behavior and gross anatomy of entire organisms, to the complex interrelations between the numerous species of the ecosystem. The core idea of nature growth and the Islamic spirituality concept is a science that studies nature's ideas and then imitates these designs and processes to solve human problems, with the understanding of Islamic principles. Design Concept is the inspiration from nature resource, provides the designers with combinations of shapes and colors and textures. It is possible to incorporate these basic images into the design. The vision in graphic design is to promote respect for the natural world by incorporating nature into visual design and spiritual values and dimensions.

Nature processes distinctive potential resources in the production of the design process and innovation. The most important considerations in choosing a tile design are a pattern design. Therefore, the importance of focusing on the production process in design has become crucial. The biological, physical and visual aspects of environment influence life philosophy, culture, society, tradition and creativity development. In the production of design symbols, it is evident that there is a lack of focus and assessment given to the production process compared to that of the end product. The importance of the transformation process is emphasized by Charles & Cynthia (1992) who believe that the problem solving processes are shown to illustrate how the process can be altered for use in solving specific types of problem in the design. In this case, the design transformation process is seen as a source of productivity of ideas and its variations for design solutions.

The objectives of this research are to determine the significance of systematic design process and ideas transformation in the development of graphic symbol. This study explores the relationship between tiles production and its pattern within an activity theory framework, focusing on data collected using questionnaire survey from selected universities in Peninsular Malaysia. At the conclusion of this study, design criteria and analysis of system will be established before the production process of decorative tiles design based on tropical plant images.

For thousands of years, artists have relied on the natural world for inspiration, especially designers of pattern in the modern world. Floral pattern designs were chosen because flowers have traditionally been depicted in artwork and decoration since the beginning of visual communication. The artists of the Art Deco style, despite their emphasis on geometric rather than organic line, followed in a long standing tradition and placed great importance on the floral motif in fabric patterning. In fact, at the peak of Art Deco, over half the fabric designs produced depicted floral imagery, most of which was treated geometrically.

## II. LITERATURE REVIEW

### A. Design Transformation Process

The term transformation is also used in the context of the mind to visual interpretation in the communication process as explained by Alan (2002):

"The process of graphic thinking can be seen as a conversation with ourselves in which we communicate with sketches. The communication process involves the sketched image on paper, the eye, the brain and the hand. All ideas can be said to be connected; the thinking process reshuffles ideas, focuses on parts and recombines them." Alan (2002) relate the term transformation of nature through his statement:

"In the act of transformation into design, some of the disorders of nature are replaced by human order. However, some of the most successful nature-based patterns successfully abstract the natural form, while retaining a liveliness of the overall design that we recognize as being the essence of nature."

The design transformation process can be divided into several layers as follows:

- i. The transformation from the point of thinking and creativity: The process relates to how to stimulate ideas and thinking in the development of the mind. Here, the transformation process in the brain, followed by members of the body before translated into paper or by computer.
- ii. The transformation of the visual angle and design: The process is divided into two aspects, namely physical (elements) and meaning (principles). Physically, the transformation process created in the form of the size, shape, form, fabric and color. In terms of meaning (principles), it was translated by nature good or bad, soft or hard, balance, etc.
- iii. The transformation from the perspective of the nature or character of the environment, such as small or big, fast or slow, smooth or rough, etc.
- iv. The process of spiritual transformation from the point of impact is influenced by elements of earth, water, fire and wind.

"This would be in line with changes in scientific thinking that stresses the importance of process in nature, rather than the study of the finished object "(Alan, 2002). Charles & Cynthia (1992) also agreed with the above statement and explained that:

"The process described a series of events, stages or phases that can be viewed in a variety of ways. It is planning, and

organizational tool used to guide creative activities toward the end goal." The authors through their book 'Basic Visual Concepts and Principles' emphasized the importance of the design transformation as a problem solving process through the passage:

"The problem solving processes are shown to illustrate how the process can be altered for use in solving specific types of problem."

Based on the above discussion, it can be concluded that natural resources such as plants have the potential to be the innovative sources that can provide guidance to the understanding of the transformation process of design, principles of aesthetic design and evaluation of design. The transformation is not only based on the visual aspect, but also from the functional aspects. This passage describes by Ian (1969) regarding the process of transformation that is inspired from natural sources:

"Like their natural counterparts, our designs organize the synchronous movement of many parts into a fluidly transformation whole. One integrates insights from nature into man-made products, environments, and structures. Thus, our approach is inspired by nature, not from a visual standpoint, but rather from a functional one."

Results based on research theories and approaches above, have indicated that every symbol's creation should be evaluated in terms of the development of elements in form and structure of the plant images. This method allows one to appreciate the value of the creation process in detail. Alan (2002) considered that a conceptual sketch is based on the concept of man's thinking relationship to the environment associated with interest in the design process as follows:

"The effect of ecological thinking, taken to its ultimate conclusion, maybe the redefinition of design as a comprehensive awareness of relationships between things and people. This new approach would be in line with changes in scientific thinking that stress the importance of process." In this regards, Wucius (1995) stated that the conceptual drawings have a close relationship with the shape and structure elements that have been designed. He described that:

"All the visual elements constitute what we generally call 'form' which is the primary concern in our present enquiry into the visual language. Form in this sense is not just shaped that is seen, but the shape of definite size, color and texture. The way form is created constructed organized along with other forms is often governed by a certain discipline which we call "structure" that involves the relational elements is also essential in our studies."

Marcia & Sheila (2005) relate the meaning of transformation in terms of real change. Here, conceptual sketches help in changing forms, image and structure. According to them:

"Often, people confuse transformation with any kind of change, technology breakthrough, innovation, process improvement or transition. However, few changes are truly transformational. However, while all transformation is a change, not all change is a transformation. To transform means a process to change in form, appearance or structure."

The researcher opines that the conceptual drawings from the point of form and structure are the important elements to creating symbols that are potentially attractive and can be developed into

a more effective and functional forms. It can be understood from the reviews that the process of transformation through the manipulation of shapes and structures of plant images can be produced by means of the conceptual drawings. The drawings describe where the elements or representations of visual composition take place.

#### B. The Art of Transformations in Islamic Spirituality

Observing the concept of design thinking and Islamic philosophy, one need to understand the meaning of spiritual value, the design process, the art of transformation in visual language, to read in depth of the design. Then only the viewer will appreciate the content of the work of Islamic design. The vision of religion belief is that how the Islamic designers translate their works through forms, colors, spaces. The Islamic Design Concept is the social relation with different environments and culture of the Islamic nation, and through texts from the Koran and the Sunnah, which direct the Islamic concept to the creation of God and human life. In Islamic design, the vision of spiritual religion is the understanding of the unseen was the presence state. The unseen process is where the designers translate the design works through forms, colors, spaces and relations between them and God, interpret them through the solution of this principle in Islamic design. The relationship in their belief is that the process of creation in the artwork, at the same time is the remembrance of God creations.

The end product or the outcome of the design is not the reality; the spiritual process is a reality, For instance, spiritual process of the intention, is a manifestation of God's creation that reflected as the design intention (The pre-process towards the goal of the design process). The light of the heart is the light flow of idea's resources that reflected as the source flow from the image origin. The light of the movement is the implementation of the development of the process is reflected as the movement of the design process. The light of the soul is to capture a sense of feeling is reflected as the appreciation of design (the beauty and aesthetic). The light of the mind is to translate action and the results are reflected in the creativity of design. The light of the human structure is for realizing the movement, which reflected as the structure of the elements and principles of design.

The light of desire is to raise the state, of the requirements and spirit that is positive & negative, which reflected as the outcome of a design, to analyze the requirements of its achievement. This method is documented through this concept of abstraction in shapes, units and decorations. It also reflects the intellectual of knowledge in the aspect of the value of the spiritual process and the quality of the work of art in Islamic spirituality.

God's creation through the spiritual energy that was an impact on the development of science and knowledge and the discovery of molecules constituting the material and the energy contain atoms, created an aesthetics values in design. The essence reflects the concept of Islamic philosophy and manifests the understanding through the design works using design expression. The thinking eye was a combination of visible and invisible in the work of art

is characterized by creativity and precision in thought, and process.

The meaning of the design creations, the systematic process, the principles and values, which was organized through the technical elements in the technical work of design productions involve colors, lines, forms, spaces and its relationships by developing the construction methods and theories. Applications of the descriptive and analytical method by studying some of the concepts and theories related to the field of production in scientific design elements, and principle construction will achieve the Islamic design concept of similarity and simplifications of different culture and visual environment.

There is a relationship between Islamic design and scientific theories. It shows in a positive discovery in visual interpretations, visual transformation, simplifications and innovations. What important of this relationship is the basic understanding of uniformity and the aesthetic acceptance of the work of art. Design science theories and Islamic design influence each other, which reflects how the design work based on knowledge of theories and foundation design through a system of Islamic thought. It can work through the design planning process methods and techniques of the organization of design to generate scientific knowledge used in the new Islamic design concept.

### III. RESEARCH METHODOLOGY

#### A. Manual System of Design Process of Tiles

In the development of a manual system, elements and principles of design should be primarily considered as to identify the criteria for the transformation process through the manipulation of forms and shapes. The methodological framework is designed by selecting the most relevant design elements (see Figure 1). The design phase includes the process of recognizing, refining and strengthening the design criteria by producing more accurate and detailed transformation processes.

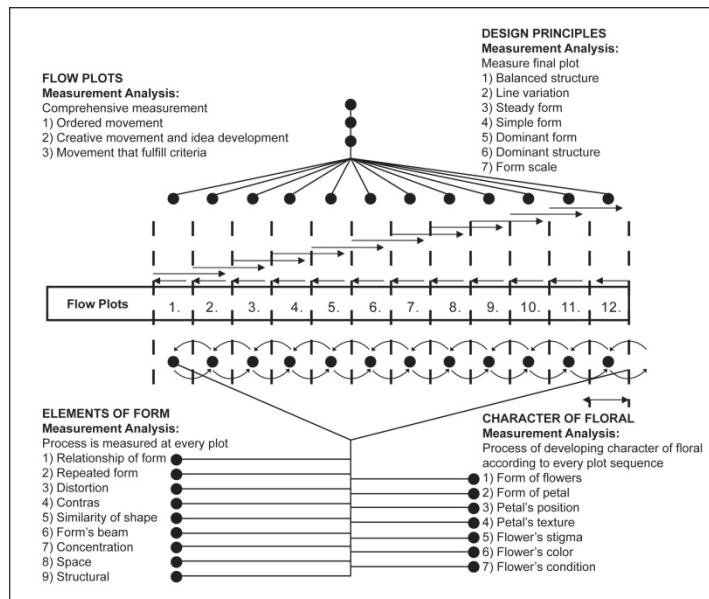


Figure 1. Plant Transformation Process Flow Sequence Based on the Design Criteria

The next step is to identify the manual system of design process by separating the criteria into four sections. The criteria include the element of the form, the principles of design, the elements of nature and the form of flow sequence. Figure 1 shows the flow sequence of plants transformation based on four sections that have been developed. A conceptual framework relating to the concept of the manifestation of the light of God towards human

beings, quoted from the book of "Secrets of the Human Light" by Baginda Muchtar, was referred to for linking the design criteria with the spiritual concepts rooted from Islamic teaching (see Figure 2). The structure, creativity, beauty, process, symbolic image and the design intention are all regarded as the manifestation of the spirit and knowledge to transform the essence and abstraction of creation to real design elements.

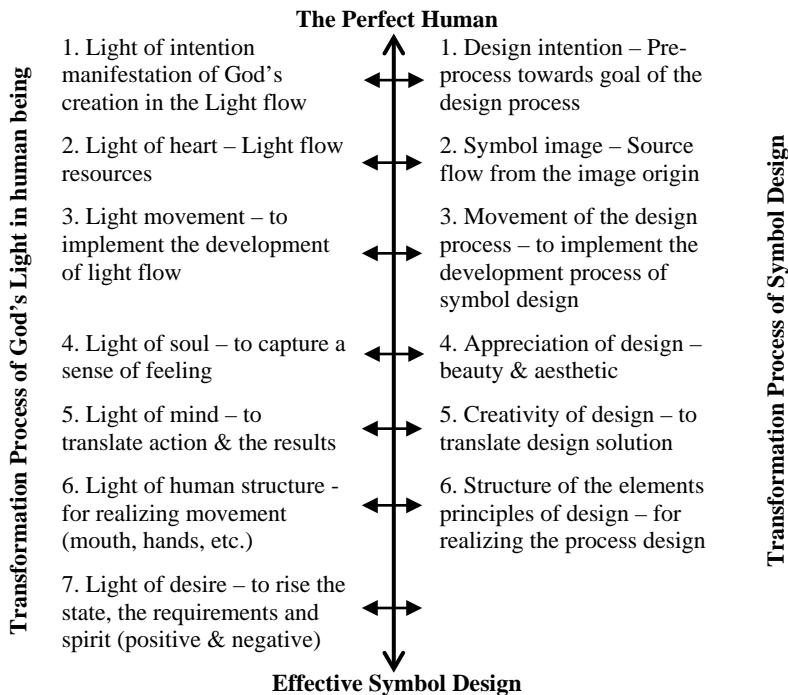


Figure 2. The transformation process associated with the concept of the manifestation of the Light of God towards human beings, (extracted from the book of "Secrets of the Human Light" by Baginda Muchtar) and its link to the transformation process criteria

**B. Criteria of the transformation process in tile design based on**  
Based on the concepts and criteria reviewed in the study, the production process criterion is developed as 'framework' for the tile design experiment described as follows:

- i. Criteria for analyzing an image to the tiles design based on plant characteristics and elements of forms.
- ii. Criteria for creating the transformation process in accordance with the system from the first plot to the end of the plots based on the principles of form features.
- iii. Criteria for analyzing the process of transformation in the image sequence that was generated based on the transformation process flow sequence.

The main focus is to identify the transformation process through the application of features and elements in the character of the plant. The importance of the development of the criteria above has been emphasized by Wucius (1997) that explains:  
"The shapes of the components of natural forms and how they work together structurally should then be examined."

This theory is also supported by Hoberman (2006) who stated the followings:

"The incremental growth of a budding plant, the natural world is constantly changing form" these observed transformations of size and shape reveal subtle and ordered natural processes that can be seen in both large and small-scale transformation."

Based on the statements above, it can be understood that the transformation of natural elements has a smooth and orderly process, and each element involved should be studied and evaluated in detail. The criteria selected in the study are as follows:

#### *The elements of forms*

Based on Wucius (1995), there are various criteria that feature the elements and principles of design during the analytical process of symbols creation. The researcher has analyzed the process using the element of forms through respondents' evaluation. Based on the feedback from the respondents and in light of the criteria that have been proposed by Wucius (1995) in the development of design creation, the criteria relevant to the transformation process of symbol design are as follows:

- (a) Structure in the process of design
  - Formal and informal structure
  - Structure of merged / separated
- (b) Relations in a process design
  - Forms that separate distance
  - Forms that meet and overlap
- (c) Repeating the process in the form of design
  - Repeating appearance, size and colour
  - Repeating direction, position and space
- (d) Changes gradually form (gradation) in the process of design
  - Changes in appearance and gradual reduction
  - Changes in the gradual change direction and circle
- (e) Contrast in the form of process design
  - Contrast in shape and size

#### *plant images*

- Contrast in direction and position
- (f) Radiation in the form of process design
- Property emission in a position outside of the centre / to the centre
- (g) Space in the process of design
- Separate positive and negative
- Separate into the illusion

#### *The design principles*

The criteria in the design principles in the design transformation process are as the followings:

- (a) Balanced structure
- (b) Flow of line
- (c) Form a robust
- (d) Simple design
- (e) Dominant form
- (f) Dominant structural

#### *The transformation flow of sequence*

Criteria used at the end of the process flow in the creation and the transformation sequence analysis are as follows:

- (a) The orderly movement –Movement format of plots should be added
- (b) Movement of creative and development ideas- Movement format of plots should disappear
- (c) Movement that meet the criteria
- (d) Movement format that is causing the plots is not logical or defects

Based on the above discussion, one can summarize that based on the listed elements and principles of design, this study has identified the most appropriate design criteria that could be applied effectively in the production of plants symbol design. It thus supports the existing criteria suggested by previous researchers. Figure 3 shows the conceptual design framework that relate to the natural processes in the creation process of plants in the design.

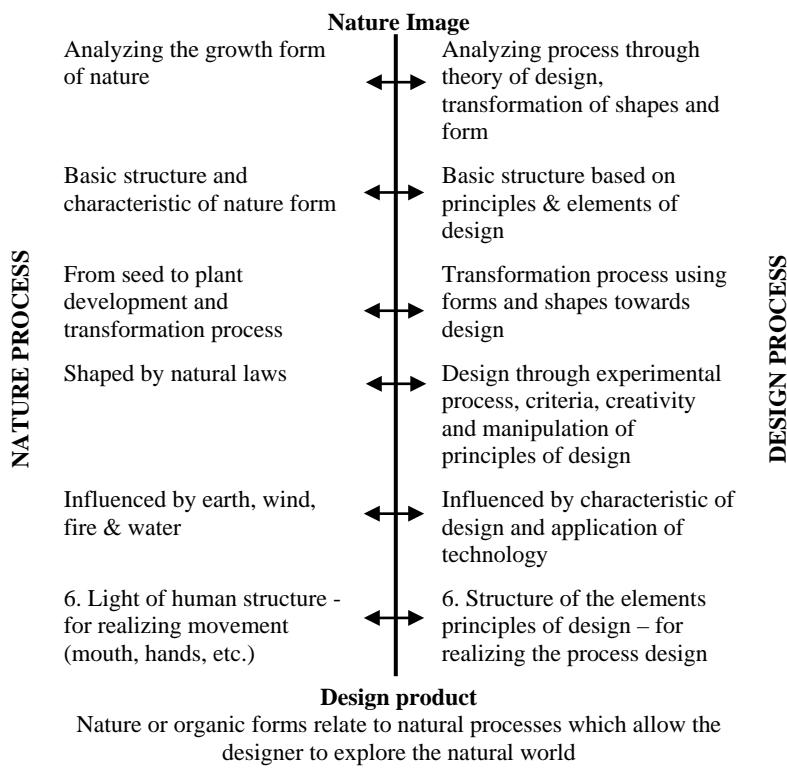


Figure 3. Conceptual Design Framework Relating to Natural Processes

#### IV. FINDINGS

This study gauged the importance of the transformation process in symbol design. Questionnaire surveys were conducted with 159 designs-based students from four universities in Malaysia which are Universiti Putra Malaysia, University of Technology Mara (Shah Alam), University of Technology Mara (Perak) and University Malaya. The followings discuss the respondents' feedback on the aspects surveyed.

The results on the first stage of the survey indicate that the majority of the respondents (71.3%) agreed to the importance of the design aspects of the transformation process and priority criteria. The respondents feel that it is important to focus on assessing the results of creating good design with appropriate and systematic design criteria in the research field. Results from the second stage of the survey indicate that the average percentage of respondents with a positive feedback on the importance of the subject studied is, 91.6%, while 6.2 % of the respondents did not think that the subject matter is important.

The results indicate that almost all of the respondents agreed that the design criteria for the transformation process is an effective, systematic and easily modified in terms of forms of variations production. The following are the summary of findings on the aspects evaluated by the respondents:

- (a) The most important aspect in evaluating tiles design is the process (66.4%) followed by the product (29.2%) while (4.4%) is uncertain.
- (b) The most effective technique in analysing the visual process in tiles design is it through the detail (62.8%) followed by the

process (37.2%). The results indicate that creativity is an important aspect to assess the various methods in the creation process of ideographic tiles design.

(c) The most influence aspect in identifying the elements in the process of tiles design is the design element and principle (34.6%), followed by the design philosophy and concept (30.0%), culture and environment (27.0%) and designer's creativity and expertise (8.2%).

(d) The most important criteria in analysing the visual process in tiles design is through the elements and principles of design (59.7%) followed by design creativity and concept (40.3%).

#### V. INNOVATIONS & COMMERCIALIZATION THROUGH FUNCTIONAL DESIGN

The followings described the potential of the tile design inspired by plant images to be developed as commercial products in the market. The qualities are drawn to the tile design process and the natural potential of plants (flower) in diversifying the design solutions that suit the context.

(a) Statements and Issues: Image of tropical plants represents the identity, way of life of transformations that inspired and last through generations.

(b) Concept of Innovations: The idea was to sustain local elements from local plant images symbols into modern living environment

(c) The Approach: Creating and simplifying a new functional design without losing the beauty and values from the past.

(d) Potential consumer: Local Authority, Local & International Designers, Architects and Planners, Manufacturers, Design Consultants Developers, etc.

(e) Benefits/advantages; Developing a new approach in producing a new tiles images with integration of new concept and material. This measurement will lead to the findings & the similarity of characteristic and function in product innovation and commercialization

(f) Competitors/current practice Designers/ Artist/ Manufactures using the method of tiles design production from actual cultural/local images added directly to product design

Figure 4 indicate the process of design transformation inspired from a flower as nature resource by using the identifiable design and process criteria. The symbolic forms are then transform into product /landscape product eg. tile design (see Figure 5).

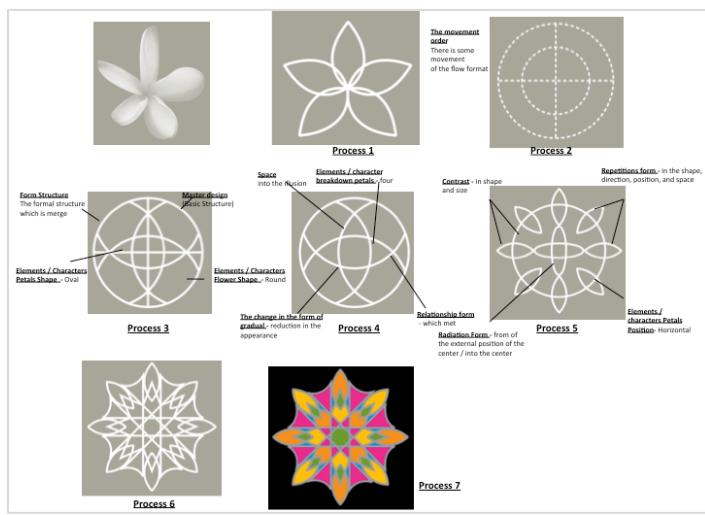


Figure 4. The design transformation process of flower

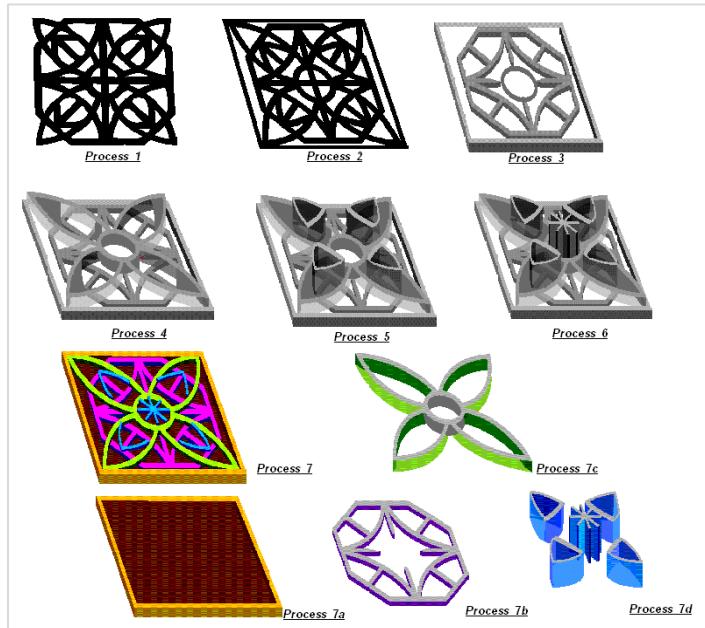


Figure 5. Examples of development of tile design based on plant image

## VI. CONCLUSION

Discussion in this study can be summarized as follows:

(a) The design can be produced more effectively when the created process explored through the media, equipment, etc. using the proper method.

(b) Emphasis on the visual approach using conceptual sketches produced during problem solving and idea generation process in design. One can express his or her feeling and emotions during the process and eventually produce more innovative artistic expression and meaning.

(c) The approach includes the intellectual process of forming goals and boundaries, analysing the situation, taking into account the existing possibilities, selecting elements for analysis and creating a way to approach the appropriate design problems of design.

The needs of systematic thinking ability and a clear goal are important in producing an effective transformation process. Beauty, harmony and aesthetic values must be taken into account in the visual assessment. The studies on the transformation process and methods based on the nature and the Islamic concept, in particular the plants and Islamic elements can contribute in increasing the knowledge and the production involving product design that based on the nature as resources. In addition, the theoretical information that has been collected and practice in this study can be utilized to create innovations and their promotion for nature based product

The use of local plants could generate the original identity of symbols and images to industrial as well as architectural and landscape products. By exposing the systematic methods, techniques and processes through experimentation, innovation and Islamic knowledge contribution could be used to benefit the related parties. Indirectly, it encourages Muslim inventors and designers to increase the number of products and production of various product designs.

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