

Visual integration in the combination of the methods of hammering and sawing in metalwork

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Introduction

The techniques of hammering and sawing have been chosen to be the base of that formulation in the metalwork and the complementary relationship arising from the pairing between these two techniques is the main entrance in building the aesthetic experience in this research, where the research problem is summarized in trying to get the metalwork out of the traditional form of using forming techniques to an integrative plastic vision that combines forming by hammering and sawing with the aim of increasing the process of artistic interaction that is achieved through a good visual perception of the artistic complementary experience.

Research problem

How is the visual integration possible through the combination of the forging and sawing styles in the metalwork?

Research goal

Benefiting from the combination of the forging and sawing styles to achieve a visual complementary relationship in the metalwork.

Hypothesis

An integrated vision can be achieved by combining the forging and sawing techniques of the metalwork.

Terms

Shaping by hammering (forging):

"In this way, it is intended to treat metal surfaces with a protruding or sinking method, that is, by pushing from the back or by light forging or pressure. This depends on the thickness of the formed metal. This method is related to some properties of the metal such as luster, plasticity and malleability. This can be applied to flat or solid metal surfaces".

Fretsaw-work shaping:

The emptying forming is a general idea based on finding a reciprocal relationship between the blank resulting from the cut and the shape represented in the other remaining parts of the emptied surface, and the voids may be the intended shape and the remaining copper surface represents the floor and may be the opposite. The shape and the ground, or in other words the occurrence of a vibration in the vision between the form and the ground, and each of these cases has its technical characteristics, and its aesthetic value is confirmed by the artist's ability to construct it.

Research limits

1. The research experience was applied to graduate students at the Faculty of Art Education - Minia University for the academic year (2019-2020) within the hours of the course specializing in Metalworking.

2. The insects' shapes were chosen as a unified structural unit to work in the design of the metalwork.

Theoretical framework

Visual integration

The complementarity of vision is determined by the ability to formulate simple overall perceptions produced through the abstraction of perceptual perceptions, and they are linked together to form judgments or certifications that result in complex perceptions of the form of work as a whole.

Despite the multiplicity of definitions used for integration and the multiplicity of methods of using it, the result of all these methods is the same, and all definitions ultimately lead to the same meaning.

To build any artwork, the design must appear in an integrated manner that provides us with the technical expertise that the design aims to achieve, which is expressed by the design using lines, spaces, shapes, color and tactile values, the design theme and the system by which the elements within the whole design are combined.

Artwork based on the coordination and integration of spaces leads to the formation of a unified visual complementary image of a specific thing, and the brain has a very important role in visual integration in terms of extrapolating the features and characteristics that define the design idea. In this paper, the designs tended to use similar elements with the reduction and enlargement of the size of the element to bring about variation and diversity in the spaces within the design. When we see the elements used in these metal artworks, we perceive the element design, part of it through hammering and the other by sawing and our perceptions in one whole and simultaneously and sequentially in the perceptual process of the one subject.

Consequently, the complementary relationship between the two methods of forming by hammering and forming by sawing was evident by tracing the aspects of communication based on the structural system represented in the structural idea of the design elements and how to formulate the formal relationships between the shape and its repetitions and the existence of a line that divides the element into a part that is executed with a specific technique and the other part is done with a different one. As a result of relating the parts to each of the units that combine all the elements.

The merging and integration has achieved a new vision, a fertile trend and a plasticity in creating new formulas for the metalwork, as this merging and integration of the two technologies in the same design leads to the creation of new relationships between the components of the one metalwork to produce an integrative interdependent organic relationship.

Selection of molding techniques and methods:

Technology: "Technology is a set of operational processes, cognitive expertise and performance skills necessary to produce any metal artwork".

Pairing: means conjugation and duplication, so associates with it.

And hammering has been chosen as a method of forming metals without cutting, and the technique of fretsaw-emptying as a method of forming metals by cutting, has been working on the creation of design visual integration as a basis for the pairing between them.

Metal forging method:

The name Ribosseum refers to the process of metal forming by forging, and it is a method of forming with prominent and sunken by pushing from the back or from the front using special pens, this is why it was known as ribosia pens, which are pens whose ends end in multiple shapes that occur when knocking on the metal surface in a push that takes the same shape as the tip of the hammered pen on it, and through which the metal surface can be formed into various decorative shapes using multiple pens" .

The hand hammers that are used in forging operations on metal surfaces are made either of wood and called dagmaq or hardened steel, and their heads are formed in different shapes according to the type and nature of the forming process to be performed on the metal.

As for the ribosite pens, it is a piece of carbon steel that resembles a pen whose type differs according to the shape of the forming tip. There are markers whose tip is like a chisel but is not sharp so as not to cut the metal and are used to define the outer lines of the design, and the shaping pens that are used after determining from the back to give the desired effects on the surface metal, and sanding pens that resemble marker pens except that they have tips ranging from softness to roughness and sometimes take specific shapes.

The methods used in this process depend on the shape of the piece to be formed and the nature of the metal, as the metal is forced to take the desired final shape and its thickness increases.

Forming with prominent and sunken helps to show shadow and light, which greatly affects the aesthetics of the levels in the metalwork. Perhaps the aesthetic dimension that can be achieved through this method is the artist's ability to control the degree of luster and direction of the metal surface through what this method brings about disparate surfaces, which achieves the current dimension of the work of art.

Vacuum molding method:

Shaping by cutting: It is the separation of a part from the whole one whole, regardless of the shape of the separated part. Therefore, the forming methods that depend on cutting include forming by punching and hollowing and cutting tools are known, which are the scissors in their various shapes and jigsaw and files in their various forms.

Shaping by sawing: The manual sawing process depends on the practical strength of the person in charge of sawing, taking into account the movement of the saw blade in a constant plane and the pressure on the blade during its forward movement, as the saw teeth remove the metal in the form of the tiny pieces.

Emptying: It means the complete removal of intended parts from the inside of the metal surface of the piece of work by using a jigsaw or aganah pens according to the nature of the shape to be emptied, and this process requires making initial holes in the places to be emptied, especially when using a jigsaw.

Vacuum shaping with a jigsaw:

The vacuum forming is its general idea based on finding a reciprocal relationship between the blank resulting from the cut and the shape represented in the remaining parts of the hollow surface. The voids may be the intended shape and the remaining metal flat represents the floor or vice versa, and is usually used to make decorations and holes of various shapes inside the metal panels.

Employing the design system for the pairing of forging and sawing:

The word design system "refers to the nature of the discretionary movement of the elements within the whole, to a discretionary movement on the surface, a discretionary movement in depth, or a discretionary movement that combines them, and this movement is in a vertical, horizontal, or slanting direction, or a movement that is subject to curved paths or combines all of these." Trends, and how to fit between the design elements, they are gradual ascending or descending or both, and refer to the achievement of a geometric or organic side or a combination of them, and refer to symmetry or change in the appearance of the design.

The employment of different methods of shaping from dotting, sanding, defining, and shaping with prominent and gummy, and emptying gives light reflections of the metalwork that highlights many of the aesthetic values resulting from the shadow and the light as a result of proximity, dimension, or zoom and enlargement in the piece of work.

Application framework:

They are shapes that give the impression of the existence of the biological characteristics that characterize living things, or that can imitate them completely. Therefore, the organic form of living organisms: "It is every state of a regular physical structure that has characteristics or is related to living organisms, plant or animal".

Since nature is the main source of all art, different forms, movements and types of insects have been chosen to conduct the experiment of this research, and an analysis of the structural system and distinct lines of each form from the other, and to build the design, various and different iterations of these elements were made.

The visual forms represented by insects are guiding elements for the eye within the composition, and they are distributed within the composition framework to evoke various aesthetic sensations consistent with the desired goal of the artwork, and their repetition creates rhythms that evoke the sense of movement, and the sensations of movement increase in these formations that prevail in them. Organic forms when they have multiple directions, evoking a sense of intense dynamic movements.

The research applications were presented through the analysis of some student experimental works (research output), which were applied to postgraduate students at Faculty of Art Education - Minia University for the academic year (2019-2020) within the hours of the course specializing in metalworking, to determine their aesthetics and the plastic values that was achieved using the two methods of hammering and sawing.

It appeared in this analysis that the metalwork (the result of the experiment) confirms the existence of a prevailing idea around which all the components and elements of the design revolve, which is the mixing and coupling between the techniques of forging and sawing, which opened the way for the integration of the plastic expression that relied primarily on the use of the red copper ore, which enriches working with high aesthetic values arising from the new tactile effects. Hence, the authors believe that it is possible to take advantage of the integration of visual vision in rhythm and the organization of elements, diversity, proportion and harmony between all the different elements in order to reach an aesthetic metalwork, and the following set of results has been reached.

Research results

1. The use of the techniques of emptying and forging worked on the richness and diversity of surfaces and achieving rhythm through symmetry, exchange, succession, zoom-in and enlargement of the same element through which repetition and aesthetics are achieved.
2. Creating a reciprocal relationship between emptying forming and protruding forming that works to support and expand the vision of the metalwork and change and reveal new possibilities for its application.
3. The mutual compatibility between the two different technologies (forging and sawing) worked on the formation of an integrated and harmonious pattern.
4. Repetition in design elements revealed many formal relationships between these elements and each other and the spaces arising from repetition, including operations of overlap, miniaturization and enlargement. It also includes several variables such as contact, overlap, deletion and addition.
5. Achieving a new plastic integrative vision through the combination of the two methods of forming by hammering and sawing, which enriches the field of metalworking.

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