

The Foundations Constructivism and Design to Trends in the Drafting of Metal Jewelry in Art Nouveau: Analytical Study of Rene Lalique's Jewelry as a New Entrance for Teaching Metal Works in the Faculties of Art Education

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Abstract The Art Nouveau period introduced a brief but remarkably fashionable style. Its designers embraced romanticism, naturalism, and femininity, creating emotive pieces of great harmony and beauty. Nouveau artists worked to emphasize creativity, new themes, techniques and materials. René Lalique (1860-1945) is one of the outstanding representatives of Art Nouveau. Lalique was widely recognized as one of France's foremost Art Nouveau jewelry designers [1]. His pieces were renowned not just for beauty and creativity, but also for quality and use of his various decorative techniques. Many of Lalique's pieces begin with a symmetrical frame surrounding a design. The frame may consist of a geometric shape, or mirror images of some animals. Often he would embellish the primary design with a dangling jewel or gemstone and/or a motif. Depending on the design they are supporting, used chains are composed of different types of links including bars, squares, Etc [2]. The links can be enameled, or they can be composed strictly of metal. Lalique adapted special techniques for his craft that enabled him to incorporate Japanese imagery into his designs [3]. His open-backed translucent or plique-à-jour enamel-a high point of technical achievement. This research provides a new entrances in teaching metalwork course at the Faculty of art Education with plastic contemporary visions through the Foundations Constructivism and design for Trends the drafting of Metal jewelry in Art Nouveau, so the educational and service institutions can benefit from the development of the artwork in an effort to reach the highest degree of excellence in performance, and through the reach to a set of analytical innovative designs to enriches the field of metal works , in order to identify the theoretical concepts related to the work of metal and jewellery to study the techniques and technical, aesthetic and utilitarian characteristics of Rene Lalique applications in the field of the art of forming metal ornaments.

Keywords: *art nouveau, metalwork, Rene Lalique, foundations constructivism, design, jewelry*

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1. Introduction

The artistic heritage is one of the important inspiring sources that many times artists use it generally. The jewelry designers particularly look for heritage in special way to find what can enrich their creative imagination as it is considered a value added to aesthetic experiences carry various artistic and design values. In the twentieth century, the philosophical view of its jewelry designers started to appear. That jewelry has had new visions correlated to modern thinking developments.

"The Art Nouveau movement was largely a reaction to the fussy, inhibited style of the Classic period. Art Nouveau, literally "New Art", is the French name for the movement. Though the movement was popular throughout

Europe. Nouveau artists worked to emphasize creativity, new themes, techniques and materials", ([3], 53).

Lalique was widely recognized as one of France's foremost Art Nouveau jewelry designers. His jewelry pieces were renowned not just for beauty and creativity, but also for quality," Lalique burst onto the jewelry-making scene at the perfect time; his vision, his imagination, and his creative flair were a perfect complement to the spirit of the Art Nouveau movement as it began to find expression in jewelry design" ([1], 112). Lalique's new designs would open the doors to creativity and imagination. He had established himself as a dominant force in the Art Nouveau style of jewelry design.

The researcher selected that subject of study from an observed problem of what students are doing in the designing and execution of the many metallic works and

specially ornaments. It was found designing skills and execution quality in the field of metal forming need to be developed, Therefore the current research focuses on the important trends in Rene' lalique's jewelry design who is considered as a pioneer of the field of designing and crafting ornaments and jewelry, to takes advantage in the developing of the designing skills and execution quality for the faculties of art education's students.

2. Research Problem

Through design analysis study Lalique's jewelry, Is it possible to stand on design principles and formation values of Art-Nouveau for new entrance of art education teaching ?

3. Research Hypothesis

By analyzing the design properties of Lalique's jewelry, we can find new entrance of teaching art education faculties developing student's creativity.

4. Importance of the Research

4.1. Gaining advantages of the heritage of Lalique's jewelry with his artistic, technical and design styles, to enrich the education process in the faculty with new aesthetic and new design principles of the work piece to suite with the students available resources.

4.2. Participating to open artistic and design horizon through harmony between more than technical approach, combining forms and materials in the metallic ornament piece.

5. Research Objectives

5.1. Directing the modern artistic visions to studying the History of jewelry design.

5.2. Standing on the construction and structural foundations for metal jewelry in Art Nouveau.

5.3. Finding new entry to teach the metal works subject for the art education students, this depends on directing the artistic visions to link the heritage to contemporary arts.

5.4. Benefiting of the design principles and formative characteristics of Rene lalique's jewelry, to open new fields of jewelry design art.

6. Research Boundaries

The study confined on:

6.1. Studying of Rene Lalique's jewelry, and determining the main features of the Rene Lalique's design in jewelry.

6.2. Studying and analyzing the directions of jewelry design in lalique's works to gain new intellectual Contributions in the field of designing metal jewelry from the designing structure of lalique jewelry.

6.3. The research practical applications depends on finding a group of Analytical geometrical designs

comprise new entries of trials target the standing on the artistic and formative values from some lalique's jewelry.

7. Research Methodology

Research follows the descriptive and analytical method for the designing principles on some of Lalique's jewelry.

8. The Theoretical Framework

8.1. Myth of jewelry in the Work of Artist Rene Lalique

René Lalique is considered to be one of the world's greatest jewelry designers of the Art Nouveau and Art Deco periods. In fact, "He was one of the few artists who successfully made the transition from the Art Nouveau (1880's – 1900's) aesthetic to the sweeping, modern and elegant functionality of Art Deco (1910 – 1940) " ([2], 125).

His work features elements inspired by nature, as was the main theme of the Art Nouveau movement, (Figure 1). "Lalique employed the most modern manufacturing techniques and equipment of his time to mass-produce his work while retaining a hand-made look " ([1], 112).



Figure 1. Decorative Hairclips, Enamel, Glass, and Topaz (Source :("As of May 25, 2012, Weldons of Dublin website"))

8.2. René Lalique (1860 – 1945) French Designer Jeweler, One of the Outstanding Representatives of Art Nouveau

René Lalique is without a doubt, the most important jeweler of the Art Nouveau period , "He was born in 1860, he studied drawing with Jean-Marie Lequien. Then he began an apprenticeship with "Louis Aucoc", one of the best jewelers of Paris. Later he studied drawing at Sydenham College in London where he developed unique naturalist style influencing his jewelry style. He also studied sculpture and etching. In 1885, Lalique began manufacturing his jewelry designs by employing non-conventional materials such as translucent enamel, semiprecious stones and ivory" ([1], 120), (Figure 2, Figure 3).



Figure 2. Necklace Pendant, Multi-gem, Enamel (Source :("As of 2013, art nouveau, jewelry art and green. Enamel website"))

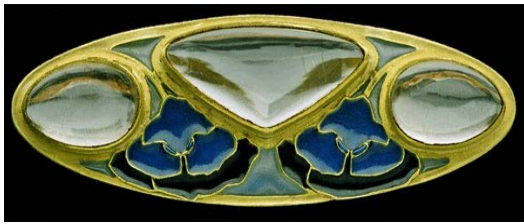


Figure 3. Brooch, Gold, Crystal & Enamel.(Source :("As of May 25, 2012, Weldon's of Dublin website"))

8.3. The Features of the Art Jewelry in the Rene Lalique's Works

The Lalique's work influenced by nature, he used unconventional materials and techniques , his work is ground-breaking and extremely unique. Lalique was able to explore creating innovative jewelry, he allowed himself to depart from the traditional style of his earliest works. He began to use novel and inexpensive materials.

"The most significant influence on Lalique's earlier works and with his works within the Art Nouveau movement was Japonisme, The most remarkable characteristic was the simplicity of the art, and in its admiration", (Brunhammer, 1998,146."Lalique took these motifs to a new level, In the Pin Pendant Swallows (Figure 4), we can see the subject of Japanese influence, but the actual design and composition is more inventive" ([4], 39).



Figure 4. Pin Pendant Swallows, Gold, Diamonds, Enamel (Source :("As of May 25, 2012, Weldon's of Dublin website"))

The oriental Japanese style that is sometimes found in Lalique's art is the foundation to understand his themes and how he applied his knowledge of jewelry-making to his designs. The Japanese influence is a unique characteristic. It is a starting point for Lalique's designs.

The fusion of Western and Japanese styles is best observed through the actual pieces of art, (Figure 5).



Figure 5. Japanese Poppy Necklace, Pendant Glass, Enamel, Gold, Rose cut diamonds (Source: ([2], 35))

Lalique incorporated glass as a major material in his jewelry, (Figure 6). Lalique revealed fantastic qualities of glass, such as its volume and transparency.

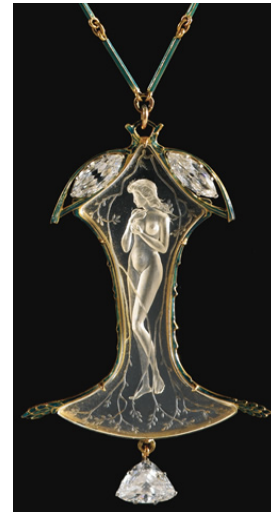


Figure 6. Nude Nymph Amongst, Branches Pendant, Comporting Chain (Source: ("As of May 25, 2012, Weldon's of Dublin website"))

Lalique preferred to work with gold, usually yellow, but occasionally green gold, and he used the lost-wax process to cast solid-gold pieces. "To create his gold pieces, he usually used fret working. This is a process in which a plate of gold is rolled, cut out, and fretted out on the inside to produce the internal detail" ([1], 124). He would later add enameling and other materials to his gold pieces.

Enameling was one of the major techniques that Lalique had used, almost all of his pieces included some kind of enameling which its color comes from metal oxides, consists of finely ground glass flux with adding small amount of water."Lalique's favored enameling technique was Champlevé enameling, where cells were engraved into a plate, leaving only dividing ridges. These latter served either as the figure or as the ground of the motif." ([1], 125). In plique-a-jour enameling, one of Lalique's most elaborate techniques, he would achieve an effect similar to a miniature stained-glass window. On an openwork gold plate, a copper plate was attached to the areas which would contain the "windows". After the enamels were melted, applied, and cooled, the copper on

the back was etched away, and the glass was exposed to be visible from both sides. He also liked to use opaque enamels applied in several layers and varying colors, which when later cut would appear as a patterned gem. The combination of this effect and the elaborate plique-a-jour enameling can be seen in the watch, (Figure 7), Pine Cones.



Figure 7. Watch Pine Cones, Gold, plique-a-jour enamel, Opaque Enamel on Glass (Source :("As of 2013, art nouveau, jewelry art and green. Enamel website"))

Lalique used stones and opals in many of his pieces. He used the translucent stone with its indeterminable color for peacock feathers, flower centers, and to represent water. The use of pearls is another feature of Lalique's jewelry, serving as highlights and finishing elements for his pieces . The use of the pearl as a final touch can be seen in the ring, (Figure 8) , On this ring, he combined his use of natural world color enamels with a pearl—with its luster and iridescent chromatism.



Figure 8. Ring, Gold, Enamel, and a Pearl, Paris (Source: ("As of May 25, 2012, Weldons of Dublin website"))

Lalique also became the first jeweler to use horn, which he valued for its transparency, pliability and malleability. He preferred buffalo horn to be used in the production of combs. "In the tiara below, (Figure 9), gold, diamonds, and tortoiseshell are all embellishments to the initial horn comb," which he fixed in place with hidden screws and rivets. The diamonds give the leaves the realistic look of ice". ([1],130).



Figure 9. Tiara, Icy Leaves, Horn, Gold, Diamonds, and Tortoiseshell (Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website"))

Also In the tiara, (Figure 10), Cattleya Orchid, he combined the translucent enamel and a central vein of diamonds highlighting the ivory flower. These natural materials allow the piece to incorporate the lifelike depiction of natural elements.



Figure 10. Tiara, Cattleya Orchid, Carved Ivory, Horn, Gold, Enamel, Diamonds (Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website"))

Nature is dominant in the work of Lalique. It is not simply a representation of nature that we see in Lalique's work, Lalique was always returning to the motifs from nature, such as: the pine avenue, the firs, the lake or pond, the willows, the swans—all were photographed on his property at Clairefontaine (Figure 11).



Figure 11. Pendant, Two Swans with Landscape, Enamel on Gold, Diamonds (Source: ([5], 141))

Some of Lalique's most unique designs are those in which he combines nature and the female figure into one. This necklace from Lalique is called "Insect Woman and Black Swans", (Figure 12). It was includes the figure of an "insect woman" and two black swans, the combination is completely unique.



Figure 12. Necklace, Insect Women and Black Swans, Enamel on Gold, Opal, Amethyst (Source: ([2], 37))

Also The corsage jewelry (Figure 13), Dragonfly Woman is another example of the fusion of nature with the female figure. It is a dragonfly holding a half-eaten female.



Figure 13. Corsage Ornament, Dragonfly Woman, Gold, Enamel, Chrysoprase, Moonstones, Diamonds (Source : ([2], 75))

8.4. The Main Attributes of the Rene Lalique's Jewelry

8.4.1. Direct Recourse to Nature

The jewelry of Lalique are characterized by using different elements were not derived from the historical and decorative units but it is borrowed directly from nature, such as ornamental plants, Table 1. The broad natural foliage naked, Swans, peacocks, orchids and lilies were equally striking on such items as hat pins and brooches.

Table 1. Group Of Lalique's Jewelry From Nature

	<p>Landscape Jeweled Pearl Pendant</p>
	<p>"Head with Rooster Headdress" Hair Comb</p>
	<p>Swan pendant</p>

Source :("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.2. Rhythm in Design Ornaments

Lalique's jewelry marked with skills and accuracy in highlighting the rhythms of harmonious relations between the branching of the plant and modified natural elements as forms of flowers, birds, feathers, shells, trees, animals, and women's hair Table 2.

Table 2. Group of Lalique's Jewelry Representing Rhythm In Design

	<p>women's hair brooch , gold, pearl, ivory.</p>
	<p>Bracelet. Iris, Chased gold, enamel on gold, opals.</p>
	<p>Hair Comb</p>

Source :("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.3. Using Chains as Formative Value:

Chains were also integral components of the Lalique's design. He invested as much thought into the chain for a pendant as he did the rest of the design. "Depending on the design they are supporting, chains can be composed of different types of links including bars, batons, squares, ovals, or circles. The links can be enameled, or they can be composed strictly of metal" ([2], 151). The soft lines of chain forms and their overlap that turns around in a general unit indicate dynamic move. Table 3.

Table 3. Lalique Using Chains




<p>Necklace</p>	<p>Gold Necklace.</p>
<p>Lalique Necklace , Enamel, Opal, Pearls</p>	

Source :("As of May 25, 2012, Weldons of Dublin website").

8.4.4. Materials:

Rene incorporated semi-precious stones into his fine jewelry designs, Lalique also appreciated the artistic possibilities inherent in natural items such as mother of pearl, tortoiseshell, and ivory; Table 4. "He combined precious stones with unexpected materials like horn, ivory, copper, enamel, and mother of pearl and semi-precious stones such as agate, jasper, amethysts, citrine, peridot, moonstone, and opal are prevalent in his work", ([1], 128). He used the gold with all colorimetric grades and also enameled the pieces with transparent and dark color and used the irregular shaped pearl as they are without intervention. Also he used various techniques inside the same work piece. His ability and experience in all techniques helped him for all that.

Table 4. Samples Show Different Materials Used In Lalique's Works.

		Comb with flowers, Ivory.
		Blog of an Art Admirer, brooches, buckles
		Rene Lalique lover's kiss pendant

Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.5. Plants


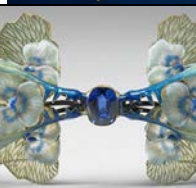

Lalique studied plants deeply and with their autopsy and construction carefully then he merged that in the design of jewelry. So his works appeared as more imaginative and complicated, he used the shapes of decorative plants with the three dimensions ,also he used branches of plants and buds and the corrugated lines in addition to the streamlined shapes, Table 5. That affects the general form of jewelry piece.

8.4.6. The Insects:

Lalique’s designs embodied the naturalistic spirit of the Art Nouveau movement. Through Lalique’s eyes, all the fauna in nature had potential for beauty, Table 6. The humble, rather unpleasant-looking bat could be as elegant as a butterfly or a dragonfly when it was incorporated into




a ring of enamel and moonstone. "He used different shapes of insects with the three dimensions as a sculptural blocks" ([3], 57). And he used shapes derived from the insects with plants in free abstract form.

Table 5. Plants in Lalique's jewelry.

		"Hydrangeas" hair grip Horn, gold, enamel and diamonds.
		Overlapping pansies, molded glass blossoms, enameled petals.
		Bouquet brooch of enamel and crystal

Source: ("As of May 25, 2012, Weldons of Dublin website").

Table 6. Insects in Lalique's Jewelrys

		Lalique Gold, Enamel, Opal, and Diamond Pin Circa
		Dragonfly brooch enamel & diamond.
		Lalique "Beetle" ring.


Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.7. The Impact of Color Value on the Shape in Lalique's Works:

The works of Lalique were characterized by richness in colors which confers on the works high artistic and formative values. Lalique had used the color with all its

degrees in order to give it the naturalism and the Embodiment of shapes. Also he used the precious stones and the manufactured stones with colored enameling to give the required pure colors inside the design, [Table 7](#).

Table 7. Colors As Formative Value In Lalique's Jewelry

	'Peacock Lady' Brooch. Gold , blue and green enamel.
	Necklace. Hazelnuts Chased gold, enamel on gold, diamonds, peridots.
	Brooch Gold, diamonds, emeralds, amethysts, opals, enamel.

Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website").

Table 8. Relation between Function And Design In Lalique's Jewelry

	Fairy pin
	Hair comb
	Hair comb

Source: ("As of May 25, 2012, Weldons of Dublin website").

8.4.8. Function of the Form in Lalique's Jewelry:




The correlation between the figure and the function in lalique's jewelry can be determined according the target and considering the nature of each part of the ornament

piece as every part works to support the other part. "For Instance we find Lalique creates the comb from the birds' wings depicts a scene that is simply connected to a piece that allows it to be placed in a woman's, [Table 8](#).

8.4.9. Using of Mythology

Many of Lalique's designs included themes straight out of mythology. Enchanted women, hybrid creatures that were part human, part animal; dragons; mermaids and nymphs are found in many of his pieces, [Table 9](#). Lalique incorporated female faces and demurely draped nudes in many of his graceful, sinuous designs.

Table 9. Myths in Lalique's Jewelry

	Bracelet, green glass, accents of vines and leaves.
	Pendant Medusa & Serpent. Enamel, glass, pearl.
	Lalique Pendant-Brooch

Source :("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.10. Japanese Influence:




Many of Lalique's works show a heavy Japanese artistic influence. Much of the art of the period included a Japanese influence. "The dragonfly and other images that were so important in Japanese art are often seen in Lalique designs. The intricate wings of the dragonfly lend themselves especially well to the plique-a-jour enameling technique, [Table 10](#). He was also adept at using other enameling styles-cloisonné, champlevé, and basse-taille—to produce uniquely distinctive effects. For example, a three-dimensional effect could be achieved by combining several enameling methods in one piece.

8.4.11. Female representation is part of the jewelry's lalique designs:

Lalique was interested in women, this appeared in his work that made bodies of two girls in conflict case on a man with accurately representing the nature as we can see the beauty and suppleness and flexibility in the move of the two women and in the outer frame of the necklace and the rhythm caused by this movement. It is sculpted from ivory with adding gold and regular shaped pearl. The





work has high accuracy and the outer shape has soft and symmetrical lines and it has variety in the movement and richness in the work piece due to entering the ivory material with pearl , enameling and gold, [Table 11](#).

Table 10. lalique's jewelry influenced by Japanese

	pendant, Gold, Glass, Enamel
	Carnation Brooch - Pearl, Gold, Glass, Enamel
	Dragonfly Woman.

Source :("As of 2013, art nouveau, jewelry art and green. Enamel website").

Table 11. Female inspiring Lalique's jewelry




	Lalique pin, form of two gold woman entwined.
	Lalique brooch, gold , baroque pearl, enamel.
	Pendant, baroque pearl, gold, enamel, ivory.
	Female Figure Pendant, baroque pearl, gold, enamel.

Source :("As of 2013, art nouveau, jewelry art and green. Enamel website").

8.4.12. Jewelry's Slithering Serpents:

Snakes can arouse powerful emotional responses from attraction, fascination and enthusiasm to panic so that Lalique created magnificent jewelry featuring snakes. He produced wonderful snake pieces; a superb gold, opal and diamond snake ring , shown in [Table 12](#), serpents as part of lalique's jewelry. Table also shows an antique enamel and gold serpent pendant of mythological motif, "The Hydra designed as a nine-headed snake with openwork tubular bodies containing either green cord or brown braided hair, each head with simulated ruby eyes, fanged mouths embellished by pink enamel details, in 18k gold, late 19th century Interesting Lalique knock off" ([\[4\]](#), 68).

Table 12. Serpents as part of lalique's jewelry

	Serpent Ring, green enamel and emerald.
	Eternal Entwined Serpent Brooch, emerald, green peridot.
	The Hydra Serpents Brooch, gold, enamel.

Source: ("As of 2013, art nouveau, jewelry art and green. Enamel website").

9. Application of the Research:

9.1. The Geometrical Principle of René Lalique, Jewelry Design:

The construction design of jewelry consists of group of formative elements as dot, line, shapes, texture and surfaces and space surrounding the form. These elements should be correlated together in such way of different formative relations to produce aesthetics and technical values describe the design structure of the jewelry pieces from rhythm and unit balance and ratio, what results from its function from constructive principles and aesthetics and technical values.

In this part, the researcher analyzes group of lalique jewelry based on the geometrical construction in design and determines the main axes used to form the design of his works, which can be vertical, horizontal, inclined axes or curves, those will be as tool helps to understand and analyze the artistic work by referring it to first primary elements in order to recognize the artistic style in lalique's design from distributing the simple geometric vocabulary reaching to formulate his complicated designs.

9.2. Constructive Design and Geometrical Analysis for Selected Jewelry of Rene Lalique:

9.2.1. Jewelry Piece No.1: (Figure 14-A).

Work Description: Lalique depended on the natural shape of the pearl and natural colors. It is symmetrical, but not rigid. The piece design is based on overlay inspired from tree leaves with their details, Lalique depended in the general form of shape on pentagon as geometrical shape then he divided it internally in two parts:

First part is represented in the upper part of design which takes equilateral triangle with its upside part gives the feeling of balance, inside it group of blue Garnet stones with a circular shape to feel the internal move of design. The second part which is below takes equilateral triangle shape in design which shows visual relaxation on design. Also it can provide the feeling of stability and calmness for visualization due to balance in design. The whole design depends on the symmetry between halves which occurred by vertical axis in Jewelry design. **Table 13.**

The design has flexibility in the internal move between its parts. Also the soft lines play role between each other where they are Interrelated and overlapped and what is restricted inside of space to ensure the branches and the shapes generated from it. In addition to the interest in the color richness while using the transparent enameling that allows light to pass in the parts of the piece with high definition in design and execution. Lalique ability to invest variety of materials appears and then the work piece size suits its function and the available variety inside each piece. The work benefits the educational side of the research to develop the technical skills for the art education students to use enameling techniques ensuring on the value of colors in artistic work piece through the interest in the color richness while using the transparent enameling that allows light to pass in the parts of the piece with high definition in design and execution. Lalique ability to invest variety of materials appears and then the work piece size suits its function and the available variety inside each piece.

9.2.2. Jewelry Piece No.2:(Figure 15-A).

Work Description: Lalique depended in the construction of this piece on the oval shape as a basic geometrical shape, inside it circular shape with small circular shape in the middle, that one is considered the design center, radiated lines give the feeling of propagation and the continuous move that occurs in design with balanced feeling of circular shapes. **Table 14.** The work benefits the educational field to develop the creative and innovative thinking for the art education students through benefiting of laliques designs and forming and combining of more than one technique in one work piece so we find: The use


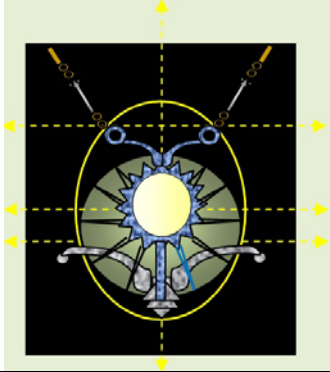
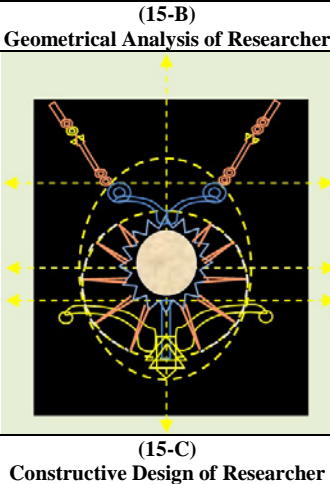
of circle element in design shows as the circle is considered one of the important elements represents continuity and infinity, which is focus of design and its main axis.

Table 13. Geometrical Analysis and Constructive Design of Jewelry Piece No.1.

<p style="text-align: center;">Thistle pendant Gold, glass, Plique-à-Jour enamel, moonstone, Cabochon Sapphires, diamonds, C.1898-1900. (Figure 14-A) <i>Source:(Brunhammer, 1998,70)</i></p>
<p style="text-align: center;">(14-B) Geometrical Analysis of Researcher</p>
<p style="text-align: center;">(14-C) Constructive Design of Researcher</p>

The directions of the straight lines and curves may give feeling of unity and proportionality between its geometric shapes composing aesthetic and artistic values. Also variety is achieved as a result from the difference in shape of the restricted areas between lines of circular, oval and triangles; Variety is also achieved due to difference of the axes in the body construction between vertical, horizontal and tilted axes.

Table 14. Geometrical Analysis and Constructive Design of Jewelry Piece No.2


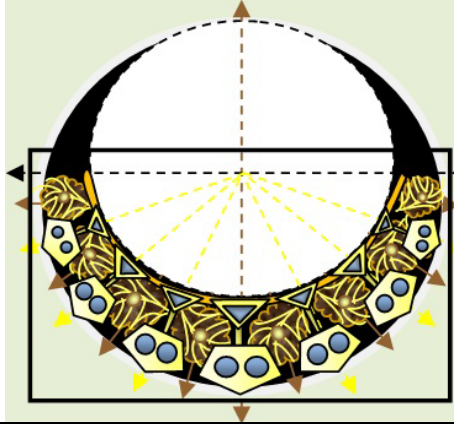
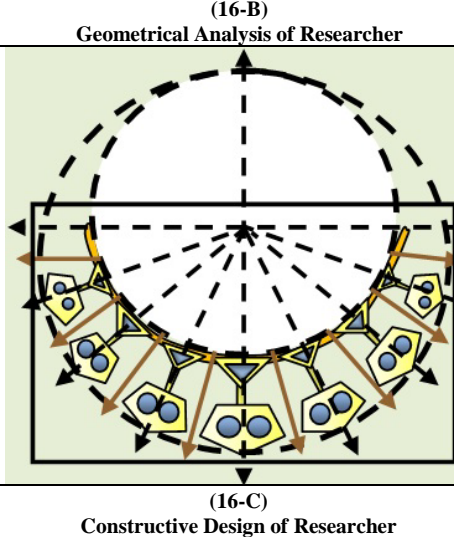

<p align="center">"Thistle" pendant Gold, glass, moonstone, sapphires and diamonds, c.1898-1900. (Figure. 15-A) <i>Source:("As of May 25, 2012, Weldons of Dublin website").</i></p>
 <p align="center">(15-B) Geometrical Analysis of Researcher</p>
 <p align="center">(15-C) Constructive Design of Researcher</p>

9.2.3. Jewelry Piece No.3: (Figure 16-A).

Work Description: Lalique presented group of jewelry from different materials inspired from the leaves, The algae, and coral reefs in casting and Inlay. The design depends on the circular shape as basic geometry, which is consisted of two circles have different diameter but united in the center, between them correlation of contact in the upper side, It can be divided through its center to similar and equal parts, With radiated lines form the center take the eye track of the design from inside to outside. It ends with flowery in repeated way gives kind of alternative rhythm in design. The work benefits the education field to develop the technical skills of the art education students to use more than one material ensuring on inlay with stones and emphasizing on the values of colors in his works. The color also represents important role in the piece design which causes a kind of rhythm results from the mutual relation between the brown color of the background and the golden color of the Floral petals. There are repeated

equilateral triangles towards downside on the outer edge of the internal circle in design, all are in one row. Its takes the track of eyes one more time to design outside. [Table 15.](#)

Table 15. Geometrical Analysis and Constructive Design of Jewelry Piece No.3


<p align="center">Combination Necklace/Tiara Pearls, gold, Ivory and Topaz , c.1900 (Figure 16-A) <i>Source:(Posseme,2007,143)</i></p>
 <p align="center">(16-B) Geometrical Analysis of Researcher</p>
 <p align="center">(16-C) Constructive Design of Researcher</p>


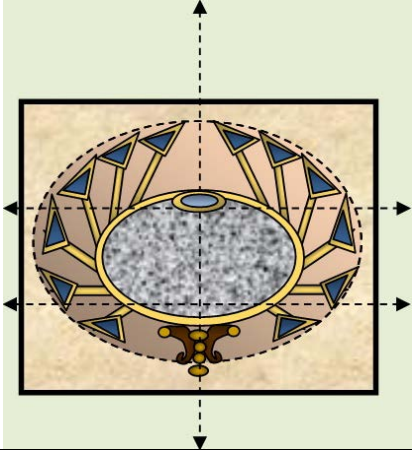
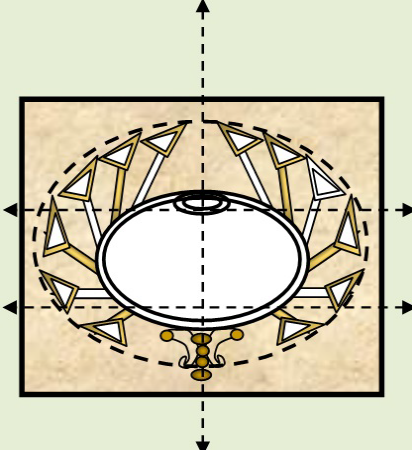
This piece design achieves variety of values such as unity and correlation between design elements by using the geometrical circular shape as one individual formative unit in the construction of design, and achieving the axial balance from lines symmetry around the vertical axis as radiated lines in regular repetition for petals in design, which makes a balancing rhythm.

9.2.4. Jewelry Piece No.4: (Figure 17-A).

Work Description: In this piece, Lalique centered an oval-shaped openwork scene, depicting three gray enameled Satyrs confronting a gray enameled maenad, with a calibr -cut black opal, to the polished gold borders,

extending a series of textured gold terminals, each enhanced by blue and translucent purple enamel, the base further decorated by a blue enamel organic motif, the reverse in chased gold relief, mounted in gold. [Table 16](#).

Table 16. Geometrical Analysis and Constructive Design of Jewelry Piece No.4


<p>Corsage Pin Finial Enamel, Opal and Gold, c.1900-1902 (Figure 17-A) Source:(Posseme,2007,149)</p>

<p>(17-B) Geometrical Analysis of Researcher</p>

<p>(17-C) Constructive Design of Researcher</p>

Where we find in the middle part of the design piece that takes oval shaped frame surrounds the Greek characters, successive lines exit from it to make radiated shape, gradient in repeated way. Lalique used the oval shape in the center to give the feeling of softness then he repeated the triangular shape in the oval inner frame to give the feeling of stability and continuation.

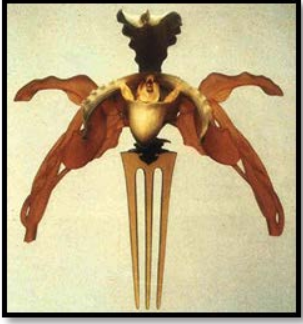
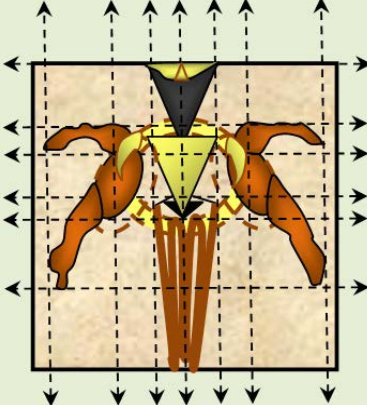
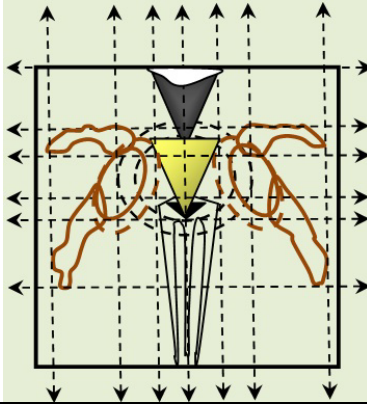
The inner space of the piece achieves new formative value to ensure the accuracy of the geometrical elements and to achieve non monotonous regular rhythm from the repetition of some formative vocabulary. Design also

achieves color sovereignty from Lalique's using the techniques of blue enameling in design.

9.2.5. Jewelry Piece No.5: (Figure 18-A).

Work Description: The body of this beautiful diadem consists of two orchids in horn and one in ivory, while a small drop-shaped topaz appears in the centre of the ivory flower. The three-pronged comb is also in horn and connected to the diadem by a gold hinge. This Tiara was cut from horn and is rather impressive. The orchid seems a bit flesh-eating (which was actually the aim). "La fleur du mal" was a common theme in especially French art nouveau.

Table 17. Geometrical Analysis and Constructive Design of Jewelry Piece No. 5.


<p>Tiara Comb Ivory, horn, gold and Topaz, c.1903-1904 (Figure 18-A) Source:(Brunhammer,1998,173)</p>

<p>(18-B) Geometrical Analysis of Researcher</p>

<p>(18-C) Constructive Design of Researcher</p>


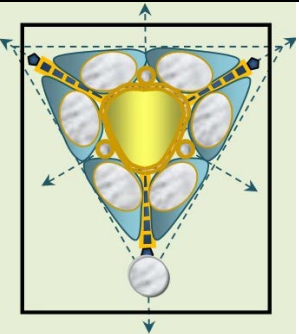
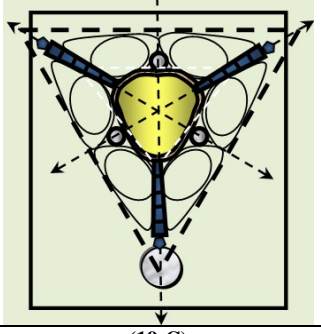
The work benefits the education side of the art education students to ensure the artistic value of using different materials and the possibility of its adapting and integrating to get the benefits of the metal formation

through Lalique's using different materials in his works like ivory as we find. The piece design represents symmetry on the vertical axis and it is called partial symmetry for its parts. Table 17. Set of linear systems in the piece design appear as shape of orchids which reflects the feeling of continuous move embodiment and bifurcation. It also has multi contact points from branching and overlapping between its leaves. That achieves design's unity and stability. Also it ensures the correlation of units in jewelry achieving the axial balance resulting from the symmetry of elements vertically and horizontally and its compatibility in shape and volume.

9.2.6. Jewelry Piece No.6: (Figure 19-A).

Work Description: Lalique depended in the design structure for this piece on the Equilateral triangle in the geometric shape. Where the Equilateral triangle use in design is the most comfort for eyes visualization. This is for equality of its elements which give it absolute regularity in the construction as it appeared in the design piece which shows the visual comfort from the design point of view and it transfers the feeling of stability and calmness for vision.

Table 18. Geometrical Analysis and Constructive Design of Jewelry Piece No. 6.


<p>Fouquet Brooch Baroque pearl, gold, Green and blue enamel, c.1905 (Figure 19-A) <i>Source: ("As of May 25, 2012, Weldons of Dublin website").</i></p>
 <p>(19-B) Geometrical Analysis of Researcher</p>
 <p>(19-C) Constructive Design of Researcher</p>

The work benefits the education side to provide the students with skills and abilities of combining the aesthetic value of the artwork with the functional side of the work piece. The design piece has in its middle another equilateral triangle is represented also in the shape of the internal lobe from the jewelry, to repeat the external triangle that is from the repeat makes correlation for the shape's rhythm.

The axes intersection of the triangle geometrical shape restricts oval shapes creates rhythm in repeated and regular way. The whole jewelry piece has sovereignty in design. Table 18.

10. Results of the Applied Experiment of the Research

Through analytical applications research for designs of René Lalique we concluded:

10.1. Possibility of reaching to a set of analytical designs depending in their construction on the geometrical basis from Rene Lalique's jewelry that contributes in the enriching of art teaching method by new frame of interpretation.

10.2. Detecting new creative and formative solutions to contribute in enriching the educational process and to develop the artistic experiences for the art education's students especially in the field of designing metal ornaments.

10.9. Opening new various formative and designing horizons through heritage of Art Nouveau's jewelry pointing to the artistic, technical and design styles.

10.10. Enriching the educational process in the field of metallic art work posed by processed aesthetic and technical design to address the foundations of processes as learning experiences suit with student potentials.

10.3. The Analysis of designs Rene Lalique helps to enrich the creative thinking and innovative for the students.

10.4. The jewelry of René Lalique was characterized by diversity in the application and dealing with metal in various forms and applications, whether through the achievement of innovation in design, or in the use of various technologies in the metalwork's jewelry.

10.5. The development of creativity among the students to open the horizons of excellence and exclusivity in the field of metal works in the faculties of art education.

10.6. Rooting aesthetic values of the Art Nouveau for our purposes and our needs, and then access to the production of works of art by using glass in a formative manner and innovative visions through attempts carried out in Results of analytical works of Rene Lalique.

10.7. Strengthen and activate in the field of metal jewelry and working on the development of contemporary plastic visions that derive their aesthetic from the Art Nouveau.

10.8. Gaining Knowledge in different techniques for Lalique's jewelry, and the development of creative skills by Analytical foundations and construction works of the artist Rene Lalique.

11. Research Recommendations

11.1. Opening new various formative and designing horizons through heritage of Art Nouveau's jewelry pointing to the artistic, technical and design styles.

11.2. Emphasizing on learning from our historical and contemporary design experiences.

11.3. Detecting the importance of Art Nouveau movement in changing the understanding of jewelry design. It is an important source for contemporary artists to create new designs in order to enrich the field of metal art.

11.4. Providing more importance for the introduction of complementary studies that deal with heritage arts and to link them with developing the intellectual and creative skills, using different techniques such as inlaying, enameling and other formulating techniques for art education students.

11.5. The interest to carry out studies linking the technical side and creative side applied in the program of metalwork art , to prepare the students for their high level of performance, efficiency and skill that must be available to the students level, and the perfection in the preparation period so that it can meet the demands of the teaching profession.

11.6. Enriching the artistic process research and theoretical technology, which achieve the scientific and technical objective and help in the application of scientific and technical ideas in the process of metal jewelry.

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