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An Approach To Metalsmithing And Its

Correlation To Specific Drawings

(TITLE)

BY

SUSAN ISABEL RANDALL

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THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Art

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1980

YEAR

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AN APPROACH TO METALSMITHING
AND ITS CORRELATION TO SPECIFIC
DRAWINGS

By

SUSAN ISABEL RANDALL

B. A. in Art, Southern Illinois University, 1974

ABSTRACT OF A THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Art in Fine Arts at the
Graduate School of Eastern Illinois University

CHARLESTON, ILLINOIS

1980

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The paper is concerned with my approach to metalsmithing which is directly correlated to my drawings; developing the two-dimensional plane and evolving into three-dimensional metal pieces. The lines of my drawings have become stimulus for my metal work; resolving into strong, linear, textural elements. I discuss three pieces which I have created and some drawings relating the transitions from paper to metal and metal to paper.

My references for these creatures are usually drawn from specific areas which have captured my interest. I have been considerably influenced by Early Irish, Celtic art and the Medieval French Grotesque art. The Celtic art suggested to me a certain primitive, yet curiously elaborate design quality in the creatures and symbols found throughout its books and metal pieces. The metal work is highly developed and assiduously crafted. The biblical drawings and paintings in the Celtic literature also reflect well crafted, aesthetically pleasing work. The Medieval French Grotesque art was exhibited mainly in the sculpture of the period. Great gargoyles and dragons were exquisitely and beautifully sculpted and were very horrid and grotesque creatures. The Celtic and French art are similar to my work with the marionettes which are two of the three pieces discussed in the paper. My marionettes described in the paper are whimsical and beautiful yet rather grotesque in nature. They are not a common art object. The marionettes have a fantasy style and have their roots in ancient artifacts.

All the pieces that are discussed in the paper; the

Dragon, Necklace III, and the Unicorn have been fabricated from original, scale drawings. They are taken from the plane of the paper and placed in three-dimensional space.

In the paper other drawings are also discussed which have evolved simultaneously with my metal work. I have developed surface treatments on the drawings which are of similar textural surfaces, if not the same in some areas, as those executed on metal pieces. These drawings have taken full circle. They return to the two-dimensional area with a new three-dimensional viewpoint where I attack the surface of the paper and establish a new texture.

Scale drawings of each piece, the actual piece, and the texturally embellished drawings are the three areas developed in the paper on my work. A detailed description of each drawing and piece, also a discussion on the progression of the work to establish a finished piece is dealt with. This allows a more knowledgable viewpoint of the immediate correlation between my drawings and metal work,

Acknowledgments

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Introduction

My approach to metalsmithing is directly correlated to my drawings; developing the two-dimensional plane and evolving into three-dimensional metal pieces. The lines of my drawings have become a stimulus for my metal work; resolving into strong, linear, textural elements. I will discuss three pieces which I have created and some drawings relating the transitions from paper to metal and metal to paper.

My references for these creatures are usually drawn from specific areas which have captured my interest. I have been considerably influenced by Early Irish, Celtic art and the Medieval French Grotesque art. The Celtic art suggested to me a certain primitive, yet curiously elaborate design quality in the creatures and symbols found throughout its books and metal pieces. The metal work is highly developed and assiduously crafted. The biblical drawings and paintings in the Celtic literature also reflect well crafted, aesthetically pleasing work. The Medieval French Grotesque art was exhibited mainly in the sculpture of the period. Great gargoyles and dragons were exquisitely and beautifully sculpted and were very horrid and grotesque creatures. The Celtic and French art are similar to my work with the marionettes which are two of the three pieces to be discussed in this paper. My marionettes are whimsical and beautiful yet rather grotesque in nature. They are not a common art object. The marionettes have a fantasy style and have their roots in ancient artifacts.

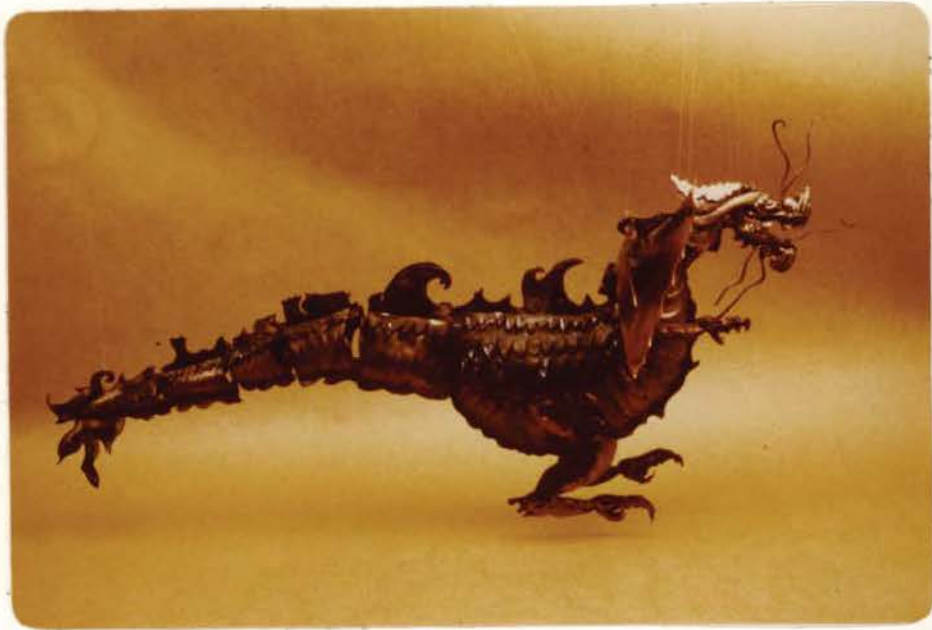
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All these pieces which I will make reference to; the Dragon, Necklace III, and the Unicorn have been fabricated from original, scale drawings. They are taken from the plane of the paper and placed in three-dimensional space.

I will also discuss drawings which have evolved simultaneously with my metal work. I have developed surface treatments on the drawings which are of similar textural surfaces, if not the same in some areas, as those executed on metal pieces. These drawings have taken full circle. They return to the two-dimensional area with a new three-dimensional viewpoint where I attack the surface of the paper and establish a new texture.

Scale drawings of each piece, the actual piece, and the texturally embellished drawings will be the three areas developed in this treatise on my work. A detailed description of each drawing and piece, also a discussion on the progression of the work to establish a finished piece will be dealt with. This will allow a more knowledgable viewpoint of the immediate correlation between my drawings and metal work.

Dragon



17" x 8" x 6"

The Dragon

My drawing of the Dragon was an outgrowth of many ideas and readings. My major influence in this piece was French Medieval Grotesque sculpture which aided in establishing the basic shape of the body and wings. The head is a direct descendent of the oriental dragons and all other parts were delineated from my imagination. The Dragon was then drawn to scale utilizing graphite to enhance the lines and shadows. All these areas were developed on sheets of metal as they had been on paper as described in Diagram I.

I began to execute the piece by examining the drawing and making many decisions. I was dealing with a selection process, deciding which parts would have movement and how these integral parts should move. Working out the mechanical and technical aspects of the moving parts was a challenge when adapting it to the metal counterpart of the drawing. The Dragon was divided into fourteen moving parts; functioning as a very flexible marionette. Each part had to be mechanically drawn out to make sure each section would function after each part was created in metal. For the four divisional parts in the tail a joint was designed to allow vertical and horizontal movement. The movement of the leg pieces was controlled by a rivet at each pivot point and the arm movements were controlled and attached in the same manner. The wings were hinged with a three part hinge on the back of the piece to allow full movement. The jaw of the head was riveted to allow movement of the mouth. Each of these areas described are in a drawing on Diagram II.

Fabrication of the Dragon was done in sections with a process called die forming. Masonite die forming is a process in which a flat sheet of metal is forced through the die allowing the metal to take the form of the die which was previously pierced. Four dies were utilized to construct the Dragon. The tail section, the body, the head, and the jaw were shaped in this process. The flange, the area surrounding the form pounded through the die, is also utilized in the design of the marionette. The flange area was used to create decorative edges for the spines of the Dragon's tail and body. The flange was also used for a connection device. It was a flat area very suitable for connecting the halves together with rivets.

There are areas of enamels and patinas which are very important factors in this piece; consequently selection of the proper metal was an essential step in fabricating the piece. Copper, bronze, silver, and gold are the most adaptable metals for the process of enamelling. Copper was selected for the basic form of the Dragon. Bronze was used for the scales because of the patina which can be developed from that metal. Brass was utilized simply as a decorative accent for color change on the wings and the back of the legs and arms.

The process called repoussé and chasing was used to develop the features of the Dragon. Repoussé is a decorative process of beating out the shape of metal, usually from the back, utilizing punches and hammers. This process is

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followed by chasing with tools, defining, delineating, and texturing from the front of the metal. This process is continued until the desired affect is reached.¹ The copper and brass were worked in this manner until the definition of the head, body, arms, legs and the top wings were properly executed.

After the body parts were repoussed and chased and the head was soldered and riveted together, the enamelling was accomplished with relatively little difficulty. The tail, body flanges, and second set of wings were enamelled. When this process was completed all work from that point had to be done without heat. The nature of the enamelling is such that any excessive heat will remelt the enamel finish. For this reason the Dragon was joined by cold methods only. No solder was utilized, only riveting since it requires no heat.

The bronze was utilized for construction of the scales, which cover the upper half of the body, the tail sections, and the legs. The bronze was brought to a green patina by exposure to ammonia fumes. The copper was treated with liver of sulphur which gives a dark antiqued affect to the metal. The copper was black with buffed highlights, the bronze was a sea green, the brass was golden, and the enamel was a rainbow of colors which gave a colorful, fiery accent to the Dragon.

After the individual parts were burnished to the desired affect with a wire brush and rouge cloth, the piece was ready for assembly. All parts were joined by riveting

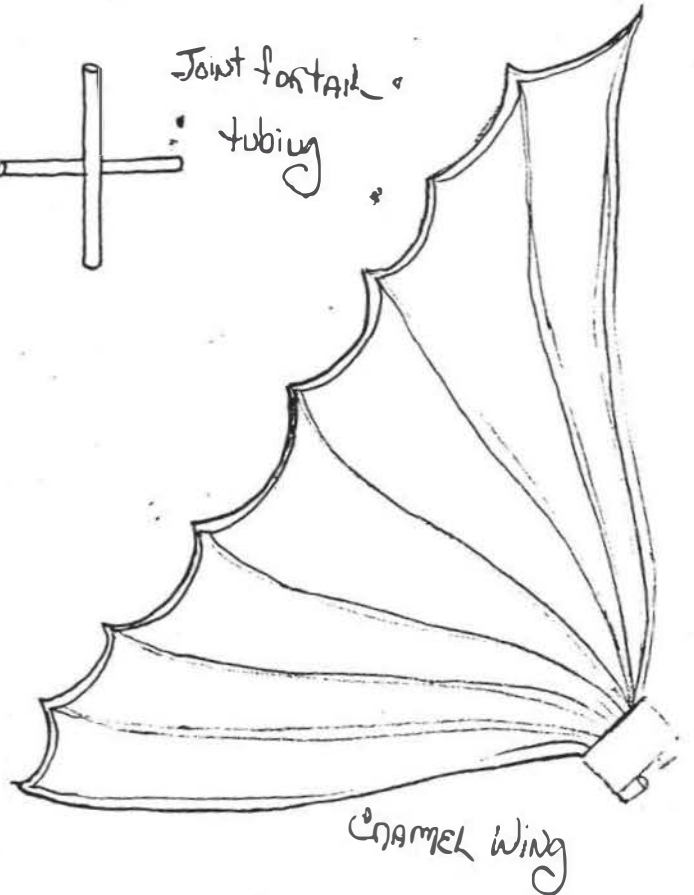
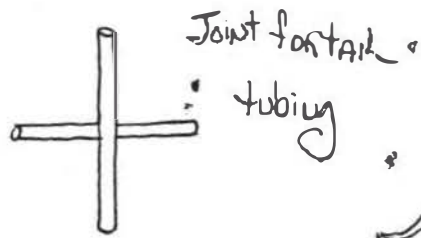
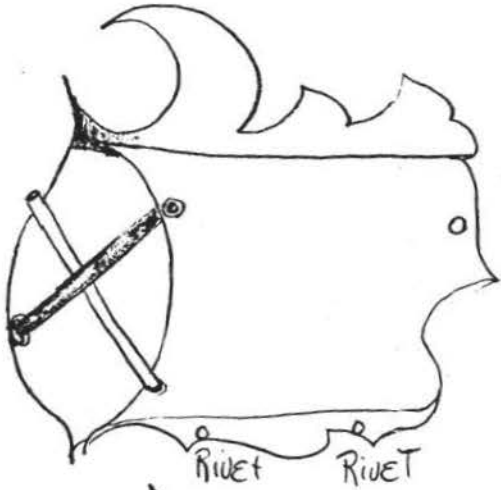
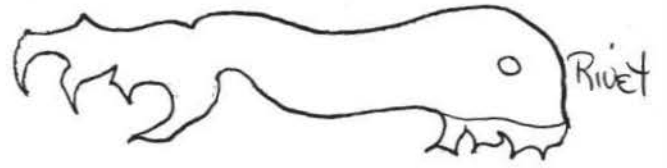
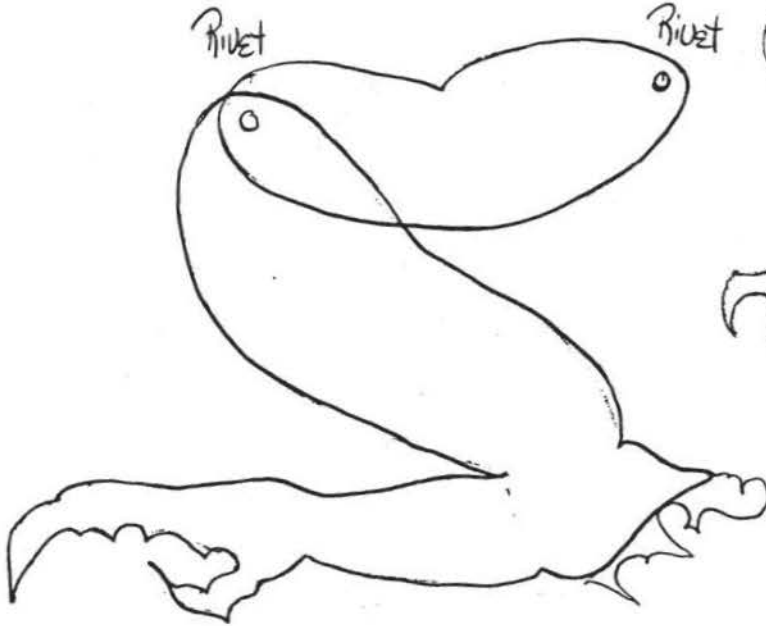
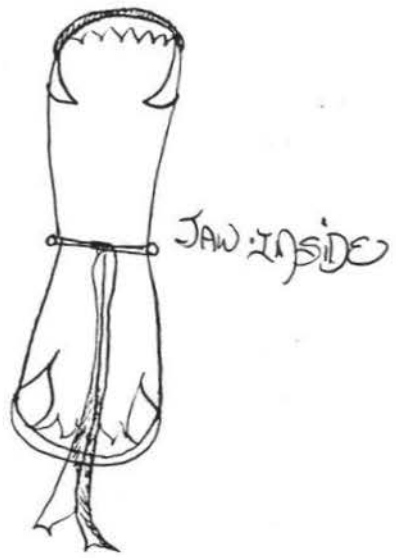
and connecting the joints which were designed for the tail.

At that point for the marionette to function, the cross bars were constructed. After the cross bars were formed, wires were tied from the movable parts to the appropriate cross bars.



The Dream

Aragon I



Necklace III



18" x 4" x 1/2"

Necklace III

My imagery for the necklace was developed from Celtic art. The original drawing of the symbol, which was initially influenced by metal work, may be found in The Book of Kells. It seemed logical to return the dynamic characteristics of this drawing into a piece of metal work. Strong symbolisms of different periods of time seem to be constantly recycling, showing a revitalization of the ancient world and its arts.

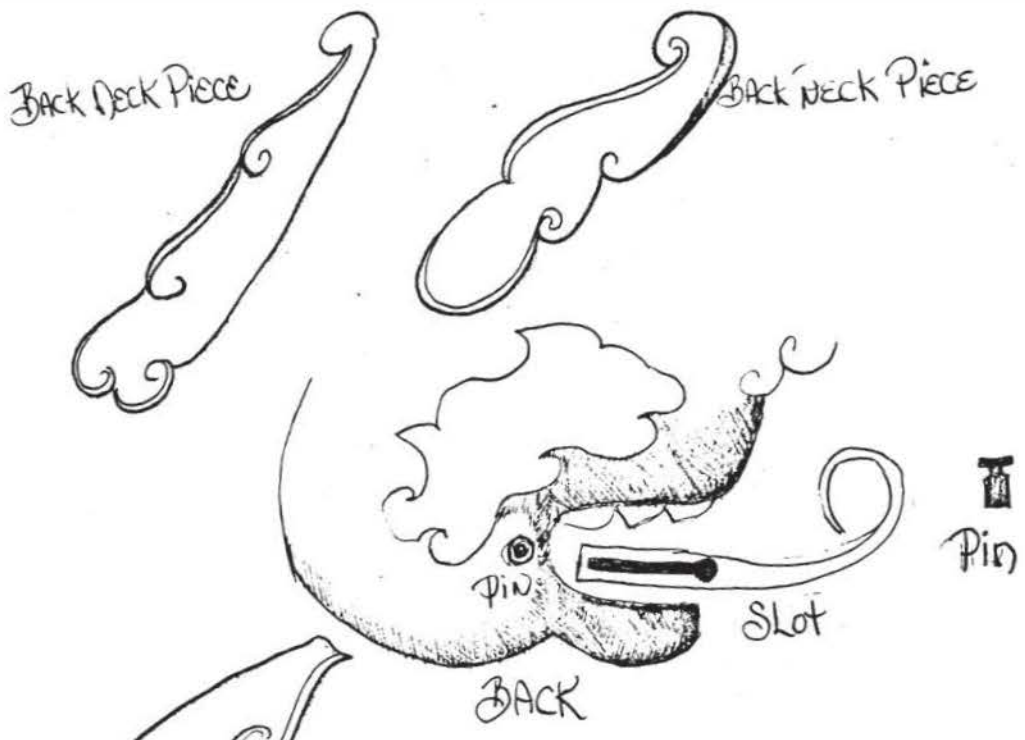
The scale drawing was developed from the ancient symbol. The neckband was designed with the neck as a focal point to work around. The problems of latch mechanisms and body movements were planned out and established in the drawing on Diagram III. Selection was an integral part of the design. The concern was with the usage of color as a contrast. Silver and brass were selected for this reason.

Execution of the piece was commenced with the fabrication technique called die forming which was already introduced in the Dragon. The matching creatures profiles were die formed in silver with the flange left for later use. The heads were repousséd, chased, and decked on the back to thicken the edges and finish the pieces correctly. The brass forms for the top of each head were repousséd, chased and decked. The term deck means a backing of metal soldered or riveted securely on another form. In this case the backs or decks were soldered to the forms. The sixteen pieces which continue the neckband from the two heads were fabricated in the same manner; each piece an individual entity.

The latch mechanism was a forged silver wire; bent, formed, and soldered from one mouth and connected on the back of the opposite creature's mouth. A slot and pin mechanism was utilized as a latch as exhibited in Diagram III. The term forging is a process of forming or shaping metal by the use of hammers on metal surfaces.²

The small individual parts of the neckband and the creature-like heads were riveted together and slightly bent to fit the contour of the shoulders and neck. There is a pivot at the center point at the back of the neck which moves on one rivet which allows the wearer to put the necklace on more readily.

The finishing of Necklace III is a liver of sulphur patina with a wire brush and rouge cloth surface. This enhances the silver and the golden brass contrast.



Necklace III

Diagram III

Unicorn



8" X 8" X 10"

The Unicorn

Unicorns are found in mythical paintings and artifacts from approximately 400 B.C. to 1500 A.D. They were present as a symbol of somewhat magical powers in thirteenth century European symbolism. The horn of the mythical Unicorn was said to have been used in the making of chalices and other utilitarian objects, usually for royalty.

The Unicorn I designed was a culmination of all my ideas and mechanical challenges. Most of my basic technical problems were corrected in this piece. The repoussé, chasing, and design are my most successful to date.

The scale drawing of the Unicorn was developed, establishing the areas of movement and the divisions for constructing the piece with die forms. Two die forms were utilized in the piece. The head and neck were created from one form and the body from the other. After the forms were developed sufficiently, they were repousséd and chased to achieve the desired facial and body articulation. The jaw was constructed from a small piece of formed sheet metal. A rivet was run through the jaw and the flange at the bottom of the mouth to attach the jaw and give it movement. Diagram IV shows the construction of the jaw and the eleven moving parts of the Unicorn.

Silver was selected for the major parts of the body and brass for the mane, the tail, and the backing on the legs. Silver and brass twisted wires were used for the wings. The mane, tail, and legs were all repousséd and chased to the desired affect.

The wings of the Unicorn were something I wanted to approach with a light, flexible touch. Wire seemed to be very adaptable for a strong yet light and airy effect. Two sixteen gauge wires, one silver and the other brass, were twisted to give an effective color change. After twisting, the wires were soldered together to secure their strength. They were then pulled through a draw plate to obtain the two gauges of wire I desired. The wire was bent and forged in areas to create the wings.

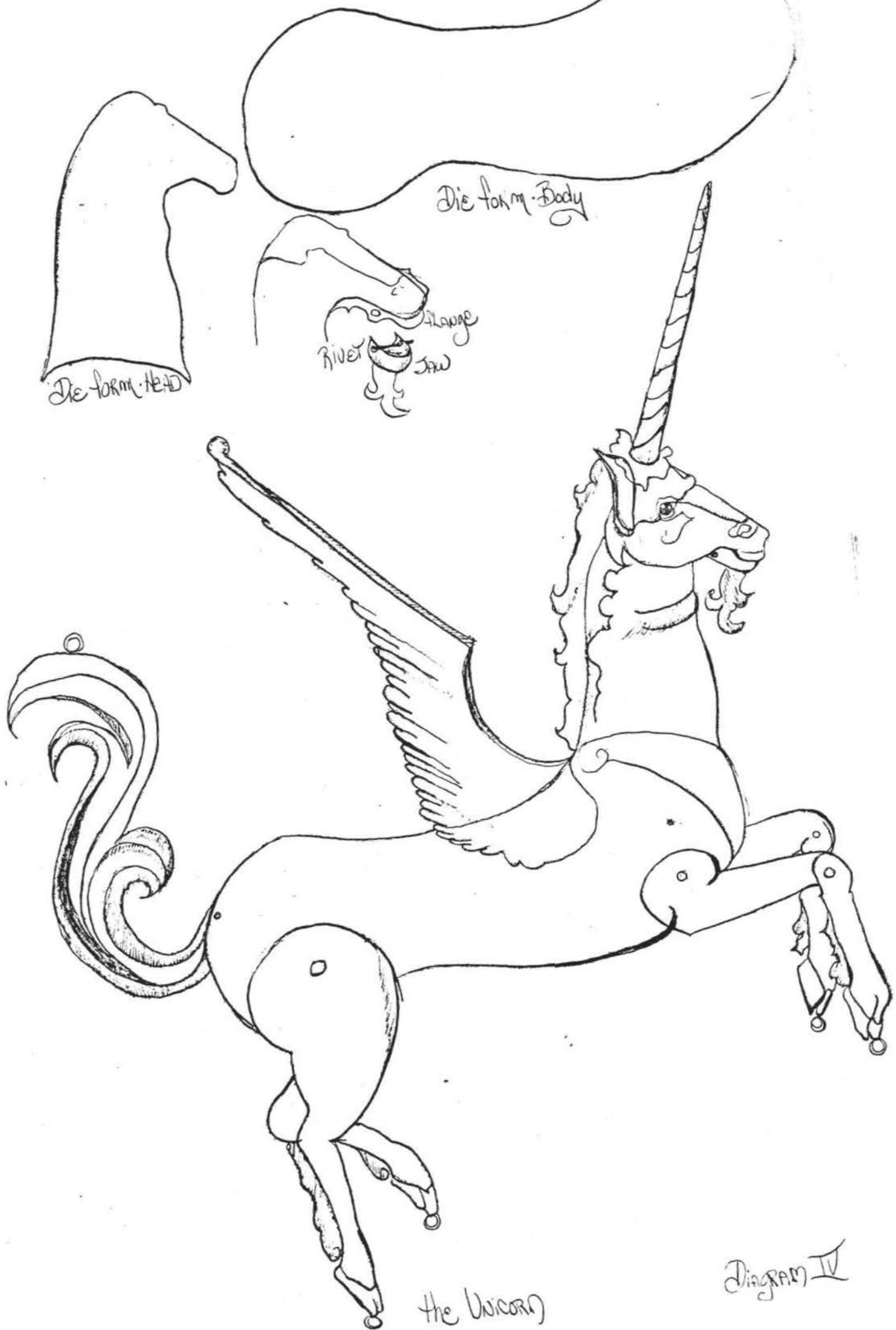
Assemblage of the Unicorn has differed from the Dragon marionette. The head was attached over a dapped ball on the flange of the body. The metal of the neck was pounded down around the ball to allow movement. This is a mechanism somewhat similar to a ball and socket connection. The mechanism is illustrated on Diagram V. The mane was soldered to the head. The legs and tail were riveted as in the Dragon. The wings also utilized a three way hinge which was similar to the Dragon.

The other aspect which was new to the Unicorn was the addition of soldered jump rings to the ends of the hooves and tail. This was a more feasible and successful way to attach the wires for the moving parts on the marionette. The cross bars also have soldered jump rings to give it a more professionally finished look.

Liver of sulphur was used to achieve an enriched patina on the Unicorn. Liver of sulphur treatment of the brass and silver wire proved to be very interesting visually. Since brass does not retain the liver of sulphur well, only the

silver receives the blackish nature of the patina leaving an enhancing gold and black surface which highlights the wings. The rest of the piece was then steel wire brushed and rubbed with rouge cloth to achieve a very subtle patina.

The work of designing marionettes became a learning process. Each one was taken a step further, developing and perfecting their mechanical and aesthetic qualities. The Unicorn established these qualities in my work.



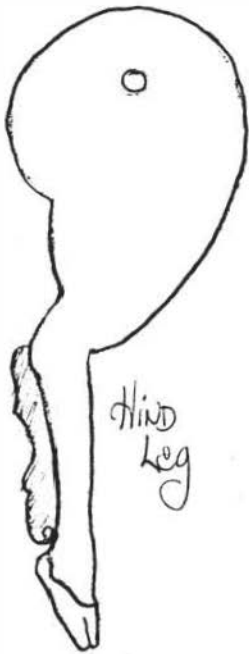
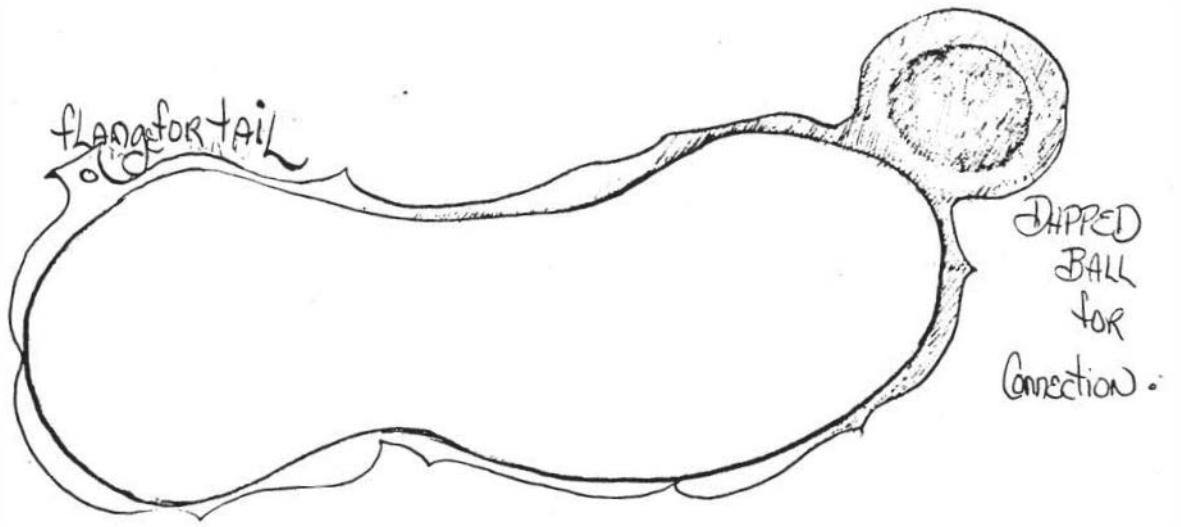
Die form Body

Die form HEAD

River Alapag Jaw

the Unicorn

Diagram IV



Drawing I



14" x 14" x 1/2"

Chased Drawings

As my drawings and metal work developed, I decided to work directly on paper as I have with metal. Always being very alert to the treatment of metal surfaces; I considered the possibilities on paper surfaces, as well. Utilizing the tools I felt so accustomed to, the different shaped stamps called chasing tools; I started perforating the surface of paper such as: illustration board, poster board, and bristol board.

The illustration board took on a new surface of raised and lowered planes with embossed shapes. The tools are similar to small nails. A chasing tool pounded with a single blow gives one stamp pattern. With this method I started building patterns and designs. One mark after another was incised until the surface had been altered texturally and visually. Some areas left smooth gave extreme contrast to the pounded areas. Graphite was rubbed on these surfaces or drawn over to create new areas of enhancement. The graphite made areas recede and also accentuated other parts.

Piercing the illustration board, cutting out small areas, and adding pierced pieces on the board brought an even stronger three-dimensional affect to the drawing. Building areas up with pierced pieces that were also chased developed all kinds of possibilities.

In these two drawings I embellished the surfaces of the boards with burnishers and chasing tools. The burnishers made large and small sweeping marks. Utilizing more pressure

with the tool made the marks deeper allowing me to vary the depth of my design. To enhance the two drawings I pierced pieces and built up areas. I dealt with depth and height to achieve a three-dimensional effect.

Conclusion

I am relating to paper in a new way, working the paper almost as a metallic surface, Each area begins to interrelate with the other, The ideas flow back and forth from paper to metal. Ideas begin to formulate and build from each area: the scale drawings, the metal work, and the embellished drawings.

My relationship between the metal and the paper is a result of my work in these areas. It is bringing me a new concern for paper and its enhancement; a new appreciation and deference of sorts to paper. Metal has a plastic quality which paper does not possess. It can be stretched, pounded, flattened, and stretched again. Paper does not have these qualities yet it can be built into a three-dimensional plane which casts shadows and occupies space. I find the interaction of my activities with metal and paper gives me exciting and innovative feedback.

Metalsmithing is not only creating ornamental objects to adorn the body, such as my necklace, but any object artistically formed in the media of metal. My marionettes are a new expression of my art; a whimsical amusement for the operator and viewer which incorporate my craftsmanship and aesthetic value. My drawings work as a basis for this new expression and a foundation for the idea of embellishing paper. A new interest in reassessing the way paper is worked has been kindled in me from these marionettes. That physical force which builds them is now building on paper. It has become a constant cycle for me; re-establishing

myself in each media along the way; re-assessing my provincial viewpoints of paper and just metal objects; re-examining their traits and attributes and the possibilities that follow in a pogressive process.

Footnotes

1. Untracht, Oppi, Metal Techniques for Craftsmen. New York, New York: Doubleday and Company, Inc., 1975.
2. Untracht, Oppi, Metal Techniques for Craftsmen. New York, New York: Doubleday and Company, Inc., 1975.

Bibliography

1. Bridaham, Lester Burbank, Gargoyles, Chimeres, and the Grotesque in French Gothic Sculpture. New York, New York: DaCapo Press, 1969.
2. Cone, Polly, Treasures of Early Irish Art. New York, New York; Metropolitan Museum of Art, 1977.
3. Freeman, Margaret B., The Unicorn Tapestries. New York, New York: The Metropolitan Museum of Art, 1976.
4. Henry, Francoise, The Book of Kells. London: Thames and Hudson, 1974.
5. Rorimer, James J., Unicorn Tapestries at the Cloisters. New York, New York: The Metro Publisher, 1962.
6. Untracht, Oppi, Metal Techniques for Craftsmen. New York, New York: Doubleday and Company, Inc., 1975.