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ROCHESTER INSTITUTE OF TECHNOLOGY

A Thesis Submitted to the Faculty of
The College of Fine and Applied Arts
in Candidacy for the Degree of

MASTER OF FINE ARTS

**THE PRACTICAL USE
OF THE ASTROLABE**

SCULPTURE/POEM

By

Robert C. Malone Jr.

May 1978

APPROVALS

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PREFACE

The following thesis represents an attempt to establish a progressive relationship between poetry and sculpture. Breaking the confines of the standard definitions of each art form requires an approach to sculpture that includes the structural elements of poetry and an approach to poetry that strips it of its literate confines.

What follows is first the establishment of a precedence for the historical and contemporary relationships of language and sculpture. This includes references to works over several centuries. Secondly, there is an explication of poetic principles of sound within the slump glass piece entitled "Glass/Melt/Sound." This piece represents the movement of sound and its interrelationships. Thirdly, Oriental language approaches are utilized in the three "Haiku" sculptures. These rely more on the visual impact of language than on the aural impact as in "Glass/Melt/Sound." Finally, the mechanical processes involved in forming the slump glass pieces is explained.

References for this thesis scan books on sculpture as well as poetry, in order to find those examples most closely related to the general category of intermedia, those works of art that move across boundaries of individual art forms towards a synthesis of two or more art forms. In this case the work is more closely defined as "object poetry," that is poetry whose form is three-dimensional and not necessarily confined to words but may instead create models of poetic experience. Essentially that is what these sculptures are - models of language and its aural and visual impact.

SCULPTURE POEMS

In assessing the distinctions and similarities between the seemingly different media of sculpture and poetry, one must first approach the elemental concerns of dimensionality and aurality. Certainly, a poem exists on the page, a two dimensional field which is noticed as negative space surrounding the shape of lines, words and letters. On the page an arena of sound is developed. Sculpture, on the other hand, is a three-dimensional medium existing in a realm "larger" than the printed page. This disparity between the art forms is enhanced when the poem enters into the dramatic and musical framework of "poetry as performance," the spoken word in an aural realm. Where does one begin to secure the forms together in a unified construct that does not inhibit the formal considerations of either form? How does one seek a new dynamics of intermedia through a balanced presentation of both arts? How can a sculptor wordlessly create a poem? These are the major problems that the following five sculpture/poems seek to resolve.

Historically, the art forms have been extensively reflective of each other. In poetry, one may point to the sculptural-architectural metaphor evident in Hart Crane's "monumental" American poem, "The Bridge." Or one may see the direct metaphorical quality of Keat's "Ode on a Grecian Urn," or one may observe the sculptural references in Rilke's early poems. From a sculptural standpoint, "The Gates of Hell," by Rodin emanates from Dante's "Inferno." Numerous other sculptures throughout history have been interpretations of various cultural mythologies, including African, Egyptian,

Classical Greek and, in terms of more recent work, it can be argued that pop artists, such as Claus Oldenburg, were making expressions of contemporary mass media mythology using the iconography of the everyday. But the problem remains; how does one approach fusing the two together into a conceptual ideology that utilizes the mechanics of each art form as integral aspects of the new form, rather than as references to each other?

The proper "mixture" of the two art forms (poetry with its materials of sound and language, and sculpture with its materials of space and form) must seek its proper proportions in such a way that the object's sculptural quality exists in equilibrium with its poetics. New interpretations of poetry and the printed word have made this melting of art forms more possible. The pictorial qualities of words and typography have been extensively used in the past fifteen years in the discipline of "concrete poetry." Instead of being recognized for their meanings alone, words are exploited for their visual effects. Using collage techniques, a poem is "constructed" with scissors and paste or rubber cement. This liberation of the printed word has continued in the realm of "book art," which has exploited the book as object, frequently for the constructive elements involved; the shape, the binding, etc. These movements in literature have blurred the distinction sometimes between art librarian and art curator. Poem or picture? Book or art object?

Sculptors have explored linguistic elements of language in their work in recent years. For instance, Richard Serra's work, "Stacked Steel Slabs" has been likened to a piling of transitive verbs.¹ Allen Kaprow's "Words" creates an environment of language,² while inter-medialists such as Ferdinand Kriwet have created "language happenings"

that incorporate letters and words on transparent inflatable cubes. Kriwet has stated, "Contemporary literature has long since rejected the idea of book being its only legitimate abode."³ The work presented here extends that tenet and projects poetry into the realm of glass sculpture.

THE WORK

These pieces represent a progressive development toward poetic expression. The first piece, "Triangle Cubed," is strongly contained within a sculptural framework; it is base heavy and has a sense of weighted balance and symmetry. The pyramidal shape evident in View A gives it an almost architectural bearing. It holds close to the ground and is similar to Serra's delicate balance achieved in "One Ton Prop (House of Cards)"⁴ Although it is most sculptural in its qualities, it establishes a tri-partite precedence that continues in the slump glass pieces that follow, which move into an intermediate realm of sculpture/glass. Dick Higgins in A Dialectic of Centuries, refers to this artistic approach as "object poetry."⁵

The second tri-partite piece, "Glass/Melt/Sound" moves into poetry first with its title and is furthered by a structural analysis of its parts. The last three "haiku poems" function independently and as elements of a tri-partite structure. In these pieces, a comparison is established between oriental calligraphic language, the haiku poem, and sculpture. It is a movement from Western concepts of poetry in "Glass/Melt/Sound" towards Eastern sensibilities.

"GLASS/MELT/SOUND"

This piece is a structural comment on poetic form - a form stripped bare of its words so that the observer may perceive the elements of poetic language through the construction of a three-dimensional model. It is the frozen motion of music and lyricism as it might move through words. In order to understand the poetic implications of the work, a few general structural observations should be made.

The work, as stated previously, is tri-partite; three independent units of three or four upended glass plates set in a staggered position on the pedestal. Most of the glass plates curve or bend to various degrees in contrast to two unbent glass plates. The plates visually intersect, and their edges are illusionistically perceived as darker than the larger flat surfaces of the plates. The positions of the glass plates within their respective bases are not equidistant.

"sine/sound"

If the glass plates were removed from their bases, it would be possible to join each piece end to end to roughly form the semblance of a sine curve as it might exist on an oscilloscope, undulating from base points to apexes of various heights, with various distances between the curves. The sine wave of sound in this piece has been segmented and the various parts have been upended, perverted from their natural flowing tendency. This fundamental restructuring of the sound wave isolates the wave into independently observable elements. This drastic action also establishes the basic analogy between poetry/sound and sculpture glass. The interrelations between these sound/glass

plates may now be understood in poetic terms without the complication of word-meanings. Pure glass without markage: pure sound without meaning except the inherent meaning of motion. The glass plates are as tuning forks or vocal cords shaking with the vibrations of sound.

"the sound units"

Each of these sound/glass plates are, for the sake of this study, determined to be the length of however many words or phrases might be contained within a line of poetry. These line/plates extend from bases which hold the line/plates together in a formal structure. Pursuing the metaphor further these bases emerge as a stanzaic framework, as in a poem. Line/plates within stanza/bases exist within the larger poem/sculpture. These stanzas are comprised of four lines each in the first two stanzas, followed by a final reflective third stanza of three lines called a triplet or tercet. These verse paragraphs are not totally bound by exact form; the plates are not equidistant within the bases. There is a sense of space between the lines that leans towards a free verse at the same time that it establishes a distinct stanzaic development.

"The stanzas - a narrative of time and change"

The poem is "read" in the same way that a line is read on a page - left to right. The first two stanzas are variations on each other. The first line of the poem bends into the total poem and introduces the eye to what follows. The first line of the second stanza is

nearly the same as the first except that its attitude is not as drastic. Continuing this comparison of line/plates, the second and third lines of the first stanza are rigid and unchanged. Nothing has affected their verticality. By contrast, their partners in the second stanza sway slightly and softly bend toward the third stanza. Time/heat has changed these plates. The final lines in the first and second stanzas continue the theme of time and change. Each of these line/plates are slight variations.

Clearly time as heat has affected these plates. The first line as the most drastically affected plate posits the notion of change as a given. In the beginning there was change; in the beginning of the poem is the representation of change, followed by two plates as yet unfallen. As time progresses, the plates bend more, and the final stanza reflects backward upon the change that has occurred. Here we have an internal pun: glass reflecting upon itself. This reflective final stanza is a well established technique in poetry, as in the sonnet, where the final couplet of the poem draws together the other stanzas into a final comment.

"the sight of sound"

If each of the line/plates are representative of broken aspects of a "sound wave," then what do their visual intersections represent? The answer to this question fundamentally lies within the relationship of eye and ear. In poetry, there is concept called "synaesthesia," in which a sound is conveyed through a visual image, or vice/versa. Dylan Thomas utilizes this technique frequently. In "Fern Hill" he speaks of "tunes from chimneys." He has also spoken of "the light of sound" and

"the sound of light." Likewise in this poem sculpture, sound is being represented in terms of a visual image, in this case an object. The eye and ear are joined together in a simultaneous experience. Projecting this concept, visual intersections are equal to aural intersections. Dark edge crossing dark edge is as sound intersects in an alliteration. For instance, note the sound of the following: "It bends as glass and sound, becomes sculpture/poem." Besides the aural intersection that occurs with the "s" sound, the "b" sounds, the "o" sounds, the "a" sounds, and the "p" sounds intersect. One could graphically represent the statement in a convoluted crossword puzzle construction.

To stretch this metaphor to its limit, but also to its logical conclusion, the particular line/plates bend as lines in a poem bend in rhyme.

"the title"

"Glass/Melt/Sound" notes the process of understanding the piece. The meaning of glass "melts" into the meaning of sound, until eventually they simultaneously exist in mixture. The basic metaphor that occurs is here represented. In other words, over a period of time the glass plates change, as in the change from the first stanza to the second stanza. Over the course of time, a piece that is first noticed as sculpture emerges as a poem. And then, what is the agent of that change? Heat as in sculpture, Thought as in poem. And, the slashes in the title also begin to bend, and establish a tri-partite title.

THREE HAIKU

The final three pieces in this thesis presentation represent a shift away from Western sensibilities about poetry toward Oriental concepts of the written word with its pictorial qualities. Again, time is an important theme or message in the pieces, and change is visual representation of time, but the approach to that theme is different.

Haiku is a brief poetic form rarely more than three lines long, and in traditional examples of this poetic form we see that the major themes spoken of deal with simple abbreviated notes on nature, specifically the seasons. These three haiku sculptures are titled, Winter, Spring, and Summer, which is not an uncommon way to title Haiku.

Oriental calligraphic language relies upon the word-picture and is unlike the abstract qualities of Western language in that the symbols for the words represented are historically rooted in pictures that served to represent objects and emotions. Thus we have the concept of "East" represented as "a sun as seen through trees." The word equals its visual representation on the printed page.

Extending this thought into the wall-poems represented here, the page has become the wall, and the calligraphic brushstrokes are transformed into curved pieces of glass. The two-dimensional word-picture is transformed into the three-dimensional word-sculpture. The suggestion of the seasons in these three pieces are visually grounded in basic representations of trees in the process of change throughout the year.

A basic cycle has emerged. If in Oriental language the tree as object is represented as equal to the word which in turn is represented

as equal to the picture then the basic equation can be posited. OBJECT=WORD = PICTURE. By extending this into the "object" of sculptural representation, as presented in the piece entitled "Winter" the cycle is completed. OBJECT (as real tree in winter) = WORD (expressing the quality of tree in winter) = PICTURE (of tree in winter) = OBJECT TRANSFORMED (as sculptural representation of tree in winter). OBJECT = WORD = PICTURE = OBJECT TRANSFORMED. These calligraphic sculptures are pictures which extend or project from the wall page.

"Winter" like the other two haiku is easily seen as a tree under the pressure of winter. Here we see frozen growth with branches that tentatively move outward and upward as though under the burden of snow. "Spring" is two young seedlings moving and growing out of the seed casing, beginning to grow upward, unfolding. "Summer" shows rapid projectile growth upward in the heat of a summer sun. The base, which in "Glass/Melt/Sound" was at the bottom of the work, is now internalized into the sculptures and is now seen as the baseline as earth line with roots extending downward and branches extending upward.

Heat, as warmth of sun, is the source of change here and time is in the passing of the seasons, unlike the previous piece where heat as a source of change is seen as a more abstract concern. In the Haiku, the glass plates are visual representations of language as seen in Oriental language, instead of musical/aural representations of English, with its many sound qualities. The different approaches to the sculptures are rooted in differing approaches to language.

THE PROCESS

Utilizing a large quantity of clear plate glass shelving that I found in 1977, I began to explore the possibilities of capturing motion in glass. The elements of poetry that I have incorporated into my work evolved over the course of this exploration.

With some graphite, a construction was set up in an annealer. The glass was cut into a number of 1/4" x 4" x 14" pieces. On a piece of transite, the plates were stood on end with 1" x 1" x 6" blocks of graphite between them and at either end of the construction. To hold up the entire assemblage, insulating bricks were placed at each end. (See Photo #1)

Next, the annealer was heated until the glass plates started to soften. Because only the upper coils of the annealer were being run, the tops of the glass softened first and the pieces fell against each other in a sort of domino effect. When the glass had reached a sufficient point of softening, the annealer was opened and the formation was allowed to cool until it stopped moving. The annealer was closed and the glass brought up to about 930 degrees Fahrenheit. The annealer was then left to soak for an hour. The temperature of the annealer was then lowered 50° Fahrenheit an hour until 650° Fahrenheit was reached, and the annealer was then shut off.

Removing the glass, I began to see the rudiments of poetic expression in the ribbon-like formation. The plates had fused into one piece and the quality of motion and plasticity expressed a rhythm in its curves, repetition in its shape, and time in the relation of the pieces to each other.

This rough formation became the basis for further exploration.

In order to manipulate the shapes, I wanted to stop the pieces from adhering to each other.

To eliminate the fusing of the glass, a potter suggested that I try a kiln wash, a mixture of 50% aluminum oxide and 50% kaolin. I painted some on the glass and set up a construction similar to the first construction and repeated the original process. The glass did not fuse, but was badly marked. Not only were the surfaces hazy from the wash, but the wash formed cracks on the outside of the curves and compression marks on the inside. In addition, all the pieces were marked where they slid against each other.

Markage, in the context of poetry, became all that noise that had to be eliminated - those consonants and words that did not enhance that final effect of clarity and pure sound. Eliminating markage was the process of poetic revision - the act of searching for only those sounds that would clearly express my intentions.

I ball-milled the kiln wash for eight hours to make the grit as fine as possible to eliminate the scratches. I removed the kaolin from the wash to see if the aluminum oxide with water would function as enough of a release agent. I painted only those surfaces that would touch in the slumping.

Again, a construction was set in the annealer and the process repeated. This time ball-milling the kiln wash had eliminated the scraping, but marking had still occurred when the wash was applied.

From Corning Glass Works in Corning, New York, I learned of a release agent that it used for the slumped plate glass in old Xerox machines. This "Microgrit" was ordered from Micro-Abrasive Corporation in Westfield, Massachusetts. The "Microgrit" was mixed with water and applied to the glass through an aspirator to those areas

that would be touching. Other areas were masked out with cardboard. The results were better than before, but still the glass did not have the purity that I sought.

As an undergraduate, I had used a refractory (Q felt) paper on which to melt broken pieces of glass in the annealer. I had not yet used it in this process because previously it had left markage when the glass was melted. Since the glass was only being softened this time, I tried the Q felt paper. The Q felt paper was cut to the same size as the glass plates with one piece inserted between each two plates, and the construction was heated once again. This worked very well, but the Q felt had functioned as a type of insulation and the pieces heated evenly so they did not slump quite as much. I prodded the glass with a steel rod to augment the function of the heat. The glass did not slump with the same grace, but I was making progress and eventually achieved plates that had little markage and could be utilized in a poetic construction.

With the glass I had bent so far, I had elements of a language to work with. A base to hold the glass plates was made by cutting slots in a piece of wood. The plank used was 1" x 4" x 40", every 1" a 1/4" slot was cut across the plank 1/2" deep. Now it was possible to set the glass plates on end in any order desired.

First the glass was set up so it appeared to flow in one direction. This did not work visually because there was a boring sameness to the pieces. I turned the work halfway around through the flow, but this effect was not exciting and lacked a certain tension that I sought to achieve. (See Photo #2)

I now started setting the glass plates in more random orders. I also started using unbent straight plates of glass. I now started to

look at the new groupings as visual sound. The tension that was being sought after was being found.

This tension originates in the compositional interactions between the plates - the repetition, variety and contrast of the pieces in the process of change. The pieces could fall towards or away from each other and I could halt the motion of the fall by positioning the straight pieces of plate at particular points in the formation. Recognizing this element of control, and perceiving these plate glass pieces as lines in a poem and my work as artist moved into the realm of a poet manipulating sounds in a poem, creating aural/visual comparisons and tensions. A bricoleur at work, I sought formal poetic expression in glass, utilizing whatever means were available, letting the materials find their own significance and meaning.

At this point the clear plate glass being used up to now was replaced with bronze plate glass. This was done because the clear plate had a green tint that I did not like. The bronze plate seemed more in the direction I wanted to go. A controlled annealing cycle was calculated for the bronze plate glass, for now the glass pieces would be used in finished works. (See Figure #1)

I next slumped the pieces horizontally. I took a soft brick and drilled out a row of 1" holes a little more than 1/4" apart, the thickness of the plate glass. Then the brick was cut in half so that when the two parts were stood on end, the holes lined up. I then cut 1" pyrex tubing into 6" lengths and ran these tubes through the holes drilled in the bricks. (See Photo #3) The plate glass was then balanced on the tubes. A light coat of Microgrit was applied to the tubes for the first run. Later I alternated between using Q felt and

Microgrit; Q felt on the vertical pieces, Microgrit on the horizontal to achieve better curves. I used pyrex tubing because it has a higher softening temperature and was a smooth surface to slump over. I later packed the tubes with crushed soft brick because they tended to sag, especially near the top of the construction. The slumping was done in a similar way except that I didn't have to push the glass, it dropped by itself. (See Photo #4)

This horizontal slumping gave me strong new pieces to work with. They had more symmetry and balance than the vertical slumpings. I continued with this configuration for some time and experimented with other possibilities but for the final "poems" used only pieces from the first two slumping setups.

The greater process of revision remained. While I now had the basic lines of the poems that I was constructing, the relationship of the lines had to be established and the stanzaic development ascertained. For quick setups to test these relations, I positioned the line/plates in the slits of the wood base. In this way, I formulated the basic stanzas temporarily as exhibited in the piece "Glass/Melt/Sound." I saw the real potential for movement and change and time in these configurations.

In order to make the stanzas permanent, I wanted the stanza/bases to be solidly unifying, and strove to achieve the effect of aluminum bars passing through the plates. To do this, I measured the spaces between the glass plate stanzas I had chosen. An aluminum bar 1" x 2" was then cut to the proper size pieces to fit between the plate glass. Each end of the aluminum pieces had to be machined square with the other side, making each end of all the pieces parallel. Two holes had to be drilled exactly through each piece of aluminum so that when the two threaded rods were passed through each piece, they would line up exactly. Then the glass had to be drilled. A jig was made (See Fig.#2)

to hold the glass in place in a drill press so that each piece of glass would also be exact. End pieces were cut for each bar. They were milled square but the holes were drilled only part way through, then countersunk with a little electric tape on the end of the rods. The aluminum ends slipped right up against the glass. (See Fig. #3) The result was that the glass appeared to have an aluminum bar passing through all the pieces holding them together.

There is a Latin Phrase, "UT PICTORA POESIS" which means "as painting also in poetry" and has been used by critics for a long time to describe the relationship between painting and poetry. Extending this phrase into the work presented here, it can be said, "UT SCULPTURA POESIS." As in sculpture, the same in poetry. And extending that thought even further to include the haiku sculptures: UT PICTURA SCULPTURA POESIS. As in painting, as in sculpture, the same in poetry. There are no limits to the possibilities. Understanding the compositional nature of one art form can provide insight into the compositional nature of another art form and in the end, may provide insight through the comparison into the nature of the creative process that underlies all artforms, despite their apparent differences.

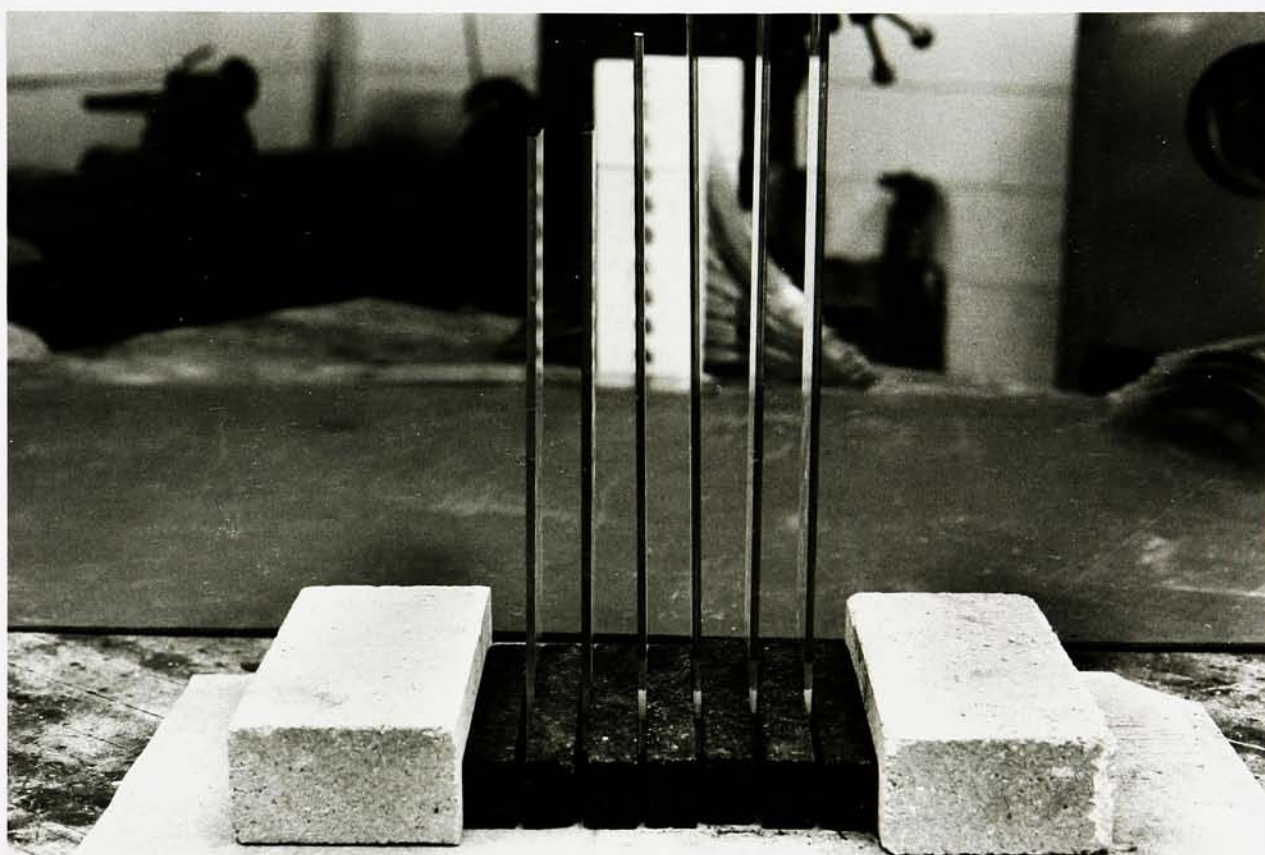


Photo #1

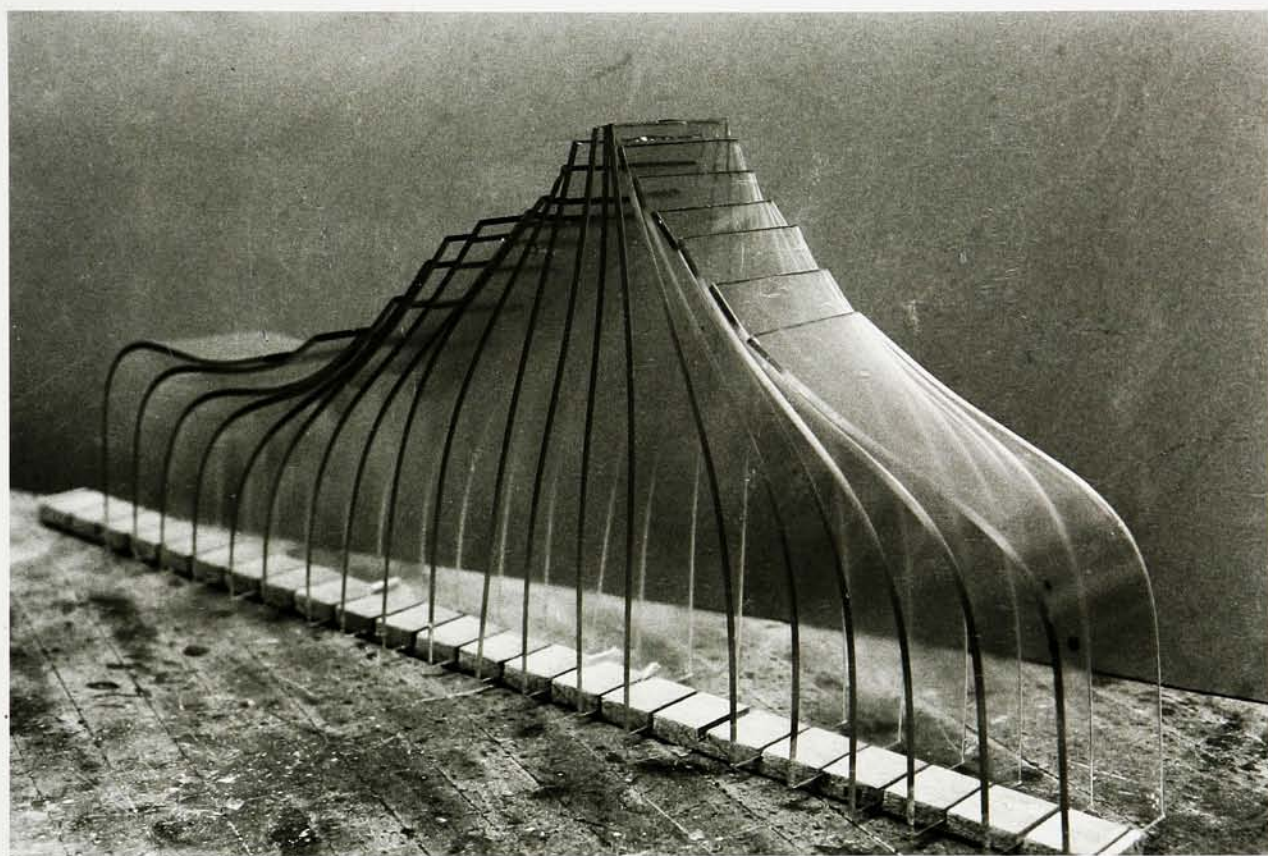


Photo #2



Photo #3

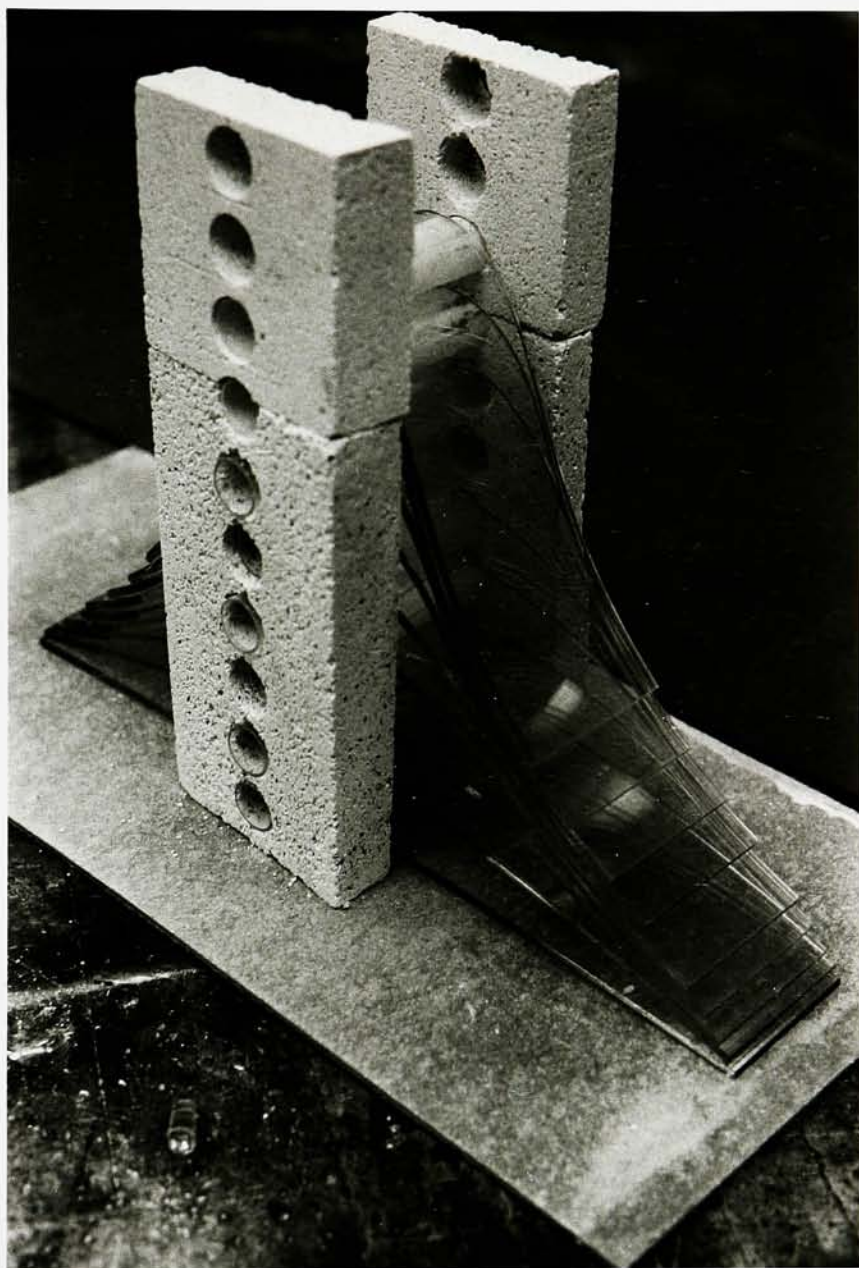


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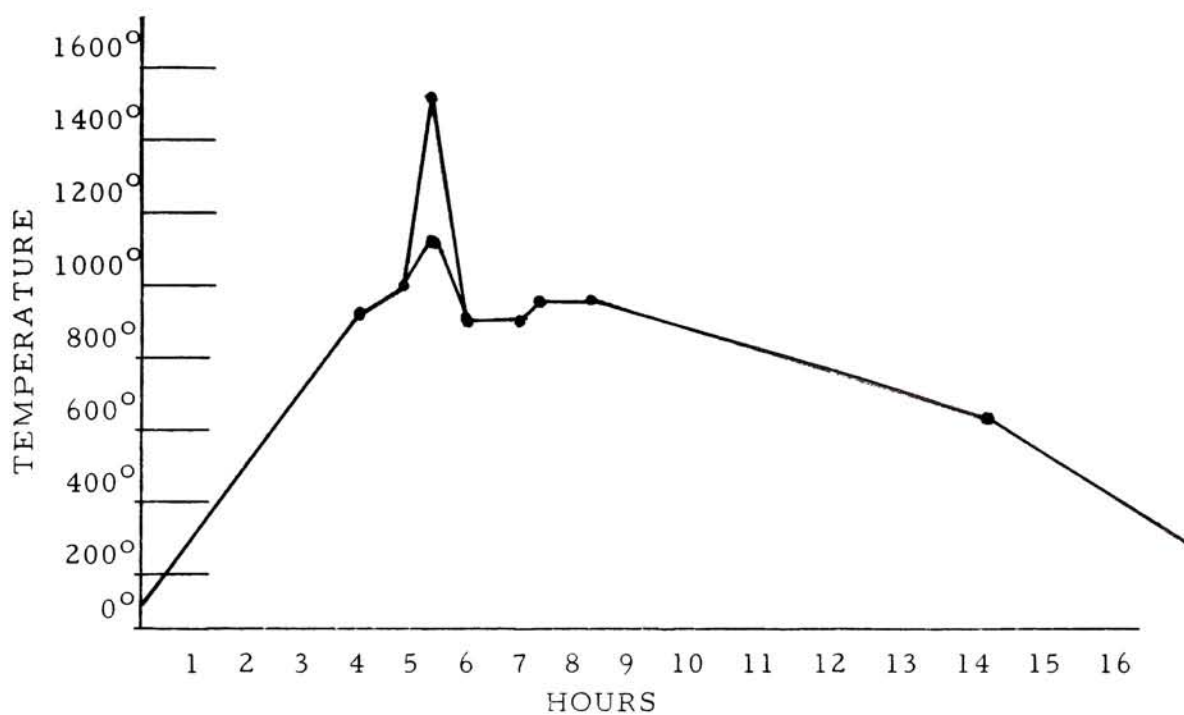


Figure # 1

Starting at room temperature, the annealer was first set at 200°. After one half hour the temperature was raised 100° every half hour until it reached 900°. Now it was ready to do a slumping. When I wanted to start the slumping, the annealer was set at 960° and I would wait one half hour. At 960° the glass was just ready to move. Now the temperature would be set anywhere from 1100° - 1500° depending on how fast the glass was desired to move. The higher the temperature, the faster and more dramatic the movement. When the desired effect was achieved, the annealer door was held open so the glass would quickly cool. (This was done for about a minute or less.) The annealer door was then closed and the temperature set at 880° for a half hour. After the half hour, the temperature was raised to 910° and left for one hour. After one hour, the temperature was dropped 50° every hour until 610°. After the annealer sat for one hour, it was shut off and let cool.

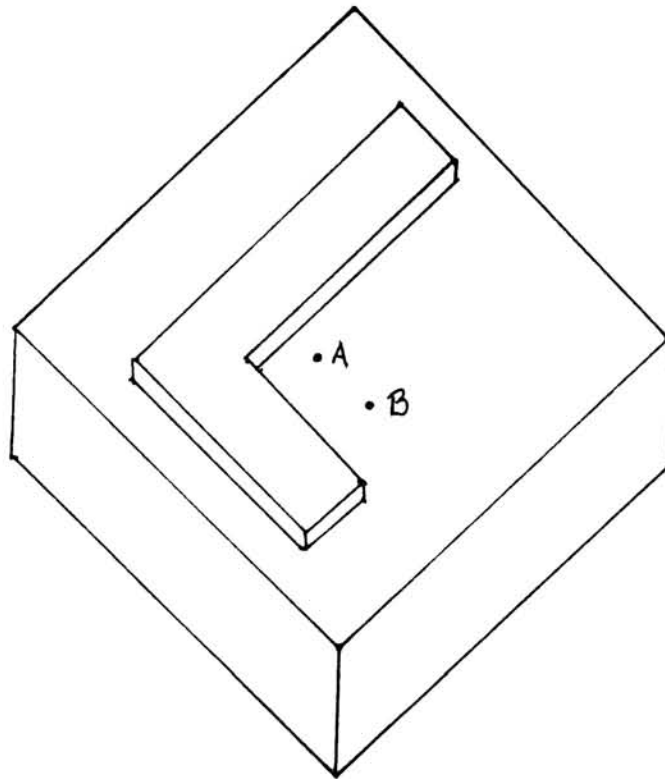


Figure #2

Shows the jig used to drill the holes in the glass pieces. It consists of a wooden block with a small square (the L) mounted on the top. The block was clamped on the table of a drill press, with the drill over hole A or B. Then the glass pieces were placed in the inner corner of the small square. The glass was then drilled. This way each hole would be in the same location in each piece of glass.

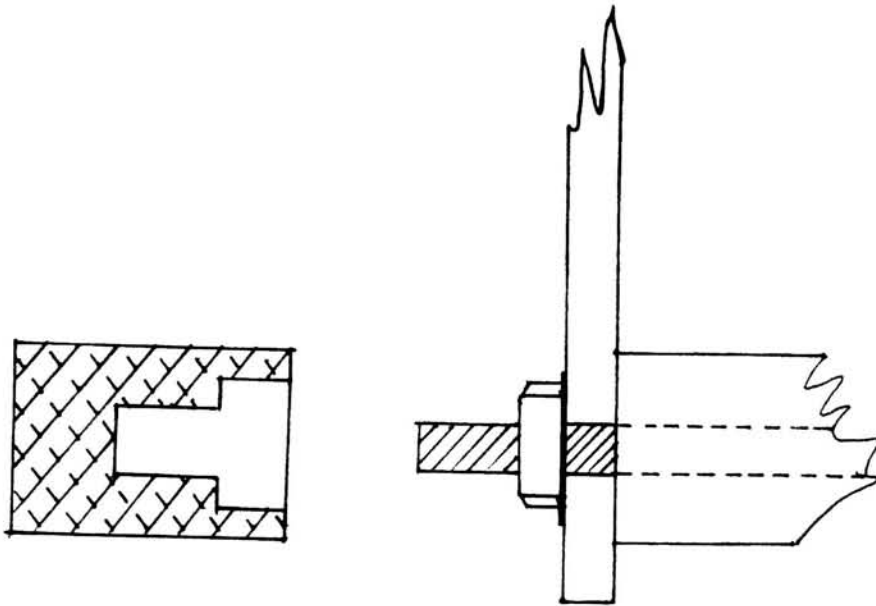
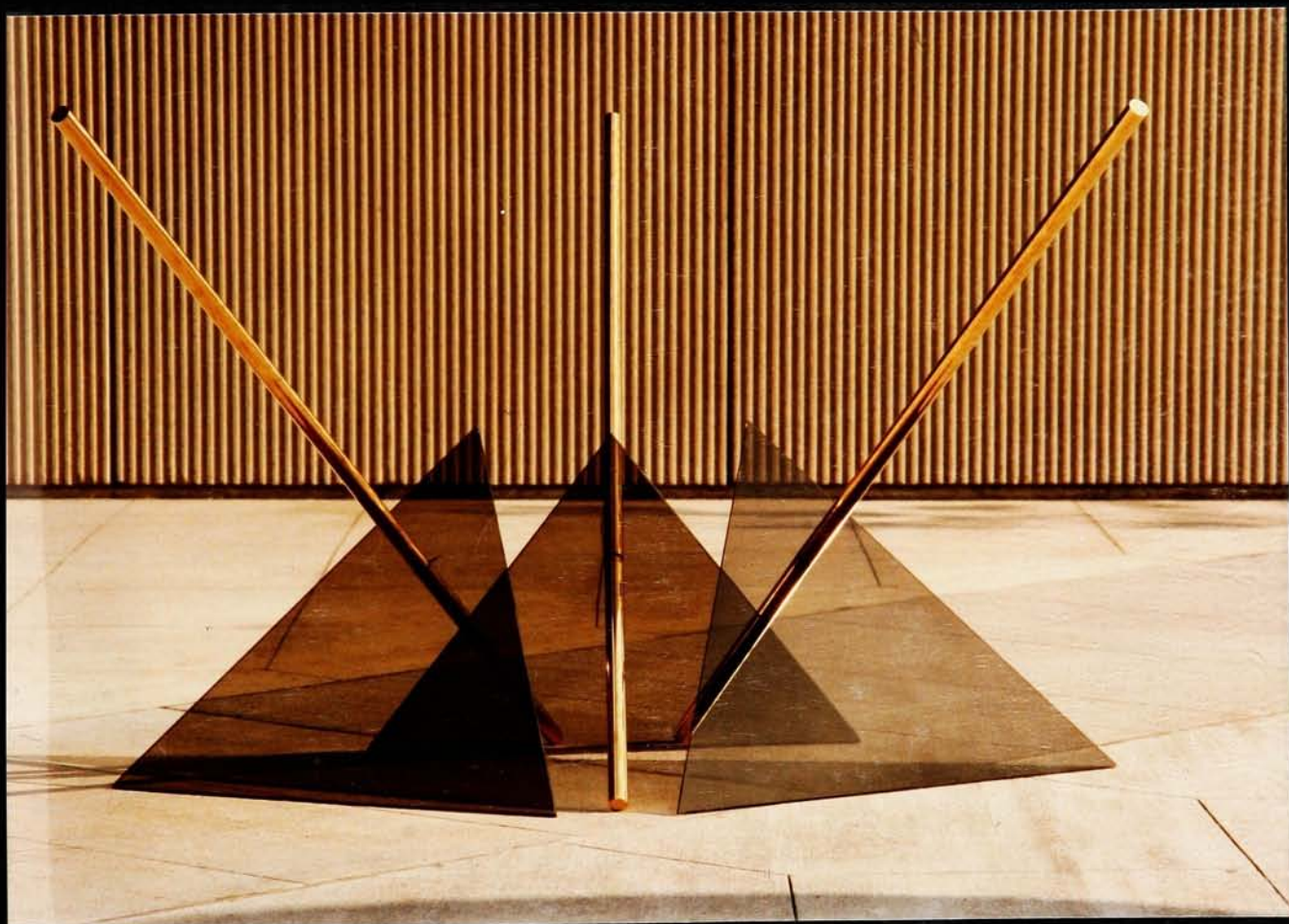
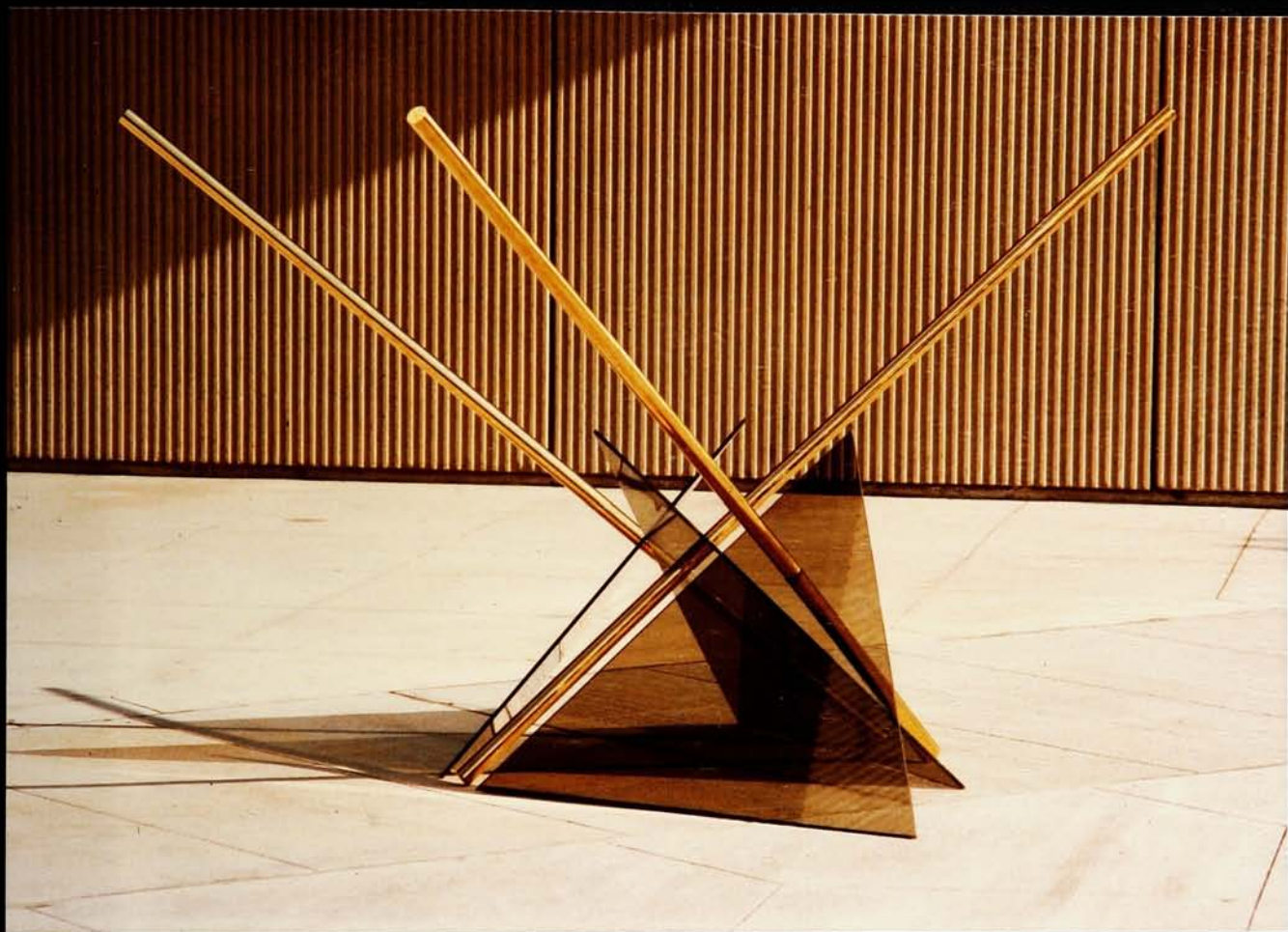


Figure #3

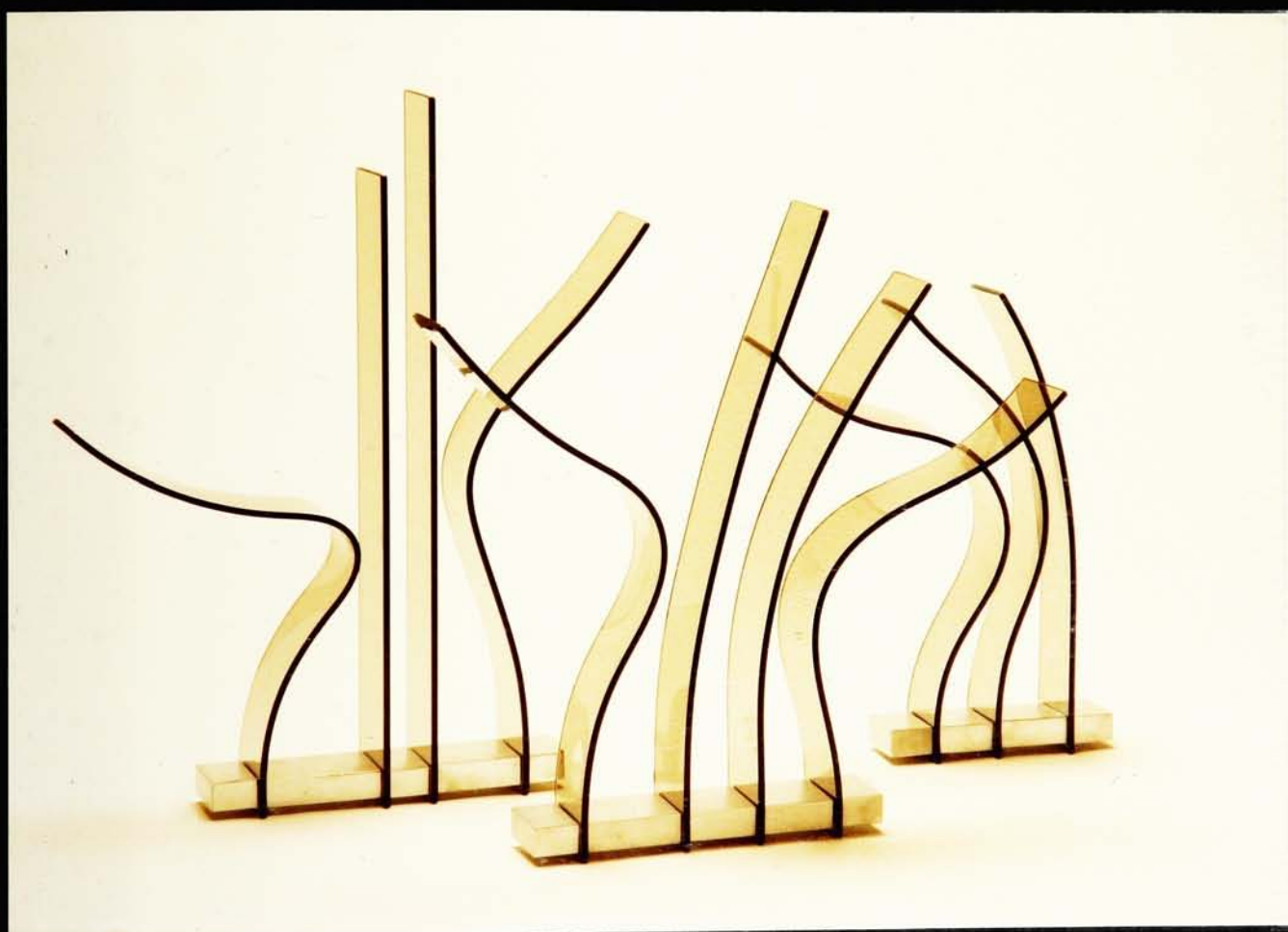
Shows how the end pieces of aluminum bar were countersunk to cap the threaded rod and nuts.



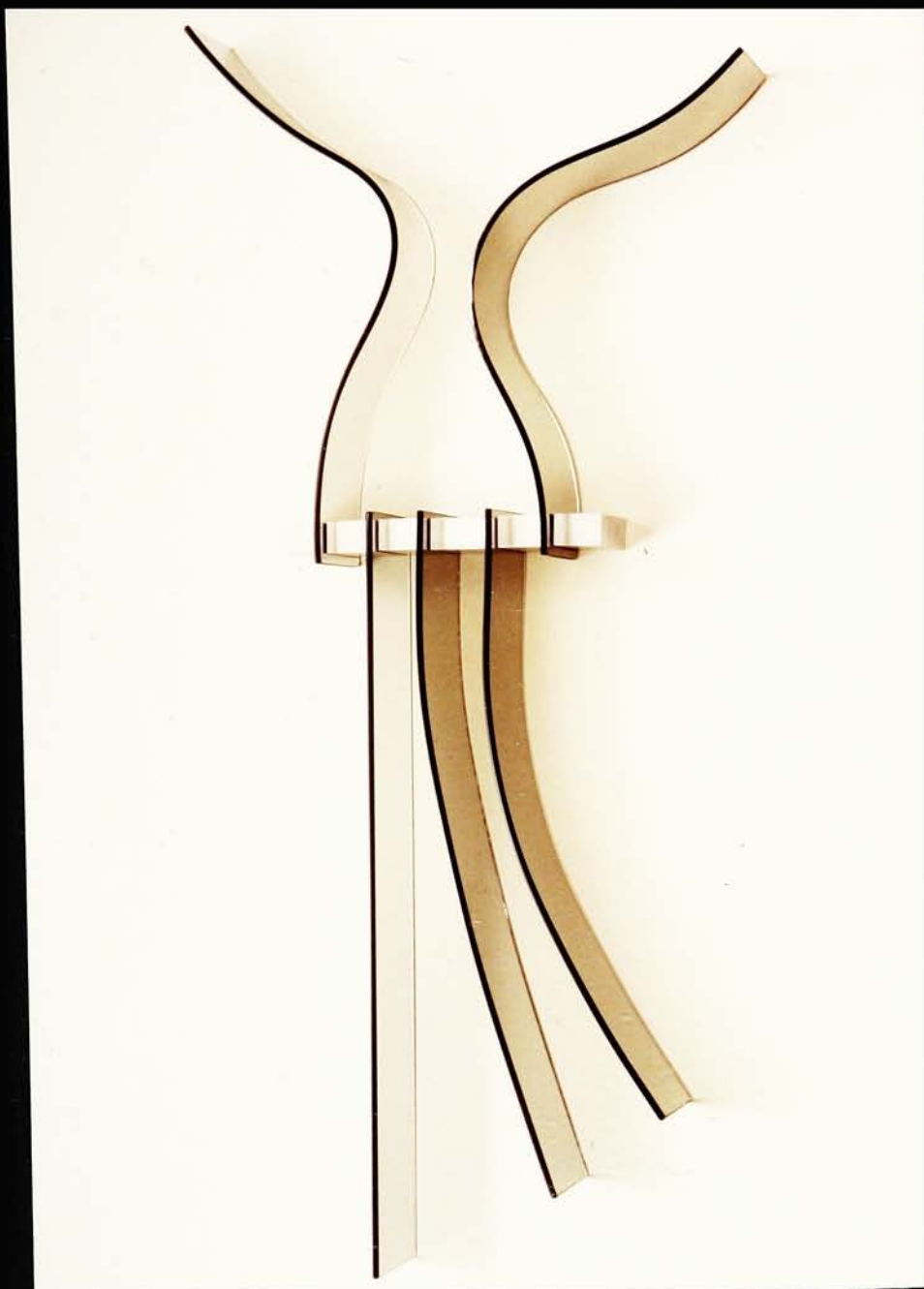
Δ^3
(A)



Δ^3
(E)



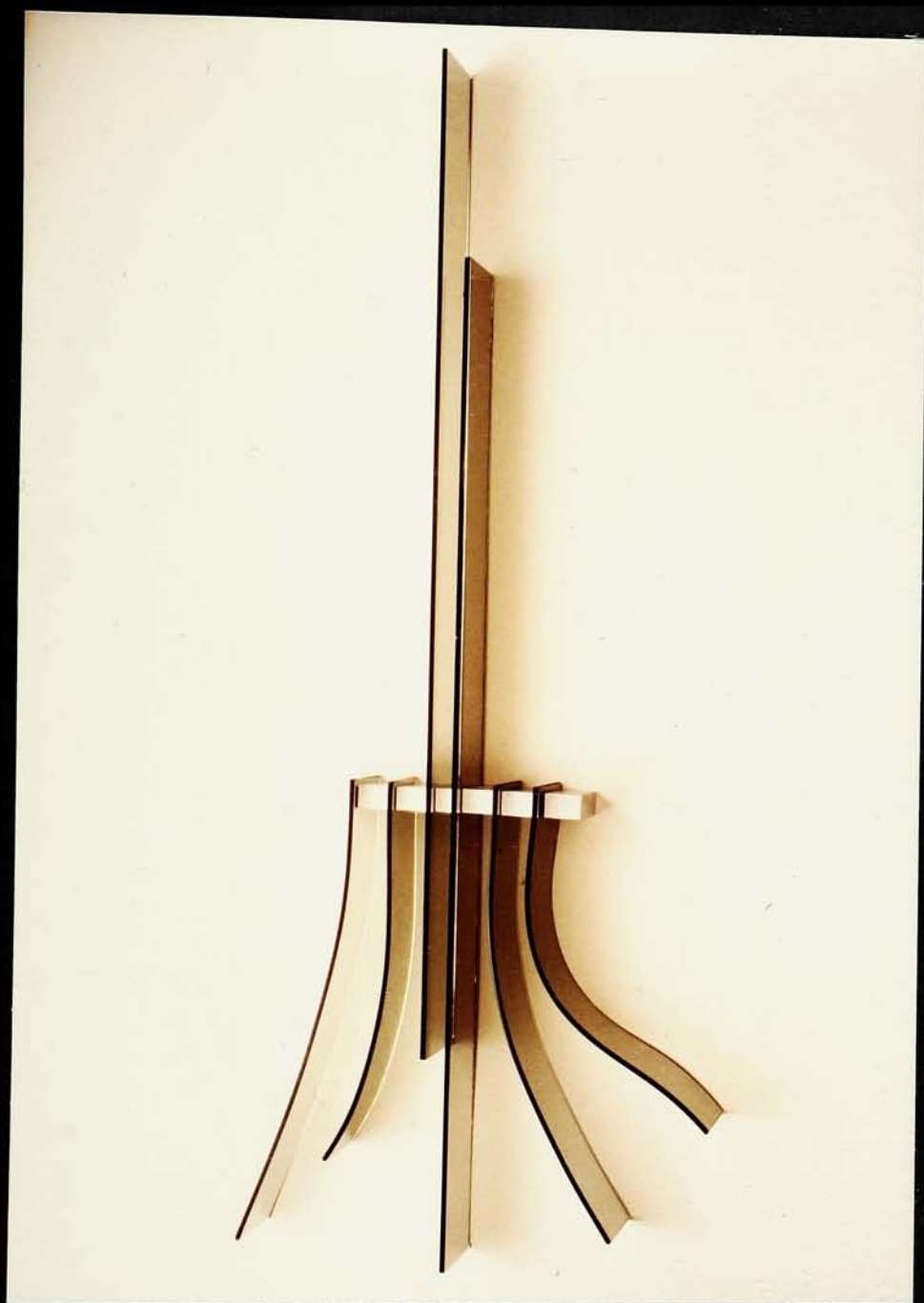
GLASS/MELT/SOUND



WINTER



SPRING



SUMMER

FOOTNOTES

- 1 PASSAGES IN MODERN SCULPTURE, Rosalind Krauss (New York, New York: The Viking Press, 1977) p. 277.
- 2 ART AND THE FUTURE, Douglas Davis (New York, Praeger Pub., 1973) p. 39.
- 3 OPEN POETRY, ed. by Ronald Gross and George Quasha, (New York, Simon and Schuster, 1973) p. 337.
- 4 PASSAGES IN MODERN SCULPTURE, Rosalind Krauss (New York, New York: The Viking Press, 1977) p. 271.
- 5 A DIALECTIC OF CENTURIES, Dick Higgins, (New York, Printed Ed., 1978) p. 17.