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Adjustable systems in wood

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ADJUSTABLE SYSTEMS IN WOOD

by

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ADJUSTABLE SYSTEMS IN WOOD

I have worked in various sculptural materials and processes: stone, plaster, metal, wood; carving, casting and fabricating. Yet I have continually returned to wood because its lightness, flexibility and aptness for quick manipulation are best suited to my concepts and working habits. I discovered that applying my methods to this one medium yielded a wider range of technical and visual wealth for sculptural exploration.

During my five years working as a carpenter I learned many methods of constructing wood in an angular manner, to create pitched roofs, to use the vertical strength of a two-by-four to bear weight, to cut angles for triangles, rectangles, octagons and trapezoids. My basic concept of working with wood was limited to the joining of complex angles. I perceived wood as an angular medium. However, my art education during this period included courses in Chinese calligraphy and drawing for animation. In these courses, I dealt with elegant curving lines and curvilinear shapes from the Art Nouveau period. I became interested in open, thin, curvilinear forms, but I also had a traditional sense of the strength, permanency, and durability of wood sculpture. Therefore, to pick up a thin lattice strip and bend it into the desired flowing curves was beyond my imagination.

A demonstration of plasticising wood in gaseous ammonia, where the artist had seemingly unlimited ability to bend wood strips into any shape he desired, awakened me to the many

properties of wood. I began making laminates by glueing layered strips, then bending them to a desired shape, and finally wrapping them tightly with rubber innertube strips (Fig. A). I kept pushing the wood to make tighter and tighter bends, trying to achieve the most radical shapes the straight slats would permit. However, the slats would break before the desired distortions were achieved. Therefore, I began to create modules on a lathe (Fig. B) which I could plug together, capturing the tight curves and bends I desired. At this point, I glued and clamped the joint, then shaped it until the joint was barely visible, producing the illusion that the contorted shapes were carved from a single piece of wood. With this new skill, I could create seemingly impossible shapes which had a very organic appearance.

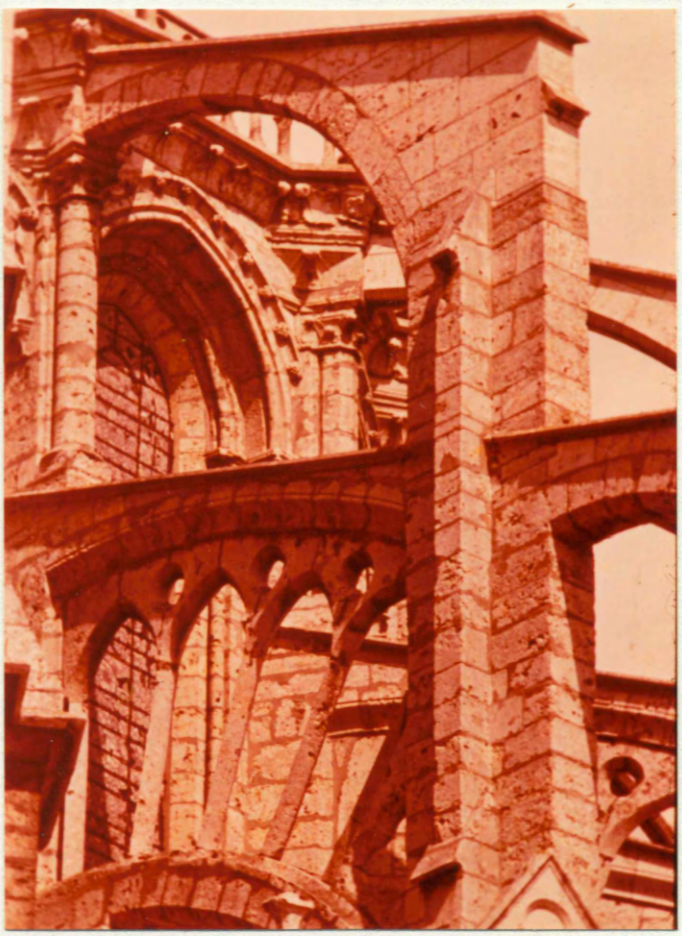
These two technical developments (strip laminates and lathe modules) were keys to my future sculptural explorations. One of the strip laminates popped apart when it was left in the back of my car on a particularly hot day. I had realized that I was using repeated elements to create a single form. However, when the strips separated, the linear repetition created a planar as well as a linear effect. The shape occupied more space, describing flat planes while also being linear. Also, when randomly exploring shapes with the curved lathe modules, I had attained a plastic medium which could be continuously changed through a trial and error process.

The sculptural ideas I had were too complex to draw, so I found myself mentally composing faster than I could log all

the ideas. By using various modules which I could plug together or fasten and remove without glueing, I discovered a more expedient way to quickly explore many shapes. I needed more diversity of shapes in the retainers, so I created various types of slotted modules into which I could twist slats. By opposing tensions, the structure was held together. The curved slats achieved a bouyancy and lightness. I was able to compose quickly using the trial and error method. I tried relatively small structures and ones ranging over twelve feet in height. I found my most challenging problems were creating enough tension to hold the structure intact while not forcing the wood beyond its stress limitations. The slats carrying the weight of the structure had to be balanced enough to distribute the weight so that one particular slat would not break. Hence, I would have to add slats to help distribute the weight of the structure. During these experiments, the wood continually broke. Yet, I was intrigued by the idea of constructing large, free-standing sculptures held together by their own tension. I found that by establishing rules, such as limiting my materials to wood slats and not using any glue, I made new discoveries about structure and form within the boundaries of these limits.

The development of the buttress in Gothic architecture was similar to my experimental development at this time because each solution led to new experimentation and discovery. The buttress used to be a solid form placed on the outside of

the walls to retain the lateral thrust caused by the weight of the vault. However, the flying buttress was a less bulky, more linear element than previous buttresses, and it could strengthen the building at different levels, aiding in the construction of higher walls. (Pl. I) The flying buttress had a lighter feeling because it was a linear element on the outside of the structure. This fascinated me because it supported more than the previous type of buttresses, yet it looked more fragile.



Pl. I Flying buttress, Chartes Cathedral

While I lived in Chicago I was greatly influenced by two sculptures, Picasso's Head of a Woman (Fig. D) and Calder's Flamingo (Fig. C). They were two huge sculptures which, if not seen with the immense cityscape and left standing by themselves, might loom over the viewer creating an oppressive overpowering effect. However, when surrounded by buildings several times their size, they were brought into scale and contained by their environment. Both of these sculptures are composed of open lines and planes. They contrast with their surroundings. Curves and lines oppose the rectilinear modular grids of skyscrapers. Calder's Universe (Fig. E) in the Sears Tower wonderfully juxtaposes a huge horizontal spiral with other rotating elements which function within the rectilinear surroundings. These sculptures use the curve as line to create volume as well as diversity and contrast, juxtaposing arch or circle against angles or squares.

The implications of background influencing the effect of sculpture hit me fully after I had erected some of my large structures and taken photographs of them. Returning to my studio, I projected the negative and redrew the image of the construction within its surroundings (Fig. F). A few weeks after I had made these drawings, I began to make rectilinear slotted constructions using dowel rods, creating repetitious three-dimensional grids. Then I wove and intertwined them with wood slats (Fig. G). After a week or two of working in this manner, I walked by the building where I had photographed the structures from which I made the drawings. I realized I

had intuitively selected the background which could be woven with the curvilinear elements of my earlier explorations. The curvilinear pieces were only interesting in relation to their environment which was basically rectilinear and repetitious. The polarity of balancing diverse elements was successful in the large structures. They were essentially drawings in space and not independent of their surroundings. However, if I reduced the scale of these curvilinear constructions and removed them from their architectural background to the immaculate white wall of my studio, I was removing the tension which gave them life outdoors or in a busy hallway.

The early systems I had devised to hold the curvilinear slats served to establish an overall gesture toward the total form. I cut many slots and grooves. Then I had places to add slats until I reached a desired impression. I never used all the retaining slots and the pieces could be arranged in a wide variety of ways. The vacant slots showed the structural system, the slats twisted into these slots established a flow which created a particular mood for the piece. The rounded slats could very harmoniously interact with the rectilinear system or abruptly oppose the system.

One day when I was cutting slats out of oak stock, someone knocked on my door and I stopped the saw before completing the cut. When I went back to the piece, I decided to continue cutting in this manner, moving the saw guide over to leave slats about the same widths as the saw cut. Now I had a solid piece of wood which flowed into repetitious slats. I could

fan these out or weave them together (Fig. H). This innovation was an intuitive response to the desire for planar volume and more solidity in the work. Also, I wished to simplify my approach to visual design. I wanted to limit my exploration to the variations I could achieve by manipulating these fan shapes.

I was able to make the slotted board because this was the most direct solution for the visual changes I desired in my work. I wished to establish the suggestion of planes in a loose linear fashion. I wanted the feeling of solidity while maintaining the loose fluidity of line. The new fan shapes could be seen as repetitious lines, or from another angle, solid planes (Fig. I). These shapes functioned much like venetian blinds or a strobe light, causing an implied motion, a fragmented image and a breaking up of motion and time. The strobe light cuts motion into fractions. By slicing space at regular intervals, I could slow down eye motion and adjust this movement by widening or narrowing the intervals.

Throughout these last two years of exploration, I purposefully pushed the limits of wood. I bent many types of wood slats until they broke in order to understand their greatest tension qualities just prior to breaking. I examined wood stock to see its faults and weak points. I studied the grain qualities of various types of woods to decide if they were more suited for twisting or for bending. Forcing the wood to its limit gave the sculptures a spirit and liveliness.

Throughout these processes of experimentation I have had to stop and reexamine my productions for other possibilities

I had not considered. A large painted sculpture (Pl. II) was designed so that the painted slats would flow from yellow through orange, red, violet, blue and green in a very even progression. However, when I set the sculpture up in this manner, it seemed stagnant. So I rearranged the slats with strong color contrasts and discovered the sculpture was much more lively. In a similar sculpture (Pl. III), I wanted to relate three systems togther in a turning gyrating effect, and this piece took on many forms as I continually tried new relationships.

The idea of continually adjusting or adding different elements to the constructions to further explore the possibilities of a design system led to the production of a wall series which used variations of downward flowing fan shapes (Pl. IV).

When I finished this series and hung the sculptures closely together on the wall of my studio, they reminded me of African masks. I decided to display them this way with the large painted sculptures which had a more vulnerable and temporary feeling. By establishing such rules as not using glue and making structures which hold themselves together through their own tension, I created these two highly different sculptural expressions. This system offers still more possibilitites for exploration.

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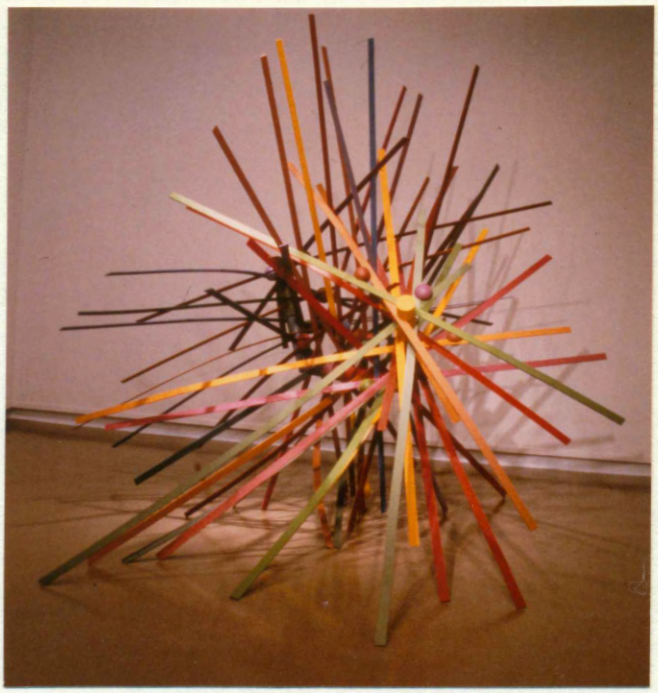
Pages 9, 10 and 11 contain photographs of the Master of Fine Arts Thesis Exhibition and Plates II, III and IV.



Pl. II Seasonal Celebration Piece I, painted fir, 1982

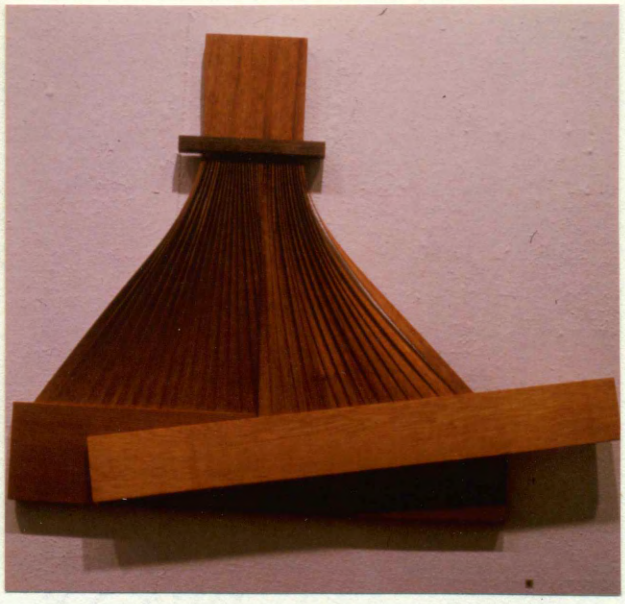
Pl. III Seasonal Celebration Piece II, painted fir, 1982

Pl. IV Wall Series, 1982

Fan I, 44" x 40" x 16",
oak, mahogany, 1981

Homage to Pablo, 32" x 24" x
12", oak, walnut, 1982

Pierced Fans, 28" x 26" x 14", fir, mahogany, 1982



Double Spread, 28" x 22" x 4", fir, mahogany, walnut, 1981

Pierced Plane, 24" x 18" x 8", oak, fir, 1981

Vertical Sweep, 54" x 36" x 18", oak, fir, 1981

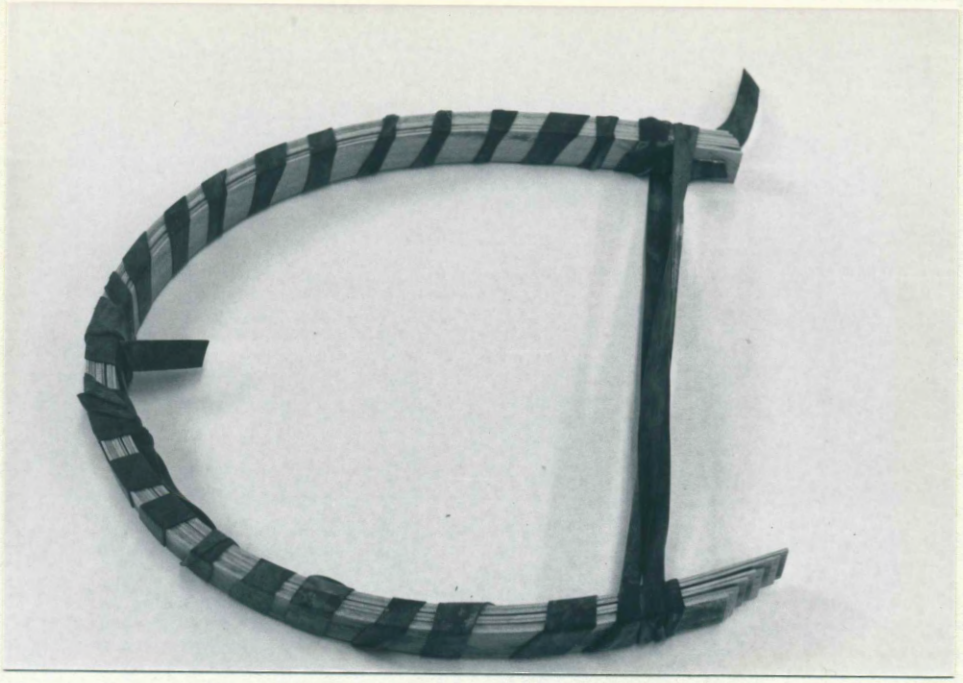


Fig. A Wood strip laminates bound with innertube strips

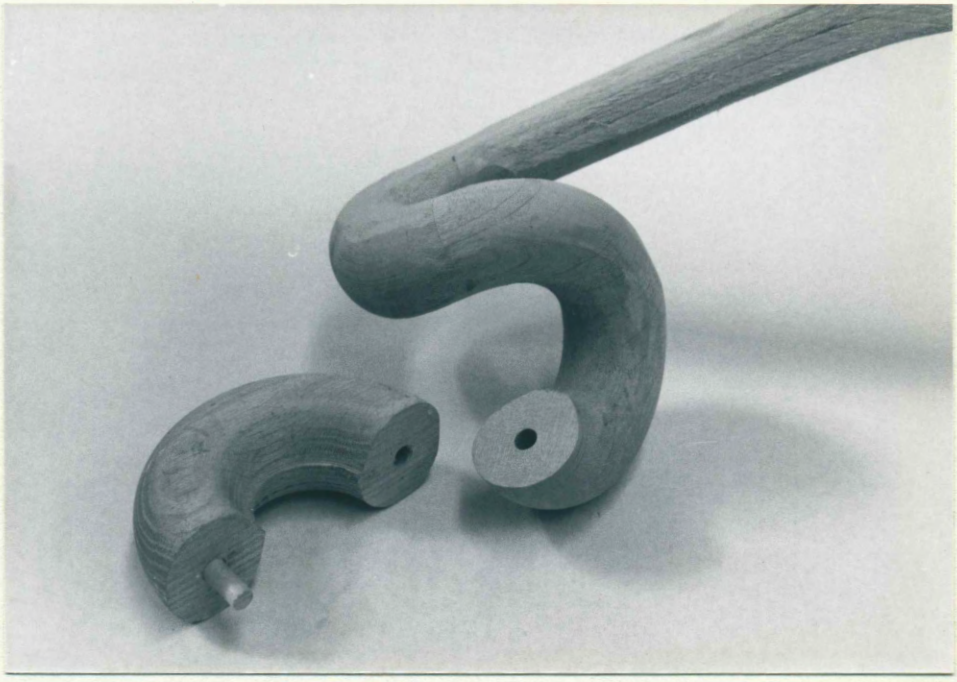


Fig. B Lathe "donuts" which are dowelled at the center for joining

Fig. C Alexander Calder, Flamingo, Chicago, 1973

Fig. D Pablo Picasso, Head of a Woman, Chicago, 1968

Fig. E Alexander Calder, Universe, Chicago, 1974

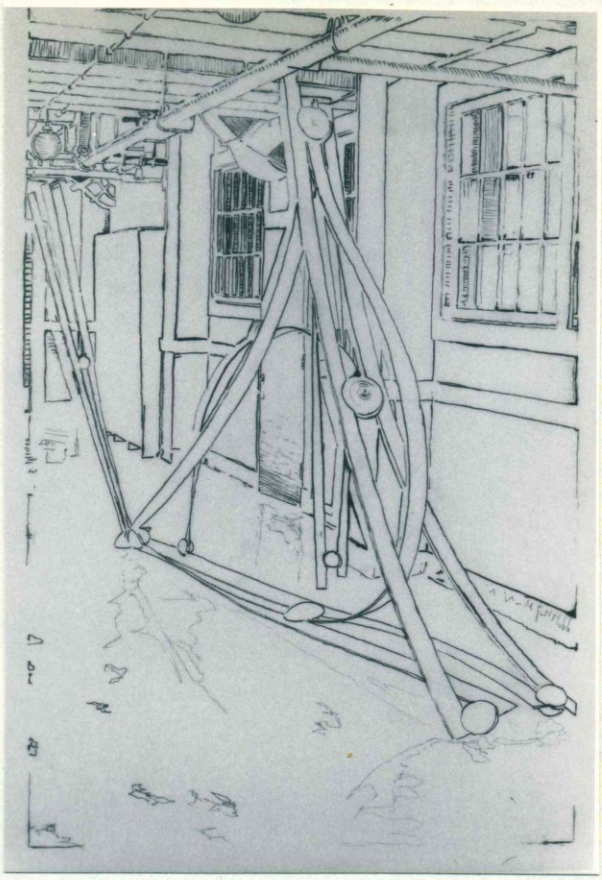


Fig. F Wood construction with interior, pencil drawing, 1981

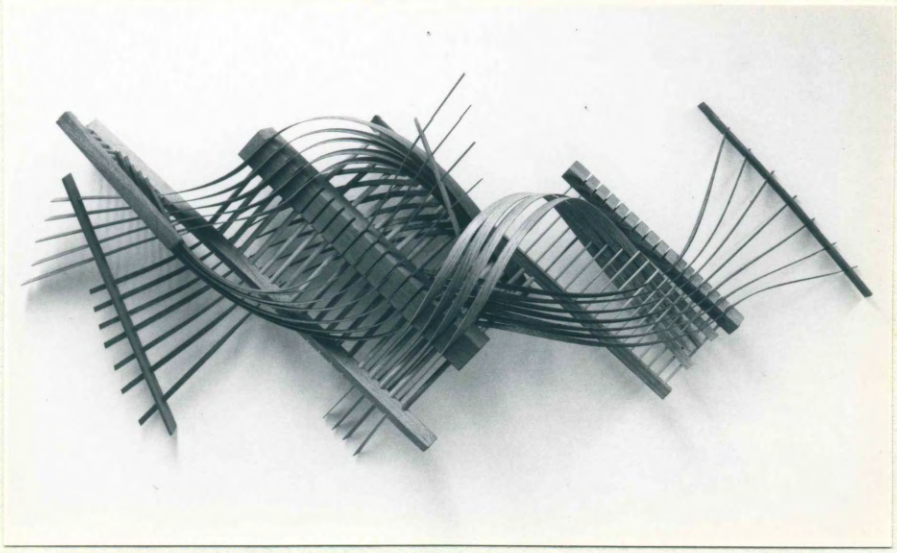


Fig. G Woven grid, mixed hardwoods, 1981

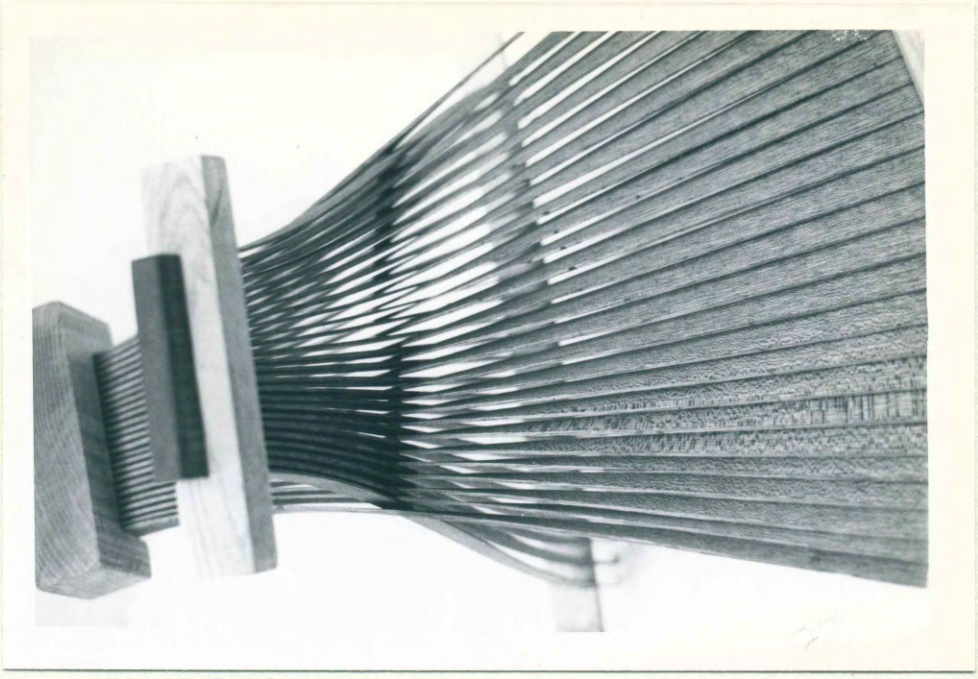


Fig. H

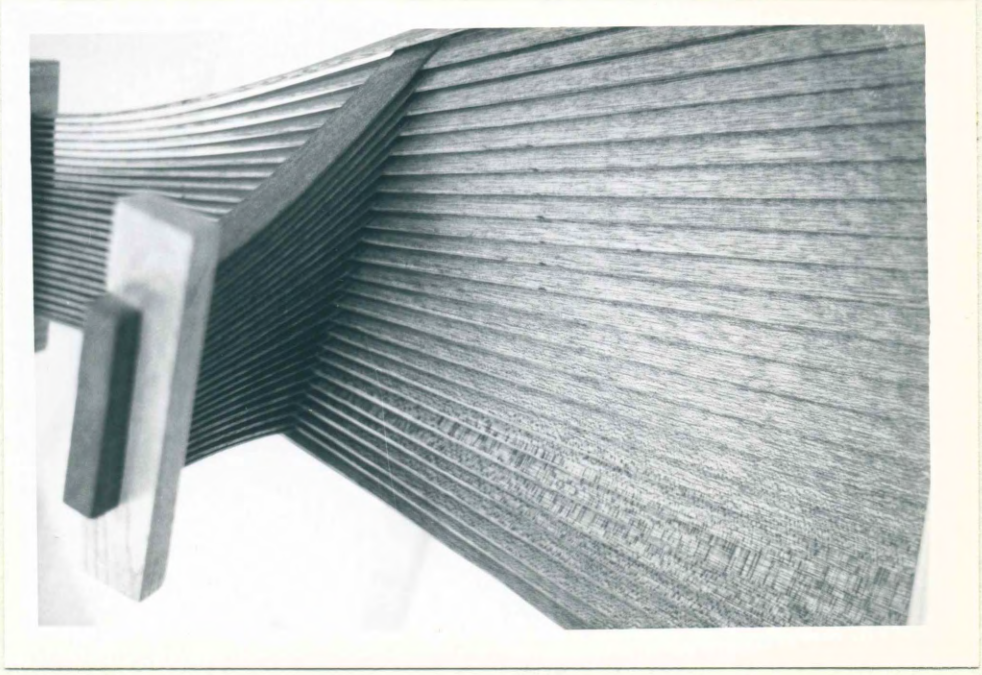


Fig. I

Fig. H and Fig. I, Solid boards which have been cut and fanned out (detail)