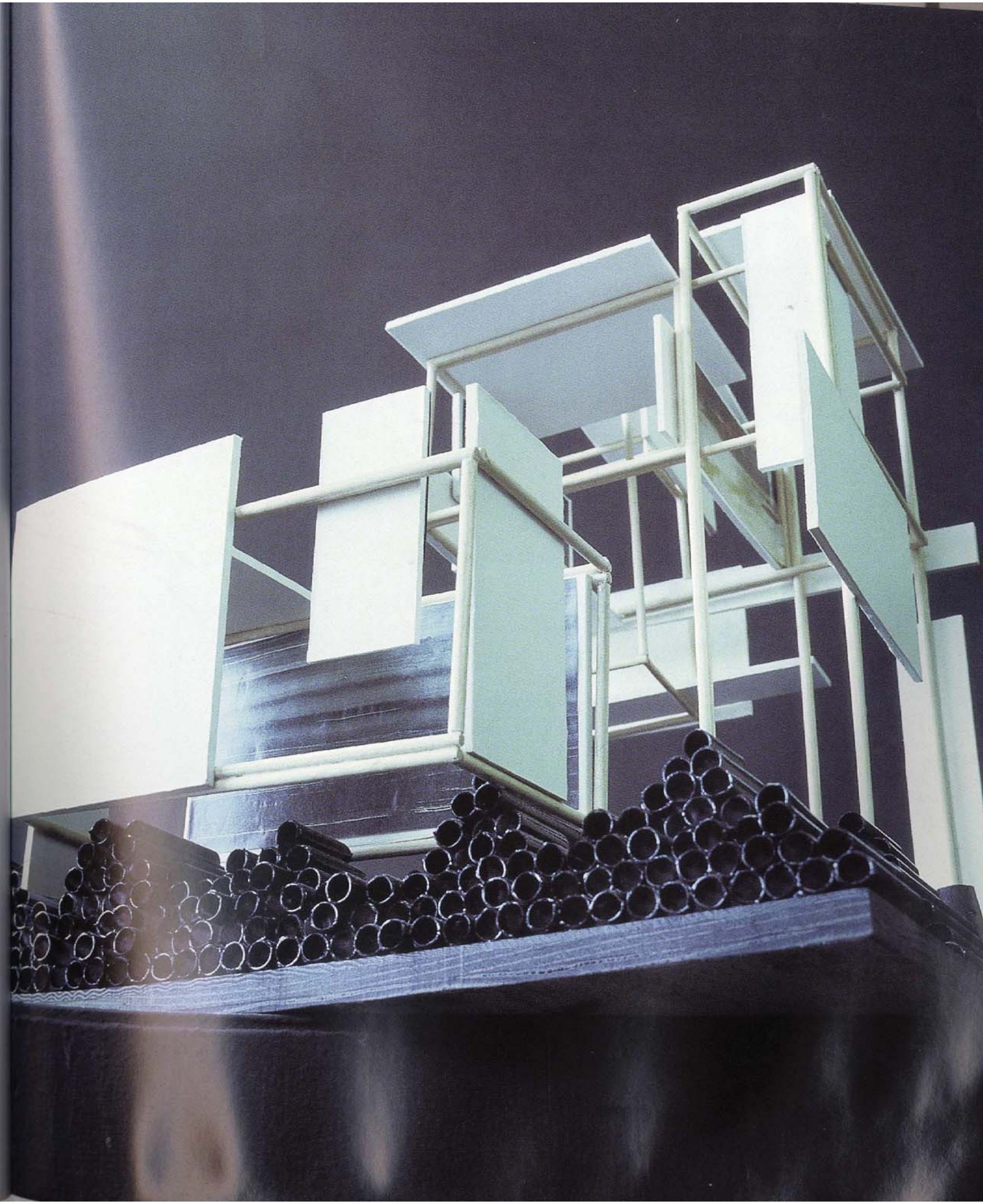
PART III
ADVANCED STUDIES IN FORM

"Whereas in foundation the elements of line, plane, volume, and space are studied thoroughly in simple situations with a high degree of control, the advanced problems pose more complex exercises, which involve the interrelationships of these elements."

PROBLEM ONE: CONSTRUCTION

"The abstract experience based on construction involves the design and organization of contrasting forms, the new experience of grouping forms to create related movements, and a deeper understanding of the balance of directional forces and of tensional positions in space."



The construction is made up of elements in a variety of materials, which may be used as found, or bent or shaped in some way, and then combined. Materials suitable for your construction include metals, plastic, glass (opaque or translucent), wire, string, rods, sheet metals, wood, stone, plaster, fiberglass, masonite, other synthetics. Use a combination of linear, planar, and volumetric elements. You need to have many elements in your construction to express the idea. Your construction should be abstract and emotionally expressive.

To generate ideas, think of some of these things and how you might express their essence in a visual form: electricity, communications, chemistry, construction equipment, travel (land, sea, air), music, circus, rodeo, dance, jazz, atomic power, theater, city. These are ideas that can elicit visual feelings. Use them to develop your own feeling for abstraction.

Do some loose two-dimensional sketches on large sheets of paper to get your ideas out. For example, think of the visual aspects of air transport—both the object and the implied motion. The plane coming up and going down. Then abstract it further. If you were thinking of a helicopter, you might do a series of hanging spirals over a flat surface. Pull the abstraction out and explore it.

Do some quick three-dimensional sketches in cardboard, wire, clay. The emotional content is here, and the objective is to capture it. Once captured, it exists in the exercise to be developed. The idea sketches should be an emotional reaction to the theme and a visual reaction that expresses shapes and movement.

"A design not only has to be structural, it has to appear to be structural. You have to get to recognize structure like you recognize a hot stove."

Search for the best overall proportions. Do some proportion studies of your three-dimensional sketches to find a successful proportion for the design as a whole.

Make a space sketch that establishes the first big tension between planes and volumes or groups of planes and volumes. The tensional relationship must strongly suggest or imply the proportions of the negative volume and establish a balance of directional forces from every position. It establishes the major theme that will hold the piece together. Once you have organized the way the elements sit in space, you can concentrate on the forms themselves.

WORKING IN FINAL MATERIALS:

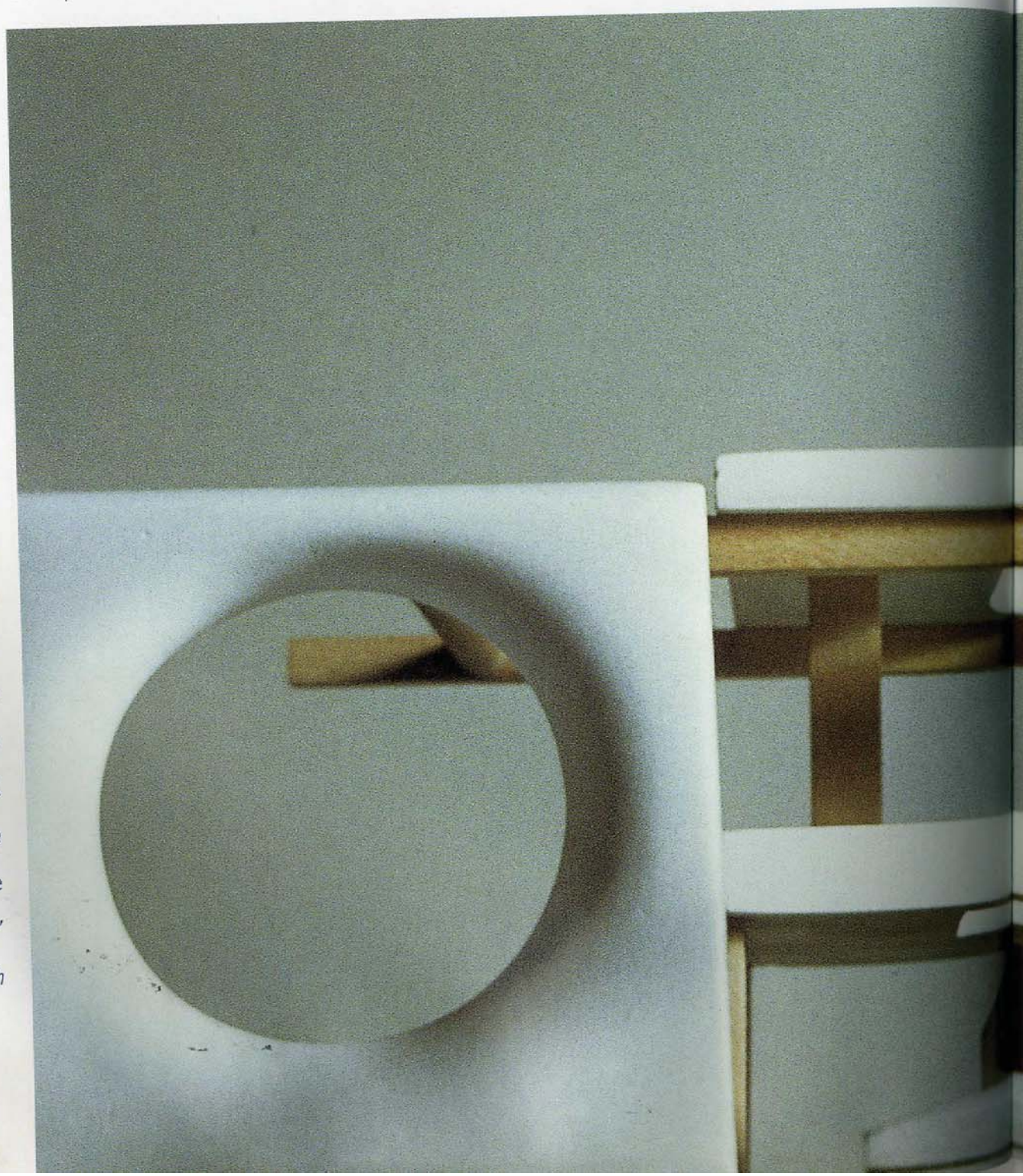
Organize volumes, planes, and lines—in that order. Put together the elements of various materials in a pleasant relationship, using the principles from your previous learning. There are two major objectives here: maintaining the spirit of your idea and learning how to combine materials in a coherent whole.

Establish the dominant, subdominant, and subordinate elements. The dominant element should be beautiful in line and proportion, interesting in character, in the key position, and should express the movement demanded by the space sketch (that is, help the construction tell its story). The subdominant element should be beautiful in line and proportion and should complement the dominant.

Create the first big spatial relationship between the dominant and subdominant elements. This consists of two or three exciting movements that express the whole design and suggest the negative volume. (Be sure to place planes in two dimensions; don't line them up. Remember that spatial relationships consist of movements.)

"Rowena's suggestion of heavy equipment as an idea for the construction problem defined for me what industrial design might be about—that is, real things made up of many parts that all add up. At the time, a woman talking about these things made for an unusual association—like Marilyn Monroe talking physics."

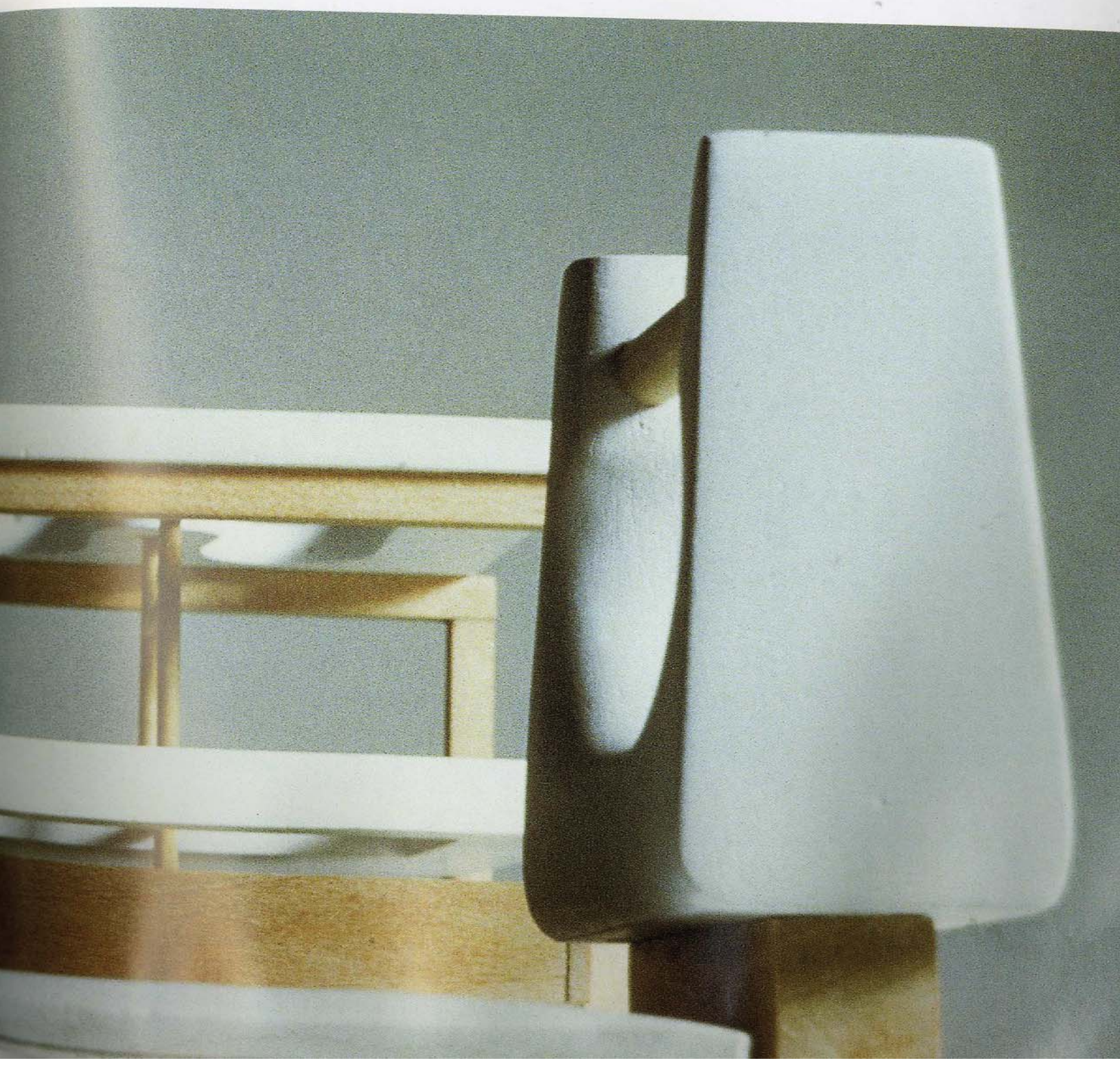
— *Len Bacich*



"Rowena would say, 'Create a relationship that's worth the effort.'"
— *Lucia DeRespinis*

Refine the volumes, planes, and lines. Strengthen the spatial relationships and tensions between elements. Examine all lines in your design, including those created by planes. Ask how they relate to each other in space and position. In this problem, the relationship of surfaces to one another—the transition from one surface to another—is very important. In working with surfaces, you are learning how the eye moves across form and across space.

Establish a unity of all design elements and forces. Be sensitive to the joining of elements. There are two levels to this problem: the visual relationships and interconnections between elements, and how the elements flow.

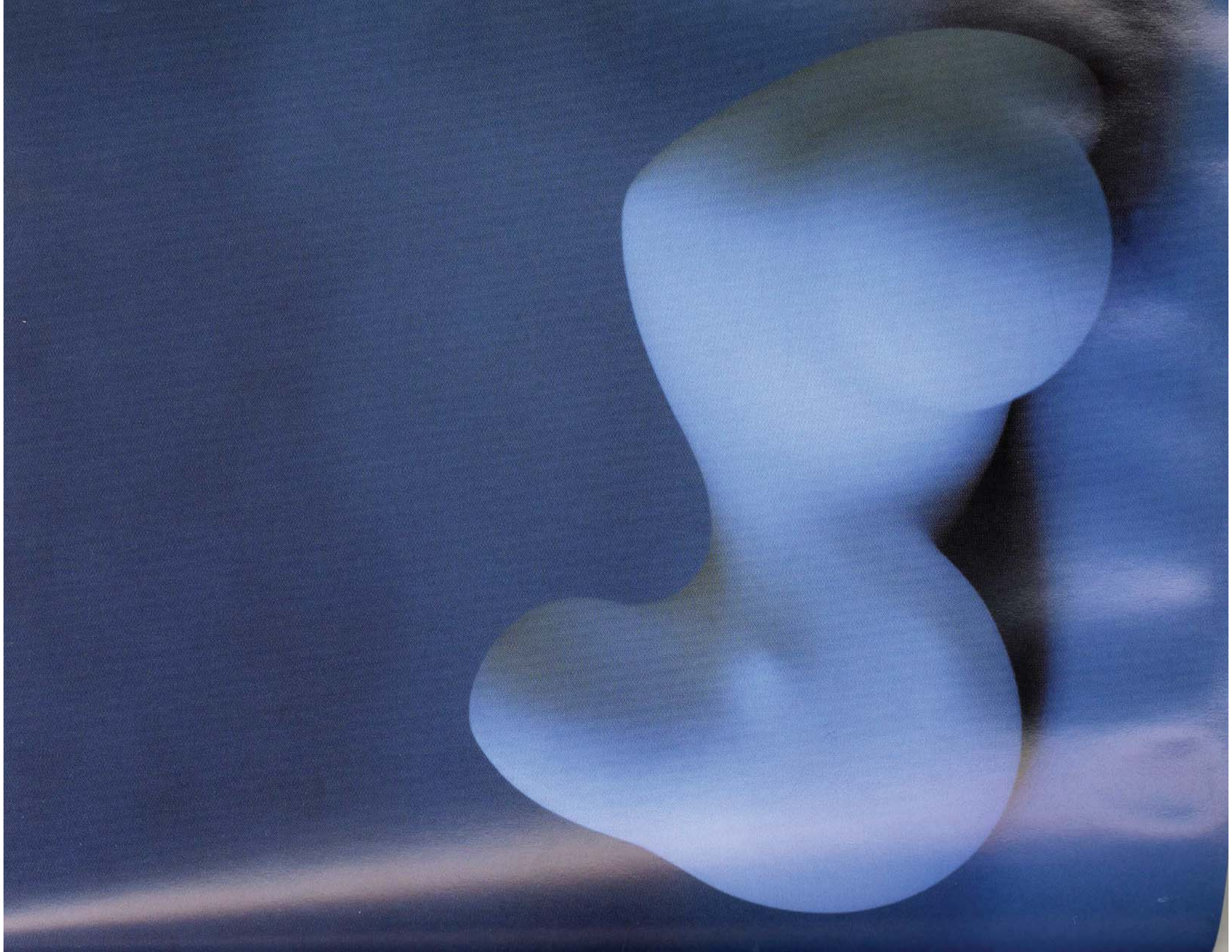


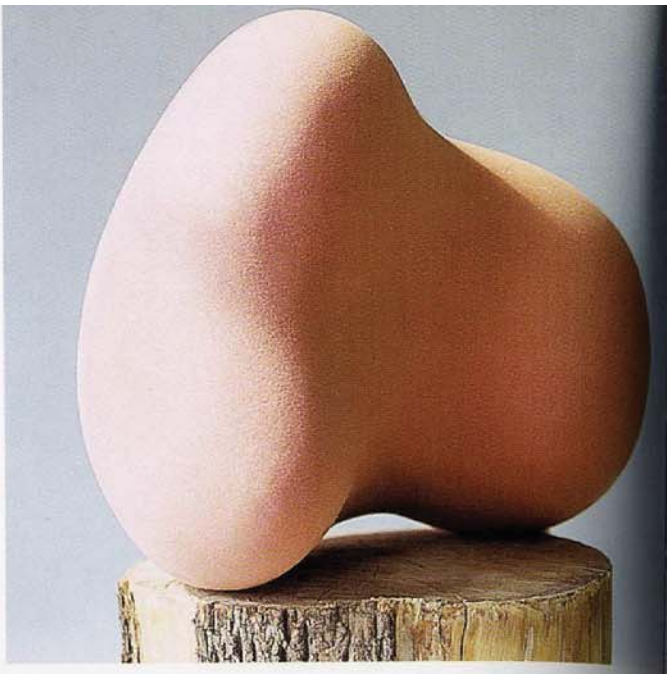
PROBLEM TWO: CONVEXITY

"The result of study with Miss Reed was a marvelous insight into the basics of twentieth-century art in all its forms. Nothing ever looked the same after that year."

— *Doris Rosenquist*

"The exercises in convexity and concavity are based on organic forms. They present the opportunity to explore the properties of a single, specific form. Unlike the dramatic quality of the construction exercise, the convexity and concavity exercises deal with subtle gesture."





Here we undertake an exploration in depth of the subtle and involved relationships between the axes of large forms and the expanding planes of their surfaces, and the sensitive lines of the final configuration. This experience often leads to quite beautiful sculptural forms and can help you achieve a high degree of sensitivity and control of organic volumes. It is an excellent introduction to the problems faced in designing many of the common forms we live with: the telephone, the commode, and the automobile.

Convexity is the expression of positive volume or form pushing into negative space. (*Concavity* is the expression of negative space pushing into positive volume or form.) The characteristics of convexity are weight and bulk. We study convexity and concavity separately, and as we learn about one, we also learn about the other.

Our study of the relationship between the axis, the mass, and the outline is an exploration of how the mass creates surfaces and how the surfaces result in a silhouette. It's the opposite of defining volume the way you learned to do it in grade school. Conventionally, we define shape from the outside in by drawing the outline and filling in the space. This problem comes at it from the inside out. (Before you start, I suggest you acquire a copy of D'Arcy Thompson's book *Growth and Form*.)

Begin by making some sketches of organic forms in clay. Then quickly, with the flat side of a small piece of soft charcoal, make several large configuration sketches (one to a news sheet). Don't illustrate your three-dimensional sketches, but exaggerate or dramatize the qualities in them that you respond to. Use an interesting combination of curves. Stay at least ten feet away from your sketch, and do this from four different positions. The shapes (configuration) should not be too dramatic or the lines may become stylized and run away with the show.

"Always imagine these things one hundred times as large, and you'll see that the proportions make a huge difference."

Next, make some axis sketches using wires attached to planes, and play with configurations on the theme. Your axis sketches should be forceful, interesting, abstract, and asymmetrically balanced from every position. It should have an interesting gesture.

Now make two or more small clay space sketches reflecting your experience. Your sketches must have the quality of abstraction. This is true of any three-dimensional