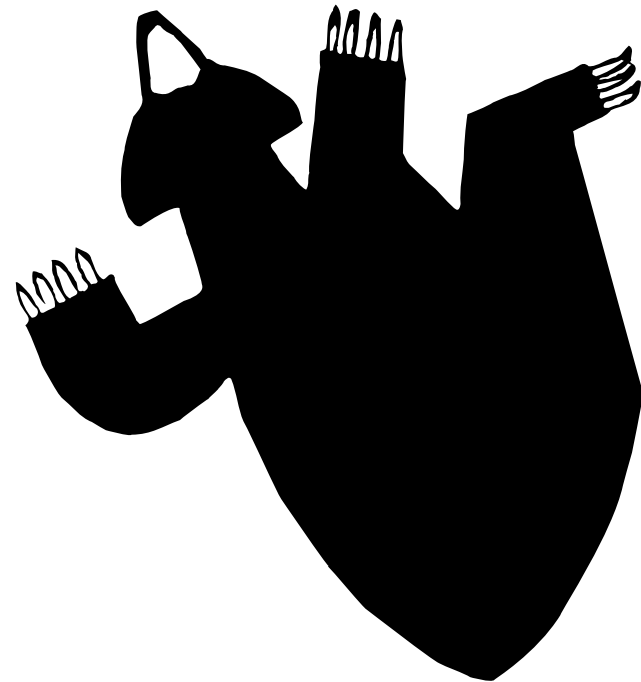


# Introductory Level Perceptual Studies for Beginning Students in Design

## Introduction to Line and Shape Exercises

Now that I have reviewed my images in their entirety, several factors are evident. A number of images were lost over the years. Some during the many moves from one part of the country to another; some to students who borrowed them to make copies for their portfolio and never returned the originals; other images that were borrowed by teachers and never returned; a few were stolen, and in some cases, I simply did not record as many as was anticipated. When I knew that there were a number of examples on file, it seemed unnecessary to shoot more. Unfortunately, the name of students was never recorded on the slide, so in most instances, I do not recall who did what or when. A few of the images are from the first years of teaching at the Minneapolis School of Art. Other images are from the Kansas City Art Institute, Carnegie Mellon University, Arizona State University and Western Michigan University

I have edited the images and am showing only a representation of student work. Those problems deemed more important are represented by a greater number of images. The principal focus is on basic perceptual and communication problems. A few examples of Junior and Senior work are illustrated only to show how introductory studies carried over to upper level work.



An interesting aside for me related to this sequence of problems revealed itself while going through an old portfolio from art school days. I found a travel poster illustrated with a bear that I had done as a second year art student. The bear was handled as a stylized shape similar to what I asked students to do at a later date. The interpretive shape had been my invention and not the teacher's. I suspect that there have been latent inclinations toward this form of design treatment for many years that did not surface until criteria evolved and became clear to me. I think that emphasis on form in drawing, an awareness of line quality and contour developed through teaching the line and shape problems were the contributing factors leading to my definition of student exercises relating theoretical abstract shapes with forms from nature. From 1957 until 1977, I taught some introductory courses but my principal teaching emphasis was at the upper level, and in particular, Senior projects. In 1977, I went to Carnegie Mellon University and there I changed my priority and began teaching some courses at upper levels but the main thrust was at the beginning level. I began teaching the line and shape problem at this time and taught it each year until 1992.

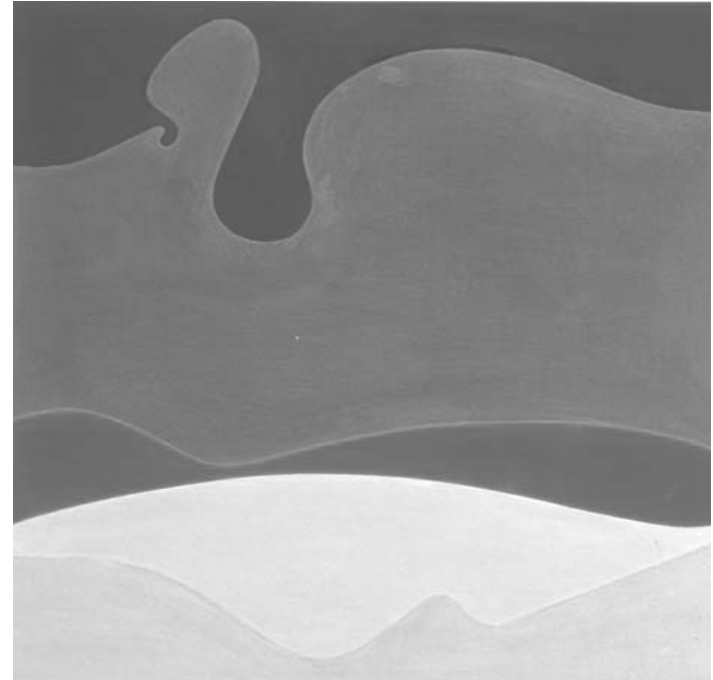
The problems originated with a short exercise done by Inge Druckrey at the Kansas City Art Institute in 1967. Inge required students to design two lines, to fill in between two vertical lines, one of which could be an edge line, and create a shape. Her exercise involved playing one line against another, interval, rhythm of long and short line elements and shape. I think what caught my attention with Inge's problem was designing a line for its own sake. I was familiar with lines describing a subject, but my concerns had always been on the subject. The difference being that content was defining contours rather than contours defining content. The concept of concentrating solely on lines impressed me as being extremely basic, and an ideal platform for developing more complicated design exercises. Over the years, I had given some theoretical shape problems, but for the most part, the studies were unrelated. However, using Inge's line problem as a starting point, it became possible to tie line studies to the shape exercises and develop a sequence of related problems with each one being more complex having additional criteria but incorporating all criteria from previous problems.

Each year I taught the line exercises, new problem definition developed, and I learned better what and how to criticize student work. Initially, students were asked to use five lines and they were permitted to shade (increase or decrease the weight of) lines for Part 1 of the problem.

Next, the number of lines was reduced to four without shading of lines. Later, I tried the exercise with three lines. It was not as satisfactory as four, but it was acceptable when there were time constraints or students could not make four acceptable lines within a reasonable amount of time.

The next innovation in the problem was the introduction of color during the early 1980s. Until that time, all compositions had been done in black and white. Students in the first year were doing a great deal of work in theoretical design, introductory drawing and color theory with strict criteria and limitations. Frankly, much of it was tedious for students, and being abstract, it was frustrating for them. By permitting students to substitute color of their choice for one black or white shape, they felt the work was more individualized. Color did not conflict with my problem objectives as it had more to do with value than color. Once the line problem moved from composition to shape, each theoretical exercise was coupled with an application which was just as theoretical and had the same limitations as the abstract shape. For example, following the simple flat shape, students designed a leaf with the same criteria for contour; for the shape with an illusion of dimension, students designed a fruit or vegetable suggesting form. The finale used all the criteria from proceeding problems and students might do compositions based on a still life of fruits and vegetables, or shapes describing a profession. Other options were doing either a bird, animal, insect, reptile or fish.

I am convinced that combining theoretical and application definitely helped students to carry over and retain what they learned from doing theoretical problems. I have worked with a number of other basic design problems where students did well and seemed to understand the principles. However, they rarely carried over to the next problem what they learned from the one before. I seldom saw evidence that students applied what they learned in the first year to what they did as Juniors and Seniors. With the line and shape problems, I found that application of theory was carried over at all levels and after students left school.



At Arizona State University, students were required to keep progress books. This was a good addition to the problem because it was effective in showing student progress with both eye and hand skills. Also, students wrote descriptive notes regarding their understanding of the problem and what they learned.

I had concerns that this sequence of problems might result in formulized solutions. However, watching student progress in later years, I found this was not true for most students. All the student work was similar in the beginning, but as they grasped criteria, they were more sensitive to line and shape, and the work became individualistic as they progressed through school and into the workplace. In my own experience, this has proven to be the most effective perceptual problem that I have worked with at the entry level. I also found that each year the problem was given, my own visual skills improved and something new was learned in the way of interpretive criteria, or in how to present the problem to students. I don't think I ever taught problems exactly the same two years in a row. I think that success with line and shape exercises is due to sequencing a number of related problems with each step building on the ones preceding it. A series of related problems with incremental criteria and appropriate limitations set by the teacher are highly conducive to student learning. During the first three semesters, exercises in all courses should be related and sequential with expanding complexity and criteria. However, there should be consistent criteria and demands for all first year courses. During the last three semesters, problems should be diverse as possible with new areas of criteria based on professional practices and technology, but the basic, visual criteria should be continued from the introductory classes. Criteria for the very first exercise should be relevant to the last problem before graduation. Criteria should be limited, factual and understandable permitting students to make critical analysis of their work at all levels of the program. Problem limitations should be conceived by the teacher to keep students focused on problem objectives. As students acquire experience, imitations are gradually reduced.

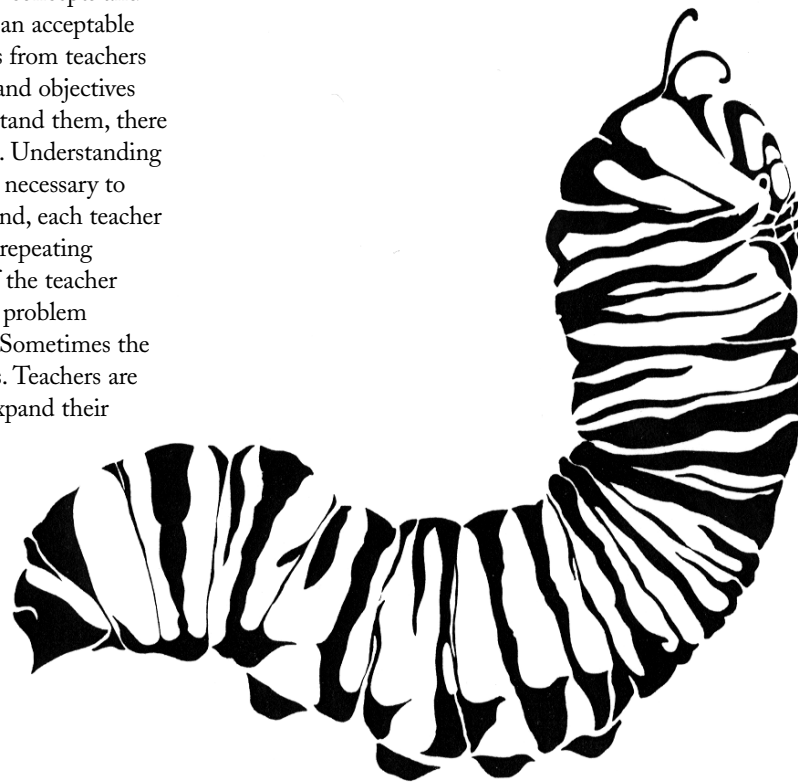
Other critical factors are each student working at their own pace with emphasis on nuances. Nuances are identified as those minute refinements that make such a huge difference in the final image. Working on nuances accomplishes three important objectives. Refinements sharpen the eye, improve handskills and they lead to self-discovery.

Each stage of the problem demands exploration which requires students to make numerous critical judgements using criteria provided by the teacher. Teachers need to force student exploration as it is such an important part of the learning process. Because abstract exercises and applications are done simultaneously, I think students better understand the theoretical problems. At this level, students rarely understand abstract imagery or how it relates to what they want to do. Because applications deal with subjects that they can identify and comprehend, students make connections between abstract considerations and content. Most students acquire an ability to look at an image both as an abstraction as well as a representation. It helps them to better understand abstract imagery in general. The line and shape problems work extremely well in conjunction with other courses in visual communications, drawing, letterform or color theory. The same criteria applies to all areas and if teachers work together, there are tremendous opportunities for reinforcement which greatly enhance the educational experience for students. It is extremely important for teachers who next have the students to be aware of what students did in these problems, and that they reinforce what the student learned by demanding the same consideration for line quality, shape, composition and color. Equal demands on craft, studio discipline and professional demeanor have to be reinforced throughout the entire program of study. Without this reinforcement, students may not follow through with what they learn. Follow-through by other teachers is essential! When looking at student work produced for this sequence of problems, it is necessary to keep in mind that it is done in the first year of design studies. It is not perfect. Students come into the course with weak handskills, little experience with abstractions and no knowledge of design principles. Most have never been exposed to drawing, letterform, basic design or color. Students are undisciplined and work-habits tend to be poor. The first year of studies is the proper time to establish student attitudes, values and work habits.

It is not my intention to present a *how to* publication about teaching introductory classes in Graphic Design. Furthermore, I think it would be a serious mistake to make that interpretation. Each teacher must find content, problem definition and sequence with appropriate criteria according to their interests and objectives. My purpose is to convey as thoroughly as I can my own experiences and methods in teaching with the hope that they are helpful to other instructors.



Much of what is described here could be applied to teaching color, composition, drawing typography or other facets of Graphic Design. My failures and successes, insights and assessments might suggest directions, considerations and procedures which can be adapted to other approaches in basic studies. Over the years, I borrowed many concepts and problems from other teachers and this is fairly common and an acceptable practice. Most teachers begin their careers by using problems from teachers who taught them. It is only important that problem criteria and objectives are clearly understood because if the teacher does not understand them, there is no way students will ever benefit from doing the problems. Understanding precedes learning for both teachers and students. It is always necessary to interpret and redefine problems into personal terms. In the end, each teacher must find their own way. There can be considerable value to repeating worthwhile problems year after year. This is particularly so if the teacher stays in a learning mode and each year experiments with the problem searching for better ways to present, critique and evaluate it. Sometimes the content can change without changing the problem objectives. Teachers are expected to learn each year just as students are expected to expand their abilities and knowledge.



## Line and Shape Problems

### Objectives

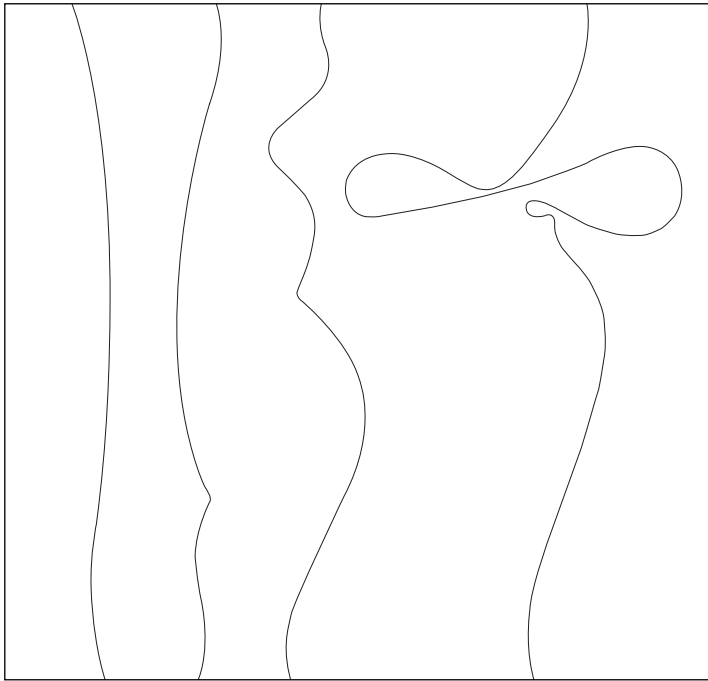
Developing eye and hand skills, using the pencil as a tool, learning design process, criteria and terminology. Being the first class in Graphic Design, it is important to establish good work habits, discipline and an introduction to critical analysis of work. These are *reinement* problems and self-paced as it is meaning less to advance students who do not understand or can not do the exercises. By allowing students to progress according to abilities, those with more experience or talent do not become bored, and good but slow students do not feel undue pressure. Deadlines come later in the program. Students should keep a progress book beginning with line studies from the first day of class. The sequence of problems works best spread over two semesters. However, by reducing the lines to three, I have done the problem in one semester. I have worked with only one line in a three hour workshop and had reasonable success.

### Materials

HB or B pencils and pencil sharpener  
14 x 17 tracing paper pad  
Fine line marker or black ballpoint pen with a fine point  
wide nib marking pen  
soft eraser  
colored pencils or color markers  
plaka  
illustration board for 16 inch square presentations  
10-inch square railroad or poster boards.

## Lines

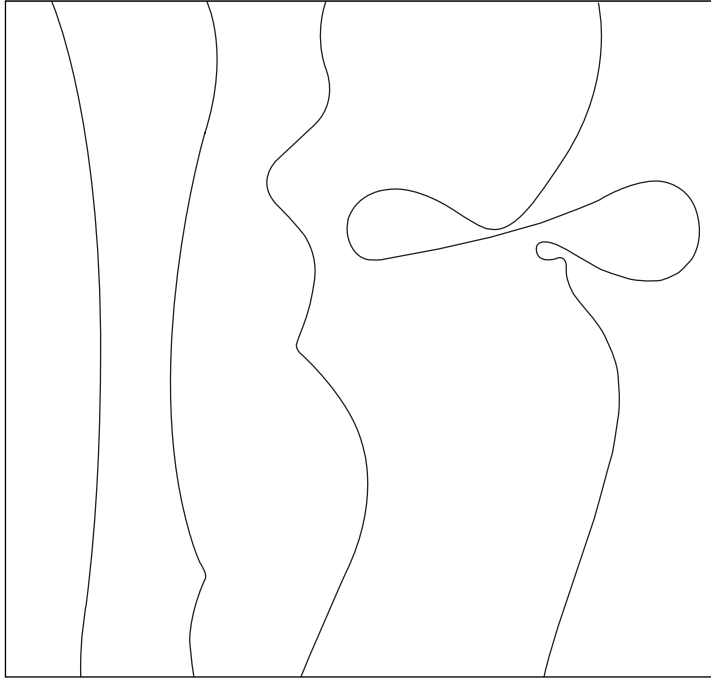
- 1 Using tracing paper pads, students rule two horizontal lines 10-inches apart. Beginning at the left, they design 10-inch lines of varying activity ranging from 1 (nearly static) to 4 (extremely active). The lines must flow without points or breaks, running from top to bottom; lines must enter and exit vertically. Number 1 line is almost static, number 4 is the most active with increments of increased activity between the two extremes for the 2 and 3 lines. Lines are composed of curves and straight lines. The curves are not repeated in the same line but rather some combination of flat, pointed, small, large, symmetrical and asymmetrical curves combined with straight lines of different lengths. Symmetrical and asymmetrical curves are determined by dropping a vertical line from the peak of the curve and comparing what happens on one side to what happens on the other in terms of symmetry.
- 2 Lines are done by hand without rulers, straight edges or flexible rules. Lines are constructed with short pencil strokes and a sharp pencil. It is impossible to control lines drawn as a single stroke. Students are encouraged to erase parts of lines and explore alternative solutions. The erasing and exploration of other solutions represent a refining process which is also the learning process.
- 3 The lines should not parallel side edges, curved lines should not parallel top or bottom edges. To keep tension, the bottom of curves do not sag, and all transitions are smooth.
- 4 The most active line usually involves closure and implied shapes. The implied shapes are designed as diligently as the lines. If the 4 line is active from top to bottom, it does not appear active. Activity is confined to a segment of the line and contrasted above and below the activity with relatively static lines. The activity needs to be on both sides of the line axis in order to achieve balance. If students are having difficulty grasping the concept, I have them draw simple, static lines and construct the activity into a segment of that line paying particular attention to working out transitions. Implied shapes must vary in size and definition.





- 5 While closure is a consideration in the most active line, it should not occur in the other lines. Closure on the less active lines is a fairly common mistake by students. I am demanding in terms of line quality, transitions and that all curves are filled out without flat spots in curves; there is line tension and that the line is visually interesting. There is no sense advancing students until these conditions are consistently met by students. To reach this point usually takes four to eight weeks. After a student has done a page of lines, they are asked to indicate the number for each line (1 to 4), and to put a small  $x$  under the lines that they think are good ones. When the student and I are in agreement on a good line, they transfer it to a *save* sheet. It is carefully pointed out to them that it is impossible to trace the line, but putting the line under the save sheet provides a guide for *redrawing* the line.

Most students have success with the two and three lines first. With these lines on the save sheet, students can focus on the one and four lines. Students might have several different lines for each number giving them more options when they begin working on the composition. It is absolutely necessary for students to demonstrate sensitivity for both the line and pencil. Students should not move forward with the problem until they consistently meet these conditions.



## **Criteria**

### **Line quality**

Sensitivity using the pencil. I do not accept lines pressed into the paper or done with a blunt pencil point. Students must show sensitivity in the use of the pencil and line quality.

### **Line intent**

Regardless of whether the line is somewhat ragged because of its construction with short pencil strokes, all the transitions should be perfect and curves filled out. It also refers to what a student does on one part of the line dictating what happens in another part of the line. All lines must flow smoothly.

### **Line tension**

Line reflects tension; I explain and demonstrate tension with a flexible steel ruler. By compressing the ruler, it bends into curves which reflect tension because of the force used to compress it.

### **Line activity**

Seeing and understanding the concept of line activity. The amount of curves, fullness of curves, and implied shapes dictate activity. As a line become more active, the lateral space filled by the line usually becomes wider. I try to be careful to point out to students that criteria given is established for this problem, and it does not necessarily apply to every problem, i.e., in this problem, elements are not repeated, but in another situation, repetition might be an ideal solution.

### Working Procedure

I took a desk at the front of the class and students came to me to ask questions or show their work. When evaluating one student's work it was beneficial if other students were there listening and watching. Sometimes I would ask another student to critique the work in front of me. This procedure stimulated student interest and participation. Also, it was an inducement to articulate what they were doing which aids the learning process. Throughout the entire program, the teacher must control the class in terms of student behavior. The studio should be absolutely quiet with no visiting, radios or headphones. If students need to talk, encourage them to step out of the studio to do so. Stress concentration on the work. Point out how talking or unnecessary moving around not only destroys their concentration, but also that of others around them.

### Typical Criticisms

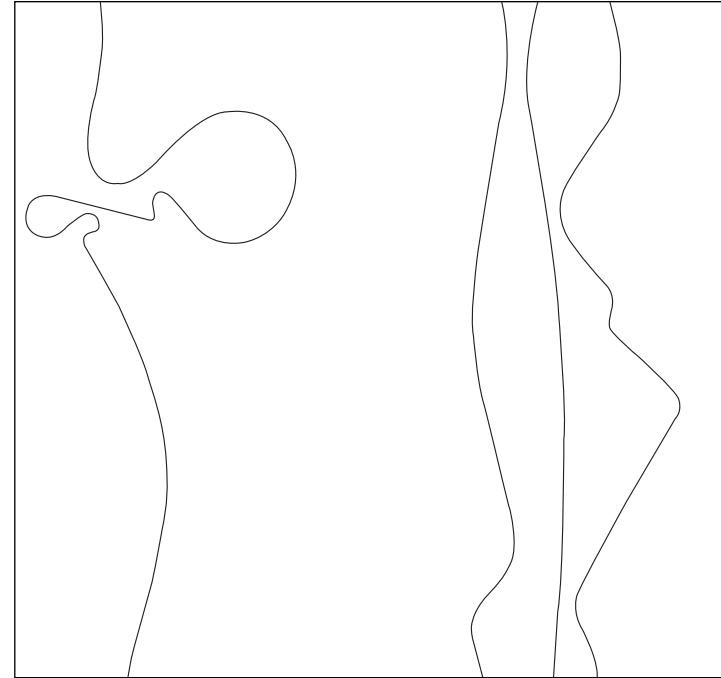
- This line is broken. Can you show me where?
- There are flat places in the curves, mark them for me.
- This is a wet spaghetti line with no tension.
- All the curves are about the same scale. Try making some larger and others smaller.
- Although you have changed the scale, all the curves are the same. Mix in pointed, asymmetrical, flat, etc. for a more interesting line.
- Variety is the spice of life and visually interesting lines!
- You are bringing this curve back too far making a rather ugly shape and one that will be difficult to work with other shapes.
- This curve is limp. More tension in the line.
- This shape is sagging. Don't draw the implied shapes vertically. Try and keep them more to the horizontal so they can work in a dynamic (oppositional) relationship to the other lines.
- The peak of the curve is in the exact middle of the line. Move it up or down.
- You are entering the picture plane at too much of an angle creating an ugly triangular foot which will give you problems at the composition stage.
- You are pushing too hard on the pencil. By pushing too hard, you lose control.
- Your pencil is too dull and you are losing line quality. Sharpen the pencil!
- You are holding the pencil at too much of an angle and the strokes are too broad. Hold the pencil at a more vertical angle and use the point.
- On this shape closure (4 line), the neck is too long and the lines too parallel.
- On this shape (line 4), if I draw a horizontal line through the middle, the top half is exactly the same as the bottom half. Play one line against the other to make the shape more interesting.
- The line (4 line) has equal activity from top to bottom which reduces the illusion of activity. Within the line, play the highly active segment against the relatively static segments.
- Too many curves for this line. You need the contrast of curves to straight.
- Restrict activity to a segment of the line.
- Construct the line! You cannot draw it with a single stroke.
- You are bringing the bottom (or top) of the curve too far back creating an ugly negative shape.

Continued.....

- Try to visualize the line and then draw it. Feel the line as you draw it.
- Use the pencil with sensitivity.
- You must concentrate on the line as you draw it. You cannot be thinking about something else or visiting with your neighbor and be successful.
- This part of the line looks good but this part does not work.
- Save the good part and erase the other and try some alternative variations.
- On this closure, the ends of the implied shape are tangential which allows the eye to skip by the shape. Try extending either the bottom or top line of the closure creating an oppositional relationship between the two lines.
- Try to avoid the tangential relationships.
- Chatter! Chatter! Chatter! It is impossible to talk and work on lines at the same time. If each of you is concentrating as you should, this room would be absolutely quiet.
- You know the criteria. Before you bring work to me, ask yourself the questions related to criteria, make the judgments and corrections before bringing the work for discussion.
- Get out of here! You have been to me every five minutes. Go back to your desk and work. You are becoming dependent on me when you should be dependent on yourself. I don't want to see you again until the end of the period.

## Line Composition

The next step is to arrange the lines as a composition in a 10-inch square on tracing paper. On the composition, students may turn lines upside down, flop them, or modify lines as necessary to improve the composition. They may draw entirely new lines if it makes the composition better. Lines cannot touch or overlap and must enter and exit the picture plane vertically. In order to control interval, students use the lines to define a major and minor shape. They cannot incorporate side edges as part of either shape. Major and minor shapes relate to enclosed areas, and the distinction between the two should be extreme. The spaces between lines become *shapes* and the lines become edges or contours. Students should be made aware and sensitive to shapes and which ones are visually interesting and those that are not. The typical student approach to the composition problem is to take a clean piece of tracing paper and draw a 10-inch square in the center; the lines on the save sheet are individually cut out. The students then arrange the lines under the 10-inch square. Students experiment with turning lines upside down, flopped and in different combinations until they find something worth redrawing on another piece of tracing paper. I encourage this approach as it requires multiple decisions within a short period of time, and each decision is a critical judgement. This activity is most inductive to self-discovery by students, and as such, it is an important part of the learning experience.



### Evaluation

- 1 This involves playing one line against another. I stress the dynamics of opposition; lines working against lines, pointed curves against flat curves or straight lines, activity against static, large to small, etc. Curves should not repeat within the line, and scale and line elements must vary. One curve should not butt against another creating a *bottleneck*. A sharp pointed curve works against a flat curve. Activity in one line plays against a static area in another line, generally it is best to not play activity against activity as it tends to result in unstable shapes.
- 2 Avoid parallels such as a flat curve against another flat curve or straight line creating nearly parallel shapes. In these instances, modify the curve to a sharp pointed curve so that the shape between the lines is continually decreasing or increasing.
- 3 Students must examine each line in relationship to all lines in terms of shape, not just the shape created between two lines but the various shapes made between one line and all other lines.
- 4 It seems to work best if the number 1 line is not used next to either side edge because in effect it is putting two inactive lines together creating a relatively static and dull shape.
- 5 Activity in the composition should be somewhat balanced so that all the activity is not on one side or limited to bottom or top of the composition. The most active line with implied shapes creates the focus. Consider carefully where in the composition you want to put the focal point.
- 6 Students should do a number of trial compositions in pencil lines, numbering each one sequentially, and they mark the three they think are best in a 1,2,3 order with 1 being the best. When I concur with the student assessment of the composition, the student moves to the next step.

### **Typical Criticisms**

- Now that you are working on compositions, you are getting sloppy and line quality is terrible! I don't care if you are sketching everytime you draw a line, take the time to do it right and as well as you possibly can. Believe me, you need all the practice you can get!
- These two lines are parallel. The shape between lines must always be changing by either expanding or decreasing but never parallel, creating a static shape.
- The activity in this line against the activity in that line is making a very unstable shape. Perhaps you should either turned one line upside down or redrew part of one line. Try sliding one line up or down and adding to the length of the static element.
- The triangular shape with a neck at the bottom (or top) is too symmetrical and not particularly interesting. Try playing a curved line against the straight line. Why not try containing the activity of the line 4 by playing it against an edge line.
- This line is too parallel with the edge line. Try tilting the line.
- This combination of lines does not seem compatible. Put in the three lines that work and design an entirely new line in relationship to the three lines.
- Not enough distinction between major and minor shapes. Make the difference more pronounced.
- Maybe it would work better if you eliminated some of the activity in this line. Play around with it.



## Shape Composition

On tracing paper working at the 10-inch size using a fine line marker and a broad nib marker, students explore all the black and white possibilities. They can have a combination of black/white shapes and black/white lines. It is absolutely essential that all lines be very fine and sensitively rendered. A heavy, poorly drawn line destroys the entire composition. Fine, sensitive lines work much better! Exploration of black and white possibilities usually involves eight to ten compositions. Students should be made aware of the figure-ground qualities of the compositions, the ambiguity of spatial readings, which are most interesting. Also, tensions between lines and shapes are noted and become part of the student evaluation criteria. When compositions are filled in, there are a variety of shapes, and students make comparative evaluations of these shapes from one composition to another. Spend time with students discussing the various shapes as to which are visually most interesting and how the ones that are not can be improved. Point out to them not only shapes between two lines but the shapes between one line and each of the other three lines. Try and get the student to articulate their evaluations and objectives for improving the composition. Students periodically pin-up and study their compositions. At the end, they mark those they believe are the best with a 1, 2, and 3 priority with 1 being the best. These are discussed with me and when agreement is reached on which is the best, the student moves to the next step. I do not permit students to reduce the size or to make photo copies of the composition to fill in during the exploration stage. Students need the practice of drawing, and they tend to get sloppy at this stage with both the drawing and filling in with marker. I stay demanding of craftsmanship in every respect.

### Typical Criticisms

- You are really sloppy! Use the marker carefully so not to lose line quality.
- That line is terrible. For a line to work in the composition, it must be done as a thin, sensitive line. You cannot do it with a broad tip marker!
- Don't outline the square with a marker. Use the pencil.
- Now that you have filled this in, the shape is ugly. You might try redesigning that line.
- Study the compositions you have made and figure out how they might be improved or make new ones.
- I don't think you have found one that works well. Try some more.



## Color

Students can reduce their composition to half-size and do a color investigation on tracing paper with color markers or pencils. Color shapes cannot have a black line defining edges. It is necessary to see color edge against the black or white.

Substitute color for one white or black shape. Particular attention is given to value as this is the most important consideration and students should investigate value relationships. The choice of color is almost immaterial. The important thing is whether the color boundary is soft or hard.

### Typical Criticisms

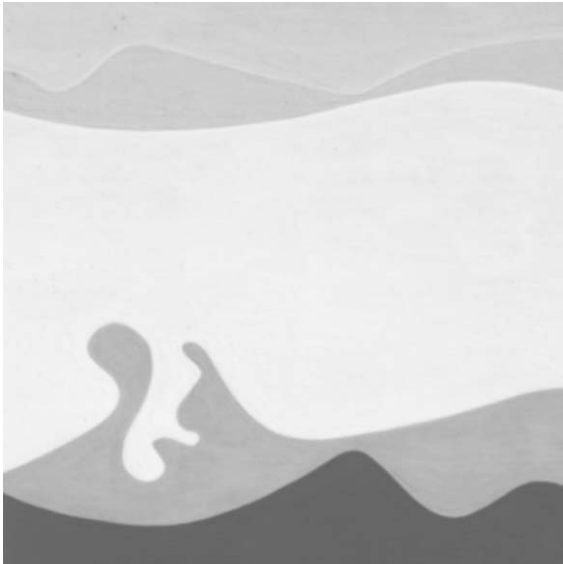
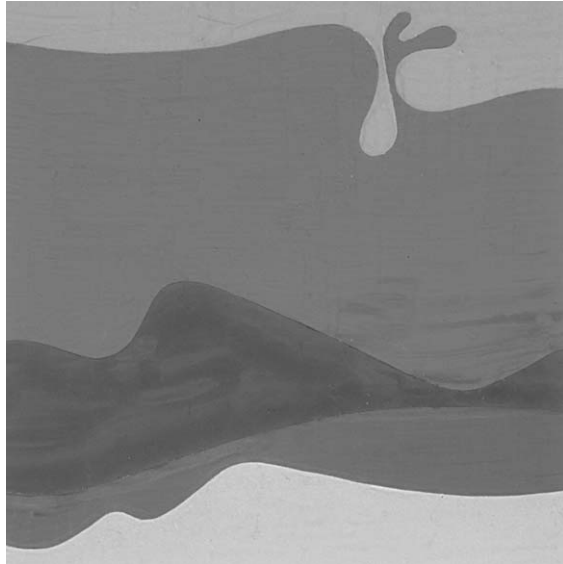
- I don't think it makes any difference what hue is selected as it is value that makes the difference. Using the same composition and shape, do one color as a light value, middle value and another with a dark value. See what happens and then decide what you want to happen.
- The amount of color to the amount of black is about equal. One cancels out the other. Remember in the color class the problem dealing with *how much to how much?*
- Even though these are sketches, you are really sloppy. Take more pride in your work and do them carefully.
- I don't think you have explored enough options yet. Do some more.

### Presentation

On a 16-inch board, students visually center a 10-inch square drawn in pencil. They put in the lines 1 to 4, evenly spaced. Tracing paper flap when completed. The lines can be done in pencil or with a fine pen. I usually required them done in pen. This is another tool and medium for the students to master. The 10-inch square is always done in pencil.

On a 16-inch board, students visually center a 10-inch square drawn in pencil. Using plaka, they paint the black, white and color composition. I am as demanding of line quality with a brush as with pencil. The plaka color shape must be well done without streaks, build-up or unevenness in the color. Tracing paper flap when completed. The 10-inch square is always done in pencil.





## Color Interpretation of Composition

As students have been doing the four exercises from Alber's color course: color boundary, visual mixture, color interaction and how much to how much, a color interpretation of the composition has been added to the repertory of exercises. Using one of the Alber's color principles, students work out a scheme where color is used in all five areas. There are no lines, only edges. Exploration is done on tracing paper at half scale using colored pencils or pastels. When one or two compositions are selected, they are translated as vertical stripes representative of areas or amounts using color-aid papers (about 3 x 3 inches.) When the final selection is made, it is put onto a 15 x 15 inch board and painted with gouache.

After doing this exercise once, it was found that the boundary principle had the greatest significance. The boundary could be used to accentuate either a shape or a line, or it could be used to diminish a weak shape or line. It could also be used to establish spatial relationships. The more successful projects used a vivid color for the minor shape and then some variation of the analogous colors on either side of the key color. For example, an intense red might have purples into blues on one side and oranges into browns or yellows on the other side. Students experienced great difficulty laying paint into even, flat surfaces.

By the end of the semester, each student should have four 15-inch boards. One is the lines in sequence with ink or pencil, one is the line composition in ink, one is the shape composition in black and white with plaka, or color substituted for one black or white shape, and a five color composition done in gouache/plaka/acrylic.

Students prepare a progress book with a sheet of white bond between sheets of tracing paper. The book will have a cover with student's name, class number and date. Students can design the cover and the book is spiral bound.

## Second Semester

A few students will still be completing the color board from the first semester but the majority of students will begin working with shapes. The supplementary course for the second semester is based on visual principles. Students will still be working with cut paper as it is most conducive to the exploration that leads to learning. Also, it prepares students for a compositional project near the end of the semester.

## Shapes and Compositions

This past year I changed the presentation of the first exercises by lumping them as one rather than assigning them individually. The innovation was particularly well received by students. Students were directed to design a non-biased abstract shape that appeared as a flat plane with an elegant contour. They were to do another non-biased shape where the contour described dimensional form. They were to design a leaf that represented an application of the flat theoretical shape. They were to design a folded paper construction that when filled in, it retained an illusion of dimension, and/or they could design a fruit or vegetable where the contour suggested form. All of these options were presented at one time and students could select the subject and sequence. Some students did all five exercises, some did three or four but everyone had to do two; one flat and one dimensional. I would recommend that the exercises be assigned as just described, but the following has been retained as a record of what went before.





## Shapes

Initially, students were asked to put the simple and complex shapes and applications (leaves, fruits, vegetables, etc.) on separate boards. For two years, students were instructed to put the theoretical flat shape and leaf on the same board. This is the same with the complex shape and fruit or vegetable. I finally decided that it worked best to put each on separate boards. In comparison to the *reinement* problems up to this point, these are *demonstration* problems and not as much time is used as on *reinement* problems. It helps the student to better understand theory application through doing them. Students tend to think they are doing something different and forget the criteria from previous exercises. The teacher must emphasize the previous criteria.

## Flat Shape

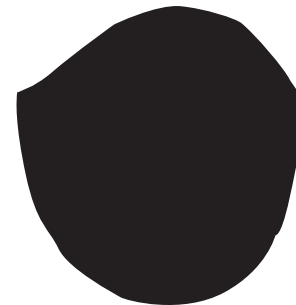
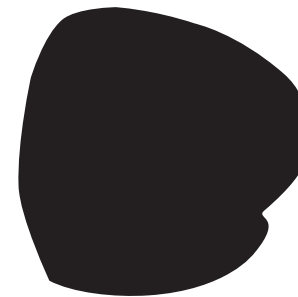
Design a simple flat abstract shape which is unbiased (wide as it is high). Students can use one point. The objective is a simple, elegant shape. Line quality is critical to success with the simple shape. Criteria are proportion, tension curves and line quality. The problem can begin with unbiased geometric shapes such as a two and one-half to three inch circle or square, and modifications.

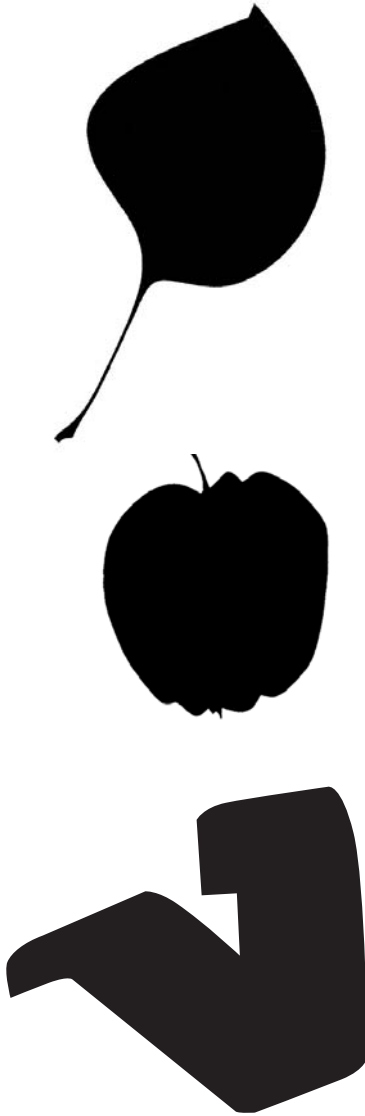
### Typical Criticisms

- The shape is wider than it is high. They should be unbiased!
- Not enough tension in the lines.
- Look where the point is directed. Put the point into opposition with the line on the other side.
- These two lines are too similar. One of them needs to be changed.
- Concave lines are particularly difficult to use on this problem unless they have real tension.
- Look at the relationship of the shape to the bottom edge of the board. By putting the flat curve on the bottom, it is nearly parallel to the bottom edge.
- Rotate the shape until you find the visually most interesting position.
- Try flopping the shape and see what happens.

### Presentation

The design is to be visually centered and done in black plaka on a 10-inch square board. Just recently, I have become aware that students also require instruction in how to visually place the shapes on a 10-inch square. Formerly, I required the student do a marker fill-in on tracing paper, cut it out and position it and then run it by me until I gave them the okay to put it on board and plaka the image. Students first of all did not know how to visually center the image, leaving slightly more white at the bottom than at the top, with sides appearing equal. This is visual centering and not a mechanical or measured centering.





### **Complex Shape with the Illusion of Dimension**

Design a complex abstract shape which is unbiased that suggests dimensionality. Students had difficulty understanding the problem objective and floundered about. When one student found a solution, invariably all the other students would do variations of that approach. In recent years, I have found the best way to accomplish this demonstration problem in the shortest amount of time with the greatest variety of solutions is to have the students fold a 6 x 2 1/2 or 3 inch strip of paper twice (one fold at a right angle and the other fold is the student's choice), and for them to draw it. The first studies are done in pencil with all lines drawn through to properly establish the reference points that create an illusion of dimensionality. There should be concern for the quality of shape, and that the dimensionality is obvious when filled in with black plaka on the 10-inch square board.

#### **Typical Criticisms**

- Try rotating the shape and find the angle that best presents the shape.
- Try setting the shape on its most pointed line so it is oppositional to the straight horizontal line of the bottom edge.
- You will not get the illusion of dimensionality with concave lines or curves. Rely on the points.
- Try drawing the shape with pencil and draw through the shapes to accurately place the reference points.
- The scale of elements is too similar. Vary the sizes and shapes.
- The shape is much longer than it is high.
- Watch the direction of the points, and vary the size and angle of the points.

#### **Presentation**

Draw four 10-inch squares on tracing paper, and do a marker fill-in of the shape in different rotations. When the best placement is determined, visually center the image on a 10-inch board and paint in with black plaka.

## Application of Theoretical Flat Shape

Choose a subject from nature which is naturally flat, such as a leaf. Design the shape using line qualities and criteria learned in the previous problems.

It is usually necessary to demand carry-over from previous problems.

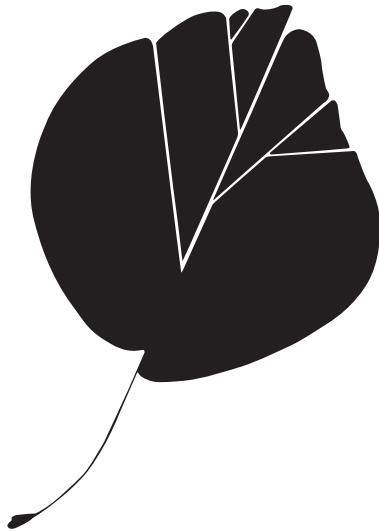
Almost every year we work with stylized leaves. In order to reduce the time students spend arriving at a leaf shape, they are instructed to choose from a pointed vertical shape, pointed non-biased (somewhat triangular) shape, a pointed horizontal shape or a trefoil. They are to concentrate on refining the shape playing one contour against the other and designing top and bottom of the leaf so that three lines do not converge at the same point when the stem is attached. Students may add one or several combinations of leaf serration, stem, ribs or decay to enhance the communication of the shape as a leaf. Edge serration will relate to the definition of leaf veins.

Students view drawing the leaf as something different from what they have been doing and concentrate on the leaf rather than the shape and line quality. The teacher must constantly remind students that the previously given criteria applies and the leaf as such is incidental to problem objectives. The leaf is a shape and the shape is a leaf! For purposes of the problem, I make a distinction between *organic* and *geometric* symmetry. *Geometric* describes contours on either side of the axis which are identical while *organic* describes a symmetry where enclosed areas on either side of the axis are the same but the contours differ. Students are required to always draw the spine when working with any image from nature.

### Typical Criticisms

- Play the line and shapes on one side against the other. Your shape is too symmetrical.
- The intruding white lines describing ribs are too thick creating excessive visual vibration. Thin the lines down!
- What is the relationship of the stem to the veins? What is the length of the stem to the body of the leaf?
- There are too many white lines. The idea is to have just enough to communicate and no more.





- Extend the stem line to the tip of the leaf and you will see that there is more area on one side than on the other. There must be balance, or symmetry of area, but not necessarily of shape or contour.
- You can create tension within the shape by indicating ribs or decay in more than one place on the leaf. However, one area should be dominant by size and the other(s) subordinate by size or activity.
- You are cutting off the stem at the bottom of the leaf where the two lines describing the sides of the leaf come together and meet the stem line. To ensure the integrity of the leaf and stem as a single shape, it is necessary to off-set the two leaf lines at the point where they meet the stem. One line might turn up where it meets the stem; the other might turn down; the two lines might meet the stem at different levels on the stem, or some other similar device for off-setting them.
- Play with stem. Vary length and weight.
- Remember the nodule at the end where the stem attaches to the branch has form. Look at a leaf stem so you know the form of the nodule and translate it into a drawing that accurately reflects shape and volume.
- You are using too much serration, use small amount(s) as an accent.
- With decay, either use a small amount as an accent, or show decay over almost all of the leaf. Don't cancel out with equal areas of decay and undecayed leaf. *How much to how much!*
- The negative shapes on both sides of the leaf are all too similar. Vary size, shape and direction.

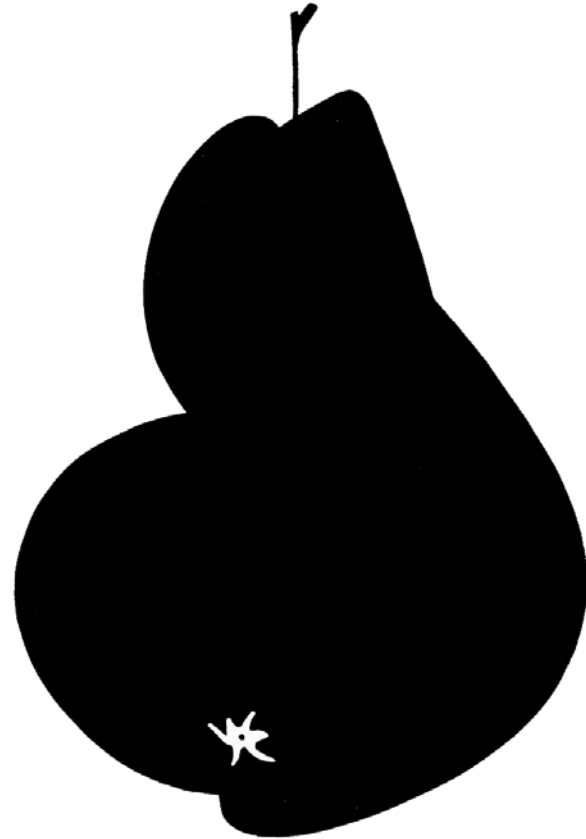
### Presentation

Draw four 10-inch squares on tracing paper and do marker fill-ins of the shape in different rotations, when the best positioning is determined, the leaf may be done in one color visually centered on a 10-inch square board. This past year I changed this exercise making it a composition rather than a single image. In the past, the fruit or vegetable was presented on a 10 x 10 board in black plaka. Last year, students were required to design a simple composition incorporating at least one fruit or vegetable (it could be more) with two other shapes from the theoretical studies. Scale, place ment, tension, overlap, activation of ground, interval are among principles that could be demonstrated with this exercise. I recommend this interpretation of the exercise but I have retained the previous assignment as a record.



## Application of Theoretical Shape with Illusion of Dimension

Choose a fruit or vegetable to make a shape that suggests dimensionality. Initial studies should be done on tracing paper with pencil as constructed drawings with ellipses and axis. This better aids the student in understanding the volume or dimensionality of the subject. They then interpret the drawing using lines based on earlier problems; line quality and tension curves. The resulting image is highly stylized. There is considerable distortion and artistic license taken in this exercise. The most interesting results occur when there is exaggeration of elements. However, the student has to explore which elements to exaggerate proportions, stems or leaves to the body of the fruit or vegetable, or the variation of forms within one variety of fruits or vegetables. Those parts of the fruit or vegetable that are inverted often have to be extruded, stems have to be raised and extended. Students must pay particular attention that ground and horizon lines are curved because they are elliptical; that increments decrease in width as they move back in space; and to better define the illusion of space, objects should set on different planes. Contours must describe the space occupied by the fruit or vegetable. Sometimes it is helpful to draw a trapezoid (square in perspective) or ellipse (circle in perspective) and draw the object so as to set on as much of the trapezoid or ellipse as possible.





Of particular concern is that the main shape does not close where there is a stem or stalk, or where the contour comes into the stem or stalk from either side, the two sides offset to maintain the integrity of a single shape.

Shapes are not symmetrical. Students design one side to play against the line defining the other side as they did in the line shape and leaf compositions. This is not a geometric symmetry but an organic symmetry where contours might differ from one side to the other, but enclosed areas on each side of center will appear equal.

Concave lines on contour tend to diminish vitality of fruit or vegetable shapes. Students need to know when to use a point or a curve in establishing the illusion of dimensionality. A point tends to show a form going behind or in front; a curve tends to flatten into a single shape.

#### **Typical Criticisms**

- The proportions are wrong. Draw an axis line from the blossom to the stem. Just as with the leaf, the contour and shape on either side of the axis might differ but the areas have to be the same.
- Draw through all the ellipse in order to better understand the form. A diagrammatic drawing.
- Make a pencil rendering shading in all the values describing the forms in order to better understand the form.
- Draw an ellipse or trapezoid (square in perspective) and draw the base of the fruit so it touches all the sides describing the space it occupies.
- The top line is straight across where it should be curved because it is the top line of an ellipse.
- The bottom line is straight across where it should be curved because it is the bottom line of an ellipse.



Continued.....

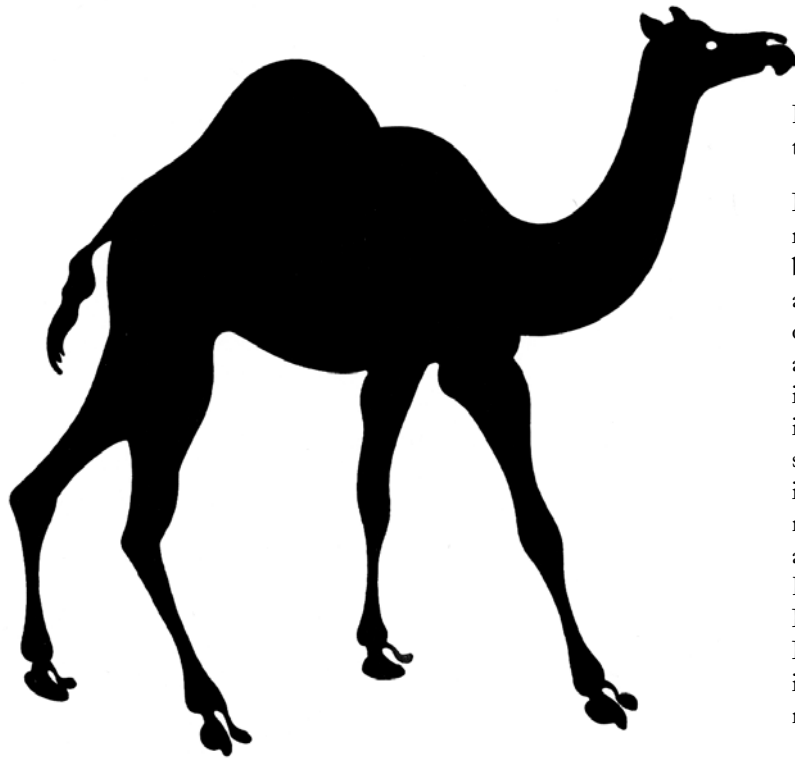
- Off-set the two side lines where they meet the stem because now they cut off the stem.
- Draw an ellipse at the top of the fruit and begin the stem from the center of the ellipse rather than drawing it from the contour.
- Look at proportions. The vegetable has two basic elements with an extended neck and a body. Play with size differentiate between the two elements.
- Play with the scale of the cap and stem to the body.
- Even though the detail of the blossom scar is inverted, reverse it so that it extends and becomes part of the contour.
- Try exaggerating the thinness and length of the stem in relationship to the body.
- This should be a point rather than a curve to suggest this form going behind that form.
- Try flopping the drawing and see if it works better.
- Play around with the different ways you can set the drawing on the board. Play the bottom line of the vegetable against the straight line forming the bottom edge of the board.
- The top of the stem has to be curved also because it is circular.
- The drawing is too symmetrical. One side is just like the other. Play one line against the other.
- Line quality is terrible! No tension in the lines!
- To draw the stem cap as on a tomato, eggplant or squash, draw the elliptical contours from where the stem attaches. Draw the cap to sit on the contours. When you fill in, the cap will then describe the volume.

### **Presentation**

Draw four 10-inch squares on tracing paper and with marker fill in four different rotations. When the best positioning is identified, the final presentation is made with plaka visually centered on a 10-inch board.



## Final Project



For the purpose of maintaining a record, the previous practice for assigning this stage of the course is retained, and is as follows.

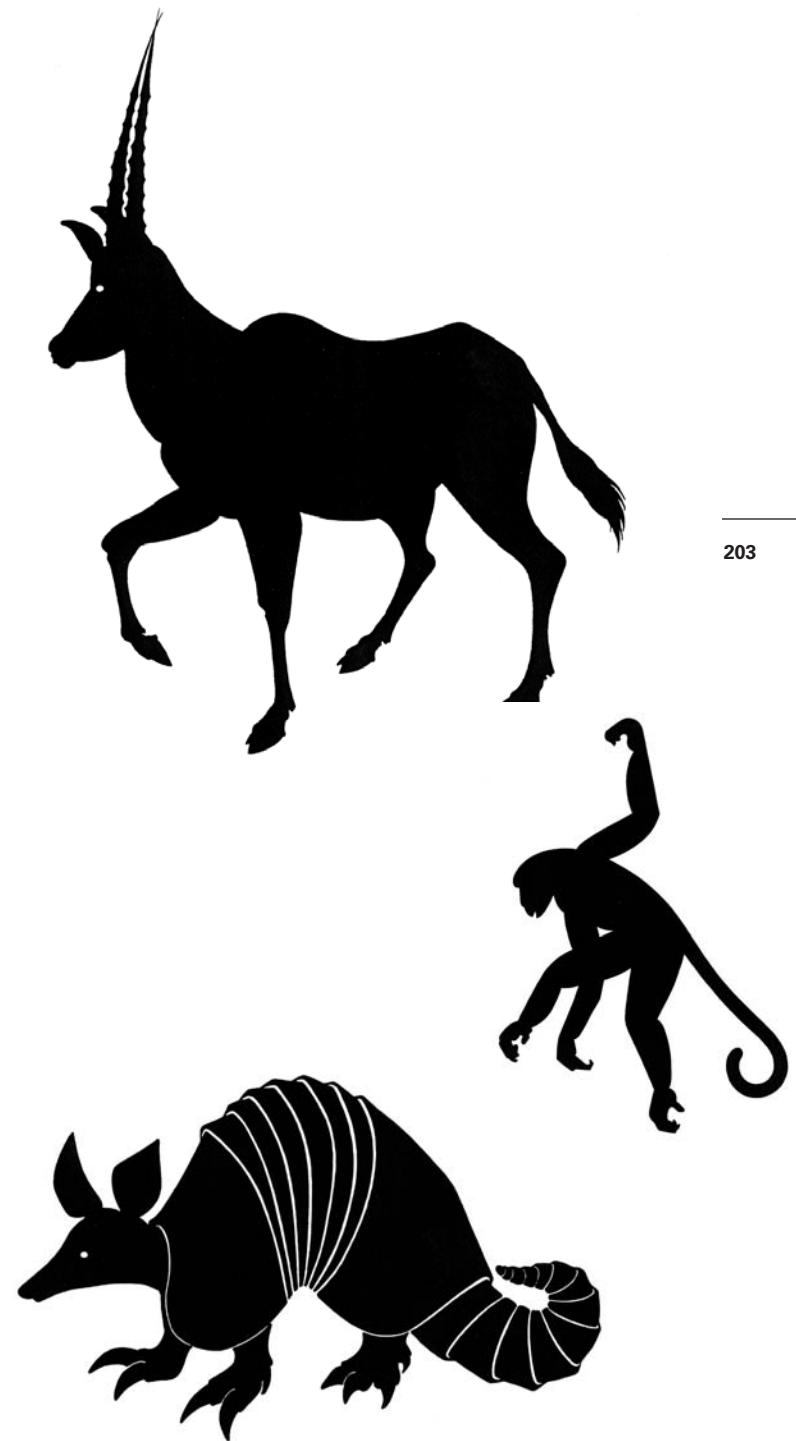
In the instance of animals, birds, reptiles, insects and fish, students are required to do considerable research which must be included in the progress book. It is important at this stage to insist that students collect information and sketch in a professional, systematic manner. Sketches should be well organized on the page. The research sketching should require all the criteria and demands of the drawing class. A principal concern at this stage is teaching students how to use research material (images) as a source for information. It is important to teach them how to use visual research as a source of information, and not as something to copy. This is an extremely important point and worth the effort and time to teach. I take time and make special effort to emphasize and require students to use found images as sources only, how to use the sources, and never permit them to copy. Research involves drawing details such as mouths, hoofs, fins, ears, legs, etc. I put emphasis on this part of the problem; I am critical of drawing quality. It is a technical, or information drawing, not artistic nor rendering. It is important to me to emphasize to students that they draw what they know more than what they see. This point cannot be over-stated.

Students are expected to build in the illusion of dimensionality. In the instance of any four-legged creature, they draw a rectangle in perspective in order to place the feet; wherever one form overlaps another is indicated in the contour. They also make diagrammatic drawings of the spine using right angle lines for placement and perspective of eyes, ears and limbs. Some sketches are volumetric, drawing through the forms to accentuate better understanding the illusion of dimensional imagery.

Exaggeration is also discussed and explored during the sketching stages. There is usually a great deal of distortion such as making heads smaller, legs longer, thinner and reducing the size of feet, identifying and exaggerating characteristic qualities. A few insects and fish are entirely invention designed from parts of several varieties of the species. We talk about designing into the image intangible qualities such as a fox being *sly*, antelope as *graceful*, etc. The objective was to create an interpretive, symbolic image with high communication value and not to make an image that is biologically correct.

The first step is pencil sketches to understand anatomy, find a posture, explore proportions and drawing of details. Most of this work is quite small. When the major decisions are made, the drawing is enlarged to size and work begins on contours. These drawings are then tested by filling them in as black shapes with no internal details. Students are encouraged to pin these on the wall and study them before working on them some more. This is to establish shape and dimensionality through contour. At this stage, the filled in shapes are put up for critique and discussion. After defining shapes, students are permitted to introduce some reversed internal lines to define details. I emphasize that these are minimal, and students should be selective about how much, where, and weight of white lines. Normally there is a great deal of trial and error exploration at this stage.

At a later date, students began to introduce texture. Since this was obviously what they wanted to do, I added dimension as an option, but with the condition that texture had to show form .





#### **Typical Criticisms: Research**

- Look at what the photograph is telling you. Draw what it tells you and don't just copy the photograph.
- The drawing is sloppy. Remember what you learned in drawing class.
- Sharpen your pencil!
- I would try some alternate positioning. This one looks too much like a flat cut-out. Remember, you want to build in the illusion of volume and space.
- Play around with proportions. Feel free to take liberties because sometimes the communication and image are stronger with distortion.
- I would suggest that you make a detailed drawing of this section because when you enlarge the scale, it will be important to know how this form relates to that one.
- I think you need more research material. You might try the library or go to the zoo. You need a better understanding of forms and transitions.
- Your drawing is not clear, leave out the shading and concentrate on showing how the forms relate.
- Your sketches are scattered willy-nilly over the page. Organize your sketches in a readable and professional manner.

#### **Typical Criticisms: Working Drawing**

- Draw through so you can better see the form and relationships.
- You need to draw in the axis to see relative size of areas on either side.
- You need to draw the spine in order to place the limbs at a right angle to the axis and establish perspective.
- Try exaggerating that curve.
- You used a curve here when you really needed a point to show this form going behind that one.
- Put the rectangle in perspective and let each foot touch each line to describe the space occupied.
- Go back to your research sketches to see how this relates.
- Play around more with proportions. Try lengthening the legs and reducing the size of the head.
- Do a fill-in, put it up on the board and study it to see what you can do to strengthen the image and enhance the illusion of dimension.



### Typical Criticism: Refinements

- Go back and do more refinements. See if you can further enhance the volumetric qualities. Find those relationships that best show volume and exaggerate them.
- Pin it up and study it. Look for how many of the white lines can be eliminated.
- Do another where the white lines are even thinner and put it up with this one and see which is best.
- Do one with less white line and put the two up on the board and study them.
- The texture is lousy. It is uncontrolled. This is not a painting class.
- You have flattened the shape by how you applied the texture.
- The texture must lay on the form in a manner that describes the dimensional qualities of the form.
- The texture for this is different from that. Make the distinction.
- You have scales and several very different kinds of fins.  
The surface of the tail is different from that of the pectoral fins.
- You need to explore different textures to convey these differences.

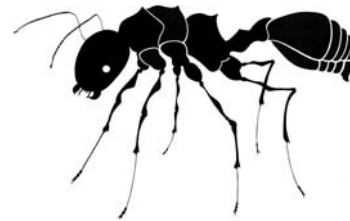
### Presentation

Visually center on a 16-inch square board using brush and black plaka. Attach a tracing paper flap to protect the image.

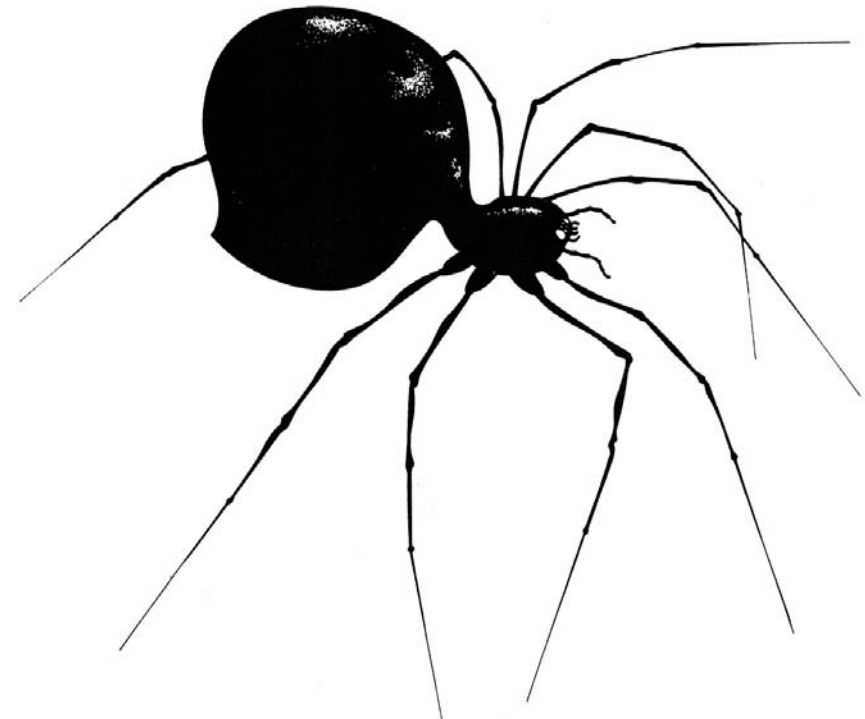
### Note

This past year the final assignment was changed to merge the major and minor classes as well as to include an element from the letterform class into the composition.

The last design exercise was a 15 x 15 inch black and white composition based on selecting a topic from a list provided by the teacher. Design principles were expected to be demonstrated in the major composition. The word chosen by the student to illustrate is hand-lettered and it becomes an integral part of the composition.



205

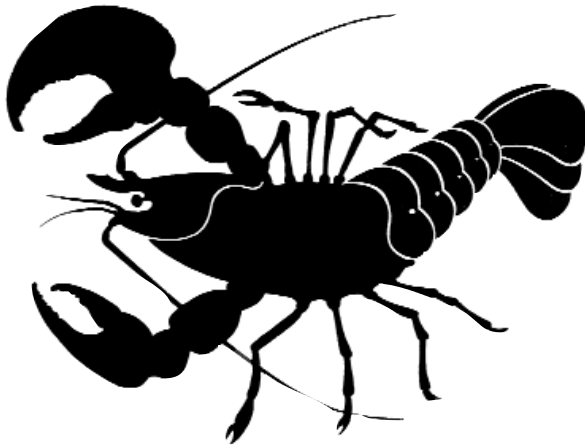




At the end of the semester, students were instructed to reduce all their work 50 percent using xerography, and to do an 8 1/2 x 11 inch booklet. They wrote an introduction explaining the importance of design principles. On the left-hand page, they identified the principles, and below that, in their own words they explained their understanding of them. On the right hand page, one or two exercises were illustrated. If two were used, one was to be placed directly above the other.

A few students included basic design exercises, and I think this added to the overall impact of the booklet. In the future, all basic design and principles exercises with organization of contents, cover design and typography will be requirements. Students will explain the design objectives for each exercise, and make two copies of the booklet, one for themselves and one to hand in at reviews.

Students are permitted to use the computer for type or however they choose in putting together the booklet.



During reviews, many students said that their understanding of the principles became more clear to them as they put the book together. Another group of students commented that understanding occurred as they explained the principles. A number of students commented that the course provided them with a design vocabulary which they did not have before. If visual principles are the language of design, then terminology is the vocabulary required to verbalize that language. The vocabulary factor is extremely important as it is a tool for critical analysis, developing concepts and communication with teachers or colleagues. I do not think the role of vocabulary as it relates to perceptual understanding has proper recognition regarding its importance within the learning process.





