RAPID VIZ

A New Method for the Rapid Visualization of Ideas

Hanks and Belliston

WILLIAM KAUFMANN, INC.

. . . the learning to visualize of two inseparable images, one on a sheet of paper and the other on the back of your mind.

"All we need is another drawing book."

When I mentioned to an architect friend of mine that I was thinking of writing a book on drawing he just stared at me. Then he bellowed with hands waving in the air,"All we need is another drawing book. Why you could fill this room with those kinds of books. There are thousands of them covering everything you could possibly want to know about drawing." He pointedly asked, "Why on earth would you want to do another?"

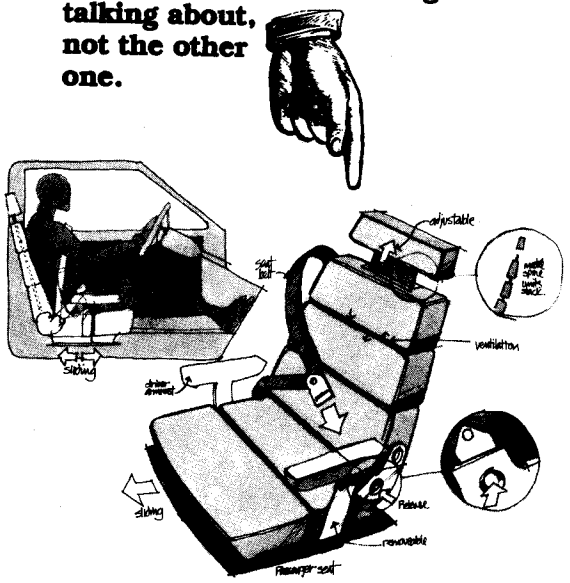
It is a good question. Why would I want to do another? The answer comes from personal experience. It involves my own development; I what to explain to you what I feel drawing, thinking, visualizing is all about.

My visual education began later in life than it does for most people. It began when I was in college. My only previous exposure was doodling on scraps of paper around the borders of English themes and on the pages of the phone book and such random places. In college I floated around various majors but finally landed in design. In that college you had to learn to draw if you wanted to get your ideas across. Drawing was something you were made to learn—something you had to go through and get over with like chicken pox.

And so I did it; after taking several classes, considerable effort, and filling waste baskets with discarded drawings, I finally reached an acceptable level of proficiency. But the whole education process seemed too long and too involved; too filled with unnecessary and inefficient teaching for what I finally gained.

I realized, however, that something else had happened along the way. Yes, I had learned to draw; but more importantly, I learned to *think*. My whole method of thinking experienced a complete switch. I began to *see* the world more clearly. As my hand sketched the lines, my mind revealed a whole new method of thinking that I had not known before. Being able to visualize things gave me a tool that I could use in all facets of life. What happened to my mind was much more important than the sketches I produced.

This is the kind of drawing we are talking about, not the other one.



Learning to use pen and paper had thus revealed talents I didn't know I had. Not the great talents of a fine *artist* that you might expect, but the important, practical ability to visualize. I gained the ability to picture something mentally, then quickly convert those thoughts into visual reality on a piece of paper. I could nail my ideas down on a sheet of paper.

I realized that converting these ideas had to be a rapid process taking a minimum amount of time, trouble, and work. An idea is a very delicate or fleeting thing and if it is not quickly crystalized into reality it just slips away never to be found again. A rapid conversion from thought to paper is critical.

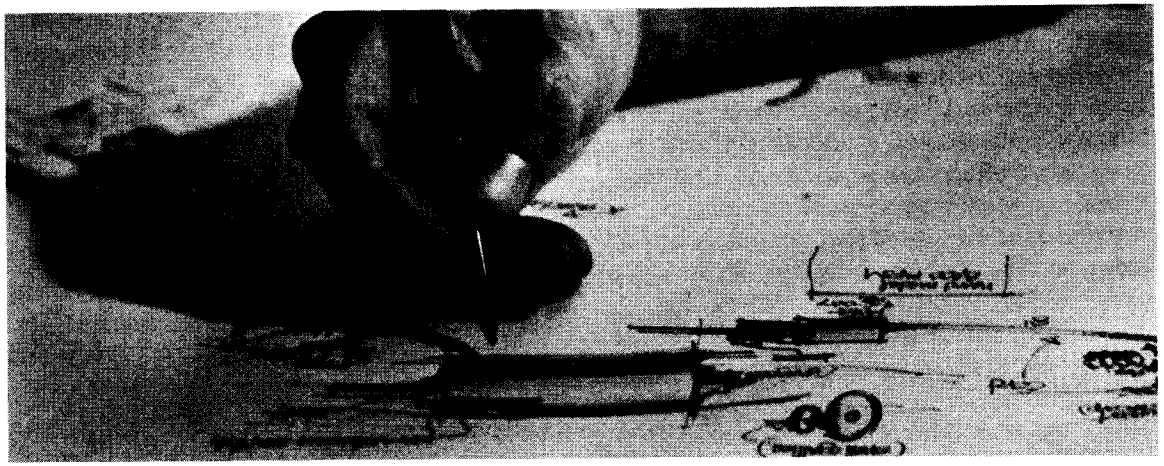
I found myself asking the question, "Can this new-found skill be taught to others?" "And can it be done without all the hassle, redundancy, and expense I had gone through in my own education?" As so often happens in life, I found myself eating all those bad words I said about teachers: I became a teacher. In a classroom situation I began to challenge students to learn the kind of drawing that had become such a valuable asset in my life.

For the next couple of years, we (it was always a group effort) evolved a method that worked. The students helped me reduce drawing to the essentials. We developed not a *fine art* type of drawing, but a simplified approach that people can use for thinking, learning, and communicating.

This book is an outgrowth of classroom teaching. By trial and error we discovered the best teaching approach. I hope that you, too, will gain by the experience many students went through to develop this condensed teaching approach.

About This Book

Some of the objectives and guidelines used to develop this book were to:



1. Produce a practical workbook to help individuals visualize their thoughts.
2. Use examples and exercises that have been tried by students.
3. Use tools, technology and definitions that relate to a student's understanding.
4. Design the content of the book for people and students in architecture, landscape architecture, engineering, industrial design, interior design, and for students and other practitioners of many basic sciences and arts in which visualization is vital.
5. Emphasize speed in mastering actions and concepts, reducing time, effort, and cost of learning.
6. Use materials and equipment that are easily attainable and economical.
7. Structure the information from simple to complex, from concrete to abstract, from general to specific.
8. Apply visualization to real-life situations whenever possible.
9. Have students learn by doing. (Although visualization is more a mental process than a physical one, the mental process is learned by actually doing.)
10. Provide positive reinforcement to the student to prove that he *can* draw and visualize his own ideas.

Earlier Education Sometimes Hampers Our Thinking

Through my teaching, I found that often the less you know about drawing the better off you will be in learning to visualize. The less you know, the fewer the preconceived ideas you have about drawing and visualizing. You don't have to unlearn things. I can remember one class in particular where I had two separate groups. One group was made up of architecture and landscape architecture students who had had what amounted to a lot of previous drawing experience. The other group was made up of beginning interior design students who had no experience—they had no idea even what a "T square" was. At first the experienced

group excelled over the inexperienced group. But the interior design students who had no drawing experience just kept plodding along until, in the end, their performance exceeded the more experienced students' performance. Experience often breeds arrogance and indifference to what may seem simplistic and rudimentary exercises. But simplicity has an uncanny way of positioning itself behind genious.

Getting the Most Out of This Book

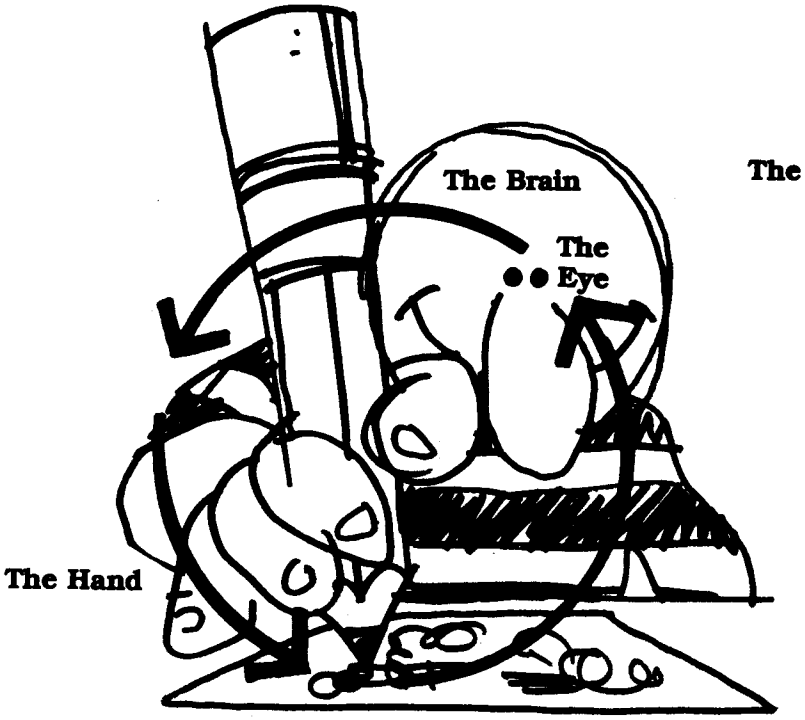
Please do more than just read this book. If you only read and do no more, it won't work. The book must be used to be of any value to you. Write in it, draw in it, insert your own pages in it, and do whatever else seems helpful to you.

Far too often education becomes too restrictive, filled with constraints and negative comments. The only possible result is to make the student an outsider—a bystander looking in. But to really understand anything you must actually do it. Second-hand learning from someone else telling you about it never is very effective.

You can't learn to visualize by osmosis. Over the years, I've had a lot of students who have tried. They seem afraid to fail; scared of criticism about their awkward sketches. But they—and you—should not be. Learning anything takes time, involves making mistakes, and involves effort. No one has learned to walk without walking—no one has learned to visualize without drawing.

I hear and I forget.
I see and I remember.
I do and I understand.

(An old Chinese saying)



The Drawing Cycle

The Image

The brain is like a muscle that must be used. If not used, it atrophies and becomes weak and ineffective. With Rapid Visualization the brain *muscle* is connected to other muscles in the hand. Coupled with the eye, the brain and muscles make a continuous cycle of expression and feedback that enables you to transfer thoughts from your head to expressions on paper where they can be refined and recorded.

What I really want to encourage is participation. Between you and me through this book and a participation between your mind, your hand, and your eyes. All this participation is important. As we noted earlier about visualization, drawing is more a mental process than a physical one, but it is learned by physically doing. You have to push those thoughts out of your mind with a pencil, then draw and develop them before your eyes on paper.

Make this book yours. Force it to give you what you need. Don't separate yourself from your own education. By itself this book is not the best method for learning—not as good as a classroom situation—so you must force the book to fill your needs. You must take an active part in your own learning process.

(By the way, my architect friend who expressed so much skepticism about this book eventually changed his mind. He helped refine and develop the book. There is a great need for rapid visualization in his profession and many others also.)

"I do not think that we have begun to scratch the surface of training in visualization."

Jerome S. Bruner
Educational Psychologist

Another Way of Learning

There are at least two ways of learning and knowing something. One way is the usual way taught in the educational system—the 3 r's of reading, writing, and arithmetic. With this method you read something, you memorize it, and you are supposed to be able to recall what you learned.

There are also other ways to learn and know something. One way involves the "I feel" method. You know something because you *feel* it.

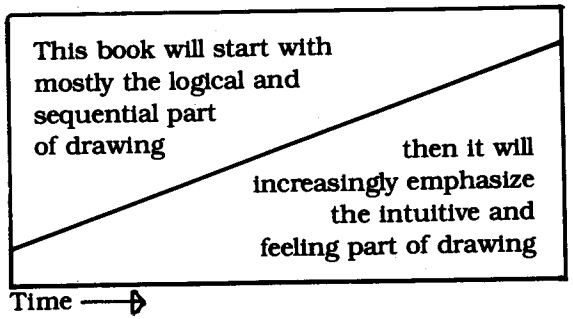
Drawing is more the feeling or intuitive kind of learning and knowing than it is the sequential, rote memorization kind of learning. Drawing leans very much toward the holistic or intuitive side of the brain.

An example of "feeling" learning is when I learned to shoot a rifle at targets thrown into the air. As a youngster I took pride in my ability to shoot accurately. One day a friend and I went shooting together—he outclassed me terribly. He was a magnificent shot. And I wanted to be at least as good a shot as he was.

I had heard about a method of shooting wherein you shot from the hip without taking aim. You aimed by "feel" rather than by looking down the sights of the gun. So I set out to learn this "feeling" method of shooting.

Another person would throw items into the air and I would shoot from the hip. It's like pointing your finger—you don't need to look down your finger to know that you are pointing in the right direction. As I became able to hit the thrown targets, I progressed to shooting them from a greater distance. Then I progressed to smaller and smaller targets until I became very proficient at shooting moving targets in the air.

I became a very good shot eventually by "feel." You may assume that the best way to learn to shoot is by looking down the sights of a gun.



But know that I became a better shot by "feeling" than by the logical, traditional method. And my friend even improved his magnificent shooting ability by adopting the "feeling" method I had learned.

Intuition vs. Logic

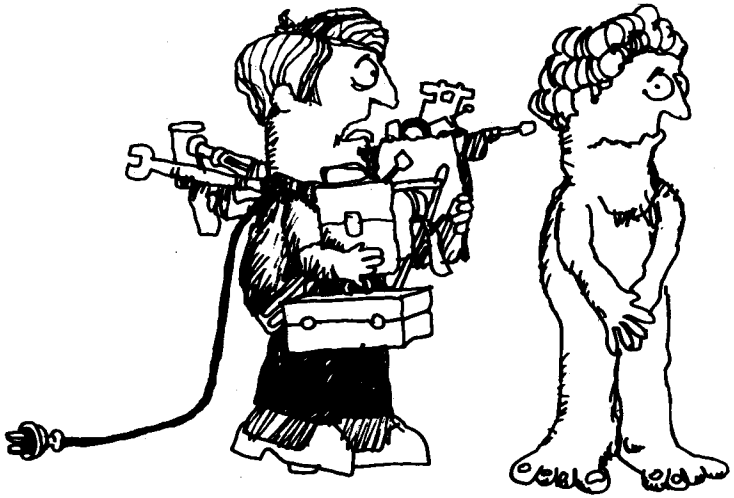
Another example of relying on "feelings" or "intuition" is speed reading. Conventional reading experts will tell you that it's impossible to read a book in 10 minutes and comprehend what you read. But some speed readers do it all the time and have better comprehension than regular slower readers have.

What's their secret? They "feel" what they read. They give you correct answers because they "feel" the answers are right. They don't rely on logic and sequence to recall what they read. Speed readers utilize the visual, intuitive, holistic half of the brain.

Visualization is to drawing as shooting by feeling is to shooting by the sight method. Visualization is to drawing as speed reading is to conventional reading.

Let me describe how it works in drawing. You know what perspective drawing is—that's where you draw things in three dimensions, giving the appearance of distance and volume. The conventional method is a laborious method of connecting lines and projecting images. It is an elaborate method of drawing that is difficult to understand, more difficult to

Principles don't load us down with too much hardware.



Principles don't leave us bare without sufficient protection.

Principles provide sufficient tools for o journey.

learn, and very difficult to do well. It's no wonder many artists don't do perspective well.

A teacher once told me there is no other way to do perspective than by the conventional method. Wrong! The rapid visualization method is better and easier. To prove it, I have taken students that seemed to have equal abilities. To one student I taught the usual elaborate perspective method. To the other student I taught the rapid visualization method.

Invariably, the rapid visualization method works better. The "rapid viz" student learns in a few minutes rather than a few hours. And the end result is unquestionably better than the work done by the student who uses the conventional method.

Rapid Visualization

I've found it easier to teach rapid visualization by starting in a logical sequential manner—the conventional teaching method. If a radical new concept like rapid viz is taught in a radical new way people feel overwhelmed. So I teach the new rapid viz concept in a traditional way at first. Through a slow transition in this book you'll switch from the logical and sequential to intuitive learning. The book proceeds first from logical, very understandable, and simplified ways of drawing to the intuitive methods later on (possibly without your knowing it).

I've consistently done two things throughout this book. First, the information is presented as "principles." Second, exercises push you to the limit of your abilities.

Why principles? By teaching basic principles you will be able to apply rapid viz to many situations. It's like teaching a man to fish to satisfy his hunger rather than giving the man a fish to eat. Principles, though short and concise, are much more filling—much richer. Also, principles allow you to travel light and fast. And that's important. You need the knowledge necessary to make quick decisions. You won't be drawing masterpieces for the National Gallery of Art. You'll be doing quick sketches that expand and refine your thoughts.

The second thing I said I'd do is push you to the limit of your abilities. It's important that you be pushed. In speed reading you don't become a speed reader unless you push to read faster than is comfortable. Likewise push yourself to draw faster than is comfortable. You need to force yourself to do the exercises at ever increasing speed.

You've heard the saying "work expands to fill the time alloted." I've had students take 2 hours if given 2 hours, 3 days if given 3 days or 5 minutes if given 5 minutes. You will be pleasantly surprised to find yourself doing things you didn't believe possible.

But it won't be without effort or without error. You're going to make mistakes. That's part of the program. You learn from mistakes as well as from successes. You must try to push beyond your limits. I'm going to give you exercises to do that are impossible to do within the time alloted. You will learn and grow from trying, not from completing the exercise.

Play

Play. That's another important part of pushing yourself. This is all one big game to have fun at. And when you win, the rewards will be better than you may imagine.

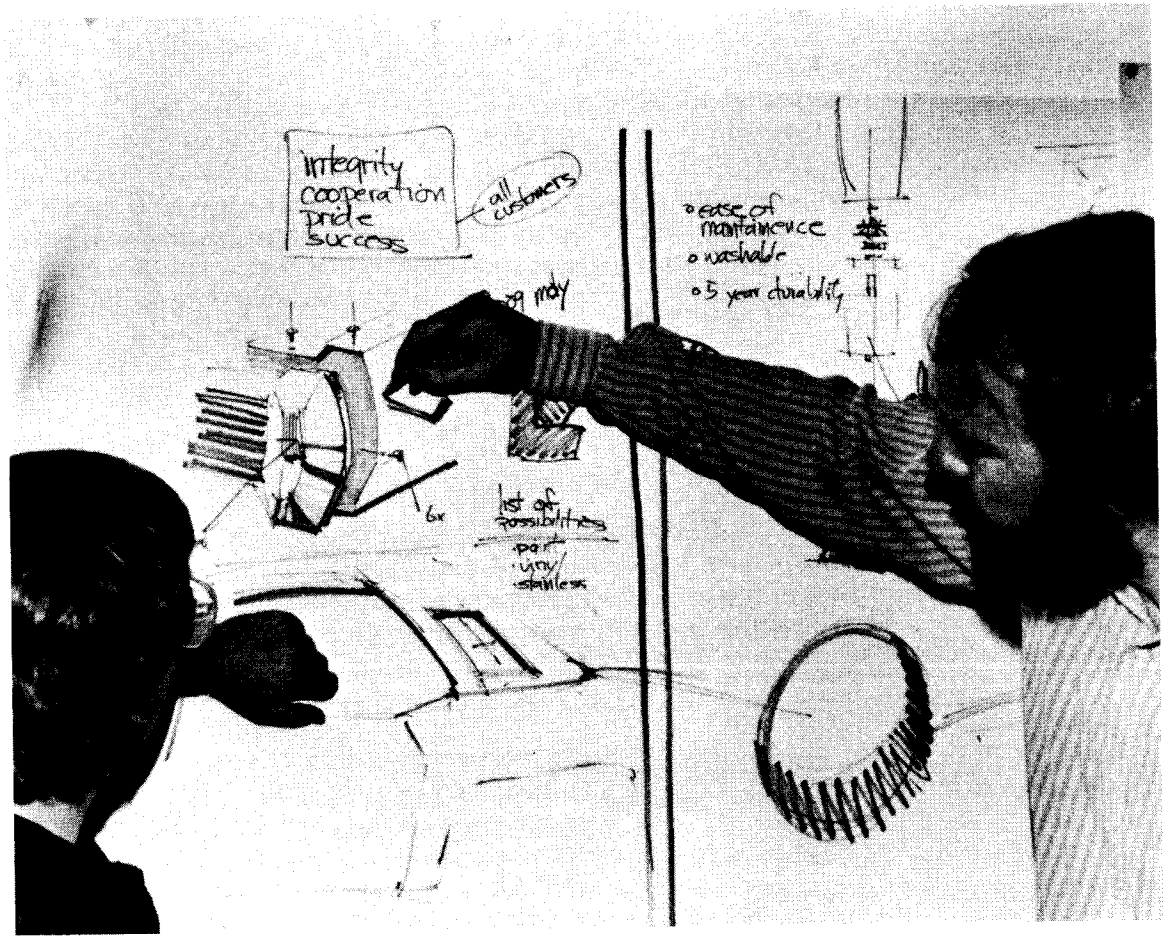
Little children gain confidence in their ability to cope with life by role playing. "Let's play house; you be the father, I'll be the mother, and little Susie will be the baby." You need to play with rapid viz to gain confidence.

If you take things too seriously it will be self defeating. Don't worry about how well you're doing, just do it.

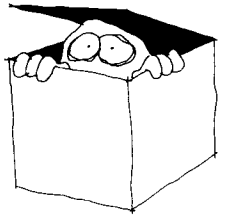
Don't look at your drawings and get discouraged. Don't meticulously try to fix things. If you're like most people you will get discouraged and question your own ability. Don't. Remember, have fun at it!

Drawing is important to mind expansion. You can't really develop that other half of your mind without some activity like drawing to get things going. But you should feel open and confident and that comes from play. Nobody should laugh at your first funny, crummy, lousy little drawings more than you do. Don't be afraid to goof-up.

To sum it up—principles will help you travel light and travel quick; and in order to grow you will need to be pushed beyond your abilities so go do it! Have fun and don't worry about your failings.



Fear of failure, fear of criticism are among the reasons people don't learn to visualize.



The Bilingual Mind

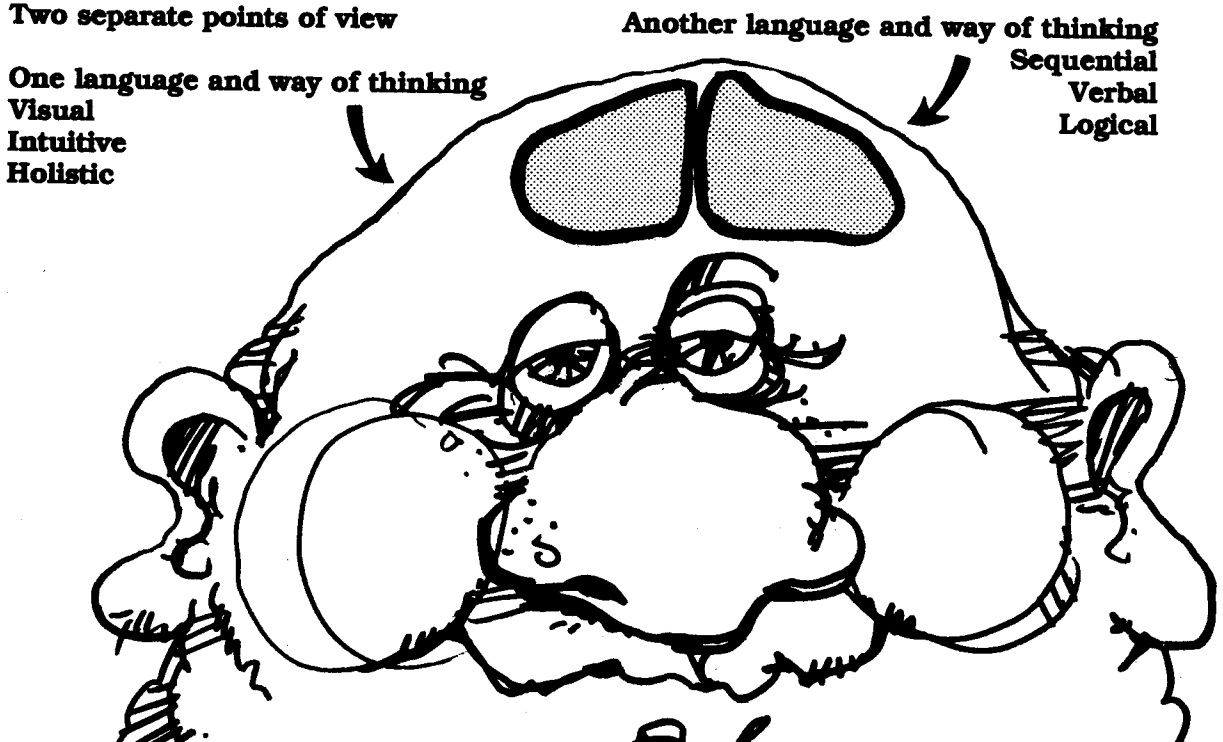
Let's talk for a moment about words. It's tough to imagine living without them, isn't it? Is it possible? A baby gets along for a time without words. He tells his mother when he's hungry—or tired, insecure, in pain, wet? But the baby's communication is hit and miss without language—mother may check the new baby's diaper when it is really gas pains that cause him to cry. We would live a fairly isolated existence without words. Words then are tools that help us communicate to others our needs, our feelings, and our thoughts. They facilitate interaction between individuals.

Language also helps us express our feelings. Wouldn't it be frustrating to be in love and not let others know? Or to feel anger and not be able to vocalize it? Give something a name, a word, and it makes sense. In trying to tell the doctor about an unusual pain, you may use phrases such as "It felt like . . .," "It was between here and here, but it wasn't really . . .," "I thought it was this, only it was similar to . . .," and so on. Then the doctor diagnoses it—labels it—and it becomes something real. Can something exist without words to identify it?

A View of Reality

Language gives us a viewpoint on reality and enables us to formulate thoughts. Think of a concept and try to disassociate it from words. It's hard to give an example because examples necessitate using words. Picture yourself swimming (don't think of the words pool and water), or eating (without the words food, fork, plate, etc.). Words help us organize and structure our thoughts.

Knowledge and language are inseparable. The transfer of knowledge is limited by our ability to conceptualize and *symbolize* thoughts. This requires some kind of language. What good is a great idea or thought if it can never leave the abyss of the mind? What if every person who wanted to fly had to start from scratch because



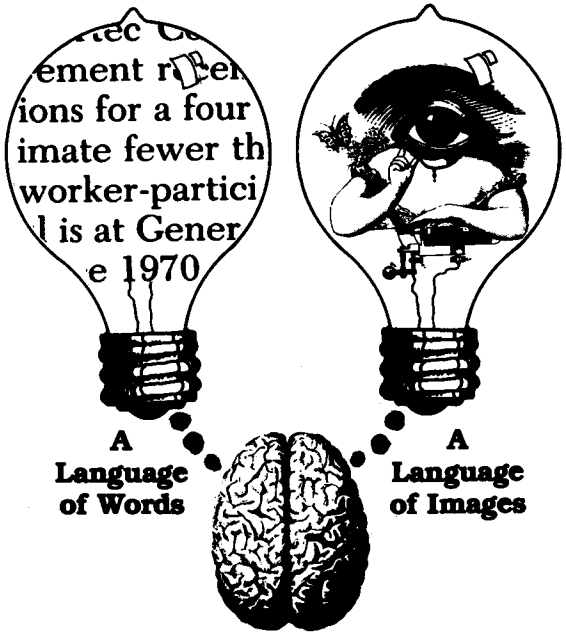
no language existed to convey the experience of flying to others? Aviation would never have progressed to the Wright brothers' prototype—or beyond.

So language is vital. But, if one language is good, aren't two languages better? A second language enables us to better express ourselves. A few examples: we call that white stuff which precipitates from the heavens in the winter *snow*. Sometimes it's so heavy and wet that just shoveling a path to the front door requires a herculean effort. Sometimes it's so light and fluffy that you can't resist the urge to romp and play. Here are two quite different substances—only one name, snow. But the Eskimos' language has about fifty different terms for what we call snow. Similarly, the Arabs have dozens of words for plain old sand. If we knew a second language, we might not be handicapped by a limited set of words.

A Second Language

A second language also might increase our perceptions of the world around us. If you visit a foreign city where you do not know the language, how much of that city can you actually perceive without being able to read the billboards, the shop names, the window signs? If you were in Spain, for example, you might be able to identify a factory by its exterior, but without knowing Spanish, the sign Muebles hanging on the outside wouldn't clue you in to the fact that they are manufacturing furniture inside. A second language expands our perceptions, thus increasing our experience and our knowledge.

When we speak of a second language, French, German, Spanish, or some other foreign tongue automatically comes to mind. In this book we're going to learn another language, a second language, but one that has no nouns.



verbs, adjectives or adverbs. Like a foreign language, it will enable you to better express yourself and to increase your perceptions of the world around you. It's a language of the mind.

Two Minds in One

Our mind is a fascinating instrument. The brain actually has two distinct and separate halves. The left half controls the right side of your body, and vice versa. Each half of your brain also controls different skills and abilities. The left hemisphere is probably your analytical half. It is concerned with order, logic, and reason. It controls your verbal and written skills. The right hemisphere is primarily responsible for your visual thinking. It enables you to recognize faces and objects. Intuition, fantasy, creativity are controlled by this half of the brain. A typical education develops primarily the analytical skills—reading, writing, and arithmetic—the left half. The visual-thinking hemisphere assumes a subordinate role and is seldom if ever developed to its full potential.

A second language, the language of the brain, is initially taught in preschool and kindergarten years. Parents and teachers are continually giving children crayons and paper—not with the goal of teaching them visual expression, unfortunately, but to keep them out of mischief. Painting and drawing are considered by many to be frivolous activities, and the educational process soon replaces them with more scientific, literary learning. The visual language is underutilized, neglected, and eventually lost.

But which language, verbal or visual, is actually the basic or primary language of the mind? Early man didn't leave behind cave dwellings adorned with vocabulary words and mathematical formulas. He used pictures to communicate how he lived. Before children are taught the verbal tools for self-expression they intrinsically know how to use scissors, crayons and paper to reflect their perceptions of the world.

Develop Another Language—A Visual Language

The purpose of this book is to help you learn that second language of visual expression. Does the world really need it? Here are some examples. You decide.

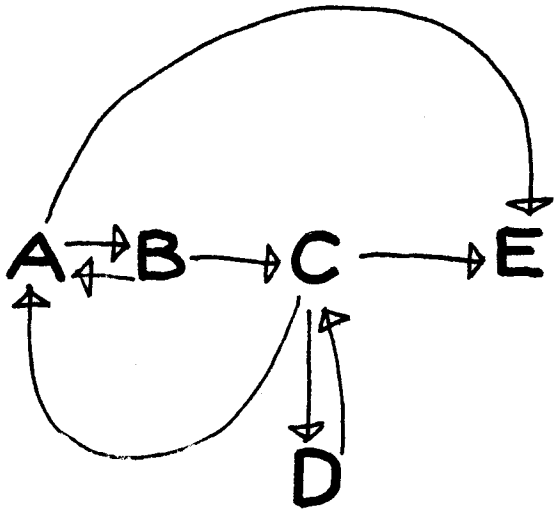
Example 1

An airline serves five northeastern cities within a twelve-hour period—Concord, New Hampshire; Albany, New York; Danbury, Connecticut; Elmira, New York; and Boston, Massachusetts. Their flights run from Boston to Concord, Danbury to Concord, Albany to Boston, Concord to Elmira, Albany to Elmira, Concord to Danbury, Boston to Albany, Concord to Albany. What is the shortest way to make a round trip from Albany to Danbury?

A verbal approach would require establishing some arbitrary set of order. Let's try the typical one, alphabetical:

Albany to Boston
Albany to Elmira
Boston to Albany
Boston to Concord
Concord to Albany
Concord to Danbury
Concord to Elmira
Danbury to Concord

The solution is still not readily apparent. Now try a diagrammatic approach:



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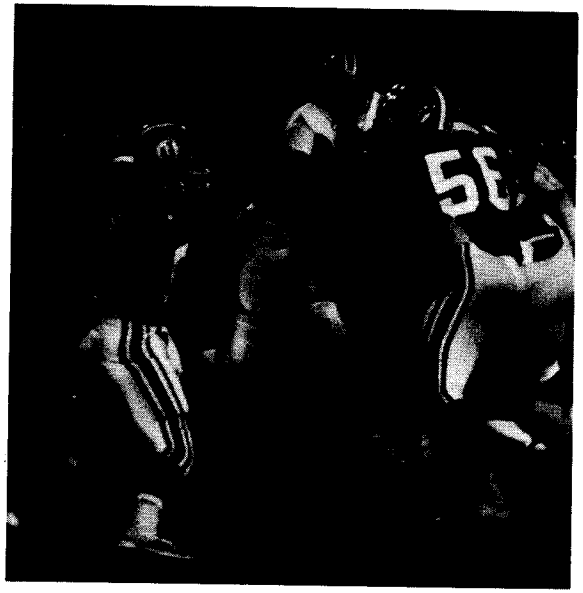
Example 2

A football play is another example of communicating with different means. You can verbally describe a particular play from scrimmage. You can explain with photographs. Or you can use visual diagrams (rapid viz) to communicate the message.

An example of explaining the football play in verbal terms would read something like this.

When the ball is hiked, the four interior linemen step back about 2-3 steps to assume pass protection blocking. The two backfield men cross in the middle to assume blocking position for quarterback pass protection. The right end is to run a down and out pass pattern making the cut to the outside about ten yards beyond the line of scrimmage. The left end . . . It's obvious from the example that a verbal explanation is hard to understand.

A photographic explanation is also somewhat difficult to understand. One photo, as shown, looks like a mass of confusion. It would take an aerial shot of many photos in sequence to explain what is happening.



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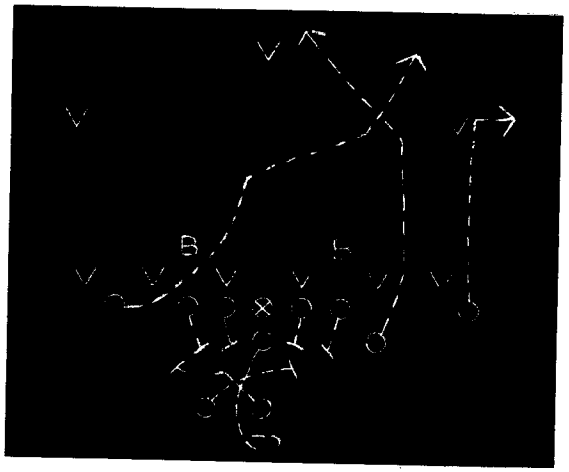


A rapid viz type diagram is the most economical way to communicate this particular play. The single, simple diagram shown clearly communicates what the plan is.

Example 3

Can you imagine the complexity of house plans if they were expressed in the verbal language? A one-page drawing would become a multi-paged document.

Summary

Which doctor would you rather have operate on you? A doctor who had memorized the parts of the body from strictly a verbal text and could only verbally describe a muscle or a bone from what he had read, or a doctor who had actually seen the ventricles of the heart and who had a vital working knowledge of the body.

Regardless of your profession, age, intellect, or motor skills, you can learn to speak that second language—the language of the mind. Without it you'll forever be using only half of your mental capacity. With it you'll know two ways of thinking, communicating, learning, being. So let's begin now to expand your visual mind.

 Or better yet:

What you need to get started

A frightening thing awaits you. It has made strong men cry and sent women fleeing from its very presence. It is a blank piece of paper. What are you going to do with it? What threat lies beyond its snowy white innocence? You are going to have to make a mark on it—you are about to violate its purity. Can you do it? Of course you can.

First you will need materials. You can play the game that some illustrators/designers play, which is to buy the "very best" special made guaranteed for 40 years or 40,000 miles writing pen; or you can buy a simple felt tip pen. I recommend the simple pen that's cheap, easy to use, and always there when you need it. For now get any pen or pencil you can find. We'll have none of this "I can't go on with the work because my special order pen has not arrived from Walla Walla."

Use whatever you want as long as it's simple, cheap, and you can carry it in your pocket or purse at all times. Don't be one of those designers who is crippled without special drawing tools.

The kind of pen I prefer is a simple felt tip pen with a flexible point. Flair, EG, and Pentel (to name a few) make the inexpensive pens that I like. The only really important thing to me is that the point be able to draw thick lines when I press down firmly or thin lines when I use a light touch. Ball point pens don't allow this flexibility.

You may decide upon a pencil. I like drawing with pencils but prefer that *you* begin with a pen. With a pencil you can easily erase and *fix up* rapid drawings. You should be learning to do rapid drawings correctly the first time, not learning to *fix up* drawings. A pencil causes many people to become "fix up" artists. You need to be committed—once the pen makes a mark the deed is done. So, for now, use a pen; save the pencil for later.

When it comes time for the pencil, what pencil should you buy? Pencils are rated 6H (hard) to 6B (soft). If you like to scratch your message in the surface with a nail, then 6H is your pencil. If you are a real soft touch, then 6B is the one for you. For me, 2H feels right—not too hard, not too soft.

And Everyone Makes Mistakes

Also, you may want an eraser, in spite of my earlier remarks about erasing. To erase pen lines drawn with a felt tip pen, I wet the end of a pencil eraser. To erase pencil lines I use a kneaded eraser.

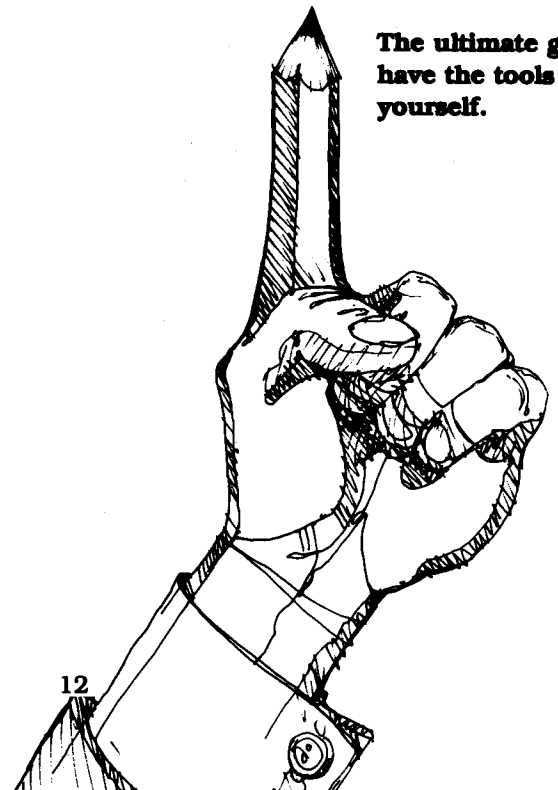
You may want to keep a ruler handy as well as a variety of colors of felt tip pens. I find it fun to draw in black then use some other color to add emphasis. The second color is my way of doodling with a drawing. You won't need other colors or a straight edge, but then again you may find them fun.

Many people have the tendency to load themselves down with tools they cannot afford, cannot easily use, and don't really need.

Going back to that blank sheet referred to earlier, you will need paper to write on. First of all, use the paper in this book. If I request an exercise be done in the book, do it! Don't be afraid of ruining the book; it is a workbook. It's not a book to look pretty on your library shelf. If you do not intend to do the exercises in the book, it is best not to buy it.

You'll need two other kinds of drawing paper. A good basic paper is regular bond paper, the kind you write and type on. Most drawings will be done on cheap bond paper.

You'll also need tracing paper. In one part of the book we cover how to evolve drawings. To evolve a drawing you will need to trace and refine your initial sketches. I prefer a 14" x 17" pad of tracing paper that is easy to see through but strong enough not to tear when you write on it. The least expensive paper you can buy that will do those things is the kind you should buy.



The ultimate goal is to have the tools fuse with yourself.

You need to get to know your pen so that it becomes an extension of your hand. Your pen becomes part of you. You need to become so familiar with it that you don't think about it. This comes from drawing or doodling a lot.

A tennis player's racket becomes an extension of the player's arm and hand. He automatically knows how far it will reach to hit the ball. Until a tennis player becomes familiar with the racket, he can't play tennis well. And the way a player learns to control that racket is to hit tennis balls. He doesn't jump right in and plan a championship game first time out. He just hits the ball around—at walls, fences, other players, or over the fence.

You are like the beginning tennis player. You are trying to fuse your hand permanently to the pen. The way you do this is by drawing. Scribble or doodle often. Practice every chance you get.

A Critical Drawing Tool—The Line

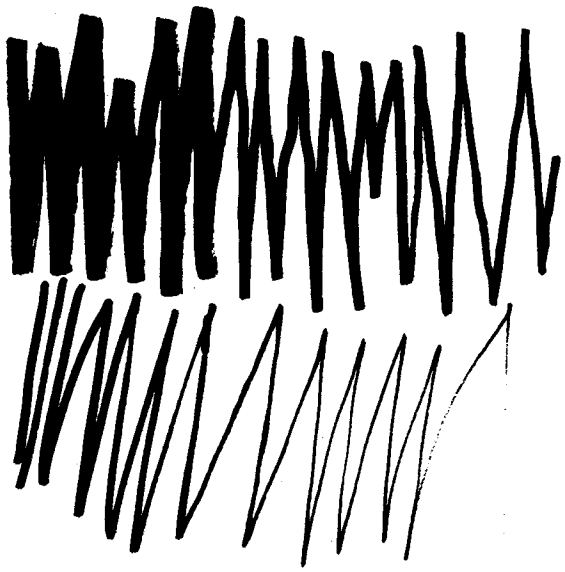
Lines are the first drawing technique you will learn. And there's good reason for learning lines:

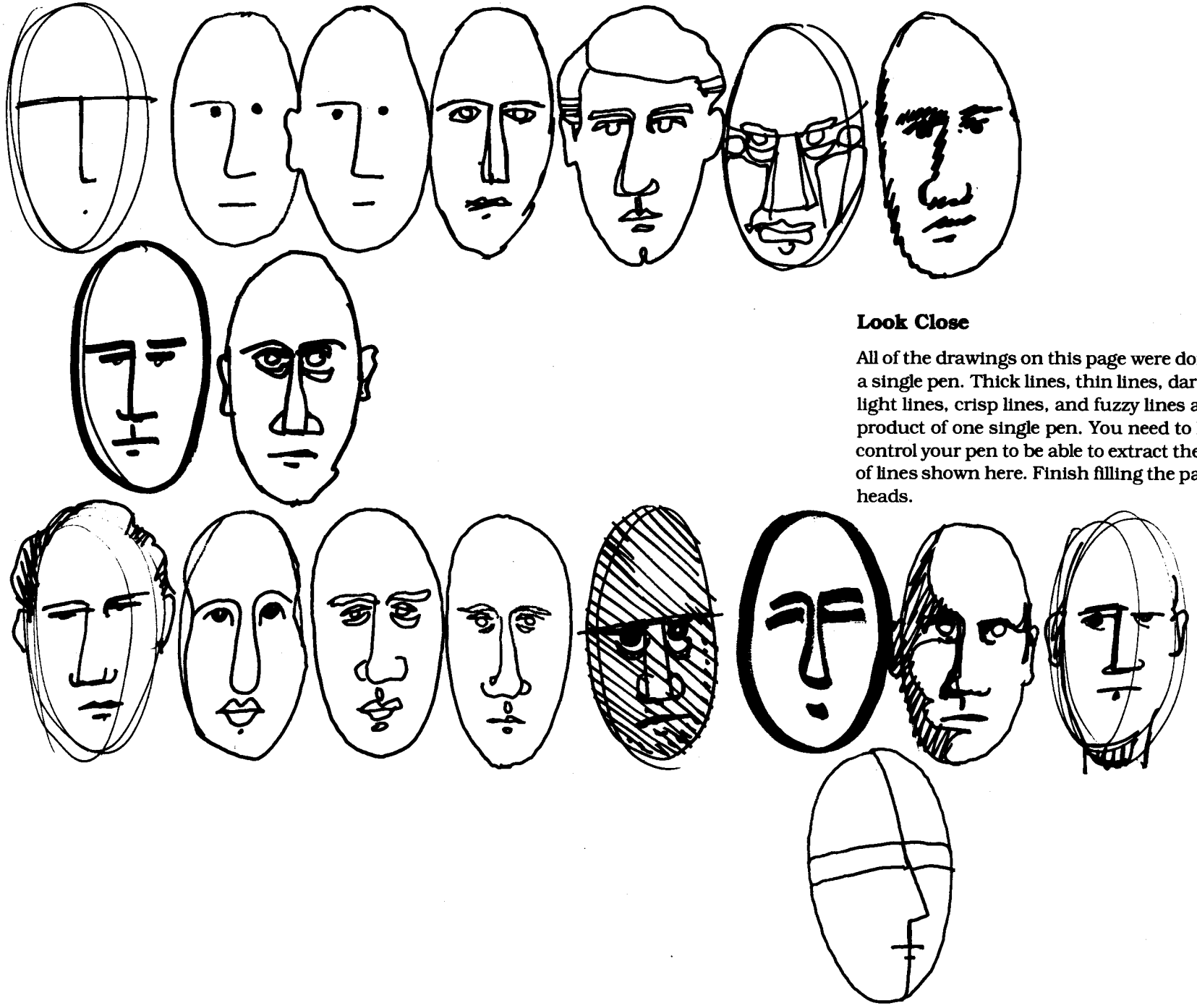
1. Line drawing is a quick way to visualize ideas with a minimum use of time and materials.
2. Line drawing tools and materials are usually the easiest to use and least expensive.
3. Line drawing is the natural way to draw—children begin with line and adults usually continue with it as they doodle throughout life.
4. Line emphasizes the basic structure and composition of a drawing which ensures more probable success and a more effective sketch.
5. Line provides a framework on which to hang other drawing techniques such as shading and color.
6. Line is easy to reproduce on copy and blueprint machines.

Now you have the necessary tools. You are ready. It's time to begin. The next page has the first exercise.

The first few exercises are really easy. Maybe even a little too easy. The important thing is for you to begin to do *something*. Get familiar with your pen and paper.

Start with lines. Make some lines with your pen—thick lines and thin lines. Try different pressures on the pen point. Lay the pen down on the paper; use the side of the pen tip to draw a line.





Look Close

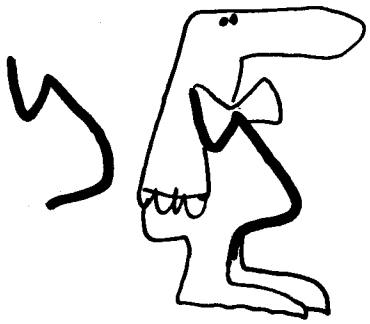
All of the drawings on this page were done with a single pen. Thick lines, thin lines, dark lines, light lines, crisp lines, and fuzzy lines are all a product of one single pen. You need to learn to control your pen to be able to extract the variety of lines shown here. Finish filling the page with heads.

Visual Thinking

Like any kind of thinking, visual thinking becomes easier and more productive the more you do it. The mind has been compared to a muscle in that it performs better the more it is used.

Visual Thinking Games

In an attempt to get your mind in the groove of thinking visually, try the following visual games. First, draw any doodle. Ask a partner to make something from the doodle. Here's an example of how it's done.

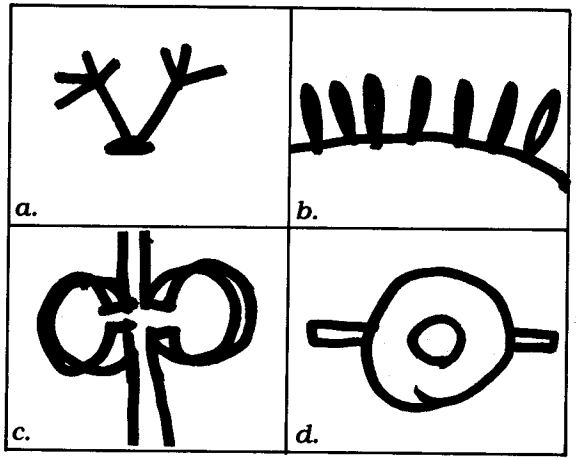


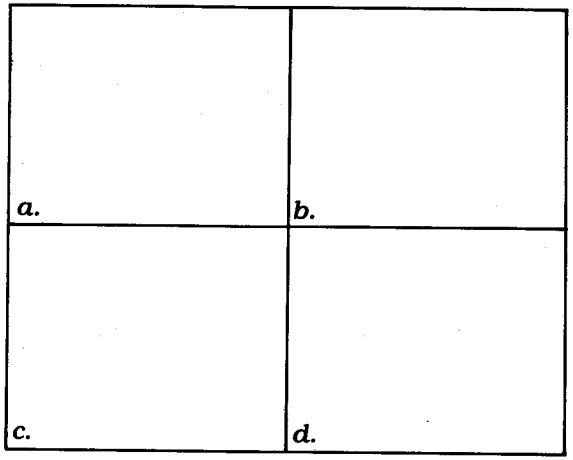
☐ *Now you make something from your doodles. Quality of drawing is not an important consideration. The exercise is to teach visual thinking. Just be sure that your drawings are recognizable.*

☑ *Check the box as you complete each exercise.*

What Is It?

Another fun game is to try to guess what the objects are when an incomplete view is shown. Your mind is forced to imagine what the drawing would be if seen from a more complete view or if the rest of the drawing were visible.





☐ *Look at the squares above. I'll tell you what the drawings represent so that you get the feel of how the exercise works.*

a. early bird getting the worm
b. just before Custer's last stand
c. a flamingo swallowing a barbell
d. a Mexican wearing a sombrero riding a bicycle

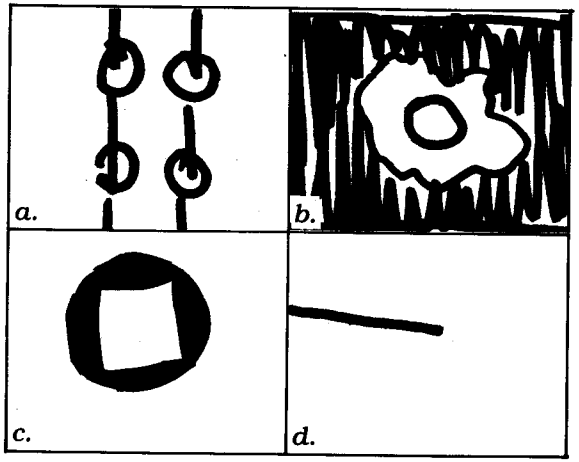
☐ *Below are some other drawings. You imagine what you think the drawings represent. The answers are shown on the next page.*

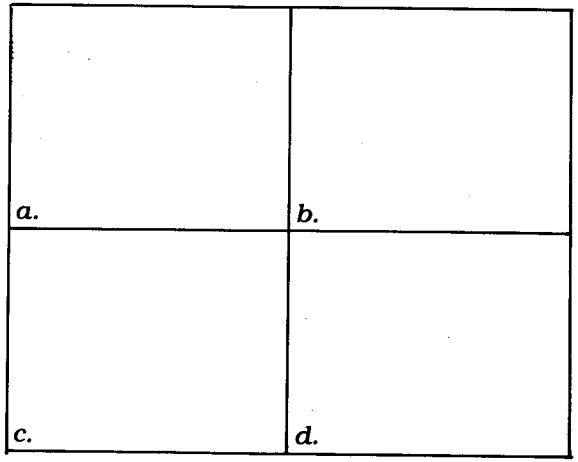
☐ *Using incomplete pictures as in the previous examples, you draw the following things in the squares above:*

a. a porcupine's pillow
b. Abraham Lincoln taking a bath
c. a spider doing a handstand
d. the other side of the argument

☐ *In the last two sets of squares make up your own visuals. (If you are tempted not to do this exercise, reconsider. Learning to think in visual patterns is accomplished by practicing. It is an easy, fun exercise, so try it.)*

a. _____
b. _____
c. _____
d. _____





Getting the Picture

Most all of us have, at one time or another, played the game of guessing what we see in cloud formations. The puffy clouds indicate images to our mind. This next visual game is very similar to that.

☐ *Shown are a bunch of squiggly lines. A series of sentences describe the lines. You match the sentence with the squiggle. Note: in some instances it isn't necessary that you see a distinct image in the lines, you might just get a certain "feel" that says to your visual mind what the sentence says.*

a. b. c. d. e.

—He had learned the amazing ability from his brother's dog.

—After laboring for weeks she was ready for the unveiling.

—The wierd Gopile stomped down main street consuming everything in its path.

—How long it had been there was impossible to determine.

—61-year-old Maude hadn't ever been married; indeed, it was doubtful she ever had a suitor.

☐ *Make up your own squiggles and sentences to describe what they mean. Remember, there is no single right answer. It is an intuitive exercise.*

Key Principles

A number of key statements will help you understand what this book intends to accomplish. Some of the exercises may seem strange, but every exercise has been calculated and tested to be effective in accomplishing a specific purpose. Listed are the goals for the book and the methods that it uses to reach them.

1. The intent of the book is to help you develop your own unique style of visual expression. It is not trying to help you become a master illustrator, just a visual thinker. The exercises take you from copying someone else's visuals to making your own. As the book progresses, you should develop a style that is comfortable for you.
2. You must push yourself. Becoming better at drawing is similar to other skills in that you must push beyond current capabilities in order to improve. A weight lifter improves by trying to lift heavier pieces. A runner improves by running faster or for longer periods of time. Push your abilities—strive for better work in shorter periods of time.
3. Defer judgment. One of the biggest pitfalls to learning visual skills is the tendency to judge. "My drawings look silly compared to those in the book," you might say. That's judging. Don't judge. Just do the exercises.
4. Humor helps defer judgment. Many artists criticize the cartoons and nonsense drawings in a book like this. The purpose of the humor is to get the student to laugh. If you can laugh at your drawings, it's easier to defer judgment. Taking things too seriously too early in the learning process discourages some would-be visual thinkers.
5. Set tight parameters. The exercises attempt to restrict your freedom at least for now. Tight restrictions as to what is to be drawn, how long to take, and so forth make drawing easier at first. Do the same for yourself. Set tight goals. Too many choices breed confusion and nonperformance. Decide specifically what to do and then do it.
6. Rapid viz is a progressive process. You will learn a little at a time. Go back over things to determine your own improvement. Progress in small steps rather than trying to become proficient in one big step.
7. Learn in sequence. Some things are more easily learned after first learning preparatory skills. Such is the case with many of the rapid viz techniques. Take things in order as much as possible.
8. As you proceed through the book you will be asked to draw things that may not interest you. "Why draw interiors of buildings if I am a landscape architect?" you may ask yourself. The answer is that the techniques you learn are the same no matter what you draw. What you learn by drawing objects different from your area of work or study will be beneficial to you.
9. Keep records of your progress. Check each exercise. Save the drawings that you do. Record the date or sequence you did things in. As you look back over previous work you will be surprised to note the progress.
10. This book is not the ideal teaching medium. A live teacher would be better, but this is a good alternative. The techniques have been tested with live students. Although learning will take effort on your part, the effort expended will be worth the rewards. Learning rapid viz will not only change your drawing habits, it will expand your thinking abilities.

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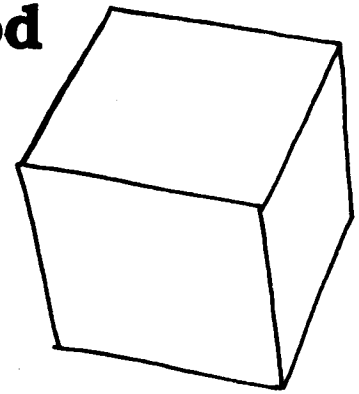
a. a bear climbing a telephone pole
b. the view of the sun through a chuck hole
c. a square peg in a round hole
d. the end of the line

The Box Method



One of the most difficult things for people to learn is to draw in correct perspective. Teachers have struggled for years to find methods to teach students to draw correct perspective rapidly and quickly. I have found a method that works well. It is easy to learn. It will work every time. And, even if you have no art background whatever, using this method you will be able to draw accurate perspective.

The method involves a box or cube. If you can draw a two-dimensional square correctly, you then can easily draw a box. If you can draw a box in accurate perspective, you can draw anything, accurately and in perspective.

Sounds simple, doesn't it? It is simple. It will take some practice. It will take time to understand what is happening. You will have to practice those things mentioned in this book. But, if you do, you will find it is really quite easy.

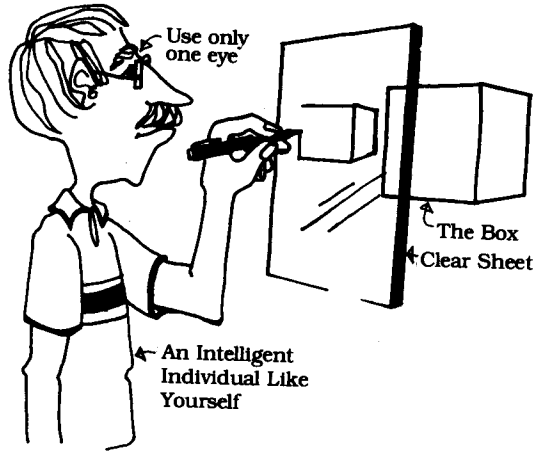
Cut out the Box

On the next page is a box to cut out. Cut out the figure, fold it, and paste the edges together so that you make your own box. You need this box to look at and to draw.

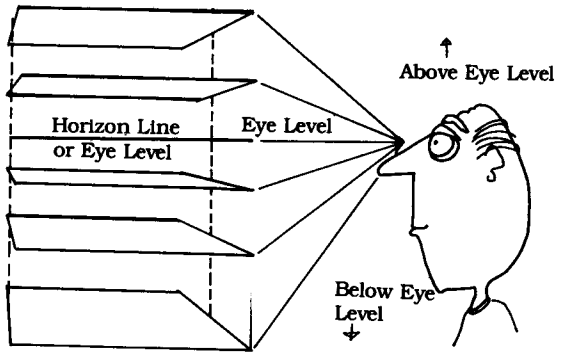
Now, once you have the box together, you will need to find a piece of clear glass or plexiglass or vinyl (like a report cover) and a felt tip pen that you can use to draw on your clear sheet.

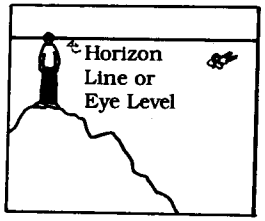
Take your box and set it up behind your clear sheet. Then hold the clear, transparent sheet stationary while you trace the box on it. Hold everything very steady. Trace the box exactly as you see it. Keep your eye in one steady position, the box steady, and the clear sheet still. If you don't move any of them, then you can draw the box in correct perspective.

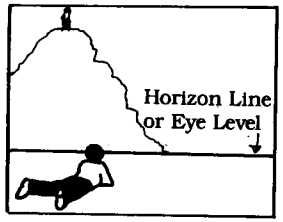
One hint; don't use both eyes. Shut one eye. If you use two eyes, you will get a double image making it difficult to draw. So make sure you shut one eye so as to get one image.



If you move the box up or down or if you move up or down, you see different views of the top and bottom of the box—you see different planes. The view of the surface that you see changes as your eye level changes. This eye level line is called a horizon line. The horizon line is always level and is always at the level of your eye. Thus the view of the top and bottom of the box changes as you move your eye level or horizon line.



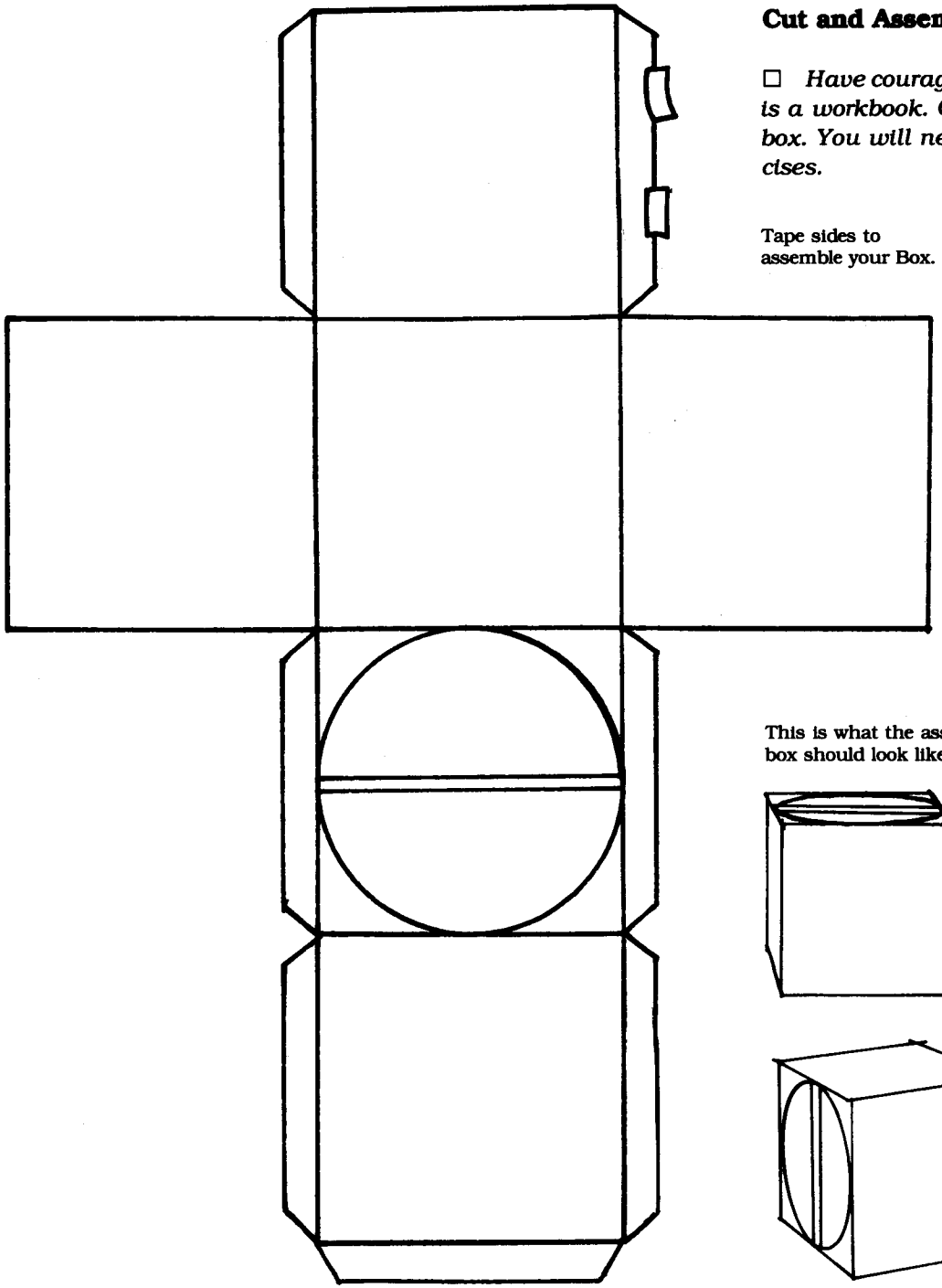




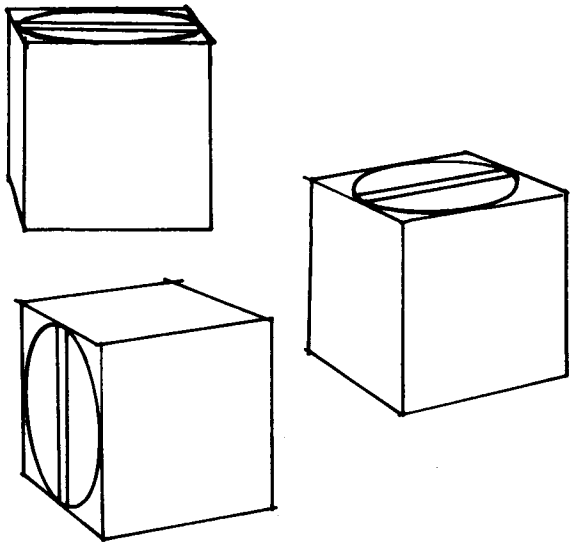
Cut and Assemble into a Box

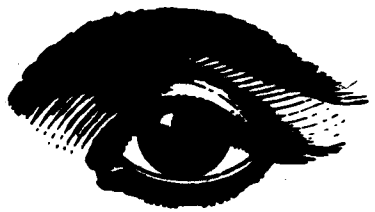
☐ *Have courage. This is a book to be used; it is a workbook. Cut the book—assemble the box. You will need the box to do other exercises.*

Tape sides to
assemble your Box.

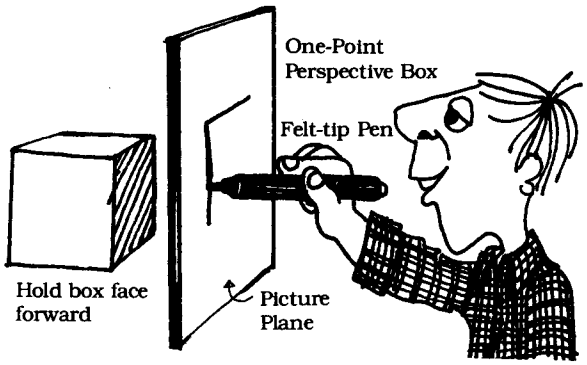


This is what the assembled box should look like.





Carefully study what happens to the cube. Turn it sideways. Hold it above your eye. Hold it below your eye, to one side, to the other side. Note how the surfaces of that cube appear to change shape as you change the position of the cube in relation to your eye.

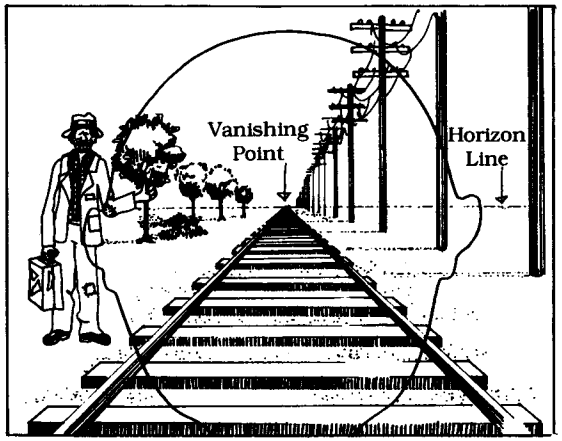


One-Point Perspective Box

If you hold the box directly in front of your eye, you will see one-point perspective. What this means is that all lines appear to converge at one point on the horizon. If you have ever looked down a railroad track, as you stand in the middle of the track, you will notice that the tracks seem to disappear in the distance. They seem to converge at one point far in the distance. This is called one-point perspective. One-point perspective means that parallel lines disappear at one single point on the horizon line in the distance.

There are three different kinds of lines in perspective drawing. One-point perspective has all three of these lines. It has vertical lines, horizontal lines, and perspective lines. Some of the lines are exactly vertical; they go straight up or straight down and are parallel one to another. Some of the lines are exactly horizontal; they are parallel across the page. Some lines are perspective lines; they converge at a point on the horizon line.

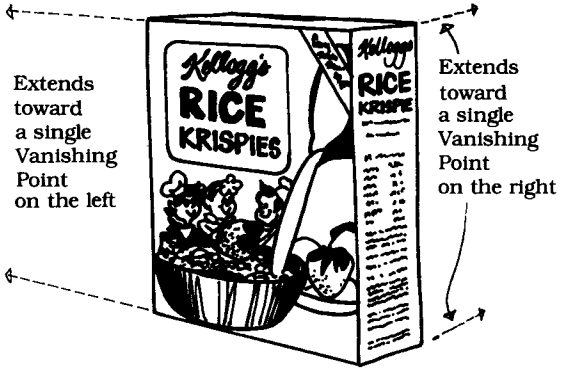
As you draw the box, the surface that you draw it on is called a picture plane. It is the transparent glass surface. The picture plane is your paper if you are drawing the box on a piece of paper. You draw on paper the same as you trace through glass, but instead of looking through the glass (the picture plane) to draw the box, you hold your paper (the picture plane) in front of you and trace that box.



converge at two single points on the horizon line at opposite sides of your paper. Notice how the edges on the Rice Krispie box and the newspaper vending machine seem to get slightly smaller as they go away from you.

Two-Point Perspective

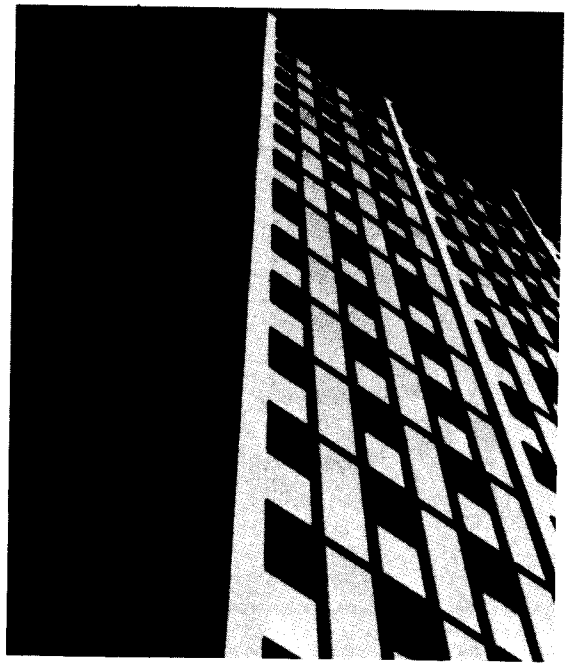
A second kind of perspective is called two-point perspective. Turn your cube so that you are looking at an edge of that cube. From that edge the sides of the cube seem to get smaller as they go away from your eye. Both sides get smaller. Both sides seem to vanish at *two* different points on the horizon line. For this reason, it is called two-point perspective. Two-point perspective means that from a given edge, parallel lines, like the sides of the cube,



Three-Point Perspective

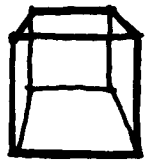
The third kind of perspective drawing is three-point perspective. What happens here is that lines appear to converge at three given points either to the sides of the picture plane or at the top or bottom of the page, depending upon where your eye level line is. Look at the corner of the building. As the sides of the building go away from you, the two parallel edges create lines that will disappear at a point on the horizon line. As you look up at the building you will notice that the vertical lines that go up appear to get closer and closer at the top so that they would eventually disappear at a point high above the building. This is three-point perspective.

The photo below is a three-point perspective view of a box of cereal.

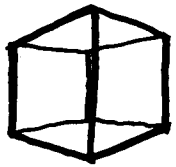


The Three Kinds of Perspective

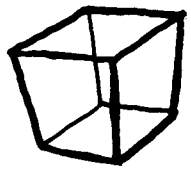
One-Point Perspective
Side of box against glass
3 kinds of lines—
vertical lines,
horizontal lines,
perspective lines

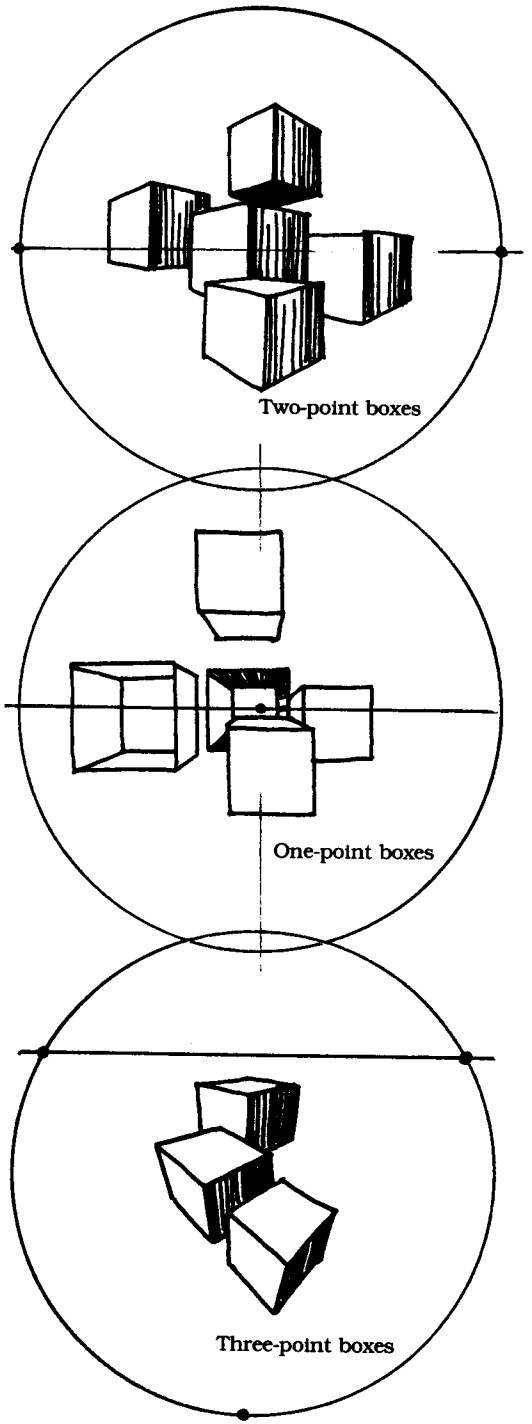


Two-Point Perspective
Edge of box against glass
2 kinds of lines—
vertical lines,
perspective lines



Three-Point Perspective
Corner of box against glass
1 kind of line—
perspective lines

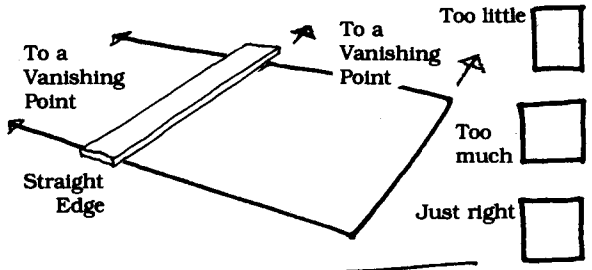




Recognizing a Square in Perspective

You need to develop a critical eye so that you can easily see if a cube is drawn in correct perspective. Below are some lines that are three sides of a square. The fourth side has not been drawn in.

☐ *You draw the fourth side so that these squares show accurate perspective. Slide a straight edge along until the square appears visually correct to you. Then, draw the line.*

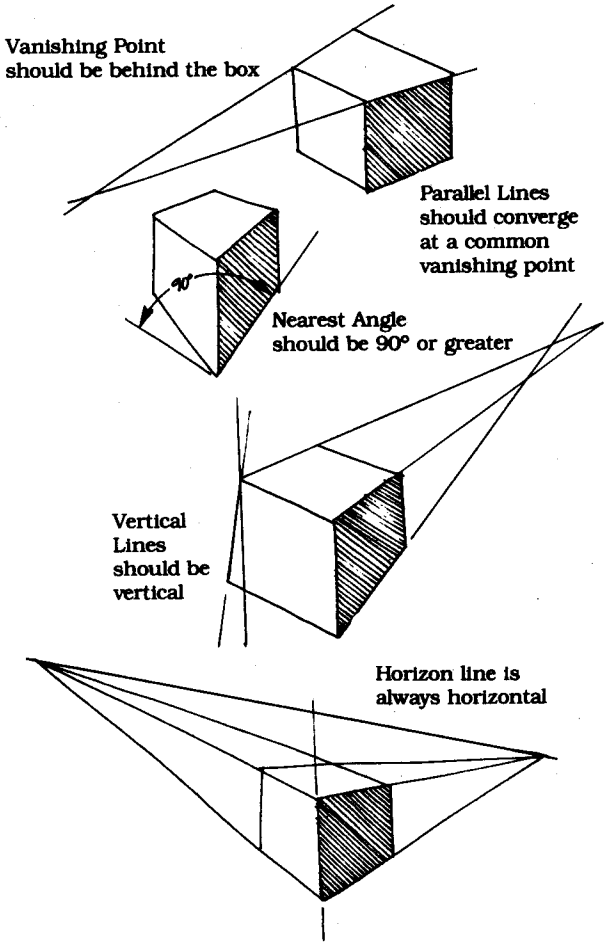


Key Principles of Perspective

Here are some of the key principles to remember when drawing boxes in perspective:

1. Perspective lines converge at a vanishing point.
2. The horizon line is always horizontal.
3. The nearest angle is 90° or greater.
4. The sides of a cube are proportional to a square.

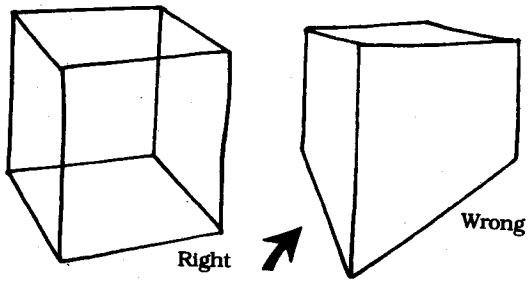
Some common errors happen when you learn to drawn cubes. Let me tell you just a few of them to watch for.



Recognizing a Cube

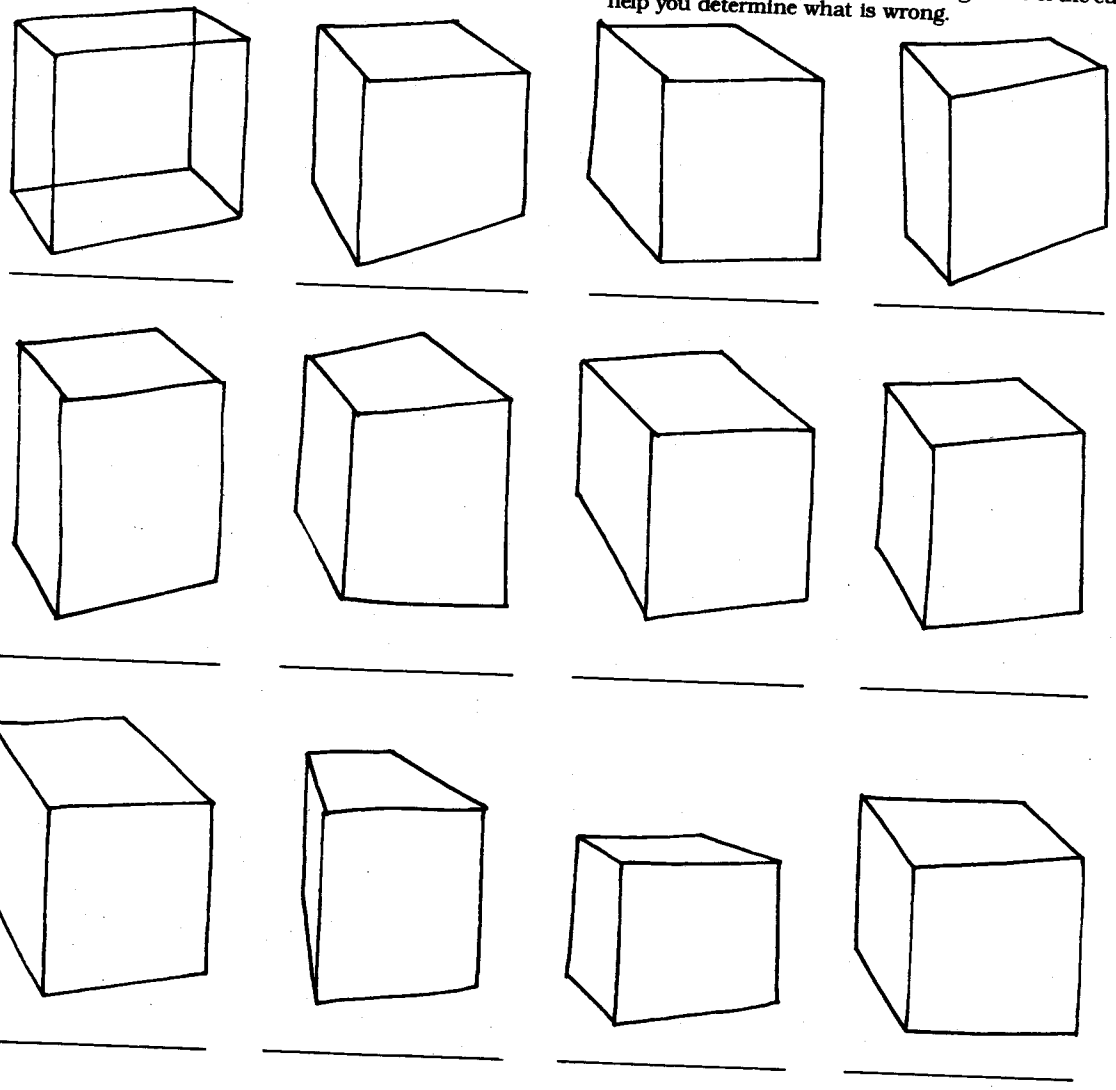
Some of the cubes below are drawn incorrectly. What is wrong with them?

☐ *Draw over the cubes so that you fix what is wrong. (The cubes have at least one of four things wrong: (1) convergence (2) horizon line, (3) nearest angle, (4) incorrect proportion. Each cube may have more than one thing wrong with it.)*



This one has all the mistakes.

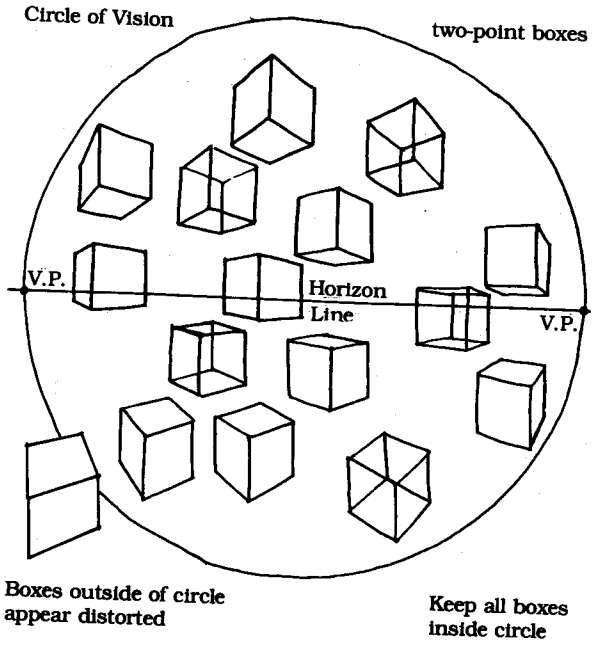
You may want to draw the hidden edge lines of the cube to help you determine what is wrong.



An Explanation

Below is a circle with a lot of different cubes drawn in that circle. The line going straight across is your horizon line. Above or below the horizon line the cubes begin to distort because of the perspective drawing. All of these cubes are drawn in two-point perspective. Whenever you draw things in perspective, you will find it helpful to imagine that you are drawing within the limits of a circle. If you draw things beyond that imaginary circle, then the cubes appear to be so distorted that they don't seem real. So you need to draw within that imaginary cicrle.

Two-Point Box in Perspective



Drawing Two-Point Boxes

Drawing in two-point perspective is the easiest of all perspective drawing for most people. You have only two kinds of lines—perspective lines or vertical lines. If you seem to have trouble drawing things correctly, draw the box as though it were transparent so that you can see the hidden sides, edges, and corners. Then erase the hidden lines once you have everything drawn correctly.

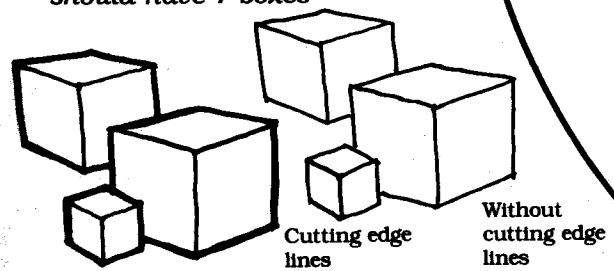
☐ *In the circle I have started an exercise for you to complete. Study the one box that is already finished. Then do the following:*

☐ *Finish drawing the other box that is started but not yet complete.*

☐ *Draw 3 more boxes anywhere within the circle.*

☐ *Draw 2 boxes that sit in front of or behind other boxes.*

☐ *When finished you should have 7 boxes*



Cutting Edge

Here is a hint to use when drawing objects. The outside lines of the object should be drawn darker and heavier. The darker outside edges make each object appear to stand by itself either in front of or behind another object.

Drawing One-Point Boxes

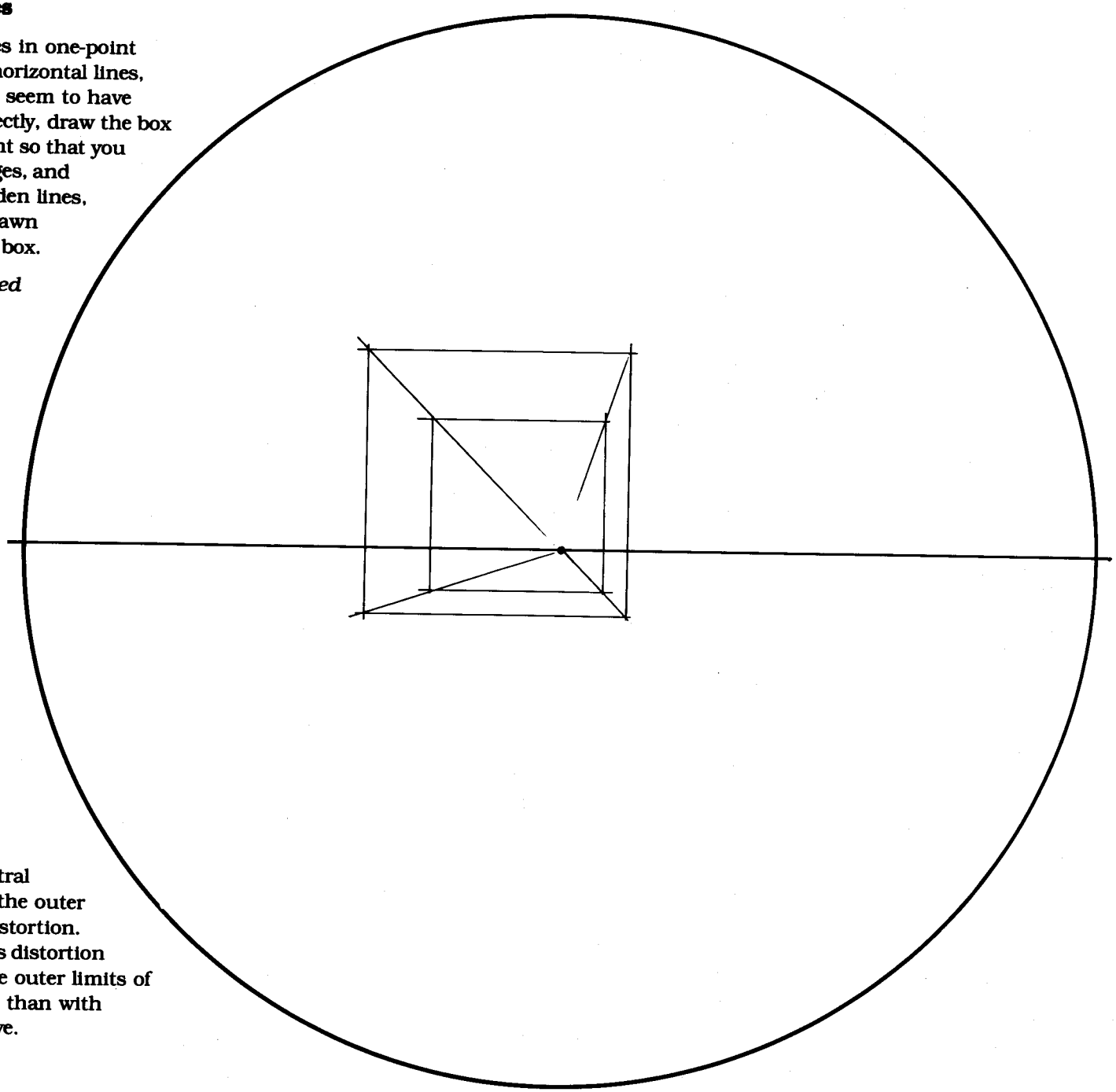
You have three kinds of lines in one-point perspective—vertical lines, horizontal lines, and perspective lines. If you seem to have trouble drawing things correctly, draw the box as though it were transparent so that you can see the hidden sides, edges, and corners. Then erase the hidden lines, once you have everything drawn correctly, thus leaving a solid box.

☐ *In the circle I have started another exercise for you to complete. Do the following:*

☐ *Draw 2 more boxes anywhere within the circle.*

☐ *Draw 2 boxes that sit in front of or behind other boxes.*

☐ *When finished, you should have 5 boxes.*



A Distortion Problem

In one-point perspective the farther away from the central vanishing point, the closer to the outer edge of the circle, the more distortion. With one-point perspective this distortion that occurs when you near the outer limits of the circle is more pronounced than with two and three-point perspective.

Drawing Three-Point Boxes

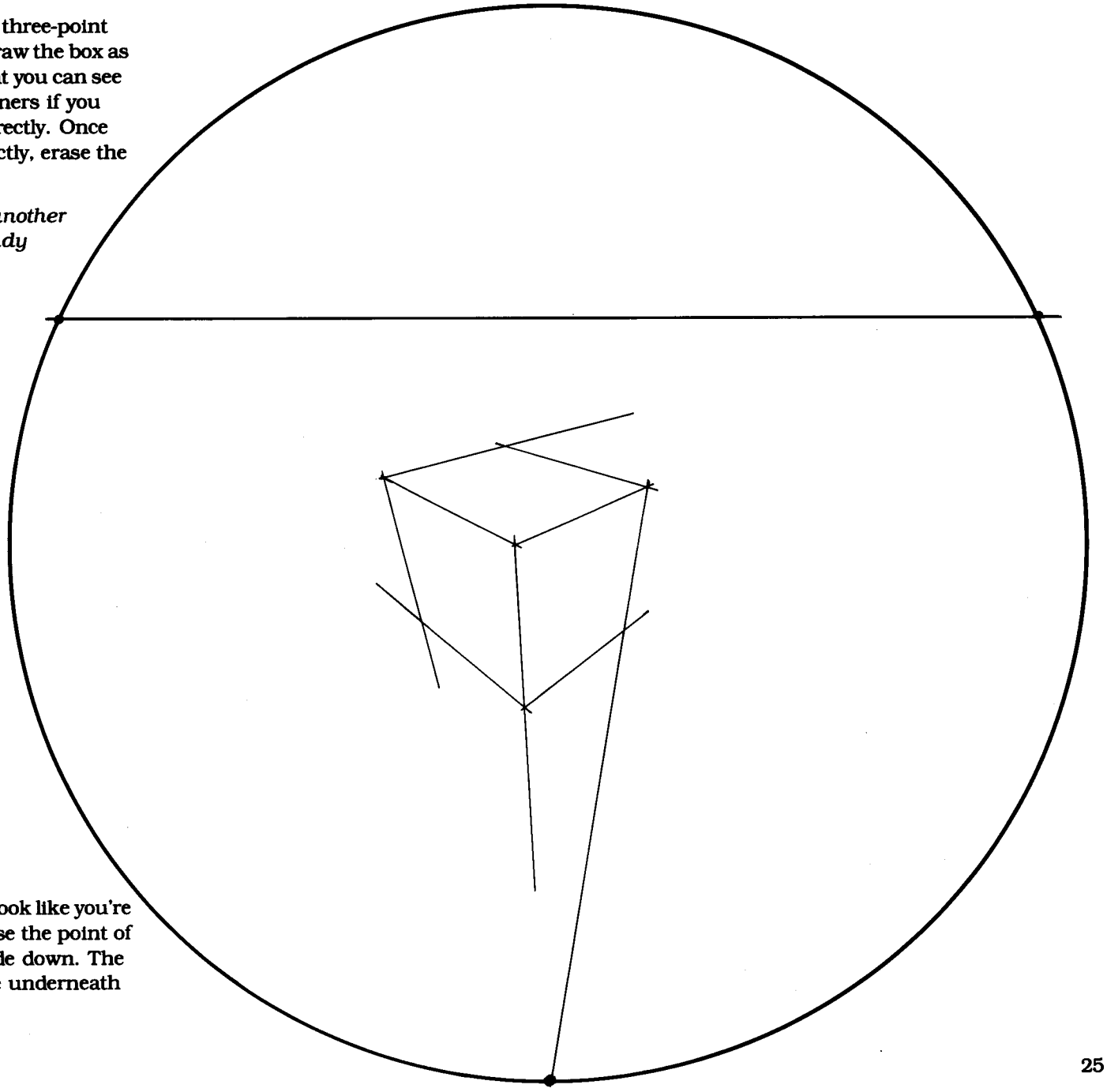
There is only one kind of line in three-point perspective—perspective lines. Draw the box as though it were transparent so that you can see the hidden sides, edges, and corners if you have trouble drawing things correctly. Once you have everything drawn correctly, erase the hidden lines.

☐ *In the circle I have started another exercise for you to complete. Study the one box that is already finished. Then do the following:*

☐ *Draw 3 more boxes anywhere within the circle.*

☐ *Draw 2 boxes that sit in front of or behind other boxes.*

☐ *When finished you should have at least 5 boxes.*

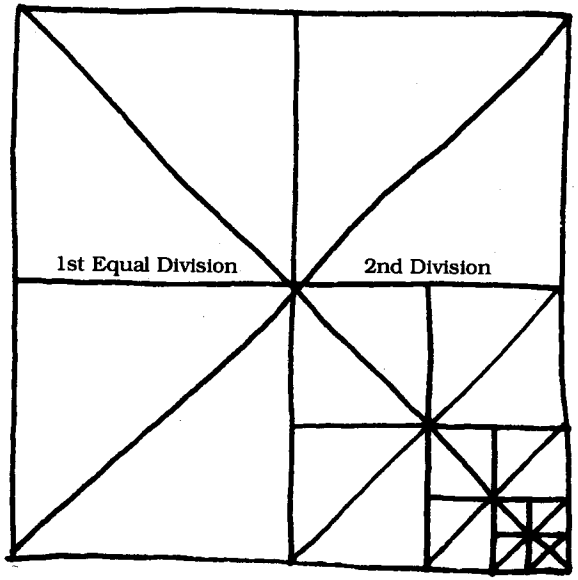


Upside Down

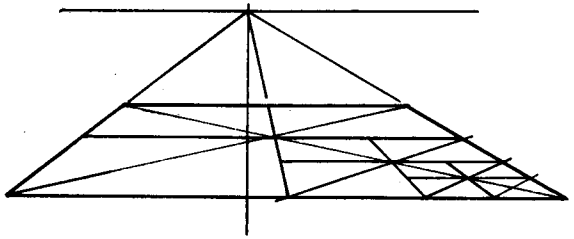
The boxes within this circle will look like you're looking down on them. To reverse the point of view simply turn the book upside down. The boxes will then look like you are underneath them.

Dividing a Square

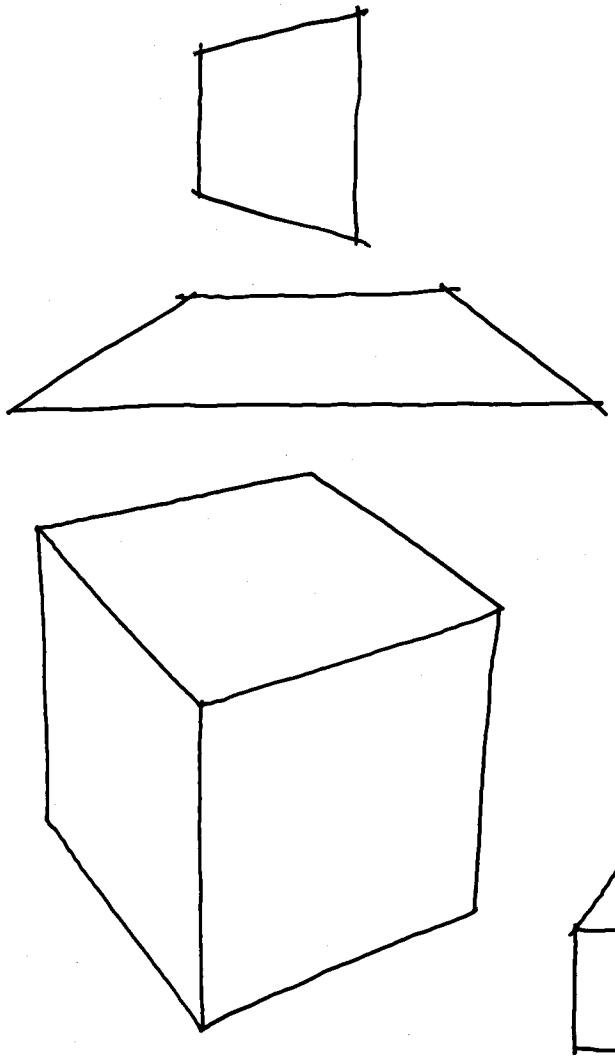
The diagonal lines drawn from corner to corner of a square cross in the exact middle of that square. A line drawn from the middle of the square to the vanishing point bisects the edge at midpoint. Now draw a line from the corner through the midpoint of the side. This line from the corner through the midpoint of the side will cross the bottom line of the square, giving you the location at the far corner of the next square. See the illustration below. This principle is used to help divide a square into equal segments or to enlarge a square in equal segments.

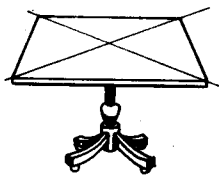


Below is a square drawn in perspective. You are above the square looking down on it. Using the diagonal to divide the square applies in perspective also.

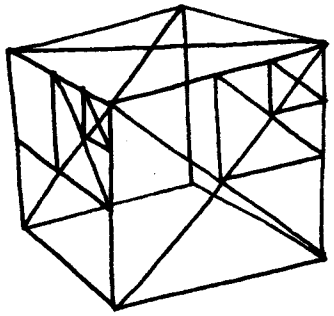


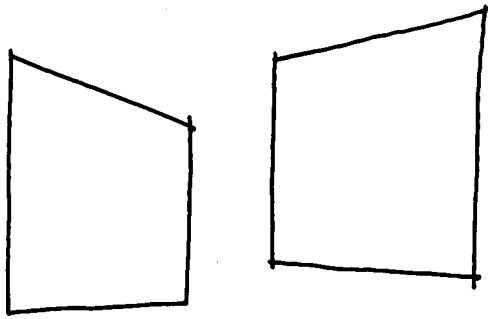
☐ *Here are some examples of cubes and squares. Draw diagonals so as to cut these squares and cubes directly in half. I have divided one cube to show you how it is done. Divide the squares and cubes below– divide them in half, then divide one side in quarters. You will need to draw the hidden edges (sides of the cubes away from you that you don't see) of the cube in order to know where to divide it.*

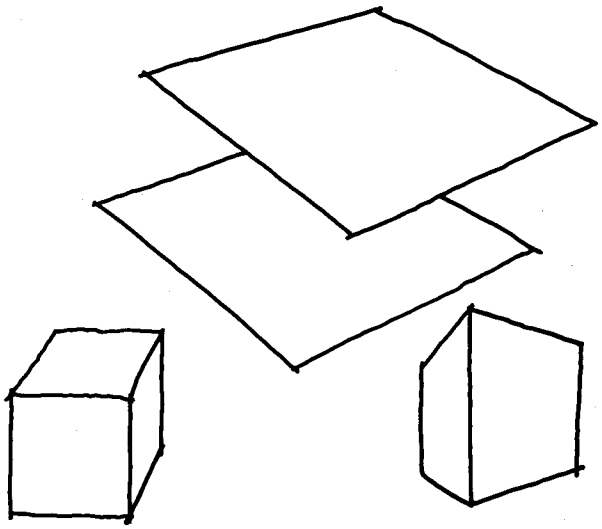




Use diagonal lines to locate the center of objects.

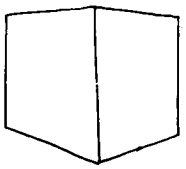




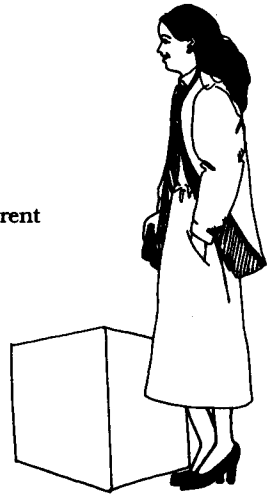


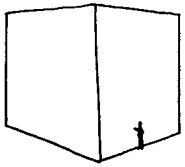
A Unit of Measurement

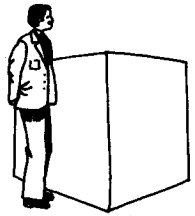
A cube can act as a standard of measurement. The cubes drawn below are all the same size, but they appear to be different sizes because of the surroundings—the man, the lady, the foot. These different cubes can act as different units of measurement. The cube can be one inch, one foot, a five-foot section, one city block, or one mile.

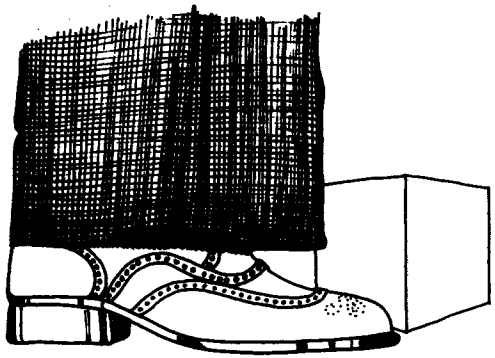


The same size can be different sizes in drawings.

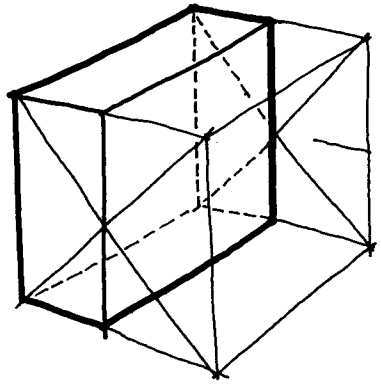








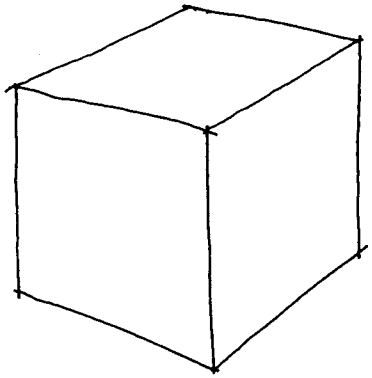
Below is a box divided into equal units. The box measures 10 units tall x 5 units wide x 10 units deep. How do you know that it measures 10 x 5 x 10? Look at the proportions—the box is half as wide as it is tall. That same box could also measure 20 x 10 x 20 because the proportions are the same as 10 x 5 x 10—the box is half as wide as it is tall.



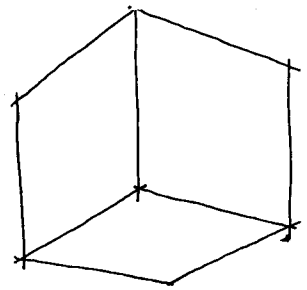
Could have been cut this way also.

☐ *Divide the cubes below. Figure the proportions and divide accordingly. Use cubes as units of measurement. Divide the cubes to get correct proportions.*

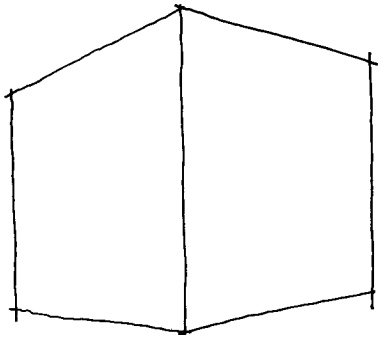
The same size can be different sizes in drawings. You need not be exact. Estimate as well as you can.



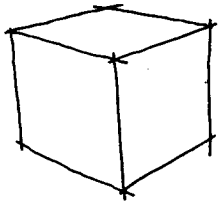
☐ *Draw this one 5 x 5 x 10.*



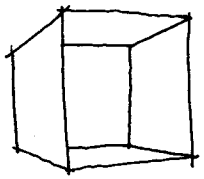
☐ *Draw this one 10 x 10 x 5.*



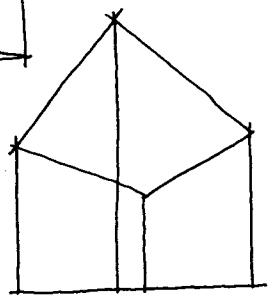
☐ *Draw this one 1 x 1 x 0.5*



☐ *Try 1 x 2 x 3.*



☐ *Draw 2 x 1.5 x 1.*



☐ *And last, draw this one 100 x 100 x 75.*