CHAPTER 2

Reference Materials, Textures, and Practical Stuff

THE PREVIOUS CHAPTER attempted to train your eyes and mind to take notice and ask questions by looking at real materials. This chapter prepares you to begin collecting reference materials in your mind and in your office. You begin by investigating materials and their textures in photographs and then see how you can use these photos to further your exploration of materials and textures. You will be asked to explore the different sources available to create a library of reference called a *morgue*. These sources include: magazines, the Internet, and real materials to name a few. Finally, at the end of this chapter, the "Photo Gallery" section contains several different photographs through which I discuss the effects of nature, and effects of other materials on surfaces, which all contribute to create textures. As you study these photographs, continue exercising your artistic eye and practice the art of looking and dissecting that began in Chapter 1.

Now it is time to fill your head with as much information about materials and textures as possible. What follows are some photographs that I took walking around Manhattan, a city very rich in texture. These photos are a very generalized and arbitrary overview of materials and textures that appealed to me. Please keep this book as a general reference guide by your desk. It will help you when you start on your own pictorial reference expedition.

2.1 Basic Materials

This first part of the picture reference section shows pictures of materials as close as possible to their *perfect* state. I found out during my collecting that it is difficult to find a perfect state in reality. I relied on material samples from stores and also thoroughly investigated surfaces in the real world during my exploration to find these basic materials.

What follows are some photographs of materials in their near-perfect state. Refer to them as you go through this book, and use them as a basic reference guide in your professional endeavors. It is important to know what materials look like in this state—raw and untainted like a newborn baby. Think of these materials as the first layer of your paint program. The "virgin" blank canvas on which every other detail falls.

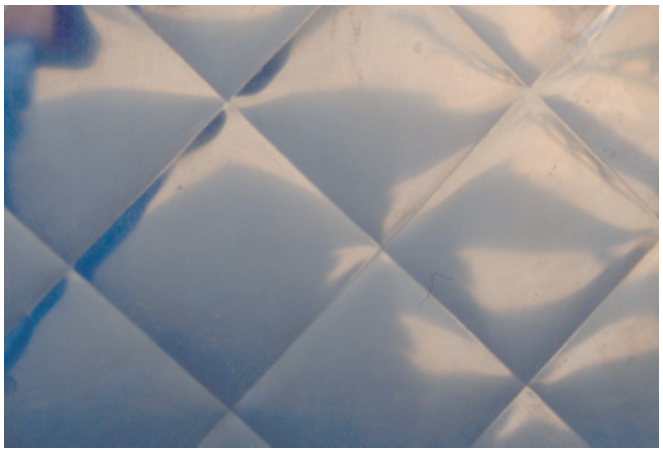
Basic Materials

Metal: Brass

Metal: Copper

Metal: Galvanized Steel

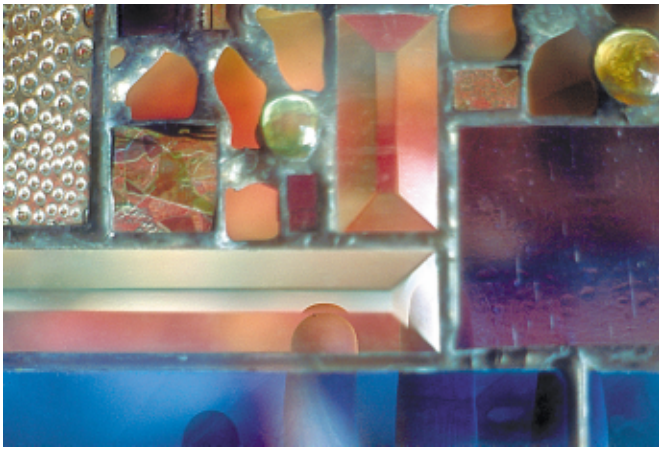
Metal: Brushed Steel



Metal Worn: Quilted Metal

Glass: Glass Block

Glass: Frosted Glass

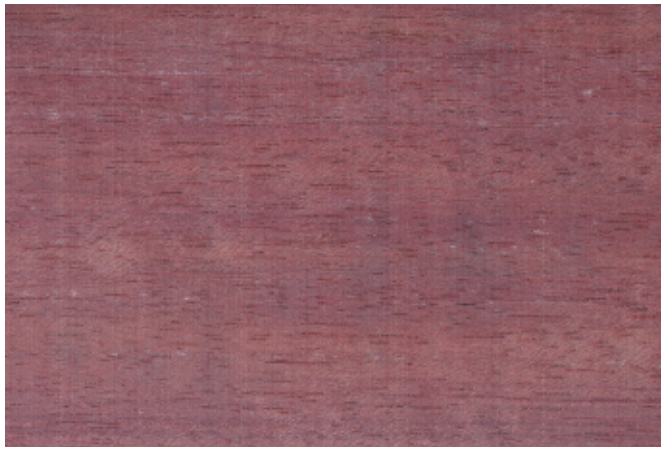


Glass: Colored Glass

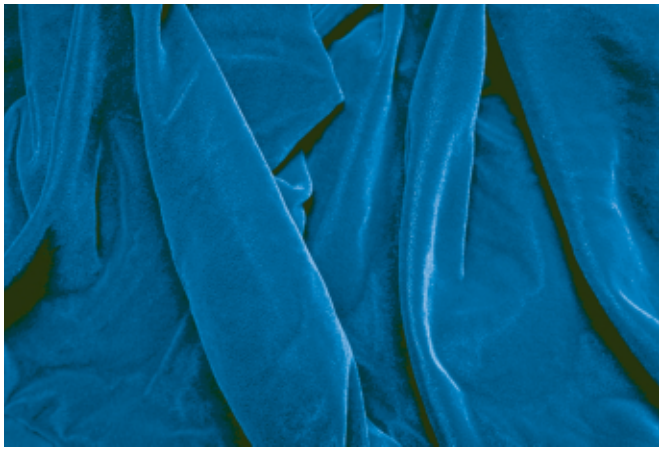
Wood: Plywood

Wood: Mahogany

Wood: Birdseye Maple



Wood: Purple Heart



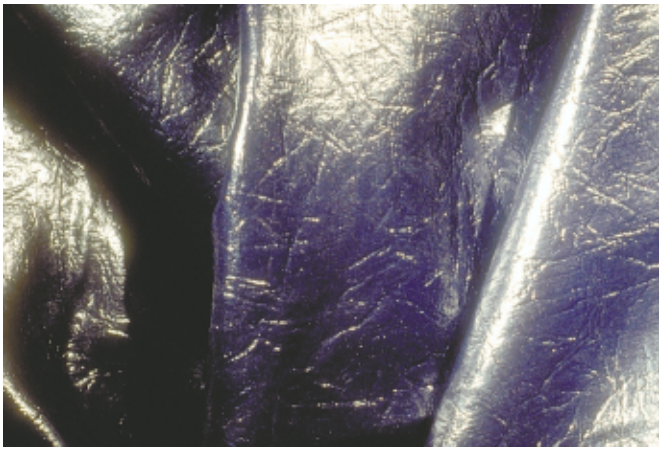
Fabric: Blue Velvet

Fabric: Burlap

Fabric: Satin

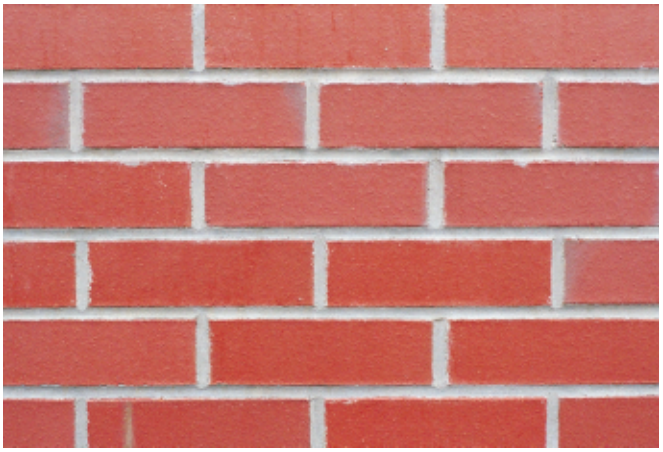
Fabric: Cotton Denim

Fabric: Embroidered

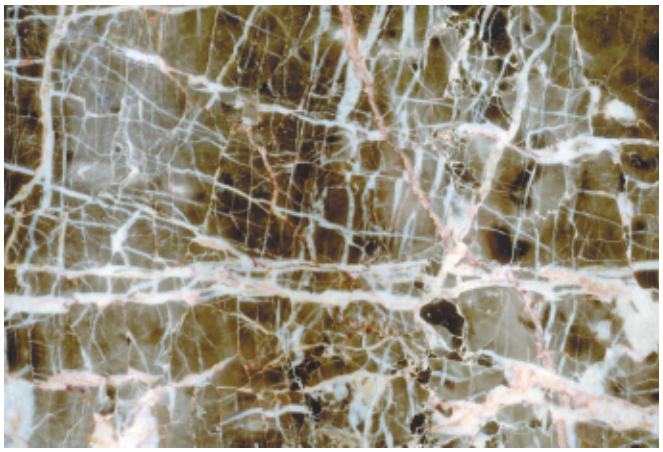


Plastic: Black Stamped Vinyl

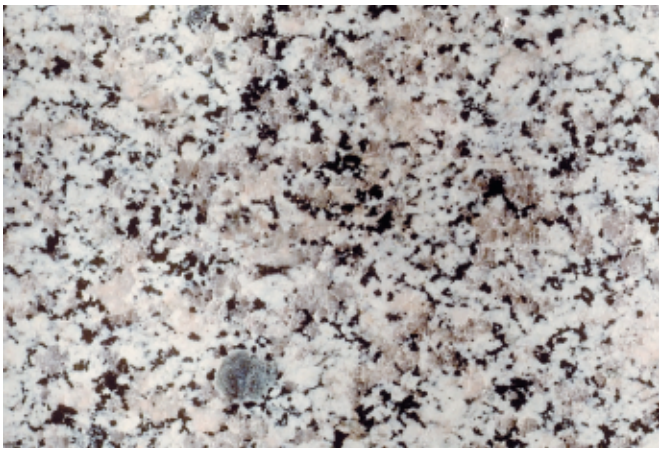
Plastic: Hard Acrylic Plastic



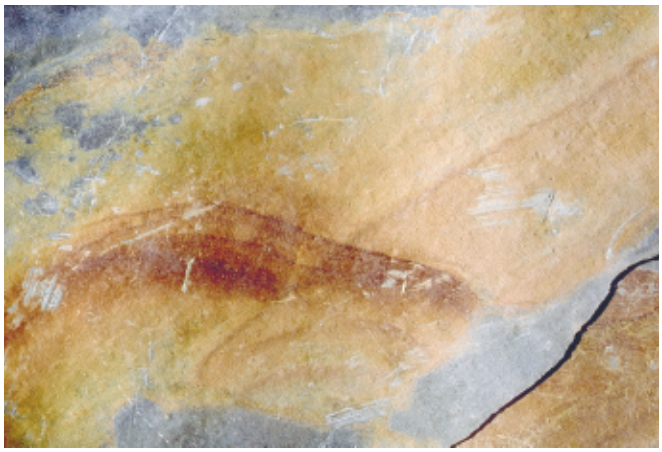
Stone: Brick Face



Stone: Marble

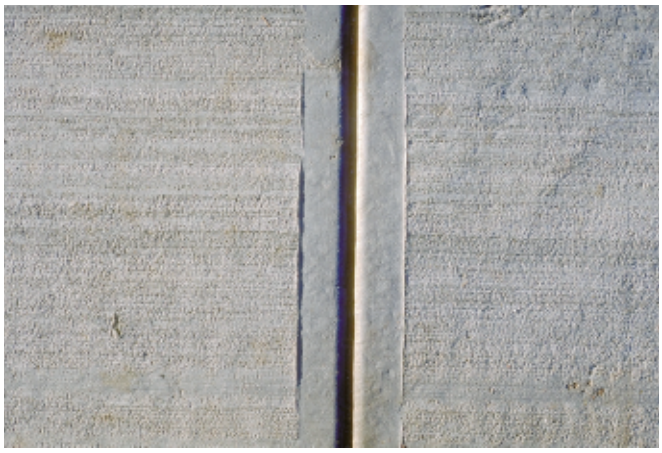


Stone: Granite



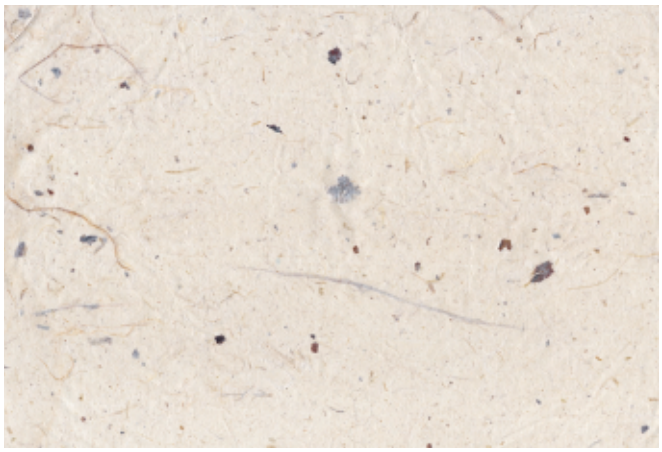
Stone: Slate

Stone: Agglomerated Stone

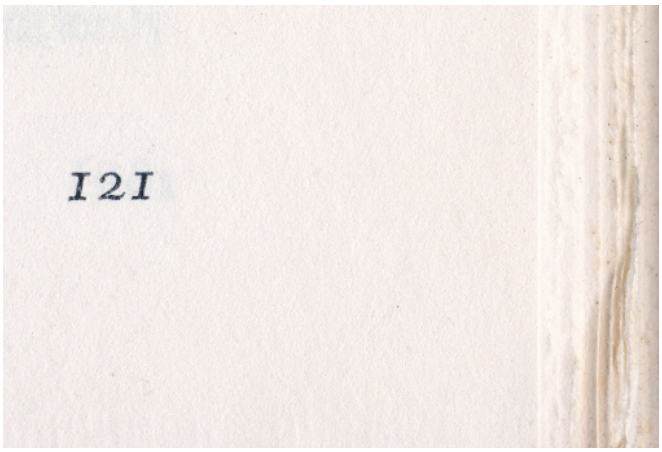


Concrete: Poured Concrete Sidewalk

Concrete: Cast Concrete



Paper Goods: Handmade Japanese Paper



Paper Goods: Text on Paper

Paper Goods: Brown Paper

Misc. Materials: Asphalt

Misc. Materials: Rubber

Misc. Materials: Leather

2.2 Basic Textures

Now consider the same materials with some basic textures added. I could not always find an example of a material-versus-texture pairing. Instead of a brass sheet material and brass sheet texture, for example, I have found brass sheet material and brass doorknob texture. In other instances I have a material and no matching texture—Japanese handmade paper material but no Japanese handmade abused paper. So, you will have to use your imagination in such cases.

In order to achieve a believable representation of a texture in any art style you must understand the subtle nuances that make up the texture; what makes it tick?

Compare the textured versions with the "virgin" materials, exercising your artistic eye to identify the changes. Think of the textures as the layers on top of the base material in your paint package. Each layer has its own history and reason for being there, and in Chapter 1 you were given a number of categories you can consider to differentiate and separate the layers when encountering a surface.

Basic Textures

Metal Worn: Brass Plating

Metal Worn: Copper

Metal Worn: Galvanized Steel

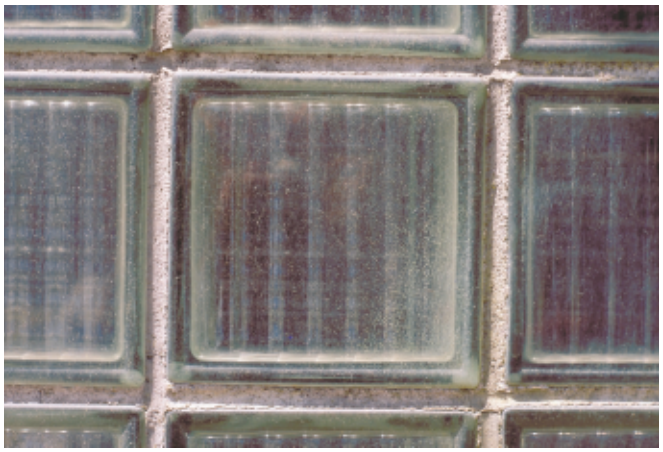
Metal Worn: Brushed Steel

Metal Worn: Quilted Metal

Metal Worn: Rusted Iron

Metal Worn: Aluminum

Glass Worn: Scratched Faux-Frosted Glass

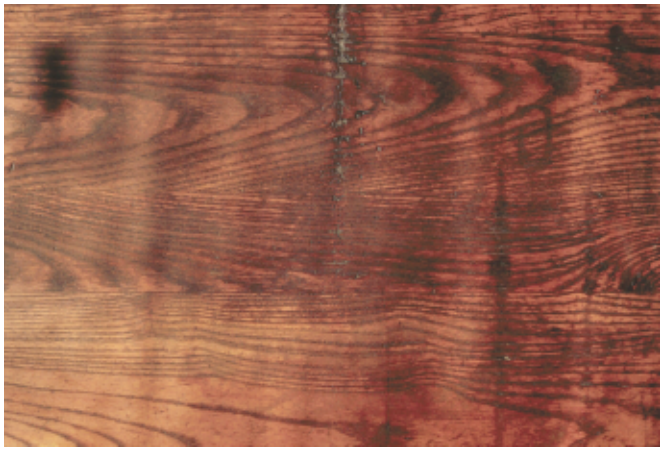


Glass Worn: Glass Block

Glass Worn: Reinforced Glass

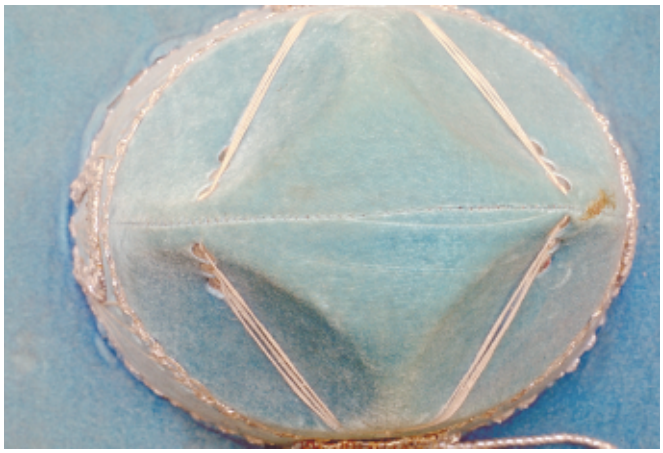
Wood Worn: Plywood

Wood Worn: Wood Plank



Worn Wood: Stained Oak Table

Worn Wood: Assorted Veneers



Fabric Worn: Blue Velvet Hat

Fabric Worn: Red Velvet Drape

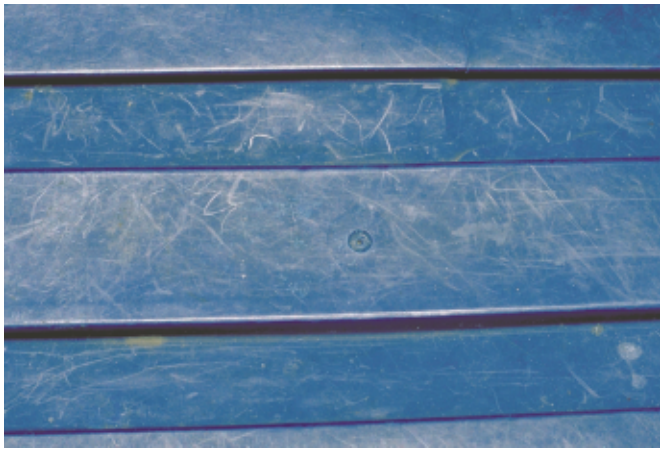
Fabric Worn: Burlap Sack

Fabric Worn: Satin Lining

Fabric Worn: Cotton Denim

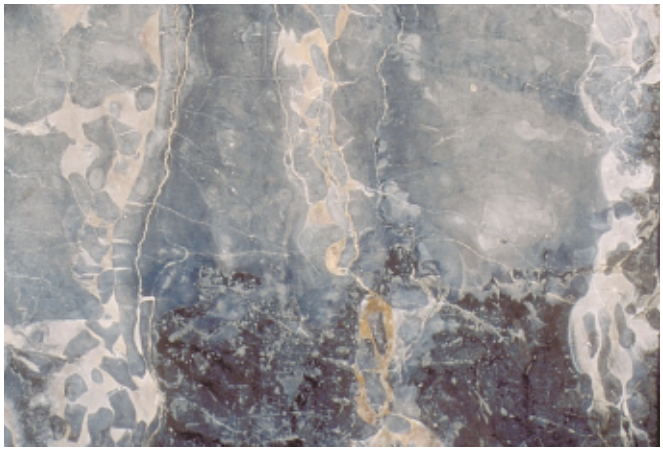
Plastics Worn: Ripped Vinyl Chair Top

Plastics Worn: Pool Balls

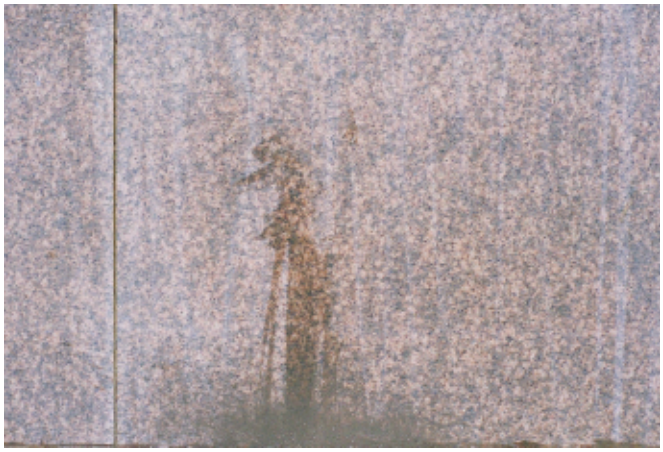


Plastics Worn: Garbage Lid

Stone Worn: Brick Wall

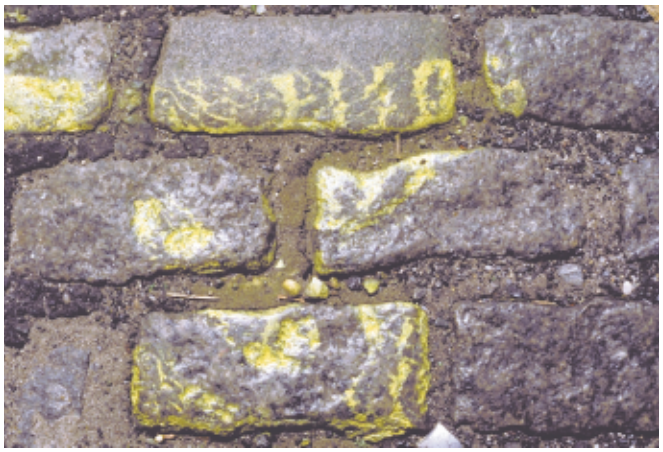


Stone Worn: Marble



Stone Worn: Granite

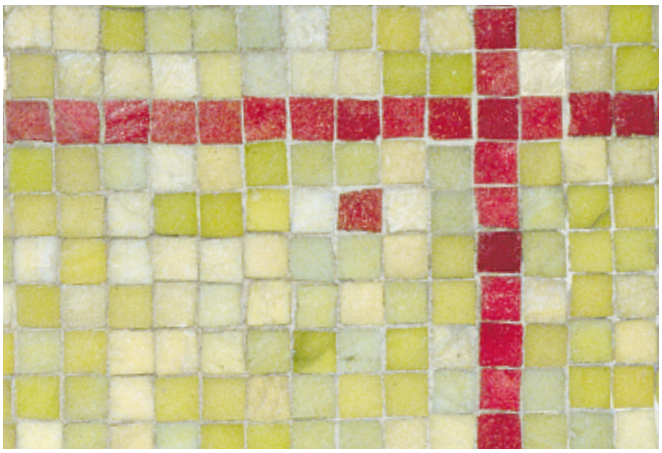
Stone Worn: Limestone



Stone Worn: Stone Road

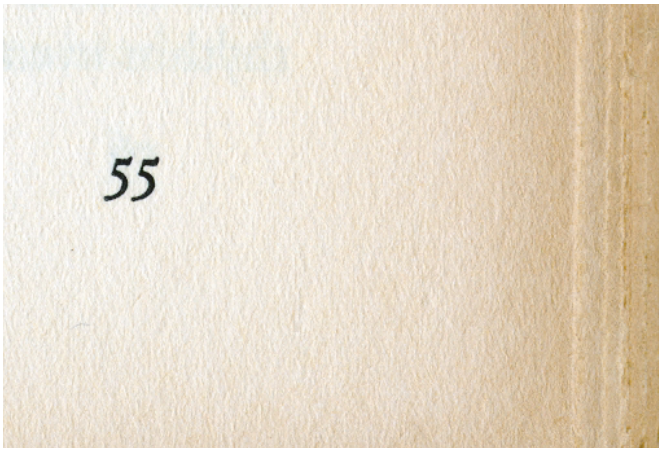
Concrete Worn: Poured Concrete Sidewalk

Concrete Worn: Cast Concrete



Tile Worn: Glazed Ceramic Tiles

Paper Goods Worn: Cardboard Box



Paper Goods Worn: Text on Yellowed Paper

Misc. Textures: Dirt

Misc. Textures: Asphalt

Misc. Textures: Rubber Tire

Misc. Textures: Leather

Misc. Textures: Linoleum Tile Under Wood

Misc. Textures: Auto Paint

The ability to differentiate between different types of surfaces and materials, as well as determining what makes up the surface and what gives the material its quality, is an important talent to develop. It allows you to make decisions quickly about the surfaces in your work as well as avails you with a new and exciting vocabulary through which to express it.

2.3 Creating a Morgue

An invaluable tool to start building right now is a *morgue*; a collection of images, photographs, samples and examples of colors and materials, and the like (see Figure 2.1). Your morgue should contain anything that visually inspires or affects you both in positive and in negative ways. It is a visual diary of sorts made from various sources, even your own work. It can contain real materials such as clothes, paper, rusty nails, washers—whatever you want to keep on record. For instance, I keep graphic design images to use for reference of type styles or current color usage.

2.1 Example of a morgue.

They all inspire me to create. Use your morgue not only as reference for reproducing textures for a project, but also to define your likes and dislikes—to see how they change over time. Morgues can be loose pages and items categorized into folders or pasted into sketchbooks or scrapbooks. This library-like collection is for you. Make it your own!

2.3.1 Your Own Photographs as Reference

I learned a great deal while taking photographs of textures and materials for this book. Like many of you, I am not a professional photographer, but I didn't let that stop me. They might not be the prettiest pictures, but they give me the information I need, the ideas I have been looking for, just as your own photography will do for you. The photographs you take do not need to be perfect in every way. Nothing ever needs to get in your way of finding reference, or creating it.

This book was a good exercise in encouraging me to rely on my own ability to capture what I needed from a photograph. I also learned a few lessons that may help you.

2.3.1.1 Camera Choice

Use a 35mm camera that has a reliable light meter either in the lens or handheld flash. If you have an automatic-everything camera, it is also helpful to set it to manual operation for focusing and bracketing

purposes. In a pinch, you can shoot reference photos with an instant camera or a "party fun" camera, although these cameras lack the capability to capture the same level of detail as the professional types, because of the quality of their lenses.

A digital still camera can also be used to acquire reference materials. The one drawback is the resolution of the captured stills. Digital cameras vary in resolution. The two kinds I used for this book took pictures that ranged in size from 640×480 pixels (6.6×8.8 inches at 72 dpi) to 1536×1024 pixels (21.3×14.2 inches at 72 dpi). This means that if you need to enlarge these images for some reason, the detail falls apart because the pixels, which make up the image, start to become visible. Digital cameras are better for textures that remain small, for creating tileable textures, or just for reference shots. They are extremely easy to use and cost effective. There are high-end professional digital cameras that have much larger resolutions, but they have much larger price tags, ranging from $20,000 to $50,000 at the time of writing this book.

A digital video camera is another way to capture both imagery and sound, and is useful for recording audio and/or visual notes on the texture's natural environment. Like digital still cameras, digital video cameras are resolution-dependent, and the images cannot be enlarged without deterioration. The coolest feature about the digital video camera that I used was its capability to capture extreme close-ups. I had the lens about 1/16th of an inch away from my tabletop and the photo turned out beautifully crisp in detail.

2.3.1.2 Film Stock

Decide on the film stock to use based on when and where you are shooting. For this book I used Fujichrome Velvia 50 and 100 ASA for all of the outdoor shots and Fujichrome Tungsten 200 and 400 ASA for indoor pictures. Your choice is important, because colors will shift if you are not using the correct film speed. At all times I used transparency/slide film because of its color saturation and accuracy of detail. I prefer this to print film. If you are unfamiliar with the aspects of taking photographs such as: film speeds, grain, composition, lighting, indoor versus outdoor, and so on, then I suggest you look at books on the subject or take an introductory course in photography.

Make sure that you buy your film from a professional camera store. Film must be stored in a controlled cool environment and most corner stores do not have this facility. Keep this in mind at your end as well—carrying around your exposed film in your pocket for a month during the summer could also have an effect on the developed pictures.

2.3.1.3 Bracketing Your Photographs

An important procedure to execute when taking pictures is that of *bracketing*. It consists of taking three pictures: Take your first picture at the perfect light meter reading, take a second at an f-stop or half an f-stop below, and take a third at an f-stop or half an f-stop above the first setting. The results can be significantly different. A few of the pictures for this book were saved because of this technique. It may seem like a waste of film, but it is much more of a waste if you pay for developing bad pictures and have to retake them. Some photographers will bracket two or more pictures on either side of their first shot by 1/4 or 1/3 f-stop increments, but for your purposes, one on either side should suffice. You should be able to clean up and salvage one of the three pictures in a paint program, such as Photoshop.

2.3.1.4 Record Information

When you take a picture, be sure you record enough related information, such as the surroundings, f-stops, time of day, and the location. I must confess that it is a pain in the neck, and I did not do it for every shot in this book. If you can record the information, do it. It will help you get into the habit of looking around your surroundings. You will start to identify what may be affecting your photograph, such as cast shadows, the location of the sun, the amount of humidity, if any, and so on. All these things are good to know, especially a month or two after the fact. Instead of writing, try using a video camera or recording the information on audiotape. I walk around with a tiny tape recorder when I go out to get reference and "speak" my findings. Either way, I urge you to record somehow, and devise a system for cataloguing. This is information you do not want to lose.

2.3.1.5 Sunny Versus Cloudy

I took many pictures in both sun and clouds, and there are advantages and disadvantages to both. While bright sunny days offer you wonderful saturation and detail, the shadows cast from other objects onto the surface may confuse the textural information. Cloudy days, although they provide you with less saturated images, are void of harsh shadows and the lighting is more constant. In both cases, be sure you record enough supplementary information so that you can correct the photos, such as removing unwanted shadows or adding saturation, in a paint program later.

2.3.1.6 Development Process

You might take amazing photographs, but if you develop them at your neighborhood drugstore or supermarket you might not get the results you expect. The development of color film negatives or slides is a chemically intricate process. Fluctuation in temperature and time, or chemical impurity or staleness can create undesirable results. The same is true for the printing end of the process if you are shooting with print film. You will be much happier with your results if you spend the extra money and take the film to a professional photo lab. Find out where professional photographers send their film in your city and do the same.

2.3.1.7 Scanning

Not all your reference (taken with a nondigital camera) needs to end up in a digital format, although there are times when it is really handy to have it at your digital fingertips. You never know when you might need to grab a texture off of one of your photographs to make it a tileable texture for your work or to send one of your photos as reference via email to the art director off-site. In these cases, you will have to scan in and touch up your photographs.

2.3.1.8 PhotoCD

Most of the photographs I took for this book were immediately put on Kodak PhotoCDs. At first, I thought it was a bit expensive, but my time is also very valuable to me and I would much rather paint than sit at a scanner and scan in 400 slides. Besides saving you time, PhotoCDs give you a number of different resolutions, so you can choose which is best for your needs. Now I have a complete digital library of all my reference at the ready. Try to choose a shop that takes pride in what it does. This means that it first develops the film correctly and then makes sure there is little or no dust on the slide before it scans it (saving you time on the clean-up end). Also, if you pay a little bit extra you can get your CD back the next day. (Not all labs offer this, so ask first.)

2.3.2 Magazines as Reference Sources

In addition to your own photographs, magazine clippings are a great way to beef up your reference library. There are multitudes of magazines published today from which you can obtain imagery and reference material. Here is a list of the types of magazines I use and what they offer:

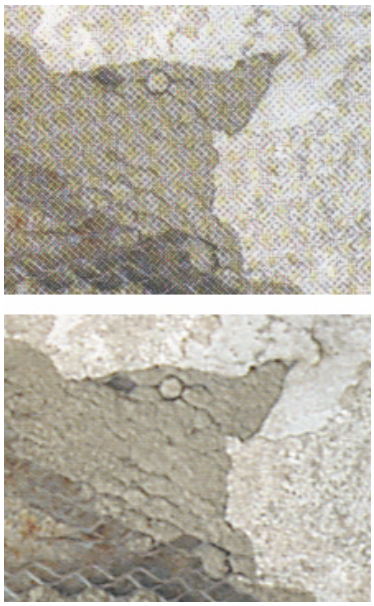
- **Interior design or architecture magazines** Building materials, paints and surfaces, environments, and color trends.
- **Fashion magazines** Clothing, cloth, textiles, design, contemporary usage of colors, graphics, and fashion.
- **Industrial design magazines or annuals** Contemporary surfaces, such as new synthetics, woods, and metals.
- **Graphic design magazines or annuals** Typography, posters, packaging, color usage, and graphic trends.
- **Stock photography catalogs** Moods, people and places, products, colors, use of light and textural qualities.

Whatever you are interested in is what drives you. It informs you as to where you will get your reference. This list is to get you started. Inspiration can come from any place. I collect reference constantly even if I do not have a specific project to work on.

Your own drawings or notes should be a part of this collection, as well. Lists of music and movies that inspire you should be too. Adding magazine clippings to your morgue makes sense. Doing so will save you time and money, and may completely do away with the need to take your own pictures as reference. Collecting on a consistent basis will make you ready for any project, and you are afforded more time when it counts. For instance, if you need to photograph something specific you can take the time to find it.

Having said that, I must provide a couple of points against using magazine cutouts verbatim as scanned-in textures.

The question of "reproduction rights" immediately comes to mind. The person who took the photo for the magazine, or the magazine itself more often than not, owns the rights on reproduction. This means that you must ask for permission or buy the rights to use their pictures in your project. The details and intricacies of this issue are far too complex and drawn out to get into here. This is just a friendly reminder that this concern exists, and you may be stealing someone's work if you use it without permission. So be mindful. This is not to say that you cannot use the photo as reference and paint it yourself, or your interpretation of it. Very rarely is there a texture that you pull from a magazine that form-fits your exact needs. No matter what the reference, it will always need adjustment here and there.



2.2 A scanned printed image comprised of cyan, yellow, magenta, and black dots may cause a moiré pattern (top). Using the "de-screen" function in your scanner's software will usually remove this from the scan (bottom).

The second point of concern is the structure of printed pictures themselves. If you look closely at a printed color photograph in a magazine, you can see the cyan, yellow, magenta, and black dots that make up the image. When scanning these pictures into the computer, this can create a moiré pattern (see top of Figure 2.2), and can be more trouble than its worth trying to remove it. Most scanners today have a *de-screen* function that in most cases gets rid of this moiré pattern (see bottom of Figure 2.2), and any evidence of the colored dots themselves. So if you are in the market to buy a scanner, be sure that it has this function in the software that comes with the scanner.

2.3.3 Other Reference Gold Mines

In addition to magazines for reference gathering, there are

- **Photography books** You can glean textures, light and shadow, and color information.
- **Painting and art books** Gold mines for learning how painters use brushstrokes to describe textures as well as color palettes. Art books also offer much of the same information as photography books do. Looking at the materials sculptures are made from such as stone, marble, and bronze can tell you about softness, brittleness, and pliability of the material.
- **Architectural and interior design suppliers** They frequently have binders full of material and texture samples for real-world materials, such as tile, marble, wood, and cement.
- **The Internet** Provides a wealth of information and reference. By entering keywords in any of the search engines available, you will most likely find a variety of pictures that can help you start your project.

Unlike many of the other specialties in this computer graphics business, a texture artist needs to accumulate an entire library of images, books, and materials from which to work to be good. It is up to you to know what something looks like and reproduce it; that is your job. It also helps your director or art director if you show images from your morgue to inspire initial ideas from which to start. Much work can be accomplished in this fashion concerning style, mood, and extent of detail. Then you may begin with a much clearer vision of the direction in which you want to take the project.

2.4 Photo Gallery

So often we approach our projects with the attitude that the objects and surfaces we must texture are separate elements having no relationship with other things around them. We paint and texture the objects as if they stand alone when, in fact, these objects live together within an environment. They influence and affect each other as is evident in reflections and the wear and tear on an object or surface. This is the impetus of this section—to create a dialog between you and me and the photos that follow and put into practice exercising your artistic eye. I hope you did the exercises I set up in Chapter 1. Now let's take note of the interaction between real-world materials and items, and describe what's happening.

I took the photographs that follow while walking around New York and during other travels. In this exercise, all I'm doing is describing what I am seeing. See if you can spot what I am talking about.

2.4.1 New York Brick Bundle

In Figure 2.3, look at how the pulley is constructed and what it is constructed of. The rope is not tied around the bricks because it would wear away and have to be replaced. As far as I can see, the rope is pulled through a hole drilled in the center of the bricks. I love the different colors of the three bricks and their condition.

If the bricks at this height indicate that the door of the garbage container is closed, then why are there scrapes higher up on the wall? Does the lid on the garbage sometimes fall into the container? Was there a different length of rope on an earlier version of the pulley? Why do the scrapes seem to get wider at the bottom? Is the paint on the wall being worn away or is the brick bundle leaving pieces of itself behind? Because the graffiti is being worn down I would guess that the wall and paint are being worn away.

Another interesting part of this picture is the branch-like pattern on the wall (top left). I didn't write this down when I took the picture so all I can do is guess. (See how important it is to write down supplementary details when you take the shot?) It looks as though the branches from the tree left their mark either from when the wall was wet, or from a very violent wind slapping them against the wall. (There are actual bits and pieces of the branches left on the wall.) Hmm. Would I have thought to put that in one of my pieces?

Does the graffiti just above the dumpster to the right bottom of the photo, look like it extends down the wall past the container? If so, then the container had to have been added later.

2.3 On Opposite Page
This photo was taken late in the day, around 4 P.M., on a shaded New York street.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2.4.2 South of France Water Trough

There are a number of things I would like to point out to you in Figure 2.4.

- Notice the different types of stone and their textural qualities. Both the top part of the wall and the bottom part are made from cut stone.
- Is the trough between the buildings stone tile? Because of how old the village is, I would guess that everything from the foundation of the house to its walls to the streets are all made from stone with very little concrete.
- Notice the cut indentation of the stone, the router edge. You would not need to model the indentation, the broken-off part near the bottom of the wall, and the three reddish-brown bricks (top-center); you could add these kinds of details to your wire-frames with your texture and bump paintings.
- It seems to me that to make the flowerbed, some sort of foundation of stone was laid and then a thin "paste" of concrete was laid on top. The stone layer beneath the poured concrete flowerbed can be created with one texture map; just remember to include the zone where the two materials meet and live next to one another.
- Notice the blue and black stenciled number and its over-spray onto the wall, as well as a remnant of an earlier painted arrow just above this. Beautifully subtle, but still evident.
- Take note of the crumbled away walls of the water drainage trough—no perfect CG edges here. I especially like the crack in the front corner of the flowerbed. Would you put one in your piece?
- Notice the dirt and dust that have settled on the wire gate horizontal framing. Also notice the subtle light reflection on the horizontal wires that cross the dark areas behind. How can you create the depth of this photograph?
- How would the dried-up, salt-stained part of the trough be expressed as compared to the wet part? What are the differences?
- Note the green algae-like color and the settled soot and sand in the water.
- Because of the overcast nature of the day, take note that there are no harsh shadows and that the saturation on the whole is low.
- Notice the lack of detail on the flowers and their leaves, but even so they are not just one shade of green or pink.

2.4 On Opposite Page
This photo was taken in the south of France in a little village called St. Clement. The light quality here seems to suggest a somewhat overcast day.

2.4.3 Green Painted Door

Several things draw me to Figure 2.5. The first is the rich green color of the door and its beautiful bumpy textural quality. Look at all the wonderful little details that are in this photograph.

- Notice the number of holes that have been drilled for different lock systems.
- The dust, which settled on the tiny boarded up window ledges and padlock apparatus, demands some attention.
- The ripped off plating made of some sort of mystery material is unprotected and rusting and creates a pattern with that ripped-off part and the glue left behind.
- Take note of the shininess of the paint, and the highlight color of its sheen.
- Notice the beautiful bashed up brass doorknob with paint remnants and the doorknob plate completely painted.
- Did you notice the pattern of the bumpiness on the door? What is it caused by—numerous paint applications, rust underneath, a thick paint roller? Notice the vein-like, high-lit edges from large dried and cracked portions being broken off, peeled off, and then repainted.
- Look at the different colors of rust, the painted over screws and spray paint graffiti.
- The color of the door is reflected in the metal objects on the door, the lock, and the doorknob.

2.5 On Opposite Page
A green-painted door in Soho, New York.


Windows by
ONE WAY

2.4.4 University Avenue Near Twilight

There are many things going on in Figure 2.6. Look at how the colors are affected by the moisture in the air. The saturation of colors of the buildings decreases whereas the saturation of the lights and the road itself increase greatly. Everything has taken on a slight bluish color. I love the color of the greenish lighting (how my film speed and aperture captured the fluorescent lighting) underneath the scaffolding on the left, and the golden-yellow light coming from one of the windows on the building just off to the right of center and up. Many of the windows are the same hue as the sky due to reflection.

If you cover up the sky and buildings in the distance, this could be a photograph taken at night. Hard to believe that there is that much light in the sky compared with the presence of light on the street. This is a product of contrasts. If you compare this sky to one of midday, this one would definitely be less brilliant. It seems much brighter though because everything else is comparatively darker.

Take note of the amazing depth of field, intrinsically a characteristic of twilight because of the angle of the light, now exaggerated by the moisture in the air. The buildings in the distance are just barely discernable. They are mostly flat, muted colors with light and dark boxes for their windows. As you move forward to the front of the photo, details start to become more apparent, but are downplayed much more than if this was midday because of the lack of sun. For example, you cannot discern every brick texture or even every brick on some of the buildings, and therefore, there is little "bump" information. There are still shadows on the ground under the cars. The sky and its ambient light are still powerful enough to cast shadows. How will these shadows change when the sun goes down completely?

Compare Figure 2.6 with Figure 2.7. What are the similarities and differences, and why?

2.6 On Opposite Page
This picture was taken on an autumn evening just as the sun was going down in New York City. It rained a fine mist earlier, which helped accentuate the effects of the twilight hours on the city.

2.7 On Opposite Page
This photo was taken in Venice around the same time of day as Figure 2.6.

2.4.5 An Office Door

Figure 2.8 is a good example of everyday wear and tear on a surface. By looking at this door I can imagine the stories it has to tell (at least how I perceive them). It is a steel door, which has been brushed to give it a shiny, wavy pattern. Notice how constant use has worn away this metallic, shiny finish. How does this happen? This door is fairly heavy because of how thick the steel is, so when people push through it they put their shoulders into it while others put one hand on the pushbar and the other where it is worn away. Also, when people open the door from the other side they often place their hands on this spot once the door is partially open to pull it open. I'm not sure why there are so many scratches in this area. Possibly from rivets, buttons on coats, and carried packages used to open the door. The same tool that created the brushed look probably caused the dark black-brown streaks in the worn away finish.

The pushbar reveals other textural affectations that apply to similar objects of the same shape. Notice how the edges of the bar have the finish worn off completely. Edges on objects like this are the first to feel the effects of human intervention, this is true for wood, plastic, glass, concrete, and so on. The fronts of these objects are less abused. This is an important point to remember to add to your textures for an added bit of realism.

I think my favorite part of this picture is the bolt in the middle of the pushbar. Look closely and you will see a radial scratch pattern on the bar itself. These are the kind of "human" intervention textures that I love to add (if I have the time) to my work. They add authenticity to my work. I can only image what or who made these marks, which is part of the story.

Notice how the doorframe meets the white wall and the slipping silver plate near the door latch. Take note that when things are constructed, they are far from being perfect. Something to consider.

2.8 On Opposite Page
This is a picture of the inside of the front door to an office in New York City. It was taken with a digital camera and flash.

2.4.6 Restaurant Wall

Notice how the paint on the fan's frame has been scraped and worn away, leaving the actual brushstrokes behind and revealing the warm wood material underneath (see Figure 2.9). Notice all the different hues and tones of blue.

- The random pattern of screws, some showing their heads, others filled in with dirt and grime hiding their details.
- Notice how all these surfaces butt up against one another or lay on top of each other. Each piece defines itself and its neighbor by trapping dirt and paint in the ledges, cracks, and meeting places of each material.
- The smudges and drips on the window panes—are they caused by a sloppy paint job?
- Look at how the reflection in the window panes is softly blurred. Why is this? Is the window greasy? dusty?
- Notice the pattern of the paint chipping off of the windows.
- Did you notice that the top-left window is cracked? How does that affect the reflection?
- Would you eat at this restaurant? (Just wondering.)
- The blue paint has a matte finish and therefore has no specularity or sheen to it.

The picture underneath (Figure 2.10) shows that the windows are not completely transparent, because they are dirty. There is also the contributing factor of the reflection, which hinders the clarity of the bottles and containers that lay behind.

- The bottom-two glass panes on the left are a molded, bumpy pattern that bends the light, which breaks up the articles behind them.
- The bottom-two panes on the right have some sort of wire mesh material behind them, which obscures the objects behind the glass. The long horizontal band of red in the top-left window panes—is it a reflection?

2.9 On Opposite Page
The photograph with the oily, dusty fan is texturally complex. This one is of a restaurant's kitchen window. It was taken around 2 P.M. on the shaded side of the street. I was particularly interested in the accumulation of grease and dust on the fan (as disgusting as it is), and all the different affectations of the glass frames and panes.

2.10 On Opposite Page
Another window section of the restaurant wall.

2.5 Look and Collect

In this chapter, we expanded the idea of looking into one of collecting. Not only are you going around looking at many different examples of textures and surfaces, now you are collecting them into one place in a variety of different forms so they are at your fingertips when you need them.

I would like to round out your artistic knowledge with the theory of color. Color is one of the first things you notice about a surface, and I briefly wrote about recognition of color in shadows, and so on. The theory of color expands your knowledge from a visual aspect of art to a perceived aspect of art. When you encounter a color, in other words, it is not on a purely visual level; there are many other components attached to color that I would like to explore, and Chapter 3, "Color Theory," is about just that. There you will get acquainted or reacquaint yourself with colors and color theory.

2.6 Exercises

1. The ability to differentiate between different types of surfaces and materials, as well as determining what makes up the surface, and what gives the material its quality is an important talent to develop.

   Look at the photographs of materials and textures at the beginning of this chapter and see if you can start to distinguish the features that make up each surface.

   Identify what the common differences are between the virgin and textured samples.

   Look for patterns, lines, specks, and dots that describe the textures.

2. We have expanded the idea of developing an eye for looking to one of developing an eye for collecting. It is important to know what you need to collect and what to leave on the street or in the magazine. At first, it may be difficult to be selective. With experience and time, and management of your morgue, you will soon have a varied and impressive collection.

   Start setting up your own morgue by creating categories such as: types of materials, types of reference, colors, genre styles, preferences, likes and dislikes, and so on.

   Begin gathering photographic references from the sources I mention in the text.

Go to architectural suppliers, stores that cater to home improvement, furniture and bathroom stores, and so on, collecting as you go.

3. Start experimenting with picture taking. Get to know what it is you need to watch out for when collecting your own reference.

   Experiment with different types of film stock, lighting, and situations.

4. Like the pictures at the end of this chapter, rediscover your own photos and look at them in this new way.

   Scrutinize how materials meet or fit together.

   How perfect or imperfect is this joining?

   How would you re-create this in a painting or a 3D program?