

PERSPECTIVE DRAWING

SARAH HALEY

TEMPE DIGITAL

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PREFACE

Perspective is a powerful way of seeing

Whether we are aware of it or not, perspective is a constant in our perception of the three-dimensional world. As you watch the sun set over the ocean where it appears to meet the sky, the horizon line is ever present. Driving down a long road that appears to narrow and disappear into the distance, we intuitively know that a vanishing point is an illusion of depth. As we peer at a distant mountain, atmospheric perspective cues tell us it is far away, even if we do not understand why. We move through three-dimensional space viewing everything in our world in perspective, though we may not be consciously aware of how it works. This book will open your eyes to a new understanding of your surroundings, enhancing your powers of observation to launch a unique appreciation of the world around you.

Perspective is an essential drawing and design tool

Perspective can be used to depict depth and volume and to give your visual work a convincing three-dimensional appearance of space. Perspective is one of the key principles of drawing, and better understanding of it will markedly improve your drawing skills.

Most commonly, artists use perspective to depict realistic three-dimensional spaces. However, perspective can do so much more than simply express reality. You can use perspective tools to bring to life unreal, exaggerated, and physically impossible subjects that could never exist in real three-dimensional

space. This makes perspective a versatile tool for visual expression that can open doors to your imagination and expand your creative possibilities.

Perspective is for everyone

This book is for beginning and intermediate art and design students, and anyone wanting to learn or improve upon essential drawing skills. Students of the studio arts such as drawing and painting, and designers in a broad range of disciplines including graphic design, interior design, animation, web design, game art and design, and fashion design will all find this text relevant.

ACKNOWLEDGMENTS

With great humility, I have the utmost gratitude for everyone who has made this book possible.

Jeff and Tempe Digital have gently guided me through this daunting process with patience and wisdom.

Navid Baraty, Bo Bartlett, Anya Belkina, Michael Bilsborough, Andy Burgess, Katarina Burin, Thomas Burke, Christopher Najee Chandler, Jeff Clay, David Curtis, Valerio D'Ospina, Nuno de Campos, Rick Dula, Nicole Eisenman, John Finnerty, GMUNK, Nicola López, J. Diane Martonis, Shannon Rafferty, Anna Sew Hoy, Jos. A. Smith, William Steiger, Pdraig Timoney, Jaime Brett Treadwell, Wayne White, Katherine Winter, Zimoun, and Marina Zurkow have been very generous with their creative talent.

My inquisitive students have molded me into a better teacher, and I cannot thank them enough for asking questions.

My mentors Anya Belkina and Jos A. Smith mean more to me than I could summarize here but I am forever grateful for their guidance.

My mom and dad have always known this project would eventually be completed, even when I did not.

And I would not be half the person I am without Elizabeth, Innesse, Nela, and Matt. I am forever appreciative of their love and support.

ABOUT THE AUTHOR



Photography by Kevin Nguyen

Sarah Haley has over a decade of experience teaching art and design, particularly linear perspective. She designed courses in perspective drawing for the Art Institute of Pittsburgh—Online Division, where she also taught and served as an assistant online program director for the Art Foundations department.

As a practicing artist, Sarah frequently receives commissions for architectural drawings and paintings. She earned her BA in Art History & Visual Art from Duke University in Durham, North Carolina, and her MFA in Painting from The Pratt Institute in Brooklyn, New York. Sarah currently lives in Austin, Texas, with her husband and two children.

For more information, please visit: <http://sarahsfineart.com>

LINEAR PERSPECTIVE

1

1 LINEAR PERSPECTIVE

Linear perspective is a geometric method of depicting three-dimensional subjects on a two-dimensional format. Linear perspective creates the illusions of depth and dimension by modeling monocular vision. **Monocular vision** describes how one eye perceives depth. Binocular vision describes how both of our eyes in combination perceive depth (1-1).

Linear perspective operates on three basic principles that summarize how we perceive depth through monocular vision: diminution, convergence, and foreshortening. Together they

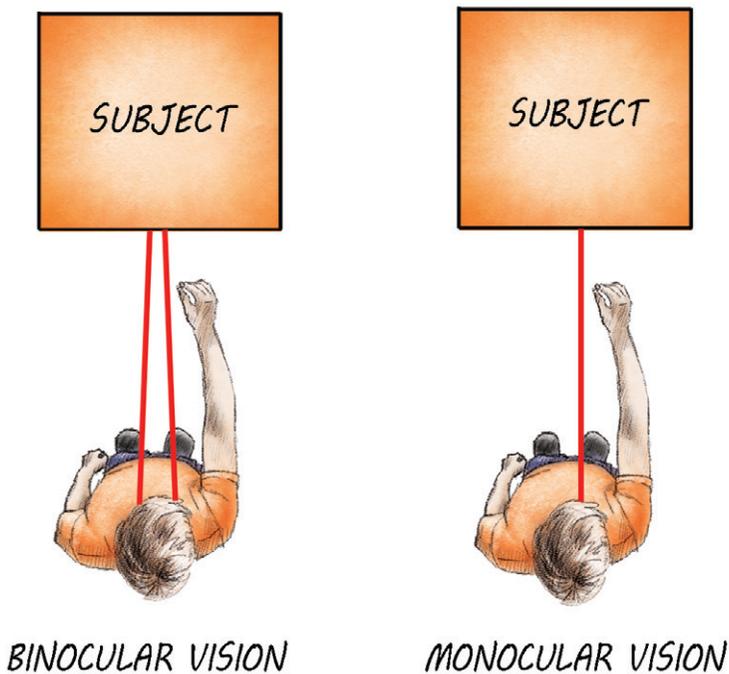
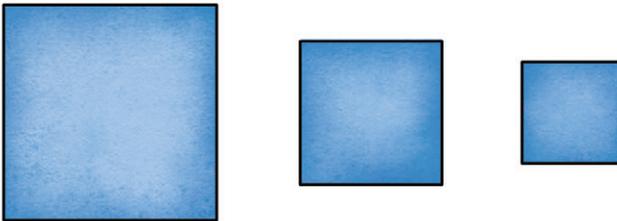


Figure 1-1



DIMINUTION. Nicole Eisenman, *Seance*, 2011. Oil on canvas, 60 x 72 inches. © Nicole Eisenman. Photography by Robert Wedemeyer. Courtesy of the artist and Susanne Vielmetter Los Angeles Projects.



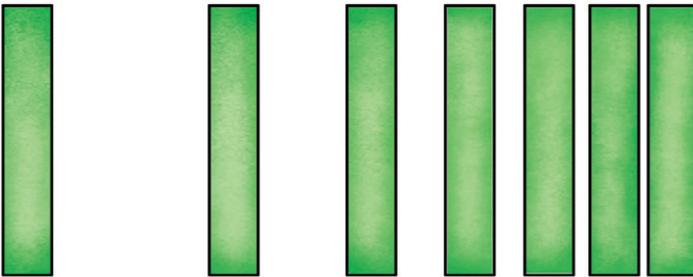
DIMINUTION

Figure 1-2

create the observable phenomenon that constitutes linear perspective. When receding forms appear increasingly smaller, we call that **diminution** (1-2). When receding forms appear

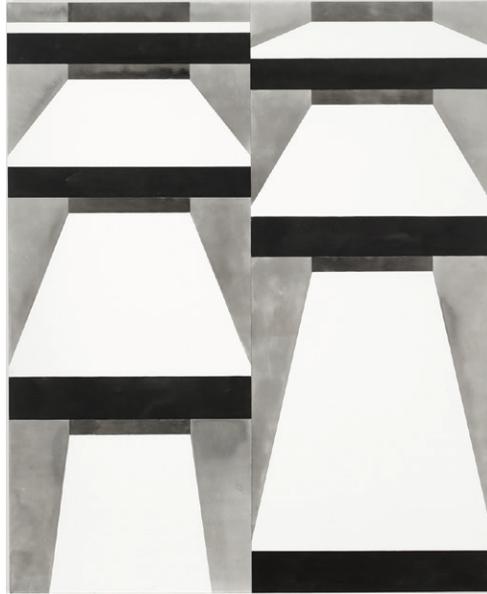


CONVERGENCE. Christopher Najee Chandler, *Foggy Night Road*, 2017. Photograph, 3456 x 5184 pixels. © Christopher Najee Chandler. Courtesy of the artist.

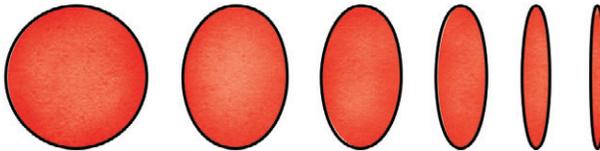


CONVERGENCE

Figure 1-3



FORESHORTENING. Padraig Timoney, *Riser and Landing*, 2010. India ink on canvas, 86 $\frac{5}{8}$ x 71 $\frac{5}{8}$ x 2 inches. © Padraig Timoney. Courtesy of the artist and Andrew Kreps Gallery, New York.



FORESHORTENING

Figure 1-4

increasingly closer together, that is called **convergence** (1-3). And when receding planes appear to shorten, that is referred to as **foreshortening** (1-4).

The two-dimensional rectangular plane and its three-dimensional counterpart, the rectangular prism, are the building

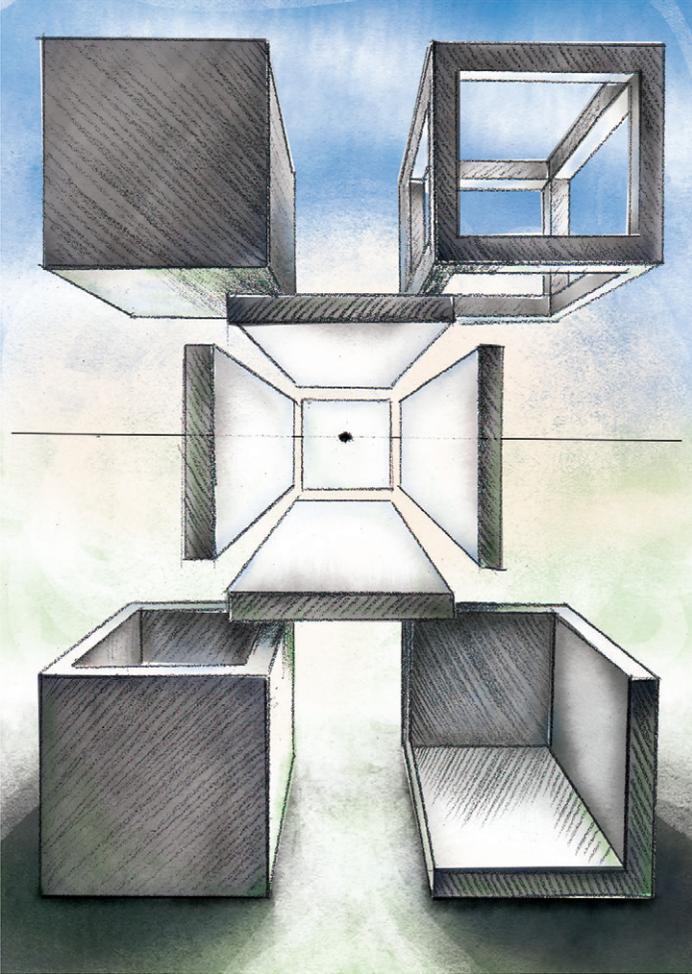


Figure 1-5

blocks from which all forms are derived in linear perspective. The presupposition of the rectangular prism is of supreme foundational significance because it models three-dimensional space, the most basic form of which is a box (1-5). A **rectangular plane** has 90-degree angles and two sets of parallel edges (1-6). A **rectangular prism** has 90-degree angles and three sets of parallel planes and edges (1-7).

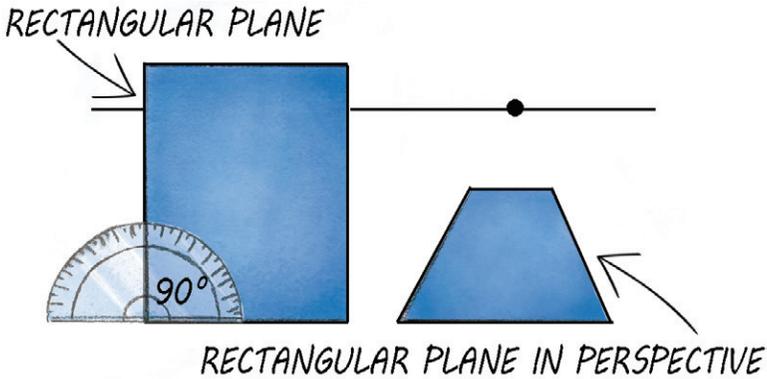


Figure 1-6

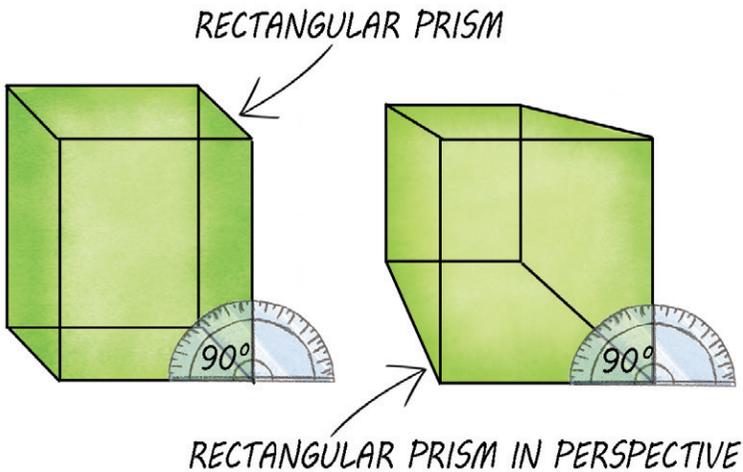


Figure 1-7

Essential to perspective is having one fixed point of observation. Think of yourself as the viewer. Choose a location, and fix your gaze in a specific direction. Your location—the viewer's location—is referred to as the **station point**. The direction in which the viewer looks is the **line of sight**. The endpoint of the viewer's line of sight is called the **center of vision**. When you combine the viewer's station point and center of vision, that's

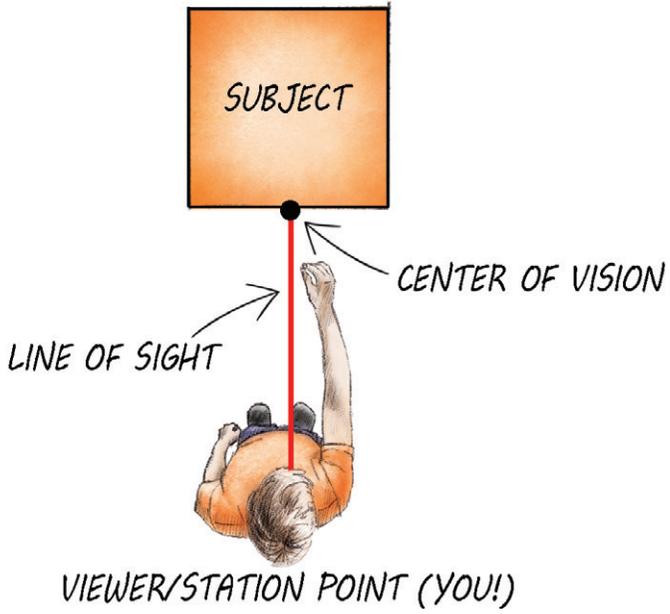


Figure 1-8

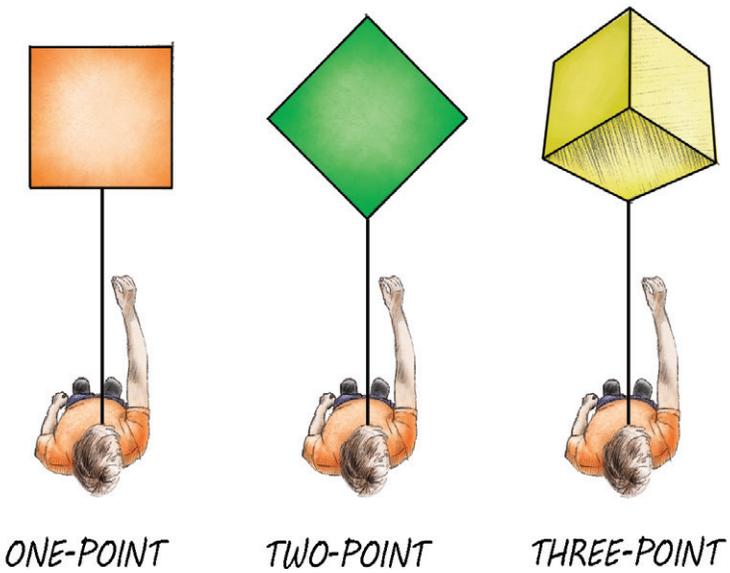


Figure 1-9

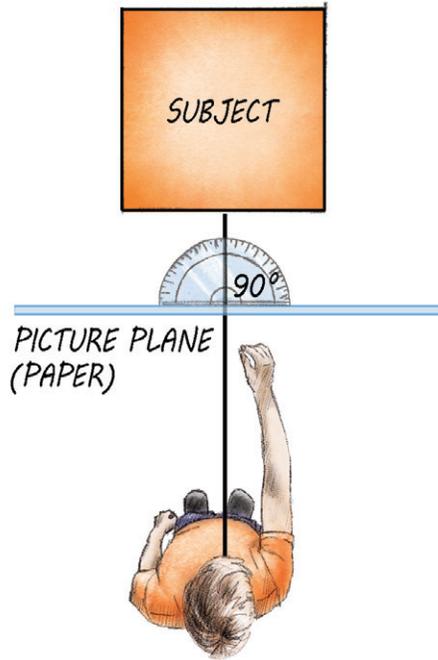


Figure 1-10

a **point of view** (1-8). If the station point, the center of vision, or the subject moves, the point of view changes. In observable linear perspective, a point of view will always be one of three major types: one-point perspective, two-point perspective, or three-point perspective. Without even taking a step in a new direction, simply shifting the viewer's gaze can alter a two-point perspective view into a three-point perspective view, for example (1-9).

The **picture plane** translates three-dimensional space onto a two-dimensional surface. The picture plane is always perpendicular to the viewer's line of sight. A **perpendicular** angle is a 90-degree angle. So the picture plane always forms a 90-degree angle to the viewer's line of sight (1-10). Think of



HORIZON LINE. Bo Bartlett, *The American*, 2016. Oil on linen, 82 x 100 inches. © Bo Bartlett. Courtesy of the artist and Miles McEnery Gallery, New York, NY.

the picture plane as a window or viewfinder situated between the viewer and the subject. It is also synonymous with our drawing surface, which is usually paper.

Following the viewer's line of sight through the picture plane and beyond the subject, we find that the center of vision often falls on the horizon line. The **horizon line** is a horizontal line where the sky appears to meet the ground. We know that the Earth is round and does not have a straight edge, but a horizon line is a useful perspective tool where diminution, convergence, and foreshortening are infinite. A horizon line is always optional in linear perspective. But it is used more

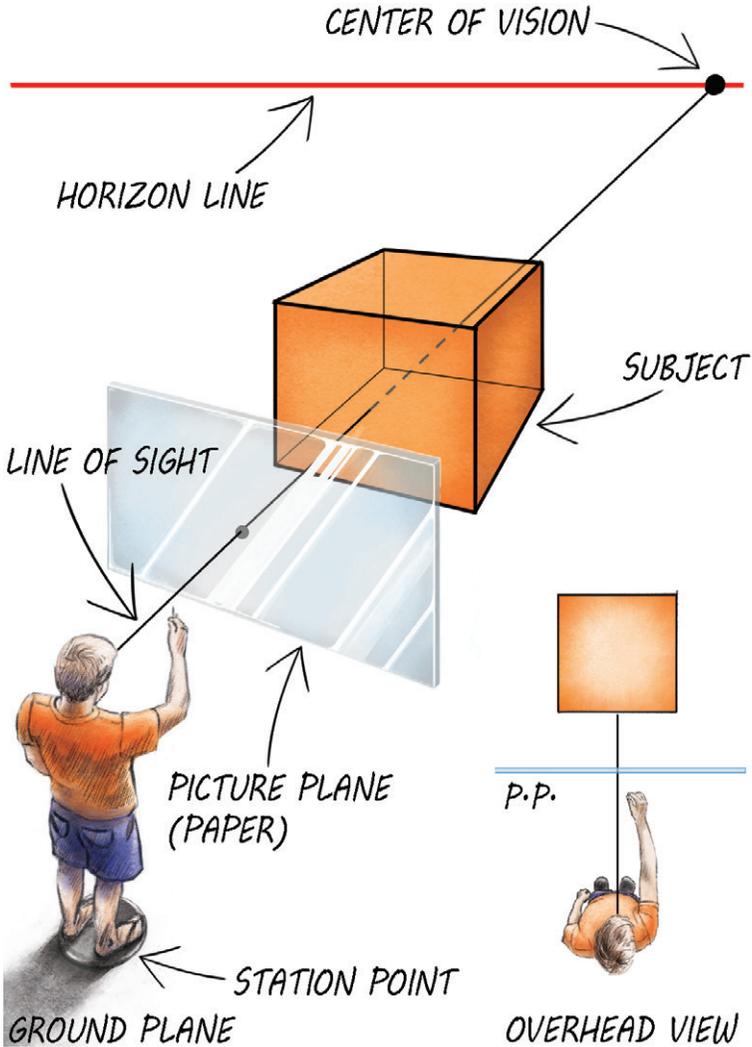


Figure 1-11

often than not to define the ground plane and to help orient the viewer. The **ground plane** is the two-dimensional plane below the horizon line representing a flat ground, or floor, upon which objects rest (1-11).

TOOLS & TECHNIQUES

2

2 TOOLS & TECHNIQUES

Perspective drawing is made easier and more enjoyable with the proper tools and techniques. Our main drawing tool is the pencil. Pencils can be soft and dark (8B), or hard and light (8H) with a numerically graded range in between (2-1). The scale from dark to light is as follows: 9B, 8B, 7B, 6B, 5B, 4B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, and 9H. Since precision is especially important when rendering in perspective, harder pencils that hold a sharp point such as 2H or 4H are recommended. Keep softer pencils like 2B or 4B on hand to darken lines. Mechanical pencils, or drafting pencils, are an

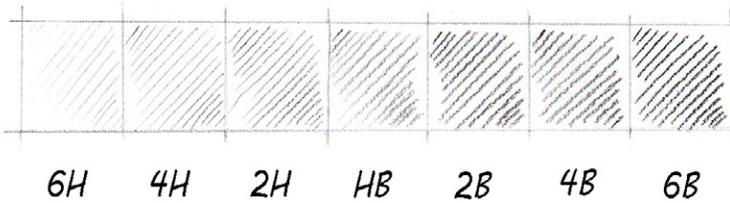


Figure 2-1

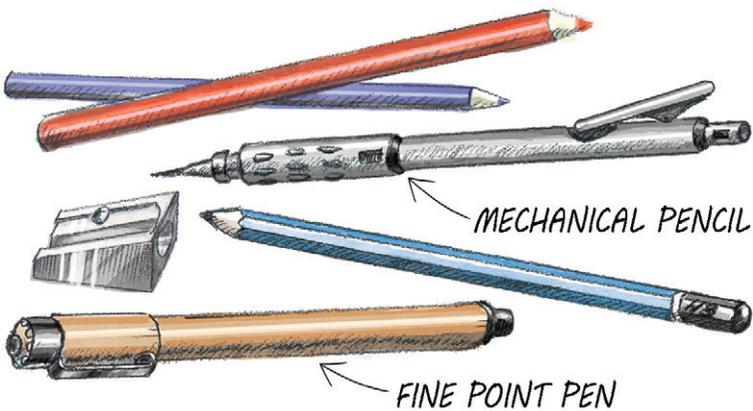


Figure 2-2



MIXED MEDIA. Nicola López, *Earth*, 2008. Etching, woodcut & collage, 41 x 41 inches, edition of 20. © Nicola López. Published by Pace Editions. Courtesy of the artist and Pace Prints.

excellent choice as they always hold a sharp point. You can obtain different grades and sizes of lead if you need a darker or lighter line, or thicker or thinner. You may want to use a few colored pencils for color-coding vanishing points or other important reference marks in a complex scene. And unless you exclusively use mechanical pencils, you will additionally need a pencil sharpener (2-2).

Practicing good pencil technique is important. Hold pencils firmly but not too tightly, and only apply light to medium

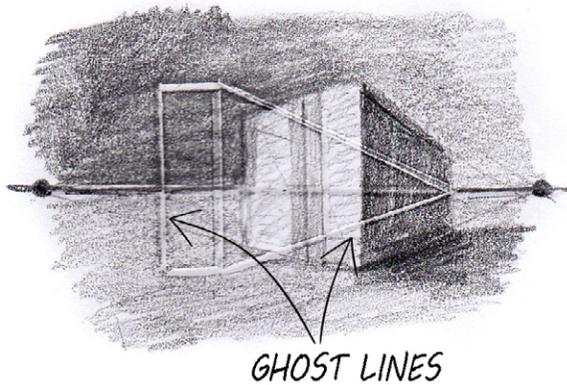


Figure 2-3

pressure. Do not seek a darker line by pressing down hard. This will only result in tired hands, achy fingers, broken pencil leads, torn paper, and—worst of all—indelible pencil marks. Not only can such marks be very hard to erase, but often they will have etched a groove so deep that it shows up on several layers of paper underneath, re-appearing as a ghost line when you shade a later drawing (2-3). To avoid these pitfalls, remember to “stop, drop, and swap.” If find yourself pressing down hard to go darker, stop what you are doing, drop your pencil (carefully, so as not to break the lead!), and swap it for a softer, darker pencil. Always keep several pencils of various grades within easy reach to avoid the inclination to apply too much pressure.

Erasers are another essential. White plastic erasers intended for pencils should always be on hand. Different shaped erasers are used for different purposes. Block erasers clean large areas, whereas thin pen erasers (encased in a holder) will remove select details. You can also use metal eraser guards

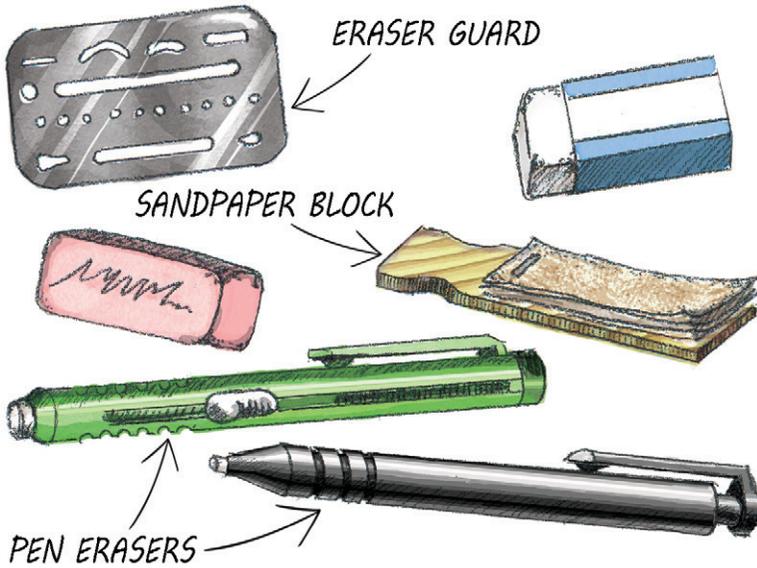


Figure 2-4

to shield areas that you do not wish to eliminate. Erasers should always be kept clean to avoid unwanted smears. Clean your erasers with a sheet of medium to fine grit sandpaper, or you can purchase a sandpaper block designed expressly to clean erasers (2-4). Get in the habit of cleaning erasers before touching them to your paper.

Another good practice for keeping your drawing clean is to keep your hands clean. The acidic oils of our skin upset the pH of paper. Oil on paper also creates a slick barrier that repels pencil marks and prevents erasing. If you want to intentionally smudge or smear graphite on paper—some shading techniques involve toning paper in this manner—do not use bare fingers. Instead, use tissue paper or a chamois cloth to blend larger areas, and use cotton swabs or a tortillon (a tightly



ANIMATION STILL. Marina Zurkow, *Mesocosm (Times Square)* (detail), 2014. Triptych, hand-drawn animation (color, silent), custom software, computer, screen or projector, dimensions variable, landscape orientation, 73-hour cycle (12-minute day, 73-hour year), edition of 5 + 2 AP. © Marina Zurkow. Courtesy of bitforms gallery, New York.

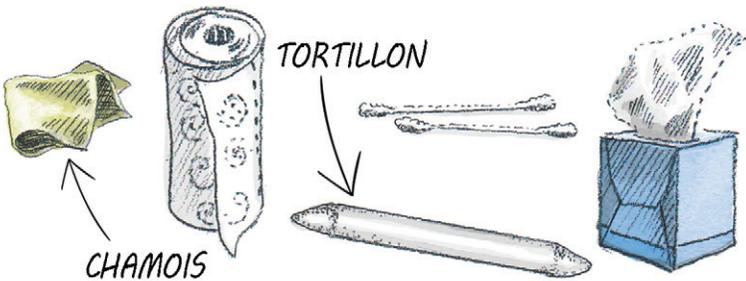


Figure 2-5

rolled paper in pencil form) for smaller areas (2-5). You also want to keep your entire hand and arm lifted off the paper if you can manage it. Try using your pinky finger as an anchor. If you must rest your hand on your paper to work comfortably, place a clean piece of scrap paper under your hand to shield your drawing.

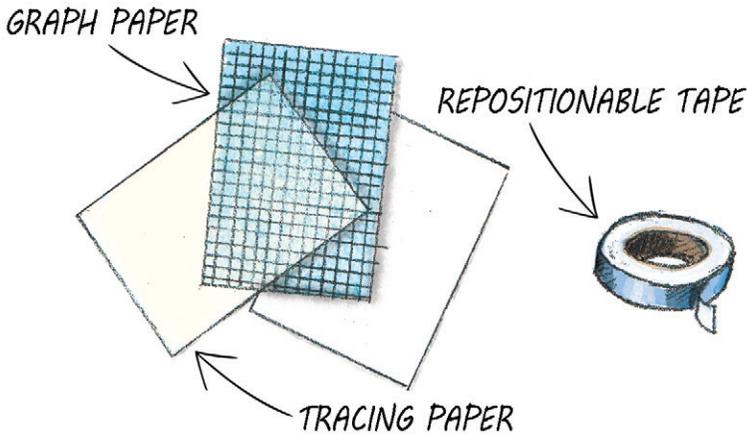


Figure 2-6

Regarding paper, a pad at least twice the size of the outer dimensions of your finished composition is recommended. An 18 x 24 inch pad will comfortably allow a 9 x 12 inch finished piece. Make sure the paper is sturdy enough that repeated erasing will not cause tears. A good choice is 60 lb. paper. Also, select a medium tooth or texture. Too much texture in the fiber of the paper will make straight lines look bumpy. Too little texture in the paper will not take pencil marks easily, and you will end up applying too much pressure to produce a line. Tracing paper and graph paper are also helpful for perspective drawing. Graph paper is great for mapping plan and elevation views. Tracing paper is an excellent organizational tool for complex subjects involving multiple sets of vanishing points, or when you're using grid overlays. You will also need repositionable artist tape; it lets you anchor layers of paper to a support but easily remove or reposition without tearing the paper (2-6). Having a couple of layers of paper under the top sheet will ensure a smooth drawing surface, cushioning the top layer from any imperfections of the supporting surface.

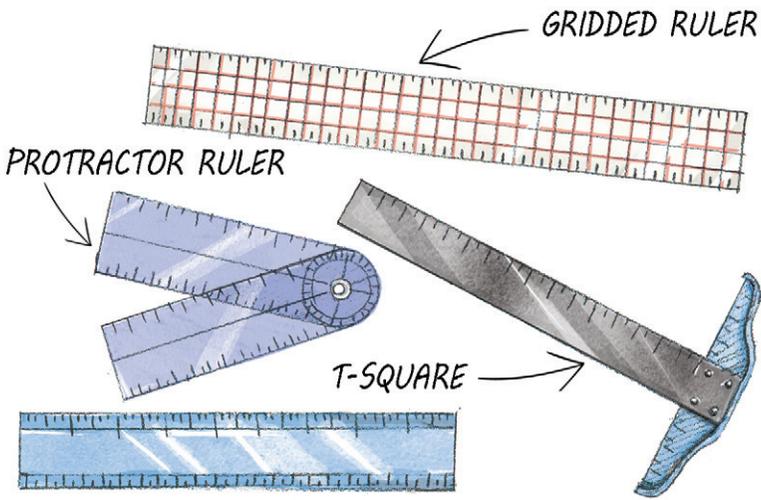


Figure 2-7

Nothing in perspective is accomplished without straight lines, which makes rulers an absolute must. At minimum, a ruler as long as the longest dimension of your paper gives you optimal reach. Although not necessary, it is very helpful to have some specialty rulers for specific tasks. You will often need to draw two lines parallel to each other, so a clear plastic gridded ruler is quite possibly the most versatile. Perspective drawing also calls for perpendicular lines. A T-square—a ruler with a perpendicular bar at one end—is therefore useful. Some rulers have a protractor built into them, which is convenient for simultaneously measuring and marking angles (2-7). If you find that your ruler slips around, put a piece of masking tape down the length of one side for more traction, or purchase a ruler with cork backing. A flexible curved ruler, or a French curve, may be helpful if you need assistance drawing curved lines (2-8).

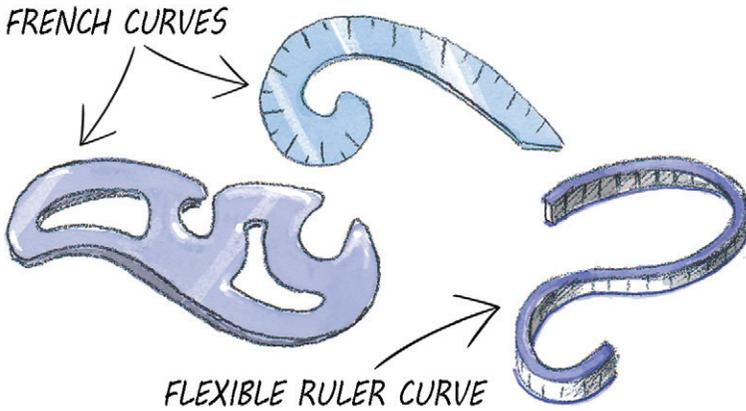


Figure 2-8

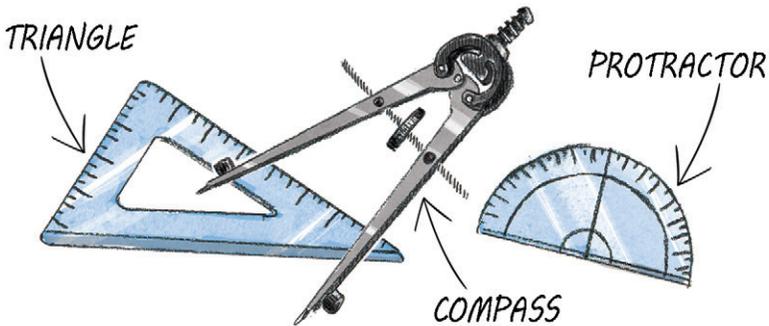


Figure 2-9

A few drafting supplies are also essential. Chiefly you need a triangle with a 90-degree angle to locate station points in two and three-point perspective. You need some form of a protractor for measuring angles for diagonal vanishing points. And a compass is needed to construct the cone of vision and locate vertices for diagonal vanishing points (2-9). Choose a compass with a threaded precision wheel to avoid the frustration of

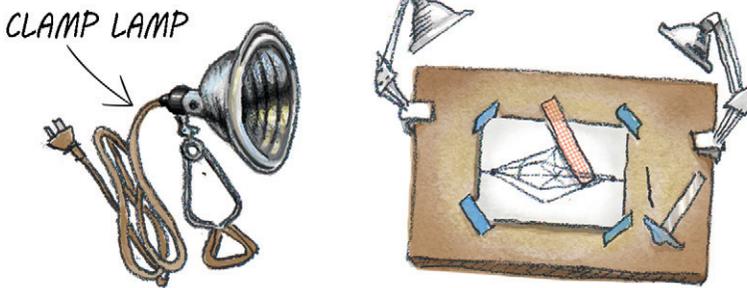


Figure 2-10

unwanted slippage. There are also compasses in ruler form that are helpful for larger circles.

Now a word about supports. An 18 x 24 inch pad of paper is not much use without a hard flat surface to support it. Make sure you have a drawing board, or a drafting table big enough to fit the largest pad of paper you plan to use. Be sure to angle your support surface to avoid the distorting effects of foreshortening; the drawing surface should be parallel to the plane of your face. This is especially important when working large. If you do not have an adjustable drafting table or easel that you can tilt, find a way to prop your drawing board at the required angle.

Lastly, good lighting cannot be stressed enough. Most people do not realize that even with large windows and skylights, the sunniest of days does not output optimal light for detailed drawing work. We supplement daylight with artificial light not only to have enough light, but also to ensure our work area is evenly lit and free from distracting shadows and glare. Lighting does not have to be expensive to be effective. Clamp lamps are a low-cost, easily positioned lighting solution that you can

pick up at any hardware store (2-10). Whether you use fluorescent or LED light bulbs, be sure to choose bright bulbs that emit a full spectrum. These types of bulbs are often advertised as mimicking daylight. Position at least two lights on either side of your work area to eliminate glare and shadows. Incidentally, this is also an optimal arrangement for photographing your completed work.