

# How to Introduce Perspective Into Your Drawings

By Paul Wagner

**NOTE: Article may be reprinted without permission so long as content and credits (at bottom) remain intact.**

Perspective: Where **Art Meets Science**.

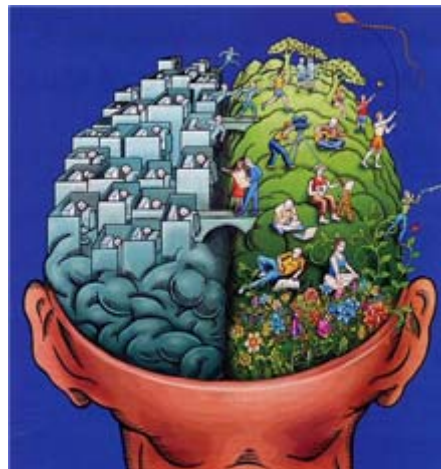
As an artist, you may at times need or want to draw more “technical” components to your drawing. After all, if you are trying to draw a barn if you knew a few tricks (herein discussed) about perspective, that barn is going to look a whole lot more like a barn and not a twisted structure from a hurricane!

Here is where Science can provide the tools you need. Science tells us that the **Left Brain** is your scientific logical side. It’s where you make decisions based on fact. There is no emotion, only cold ice of the rational mind. That’s not a bad thing, as it protects us from walking onto the open freeway (thank God!).

Within the **Right Brain** you have the artistic, imaginative, creative, and yes, dare I say “flippant, spontaneous” side. This is where many people believe they have to live if they are to be good artists.

Not so.

Although the Right Brain is great for coming up with the idea that we can fly over that freeway, or dig underneath, or jump with a gigantic pogo stick over it, the Right Brain is just responsible for the spark, the essence of the imaginative thought.



It is still up to the left brain to grab the pencil, understand the texture of the paper that will make softest lines, and discover hard, disciplined, methods to convert the subject of interest accurately onto the paper in front of us. Now THAT being said, art doesn't have to be on paper, lines don't have to be straight (just look at Dali's or Picasso's works), and in truth anything really goes in pure art.

But, you are reading this article because you want a more disciplined, clearer approach to Perspective, and, as you would guess, that is mostly from the Left Brain.

So a short tour then on the tools and knowledge that will help you become a better artist.

## **Lines, Planes, and Space – Basic Building Blocks**

When I was a child I was fascinated by models. Paper airplanes first, then assembled plastic cars and ships and jets, all held together with this nasty but sweet-smelling glue called toluene which melted the styrene model parts so they could be fused together within minutes—and if you got any of that stuff on your fingers and touched ANY shiny parts, well yuck, it was like the whole model was worthless—ruined by any good critic's standards.

But, if you were careful, used another small brush to ever-so-lightly (and quickly) touching only the edges meant to be glued, well then, you had the shiniest fastest flying X-15 in the entire fleet. You became Captain of that ship rather than Ensign!

I didn't realize it at the time, but I was learning about Perspective early on. Not only would I put my nose right up close to the model where I could pretend it was flying right into me, or being consumed by the spitfire from the tail engines—I could see little things that I found fascinating—like why the plane's nose was so big when it was close to my eyes but the engines so small in the back?

My world of Lines, Planes and Space had only just begun.

These are elements of dimension, and each plays a part of Perspective, the bigger picture. The more you know about Lines, Planes and Space and can apply principles, the easier it will be for you adjust your drawings when they intuitively “appear” wrong. And I mean a LOT easier.

I was lucky on this count as I came from a family of engineers and scientists so this stuff was discussed at the dinner table. Later, I realized that fellow art students struggled with their drawings only because they didn't understand the principles that Perspective was based upon. I came to understand that this was the stuff of basic rules and techniques that every artist needed.

...Which is why I wrote this paper!

## Lines

When you **Draw a Line** (that 1-dimensional object), you are giving the viewer (including yourself) the Direction, a Course, a Bearing, even a State or Status.

If I was to show you a drawing of a javelin thrower with his muscular arm drawn back, holding the javelin, you would instantly know the direction towards which he was about to throw. The line (and angle) of the javelin clearly tells you.



Let's look at an example more subtle, but just as powerful. If I were to show you a picture of a person leaning forward, arms extended over the edge of a cliff, your brain easily calculates based on the line imagined drawn from his head through his torso if he is substantially far enough leaned forward to conclude if there was no possibility of moving backward. He is simply about to fall.

What you have done is use a specific case of the Line called The Axis. You put an imaginary line through the body at the angle, and it was all you needed to know to calculate an impending fall or not. Your Left Brain did the calculations for you, based on the angle of the line, volume of weight over the center of gravity, and so on.

The Axis is the imagined center line through any object. It is most pronounced (or obvious) when looking for action in a drawing. That includes even subtle action

**ALWAYS KNOW THE PRIMARY AXIS** of the main object's Line (angle) for any drawing. That one simple powerful usage can make or break the action you intend in a drawing. An Axis line just a few degrees off can be weaken or strengthen the intent of your composition.

Conversely, the artist can use that fact to their benefit. By knowing the exact angle of an Axis Line through an object, the artist can describe the entire story the picture is trying to deliver to it's viewer. Remarkable, but true.

Here's a great example. Years ago I was traveling down Pacific Coast Highway and one of my "snapshots" of a painting was right there for me at the side of the road. This young woman, dressed in her waitress garb complete with white shirt and black bow tie was standing in front of the restaurant watering the plants. What made this so much fun and full of story was she not only had on big rubber boots, but in her attempt to water the plants she had run out of hose line and, not to be thwarted, had managed to heave her body forward to stretch the hose far enough to spout the water at a perfect 45 degrees over to the plants she was intending to water. The entire scene was hilarious and easily made "Life and Times" (see The Creative Process of Art).

The Point: If she was not leaning forward at just the perfect angle, the humor of the scene would have been utterly lost. The extreme forward angle of her body was a story about determination in the face of danger against all odds with time running short...ok, maybe I sound like a corny trailer for a movie but you get the drift.

Remember the power of the Line and especially the Axis and know that they can create stories in your drawings.

## Planes

Two-dimensional objects are called a Plane. Think of "flat" and you'll get "plane".

The simplest plane that we all know is the ground upon which we walk.

Another simple plane is a wall. Or a ceiling. Or a hill.

But how do you "draw" any of these objects?



Above is a picture of a white plane sitting inside a frame. The obvious problem is that there is nothing giving you any **Frame of Reference**, so you can't tell which way the plane is sitting in space. If I drew in a flat sheet of paper, I would at least have edges to tell me where my plane is.

Let's add a lady bug sitting on that imaginary frame.



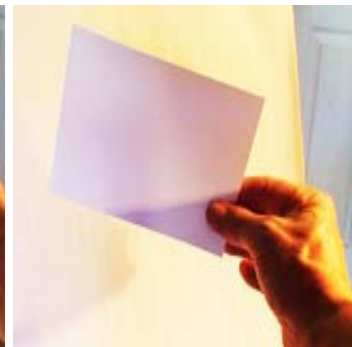
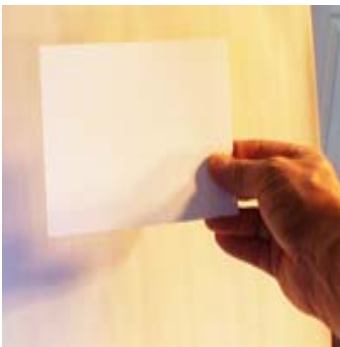
Now your first reaction is that you are looking from underneath upward. We know we are looking “up” because we can see the underside of the lady bug, and it’s more facing towards us than away from us. If I were to lay down a plane that the ladybug is standing on, what would the orientation be?

Here, let me help you out. (There is a very slight exaggeration).



Once I know where the ladybug is on that plane, I can correctly place anything (even smaller than the lady bug) on the same plane. So, since I can “see” a plane, I can now draw a leaf that the ladybug is sitting on.

Here’s a little trick you can use to clearly “see” a plane in your drawing. Grab a small sheet of white card stock and cut it into a rectangle. Now close one eye and turn it towards you, mimicking the orientations of the subject you wish to draw (like the plane the ladybug is sitting on). You’ll see better where objects can be added relative to the main subject because they will “sit” on the card at those locations.



OK, now so what?

Well, it's easy to understand that there may be multiple planes in your picture—and as the picture becomes more complex, more planes will appear.

Here's the BIG point. **For any object that is within the same plane it will be easier to “size” it compared to any other object in the same plane, even if you are going to imagine it into your drawing.** You'll see why in just a little bit, so this is not a closed topic quite yet.

Ultimately a picture itself is flat. But life comes out from it because you, the artist, bring it out using these dimensional tricks. And understanding how to use the **Line** and the **Plane** will help.

## **Space.**

Have you ever looked up in the sky and seen the contrails of a far distant jet as it flies through moist air? There is an interesting optical illusion based on the fact that you have no frame of reference to tell if that jet coming, going, flying up, or descending.

That is because the jet's contrail is nothing more than a line in space and that's what creates the confusion. I can position any line in space and you really have no sense of its direction.

To get a real sense of this, take a paper clip and unwind it into an “L” shape. Extend your arm and hold the small end between your thumb and forefinger horizontally so that the long end extends up vertically. Close one eye and move the tip any direction. You will be very hard pressed to guess if someone other than yourself slightly moves it toward or away from you.

Ponder that and you will quickly discover that without other frames of reference you are just guessing. Even watching the jet streak across the heavens doesn't help you out until you can detect movement relative to the ground or unless he is getting bigger or smaller (more on that in just a while).

## **The Intersection of Two Planes determines what space an object occupies.**

And that immediately implies that you have 2 planes. This becomes easy if you consider that one plane is the flatness of the ground and the other plane is calculated using your stereoscopic vision—that you have two eyes allows you to easily judge distance between points. Extend the second plane **through those two points** and you have your second plane.

Here's an example. First the ground (Plane 1).



Now I can overlay Plane 2 in the air. You'll notice the **two red points** on the plane.



Unfortunately when you are just starting out in art, your eyes can deceive you in understanding the orientation of the plane, especially when you are looking at the flat surface of a sheet of drawing paper.

Fortunately, Science (you remember that Left Brain?) comes to the rescue. So let me introduce you to the concept of...

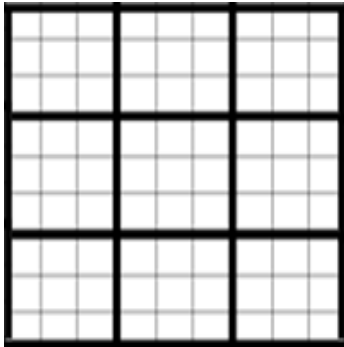
## **The Vanishing Point.**

**The vanishing point is a point in the distance where all parallel lines converge.**

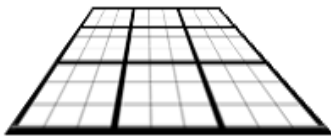
Examples are floors, walls, ceilings, railroad tracks; a line of trees, even the line on the horizon itself converges to the same point.

Here's an example of how to understand vanishing points.

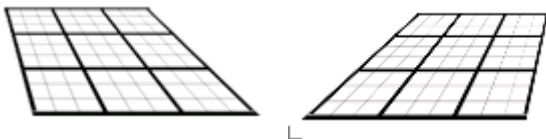
If I took a flat square sheet of paper and drew grids on it like this:



And then I laid it down on a horizontal plane, like my desk, and put my nose way down low near it, here is what I would see:



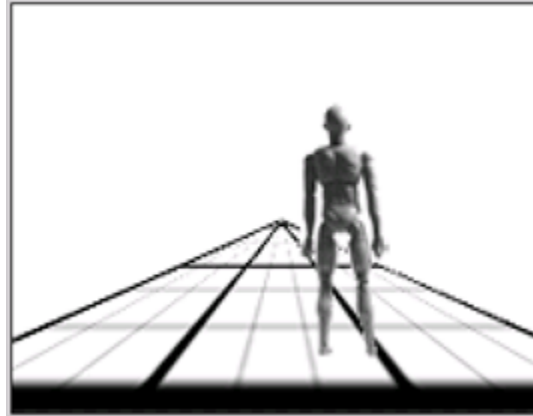
And if I moved my nose left or right I would also see:



You can now see that in all 3 cases the top and **bottom lines remain horizontal** but the angles along the sides “appear to” converge in the distance—and the **horizontal lines in the back are shorter** than those lines in the front.

Remember when [I told you earlier](#) that the multiple planes may exist in a drawing? Well here’s the gold: Once you can identify two or more objects **IN THE SAME PLANE**, it will become **MUCH EASIER** to size them relative to each other using the vanishing point as your gauge—**EVEN FOR THOSE OBJECTS THAT ARE IMAGINED**. It’s very accurate and dependable, method for giving you the right size.

In other words, it becomes obvious where the model is standing, in the picture below, relative to any other object I might place on the plane. In turn, that becomes useful for when I want to place other objects on the same plane. They shrink or expand relative to both the man model the size of the squares.



The Vanishing Point guarantees positioning with mathematical accuracy and can become a valuable tool if used carefully.

Here's an excellent example of the Vanishing point of converging parallel lines of the People Mover tunnel at the Frankfurt International Airport.



Notice in my definition that I said parallel lines converge in the distance.

But if you think about it, where does the vanishing point go if you are looking at the corner of a building right in front of you? Or if I place a big box right there in the middle of the Frankfurt Tunnel

## **Vanishing Point 2 and 3.**

Well, the vanishing point is still there behind the building, so any railroad ties or trees leading into the distance don't change the fact that it's there—it still is.

However, you do have 2 additional vanishing points (don't worry, there are no more than 3 total). One side of the building leads off to one vanishing point and the other side leads off to the 3<sup>rd</sup> vanishing point.

I'm sure an example will help at this point. Here is a picture of the imagined building (which, again, is obstructing your view of the primary vanishing point which is still there!)



Now let me draw in the 2 other vanishing points for you and you'll easily see that they do in fact converge:



All buildings or objects obstructing your view of the primary vanishing point will automatically have 2 other vanishing points. They sometimes are harder to resolve if, say, it is not a box or a building—but they nonetheless exist and may need to be considered for accuracy.

Now let's go back to the ladybug example.

Even the plane under which the ladybug is sitting has the additional 2 vanishing points.

Here, let me draw them in for you.



Notice that the left vanishing point is higher than the right vanishing point proving that plane is lifted on the left.

If you are not sure of where the vanishing points are on your drawing, then go back to the square sheet of card stock, close one eye, and position it how you want the plane to be oriented in your drawing.

Again, any other objects, real or imagined, on the same plane will ALWAYS follow the sizing rule of the plane's vanishing points.

# Foreshortening

If you hold up your finger close to your eye, you'll instantly see foreshortening at work. As an object gets closer to you it gets bigger relative to the eye. And if it is really a long object (with respect to distance from your eye) then the difference between what is close to you and what is far from you is rather dramatic.

I'm always amused when I see video game artists do their characters on posters. They are masters of foreshortening because they are trying to accentuate action and forcefulness of their characters. (Some of those kids out there drawing for those video game covers and posters are truly gifted and phenomenal artists). So take heed in your compositions if you need action and forcefulness!

Foreshortening can be a powerful element of drawings if done well.

But first you have to decide if you need foreshortening in your drawing.

If you are going to draw a person, (like a model) you must answer two questions:

- 1) If they are close, are their legs, arms, and head farther apart from the primary vanishing point?
- 2) Are they far enough away to not really see any difference?

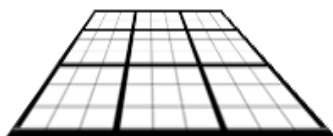
For example, if you were to draw a person walking on the other side of the street, there would be no concern for foreshortening in your drawing, even if one hand was pointing at you—the difference in distance is too small to be picked up in your drawing.

But, if that person was right near you and their index finger was scolding you (in a drawing!) you would very much have to draw that person with foreshortening.

So how do you accurately draw with foreshortening?

You simply apply the same techniques about the Vanishing Point onto the characters, people, or objects you are drawing.

Remember this?



No matter whether you get closer or further away, those little squares exactly represent the relative size of the object you are drawing.

Let me be more explicit by example. In the example below you can see foreshortening. The vanishing point is behind me and the “cubes” are (mostly) proportionately distant from each

other. So even if you don't have a real model (cartoons or some imagination) you always have a tool by simply drawing in your vanishing points (yes, of course you can use a ruler).



Example of Foreshortening.

As you can see, when dealing with object this close, foreshortening plays a huge role in getting true dimensions correct.

Just remember this. As long as you can imagine (or even draw to be erased later) your vanishing point, it will make the job of accurately representing your foreshortening much, must easier.

If you have a model and you need to check your proportions, you can always use the measuring stick (Lesson 3 in the Videos). But the measuring stick is only good for those objects that you can see.

So there you are. We have explored Lines, Planes, Space, 3 Vanishing Points and Foreshortening.

Review this document whenever you need a refresher on these points and you think you might be getting in trouble with one of your drawings.

I'll see you over in the Videos and Ebook so just keep practicing, practicing, practicing, on your drawings.

To the creative aspiring artist within you,

A handwritten signature in black ink that reads "Paul". The signature is written in a cursive, flowing style with a large initial 'P'.

Paul Wagner

[www.how-to-draw-online.com](http://www.how-to-draw-online.com)

Founder, Art Training International