

NFXstudios 3d

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Design Principles

Since this is a tutorials section, I don't want to go too deeply into design theory, but there are a handful of basics that are worth considering when putting together any composition. This could include pencil sketches, digital painting, or rendering a scene in 3d.

Concepts

Being someone without a terrible amount of pure talent in 2d, it has always been difficult for me to justify the idea of drawing concepts for something I'm going to eventually create digitally, but quickly sketched concepts can be a major time saver. The quality of the sketch doesn't even matter, as it's really only for your benefit; no one else is going to see it.

An excellent example of using a drawn concept is in determining the layout of a complicated composition. You don't need the features of the various objects so much as you want to arrange their relative size and position.

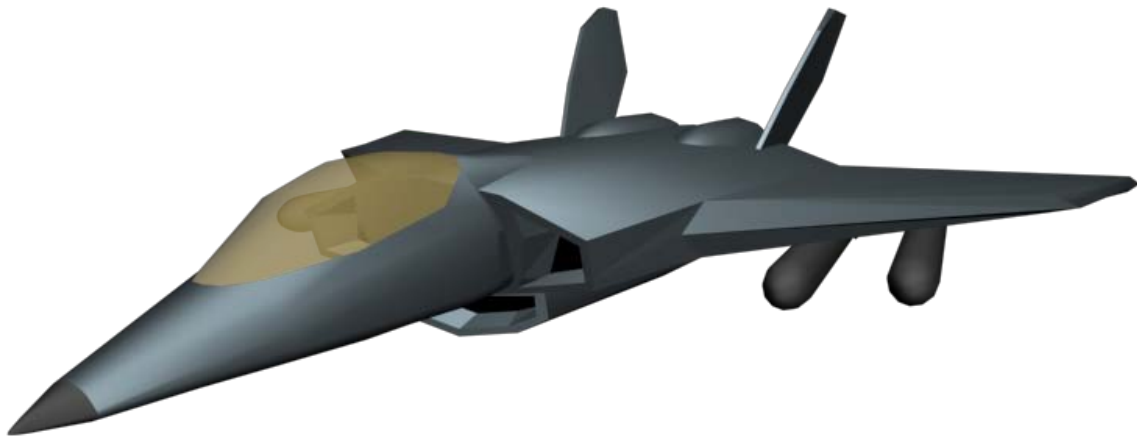
Additionally, a drawn model sheet scanned in as a jpeg or png and used on a mapped plane is a good starting point for beginning a 3d model (stuff like that will be covered in later tutorials). The basic point, boiled down, is this: it's better to start with your ideas in some tangible form rather than just floating freely through your head. I'm not saying it's impossible to successfully create a work of art without sketching it beforehand, but if it worked for Leonardo, and generations of renaissance masters, why wouldn't it work for you (and me) as well?

Research is another important facet that's often overlooked. Memory and perception have a way of overriding reality. One of the major tenets I've emphasized over the many years I've worked as a professional artist, tutor, and now as a teacher, is that good fantasy is always rooted in some way in reality. For a quick test: think of what a railroad switcher looks like. The lever that's used to switch the main track off onto a spur. Got a picture of it in your head? Now Google it and see how closely your imagined switcher resembles the real thing.

For a couple of particular examples, consider first the Old West Town that makes up a big chunk of my digital portfolio on this website. There are approximately 512 individual 3d models in that scene, which I created in roughly ten weeks. But I spent perhaps two or more months *researching* the American old west before I ever created a polygon in 3ds max. Why? We may not explicitly recognize authenticity when we see it, but we *do* recognize when it's not there. I worked from books of nineteenth century

photography, Google searches of period photographs, actual visits to era-specific buildings (believe it or not, there are a great number of “old west” style buildings dating to the mid 1800s right here in [sometimes] sunny Michigan), and by studying a selection of Western themed films noted for the accuracy of their set designs: Tombstone, 3:10 To Yuma, The Assassination of Jesse James, and several others. I then made a rough (that’s an important word, “rough,” as these sketches were really only necessary as guidelines for me) sketch of the town layout, a handful of rough elevations of individual buildings, and then I was off to the races in 3ds Max.

Now consider this render:



This is a model of a fighter jet entirely out of my imagination done with no reference, no research, and no concepts, in about an hour or hour and a half of doodling in 3ds max. I suppose it looks plausible enough, but could that thing really fly? What’s the purpose of that scoop on the underside of the plane? Does it even have one? I don’t know, it just looked cool to put it there. How are those missiles attached to the wings? Again, I have no idea. A model like this might work as a vaguely seen animation in the far background of a game environment, but trust me when I say something like this would not hold up to close scrutiny as a “hero” object in a game, or as an element of a still composition. A couple hours of researching actual jets and scribbling some basic sketches of the way the mechanics work, would have lead to a much more believable model.

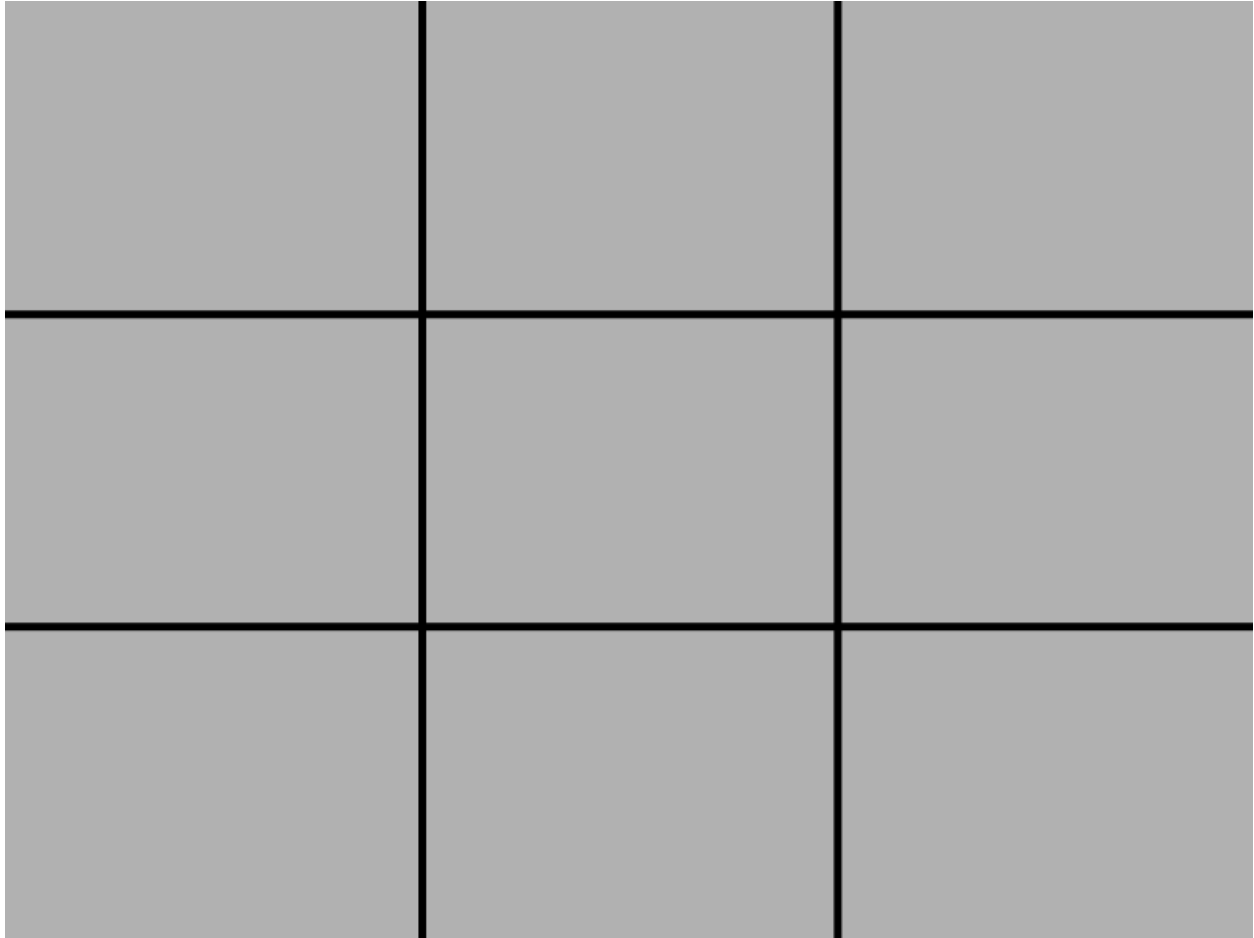
The lesson of this subsection is this: most of your work as an artist is probably going to be done before you even touch the tools of your final medium. Do your homework, make your sketches, plan your composition, and you will be in much better shape to create a more credible scene, and one that flows much more naturally and is more pleasing to the eye.

Which leads me to:

Composition Basics

There are rules, as with everything else, governing the composition of both still and moving images, and this could be a textbook on the subject rather than a short article on a tutorials page. I will not be going into great detail, but there are at least a couple basics you should keep in mind:

1) The rule of thirds. The next time you have the opportunity to look at a professionally composed photograph (not a studio portrait, the rules are slightly different for that), or a movie, or a television show, note that the main subject or area of interest is never in the direct center of the screen. Consider this illustration:



This composition has been divided into rough thirds. Nobody is going to bust out a ruler and measure your composition to determine your accuracy; rough division is good enough. But following the rule of thirds suggests that the main subject of our composition, or the area of the composition that immediately catches our eye, should be located near one of the four intersections of the black lines in the above illustration. Ideally, there should be a hierarchy of three “interesting” areas of the composition, all residing near one of these intersections, which draw our eye around the image.

This happens subconsciously, but you can do a forced experiment by finding a professionally composed photograph or painting, closing your eyes for several seconds, and then opening them and marking the spot where your eye is immediately drawn. I’ll bet you it’s near one of those imaginary intersections.

Whenever there is a linear component to your composition, for example a long line, your eye is going to follow that line. As an artist, you can use this to your advantage, or you can use this badly and leave most of your composition totally ignored. Say, for instance, at the upper right intersection of the above illustration, I have a very eye catching element in my composition. To the left of it is also a bunch of pretty interesting stuff to look at, and which I spent a long time creating. Unfortunately, I allowed a long straight line to lead from the main area of interest, off the screen to the right. The eye of the viewer will naturally follow that line, and all the cool stuff on the left will be missed, because the viewer has been cued to follow the composition’s hierarchy to the right.

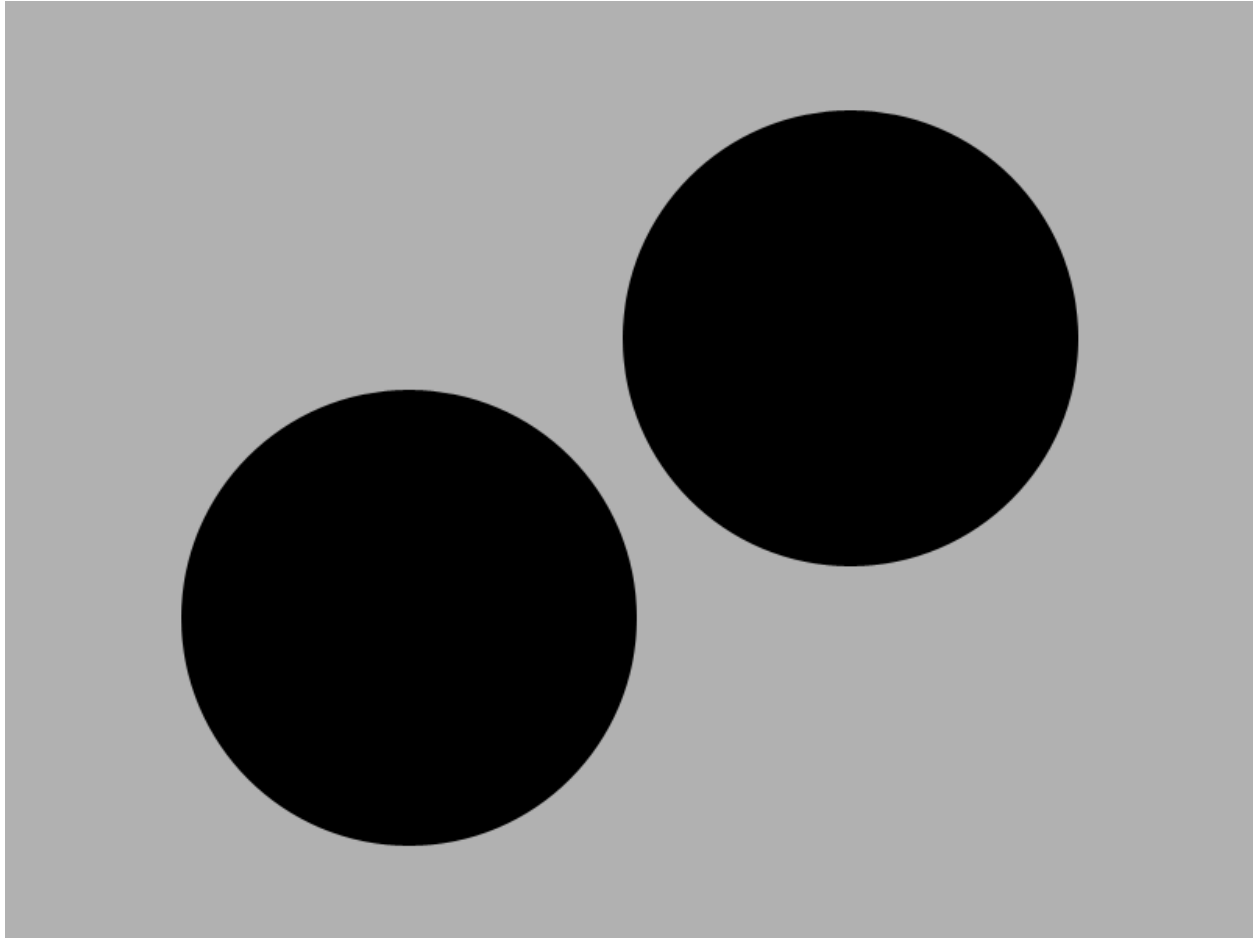
The lesson here: avoid creating strong points of interest in your compositions that are directly in the center of the image, and take care that lines or hierarchies of bright and interesting spots lead the eye of the viewer around your image and not off your image entirely.

2) Balance. The last basic fundamental of design principles I'll touch on is balance. We all know there cannot be light without dark, or there cannot be Jedi without Sith. Elements of your composition have weight, and there are two areas of "space" you should be aware of.

The first is positive space. Positive space is that which is filled by a solid object. The second is negative space. Negative space, as you might guess, is the "empty" space around a solid object. You will want to pay close attention in your composition to the use of positive and negative space. Typically, negative space has no "weight," and therefore cannot balance an area of positive space. There are exceptions, of course, but that's the general rule.

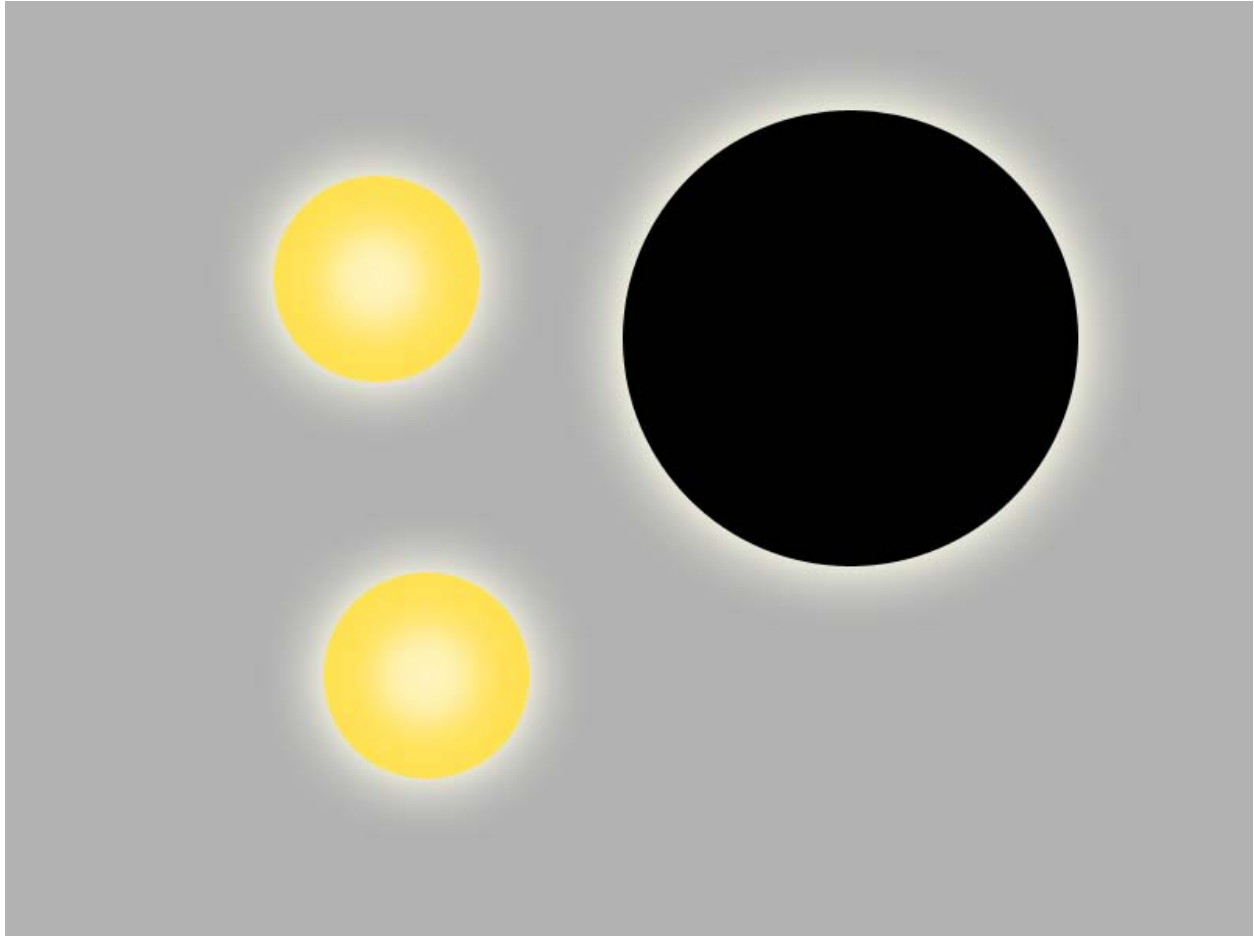
Regarding the "weight" of objects in your composition: there are various features that can give a positive space object "weight" that counts towards the balance of your composition. The first is natural: size. Bigger objects have more weight (visually) than smaller objects. Brightness, however, is another factor. A small, intensely bright object, might have more visual weight in your composition than a large dark object. But a large dark object with a strongly contrasted highlight (such as a spotlight reflection on a large black ball) might give that object even more weight than the smaller but more intensely bright object. Am I losing you yet? Good, that's been my intention all along!

There are generally two kinds of balance you will be working with for basic compositions: symmetrical balance and asymmetrical balance. Recalling that "weight" can be perceived in an object based on a number of factors including physical size, or relative brightness, symmetrical balance in its most simplified form might look like this:



You'll note that the two black balls are exactly the same size, exactly the same brightness, and they are generally positioned along the intersection of lines if we were to divide the image into thirds. This image is symmetrically balanced.

For asymmetrical balance, consider this:



The black ball on the right is clearly larger than the two small balls on the left, and obviously has more “physical” weight. However, the two small balls on the left are very bright and have a strong glow, contrasting the darkness (and subtle corona) of the black ball. This gives those two balls more weight from a luminosity standpoint. We could say this composition is asymmetrically balanced because, while the two object on the left are smaller, they have roughly equal weight to the single large object on the right. You’ll also note, again, that each of the elements is on or near an intersection of lines if we were to divide the image into thirds.

So those are some of the basics of design principles you will want to keep in mind when designing a composition of any sort, whether by hand on paper, or digitally in Photoshop or 3ds Max (or even if you’re framing a composition for a movie shot!). With the basics out of the way, we can have a little bit of fun now. Promise!