



By Rhys Davies

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Chapter 1

Introduction

Isometric Pixel Art (IPA) is a modern form of digital art that only recently has been accepted as a new art form. I'm sure most of us have seen this typical type of artwork in old games such as 'X-Com' or the relatively old 'Ultima Online'. The 2-Dimensional (2D) representation of a 3-Dimensional (3D) object is fascinating to many people. This is possibly because of the simplicity and amount of small details that can fit into a single IPA piece. It doesn't need that much brain power to figure out, yet it is pleasing to the eye. IPA can be compared to cartoons in many ways, as people like to look (watch) and accept the 2D art form as it is very simplistic and easy to follow. The main purpose of any art work is that it draws your attention. In many ways IPA is set out to achieve this, that is, to represent something that looks like it could come from the real world, yet you know it's just a computer generated image (CGI).

Each separate IPA image is always going to be made up of single computer generated blocks, known as pixels. Each pixel is the same size as any other pixel, but it can be any colour you can think of and it can fit together with other pixels, any way you can think of. You can think of a pixel-based image as you can a mosaic in real life that is made up of tiles to form an overall picture. To see an example of a single pixel take a look at this letter 'i', the single pixel is the small dot you see above the long vertical line. In fact the whole letter is made up of single pixels that have been joined together to appear as one long stroke or line. The pixel will be explained further along in this reading when we look into tools used to create IPA.

Chapter 1

A Lesson In History

The actual term 'pixel art' was first published by two members of Xerox Palo Alto Research Center (PARC) in 1982; Adele Goldberg and Robert Flegal.¹ The basic concept of the creation of the art-form delves even deeper into history when around 1972 Richard Shoup developed his SuperPaint system. SuperPaint was created as a computer graphics program with also included a framebuffer system.

It is easy to see the origins of Pixel Art in traditional art-forms such as cross-stitching and mosaics. These (in particular mosaics) were created using anything ranging from tiles to rocks in order to create a large picture or scene created from many small objects. In essence it is the same concept of Pixel Art. That is, arranging many small pixels of different colours to form a larger overall picture.

Older styles of video games used Pixel Art to create their graphical content. Console gaming systems such as the Nintendo Entertainment System and Atari are some of the very early examples of video games using pixels to create the graphical content that appeared on screen (even though the graphics were usually crude and limited in colours and detail).

¹ Adele Goldberg and Robert Flegal, "ACM president's letter: Pixel Art", Communications of the ACM, Vol. 25, Issue 12, Dec. 1982.

Chapter 1

Basic Knowledge

To even begin to be able to understand Isometric Pixel Art you need to have a fair understanding about how to work the basics of computers. This includes operating the mouse, keyboard, loading saving, etc. I know this may sound silly since you've managed to get yourself to this website, but constantly I am asked by people if I could teach them how to do this sort of art, even when they are unable to even do basic operations on a computer. So please people, before even continuing from this point forward, if you are lacking in the basic computing skills please go to a course or something. Then come back when you are ready.

Besides from the basic computing skills you will need a dash of creativity, a splash of enthusiasm and a pinch of artistic flair (that last point is merely a rumor.) Also, some basic understanding of paint software such as MS Paint, (which we will be using primarily) could come in handy.

Chapter 1

Tools Required

Right, now that we've flown past the boring stuff we can get on to actually looking into how to make this 'Isometric Pixel Art'. Before we go anywhere you need to have access to a small little program that ships with most versions of Microsoft (MS) Windows, called MSPaint.

To access it on most computers running the Windows Operating System please follow these simple steps. Click on the Start button, scroll up to the Programs folder, then up to the Accessories folder, and now once that's open Paint should be on the list of programs that appear in the Accessories folder. If not Paint might be under the next folder up the top of the Accessories folder called Applications. Anyway, once you've found it click on it once and it should load. Congratulations you've just loaded MSPaint and you are one step into learning about Isometric Pixel Art.

Apart from PAINT, you can use many other programs to draw IPA. Programs such as Adobe Photoshop and Paint Shop Pro do the job well (possibly better than paint according to some people) but are just to darn expensive, hard to get hold of, and way to complicated for the average beginner to use.

Okay so let's see what we have on our list so far - 1 computer, 1 copy of MSPaint, 1 mouse, and 1 keyboard. If you've ticked everything off on that small list then you are ready to create some Isometric Pixel Art.

All is good so far unless of course you want to convert your final product to an image format that is suitable for the web (please don't use bitmaps files on your homepages, it's terrible!) I find that GIF files are fine as far as quality wise is concerned. Also if you are looking for that extra mile in terms of quality and minimal color loss, use the PNG format. To convert your final bitmap files into these filetypes please do not save them as this using MSPaint. Unless you want an extreme loss of color and overall crappiness for your masterpiece, do not try and save them as a GIF or PNG using MSPaint (PNG's can be fine some times saving them out from MSPaint, but there is no transparency options included.). Instead search for a simple BMP to GIF converting program to save your files. Or if you are a lucky person you will have access to programs such as Adobe Photoshop or Paint Shop Pro, in which case you should save your bitmaps as GIF or PNG files using these top quality programs for a top quality outcome.

*Throughout this tutorial the only program we will be using and discussing is Microsoft Paint. Please, if you don't have access to this program anywhere, do not bother continuing the tutorial until you find it.

Chapter 1

Ideas/Research

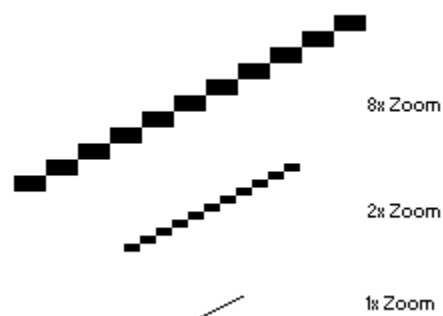
A good way to start any IPA piece is to do some initial research into any ideas you have about what you are going to draw. Write down any ideas that come to your head during the day, and when you are ready to create a new piece simply select an idea from the list. This really does save loads of time instead of sitting there with MSPaint open, trying to think of something to draw.

Once you've selected an idea it's always good to research it first before starting to draw it up. Use a search engine such as Google or Yahoo to search for your idea. For example, I had an idea awhile ago to draw up a miniature Roman village. I had an image in my mind about what it was going to look like but I had no idea as to how they structured their buildings and what colors I needed to use to make it as realistic and good looking as possible. I spent about an hour or two searching the Internet, trying to find pictures of Roman buildings and so on. In the end the research really helped me when it came to designing buildings and using the right colors in the piece. Although I never finished the village, I keep using the same process today, always researching into a topic if I am not sure on how it would look.

Chapter 2

The Basic Line

Throughout this section I will be discussing the basics of Isometric Pixel Art. The first thing we have to cover though, is how to draw a line on an isometric angle. The straight line in an isometric picture can go in several different directions, really it's up to you. This of course helps the creator come up with all sorts of shapes and fantastic structures. Below in Figure 1.1 I have created the most simple of all isometric straight lines.

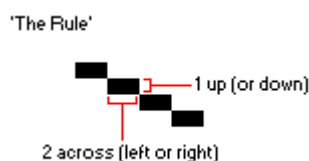


As you can see, when zoomed out at normal view the line appears straight and clean. Zooming in closer you can see how the line is formed.

Chapter 2

The Rule Behind It All

All simple isometric lines such as in this particular example have a simple rule you should always follow for clean results. See Figure 1.2 below, which explains how the simple rule works and how to achieve this with every one of your lines.



The rule takes upon the basic concept of every 1 pixel you draw moving in either an up or down direction, you have to move 2 pixels across. So if you were looking at this line from a birds eye view it would appear straight up and down, vertical. But since this is isometric it needs to be skewed slightly. Apparently the angle of an isometric line is near 30° , but then again it could be exactly 26.565° . Below is an example of how not to draw your isometric lines. I mean you can draw them like that if you really, really want to, but in my opinion it always ends up looking messy and really weird to look at. The example below is 30° and as you can see it looks slightly off, that's why the isometric line is not exactly 30° .

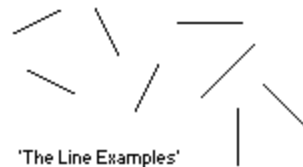


Chapter 2

The Rule Behind It All

I think that is all we really need to cover about lines. It's all really basic stuff and most people get it the first time they try. If you don't, just keep practicing and looking at examples.

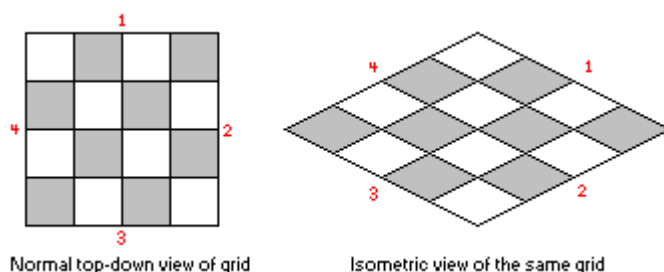
Below are a few different variations of the line, showing different ways you can use it. And yes, horizontal and vertical lines are acceptable, and yes you can break the simple rule, but please people, only if the line ends up looking clean and fits well into the picture.



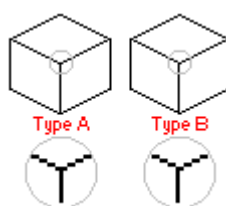
Chapter 2

The Isometric Grid

You can think of an isometric plane or 'landscape' as a series of squares that have been joined together to form a larger square. The below image shows us how a normal 2D grid is turned into an isometric grid. The normal grid has simply been moved around, as if it were in a 3D modeling space, so that the view has changed to an isometric view of the 'plane'.



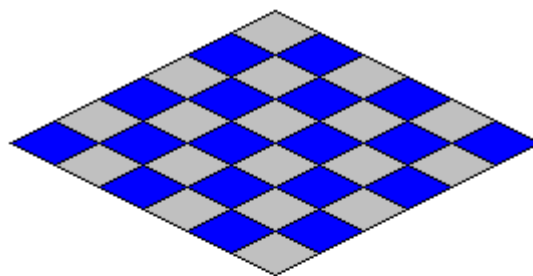
In order for each separate smaller grid square to fit in to place, the lines joining both top and bottom need to be exactly the same on each square. In the isometric world (and community) there are two types of common 'building blocks' that are used in isometric construction. They are the aptly named 'Type' A and B blocks. See below for an example of each type of block.



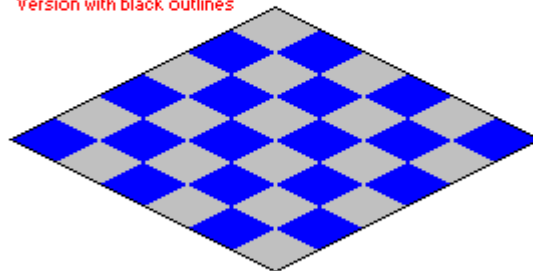
Chapter 2

The Isometric Grid

In most cases the isometric grid uses the Type B block in order to tile effectively, without any glitches or uneven lines. The left and right sides of the Type B grid block must be two pixels high in order to join and tile effectively. You can see in the example below what I mean.



Version with black outlines



Version without black outlines

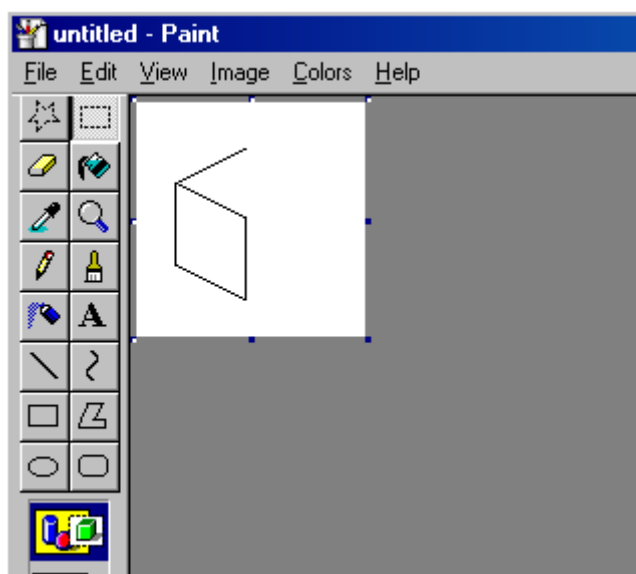


Close up of join

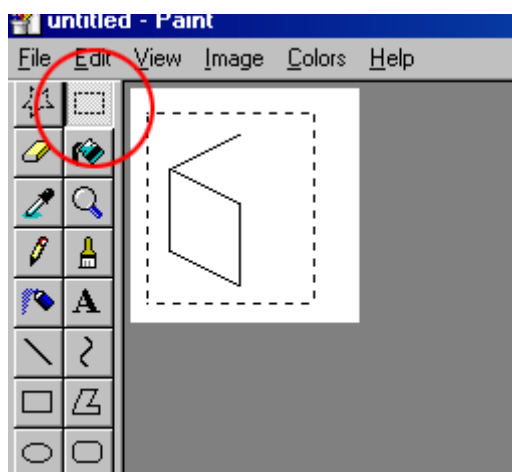
Chapter 2

Creating Your First Isometric Cube

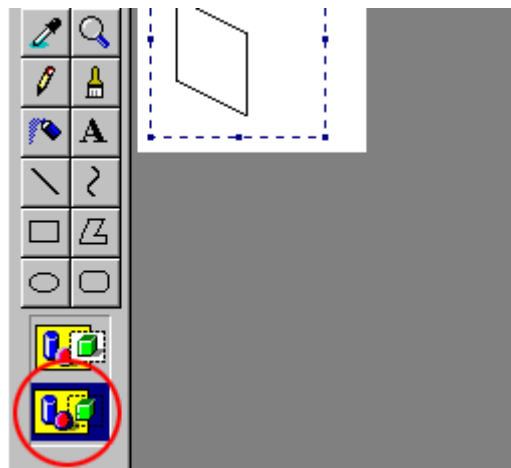
To begin our cube we must first draw up an outline. When drawing your outline, think of it as a 2D square, skewed into a 3D perspective. Draw one side of your cube using the lines that we have discussed before. This is done using vertical lines for the sides of the cube and the angled lines for the top and bottom edges. You can see below my completed side for my cube.



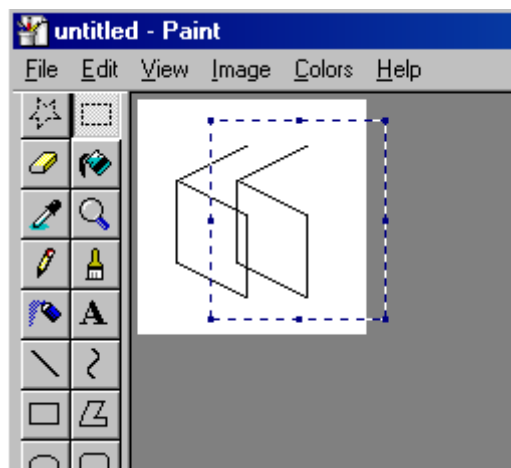
As you can probably see, I have included the middle line of the shape so I can line up the mirrored piece in a moment. Now once you have got your side done and you are happy with it; drag a selection around the image using the selection tool as shown below.



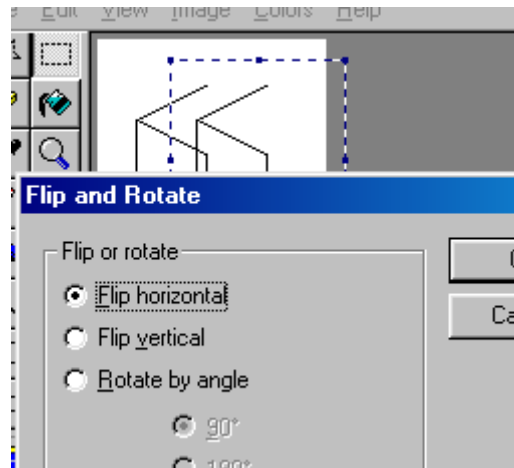
Next go up to the edit menu and select copy. Alternatively you can simple press the keyboard shortcut of ctrl+c. Once you have done this you will need to change the masking options for your copied selection. This is achieved by clicking on the second icon which looks like a bunch of shapes on a yellow background, with a floating selection. As you can see the floating selection does not have a white background like the alternate icon above it. This simply means that and colours in your selection that contain your current background colour on the palette, will appear transparent. Below I have highlighted the mask selection box that you need to select, with a red circle.



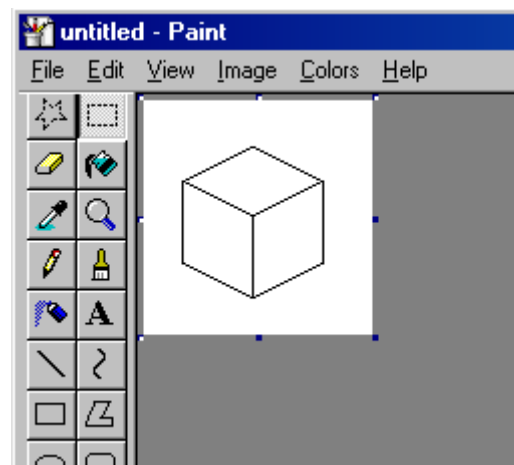
Okay now that we're past the tedious part of mirroring and getting your selection backgrounds transparent, we can focus on creating the rest of our cube. Let's start by again viewing the edit menu, but this time selecting paste instead of copy. Again alternatively there is a keyboard shortcut that saves you having to use the mouse, pasting something on to your canvas is simple a matter of pressing ctrl+v. Okay, after you have pasted a cloned image of your selection should appear on the canvas. Do not click anywhere on the canvas once you have this floating selection, or you'll have to undo the process (ctrl+z) and start all over again. Below you can see my floating selection of the cube side I copied and pasted on to my canvas.



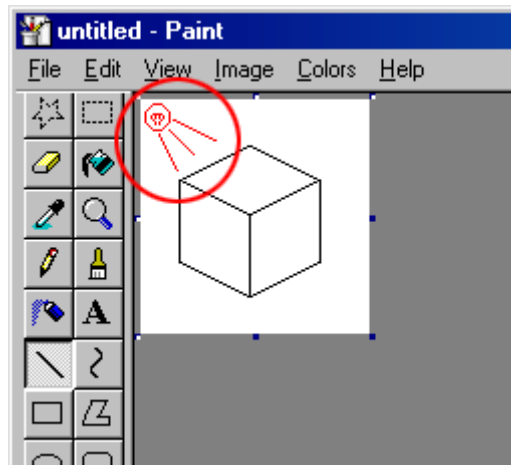
Right, now we are going to move the selection across to the other side of the cube that is already drawn up. Hopefully your white background is transparent and the only things visible and moving are the lines that make up the side of the cube. Once the selection is positioned we will need to flip it so it mirrors the other side of our cube outline. To mirror the selection we select the Image menu and then select the option Flip/Rotate (shortcut ctrl+r). A popup menu should appear as shown in the example image below.



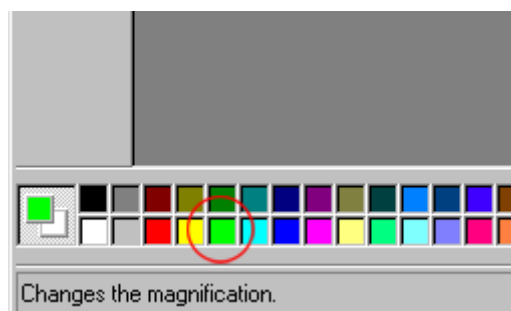
Now we want to only flip our selection horizontally so we make sure that the horizontal option is selected. Once done click the 'ok' button and you should return to the canvas with the selection mirrored and ready to be joined to the rest of the cube. To do this simply move the selection across so the middle line overlaps the middle line of the already made side. Well done, you've (hopefully) just completed your first outline for a basic isometric cube. It should look something similar to the image below.



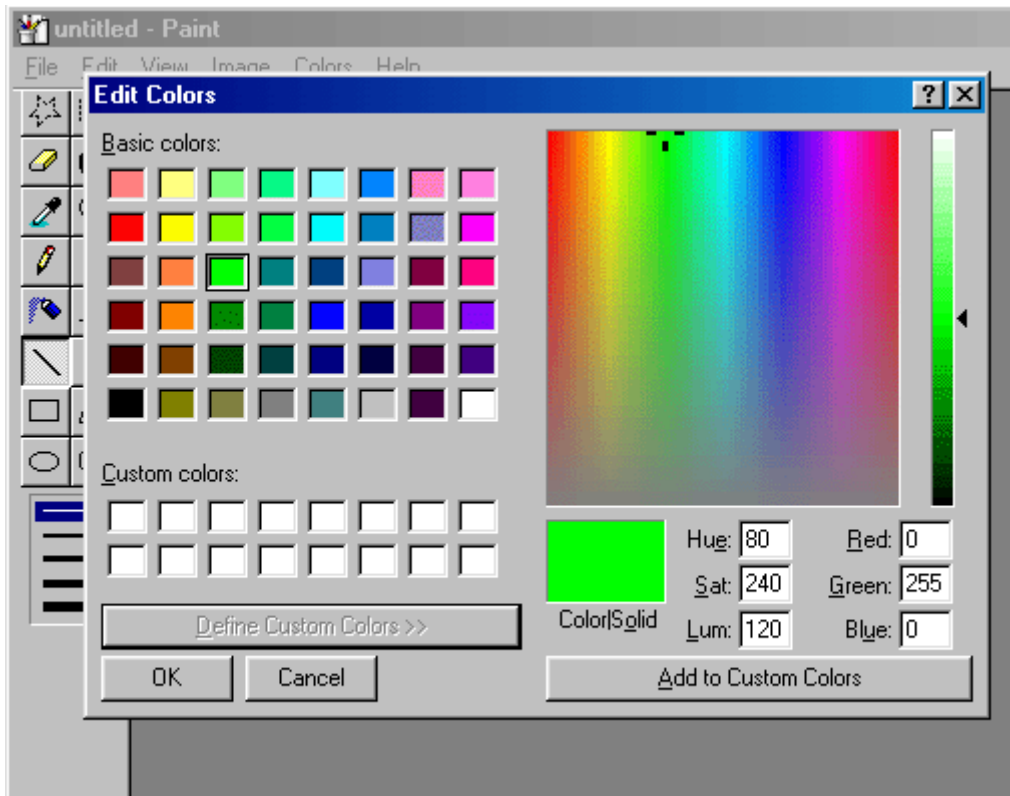
Once we have the outline completed it's time to colour our cube. Let's use a nice green for this cube. In order to create a sense of 3D within the picture different shades of the same colour are used to create a light source. A light source is simple where the main directional light would be shining from, with the appropriate shadows, light and darkness to follow. For this example our light will be shining from the upper top left of our canvas as shown below. Please note that you don't actually need to draw on your light source as I have done in my example. You can if it helps though but it won't be there in the final product.



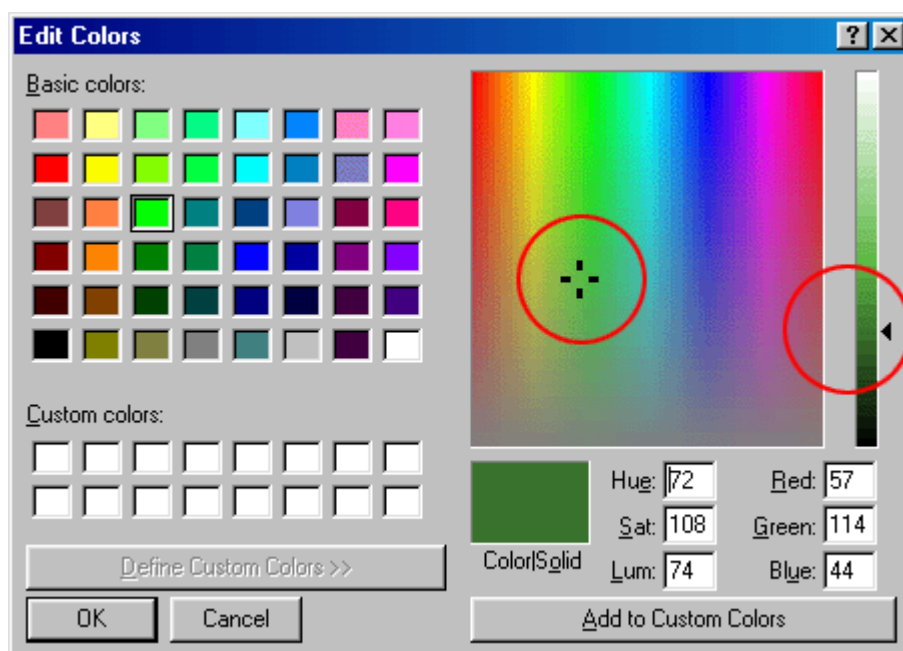
The light source is always up to you but in most of my work it usually is in the upper top left of my canvas (we will cover this in a later chapter). Now we can select our green colour. We can do this in many ways, one of the easiest being simply selecting the colour green from the predefined palette on the bottom toolbar. Besides from being too bright this green is extremely ugly and over the top. We need to dull it down a bit, but not too much as to have a faded appearance (well you could use the faded look, it's really up to you.) Let's now double click on the light green (almost neon) colour from our palette at the bottom of the screen. I have again outlined the step in a red circle below.



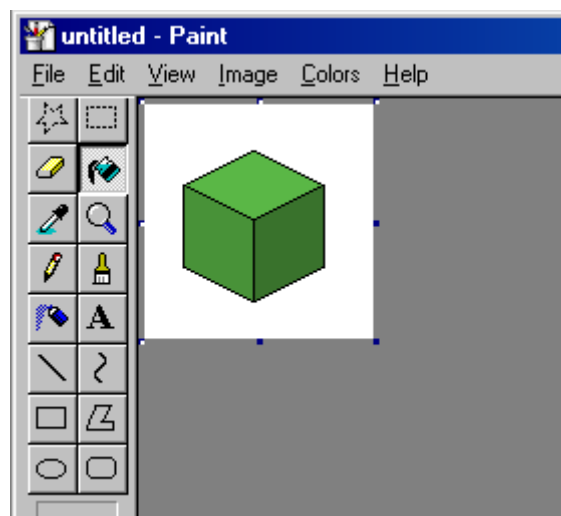
Upon doing this a popup menu box should appear like below. It contains a whole series of boxes, each containing the default colours. We want to use the advanced options to alter our colour so we need to click on the 'define custom colours' button at the bottom of the popup menu. This will widen the popup and you now should have a large colour selection box consisting of all the colours you could imagine! See below for what your screen should look like by now.



To change our default ugly green to a nicer green colour we need to drag the small crosshair shape that is currently up the top of the palette. It is here by default because we have selected the ugly green colour before-hand. If we were to select a different colour it would appear in a different place. To change our colour we need to affectively alter the hue and saturation of it. The hue of our colour is the actual colour we see, whether it be red, green blue etc. The saturation is how much of the colour is retained before it simple fades and you are left with a black or grey colour. The more saturation the brighter your colour, the less and obviously the darker and washed out it is going to be. To get our colour that we want to use for our cube we simple drag the crosshair to about the middle of the palette, still staying within the green colour sections. You can make your green a lot more natural looking by adding some yellow to it. This is done by dragging the cross hair into the part of the palette where green meets yellow. Remember to achieve this colour you will always need more green colour than yellow. Below you can see where I have positioned my crosshair. I wanted a more natural green colour for my cube; you can choose what you want to use it doesn't really matter. Once you have decided on a colour make it a bit darker using the side vertical bar that shows your colour. To do this, simply drag the slider down until the colour is dark enough.



Now that we have our colour chosen click the ok button and it should appear as your foreground colour in the little foreground/background box next to the colour palette. Now we can simply get our fill tool (the little paint bucket being tipped over) and click within the right hand side of our cube. The colour should fill the white part within the lines with our colour we just created. As it is the darkest side of the cube (remember our light source), it needs to be a tad darker than the other sides. The opposite side (left side) needs to be lighter than the right side so we repeat the colour process but this time we don't touch the actual colour selection part but jump in and adjust the brightness of our colour so it is brighter than our colour we used before. Once this is done fill the other side of the cube. Repeat this process of filling with colour to the top of the cube, making the colour even lighter than the left-hand side colour. Now you should have something similar to below.

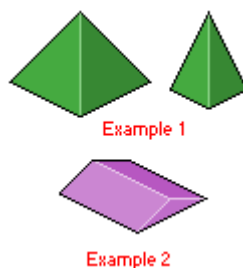


Chapter 2

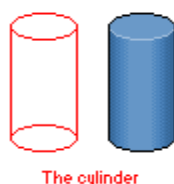
Other Objects (Shapes)

“Great!” you may be saying now. “Now that I’ve created a cube I can jump straight in to the deep end and start on my first masterpiece!” “Wrong”, I say. What happens when you go to create a roof on your house that requires a different shape other than that of a simple cube? The answer is within this section of the chapter. Hopefully it will teach you how to make some more basic shapes for your creations.

First up is the pyramid. You can have normal pyramids or long sections of block with triangle ends. First up we will look at the normal pyramid. Below is an example of how a normal pyramid should look in the isometric style. The sides are straight up and down at a 45° angle. We can change this angle to make the pyramid smaller, as you can see in the second example. If you look closely you should be able to recreate something similar using the same techniques you used to create the cube.



Now that you have hopefully got the pyramids out of the way (you can refer back to this section if you need to at any time), we can make some more cool shapes. Now let’s make a cylinder, which are very easy to make. All a cylinder is really made up of are two circles joined by a middle section. Below is an example of a cylinder. The shading as you can see, is simply a gradient of colours, going from dark to light. This shading technique gives the illusion of depth as the 2D object is transformed using shadows and highlights.



On the subject of round things, one of the most difficult shapes to create in the isometric viewpoint is the sphere. Spheres are basically flat 2D circles; coloured and shaded in such a way as to make them appear 3D. The shading is much like the way I shaded my cylinder. Starting from dark and gradually bringing the lightness of the colour up, giving an illusion of depth. As you can see in the example image below, I have provided the basic outline and then the complete piece. Also there is a zoomed in image of the same complete piece. You can see that I've used dithering to make the gradient appear less ugly, making it blend in more. Dithering is the process of taking a colour next to another colour and placing a checker type pattern, or sometimes a random pattern of dots within the other different colour. When zoomed out fully the dots and the different colour blend quite well, creating a colour that is somewhere in the middle of the two, thus mixing them and making the join look smooth. Dithering will be explained in further detail a bit later in this book.

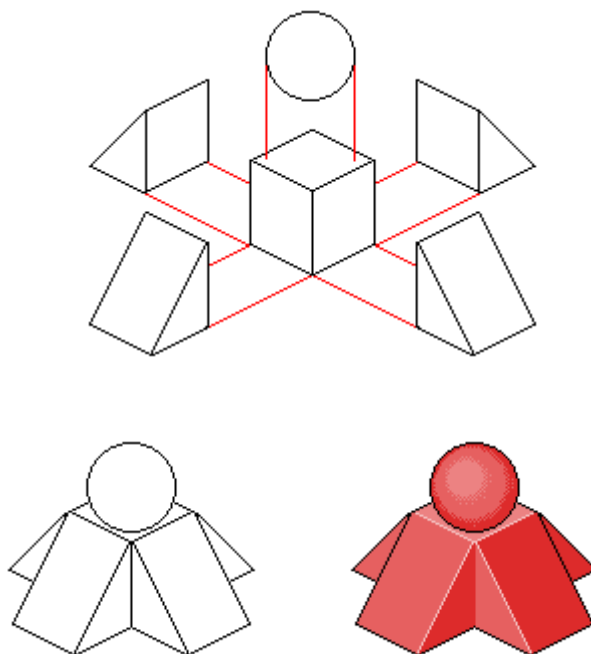


Chapter 2

Combining Shapes

This is where the more fun and creative part comes into play. Now that you know how to make all these wonderful shapes, it's time to put your hard work to good use. How about making a building with a pyramid top? Or maybe a cubed building with a dome roof? All of these are simple to make and also give IPA the complexity it needs to keep people interested. All you need to do is make each shape separately, making sure that each piece is in proportion. Then using the select tool in Paintbrush move the shapes over and around each other until they look right and you are happy with the result.

Just for a small example I'll be creating a cube which has sloped sides and a sphere sitting on top. The first step is to create your outlines for each of the shapes. As you can see below I have used red lines so each of my shapes are in the correct proportions to each other. Below is an example of each of the shapes I will need for my little structure.



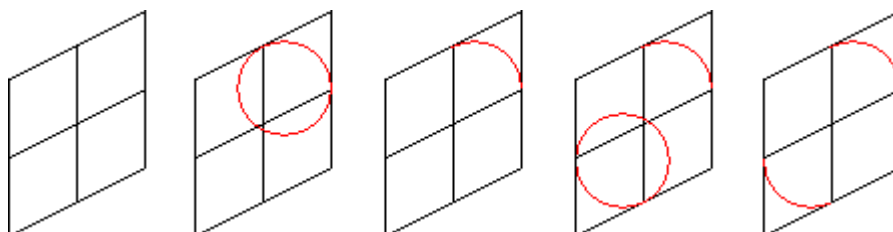
Chapter 2

Creating an Isometric Circle

Creating isometric circles is a little hard in MSPaint as we don't have the flexibility of the transform tool such as that found in Adobe Photoshop or other similar higher-powered graphical editors. What we have to do to create a perfect isometric circle involves combining 4 different parts of 4 different 2d flat circles. I'll explain in further detail below.

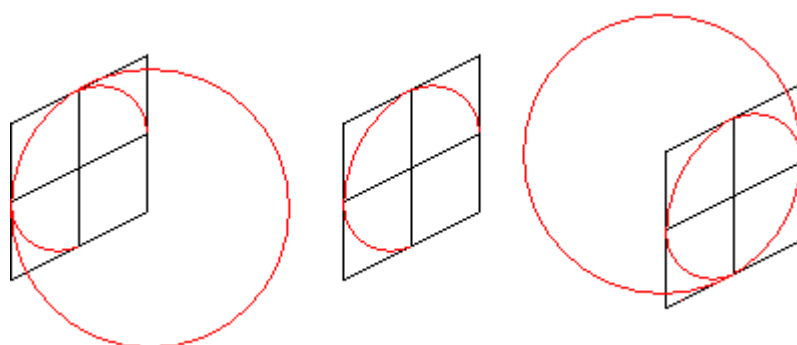
Step 1.

Create a flat plane on an isometric angle. Divide this plane into 4 quarters as shown in the example image below. Once you have done this create a small circle that has its edges touching the top and right sides of the top right segment. You also need the bottom left edge of the circle to slightly be overlapping the middle junction where all the segments meet (see example image below). Erase all the unnecessary lines and you should be left with an arc (see example image, third across). Next we simply repeat the process but in the bottom left segment. At the end of all this (I told you it was time consuming and difficult) you should have something looking similar to what my final example image has below.



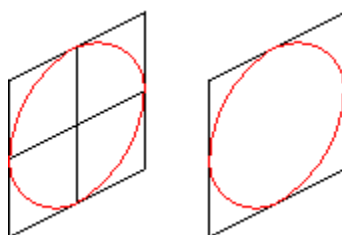
Step 2.

We've now created two out of the four outer edges we need to complete a whole circle. The next part is similar to the process we have just done but it is using a larger circle. As you can see in the example image below the middle of the larger circle is in fact the bottom right corner. Make sure the edges of the circle are touching the top and left edges of our square. It may take a bit of getting the right sized circle but once you have it about right go from there (don't worry about lining the middle up exactly). Erase the unnecessary parts of the large circle so you are left with the remaining parts inside the top left segment. Repeat this process with the large circle but this time do it in the bottom right segment (using the top left corner as your centre point). See example images below to refer to anything I'm talking about.



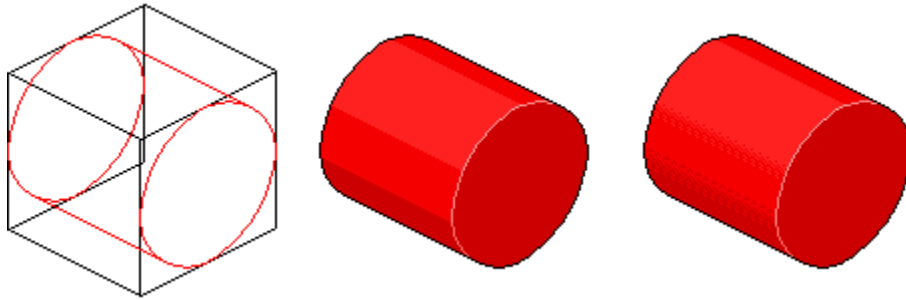
Step 3.

Upon erasing the last larger circle you should end up with an image similar to what I have produced below. We can start to see our circle within the constraints of the isometric square plane. Erase the nasty interior lines and it becomes even clearer.



Step 4.

Below is basically an example of what you can now do with your isometric circle. What I've done is simply make two copies of my isometric circle, connect them using isometrical lines into a long cylinder shape. I have then erased all the unnecessary lines such as those inside and the cube outside. I've then shaded and coloured the cylinder accordingly to make it seem 3D (including dithering the colour changes to make it appear smoother).



The circles you make do not have to be large in size as mine are. You can create them at basically any size using the method I have described above. An easier alternative to creating these circles is to simply use Adobe Photoshop and skew a flat 2d circle into an isometric angle using lines as guides to how much it should be skewed.

Chapter 3

Colours

Using and selecting the correct colours to use for your IPA piece is one of the most important aspects of the overall work. Having a bright toxic green house with purple highlights isn't the best thing anyone would want to look at. Just imagine you're building or scene, as it would look if you were standing right there. Whether it be bright plastic style, or mid-tone natural colours, it's still your choice. The only thing you have to consider is making the right choice of colours to suit your piece.

Using an example of my work below, you can see that I don't really like to use bright colours all that much. Although the colours aren't the prettiest, I think it adds to the overall theme and feel of the piece. If I were to say, create a fun game scene or children's style piece, I would opt for the brighter and happier colours.



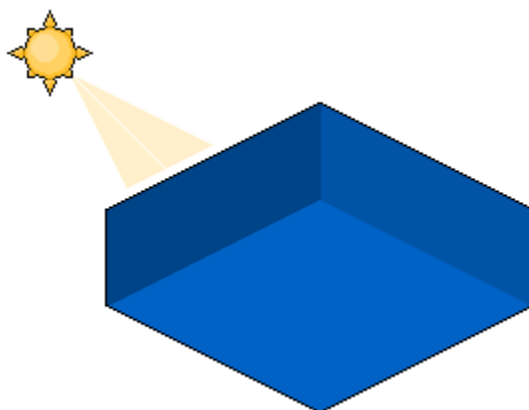
Remember, if you are unsure about your colour selection, divide the palette sheet in MSPaint into thirds. Then pick your colours from the middle third. This way, they won't have too much contrast or too little.

Chapter 3

Lighting

Next up is lighting. Without a light source or lights your work isn't going to be all that great to look at. If you were to place your building into the real world, it would be pitch black. All your wonderful colour choices would be lost. Of course we are working in a 2D medium so creating real light sources isn't as easy as placing them around our object, ala if we were working in a 3D environment. To create a light source for your picture first choose a place where either your sun or misc light source would be coming from.

You can see how I have done it below; my sun has been placed in the top left corner of the scene. Placing your light source behind or directly in front of your building or object doesn't really work that well. Because the light is shining either directly from the front or directly from behind (where it would be blocked out by your object), the amount of light is either too much or too little. Shading these types of light sources wouldn't be worth it. You could try it if you want just to experiment, but for now we'll stick to either left or right light sources.

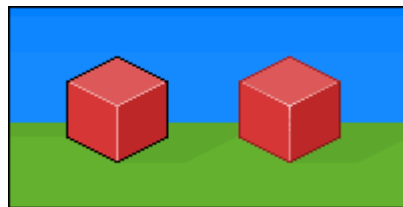


As we did in our cube tutorial, we'll place the light source at the top left corner. Now, imagine your object as if it was in a 3D environment. If you have a box and desk lamp lying around it would help as well. Now place your box so one of the corners is facing you. Now place the lamp facing the left hand side of the box that is facing you (see example). Now you can see how we are going to shade this thing? One side (the one directly facing the light) is the brightest, the second brightest is the top of the box (because the light is coming from above) and the last side is the darkest. Shading your objects using this method will almost guarantee a fake 3D look, which is what we're aiming for in an isometrical work.

Chapter 3

Outlines and Highlighting

Outlining and giving your buildings and objects highlights makes them stand out more, and gives them a polished look. Black outlines help people to distinguish objects from the background and tend to make the object look more cartoonish than say if the outlines were simply darker versions of the objects color. Highlights on the other hand, round off the corners of sharp objects and help the pseudo 3D appearance. If you shine a light onto a square object you can sometimes notice that the very edges shine in the light and appear brighter than the side which has the most light shining on it.



Chapter 3

Different Styles of Outlines

Choosing what type of outlines to use is basically when you decide on the style you are aiming for. As I said before, black outlines usually give your scenes a cartoonish feel (combined with bright happy colours). The other type of outline needs a bit of explaining. Basically what you do is grab the colour of the object you're outlining and darken it until its in the middle of the original colour but not too darkened. About 2 or 3 times as dark as the original colour was. See example below.



Chapter 3

Using Dithering Effectively

Dithering is a relatively easy process but can produce some stunning results if you do it correctly. As explained earlier in this book, *“Dithering is the process of taking a colour next to another colour and placing a checker type pattern, or sometimes a random pattern of dots within the other different colour. When zoomed out fully the dots and the different colour blend quite well, creating a colour that is somewhere in the middle of the two, thus mixing them and making the join look smooth.”* Now this may seem a tad confusing for a first time reader, so I'm going to illustrate what I mean.

The first image in the image sequence is simply two different colours created using the luminescence values of the one colour (blue). Side by side you can clearly see the line separating the two colours and it looks quite ugly. By adding a checkered pattern of each colour over the line it starts to blend together (as you can see). The final image in the sequence has two more colours added to it (also by changing the luminescences value). These colours are also dithered into each other. It provides even more blending and the end result is quite smooth as compared with the third image which is dithered using only the two colours.



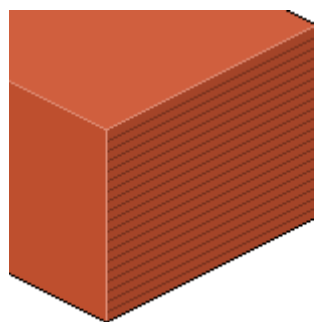
Chapter 4

Texturing

Texturing your objects and buildings make your pieces more interesting and pleasing to look at. Going for the plain coloured look can be good if you are giving it that cartoonish feel, but usually it's a tad boring to look at. A building is usually made of bricks, so why not give it a nice brick texture on its walls. This can be achieved by following this small tutorial below.

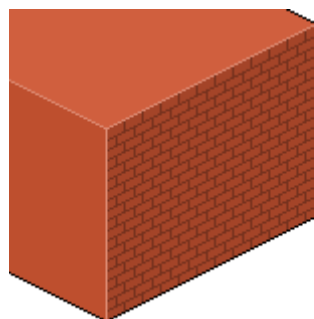
Step 1.

Draw evenly spaced horizontal (iso-horizontal) lines across the side of your wall, using a darker colour than the original wall colour.



Step 2.

Once this is complete, go along drawing small vertical lines that jump each line as you move down. They also need to be evenly spaced as you move along.

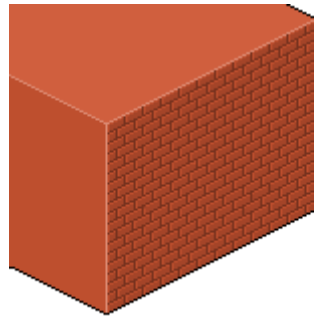


Step 3.

Now repeat this process on the gaps that have no vertical lines, drawing each small vertical line in the middle of the 'brick' above. There you have it, the simple brick texture.

Step 4.

To make it more brick-like and nice to look at, we're also going to add highlights to every brick to make them stand out more. So, decide (or look) at where your light source is, and highlight the part of each brick that the sun will be directly hitting (with a lighter colour).



As you can see, texturing isn't all that hard, and once you get it down you'll never have another plain looking wall again. Now, we'll look at some other texturing examples.

Chapter 4

Grass

Creating grass texture for your scene can be done in a few ways. It really depends on what kind of style you are going for. Cartoon grass has very few details and is usually brighter in colour. Realistic grass on the other hand would contain a much more varied range of colours and increased detail. Below I will explain how each style may be created.

To create cartoon grass I usually start with a flat colour. A nice green with some blue tinge is a great vibrant colour and isn't too green to give an unnatural feeling.



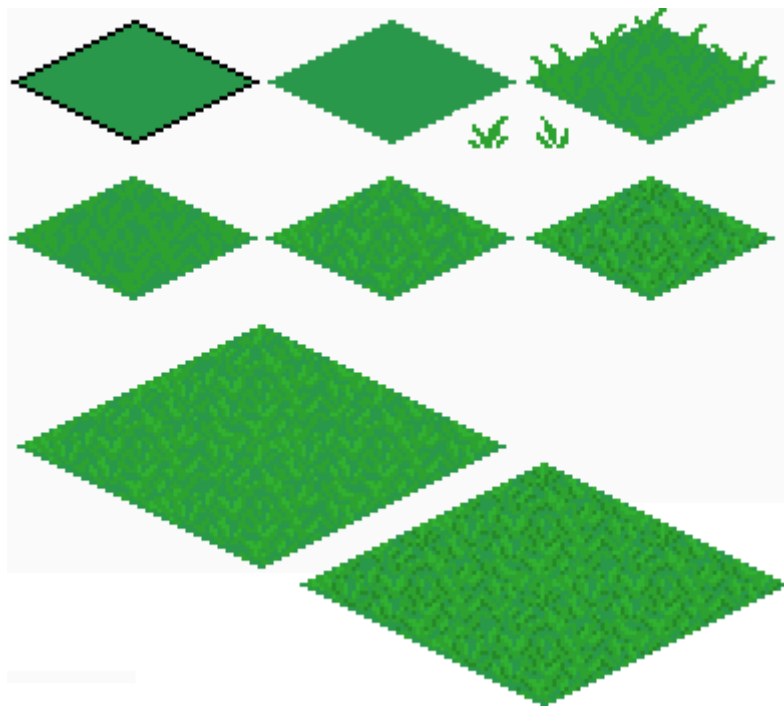
Upon laying down a base colour I will start to create some smaller leaves for detail. Once these leaves have been created (very simplistic mind you), I will choose a lighter coloured green (usually more towards a green-yellow colour) to colour them with.



The finished leaves can then be copy and pasted around the flat colour randomly or in a pattern if you so choose.

Realistic grass takes a bit more time and patience. Like the cartoon grass I start with a flat colour. This time I usually go for a more yellow-green colour as it looks more natural than the green-blue I used before. Once this has been completed I choose a darker green-blue colour for the shadows of the leaves on the grass. Creating a random pattern that also tiles properly is important in this step. Take your time to get it repeating when tiled. You also want to try and reduce any places in the pattern that are obviously repeating when it is tiled.

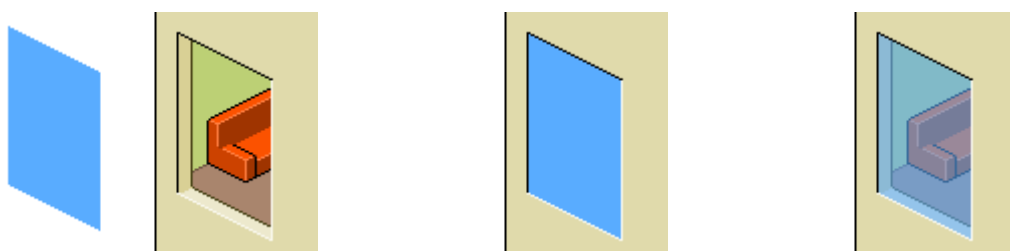
Once you have your pattern down you can select a light yellow-green colour and start highlighting the tips of the leaves (as seen below). Try and work on getting it looking great, as good looking grass really makes a scene work.



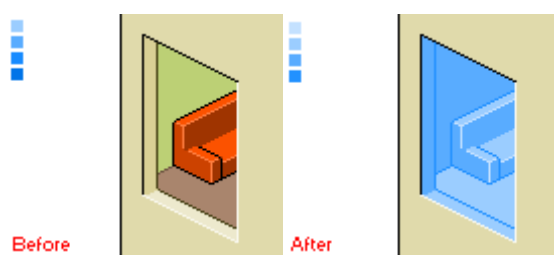
Chapter 4

Glass

Okay, this next part is what stumps most people trying to create nice looking buildings with cool windows. The easy (and recommended) way of creating glass for your buildings is to use Adobe Photoshop or similar. All you need to do is create a separate layer, fill the glass area with a light blue colour, and adjust the transparency of the glass layer (see below for example).



Creating your glass within MS Paint is a lot more difficult on the other hand. We are going to use a selection of different blue colours. If you have detailed the inside of the window with a room then all we need to do is go over the outlines of the furniture and objects inside the window frame with a darker blue colour. The rest of the window is then filled with a lighter blue colour, and a highlight can be added over the top. See the images below for the before and after shots. I have also added the blue palette I used for the glass and highlights.



To go an extra step with your glass you can add a reflection. It's not really a reflection but it appears like a strip of light is reflecting from the window. All you need to do is create a white strip (or two) diagonally across your window and lower its opacity on the layer. If you are using Paint then select your colours accordingly to the different lights and darks as the reflective strip overlaps lines and different shades.

Chapter 4

Dirt and More

Creating a dirt tile is very similar to creating a grass tile. You can create it in many different ways and it's all dependent on the style of art you are trying to achieve. Instead of adding leaves you can add rocks etc.

As well as dirt there are many other tiles you can create to make your scenes look great! Some examples could be sand, water, lava or even a cobbled street!

Remember, adding as much detail in a tile as you can without making it too distracting will really make your scene appealing. Combining a great environment with great props and architecture will really make people say "wow!".

Chapter 4

Detailing Your Work

Detail is what grabs most people's attention. Simple minuscule things such as light fittings, glasses and plates in sinks, or drinks in a refrigerator can make a simple setting into a grand masterpiece. Pebbles on a path, insects in the garden, they all count towards a successful piece of isometric pixel art. People love to study all the small details they can find, and if you include more of them, the more people will look at your picture for a much longer time. A plain cube can never be compared to a cube with a few trees growing out the top of it. So next time your creating a piece, remember to add all the details you can think of to make it an even better piece of art to look at.

Chapter 5

Drawing Isometric People

When I came to write this chapter I nearly freaked out at how hard it will be for me to create a tutorial for making small isometric people. Then I realised that you are probably here reading this to find out. So I gave in to my urge to watch some TV and I started writing it. Isometric people are really the most difficult things to create in IPA. What I usually do may seem a tad odd but it works most of the time.

First things first. I start by creating a small vertical isometric rectangle, about the size I want my person to be. I then cut a small portion off the top of it until I reach the neck line.



Next, I create a small oval shape around where I think the head should be placed. What you should have now is a rectangle with a head. Next are the torso and legs.



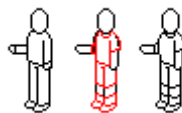
I first mark where the torso ends and the legs begin. Then I divide the bottom half of the rectangle into two even halves. These will be my legs. Then I go back up near my neck and round the shoulders off until they look about right (see the example images if you aren't too sure. So basically, all i'm actually doing at the moment is carving a person out of a block of virtual wood. I might also bring the legs in a bit, and the body so the person becomes skinnier.



Now I add my arms to the person. Two thin isometric rectangles down each side of the body usually works. Although, you can bend them around as I have done in my example below. Posing your people will be explained soon. Add some little hands to the ends of the arms and add some shoes for the feet. I have also touched up the legs to make them a bit straighter. I also made the head smaller and neater.



All that's left to do now is to add some hair, clothes and facial features. I usually start with the clothes first. They need to be slightly larger than the body and any bare skin should be distinguishable from the clothing. What I do is create an outline of the clothing 1 pixel out from the original body frame, then erase the inside line to clear things up. As you can see below, I have my original body frame, then the clothing being added and then the final product.



Next, add a small face and some hair. You don't really need to stick with the isometric guidelines when it comes to creating hair, as we all know hair has a mind of its own and can stick out wherever it wants.



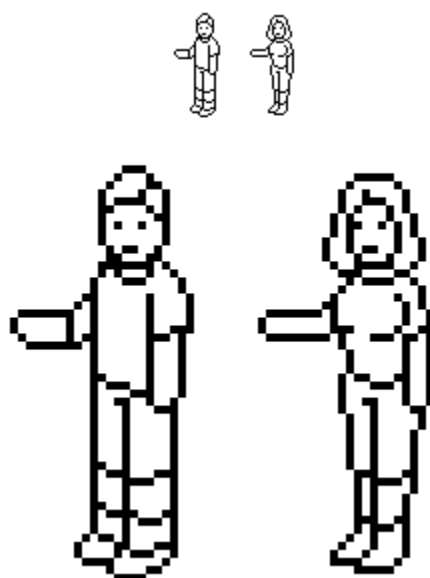
Colouring is all that is left to do, as well as some minor shading to make the person look more 3D.



Chapter 5

The Basic Outline and Scaling

Below I have included the basic outline of both a female and male for you to study. Both have been enlarged so you can study how each pixel works with each other to create the person.



Scaling your people to fit your scene is very important. Otherwise you'll end up having the scene from the "50ft Woman", instead of a children's playground as you originally intended. Doors need to be high enough for the people, as if they were alive and could walk through them. Chairs need to be the right size for people to comfortably sit on and the actual people need to be somewhat realistic. You don't for example have a 5-year-old child towering over an NBA Basketballer asking for an autograph.

Chapter 5

Poses

Posing your people can be an interesting challenge. If you have a wooden mannequin handy then your life will be a whole lot easier. If you don't have a wooden mannequin, use a nearby friend or relative to pose how you want, study them and try to recreate it in your scene using your isometric person. A person running would have legs bent in the running fashion. All you really need to do is imagine yourself and how you would perform the pose or action. Making the character seem that they are performing the action by sometimes over-exaggerating their movement is the best way to get your point across on the virtual canvas.

Chapter 5

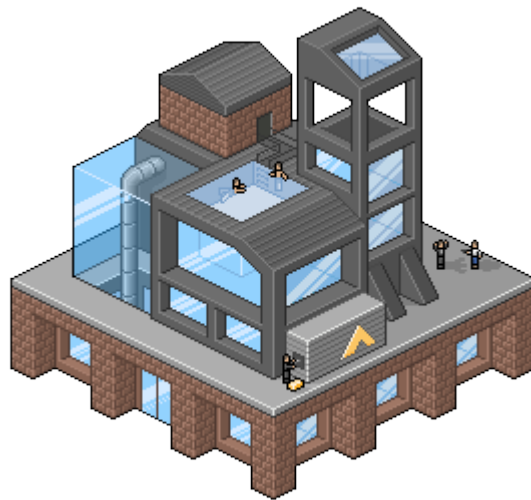
Colour and Outlines

Colouring and outlining your people is more or less the same as colouring and outlining your buildings and objects. It all really depends on the overall feel of your piece. If your buildings have a washed out colour then its most preferable that you colour and shade your people the same way, as so they fit into the scene without looking out of place. My people in my recent works all have a single black outline and the inside lines are all darker colours of the clothing and skin shades. As I said, colouring and outlining people is really much the same as I have already explained.

Chapter 5

Examples For Further Reference

Below are some examples of my own work. Also be sure to check out the work at Eboy (www.eboy.com). You will see that their work is really well created and you will learn a lot from studying how they create their work and their people.

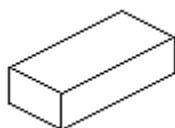


Chapter 6

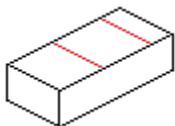
Creating an Isometric Car

Okay, the first challenge of the tutorial! It's time to create our very own Isometric Car! It's actually quite simple and it will be no time before you can create your original designed cars at will!

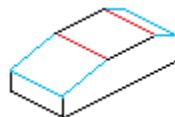
To start with we are going to make a rectangular box. Create it as long and as wide as you would like your car to be (also the height matters here). Once you are satisfied with the dimensions of the box proceed to the next step.



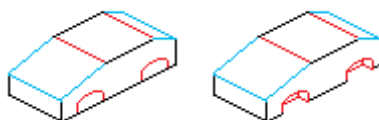
Now you have your initial box laid out its time to carve out the shape of your car. Measure on the top of the box where the middle section of your car will start. This can be achieved using two lines drawn at the beginning of the boot and hood of your car.



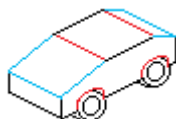
Once this is complete start carving the front and back ends of your car by creating sloped lines down from the middle section of the box to the front and then slightly to the back of the car. You can see in my example image below how the front of my car hood slopes. The back also slopes but not as much as the front as it is much shorter in length.



Okay, now our car is starting to take some shape. Time to add some holes for wheels to fit! Mark out some squares on the side of your car where the wheels might go. You can also smooth the edges of these squares to make the cutout part more round (see example below). Once you have marked out the areas for the wheels erase the bottom lines and create the Isometric line to make it appear 3D.



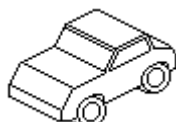
Now it's time for the wheels! Use my previous tutorial on creating circles to create your tyres. Remember to add detail such as hubcaps and wheel-nuts! Once you have created the wheels move them into place on your car.



Once you have moved the wheels into place it's time to move onto the top part of the car (I like to call it the cabin). This is the part where the windows and roof are. Create an extension to your box upwards in the middle section. Remember to make it as high as you would like your car to be. You can see i've altered my hood slightly so it wasn't sloped so much downwards. I think it looks much better now.



As we did before, add the sloping for the windscreen and ever so slightly for the back window. At this point it is also a good thing to add the cabin details. Create an interior for your car if you wish and use your skills learned in the glass tutorial to add windows.



Time for a paint job! Choose a colour you'd like your car to be and paint away! Remember how we coloured the cube in the first tutorial and remember to give your car a light source when you are shading it.



Once you have coloured your car according to your specifications it's time to add detail.....lots of detail! Side-mirrors, door handles, radio antennae. You should also add a front grill, headlights and even a number-plate! See my example image below for my finished car. Remember to keep practicing and you'll have no trouble creating cars for your scenes.



Chapter 6

Household Objects

To make people interested in looking and enjoying your artwork, a lot of small detail is needed to captivate and imagine a viewer. An interior scene such as a bedroom or lounge is not very interesting to look at unless it has a lot of detail in it. Detail is achieved by placing props within your scene to get people interested. Props such as chairs, tables, cabinets and electronics are great to litter around your scene (I don't mean to chuck them around randomly, take some time and think about where you are placing your props).

A lounge scene for example may have a central focal point of a fireplace. Now around this fireplace may be a lounge setting with a couch and some single reclining chairs. You might also add a bear-skin rug on the floor. If your fireplace has a mantle you might add a clock and some candles.

If you were making a bedroom scene you would obviously want a bed...maybe a desk if it's a student's room. A closet for storing pixel clothes (or Tom Cruise). Even a fish-tank or bird-cage with a family pet makes for great detail!

Remember, the more detail the more people are going to enjoy your work! A bland scene is going to make it look like you are just lazy with your work, and people won't enjoy it as much.

Chapter 6

Creating Overlay Objects

Overlay objects are things such as smoke, planes or giant banners in the sky. These things usually overlap your buildings and provide an extra layer of detail to your image.

Say you have a building on fire, there obviously should be some smoke coming from the flaming...flames. To create smoke I create a bunch of different sized circles. I then erase the middle sections, leaving me with only the border. You can then colour it grey (or blue...depending on what's burning!) Even adding some transparency using Photoshop helps give it that smoky feeling. It really doesn't matter though, thick smoke is usually fine.

Once you have created your basic shape of smoke you can add highlights around it to stop it from looking flat. You can also colour different parts of the smoke either lighter or darker to give a more random feeling to the smoke as it rises from the fire.

Use this same process we just discussed to create smoke for many different overlays for your scenes. Giant banners coming from the back of a plane, an explosion at an oil plant...it's really up to you!



An example of a smoke overlay within a scene.

Chapter 6

Creating Trees and Bushes

Many of your scenes will be based outside or will need some sort of vegetation within it to make it look good. Creating trees and bushes for your scene is very easy and adds a lot to an empty patch of grass!

We'll start of with the most simple of the two, the bushes. All you will need for this are a few circles overlapping each other (much like the smoke tutorial). Only this time, in the shape of a bush.



We then use a darker shade of colour and dithering to get the bush some shadows and make it look more 3D.



After the shadows have been applied we add some highlights and some flowers if you are going for a rose bush or something similar.



Creating trees use somewhat the same method as creating a bush. The large canopy of leaves around the top of the tree can be achieved using the previous method of combining circles and shading accordingly.

All you really need to focus on is the trunk of the tree and the branches that “branch” out from the top and into the canopy of leaves. You can see an example of a quick tree I have created below. It has no dithering and not much detail but you can see the basic form.



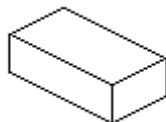
Chapter 7

The Table Tutorial

We are now going to create a small dinner table using many of the techniques we have just been through in the past 6 chapters. Feel free to follow along using MSPaint.

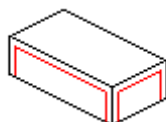
Step 1.

First we will create a rectangle that is exactly the size of our table that we want. Remember how we carved out our people? We are going to use the exact same method to create our table.



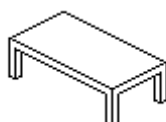
Step 2.

Once I have created my base block, I then create small rectangles on each side of my block, as to where the legs and the top of the table will go. As you can see, I like to do it in a red colour so I don't confuse the current process with the rest of the piece.



Step 3.

Now I have placed where my legs and table will be, I simply erase the bottom of each of the parts of the table that don't need to be there. As you can now see, we have the beginnings of a table, complete with legs. I now add some depth to each leg by adding on a section until I think it looks about right. Go over the red lines with black to complete the basic table outline.



Step 4.

I now decided where my light source is coming from and I add the colours accordingly. I find that most of the wooden colours I use come from the lower left hand side of the palette found in MSPaint. Don't make the colour too dull or washed out.



Step 5.

Now that I have coloured my table, I can add highlights to the edges that need highlights. I also decided on my outlines as to whether or not they should be coloured or left as black. This time I have decided to leave them black but it's your choice.



Step 6.

There we have it, the basic table. Now all I do usually is add some wood grain texturing to my table to make it look better. To do this I add random straight lines with a darker colour than the base colour. It gives a nice woody texture to it when viewed at 100%. There's your table!



Chapter 7

Setting the Scene

I want you to get out of your chair right now and take a look around the room. See how the furniture is placed? Good. This is how you should set out your scenes, make it so people could actually move around and function in comfort if it were in real life. Think about how you would like to live in such a place, the cool stuff that you would want to have. Think about whether or not the chair should be near the door for good/bad Fung Shui (I have no idea how it works).

All of this is extremely important in setting a good scene. For example, you don't want to draw a horror scene and then chuck in a few purple flowers for effect, or just because your feeling nice. Get into the mood, listen to some freaky music or something, anything to help you set the scene you want and to make the outcome as good as possible. Listening to music also helps your creative juices flow.

Chapter 7

Mini-Tutorial: The Interior of a Kitchen

Okay, now to every pixel mad housewife's dream. Pixelling the interior of a kitchen. It can be any kitchen you want. A made up one, your kitchen at home, hell it can even be a kitchen that isn't actually a kitchen. Me, I like to make up my own interiors and designs. So here we go, watch my process and steps carefully and then in your own time make your kitchen from scratch (don't copy mine in other words.)

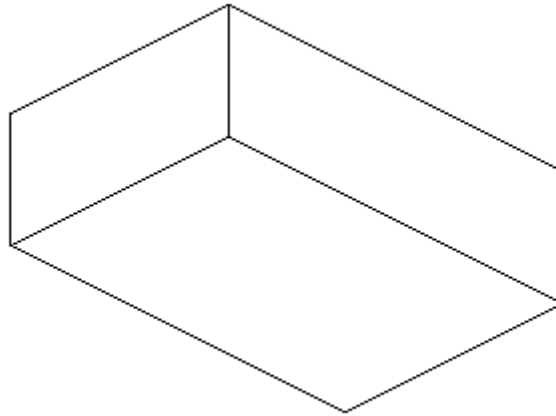
Step 1.

The first step I always take when i'm pixelling a scene, is I browse the net using Google Image Search (www.google.com) for reference pictures to help me design and draw (relatively ok looking) objects and architecture. Below are some photographs of kitchens and kitchen objects that I could use in my scene that I found using Google Image Search.



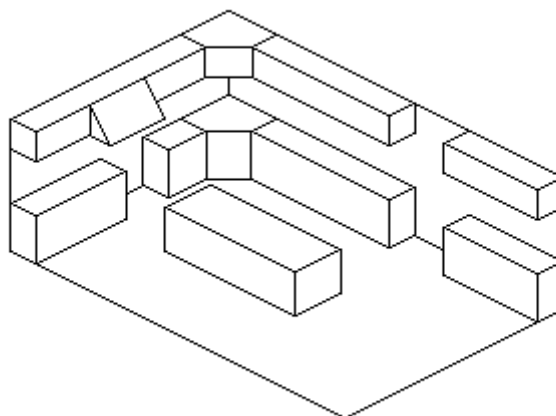
Step 2.

Next I draw the basic outline of my room space in which the kitchen will eventually fit in to. Remember to always start with a basic outline and leave all the colouring and shading to last. As you can see below, my kitchen is a basic cube shape with one side being longer than the other.



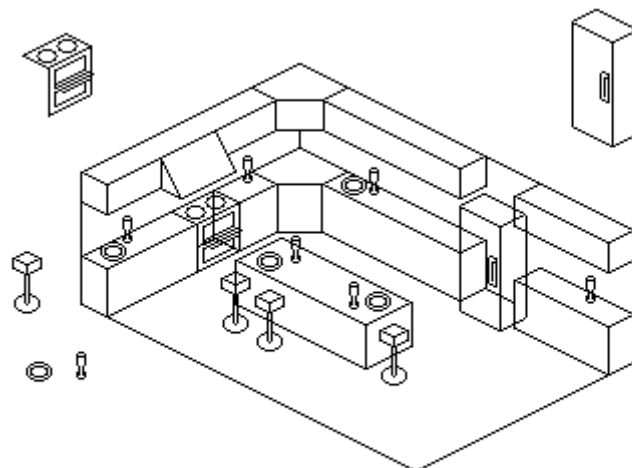
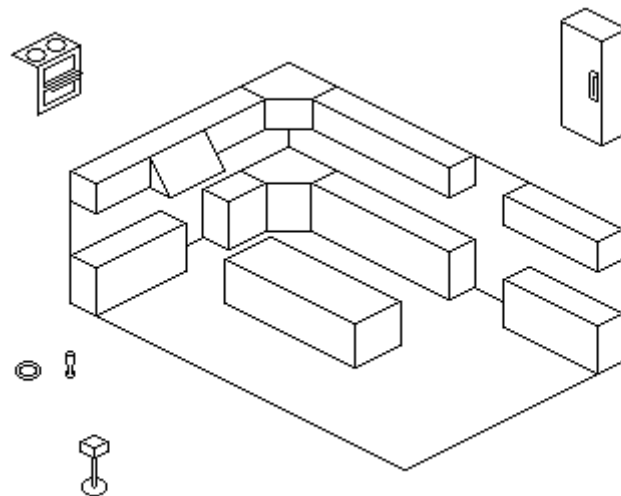
Step 3.

Ok, now inside of my cube I begin to map out and draw the cupboards and overhead thingys that kitchens have. Take your time in this particular section and plan out where you are going to place things. Look below at my example and you will see that I have some nice benches and cupboards.



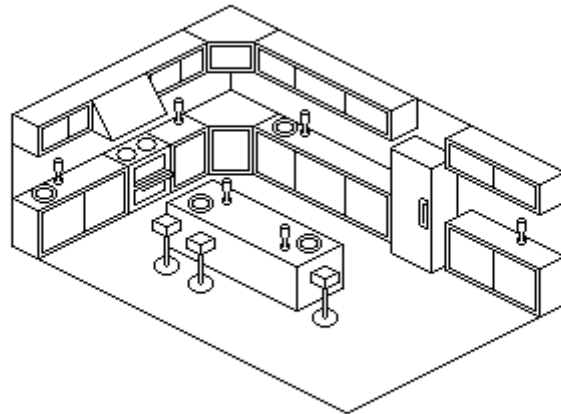
Step 4.

We've got benches and cupboards and overhead things, now we need some objects. Objects include such things as refrigerators and ovens, even plates and glasses. Okay, around the outside of my scene I start to draw all the objects I want to place around my kitchen (remember to keep them as isometrical as you can). I then select each object and place it where I want it to go in my scene (look in the second example picture), or copy and paste it and then place it around my scene. Such things as plates or glasses can easily be copied and pasted to save you the trouble of recreating them each time you want to use one in your scene.



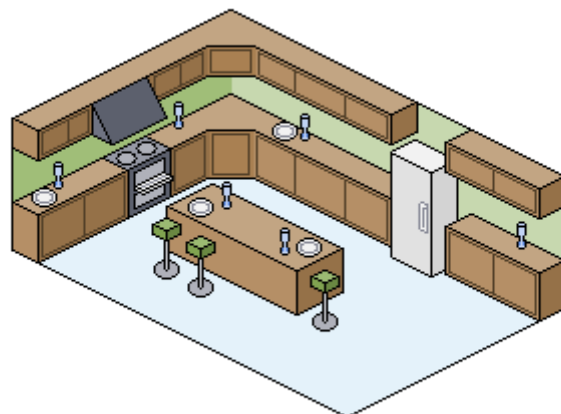
Step 5.

Look at how messy my scene is! To fix this all we need to do is go around the scene, erasing lines that would appear behind other objects. Once this is done you should have the basic outline of your entire scene. Look at my scene so far if you are unsure of what I mean.



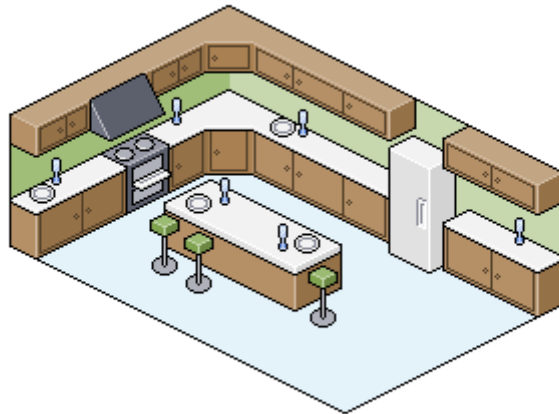
Step 6.

Ok, now we colour it in like a colouring in book. Get your fill tool and go around your scene, colouring everything to your satisfaction. Remember to use darker shades of colours to give objects shading and always remember to use a light source when you are shading your scene.



Step 7.

After colouring and shading, it's time to highlight. Go around your scene and find the sharp edges. Things such as the edge of a cupboard or bench-top will need a highlight. Once you have done this it should look similar to mine below (don't make it exactly like mine or you won't have learned anything.)



Step 8.

Add a few people that you've created in the other tutorials or just leave it how it is. Save the BMP file as a GIF or PNG in an image editing program such as Photoshop or The Gimp (freeware). Please remember not to save your work as one of these file-types in MS Paint. Paint tends to totally ruin your work if you attempt to save it as something other than a BMP. Show it off to your friends and family and receive criticism as to where you could improve next time. Always remember to take comments as a learning experience, and don't get angry if they are negative, just improve on it next time.

Chapter 8

Large Project: Your House

Okay, it's up to you now. This is the final challenge. This will really push your pixelling skills, and what you have learned so far will most definitely be revisited during this project. I want you to pixel the outside view of your house in the isometric pixel art style. Remember, you can make it as simple or as detailed as you want, it's up to you. I've given you the basics and you should be able to create this masterpiece all by yourself. Good luck and remember to receive as much feedback as possible on your work, so you can keep improving it.

Chapter 8

Final Words

I'd first like to thank you for taking the time to read through this tutorial of mine. It's taken me quite a while to make and I hope you have gained some valuable knowledge from it. I'd also like to thank all the people who have supported me over the years. It's you guys who really deserve the praise and respect. So thank you for reading, and i'll probably see you around the place (i.e. Commenting on your new pixel works at DeviantArt.com)

`RhysD

Chapter 8

Links

RhysD.com – <http://www.rhysd.com> (my online home)

DeviantArt.com – <http://www.deviantart.com> (a great digital art community)

Eboy.com – <http://www.eboy.com> (these guys inspired me to start creating my own pixel art)

PixelJoint – <http://www.pixeljoint.com> (great community website full of fellow pixellers)

Pixel Art Wikipedia Entry - http://en.wikipedia.org/wiki/Pixel_art (check out the entry for Pixel Art over at Wikipedia!)

Pixelation - <http://pixelation.wayofthepixel.net/> (a great forum for pixel art showcasing and critique!)

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