a maestro's study on 3D Modeling for Spring

Beta v0.9.01
Part I : Official Guide of Upspring
By : 'Maestro' R Setiawan

SYSTEMATICA :
This manual consists of several chapters explaining various aspect of TA Spring. I want everyone to be able to make Spring textures by reading this tutorial so I make this as comprehensive as possible.

Outside the explanation there are a few graphics and table. Since image is stronger than words when explaining gui, I extensively use screen captured pictures. There are some case study, which is also good to read as i make the case study when I'm doing it.

While this tutorial is in .pdf format I cant add the 'bookmark' stuff because I don't use professional .pdf maker software, but rather limited OpenOffice internal pdf exporter tool. So I add a complete table of content, containing both chapter and sub-chapter

In short : This is the most comprehensive tutorial ever, providing as many detail as possible but stay easy to understand
Enjoy!.

Disclaimer :
Condition 1.
This manual is intended to be a scientific, complete manual to both Upspring and TA Spring 3D model in general. Considering the author poor record in general education author believe that while some part is a bit long and complex it is don't need a PhD degree to understand it
Author take no responsibilities if you cant understand any part of this tutorial, check your IQ meter!

Condition 2
I only made the manual, credits, compliments, critics, question and feedback for the tool itself should be send to Zaphod, the creator of the tool, in Ta spring Mod forum.

Condition3
This manual must be used as it is. If u have a thing of two you feel necessary to be added to the manual, mail me at :
spmaestro2000@yahoo.com
or alternate email :
iwanenator@gmail.com
If you ve tried to mail me via all those mailboxes and still doesnt work do one of the following 3 option
1. Buy an AK-47 in black market and blow your ISP office. Risk is almost nil today as White house administration always blame Bin Laden et al for all kind of violence!
2. Launch your own private-owned Internet array satelit to ensure high-speed connection
3. Ask in TA Spring forum
Feedback guaranteed!

Condition 4
It is highly recommended that before read this manual you shout out loud 'MAESTRO IS COOL!' 3 times. According to writer experience (maestro) this will boost up moral and make learning faster!.

TABLE of CONTENTS

A Maestro's Guide to Upspring

Credits for various part of Upspring modelling tutorial goes to following Writer team :
Tutorial project Leader : 'maestro' R Setiawan
General layout and concept : 'maestro' R Setiawan
Texturing tutorial : 'maestro' R Setiawan
All Tutorial Writer : 'maestro' R Setiawan
Art and graphic : 'maestro' R Setiawan
Example development : 'maestro' R Setiawan
Data and Research : 'maestro' R Setiawan
Case Study Sample : 'maestro' R Setiawan
Self interviewer : 'maestro' R Setiawan
Coffee maker : 'maestro' R Setiawan
Grammar mistakes and basic english misspelling : 'maestro' R Setiawan
Engine professional and 3D consultant : Zaphod

Chapter I
GENERAL CONCEPT

What is Upspring ?
- Upspring is a tool designed to convert the 3D model you made to a 3DO or S3O model that is used by Spring RTS game.
- It is a model assembler/converter, not a 3D Modeler
- Upspring work just like the old 3do builder. You have to make the model in other software and use Upspring only to assembly the model i;e combine the UVmapped model with texture (s3o) or to build object structure and texture it (.3DO)

What is 3DO and S3O ?
3DO and S3O is 3D model used by TA Spring engine. 3DO format use face-by-face texturing system. 3DO work only with quad based object. The newer S3O format support UV mapping and both quad and triangle object. The difference of both format make the workflow of 3D modeling is different too as depicted in the following diagram
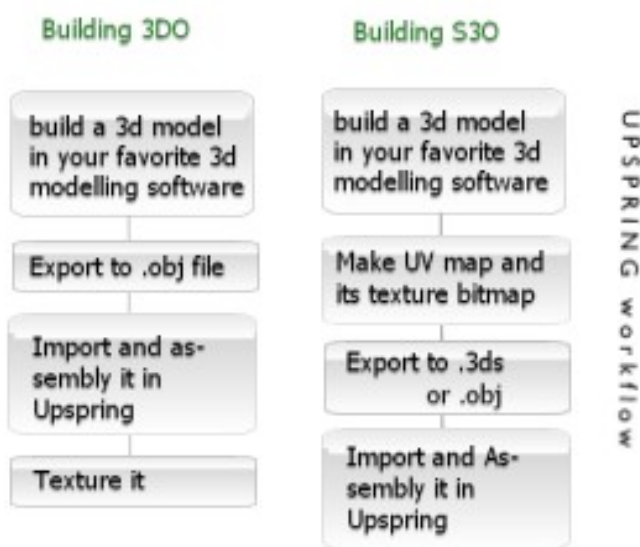
Upspring at current moment able to read 2 of 3 generally accepted 3D model file format, i;e .3ds, .and .obj. The third generally accepted format i;e Lightwave's .lwo format is not yet supported at the moment unfortunately.

Geometry support	3ds	obj
Quad based polygonal object		x
Triangle based polygonal object	x	x
Hierarchy support	x	
UV mapping support	x	x

The consequence of those difference would be :
1. If you want to make quad based obj. file, you will make the hierarchy after you import it in TA spring, while with 3DS object you can build the model hierarchy in your 3d modeling software
2. 3DO model is quad based model so if you want to use older 3DO format for your TA Spring unit with Upspring you must export it as .obj file

Chapter II

INTERFACE BASIC

Like former 3DO Builder and most 3D modeler Upspring interface consists of 4 customizable viewport.
Each viewport have several rendering mode, i;e wireframe, solid, and texture. In left is main toolbar panel and in the right is 3D MAX-style control panel.
Like in most 3d modeler too, you can change the proportion between viewport by dragging the between-viewport border
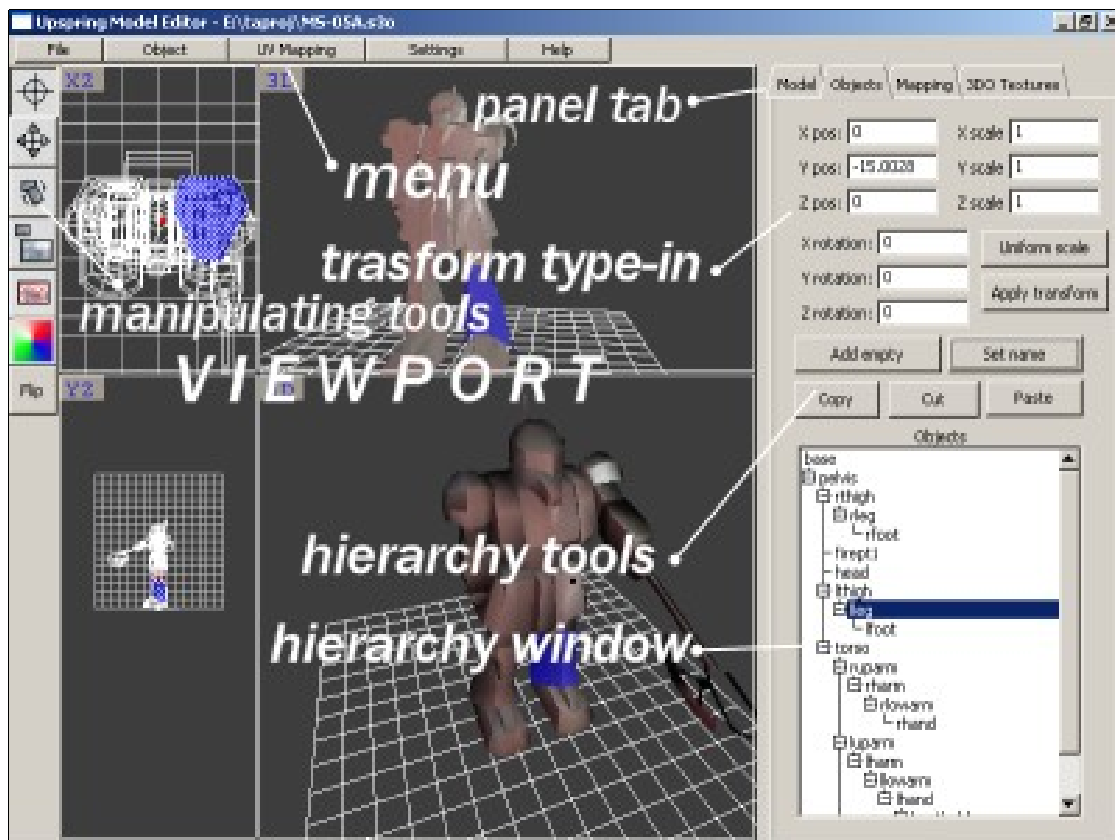

INTERFACE OVERVIEW

1. In the middle there are 4 big viewports showing the object you are work on. To change the point of view and object rendering type click the viewport name and a menu will show up.
2. In the top there is the typical menu menu bar
3. In the left, there are some manipulating tools. These are button you can use for basic transformation and polygononal operations. There is also color button if you want to assign various flat color to your model, and flip button in case there is a polygon with flipped normal.
4. In the right is Upspring command panel tabs that contains various function here. The name of tabs says what the tab for. Shown here is contents of 'object' tab.
5. The transform type in allow you to change object position and scale more accurately
6. Hierarchy tools and window in the lower part in the right is where u will manipulate the hierarchy (parent and child) of various object. All TA spring object must have a 'Godfather', a root, called 'base'. The base should be a single polygon, single side rectangle
7. Other tabs are 'texture' use to load texture set and color used to manage the side color

Chapter III
Basic Operation

In this part we will learn how to do basic operation of a model in TA Spring. As example I will import a Zaku model, an old TA unit I never finished....

OBJECT SELECTION
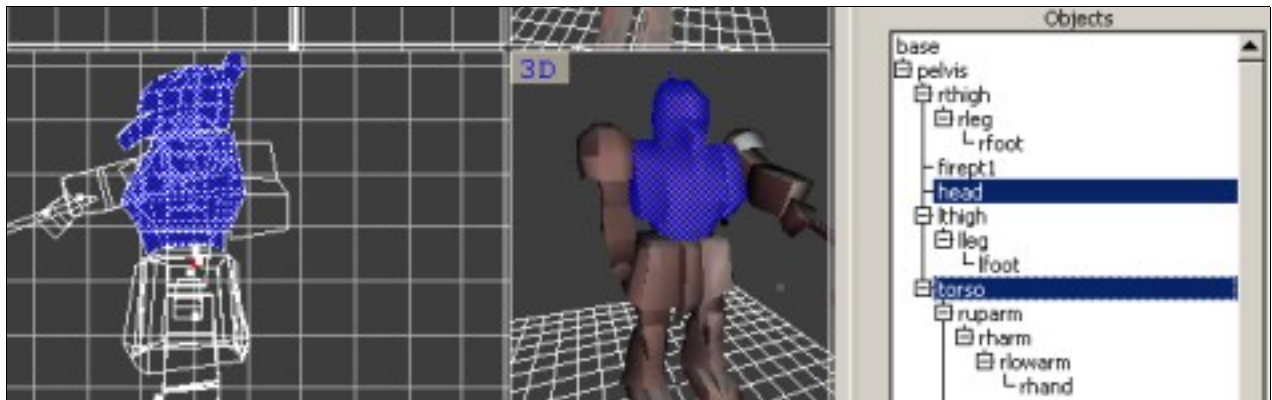
You can select an object directly by clicking an object in the viewport. Selected object became blue, and its object name in the object hierarchy box in the right got blue highlight. Selecting multiple object can be done simply by click another and another object. To deselect just click again object you already select.
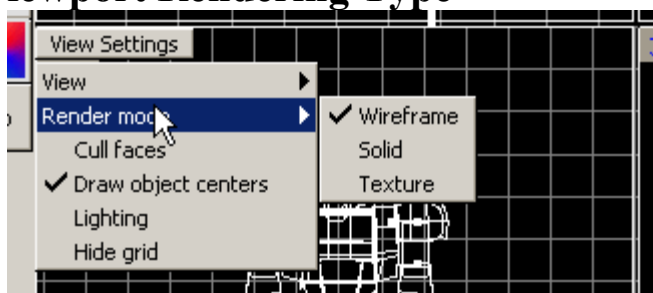You can also selecting object by click an objects name in the object hierarchy window. Select multiple object using Ctrl + click and select several sequential object using Shift+click.

After that you can manipulate object, but....

VIEWPORT CONTROL
To manipulate an object, you must be able to see it first!.

Viewport Rendering Type

To change the rendering type simply clock on the viewport name in the top-right corner of the viewport
–   View to switch the viewport view (front, side, top, rotate or FPS)
–   Render mode : How the unit will appear
–   Lighting : turn lighting on and off
–   Cull faces : hide backfacing polygon (useful in wireframe mode)

In the same View menu you can change type of view in the viewport : axonometric, perspective and FPS. Axonometric is a single axis view i;e side view, front view and top view. Perspective is... err perspective. FPS view show how the unit will appear in game with emulated Spring engine lighting.

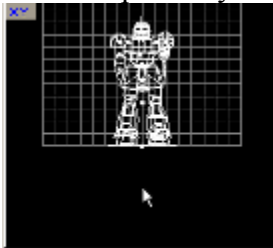# Viewport Navigation
Navigating Axonometric Viewport
IMPORTANT, make sure the 'toggle camera manipulation button' is active or you manipulate your model instead!
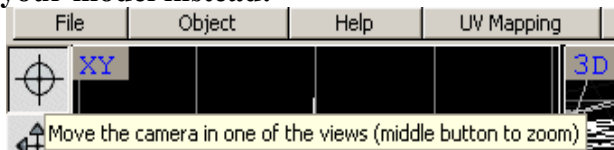
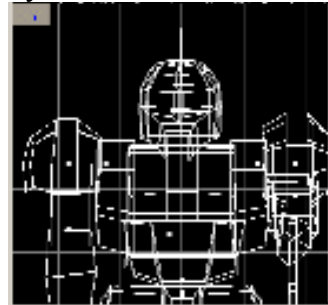**and then......**

1. Zoom Viewport	2. Pan Viewport
Zoom out the viewport so you can see more...	Shift the viewport position so you can check the part of model you made in detail
Drag your middle button of your mouse up/left to zoom and down/right to unzoom	Drag the left button to the position of viewport.

Navigating Perspective viewport

IMPORTANT NOTES : Like in axonometric view, in perspective viewport too you have to activate the 'toggle camera manipulation' button first.

<u>Navigating Perspective Viewport</u>

Left button drag
Use left button drag to rotate the viewport
middle button drag
Use middle button drag to pan the viewport
right button drag
Use right button drag to zoom and unzoom the viewport

<u>Navigating FPS Viewport</u>

Left button drag
Dragging the left button up and down will zoom in/zoom out the viewport
Dragging the left button left and right to *orbit* the object *around the camera*
middle button drag
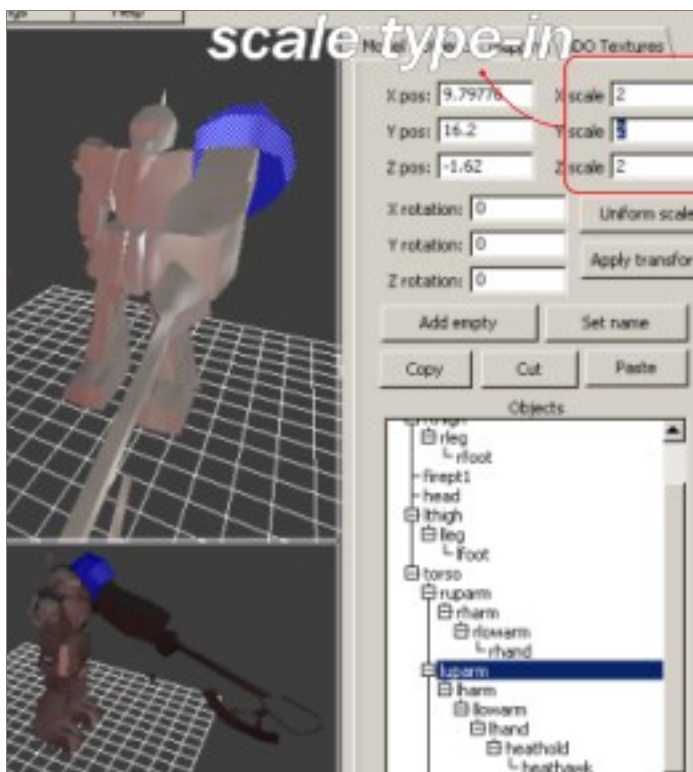Drag the middle button to pan the camera up, down, left and right
right button drag
Same with middle button but at much faster rate

OBJECT MANIPULATION

SCALE

There are two way to do this :
1. Via manipulation toolbar. Activate the

scale tool bar and then drag the selected part on axonometric viewport. This is highly unrecommended as it is difficult to control and often resulting a squashed object, so....
2. Use numerical manipulation via transform type in-scale

The number here is proportion to object's *original* size, not relative to previous scaling. If you want to turn the object back to its original size simply put 1 :-) .

The forward kinematics principle applied here : if you change the scale of object, its child object (if any) also will be scaled

Example : only enlarge the left upper arm but the entire arm is scaled

ROTATE

Just like scale there are two way to rotate object :
1. by activate the 'toggle rotate' button in the manipulating toolbar and then rotate the object *in axonometric (left/front/top) viewport*, later you still must edit it in rotate transform type-in if you want to be accurate.
2. Directly put the number of transformation in the rotate-transform type in. This is a much more accurate way.
Unit will be rotated based on its pivot point. The pivot point depicted as a small dot appear when you select an object.
The Forward Kinematics principle also work here. If you rotate an object, then all its child also rotated
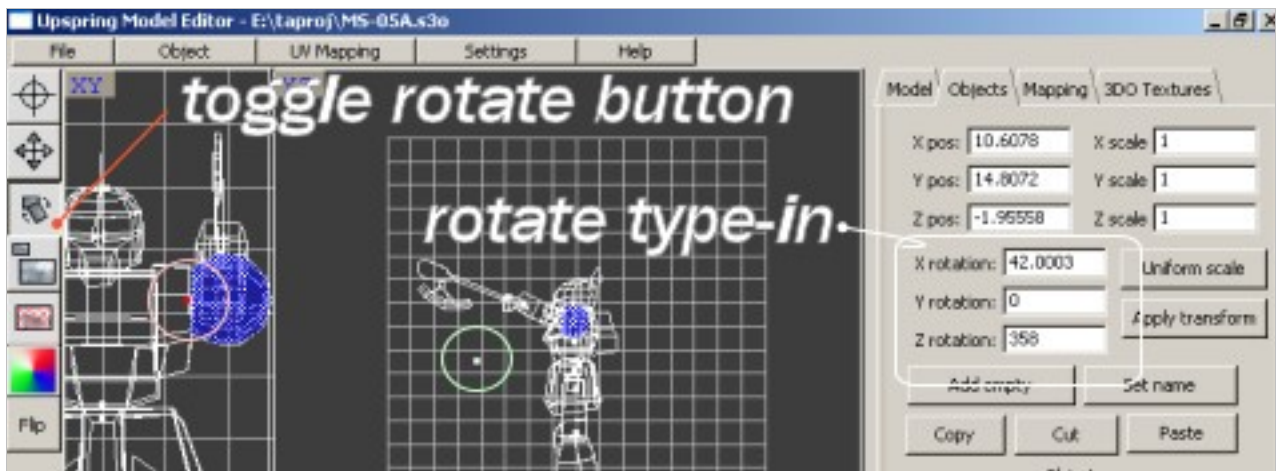
Example : I rotate the upper arm and the entire arm rise up.
As you see here, the pivot of the selected object depicted as red dot (encircled with a pink circle in front view) and the pivot of other (unselected) objects appear in Upspring as white dot (I encircle it

with green circle in the ilustration)

MOVE

Like scale, you can move an object both in viewport or using transform type in
U can move directly in the viewport, or set a coordinate in position type in
The forward kinematics work here too, moving a parent will move the entire child in the hierarchy
Like the following example, I move the upper arm and the entire hand also moved.
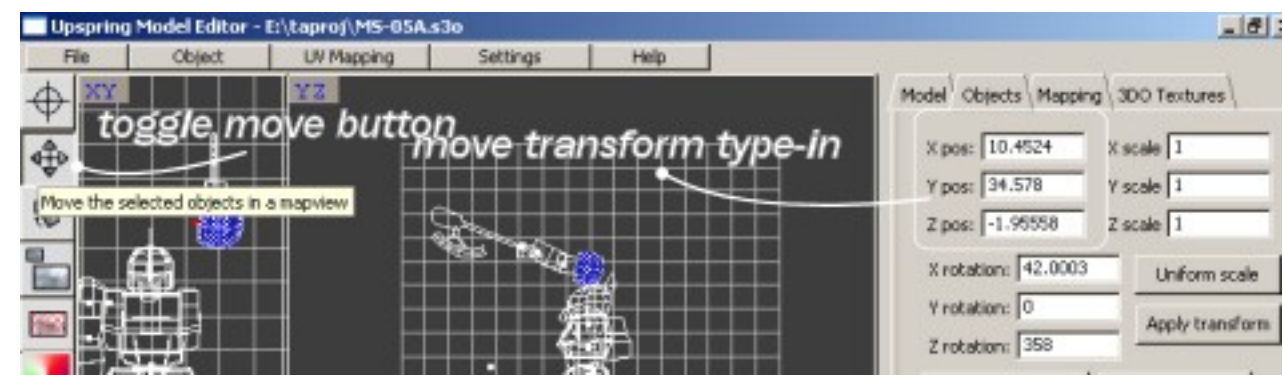
Chapter IV
HIERARCHY OF THE SPRING

I assume you already know about object 3D hierarchy. I wont explain it here.
Hierarchy system of Total Annihilation Spring is Forward Kinematics mean transform a parent object means transform its child too. For TA spring model, every unit 3d object must have a root of all hierarchy, the Godfather called 'base'. The engine will use the base for collision detection.

How we work with hierarchy, depend on type of file you import. If you use 3DS MAX, or you just want to redo your old .3do files for TA Spring, you only need to manipulating/editing hierarchy as they already have hierarchy of their own.

But if you want to use quad based .obj format or your 3d modeler isnt able to export hierarchy then you must build your own hierarchy.

CONTROLLING HIERARCHY

Hierarchy in Spring is controlled via hierarchy window and hierarchy tools
HIERARCHY TOOLS
Add Empty
Use this to add an empty object to a hierarchy

you can import a model onto those hierarchy later
Set Name
Sometimes when import a unit or adding an empty hierarchy, Spring cant read the part name resulting an 'empty' hierarchy
In this case use 'Set name' to assign a name to the part
Cut, Copy, Paste
This to cut,copy and paste various part of the model to other part in the hierarchy.
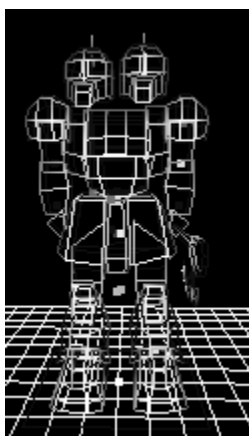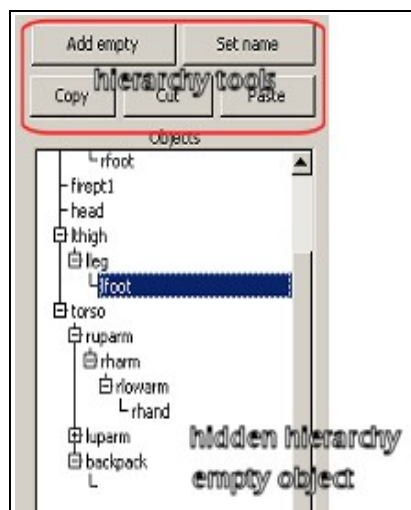
A Case Study
Building two headed Zaku

In this case study we will modifty our Zaku model to a double headed Zaku.

.....

1. select the head, move it coz 2 head wont be centered in the middle :)
2. click copy or ctrl+C

3. **The first head is the child of pelvis, and you will want the second head as the child of pelvis too so choose the pelvis before paste-ing the copied head. If you dont do this the second head will be the child of the first head!**

4. **click 'paste'... yeah you got 2nd head already. But where the second head is ?? ... you see nothing isnt it.... ??. This is because TA Spring will paste the 2nd head on the same coordinate. So after paste a copied model you must shift it to proper place**
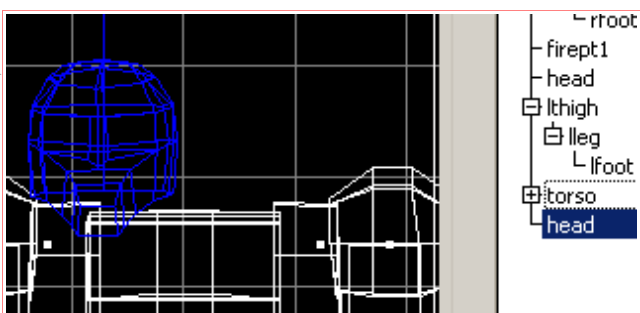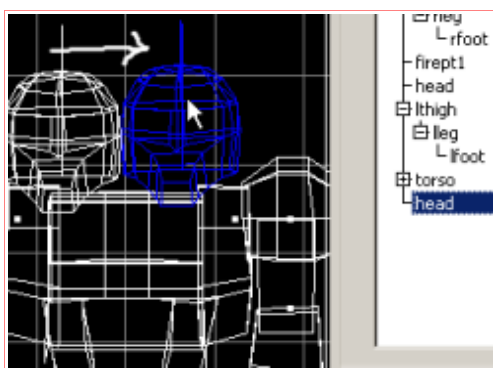

5. **Finish ? Not yet.... both head have same name. TA Spring program dont like 2 object with same name so I select 1st head, click 'set name' and name it 'head1'. Then I do the same to the 2nd head, set-name it to head 2**
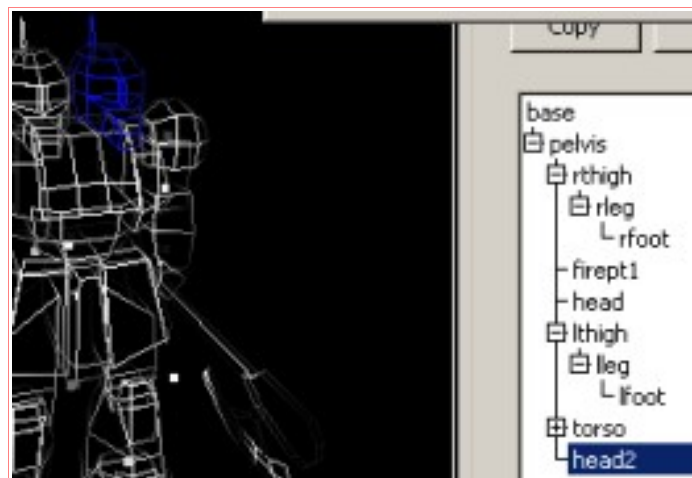
6. **Yes... and u got it.... Arent you happy now ?? :)**

A Case Study
Rigging a simple tank
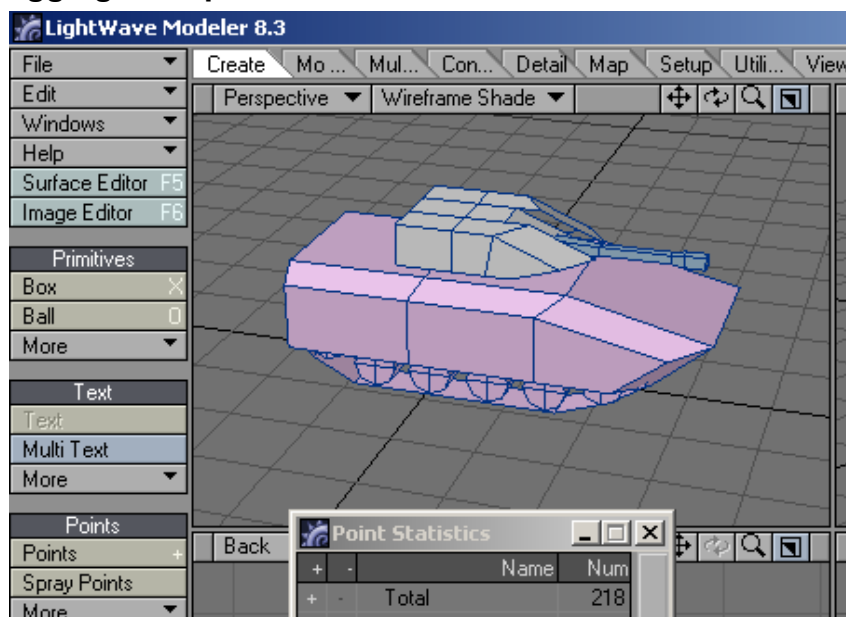
Lets build the hierarchy of this simple tank. This tank consists of only 3 part. Hull (pink), Turret (grey) and Barrel (light blue).

Below is the hierarchy we will build, don't forget to add the godfather of all unit, the 'base'
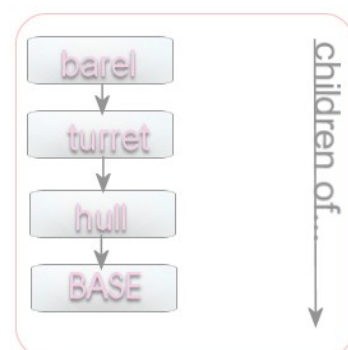
Rigging the little tank

1. Export each part as obj (quad) or 3ds (triangle)

2. Import the object to Up-spring. Begun with Root (base) first and then the 2nd highest level (hull). O_o you import the base, the model is there but the hierarchy windows show nothing ??

3. Dont worry, it sometimes happened when you havent assign any name to the model before it exported. Choose the model it top of hierarchy window, it is there! It just need a name so choose set name and give it a name !
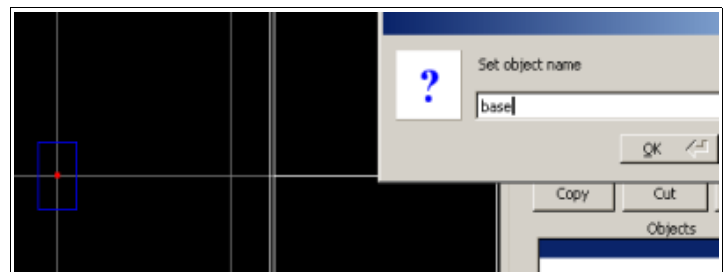
4. Then we gonna add the child, grandson and so on. We begun the child of the base, namely hull. Choose menu --> object --> insert object from file. then import the hull

5. O_o, same happened again. The model is there but no change in hierarchy window. Dont worry, just double click the base and set_name and then name it 'hull'
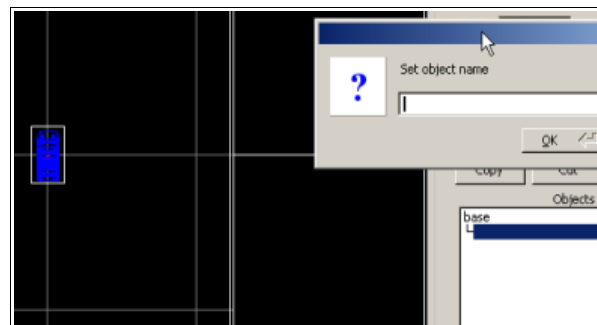
6. Choose the hull, import the turret. Then choose the turret and import the barrel. Move them to proper position

7. And yup, you got a proper rigging on your first tank :)
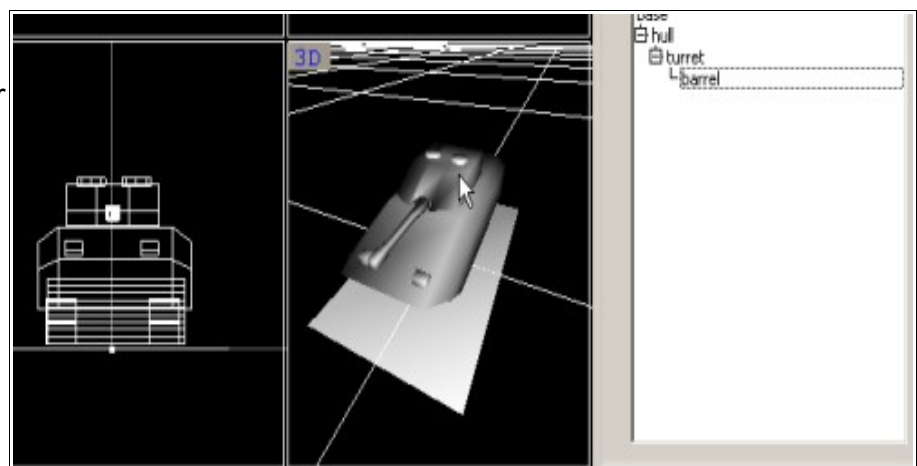
Chapter V
Texturing Basics

Texturing is one of the most important part of 3D modeling. It is texturing that make your life real, at the rate that sometimes it can be more important than the modeling itself!! --It is better to have bad model with good texture than good model with bad texture--

As mentioned before, TA spring able to use both 3DO 'quad-by-quad' texturing and triangle texturing. For more about 3DO methods of texturing see the '3DO-in-Spring' texturing here is only about S3O with UV mapping explanation

All you have to do is (sounds) very easy : make UV for your model, import the model file to upspring. As mentioned in the early part of this tutorial, there are 2 format supported by upspring: .3ds and .obj.

UV mapping with .obj format
If you use 3DS, it already has UV, it already support hierarchy so all you do is simply import the model. If you want to use .obj or Lightwave (whose modeler cant export proper 3ds hierarchy), story is completely different. As .obj does not support hierarchy (it can only export one object at a time), you must have to export them as a unified object using the Upspring menu called "UV mapping", UV map it and reimport the UV in the modeler (using the Import command in the "UV mapping" menu). Essential is that the model geometry is not modified, only the UV coordinates. If the geometry is modified, upspring will not be able to copy the UV coordinates from the imported model to it the object hierarchy.

Texture file format
So far .s3o file format for TA Spring known to work with 3 kind of format : .dds, .tga and .png. Here is the explanation of each file format :
.tga file format
.tga is one of the oldest standard format for 3D model texture. It support 8, 15, 16, 24 and 32 bit depths, rle. Of course it do support alpha channel
.png file format
.png is a file format designed for web development. However it have some advanced features such as alpha channeling, and can support up to 24 bit color depth
.dds file format
.dds is the newest file format.

DDS stands for 'direct draw surface'. It has a number of compression formats that can reduce the size on disk **and** the size in memory (png only reduces the memory use on disk). It can support up to 32 bit depths and alpha channel. Problem with this format is as this format is relatively new, most graphic editor software still don't support it without additional tools/plug ins.

You can get several .dds related tools in on nVidia's official website, as well as on the Ati website. I have trouble with most of the tools so you would better download them all and check which one work for you.

I hopes that in the foreseeable future next release of JASC... err... Corel Paintshop Pro and Adobe Photoshop will have full conversion support for this format.

Before you learn to convert your texture to Upspring readable form, you can learn some fundamental principle of texturing in the next sub-section, but if you already a top-notch texturer you can ignore it.

Maestro's 7 directive on
A Fundamental Concepts of Good texturing

### 1. Good beginning is beginning of all goods
if you want to make good textures, then you must make good UV. Here is how to check it : If you see a polygon in an UV and you dont know to which part that uv poly belongs, then that is a bad one.

Good UV can be achieved by make the UV part by part and combine them later. Imagine make and UV of aircraft, you can separate the wing, the canard, the tail and the fuselage so later you can easily recognize them and which part related to it. This way, you can make a good, seamless model.

2. Dont be fools, use the tool right, use the right tools
Try to use old MS Paintbrush to make any texture for complex TA Spring texture = Suicide >:)
Get a graphic editing software, some photo editor able to work with both raster and vector, and work with layers . PhotoShop are best. PaintshoPro, I use it and I like it. Gimp, I heard this is fine and free but I never tried it so far....
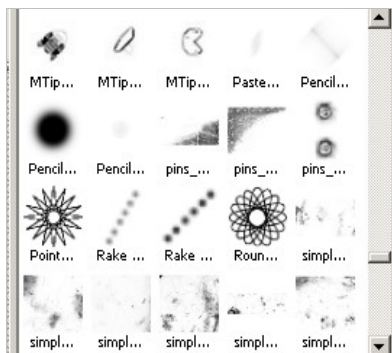
Got the best software doesnt means the software will make the texture for you!. Take your time: buy/read some graphic editing tutorial/manual , do exercises and get some plug-ins.

Empower yourself and empower your tools too.
If you use PaintShop PRO, downloading brushes, brushes and more brushes can be invaluable. PSP 8 can also import older (Photoshop 5) brushes, PSP-9 can import virtually all brush. Just looks how croded my brush menu today (notice how small the brush scrolling barr :P)

3. What you see is what you made
Well, This is the main principle in any game modeling. If you cant see it in game don't make it. Don't bother adding speedometer and brake pedals in your CORE tank model. No one care about it!
Make your model simple for it will save your time PLUS make your mod/game more efficient. Simple model also easier to UV map than a complex one.... That is the basic principle... but...

4. How low *should* you go ?
As Spring engine is new, its limitation is not yet known. How much triangle/quad you can use on each model before the engine break up and game shows noticeable slow down ?

Here are some known facts :
According to various person Spring engine got slow down mostly because of shadow, path finding, unit AI and particle handling. Because the spring engine simply uses the 3D hardware, increasing model detail only lowers the framerate if the graphics hardware isn't capable of rendering it fast enough.
According to Ground Zero -my partner in World Domination project- so far there is no slowdown in game. World Domination unit mostly consists of more than 150 quad. Some advanced tank and fighter have 200 quad and some helicopter can reach up to 350 quad. --Double the number for triangle count
You can easily use 500 triangles for common units, you can use 1000+ for rare units.

It is the same with my experience, such number are not problematic, except you set all effects to maximum... My computer is low end by today standard : 256mb RAM, Athlon-2200 (on old crappy board) and old ATI Radeon 9000. Oh and my monitor is made in Indonesia (GTC)

My principle in this case : make it playable in today standard computer. If you trapped in the past and want to make a mod that can run on Pentium II with 64MB RAM, then your mod wont be popular in

today competition. But if you make the mod too heavy so that it need 16 gigabyte RAM and 2048 bit VGA card, then you must wait the next 15 years before ppl start play the game you made. It is up to your wisdom

5. All about color

Imagine someone tell you exact R.G.B color of a battle tank. Now try to draw the green tank with exactly accurate single green color. What is the result ? It looks totally unreal!. Why ? Because what we actually see is not the color itself!.

What we see in everyday life is a color reflected by the tank. Hence the color are varied according to how many light fall to the tank, how much from them are refracted and reflected, how much cloud and other object stand between the lightsource and the tank, how dark their shadow, how corroded and dusty it is and so on....

That is how you should make your texture.

If u ever make any plastic model (kit model/maket/etc), The steps in making good textures is actually the same with steps you should do to make good scale model painting :

first step : **Make the base color**
Here is the model : we are going to texturing an OTA style fighter wing
Screen-captured the UV map, resize it to fit your texture size, use it as base layer then start painting over it.

Second step : **Detailing**
Add the panel lines, panels and stencils.
Here I only use panel line. For more serious sci-fi texturing usually people also add various metal panel in this stage, by adding various grey block with various darkness in a rather transparent layer over it.... .
It still unconvincing, cheap, ugly, crap texture. But we gonna change it in the next two step :-)
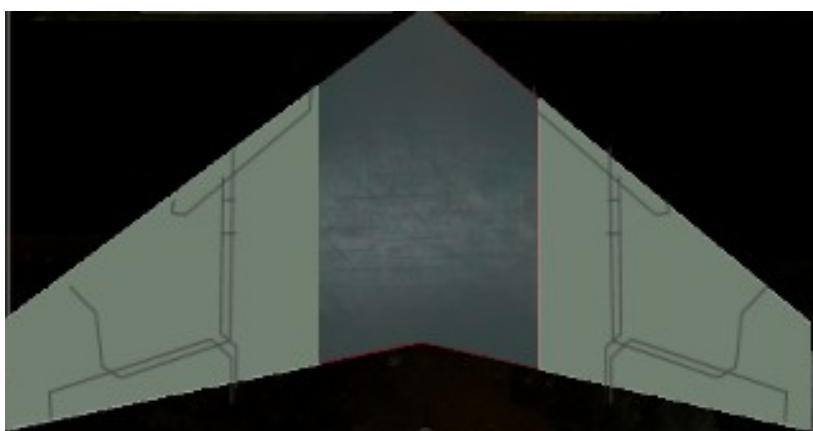
Third step. **Preshading**

Add shading to reinforce the geometry image. It gave curvature looks on the model as if the wing really have airfoil shape. Shading is a kind of 'virtual lighting/shade'. Well Spring have its own lighting and shading so use a subtle shading only. I do it simply by use huge, very-very soft (hardness 0 - 1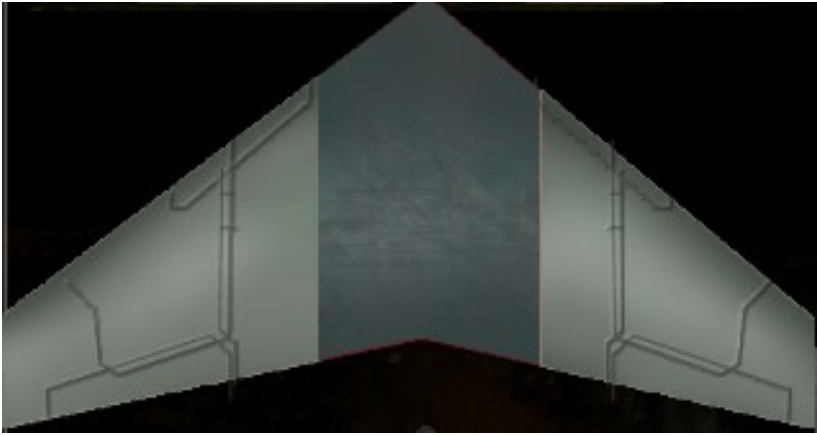0) brush along the outline of the wing. Than I copy and flatten the copied layer so I can bevel the panel line over the flattened texture.


Forth step. **Weathering**

Add 'weathering' if you wants. Paint some dirt, corrotion, scratch etc that usually happened to a material after years being used. I also paint engine and glowing exhaust over it :). The final result show

you what can do with very standard tools available in *every* photo editor (brushes, vector line and bevel). No plug ins used in this tutorial but I use a lot of free PSP8.0 brushes to make the good dirt. There is no glow plugin in PaintshopPro, so the glowing engine I made by : draw a white/yellow gradient elipse, rasterize it and duplicate it. After that gaussian blur it then duplicate the blurred layer till it looks glowing enough.

The lazily textured middle part later will be covered with side color and hull : Another efficient modelling principle : goes lazy wherever you can ;-)

That is general principle and sequence. :-). Of course, there are endless variation of combining those steps but if u never do any serious texturing job before I hopes this simple tutorial can enlighten you.
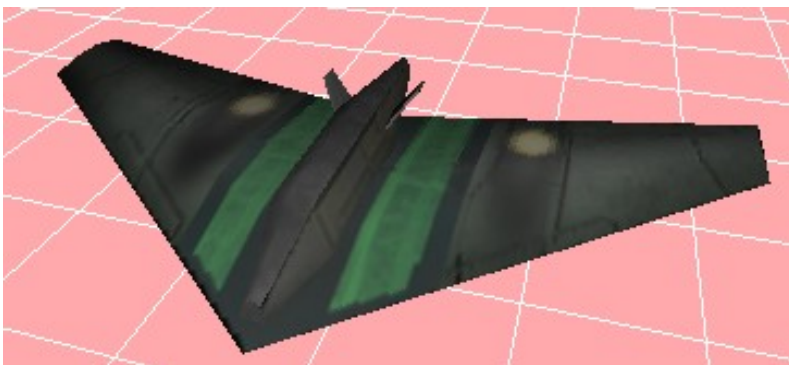

Result : I must admit, the glowing exhaust is a ridiculous idea as it is looks good only from top view but looks ugly and innatural from all other perspectives. Good in TA but bad for Spring :-(.

Example : *A variation in theme* :
left wing : more serious paneling added make it looks more natural and metallish. The panel here just various grey blocks with variation in darker/lighter tone and transparency. Proper panelling give impression as if the wing made from a lot of poorly welded metal sheet.
Right wing : without no panel but I change the base color with a green-grey-brown standard vietnam camo combined with less opacity/more transparency of the dirty/weathering layer to make it shinier but also a bit innatural (too shiny imo).
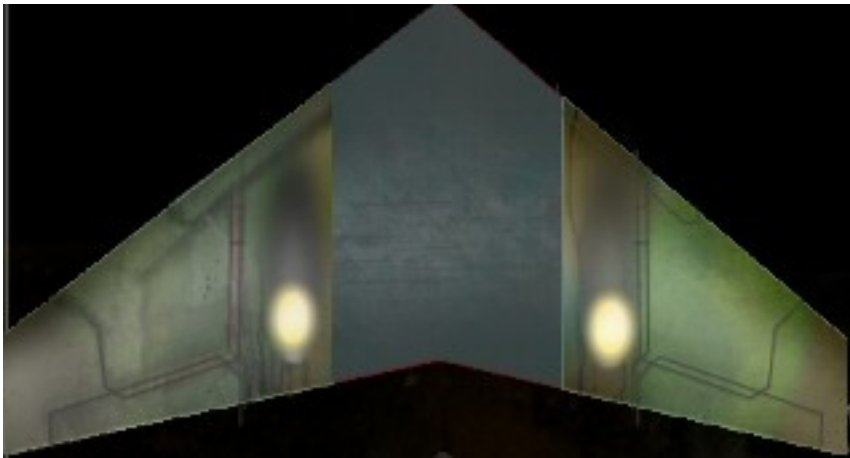
6. Make reasonable texture size : feel the power of 2!
Most .dds exporter and spring engine work best with picture size (in pixel) is the power of 2. : 32x32 pixel, 64x64 pixel and so on.
512x512 pixel picture is usually enough (or even overkill) for most of model. Smaller bitmap also help saving memory resources. If you are not using a power-of-two texture, your texture won't be loaded or will be resized to a power-of-two texture, which almost always makes it ugly.

7. Texture-geometry gambit
You can save a lot of time by using texture to make 'pseudo-protrution' or pseudo geometry.. See the next page for example
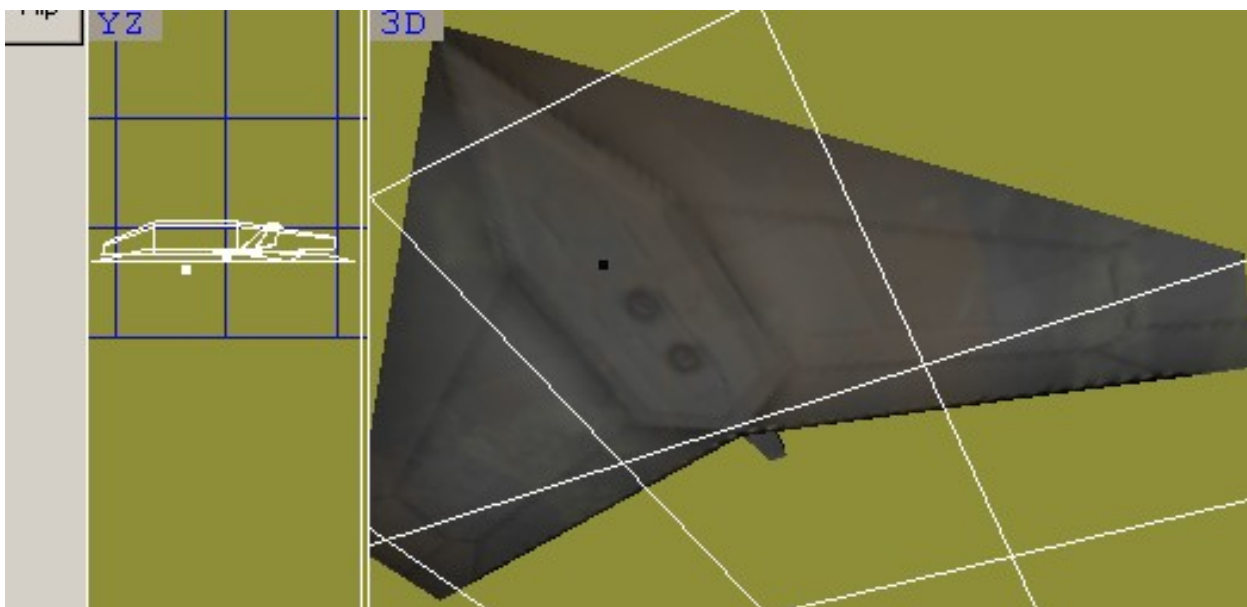
You see there is a Hexagon body in the middle of the aircraft, and there is 2 VTOL exhaust hole in center, a lot of panel and the plane wing lower part have curvature stucture, right ? But.....
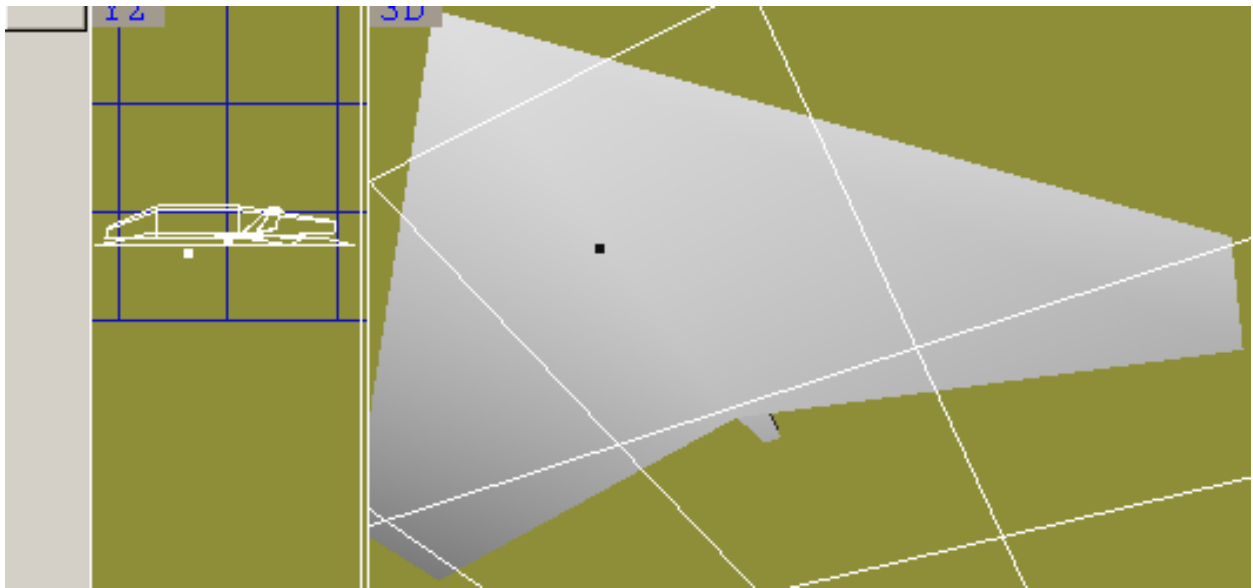
Surprise!!
The geometry actually is totally flat! The center body, and the 2 exhaust you see is all textures!!
This technique can reduce your UVW hell punishment and can save the model for overabundant small poly-detail as well as save your total working time:-)

Chapter VI
Creating Bitmap for Spring

Understanding Upspring bitmap

Here is some character of TA spring texture

1. TA spring use transparent channel as side color

TA spring do use transparent channel as side color. You put the side color in your model by make it transparent via alpha channel.

While this seems make more difficult compared to traditional TA system, actually it is the contrary. This feature enable you to make whatever form of logo etc easily. Now you can draw various number, decals, symbol, panel line etc that is a side color.

TIP : most people simply put transparent face in their side color area. This is not good. If you add preshading, weathering etc in your unit's texture then you must add preshading, weathering, etc to the semitransparent side color area too.

2&3 : UpSpring do read inverted alpha channel PLUS ultimate black/white (forget which) will be rendered as total black. Second problem can avoided easily by avoiding using ultimate/total color RGB number (0,0,0 or 255,255,255).

This mean you must build your alpha channel in inverted way. What you see in your graphic editor will be the side color area in the game and the part that being transparent in your graphic editor is the part where your texture will be rendered in Spring and Up spring

TA Spring BITMAP vs JASC (Corel) PAINTSHOP PRO

BUILDING .PNG TEXTURE

1. flatten all layer of your image
2. Add an alpha channel layer
3. (picture below) select all the part intended for side color.

4. start paint brush it in inverted way. Due to Upspring inverted alpha channeling transparent part will be the part where you will see the texture, and part which you can see in your graphic editor will be the side color.... so that is the way you should do it I prefer to reduce the ajpha channel opacity so I can see if the proportion of side color good enough
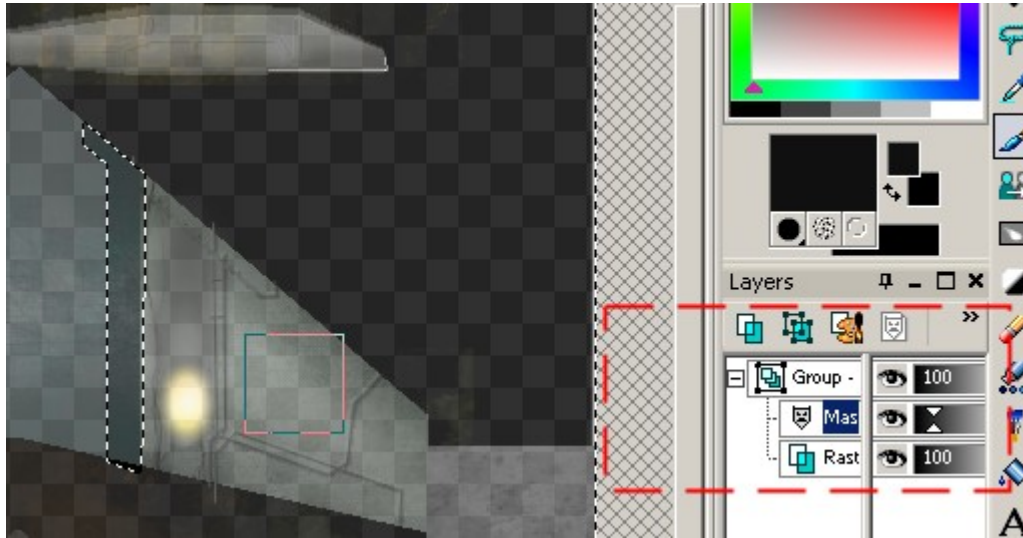
5. Choose file--> export to png and activate the 'existing image/layer transparency.
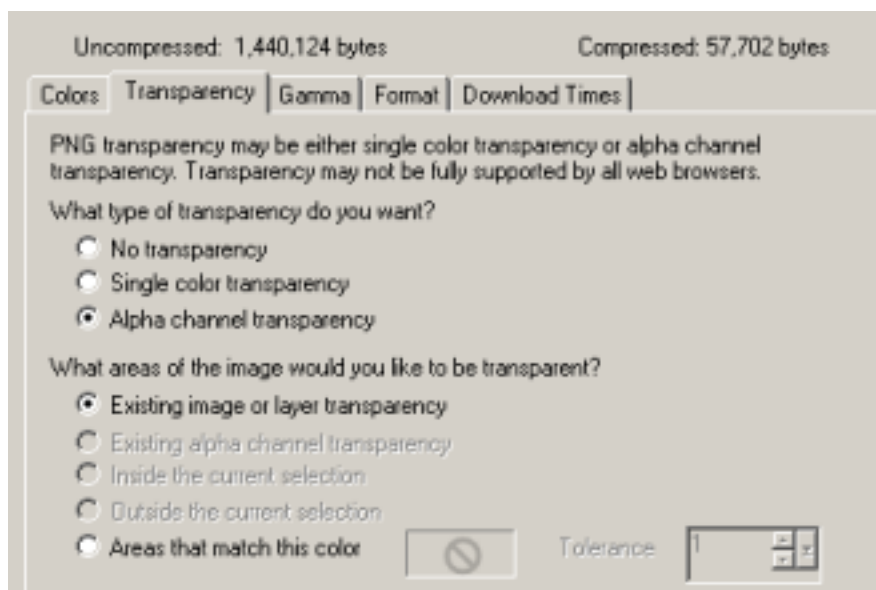
BUILDING .TGA TEXTURE

.....Same as building .png texture (step 1-4) then do some additional step as follow :

5. select the mask layer and select in the menu layer --> save/load mask --> save to alpha

will got an error and hang. In this case the only way to do is remove the mask layer, make a new one and try it again....

TA Spring BITMAP vs Adobe Photoshop

TA Spring engine is made for Adobe Photoshop so if you already have PS yous should have not much problem using it to make TA Spring texture. .tga and .dds works very fine with PhotoShop
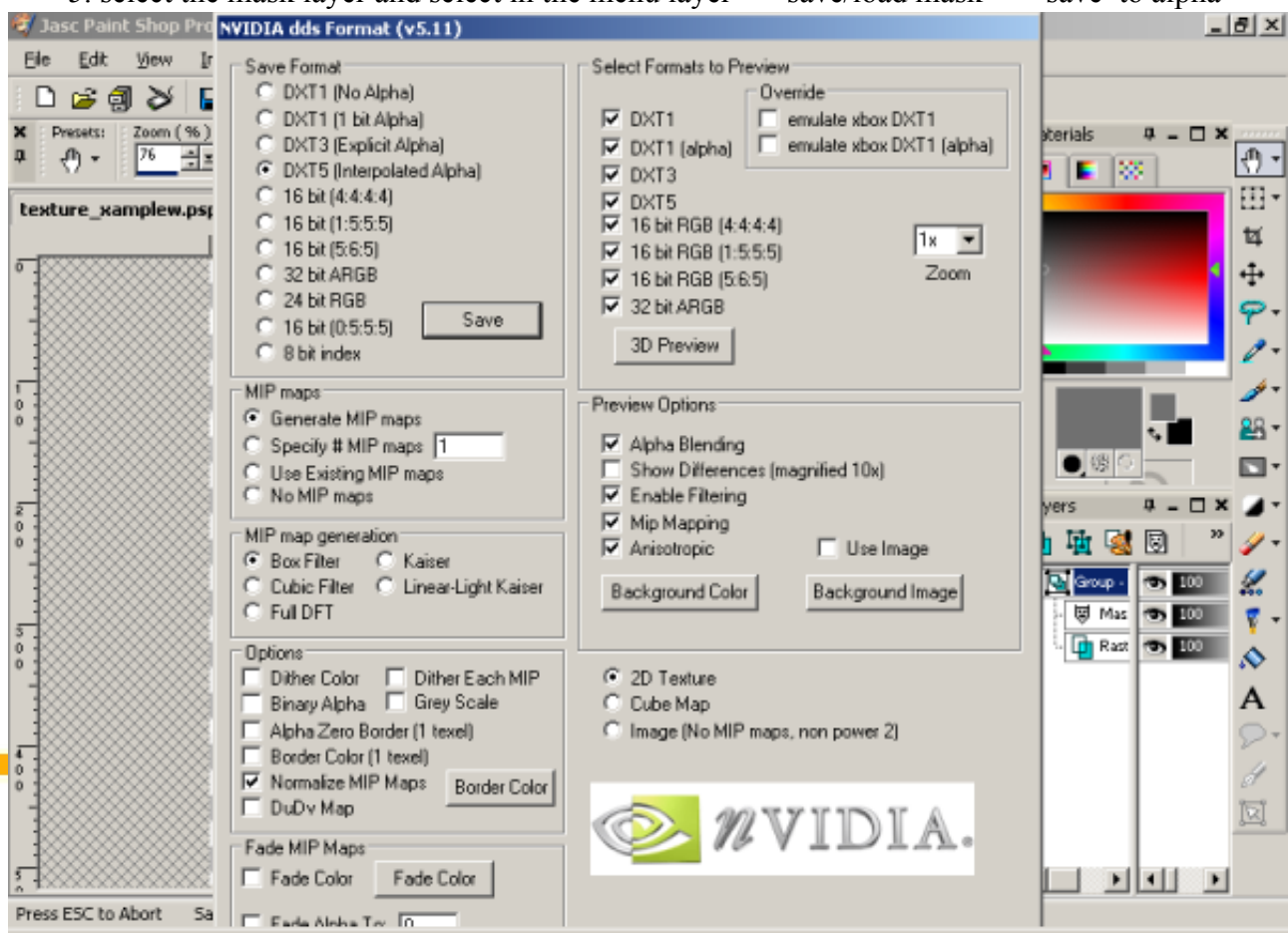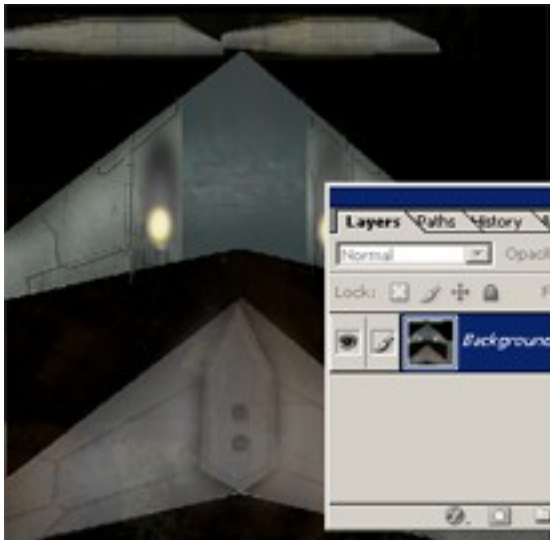
Here is how to make TA spring texture using Adobe PhotoShop
1. After you finished the texture flatten the image layers

2. Add an alpha channel. It is difficult to make proper alpha texture in the alpha channel so back to your layers
3. Add a new layer. Make multiple selection where you want the side color to be appear in game
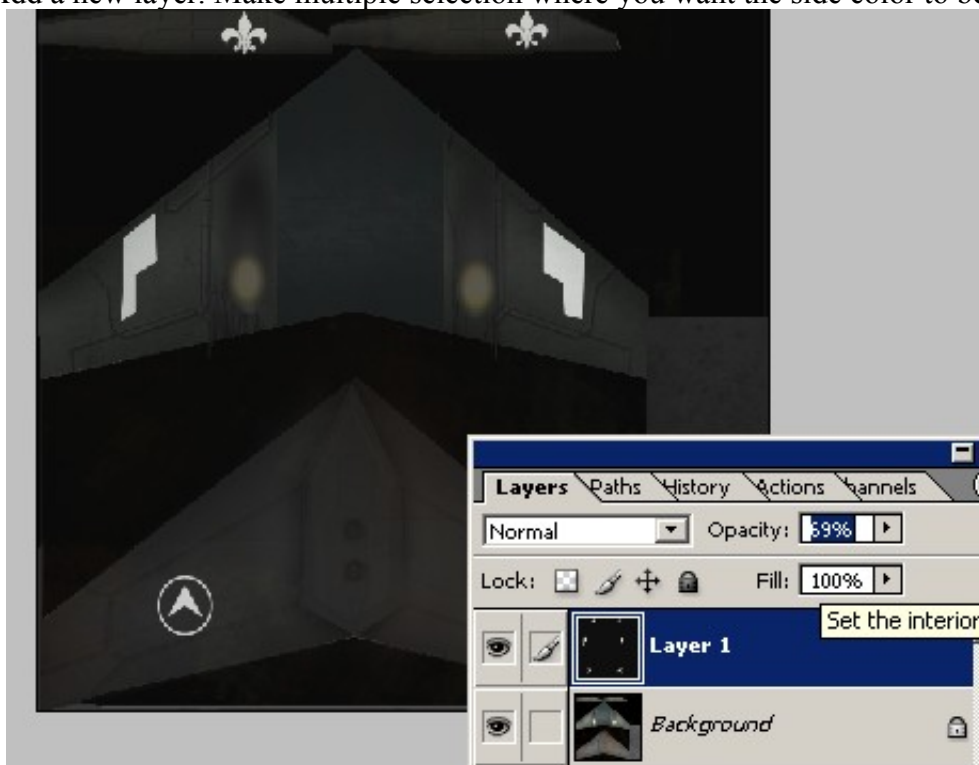
4. Add near white color to the 'side color' selection and black color to the rest. Why ? Because you will copy paste it to your alpha channel.... and Upspring use inverted alpha channel.
5. Copy paste the 'alpha channel' layer (layer1 in the example pic) to alpha channel, then delete it.
6. Save as .tga or .dds. For .tga check the 'alpha channel' option. For dds, the setting is the same with saving .dds with paintshopPro so check the picture of .dds exporter in page 20. That is if you use nVidia old .dds converter. There are few other .dds converter which some people said better. If you do use other converter, go find out urself how to make it work >:-)

7. The result should be like this :). Im not adding any weathering, dirt and preshading in the side color area so the result is a bit dull and flat , reducing the realism but it show you how flexible to add a side color today. You can even add every single tiny stencils and decals in sidecolor if you want.
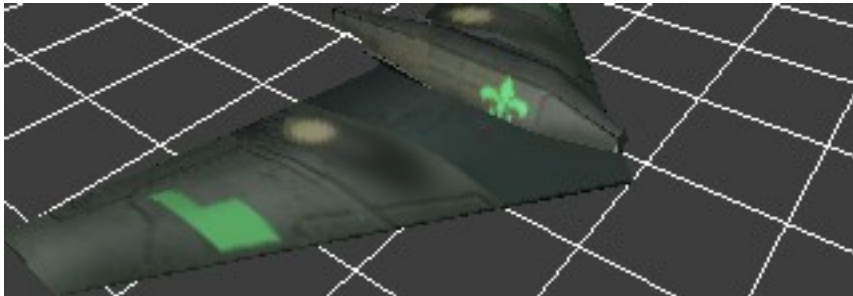
Chapter VII
FINAL STEP
Adding .s3o model and texture to your unit/mods and some additional issues

.s3o and fbi
To make your .s3o model dont forget to add .s3o extension to the model name in the unit data. Otherwise Spring engine will look for a .3do file instead and got a 'missing model' error
example :
Objectname=manta.s3o;

Where to place the texture ?
Texture should be placed in the /unittextures subfolder in your unit/mods hpi/ufo/ccx

I move the model/texture to different folder and Upspring misses the texture, why ?
UpSpring tries to reads S3O textures from the system path, from the path where the s3o file is located, and from the path given through the settings menu ("Set spring texture directory"). If it can't be found there, the texture will not be loaded.

Unanswered question and problem
ATM Upspring have the following trouble that I haven't found any solution, if someone ever got this kind of problem and succesfully solve it please tell me how to do so

1. Some people have trouble with this problem : model being all transparent in game even if they are looks fine in UpSpring.
2. Sometimes TA Spring got crash when you loaded a model you have textured before. This problem seems keep happening even if you have quit and try to reload it again. Usually I 'solve' this problem by loading other object/model before load the model that cause crash and somehow it no more crash but it'll give 'texture_null' message and your model loaded without texture.

appendix I
S3O ENGINE

This is new 3D object format intended to replace the obsolete 3DO.
The model have some advantage
First : It can have UV map.
Second : It no longer use TA 256 color palette. You can see everything in 24bit's glory

GEOMETRIC :
S3O format is a flexible 3D format, capable to implement both triangle and quad based object.
If there is any triangle the object will be treated as triangle based object. Quad based object are more efficient actually. However in game the difference will be few as today graphic card is quite powerful.

ORIENTATION
The orientation system inherit old TA system, Lightwave system.
This means : Y-is-top, Z-is-front and X-is-left system.
However 3D programmer seems to take wrong math class. Certain software such as 3D Studio MAX use different orientation system i;e Z-is-top so you must reoriented your model sometimes

GRAPHICS
TA Spring as well as Upspring use DevIL graphic library. This library support a lot of bitmap.
However TA Spring only read unlayered object with alpha channel so not all format supported by DevIL can be read by Spring.
So far TA Spring and Upspring known to work with .png, .tga and ,dds file format, but I succeed mostly with png (psp and photoshop) and .dds (photoshop only)

appendix II
3DO in spring : *Long Live 3DO builder!*

3DO is older format used in early TA Spring beta version. It is the model format it inherit from Total Annihilation. While Spring still able to use 3DO builder, there is one great obstacle if you want to use 3DO format for Up spring, namely limitation of total bitmap size. TA Spring use of 3do's texture limited up to 2048x2048pixel. This is probably more than enough if you make a mini mod with less than 100 textures, but if you are in terrific project which could reach up to 200 such as World Domination, expanded TA:FF or (M3G's) it is certainly not enough.

Upspring too, have only limited ability to edit 3DO file. It cannot browse polygon, u must select them with mouse. It cant rotate texture orientation so if your texture is facing down or left or right the only way you can do is edit the texture. Think about using the texture on several polygons, it means you will probably need to make several textures just because they have several orientation!.
Even worse, last time I tried Upspring in 3DO building, several textures cant be rendered even if I have assigned it properly.

Conclusion : If you still want to use older 3DO model on your mod, the best way is to make it with 3DO builder. Since TA Spring able to read 32bit texture you should make two set of texture, first is the ones indexed with TA palette so you can see it in 3DO builder and the second is its beautiful non indexed which you will use in TA Spring itself.

It is recommended that you use Upspring 3DO capability only to import older file to export them to s3o, or only to check how good your 3DO model in 32 bit texture glory instead of ugly OTA indexed color.

appendix III

Keyboard Shortcut

Ctrl_N	- Make new model
Ctrl_O	- Load model
Ctrl_S	- Save
Alt_S	- Save Object
Alt_R	- Replace Object
M	- Merge Object with parent
Ctrl_Q	- Reset Object Position
Ctrl_W	- Reset object position and scale
Ctrl_E	- Reset object position, scale and rotation
Alt	- Force camera tool in viewports (Use camera tool even though movement tools are selected)

Super Bonus
INTERVIEW WITH MAESTRO

Maestro had did game modding since the Original Total Annihilation is in its glory. He famous for neat 3D modeling, data and research. Also known for rapid development skill : outside being co-leader in World Domination he personally made 2 mini mods : Armor Typhoon (modern panzer campaign) and Imperial Authority. He also famous for being the most prolific TA related tutorial writer

Q : *You re known to be like writing tutorial. Why ?*
A : Well, this is the way im helping ppl. It also easier than explain/teach hordes of n00bs one by one :)
Q : *How do you like Total Annihilation ?*
A : Actually I never likes OTA (surprise!). I never like as the design not beautiful. Tanks are blocky and too wide IMO and the ship looks likes bathtub toys that it will flop on market if a toy/model company try to market such model/replica. So I leave TA for 1 or 2 years. However later I heard some ppl say good thing about downloadable unit so I search anything Total Annihilation with Excite (Google is not yet popular at that good old day) and well, suddenly I feel how good TA can be and how beautiful the engine is.
Q : *What is your favorite unit at those good old day ?*
A : Hmm, BA's S.T.A.R ships, Ground Zero's B-317, Yamato, Kinboat, TAV Mad cat and TAV behemoth!. As for recent units : Karganeth and Black Dragoth! Big is beautiful....
Q : *Do you have any favorite game other than TA ?*
A : Yeah, Front Mission 3. I play it 6 times!. I also likes all others Front Mission series but I miss the 'Eject Punch' on the new FM4 :-(. Second best re Blitzkrieg and old Starwars Rebellion. Starcraft is good when come to design and interface but the gameplay is too repetitive. It is a short time fun. Actually I also enjoy an old race game called 'Ignition' where you can drive a School Bus in a crazy race against other cars!. I hopes this game would be redeveloped one day.

Q : *favorite TA mods ?*

A : War At Sea and TA:FF. I dont enjoy WD too much! O_o. Not because it is not good but because if you are developer everytime you play the game u made it remind U your 'work to do' list! >:-)

Q : *But the how do you get involved with TA unit making/mod building ?*

A : Soon after I learn about TA great features I send tons of mail to various TA design/modding site. The mail I send is something likes 'Hi, I know nothing about unit making now, but if you allow me to join I believe I able to do that soon. May I join now ?'. Slam! Everysite seems to threw my mail to recycle bin . I dont know whats wrong with such mail O_o maybe im too much on 'honesty is the best policy' thingies. The only one have kindness to answer such mail with positive response is Estrella, owner of TA designers which is why im a member of TAD and release some tutorials only for TAD.

Q : *what you think about TA Spring ?*

A : If you a TA unit designers or modder this is the future. It still have various limitation. Compared to OTA it also much heavier and wont run on old Pentium II or old celeron. But this is the way of the future and as the engine is still under development it is the right time to join so you can influence how the engine can be developed, you can tell your brilliant idea that neglected by all the great, commercial gaming company outta there. It support UV now it can be your best training on 3d modeling and texturing. So join us, and make something for it!

Q : *Maestro, why do you call this megalomaniac egocentric cheap talk a super bonus ? What is the advantage for reader ?*

A : What me call ? Advantage for reader ?? NONE ofcourse!. This is not super bonus for reader but super bonus for me!, FOR ME! >:-).

Q : *Thank you maestro, it is the first time I interview me! Cant wait next interview*

A : Any time maestro, any time.

YEAH, Now Im officially the first one in TA world and probably in the world who publicized a self interview. Now that is an achievement >:-)

Interviewer : Maestro