

Converting 3DSMax models to GMax for use with FSX

Preamble.

gMax is a desirable tool for the FS developer even for those fortunate enough to have access to it's bigger brother 3dsMax. Some of the reasons are;

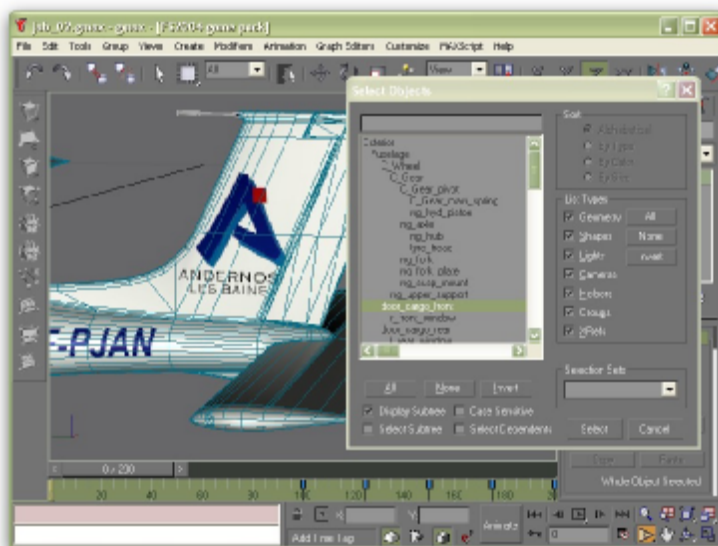
Exporting a model for use in FS9 directly from Max is at best difficult and most (if not all) current .X file exporters are limited with regard to output for MakeMdl the FS9 compiler.

Some of your development team don't have access to 3dsMax, ALL will have access to gMax.

gMax goes lightly on your system, is quick to load, and is therefore convenient to whip up a quick bit of mesh for testing and tweaking. Especially as you may be running a couple of other 'killer' apps in the background as you work, Photoshop and the Simulator itself for example.

I'm sure you can add to that list as to why gMax still has it uses for the Max equipped.

After appraising several tools (some with more success than others) to accomplish the conversion task over recent years I have settled into a nice work flow with a particular tool which for some time now has given me a relatively trouble free route between Max and gMax. So much so I don't even think of it anymore. I'm currently working on a model for a French flying school for ACOF and I'm free to use my design tool of choice, currently Max 8, knowing that the model will end up going through the 'official' FS9 SDK tools without a hitch, via gMax.



After watching several threads on the Free Flight Design Shop forums covering various semi-successful attempts to convert the FSX SDK example over recent months and listening to

several gMax developers wishing to have a version that they could dissect in order to broaden their own understanding of the modeling methods. With the prospect of the rare opportunity of a clear desk for a few days, I decided to bring my own experience to bear on converting the vintage prop liner and attempt complete the task which had as yet not been done.

So, I wanna get my stuff into gMax, why the big deal?

The internal 3ds export from Max which can then be loaded into gMax has many shortcomings which affect the developer. Firstly it is limited to an 8.3 filename format which can sometimes mean a lot of external reference renaming, for Bitmaps and the like. It has limited support for UV co-ordinates, which can be a problem if you use more than one Texture channel, and it messes up the Material tree, does your splines in and will collapse any stacks.

3rd Party tools such as Deep Exploration and Polytrans are both excellent tools in their own right, and serve a multitude of purposes, unfortunately getting a Max creation into gMax isn't one of them, or at least any of my attempts to use them for this purpose have failed, sometimes dismally.

Many methods will use an intermediate file format in order to arrive at the destination and anyone with experience of a humble word-processor will tell you that strange things happen to your documents when converted between different applications just imagine what happens to the integrity of your lovingly created mesh when put through the mangle of different proprietary file formats

Sounds like I'm sunk then.

Not so fast there is another way.

Bobo's originally named 'Back From Five' now known as 'Bobo's File Format' originally conceived as a way of giving 3dsMax 4 (which is basically what gMax is.)users a way back from version 5, hence BFF, geddit?

Here's what it does, or more accurately was intended to do, unfortunately the last version was flawed and worse it stopped being maintained in 2003, although as I have said I've been using the older stable version for quite some time, albeit with fewer features, but without incident.

<http://www.scriptspot.com/bobo/darkmoon/bff/features.html>

Fortunately a nice chap called Raul Ortega popped up with a debugged version of the original script (v 0.4.2) in 2007 for use in Max 9 (It works perfectly in Max 8 however) and I should think it will be OK in V2008 and Max 7, although I can't vouch for that, anyways lets go and get it. I've got an old Douglas to convert.

Here's the link for the 2007 version.

<http://www.scriptspot.com/3ds-max/bff-2007>

Make sure you download it off this page as you'll only get the old v0.3.6 version or the buggy v0.4.2 version otherwise.

BFF-2007 is in 'RAR' format so use a tool like 7Zip to extract it.

The first thing to do after you have extracted it is THROW AWAY, DELETE, MANGLE the file named BFF0_4_2.ms as it is the original version and will cause hair loss if accidentally used. (You'll see why later)

Cool, preliminaries out of the way, next step lets get up and running.

Installation.

Before we get down to the task at hand we need to get tooled up.

The original instructions state copy to your Max script folder, fire up Max, choose run script and navigate to your scripts folder run the new file and bingo its installed.

You need to do a little more work though to use it, although not much.

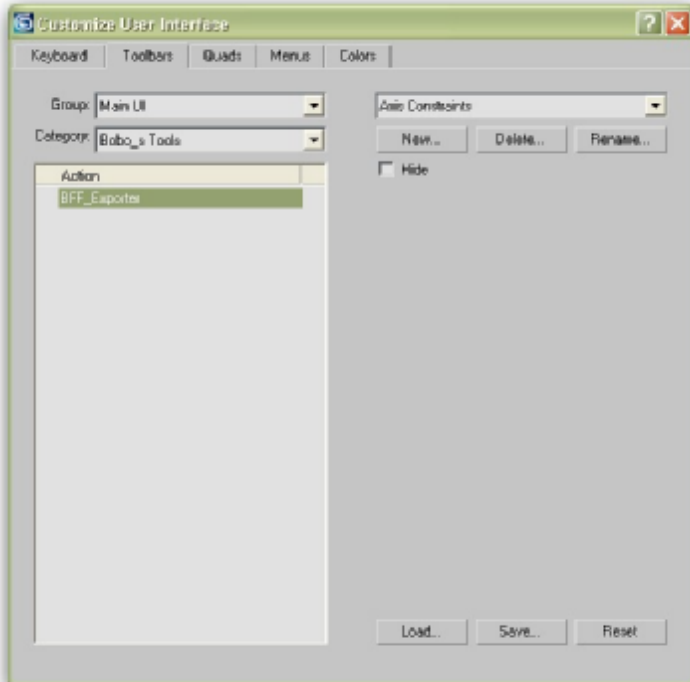
Basically I'm using Max 8 here, and just configuring a Button I think the procedure is the same in Max 9, although it has to be said if you can't configure a button in Max why on earth are you in the £3,000 software market?

Go to 'Customize/Customize User Interface...' from the Max menu.

Click the 'Toolbar' tab.

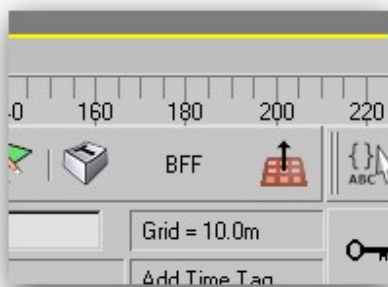
Select 'Bobo_s Tools' from the 'Category' drop down.

You should now see the 'BFF_Exporter' item in the 'Action' pane.

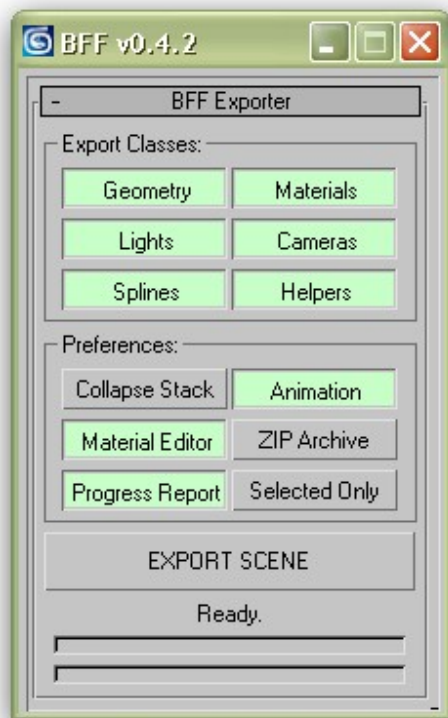


Click and Drag the 'BFF_Exporter' item to a convenient location on one of your toolbars for easy access.

Right click the button to change its appearance when you've got it where you want it, to something like 'gMax Here We Come Bad Boy' if you have enough space on your UI, otherwise just shorten it to BFF, whatever you prefer. I put mine here;



Now when you click the button you should see this;



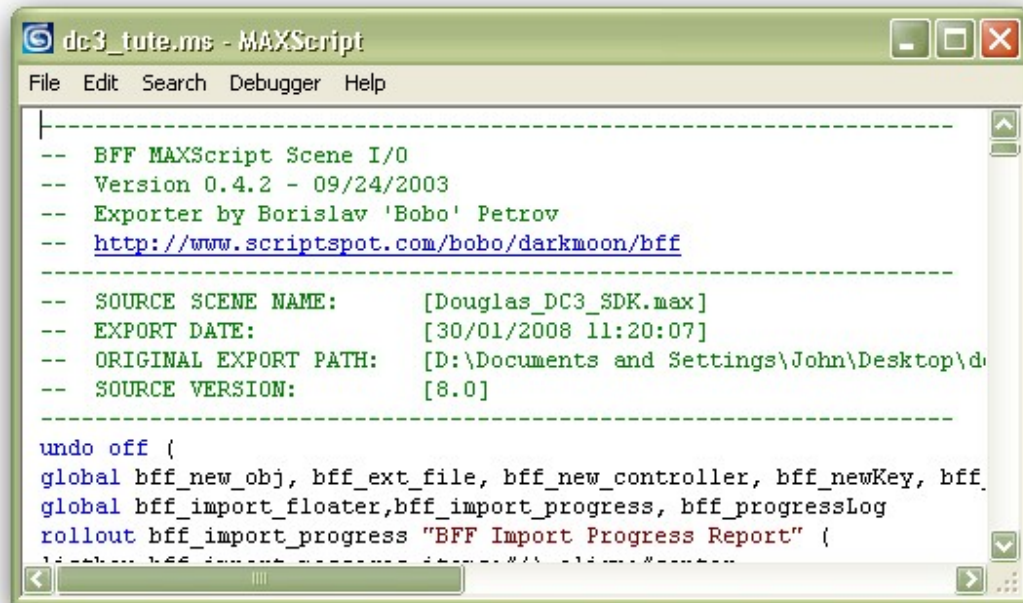
Which is all very simple and self-explanatory, note that it still says version 0.4.2 which could cause some confusion if you hadn't been paying attention earlier. No fear, if you DID follow the instructions and deleted the 'wrong 'un' earlier you are ready to roll.

Next; Using BFF and the caveats.

Using BFF

It's pretty straightforward you just select the 'Classes' of object you want to export, the top 6 buttons. And choose your 'Preferences' from the bottom. Then hit Export Scene (or Selection if you had that Preference checked) and you will be presented with a file requester in order to save your export. I decided with the DC3 to 'go for broke' and see what happened going for the whole shooting match. In practice especially with a model with a well-defined hierarchy structure such as the SDK example would be to break it down into manageable sections and deal with it a bit at a time. The first issue I came across was that the export script fell over at the thought of a .dds file which I cured by changing the reference of 'GlobalEnv_AC_Chrome.dds' to point to a different file format. To export successfully its probably best you only have Bitmap formats that gMax can handle in your materials, the script may choke on .dds references for example, depending on your set-up (Direct X, GPU driver, and Max video driver etc.) so it is probably best make sure there are none of those in your scene before you attempt to export. FSX materials are fine at the export stage, but there may be some issues at import time which I will work around later.

BFF will then start to create 'MaxScripts' of all your objects and materials which may take a little time, although not as much as you did to initially make them. Eventually a window will pop up showing the main generated script. Don't be alarmed if there is a pause before you can do anything else in Max it hasn't hung (usually) but it can take a while to process if you are exporting a complex scene, such as the DC3.



```
dc3_tute.ms - MAXScript
File Edit Search Debugger Help
-----
-- BFF MAXScript Scene I/O
-- Version 0.4.2 - 09/24/2003
-- Exporter by Borislav 'Bobo' Petrov
-- http://www.scriptspot.com/bobo/darkmoon/bff
-----
-- SOURCE SCENE NAME:      [Douglas_DC3_SDK.max]
-- EXPORT DATE:           [30/01/2008 11:20:07]
-- ORIGINAL EXPORT PATH:  [D:\Documents and Settings\John\Desktop\d
-- SOURCE VERSION:       [8.0]
-----
undo off {
global bff_new_obj, bff_ext_file, bff_new_controller, bff_newKey, bff_
global bff_import_float, bff_import_progress, bff_progressLog
rollout bff_import_progress "BFF Import Progress Report" {
```

When it has completed, the MaxScript editor will present itself showing something like the screen shot above to tell you that processing has completed.

Fire up gMax if it is not already loaded; if it is running make sure you save your current work BEFORE YOU DO ANYTHING ELSE. You won't get the chance later...

If you DIDN'T export FSX materials and you are only using gMax 'Standard' and 'Multi Materials', THEN importing is just a case from gMax's menu selecting 'MAXScript/Run Script' and navigating to the 'ThefileIjustExported.ms' file you just exported from Max. You will then be prompted that gMax is just about to reset, (which is why you saved your work right?). Then go and make some coffee while gMax builds a new scene from your export. It's important to emphasize here that this is not importing a file it is actually using MaxScript, gMax's native language, to re-create brand new mesh before your own eyes. Magic

Of course converting the SDK DC3 we ARE using FSX materials so there are some considerations, if you have raced ahead you will probably have found that out already.

FSX Material Caveats

First of all make sure you are using the FSX gMax gamepack before you attempt to import a scene containing FSX materials, sounds obvious but it's the sort of fundamental thing I have to remind myself of constantly.

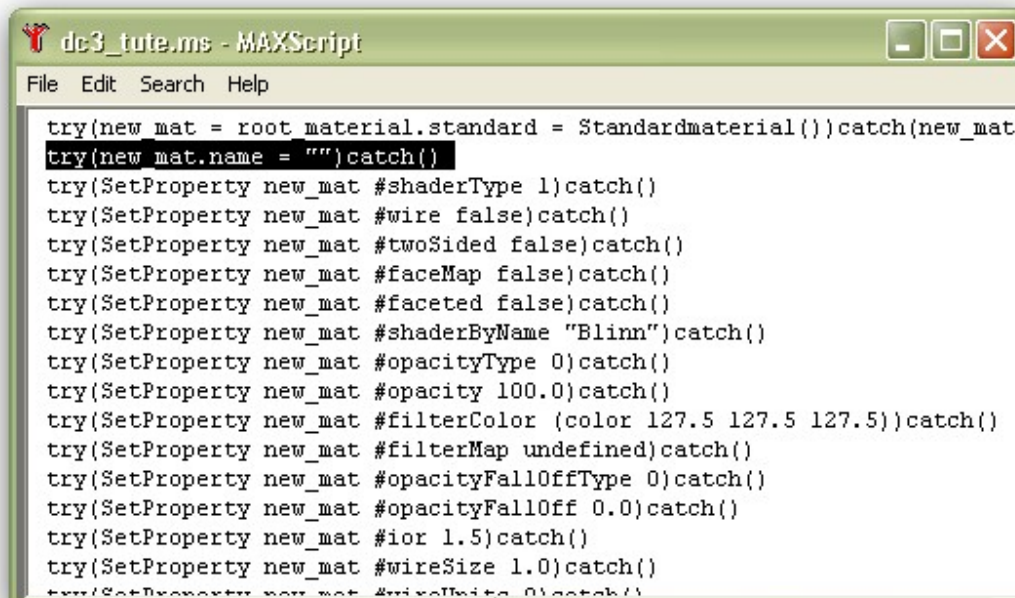
FSX Material and Multi-Materials WILL cause the script to fall over on import. The good news is that there is a kludge to get around the problem. When you run the script in gMax it falls over, bringing up a highlighted line in the script, and an error message. This one;



The workarounds are;

The safe slow way.

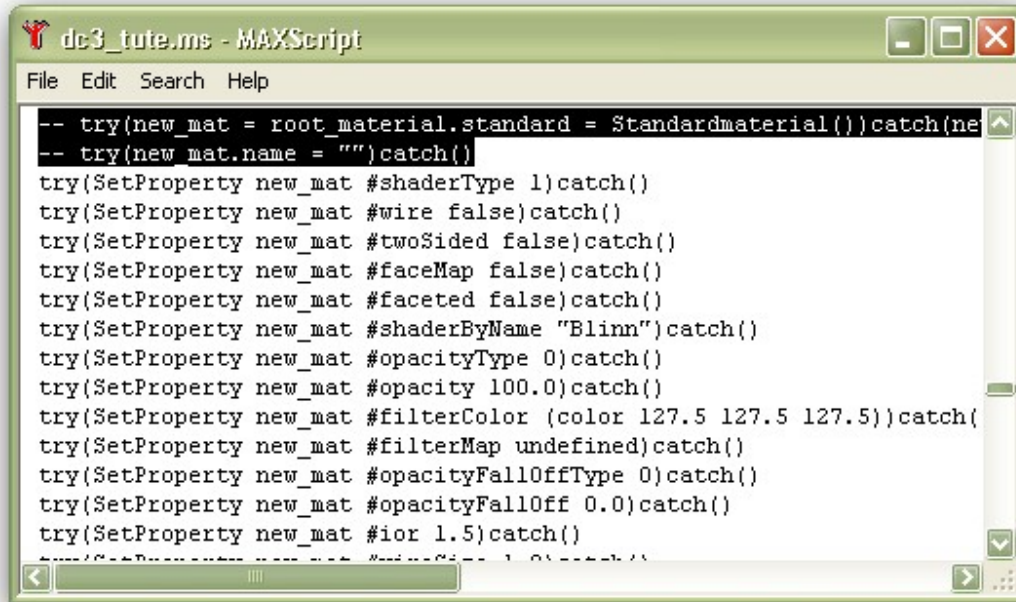
The MaxScript editor will appear highlighting where the error occurred.

A screenshot of a MAXScript editor window titled "dc3_tute.ms - MAXScript". The window has a menu bar with "File", "Edit", "Search", and "Help". The script content is as follows:

```
try(new_mat = root.material.standard = Standardmaterial())catch(new_mat
try(new_mat.name = "")catch()
try(SetProperty new_mat #shaderType 1)catch()
try(SetProperty new_mat #wire false)catch()
try(SetProperty new_mat #twoSided false)catch()
try(SetProperty new_mat #faceMap false)catch()
try(SetProperty new_mat #faceted false)catch()
try(SetProperty new_mat #shaderByName "Blinn")catch()
try(SetProperty new_mat #opacityType 0)catch()
try(SetProperty new_mat #opacity 100.0)catch()
try(SetProperty new_mat #filterColor (color 127.5 127.5 127.5))catch()
try(SetProperty new_mat #filterMap undefined)catch()
try(SetProperty new_mat #opacityFallOffType 0)catch()
try(SetProperty new_mat #opacityFallOff 0.0)catch()
try(SetProperty new_mat #ior 1.5)catch()
try(SetProperty new_mat #wireSize 1.0)catch()
try(SetProperty new_mat #wireUnits 0)catch()
```

The line `try(new_mat.name = "")catch()` is highlighted in black, indicating the location of the error.

Rem the highlighted line out and the one before it using a double minus (-- Is a remark in MAXScript) close the debug window and click Yes to save the file and try again.



```
dc3_tute.ms - MAXScript
File Edit Search Help
-- try(new_mat = root_material.standard = Standardmaterial())catch(new
-- try(new_mat.name = "")catch()
try(SetProperty new_mat #shaderType 1)catch()
try(SetProperty new_mat #wire false)catch()
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try(SetProperty new_mat #shaderByName "Blinn")catch()
try(SetProperty new_mat #opacityType 0)catch()
try(SetProperty new_mat #opacity 100.0)catch()
try(SetProperty new_mat #filterColor (color 127.5 127.5 127.5))catch(
try(SetProperty new_mat #filterMap undefined)catch()
try(SetProperty new_mat #opacityFallOffType 0)catch()
try(SetProperty new_mat #opacityFallOff 0.0)catch()
try(SetProperty new_mat #ior 1.5)catch()
try(SetProperty new_mat #wireSize 1)catch()
```

Repeat until the script runs through without complaint, which may take some time if you have a lot of materials.

The quick and destructive way (My Preference)

The offending lines in FSX non Multi-Materials will look like this;

```
try(new_mat = root_material.standard = Standardmaterial())catch(new_mat =
root_material.standard = Standardmaterial())
try(new_mat.name = "")catch()
```

With a good text editor (not Word Processor) you can do a search and replace to either remove the offending lines or replace with the 'Remmed' out version. If you haven't got FSX Multi-materials set up this will most likely have done the job completely which was true of the DC3 external model.

Re-run the script, repeat if necessary which it WILL be if you have Multi-Materials set up and follow this same procedure on the offending lines.

As far as I can tell the problem is caused because the gMax/Max Standard Material is encapsulated within the FSX Material definition and gMax or the script do not know how to handle that. The downside is through hacking the script this way the 'Standard' parameters of

the material will have to be re-created manually to restore them completely but at least the FSX specific stuff will be intact.

When the import script has completed save your file in native gMax format first of all. It's a lot quicker loading a gMax file than it is rebuilding all that mesh...again albeit even though the script will now parse completely. Go check your Material editor see if everything is OK there (You will need to 'turn on' all your materials before they appear in the viewports.

That was easy huh?

Animations

The big one. The original BFF page states that it will successfully export Position, Rotation, and Scale animations PROVIDED that they have been assigned TCB controllers, however in my experience they still do not work. Also even if they did that is only half the story, because newer versions of MAX handle co-ordinates differently than gMax, particularly rotations you will find that some animated parts have literally 'flipped' and maybe scattered all-over your scene. For this reason during this exercise I exported firstly without animations set in BFF's export preferences, then exported another version with animations set. ALL animated parts were checked for X,Y, Z co-ordinate integrity against the original Max version and on the un-animated import EVERY part was found to be in its correct position with it's pivot in the correct place.

To provide greater convenience to those likely to use the model, in the case of the DC3 I re-created the Hierarchy nodes (Dummy Objects) as well as the Bone animations afresh within gMax. The recreation of the hierarchy structure was a precaution against any scaling errors being produced within gMax and probably not necessary, however the Bones were re-created as they had been converted to eMesh objects and as well as losing the convenience of being able to make them disappear through the gMax display settings, all the vertex weights had been lost in translation and had to be re weighted using gMax methods.

I saved a scene comprising just these 'new' helper objects and Bones then merged in all the imported geometry.

Nearly all the animations were re-created manually by merging in the animated parts a few at a time, with controllers and key frames intact and checking for position and rotation against the original and correcting where necessary, and assigning the appropriate animations via the animation tool.

Summary

The entire conversion process of the exterior and interior of the Max FSX SDK DC3 example took a little over 15 hours completion time in total, bearing in mind no-one has made gMax versions available yet I guess this was a successful exercise. So, as long winded as this explanation seems, BFF is a very practical tool for the Max modeler wishing to get their creations into gMax for whatever reason.

Also bear in mind, that the exercise would be a big ask for any tool and exposed many issues that one would be unlikely to encounter in practical usage. For example material libraries quickly spawn among developers and teams, so the import of a material becomes less likely with time as you already have a 'killer' recipe for cockpit Perspex precluding the need to import a big list of materials. Normally I use the script, and have been using the old one for quite some time, whilst developing and I'm only exporting a few parts at a time and can cater for its shortcomings, and its been doing the job admirably this newer version is even better, and quicker.

I hope its of use to some of you who were previously unaware of the script. And hopefully many of the talented gMaxer's out there can now uncover some of the FSX 'mysteries' with the now available SDK example 'Gooney Bird'.

Here are the file properties for the converted exterior.

