

GMAX: Anti-Aliasing Render + Post processing

A tutorial for more refined render results for filigree models

This tutorial gives a detailed and clear overview how to utilize the anti-aliasing script for GMAX to render models with very delicate details and receive a better looking result in SC4. It is written for advanced modelers who know how to use GMAX and are able to produce sc4models.

The Problem:

I realized that when modelling ships with very fine rigging, the thin lines that are rendered against the environment look very fat when zooming out in the game. After speaking with some of the graphics/gmax/modelling experts from our community this effect appears to be caused by the fact that the game is not really capable of displaying a high level of detail when zooming out because it is unclear how to colour the limited number of pixels to display such detail.

The picture below gives a great example for the effect described above:¹

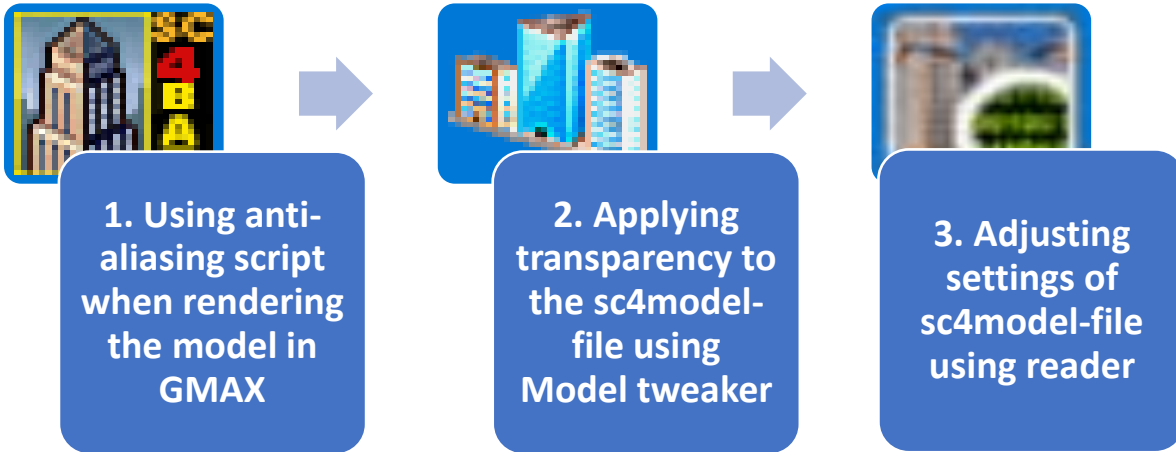
The model on the top is rendered with the standard [GMAX HD script](#) and when zooming out the rigging and antenna cables turn into a big smudge.

The bottom model has been rendered utilizing an anti-aliasing script and applying some post processing steps afterwards.



¹ All screenshots in this tutorial come from a historic sc4 project and any ship flags have solely historic purpose and do not reflect political opinions. They are showcasing the episode of the 1890s-1920s in Europe and do not contain any prohibited symbols.

The Process:



To get the full benefit of this step it is necessary to apply “transparency” to the sc4model file using tweaker. This step of the process does however create an invisible box around the model that blocks effects in the game. Therefore, a setting of the FSH files in the sc4model-file needs adjustment. [The step of applying the changes to the FSH files can be quite time consuming, since larger models can have hundreds of these files that need manual amendment.](#) Through a collaboration in the simtropolis community this last step could be automated and the tutorial has been updated including this method.

The following picture showcases the different stages of this process:



- 0. upper left: standard GMAX HD render
- 1. right: render with anti-aliasing script
- 2. lower left: render with anti-aliasing script and applying model tweaker transparency



Invisible boxes that appear in the game blocking effects like dust (from plopping and demolishing) or waves and ripple effects. These boxes need to be fixed.

The implementation:

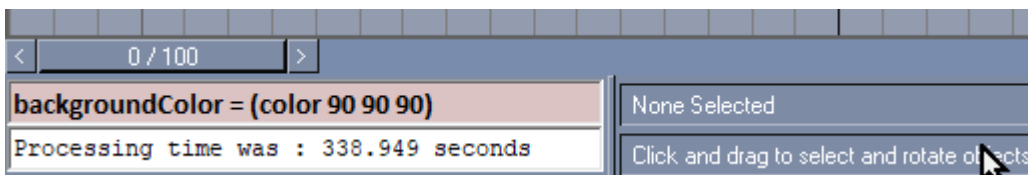
1. To run the anti-aliasing script in GMAX you have to replace the BuildingMill script in your *gmax/gamepacks/BAT/scripts/* folder. The script can be downloaded here:



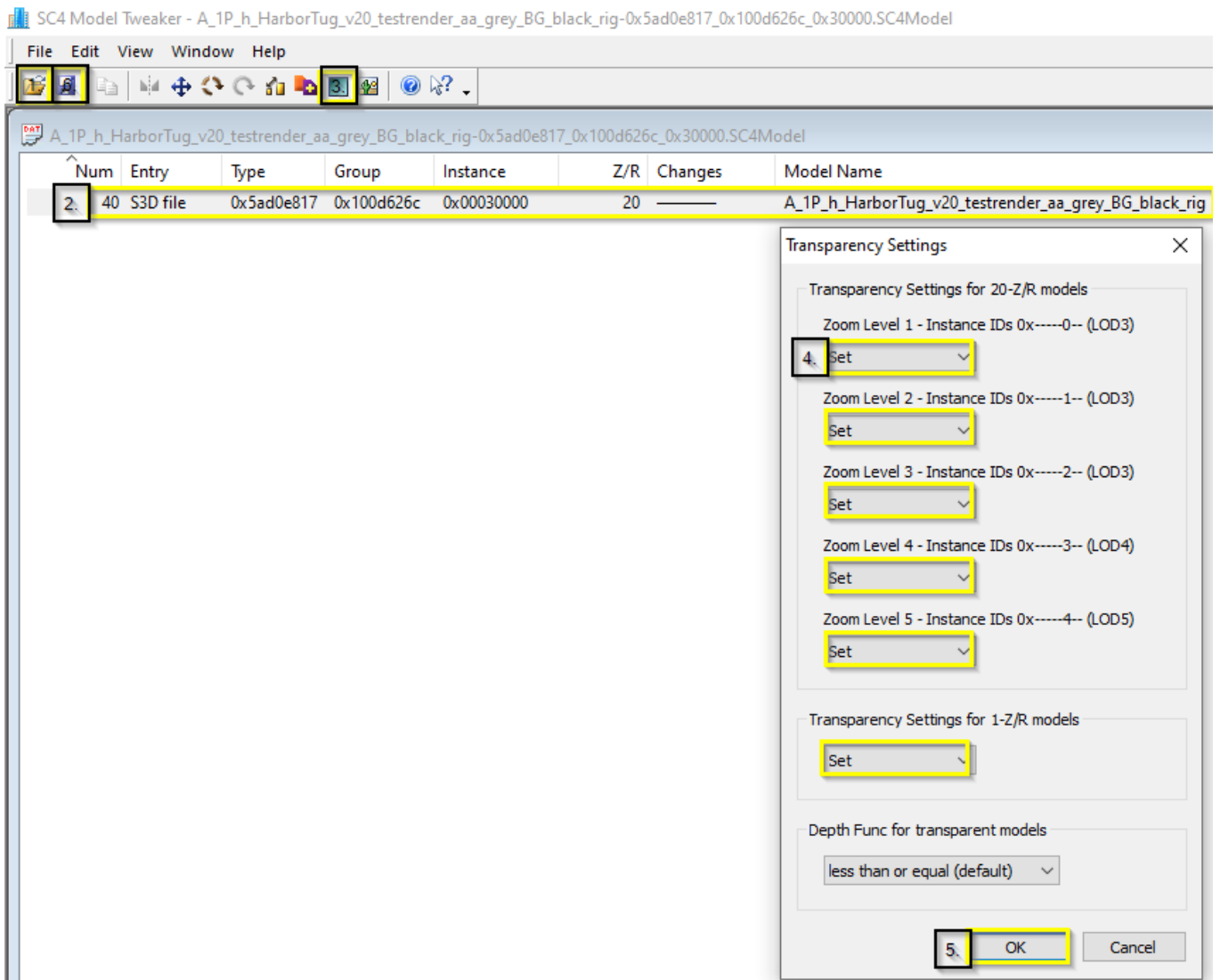
It is advisable to keep a copy of the original script and follow the instructions on the forum post where you can download the file.

Before rendering it is suggested to turn the render background into a medium grey. To do so you can enter the following in the command line (lower left) in GMAX and confirm with **enter**:

backgroundColor = (color 90 90 90)



2. To apply transparency to the sc4model that has been created this way you have to open the sc4model-file that should have been created in your plugins folder with [cogeo's model tweaker](#).



- a. Open sc4-model file
- b. Select opened model
- c. Select **Transparency** (ALT+T)
- d. Select option **Set** for all zoom levels
- e. Confirm with **OK** (a confirmation box should pop up)
- f. Save the adjusted model file

3. To solve the issue of the invisible boxes the sc4model-file has to be opened in [ilive's reader](#) next.

3.1. Manual process

Here you see a large list of entries on the left. We care about the S3D files which hold the information about the FSH files. There is an S3D file for each direction and zoom level.

Entry	Com...	Filesize	Loca...	Num	Type	Group	Instance
S3D file	Y	695	96	0	5ad0e817	b105095f	00030400
FSH file	Y	7147	792	1	7ab50e44	b105095f	00030400
FSH file	Y	12379	7939	2	7ab50e44	b105095f	00030401
FSH file	Y	11854	20318	3	7ab50e44	b105095f	00030402
FSH file	Y	3188	32172	4	7ab50e44	b105095f	00030403
S3D file	Y	307	35359	5	5ad0e817	b105095f	00030100
FSH file	Y	372	35668	6	7ab50e44	b105095f	00030100
S3D file	Y	862	36038	7	5ad0e817	b105095f	00030410
FSH file	Y	8239	36904	8	7ab50e44	b105095f	00030410
FSH file	Y	187	45143	9	7ab50e44	b105095f	00030411
FSH file	Y	18251	45330	10	7ab50e44	b105095f	00030412
FSH file	Y	187	63581	11	7ab50e44	b105095f	00030413
S3D file	Y	306	63764	12	5ad0e817	b105095f	00030110
FSH file	Y	292	64075	13	7ab50e44	b105095f	00030110
FSH file	Y	187	64367	14	7ab50e44	b105095f	00030414
S3D file	Y	698	64549	15	5ad0e817	b105095f	00030420
FSH file	Y	10795	65256	16	7ab50e44	b105095f	00030420
FSH file	Y	8600	76051	17	7ab50e44	b105095f	00030421
FSH file	Y	11401	84651	18	7ab50e44	b105095f	00030422
FSH file	Y	3752	96052	19	7ab50e44	b105095f	00030423
S3D file	Y	317	99795	20	5ad0e817	b105095f	00030120
FSH file	Y	364	1001...	21	7ab50e44	b105095f	00030120
S3D file	Y	749	1004...	22	5ad0e817	b105095f	00030430
FSH file	Y	9406	1012...	23	7ab50e44	b105095f	00030430
FSH file	Y	187	1106...	24	7ab50e44	b105095f	00030431
FSH file	Y	18418	1108...	25	7ab50e44	b105095f	00030432
FSH file	Y	187	1292...	26	7ab50e44	b105095f	00030433
S3D file	Y	310	1294...	27	5ad0e817	b105095f	00030130
FSH file	Y	318	1297...	28	7ab50e44	b105095f	00030130
S3D file	Y	327	1300...	29	5ad0e817	b105095f	00030200
FSH file	Y	916	1303...	30	7ab50e44	b105095f	00030200
S3D file	Y	324	1312...	31	5ad0e817	b105095f	00030210
FSH file	Y	709	1315...	32	7ab50e44	b105095f	00030210
S3D file	Y	329	1323...	33	5ad0e817	b105095f	00030220
FSH file	Y	881	1326...	34	7ab50e44	b105095f	00030220
S3D file	Y	326	1335...	35	5ad0e817	b105095f	00030230
FSH file	Y	751	1338...	36	7ab50e44	b105095f	00030230
S3D file	Y	330	1346...	37	5ad0e817	b105095f	00030300
FSH file	Y	3116	1349...	38	7ab50e44	b105095f	00030300
S3D file	Y	303	1380...	39	5ad0e817	b105095f	00030000
FSH file	Y	214	1383...	40	7ab50e44	b105095f	00030000
JFIF file	Y	665	1385...	41	74807102	b105095f	00030000
JFIF file	Y	714	1392...	42	74807101	b105095f	00030000
BMP file	Y	382	1399...	43	66778002	b105095f	00030000
BMP file	Y	386	1403...	44	66778001	b105095f	00030000
XML file	N	279	1407...	45	88777601	b105095f	00030000
S3D file	Y	327	1410...	46	5ad0e817	b105095f	00030310
FSH file	Y	2463	1413...	47	7ab50e44	b105095f	00030310
DIR file	N	912	1438...	48	e86b1eef	e86b1eef	286b1f03
S3D file	Y	305	1447...	49	5ad0e817	b105095f	00030010
FSH file	Y	171	1450...	50	7ab50e44	b105095f	00030010
S3D file	Y	329	1451...	51	5ad0e817	b105095f	00030320
FSH file	Y	3112	1455...	52	7ab50e44	b105095f	00030320
S3D file	Y	321	1486...	53	5ad0e817	b105095f	00030020
FSH file	Y	188	1489...	54	7ab50e44	b105095f	00030020
S3D file	Y	328	1491...	55	5ad0e817	b105095f	00030330
FSH file	Y	2628	1494...	56	7ab50e44	b105095f	00030330
S3D file	Y	310	1520...	57	5ad0e817	b105095f	00030030
FSH file	Y	163	1524...	58	7ab50e44	b105095f	00030030

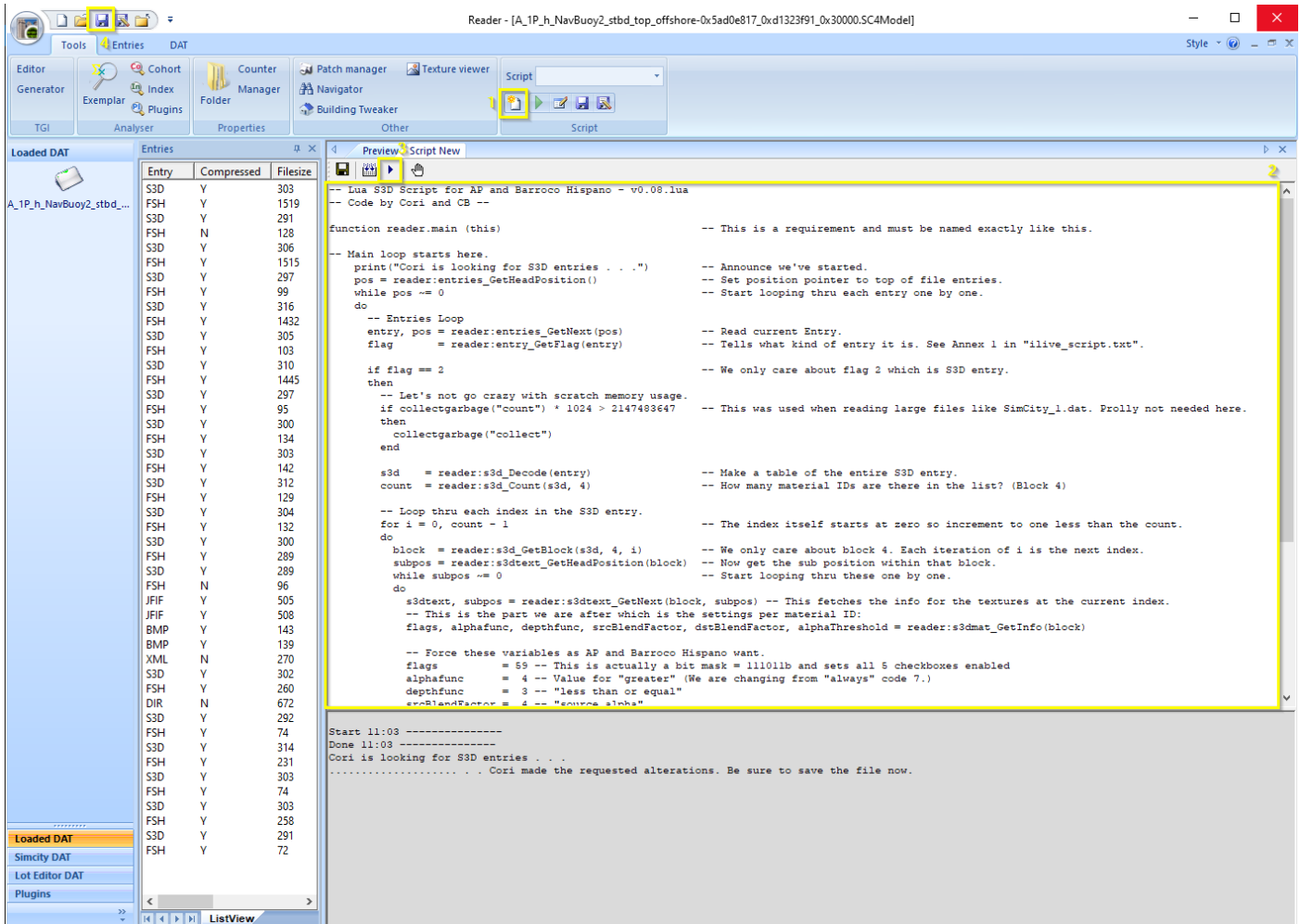
The screenshot shows a software interface with a file list on the left and a material settings panel on the right. The file list contains many S3D and FSH files. The material settings panel shows 'Mats 2' selected, with a table of materials. The 'Alpha Func' dropdown is set to 'greater'. The 'Apply' button is highlighted.

- Select the S3D file on the left (You will need to go through EVERY S3D file in this list)
- Select the **Mats** tab on the upper right
- Select the first entry in the **Mats** tab
- Set the **Alpha Func** value to *greater* (You need to repeat 3. and 4. for every entry in the Mats list)
- Klick **apply** on the top after you adjusted each entry in the **Mats** tab (continue with the next S3D file in the list on the left) The Mats tabs of different S3D files may contain a different number of entries, depending on the size of the model, the further out the zoom level, the less entries.
- Save the sc4model file (not in this screenshot)

3.2. Automated Process

Cyclone Boom and CorinaMarie kindly invested time to create a LUA script that automates step 3.1. More info about the development of this script can be found [here](#).

To use the script the sc4model has to be opened in [Reader 1.5.4](#). The script can be found [here](#): [Lua S3D Script for AP and Barroco Hispano - v0.08.lua](#). (There is an alternative method of leaving zoom 1&2 unchanged, for this please follow the instructions given in the linked forum post, do not apply transparency to Z1 and Z2 (as per step 2) and use [Lua S3D Script for AP and Barroco Hispano - v0.09.lua](#).)



- a. Once the model file is opened click the **New Script** button
- b. Insert the code in the textbox
- c. run the script
- d. Save the sc4 model file.

Now the model is finished and you should have very refined looking details in SC4!

Dedication:

This tutorial could be created after a lot of discussions with community members, personal messages and [forum posts](#). The knowledge has not been acquired by me alone but through collaboration with others. I simply took some time to document these results and explain the process to enable more modelers to use this technique.

I would like to specifically mention and thank *Barroco Hispano* and *mattb325* for their expertise and support.

I may not be aware of all people who were involved developing these scripts and methods, so I apologize to anyone I forgot to mention here.

Barroco has used this technique or a similar one with 3dsMAX scripts for a while, that's why I personally call it *The Barroco Method*.

I would like to thank *Dreadnought* who is in a continuous collaboration with and supports me with advice and encouragement!

Finally, a big thank you to *Cyclone Boom* and *CorinaMarie* who took on the task of automating the tedious process step of amending the FSH files in the post processing.