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This is meant as a hobby project and NOT for making profit or any kind of money!

Introduction

Thank you for downloading my Warcraft III Reforged Tools for 3D Studio Max.

System requirements

You must have a valid 3D Studio Max 2011 or above license, student license or trial license. The scripts have been created with 3D Studio Max 2016 on a Windows 10 Pro x64 (19042.804 build) and tested up to 3D Studio Max version 2020.

Note:

this is a work in progress and is not officially supported by Blizzard. Check the [github](#) page often for updates!

Installation

Installation

Installation

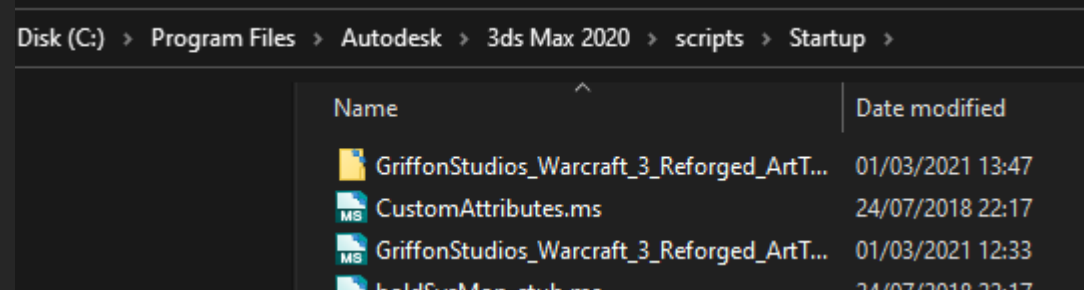
Download the latest scripts from my github page: [Taylor Mouse's Github Page](#)

You can download everything, or just the scripts you need for WC3Reforged.

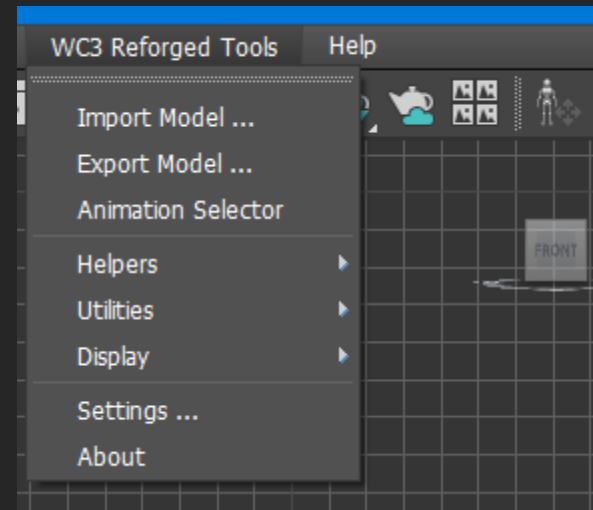
You need at least the **GriffonStudios_Warcraft_3_Reforged_Tools** folder (and content) and then **GriffonStudios_Warcraft_3_Reforged_Tools.ms** script.

Once downloaded, copy the .ms file and the folder in your scripts/Startup folder of 3D Studio Max.

Example Max 2016:



Run 3D Studio Max and an additional Menu will be available.



Tools & Plugins

Tool & Plugin Description

- Import Model
- Export Model
- Animation Selector
- Helpers
 - Ribbon
 - Event
 - Face FX
 - Attachment
 - Particle Emitter
 - Popcorn FX
- Utilities
 - NOTE: utilities only possible if the official Starcraft II Art Tools are installed (Max 2011 & Max 2016)
 - Reset Animation Tracks
- Display
 - Collapse Hit Tests
 - Expand Hit Tests
 - Collapse Attachment Points
 - Expand Attachment Points
- Settings
- Warcraft 3 Reforged Standard Material

Each of these tools & plugins are described next

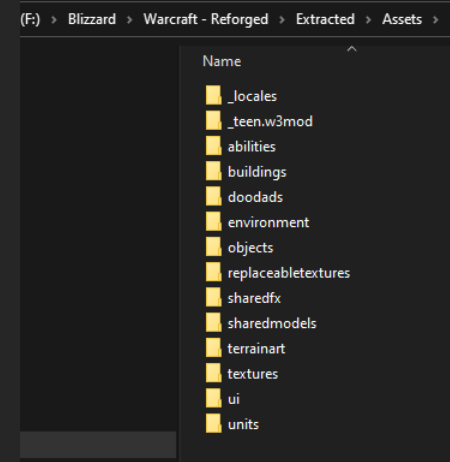
Settings

Make sure you extracted all the assets from the game. To achieve this, I use the Casc Storage Explorer.

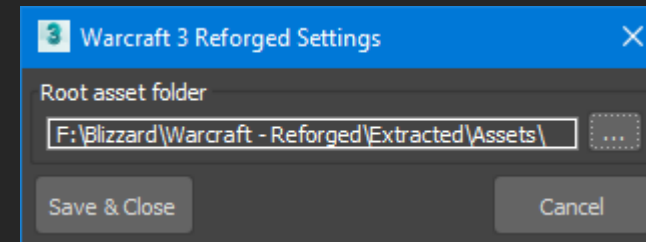


[Download Casc Storage Explorer](#)

The export folder looks like this and is essential to import everything correctly in 3DS Max.



Open the Settings from the menu and select the assets folder where you exported everything:



Note: this step is only required once

Import model

Select Import model ... from then menu.

Select the mdx file you want to import by pressing the ellipsoid button (...)

LOD's:

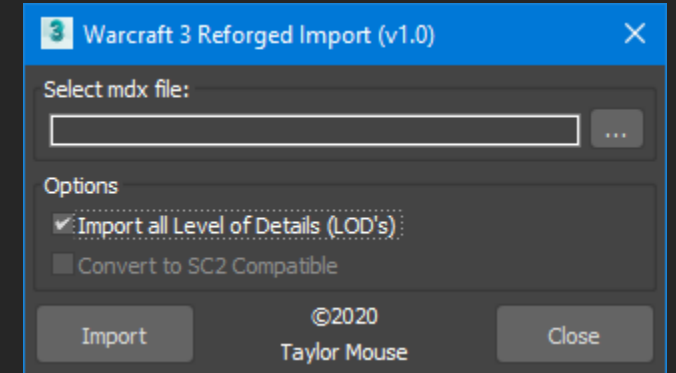
By default this is not checked, almost all models have different Level of Details in the model. This could take some time to import, so you can uncheck if you prefer not to import them.

Convert to SC2 Compatible

If the purpose is to export it later to Starcraft II using the Art Tools, you need a valid version of Max with the Art Tools installed. If they are not available, the checkbox is disabled else check or uncheck it.

Import

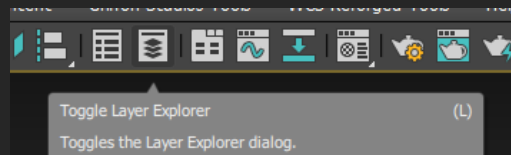
Imports the selected model, if any error may occur, please let me know. You can also open the listener (F11) and take a look what the error is.



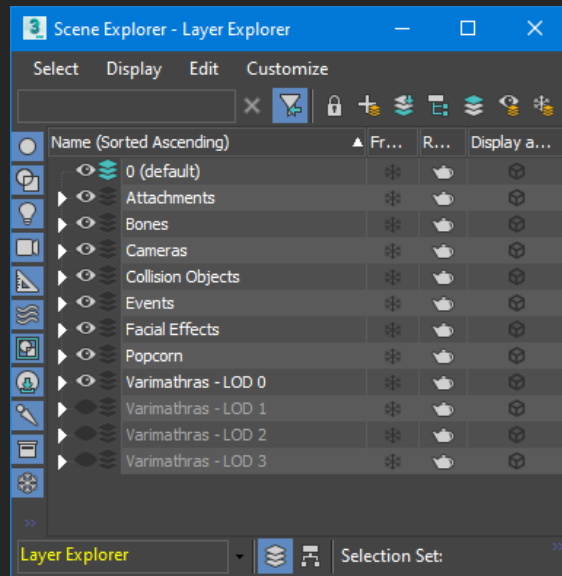
Example import

If everything went well, Varimathras.mdx looks like this

Go to the Layer Manager to turn them on or off for better visualizing the model.

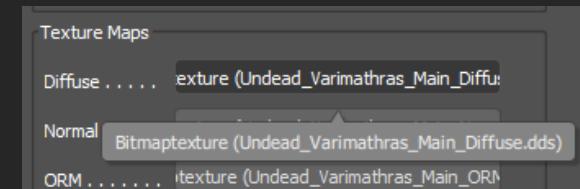
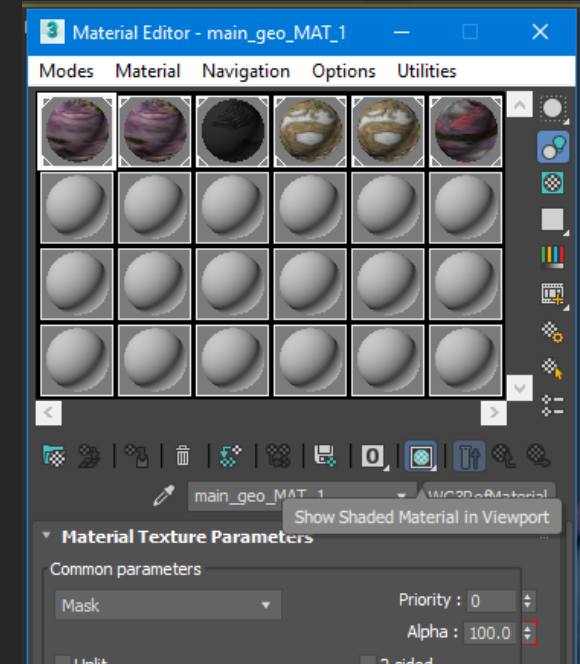


I mapped it to the (L) hotkey.



Issues after import

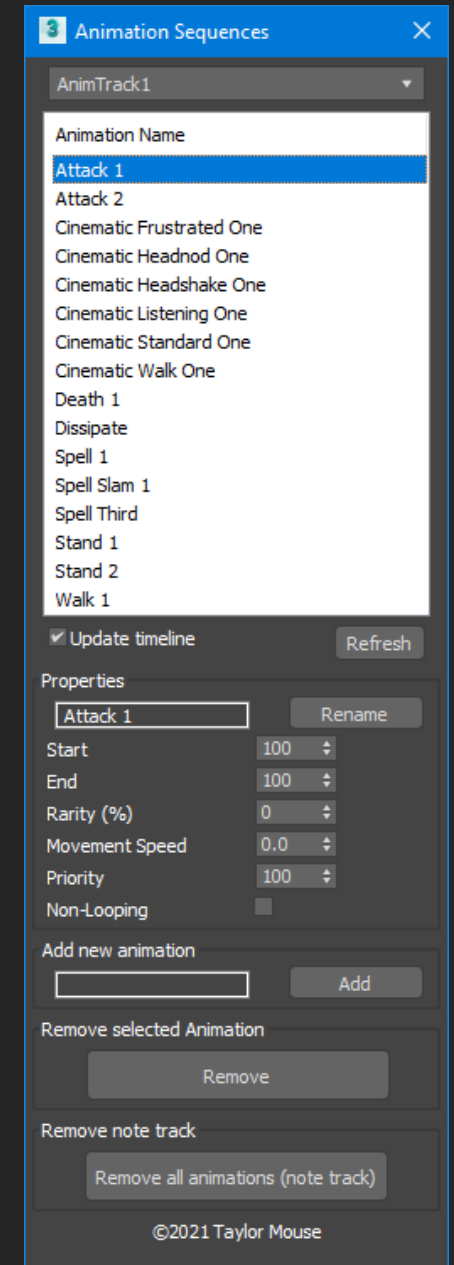
- No textures are shown
 - Open the material editor (shortcut M)
 - If this is the Slate Material Editor, you can change the Mode to Compact in the Modes menu.
 - Check the “Show Shaded Material in Viewport”
- Still no textures are showing
 - Press the Diffuse Texture Map, then select the bitmap, finally select the texture that is required (usually pressing tab does the trick)



Animation Selector

- Open the Animation Selector from the WC3 Reforged Tools menu
- Animation Tracks
 - Some models have overlapping animation sequences, they can be found in the Animation Tracks drop down. (Varimathras has 2)
- Update timeline
 - When this is checked the animation track bar at the bottom will be adjusted to the correct start and end frame of the animation sequence
- Refresh
 - Refreshes the list of animations
- Rename
 - You can change the name of the animation by first selecting it, changing the name, and pressing the Rename button
- Properties
 - After selecting an Animation, it will fill the properties, changing them will update these properties
- Add New Animation
 - Fill in the properties, and a name for the new animation, then press the add button
- Remove selected animation
 - This removes the selected animation, but NOT the keys and frames of the animated objects in the scene
- Remove note track
 - Removes ALL animations and animation note tracks, does NOT remove the keys and animations of the animated objects

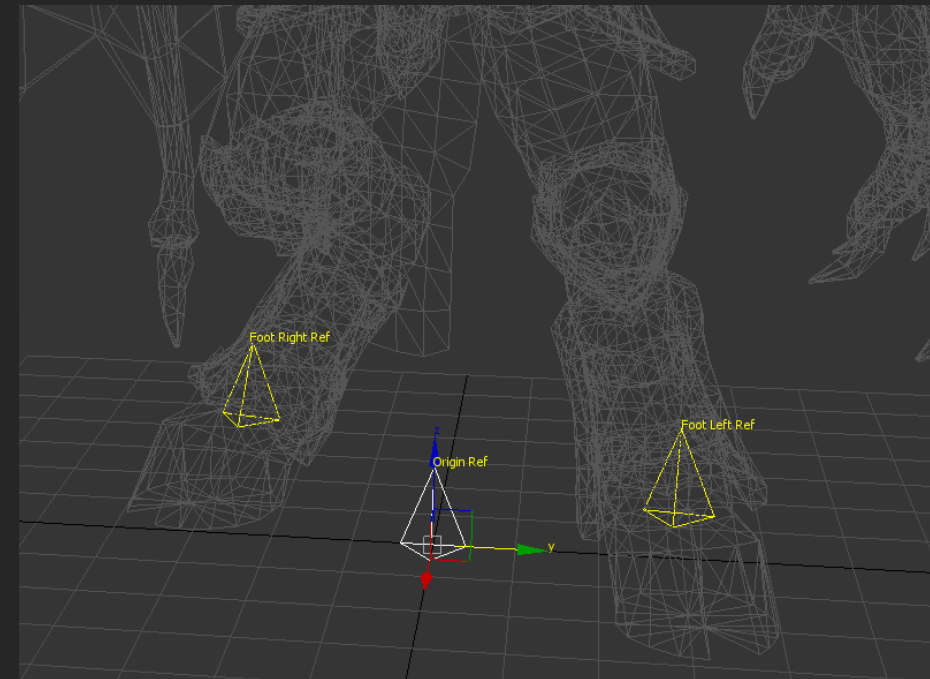
NOTE: the sequence animations are set up to be compatible with SC2 notes, so the Animation selector can be used for Starcraft II as well.



Attachments

- Go to WC3 Reforged Tools -> Helpers menu and select Create Attachment
- An attachment will be created in the scene at position [0,0,0]
- Select it and rename it
- No additional properties are required
- An attachment cannot be animated, to animate it, create a separate bone for it and link the attachment to the bone using the “Select and link” tool in 3DS Max.
- Please refer to the official Warcraft III Art Tools documentation.pdf page 22 (Appendix B) for a full list of supported names
- Example from the Varimathras model

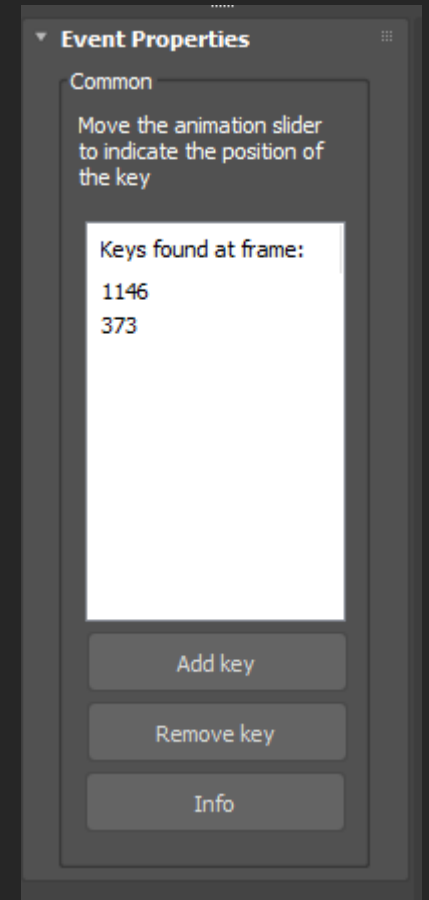
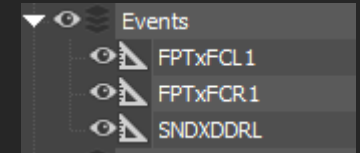
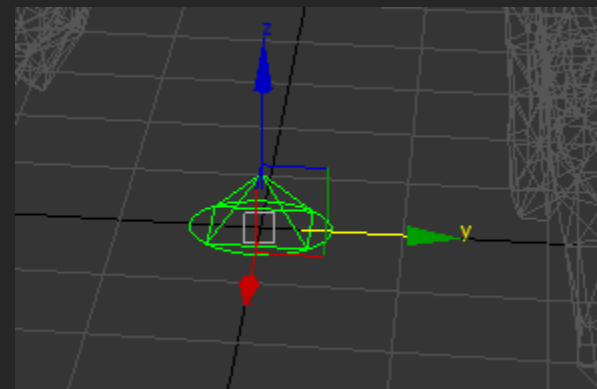
Name (Sorted Ascending)	▲ Fr...	R...	Display as Box
0 (default)	☄	👑	📦
▼ Attachments	☄	👑	📦
Chest Ref	☄	👑	📦
Foot Left Ref	☄	👑	📦
Foot Right Ref	☄	👑	📦
Hand Left Ref	☄	👑	📦
Hand Right Ref	☄	👑	📦
Head Ref	☄	👑	📦
Origin Ref	☄	👑	📦
OverHead Ref	☄	👑	📦
Weapon Left Ref	☄	👑	📦
Weapon Right Ref	☄	👑	📦



Events

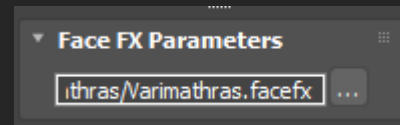
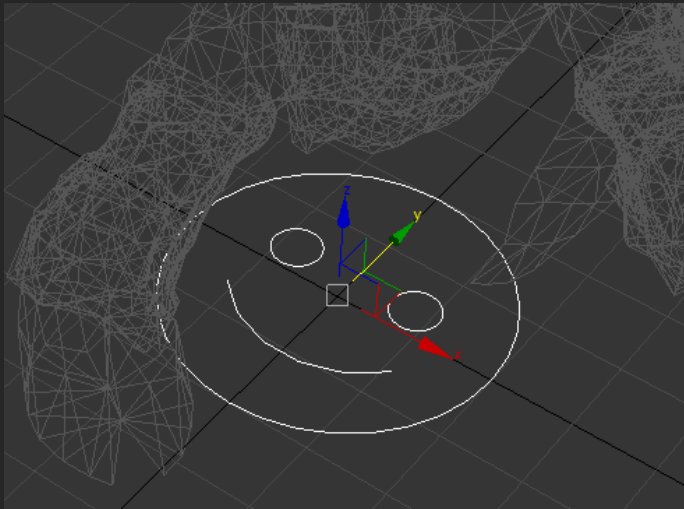
- Go to WC3 Reforged Tools -> Helpers menu and select Create Event
- An event object will be created in the scene at position [0,0,0]
- Select it and rename it
- Selecting the event brings up an additional property window where you can add the keys when the event will happen (when means, on what frame)
- Move the animation trackbar (at the bottom) to the required key and press the add key to add it in the list
- In the example, the FPTxFCL1 event is selected and has 2 keys (1146 & 373) at these frame, this event will happen.
- An event cannot be animated
- Please refer to the official Warcraft III Art Tools documentation.pdf
 - (Appendix C to F) for a full list of supported names

Footprints	FPTxyyyy	Appendix C
Blood splats	SPLxyyyy	Appendix C
Uber Splat	UBRxyyyy	Appendix D
Sound Events	SNDxyyyy	Appendix E
Spawn Objects	SPNxyyyy	Appendix F



Facial Effects (FX)

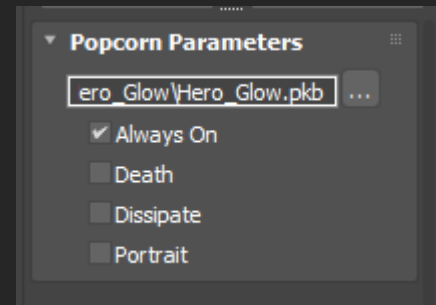
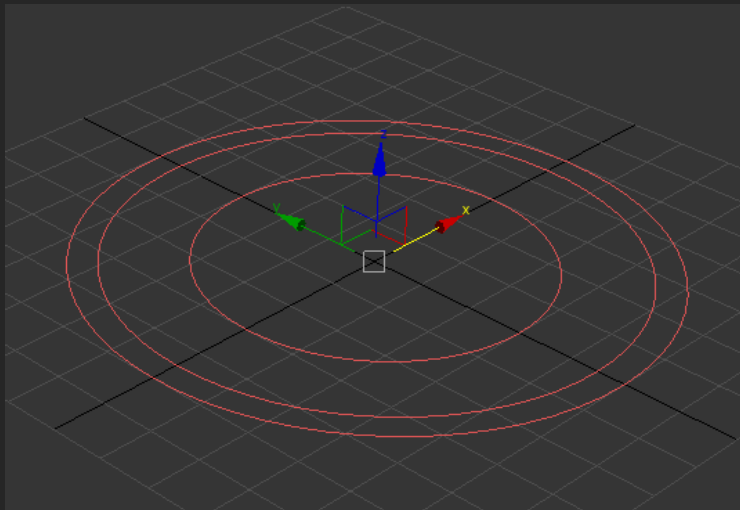
- Go to WC3 Reforged Tools -> Helpers menu and select Create Face FX
 - An WC3RefFaceFx object will be created in the scene at position [0,0,0]
 - It allows the usage of facial effects of the model. However it is nothing more than a reference to the .facefx file
 - Usually only one .facefx file is used and is called "Node"
-
- In 3DS Max the FaceFX plugin looks like a smiley with a parameter pointing to an external .facefx file



- NOTE: at the time of writing no research is done in unravelling the content of the file (probable contains animations linked to the facial bones)

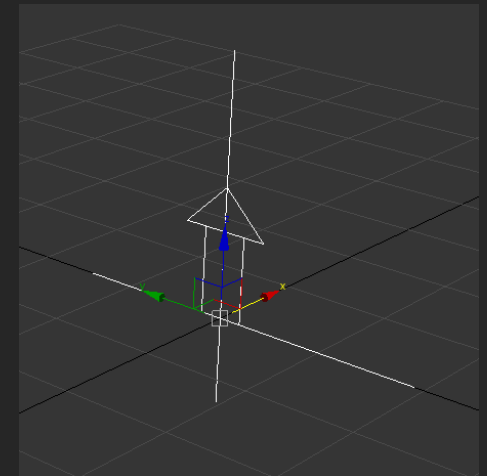
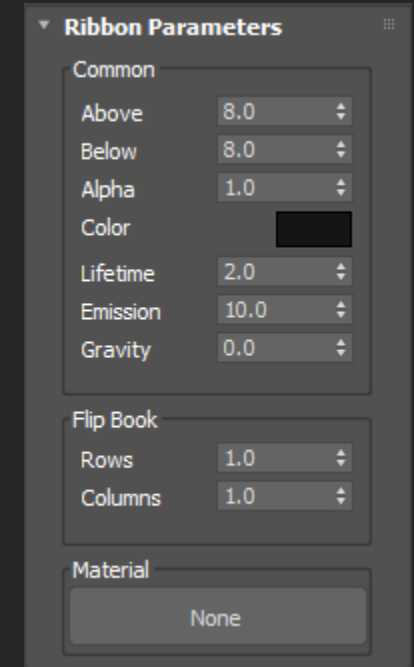
PopcornFX

- Popcorn FX is a multi platform real time effects solutions for particle effects.
- You can read more about it here: <https://www.popcornfx.com/>
- Although the website allows you to download their Editor, it is, at this moment, impossible to import the popcornfx files from WC3 Reforged.
- Go to WC3 Reforged Tools -> Helpers menu and select Create Popcorn FX
- A WC3RefPopCorn object will be created in the scene at position [0,0,0]
- You can animate the object's transform
- You can animate the object's visibility (on or off)
- The properties reference an external .pkb file and a property when to display the effect.



Ribbon Emitter

- Go to WC3 Reforged Tools -> Helpers menu and select Create Ribbon
- An attachment will be created in the scene at position [0,0,0]
- See the official Warcraft 3 Art Tools Documentation.pdf for detailed description
- Parameters
 - Above & Below: define the width of the object, above and below the center of the object.
 - Alpha: fixed alpha value of the emitted particles
 - Color: fixed color of the emitted particles
 - Lifetime: number of seconds the particle stays alive (Edge Life)
 - Emission: number of particles that are emitted in total (Edges/sec)
 - Gravity: sink or raise the particles additionally
 - Flipbook Rows & Columns: using a texture that has a particle strip, identifying the number of rows and columns in the texture
 - Material: create a WC3 Standard Material first and select this to apply the material.



Particle Emitter

Particle Parameters

Shape

Height: 20.0

Width: 30.0

Color

Start Mid End

Mid Time: 0.0

Size

Start Mid End

0.0 0.0 0.0

Alpha

Start Mid End

0 0 0

Velocity

Speed: 0.0

Variation: 0.0

Spread: 0.0

Gravity: 0.0

Emission

Lifetime: 0.0

Emission rate: 0.0

Emitter Type

Normal

Flip book

Rows: 1

Columns: 1

Particle Options

Type: Tail

Tail length: 0.0

Texture Options

Blend mode: Opaque

Replacable Texture: None

Priority: 0

Lifespan Head UV

Start Mid End

0 0 0

Decay Head UV

Start Mid End

0 0 0

Lifespan Tail UV

Start Mid End

0 0 0

Decay Tail UV

Start Mid End

0 0 0

Flags

☐ Inherit Translation

☐ Inherit Scaling

☐ Inherit Rotation

☐ Billboard

☐ Lock X

☐ Lock Y

☐ Lock Z

☐ Bone Section

☐ Light Section

☐ Event Section

☐ Attachment Section

☐ Particle Section

☐ Hit Test Section

☐ Ribbon Section

☐ Project

☐ Unshaded

☐ Sort Z

☐ Line Emitter

☐ Unfogged

☐ Use Model Space

☐ Instant Velocity Line

☐ 0 x kill

☐ Z Direction Only

☐ Tumbler

☐ Tail Grows

☐ Inherit Particle Scale

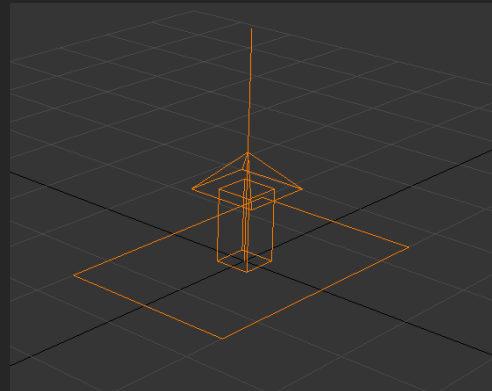
☐ Extrude

☐ XY Quads

☐ Particel Projection

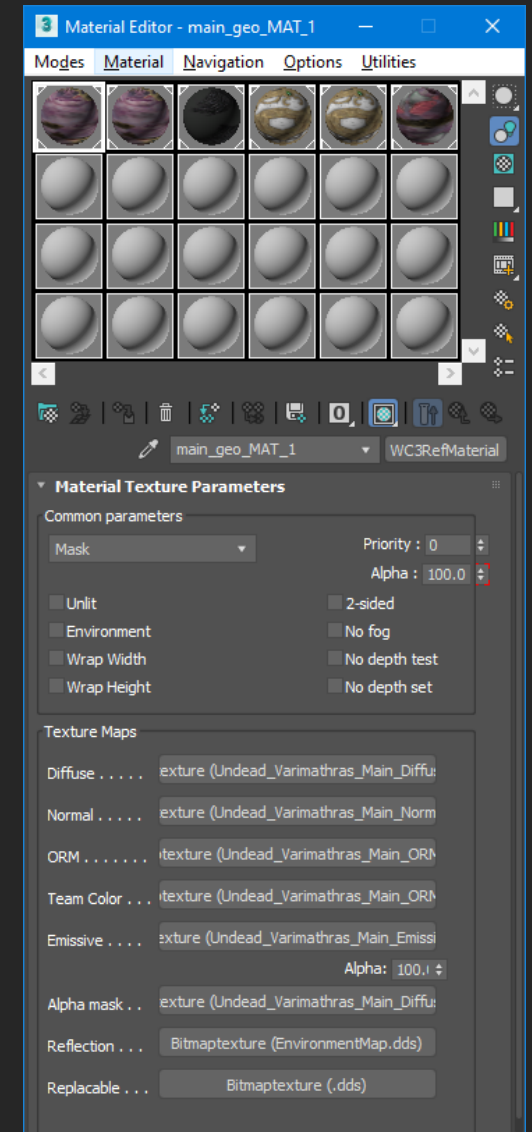
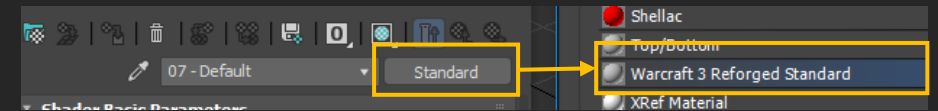
☐ Follow

- Go to WC3 Reforged Tools -> Helpers menu and select Create Particle Emitter
- An attachment will be created in the scene at position [0,0,0]
- See the official Warcraft 3 Art Tools Documentation.pdf for a full detailed description
 - (page 12 – 14)



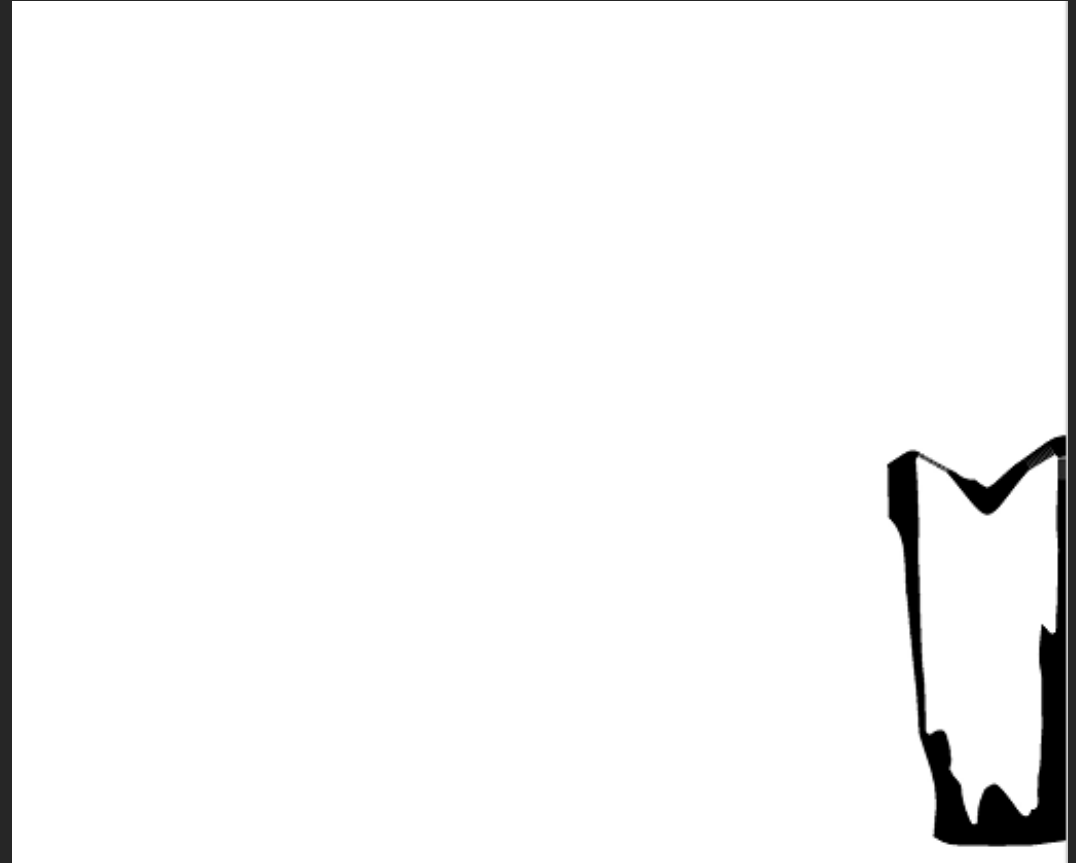
Material

- Open the Material editor (press M), select a material slot and change the Standard type to a Warcraft 3 Reforged Standard material
- Warcraft III Reforged supports PBR material (Physical Based Rendering)
- Parameters
 - Draw mode
 - **Opaque:** model is drawn solid
 - **Mask:** the transparent alpha mask map is used
 - **Blend:** depth set is turn off
 - **Add:** additive drawing, has a ghost effect mode
 - **BlendAdd:** both blend and additive is used
 - **Mod:** make the semi transparent darken the background, opacity has no effect
 - **Mod2x:** depth is turned off, no sort order error
 - **Unlit:** no light effect are used, giving a flat texture look
 - **2-sided:** backface culling is not used, drawing both sides of a polygon
 - **No fog:** model ignores the darkening of the distant fog
 - **No depth set:** the model's polygons are not written to the depth buffer
 - **No depth test:** the model's polygons will not test the sort order from the depth buffer
 - **Alpha:** can be animated to make the model transparent
 - **Priority:** prioritizes the writing to the depth buffer
 - **Wrap Width & Height:** allows texture tiling in the horizontal and vertical axis
 - **Environment:** specifies if the model is impacted by the reflection of the environment map
- This material is constructed of the following types of maps, each map type is explained in the next pages
 - Diffuse map (is more an albedo map)
 - Normal map
 - ORM map
 - Team Color map
 - Emissive map & Emissive Alpha (strength of the emission)
 - Alpha mask map
 - Reflection map
 - Replaceable map



Diffuse map

- The diffuse map (should be called albedo map) should not contain any light information, only color information
- The alpha channel contains the transparent information and is used in the Alpha Mask map
- DXT5 .dds image type (the texture shown, is just a piece of it, not the whole texture)



Normal map

- Note, this type of texture cannot be read by 3D Studio Max so first save it as a DXT1 .dds image, select it in max, then convert it to a ATI2N .dds image.
- Alpha channel is white
- Blue channel is white
- R & G are the channels used for the normal map
- If you want to create an empty normal map, take the rgb colors 128 128 255.



ORM Map

- The ORM map stands for occlusion roughness and metal reflection and the alpha channel holds the team color alpha map
- Use white for full metal reflection and black for no metal reflection.
- Use white for no shadow and black for full shadow in the ambient occlusion
- Use black for no roughness, white for full roughness, mostly this is grey'ish
- Use white for team color and black for no team color, in the diffuse map, keep the team color parts white
- DXT5 .dds image type

R channel : Ambient Occlusion



G channel : Roughness



B channel : metal reflection



A channel : team color



Team color map

- This slot uses the alpha of the selected texture, this is usually the ORM map (see previous page)
- If this slot is empty, no team color is used

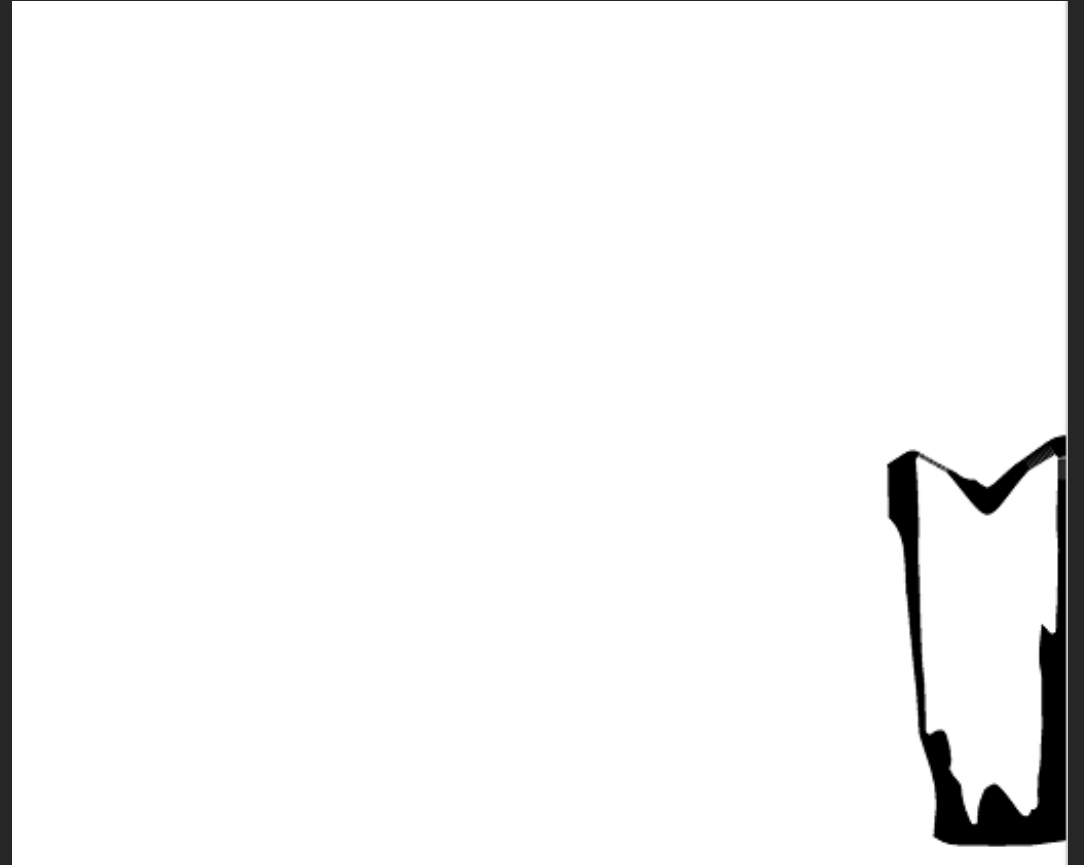
Emissive Map

- An emissive map is a texture that is used to make certain parts glow.
- This can be a color texture.
- The emissive alpha parameter is used to make it more or less glow.
- Example:
 - for Varimathras's pouldrons, there is a emissive map.
 - The black parts do not emit anything, where the green will give a nice glow in the game
- DXT1 .dds image type



Alpha mask map

- The alpha mask comes from the alpha layer of the diffuse map
- White -> everything is drawn
- Black -> nothing is drawn
- Everything in between has a cutoff alpha value of 16



Reflection map

- A reflection map is used to add as a reflection on the metal and roughness map
- It is a cubical or spherical map the emulates the surroundings
- For Warcraft III Reforged, the most common map used it's the EnvironmentMap.dds



Replaceable map

- Can be a specific color map used as a team color
 - Up till now, no map has been found in here and is always a specific type, which makes me believe it is not a map but a dropdown with specific values?
-
- Texture ID's
 - None
 - Team Color
 - Team Glow
 - Trees
-
- For more information about Replaceable texture ID's please see page 20 in the official Warcraft III Art Tools Documentation.pdf

Collision Objects

- These objects come in 2 flavors, boxes and spheres
- However I believe they are build using a capsule algorithm (height + radius) for the sake of saving space (2 floats max in stead of 6)
- The red one is the root collision object (always called that)
- The blues are the additional collision objects
- A collision object always starts with the prefix
 - B_KGS_
- There must always be ONE B_KGS_ROOT object
- These objects must be attached to a bone for export
 - In the mdx, these objects are not linked to a bone but have their own animation keys



Exporter

Appendix

Interesting url's

- [My Github page](#)
- [Official Starcrat II Art Tools](#)
- [SC2ArtTools2016.zip](#)
- [My Modded models](#)
- [Autodesk 3D Studio Max](#)
- [Casc Storage Explorer \(Required to open Blizzard archive game files\)](#)
- [Warcraft III Art Tools Documentation.pdf](#)