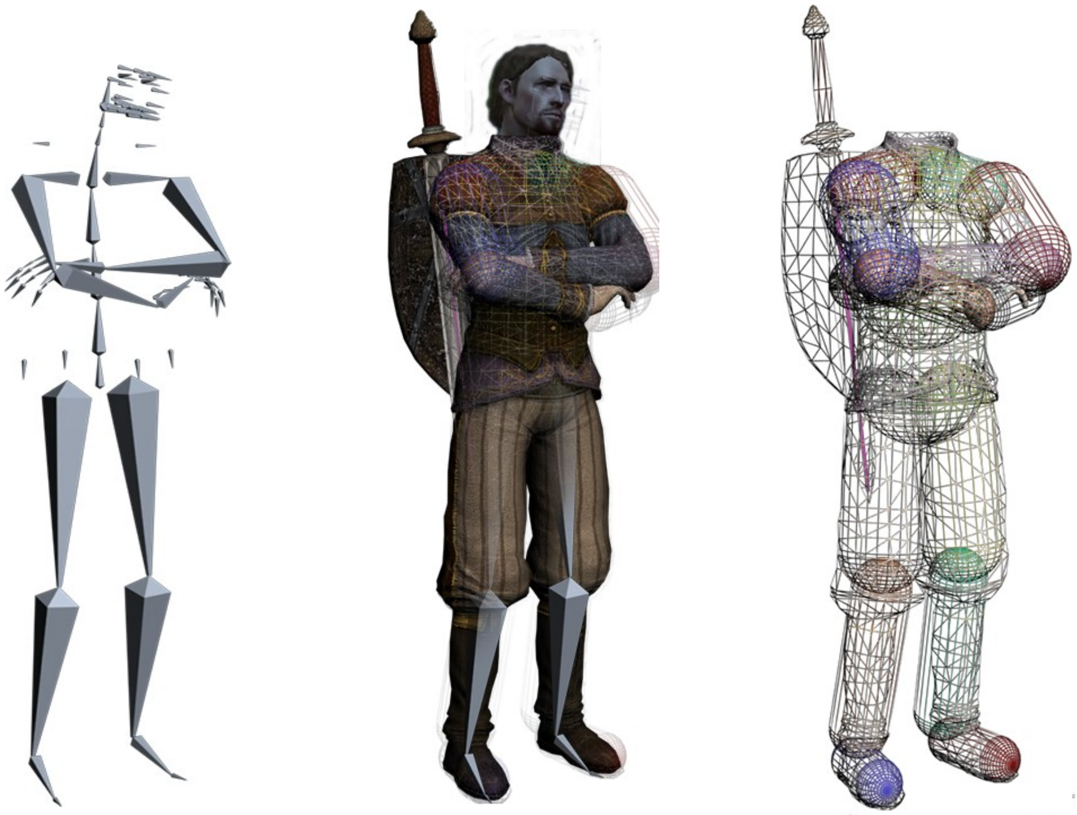
Model&Animation Import&Export

Version 5.38

(Script for 3DSmax and Gmax)

Manual

Author: Eshme



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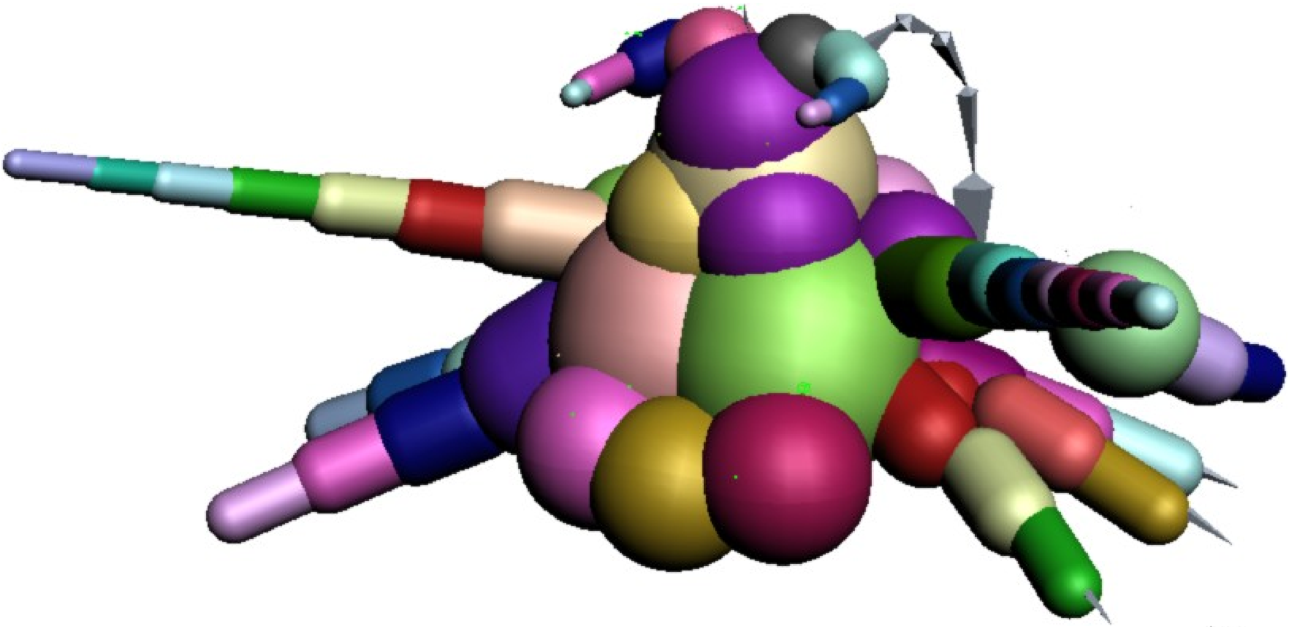


Introduction

This is a (sorta) complete package of maxscripts to do anything to make models and animation for the game Dragon Age. It can import and export Dragon Age models (MMH,...) and animation (ANI,..) files, enable you to edit raw properties and materials and such and practically u can create your own stuff with it as well.
Few key features are:

- **Model Import (MMH/MSH/MAO/PHY)**
- **Animation Import (ANI/GAD)**
- **Create Preset Skeletons**
- **Animation export from skeletal models**
- **Animation export from placables, or whatever comes to mind**
- **Creation of Additive Animations**
- **Makes GAD Animations of skeletal models**
  - **with "Entrance GAD" and "Following Height"**
- **Full automatic keyframing (and finecontrol over all tracks)**
- **Manage multiple Models in a Scene**
- **Scale Feature to work at reasonable sizes**
- **Custom Dragon Age Material Plugin to export with Materials**
- **etc..**

Installation and Uninstallation

Open the Archive with 7zip or Winrar or something similar.

Installation:

- **Copy the folders "startup" and "daotools" into ..\3dsmax\scripts or ..\gmax\scripts**
- **Restart 3DSmax or Gmax, when updating might need to do it twice**

For GMAX:

- **Install the 3rd party tool "YAGG" ,which is a listener grabber.**
- **Run it in "snoop" mode all times when using the exporter, or nothing will be saved. (That is Setup, UI, Export Settings and basically Export itself)**
- **Optionally download and install Niftools plugin to gain DDS texture support.** http://sourceforge.net/projects/niftools/files/max_plugins/

- **Add Menu Entries like this:**
  - ->Customize->Customize User Interface (will bring up the customization)
  - Switch to tab "Menus"
  - On the right side click „New“ and enter a name to the Menu. A empty Menu should be created.
  - On the left side choose category „DAOTools“ and drag these entries to the right side.
    - -"Dragon Age Animation Exporter"
    - -"Dragon Age Importer"
    - -"Dragon Age Model Exporter"
    - -"Dragon Age Model Manager"
    - -"Dragon Age Tools Setup"
  - Now switch to "Main Menu Bar" from the Dropdown List
  - Find your new Menu in the lower left , and drag it into a place of the Main Menu Bar.
- Now you start the exporter from the new Menu.

- **Or add a new Toolbutton like this:**
  - ->Customize->Customize User Interface (will bring up the customization)
  - Switch to tab „Toolbars“
  - On the right side click „New“ and enter a name to the Toolbar. A window should appear which is the new Toolbar.
  - On the left side choose category „DAOTools“
  - Click and drag the entries into the Toolbar
  - Drag and attach the Toolbar somewhere you like.
- Thats it. Click on the new buttons to start it up.

Huh..what??!

Deinstallation:

- Remove the Toolbar or Menu via „Customize User Interface“.
- Remove the Files you had copied.

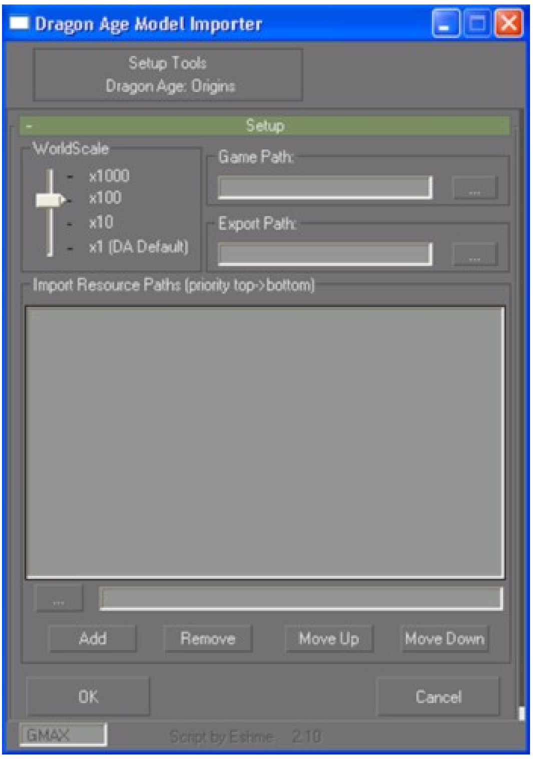
Setup

If you had installed the Scripts correctly, you would be greeted with a welcome message telling you of successful installation, leading you into the Setup for the first time. This is where you must enter the game path (ie ...\mygames\Dragon Age). This is for the Script to find Model and Animation processors to run. You need to have the Toolset installed for this.
Also you need to enter the output path for the Export. This is where all files are outputted to. This can be the override folder of your module for example.

The next most important thing is setting up the World Scale. The scale of Dragon Age Models is very very small. Almost unusable small ,you probably noticed already. This is the option to import them at a bigger size at a factor of 1 ,10, 100 or 1000. Whatever size fits your style. The exporter also takes care of this scale factor.

Once you have settled on a size you find comfortable, you may as well adjust the System Unit accordingly, because 3ds calculates many physic based stuff on System Units (gravity etc, if you need that). World Scale of 1 equals 1 Unit = 1 Meter, whereas 1000 equals 1 Unit = 1 Millimeter. After changing the System Units, you should always delete and reset your scene. That is why you do it first.

Note: You need to use the same scale during all import and export operations when working with a given Model. I for example always have it at 100 but your choice.



The 3rd part of Setup is the Resource Paths list. Here you can add any resource path that the Importer will read automatically while it is importing. For example the MSH may be in a Meshes folder, the MAO will be in Material folder, and DDS files will be in a texture folder. If you add these folders, you wont be queried by the importer to locate them manually.

Additionally you can arrange the Paths in priorities. Where the top entries have the highest priority, those will get read first and searched for the files. For whatever reason there may be the same files in different versions in multiple folders.

Importer

With this you can import Models, Animation, create 2 Skeleton Presets. And you can merge multipart Models, much in the same way the game merges them. For stuff to import, you need to extract the Resources from the Game first.

Resources are located in ERF files in the Games Data folders. To extract them, u can use the Toolset itself. Some filetypes are in these ERF's:

MMH / PHY: "modelhierarchies.erf"
MSH : "modelmeshdata.erf"
MAO: "materialobjects.erf"
DDS: "textures.erf"
ANI / GAD: "anims.erf" etc..

Model Import

The first thing to do here is selecting a MMH File to import. Either type it into the file field or pick one with the „...“ button. The MMH is being validated and the import button enabled if it is a proper file. Click on the import button and a new model will be placed into the scene ,and resized according to the worldscale setting.

By default, a new "Game Object" root node is being created, initially it will be the original „GOB“, further imports will create renamed skeletons to allow for multiple models in a scene. This is for example "GOB_Secondary01". This is to satisfy the requirement for unique object names, and will be stripped away again when exporting.

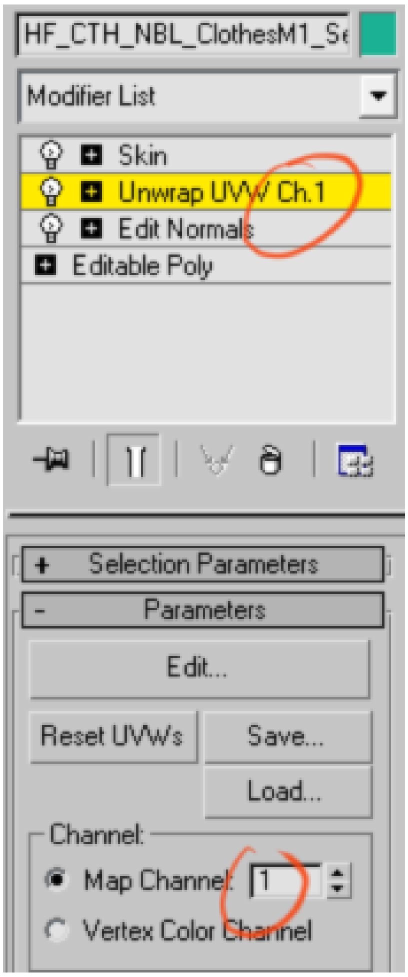
If you want to import multipart models, you can click the „Merge with selected“ checkbox, and the new model will be merged with what you have selected in the list. This is to simulate how the game merges multipart models. You can basically recreate a full armorsuit, but the skeleton needs to the same. This is how it worked in Version 2 and 3.

You have the option to disable mesh and collision import, what all models typically consist of. This is to speed up importing ,if you dont need those and only want to make animations. But it can break the hierarchy otherwise, and would result in unparented nodes if a node was depending on either. This function is pretty much equal as if you had deleted the meshes or collision afterwards manually. If unparented nodes are left over, you need to see but likely you dont need them for Animation anyway.

The MMH is what has all the Information on required data files, but it doesnt know where those are on your PC. During import you are repeatedly asked to locate files. You can speed this up by adding needed resource directories to the „Resource Path“ Setup dialog.

A list of stuff that is being Imported:

- Nodes
    - Model Root Game Object (GOB)
    - Bones
    - Crust Nodes
    - User Point Nodes
    - Snap to Point Nodes
    - Weapon Trail Nodes
- Point Lights
- Meshes
    - Vertex Data
    - Face Data
    - Vertex Normals
    - UV Channels (multiple)
    - Vertex Colors
    - Skin Blend Weights and Indices
    - Materials
        - Textures
- Collision Objects
    - Box Shapes
    - Sphere Shapes
    - Capsule Shapes (Cylinders for Gmax)
    - Freeform Mesh Shapes



Things being added to this Mesh.

Aditionally you can create a Preset Bone System. This is manually written of a MMH so treat this with care. Its much better to import a MMH ,but it shall be enough to create Animations with.

After Import you are left with a lot of puzzling Objects. This is mainly Collision Objects covering the whole Model at first, Capsules, Blocks etc. Basically all a Model consists off. If you look at Meshes, some Modifiers may have been added.

- An Edit Normal Modifier may have been added which stores the Normals from the Mesh, and preserves a visibly seamless surface, if the Model had Vertex Normal Data. (This is not available in Gmax)
- Likely 1 or more UV Unwrap have been added which contain the UV Maps the Model had. Static Models usually contain 2 Maps. That is 1 for Textures, and 1 for Lightmap.

  Note: Gmax users: Switch Modifier marked Ch2 to Channel 2 manually. Do not reset when prompted! (The contents are stored in the Modifier and mustnt be reset)
  Note: 3dsmax 2009 and above: Switch Modifier marked Ch2 to Channel 2 manually. Hit reset UVW button in the modifier panel afterwards. (The contents are stored in the Mesh and need to be retrieved this way)

- **Additionally a Skin Mod is added if the Model had Skinweights, and is animatable.**
- **Somewhat hidden content is Vertex Color. These are added to the Color Channel (0) and Illumination Channel (-1). Hair Models all have Vertex Color. You can completely disregard the Color Channel atm, because the purpose of this channel is unknown.**

Upon import a new Material is assigned to the Meshes. This is a custom Material plugin that comes with this package. Not all Material types are currently supported, where you will be notified by the Importer if not. Gmax is unable to display DDS files, and only a grey surface will be displayed. However Gmax can be made DDS compatible by some other plugins. For example the NIFtools (http://sourceforge.net/projects/niftools/files/max_plugins/**)**

If creating a new Model it always helps to look at comparable models. For example Weapons are straight up, GOB is at the handle which defines attach point, your Weapons should be as well. Skeletons, this is very difficult if not impossible to replicate from scratch due the fixed indices. So you pick one of the existing Skeletons anyway, thats it.

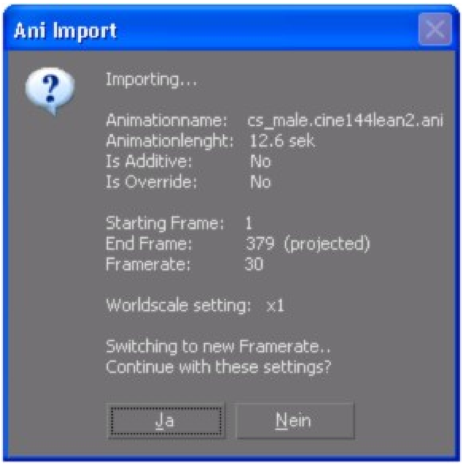
An example of a multipart Model (Body and Head seperately) that was merged by importing parts with merge checkbox on. The Animation drives all parts now.

Animation Import

Same as with Models, you select a ANI File to import. Either type it into the file field or pick one with the „...“ button. The ANI is being validated and the import button enabled if it is a proper file. Click on the import button and the Animation will be added to the currently selected Game Object. Take note that worldscale setting applies ,and should be of same setting as the model was imported at.

You can choose a different Startframe, and the Animation will be added accordingly. Additionally you can choose a different Framerate ,however 30 is the original Framerate and you should do so as well.

You can choose to activate 2 Noise Filters, which can reduce some of the jittering that may happen. You can probably always leave the „light“ filter on. The „strong“ filter has the potential to overfilter but generally it cleans out unnessecary keyframes. Technically that is translation keyframes inbetween boneenabled objects, which should never be relevant and causes the jittering.



Importing...

Animationname: cs_male.cine144lean2.ani
Animationlenght: 12.6 sek
Is Additive: No
Is Override: No

Starting Frame: 1
End Frame: 379 (projected)
Framerate: 30

Worldscale setting: x1

Switching to new Framerate..
Continue with these settings?

Import Dialog: Part of that Data is read from the ANI, like the lenght.

You have the option to disable GAD Import, but that is not really advised, because missing GAD you will loose some important part of the Animation, as you may know from the Toolset where you can disable it as well. If during import it sais „No GAD available“, it is not a bad sign, and the Animation simply has none.

Since the Animation is added to the Bones directly, they cannot be constrained or otherwise be stopped from being animatable. Strange things may happen. But you will find out.

Note: Make sure your Bone System is in the base T-pose at Frame 0 at all times for Import and Export to work! The Importer and Exporter uses this as a reference pose. Before importing, delete all keyframes in the targetted Animationrange. (ie make room)

Note: The Autokeying function in 3dsMax 2011 was changed to allow different default frames. Ensure that the default frame is 0, and is set ON.
(found under customize->preferences->animation tab->autokey default frame)

Importer Main Interface

General Options:

- ***Game Objects (GOB):*** Lists all currently found GOB's (the root of each model).
- ***World Scale:*** Displays the current Worldscale setting from Setup.

Model Import

- ***Merge with selected:*** Select this and any imported Model will be merged with the currently selected GOB in the list. Make sure that the Skeletons match, ie multipart models. When not checked, a new uniquely named Skeleton will always be created.
- ***Select Preset:*** Handy Presets of Bone Systems you can create, without the need to import from MMH directly. I have tweaked them by hand a little, but really you should use the import.
- ***Create Preset:*** Pressing this button will create the preset Bone System at the given World Scale set above.
- ***Import Meshes:*** Deselect this if you dont want meshes imported. Default = On
- ***Import Collision:*** Deselect this if you dont want collision objects imported. Default = On
- ***Import:*** Pressing this button will import the Model you selected at the given World Scale set above.

Animation Import:

- ***Start Frame:*** Setting the Starting Frame of imported animation. Setting is minimum of 1, as 0 always is the reference pose and should never ever be animated. Default = 1
- ***Frame Rate:*** The targetted framerate for the Importer. Dragon Age uses 30FPS, thus it is advised to use the same throughout. But play with it at your liking. Default = 30
- ***Noise Filter (light):*** Applies a small Noise Filter, which reduces some of the jittering occuring in a few occassions. But dont come surprised, some animations are actually crappy. Default = On
- ***Noise Filter (strong):*** Removes all the position keyframes inbetween bones, which can result in jittering but this can potentially remove too much, however in this case you may have to disable the affected bone otherwise it would still produce artifacts. Default = Off
- ***Import GAD:*** Deselect this if you dont want GAD imported. Should always be left on. Default = On
- ***Import Animation:*** *Pressing this button will import the chosen ANI file on the selected GOB in the list, and to the given Start Frame. The Framerate of your scene will be changed according to your setting. (Or unchanged if is the same)*

Animation Export

How to make and export Animations can be briefly explained by, what you see in 3ds is what you get in game. There is no special tricks involved. However still a few things dont work ,and other things require to mimic Bioware.

Dragon Age Animations are relative on position and absolute on rotation data, except Additive Animations which are also relative on rotation. Both are in parent context. This means any one Animation working on a Qunari also works on a Dwarf so to speak, and the relativeness roughly works out the difference in size. Additive Animations can be played on top of other animations. But the requirement for all of this is, that both Sceletons are comparable and bones are pretty much aligned in the same way.

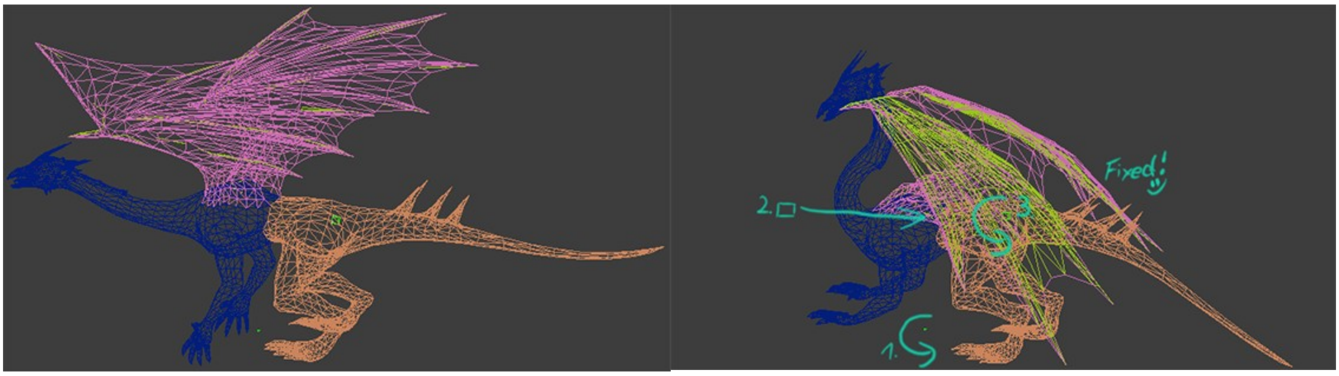
Almost anything hierarchical can be animated. All Nodes (Objects with Node Parameters), and non Skinned Meshes are animatable. It is the purpose of your Animation that decides what to do. Sceletal Models are animated by Bones, whereby the Skinmod drives the Model. Opposite to that is animated Placeables, which dont use a Skinmod, but rather the meshes are animated directly. But eventually the game allows anything of it, and can lead to surprising results. Perhaps placeables can handle Skinmods to allow organic shaped animations even who knows! But I believe Collisionobjects shouldnt be directly animated thou, it makes no sense anyway.

To succesfully export a Dragon Age Animation, the most important thing is the base T-Pose to be intact at frame 0. This is the reference and the more it is changed, the more the final Animation will be skewed. To secure it you should precautiosly select all objects ,and set a keyframe at 0. Normally you create an Animation starting from Frame 1 or higher, and leave Frame 0 be, which can certainly mean the character making a big jump inbetween but that doesnt matter. The base pose is the pose the model was exported at. If you screwed up, you can repair it by importing the model again with "merge" option.

The other important issue is GOB (and GOD+Root for skeletal models). GOB should never be animated for now, that is no keyframes set. Moving is allowed as long no keyframes are generated. This will inevitably shift the base T-pose around as well, but it doesnt account for it becoming incorrect. (It seems it works okey if you animate GOB in standard animations thou for now)

GOD should ,according to my understanding also never be animated. This is at least for animation blending reasons. However one thing must be done, also for blending reasons, this is animating GOD 180° around once until it having 0° 0° 0°. This is something Bioware has done to their original Animations, and is a bit hard to explain unless you import an animation and look at animation curves yourself. When not doing this as well, you will get bad blending artifacts with original Animations that incorporate this "flip".

This in essence is flipping the whole model, i am unsure how Bioware managed this without feeling guilty. But how do you cope with the flipped model now you will think. Well lets see what Bioware did by importing a simple Animation.



Invisible flip happening there. Try not to get confuseled. Left Frame0(base) Right Frame1

Essentially, "GOD" (1) is rotated 180°, whereby "Root" and the whole model is getting rotated to (2). Now Root is roughly moved back to its original position (3) and also rotated 180°, and the model looks original again. But this flip is there and essential for blending.

When creating a new Animation it is, in regard to this quirk and that you need to have some sort of a idle pose, very helpful to import an animation first and you wont need to redo this. But its relatively easy to reproduce. This should be your first step when making an animation.

Note: To reiterate ,never animate GOB (currently for GAD only), always leave the hierarchy in base pose at Frame 0, and add this GOD->Root flip to skeletal models.

This leaves "Root" as the last main Node which is actually moved at all before the skeleton branches out. For skeletal models "Root" accounts for all the offset and movement of all models. This is important for both standard and GAD Animations.

GAD i believe can be called "GOB Animation Displacement" im not sure. However the purpose is that GAD traverses the models pivot around the game which essentially is GOB. But the import/ export takes care of that, and you never animate GOB to simulate running. Neither do you move GOD except for the flip.

Note: This triple, GOB->GOD->Root, is a fixed requirement for GAD Animations and skeletons should be build and animated accordingly.

All the other Bones are usually driven by rotation only. That is, when you move one Bone you really only rotate the one next down due to dependencies and 3ds/gmaxes inner working. And this working simulates real bone behaviour. But not all bones or nodes are driving the shape of the figure, and could be moved without looking funny. You could simulate a sword throw by animating the weapon attach node in a arc shape or something and it would probably work well.

Various other helper nodes exist that are actually being moved and rotated, like weapon attachments (prop etc), but it is probably up to you to find a purpose for your needs.

Faces are a special area in animation. Faces are almost all the time affected by lipsynch and emotion. As such there never is a full animation for faces, if only there are slight additive animations that make the eyebrows raise or such for cutscene purposes. Unless you want to override emotions, you shouldnt animate the face.

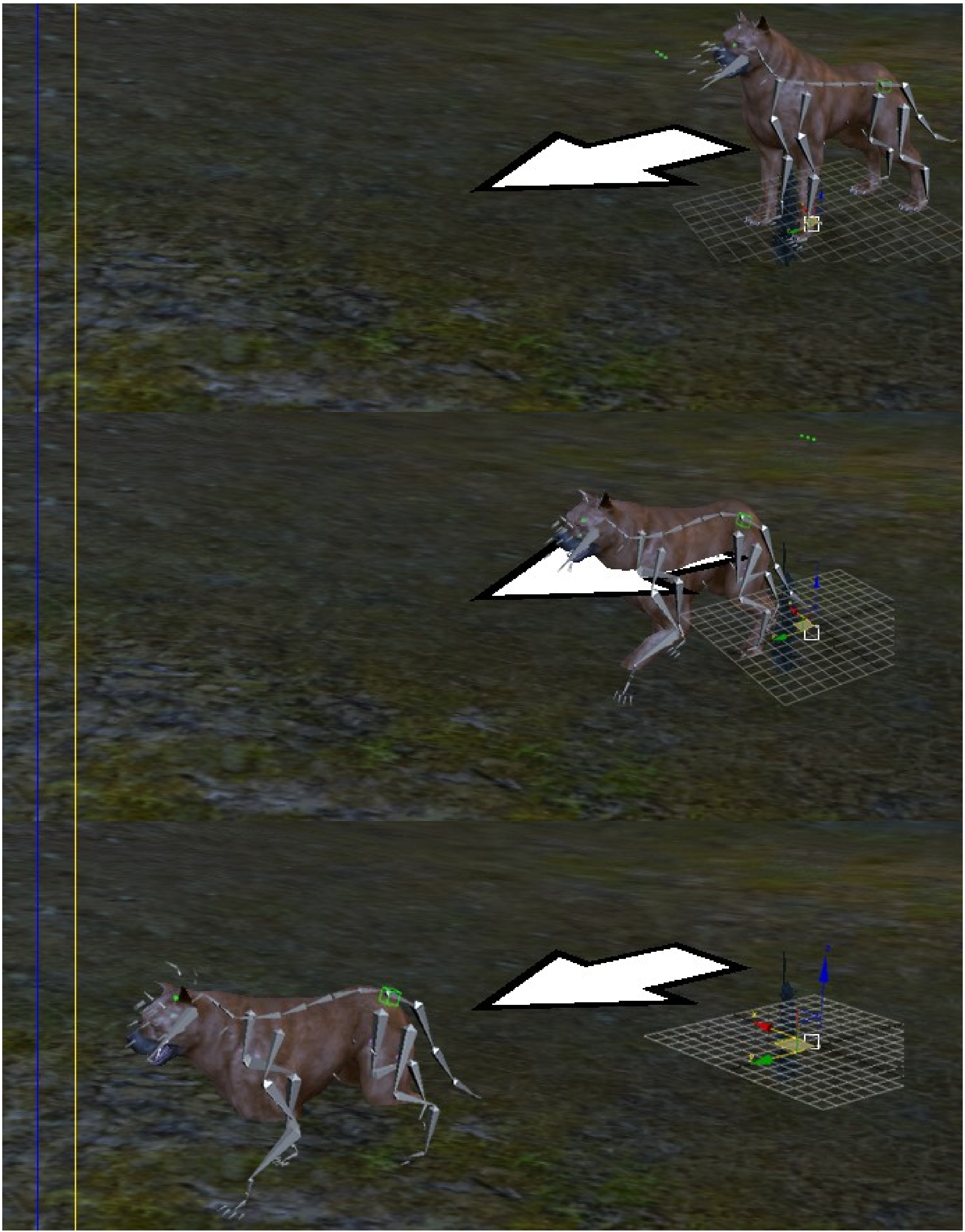
That was the basic funcionality of Animations. Now about the advanced stuff, setting up the Animation. You might have the Character animate in virtual empty space, or by placing reference objects into the scene like stools. Or another Character even to interact with.

For the latter you could prepare by importing reference objects, and align the Actors GOB which optionally can act as a independant starting position for the Animation. This is done via selecting the pivot during export. The pivot is the point that is shared with the initial Characters position in the Toolset.

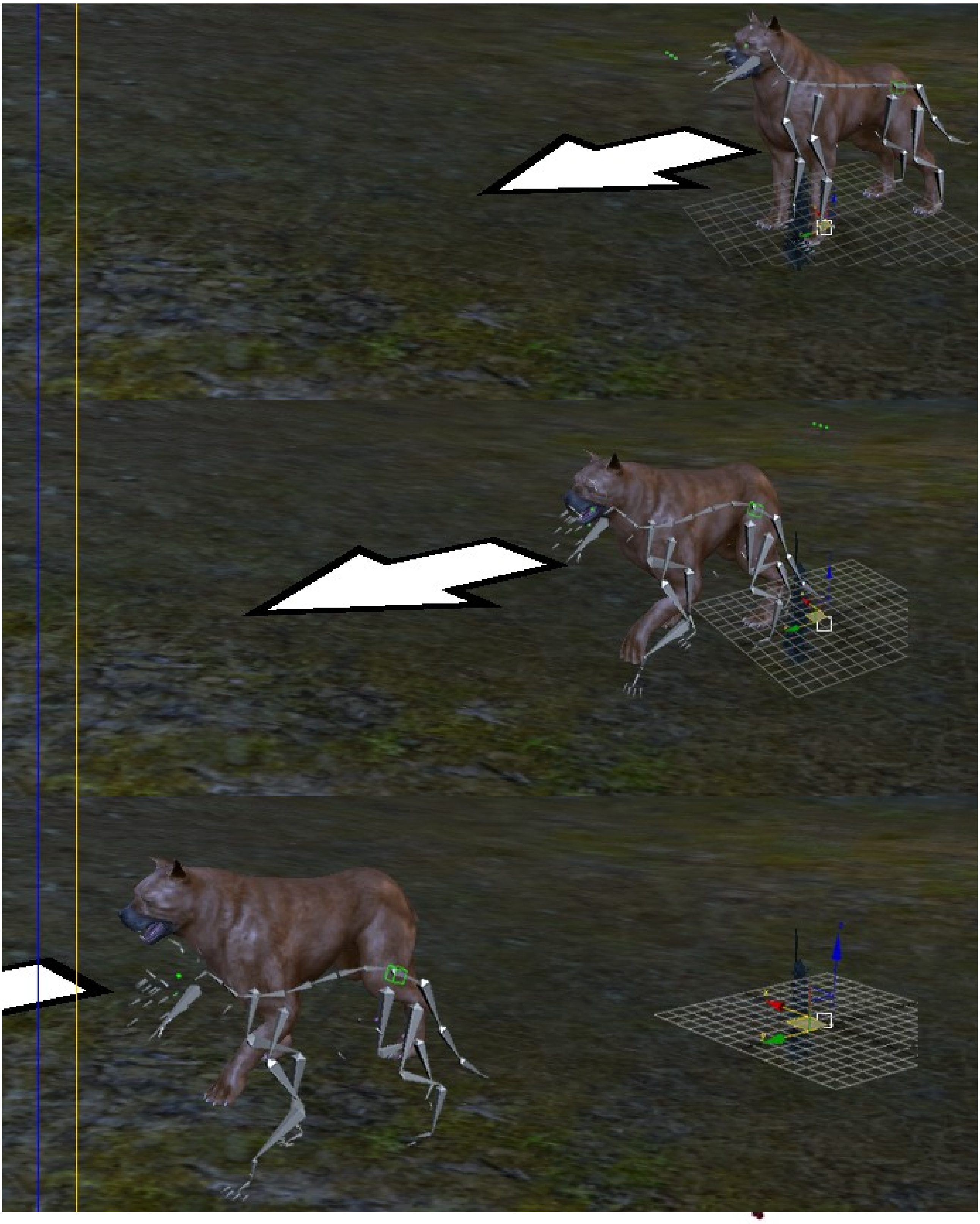
In typical Animations, the model starts animating on or near the Pivot, thus creating soft blends with the previous Animations. This is essentially the result when importing Animations, that all of those act at or near the World centre. You need to be aware of the Pivot when creating Animations, as this reflects what the game sees including the walking plane it generates. Various Pivot settings exists in the export dialog, u need to check them out.

GAD Animations on the other hand allow the model to leave the Pivot with the Bounding Box to follow and more. Additionally Entrance GAD allows the model to leave the Pivot at the beginning of the Animation. This is always optional and will not compromise the Animation, as long you follow the requirements on creating skeletal Animations. And GAD Animations are abit more complex than not, thus check out the next images and see what happens to "GOB" and "Root".

Without GAD: **The dog sinks into the ground as he leaves the Pivot.**
(Overlayed with 3ds center grid, and the gizmo displays GOB position at center)



With GAD: **The Pivot follows the dog around, so that he doesnt sink in the ground anymore. (Note that the the gizmo hasnt moved in max, this is the same animation as above)**



Any Animation takes place on the current walking plane. That is telling which direction is up which is forward etc. The walking plane can be either the Center grid (probably the easiest solution) where Y is always forward, Z is up. It can be GOB, which you can move freely around, and the GOB's Y direction is now forward etcetc. This is done via the Pivot setting in the exporter.

While speaking about GAD, what is the purpose other than it makes following the Bounding Box? It allows "snap to walkmesh" in the Cutscene editor for example. It also allows other animations to extend beyond GAD. Last but no least, the Bounding Box calculates visibility. So you never want your Character to move beyond the Bounding Box as normal Animations would produce. In the Exporter is an option to "follow height", which gives all the advantages except snap to walkmesh, if you animate a Character changing height by walking up stairs for example. Or ride on a dragon or something like that. This is all special purpose and very much Cutscene limited.

GAD export doesnt apply to player controlled animations, animation loops etc etc. These Animations are done "in place" and are mostly endless loops. The horizontal movement is done by the game in this case or the player controls. The Animation speed of the loop must fit the speed of this movement to look good. This is GAD made by the game.

Exporting now is simply done by selecting one of the GOBs available, enter a Filename to the Sequence, and click Export. But you have many settings you can play with. One of them is Pivot Control, where you set which location should be assumed in game. Additionally, you can store multiple Sequences in the new Model Root Object class, creatable under "Helper/DragonAge". Sequences stored the latter way allow more settings and are saved with the scene as well.

Your Animations should be at most 30 FPS, because the game doesnt handle more. But really any FPS works well.

Animation Export Main Interface

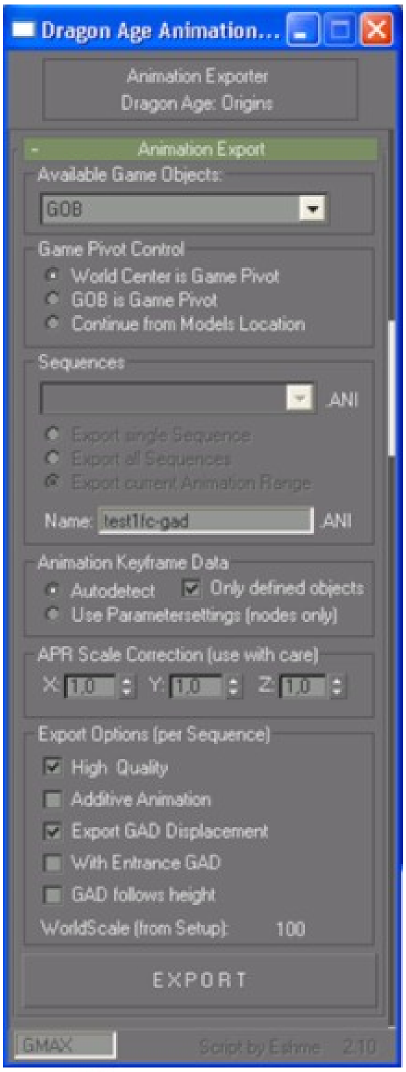
Available Game Objects:

- ***Available GOB Objects:*** **You must set which GOB is to export. This conforms with the naming done with the Importer, which allows multiple Models in the same scene. The Object must be named GOB, with or without a unique extension. Objects in the Hierarchy must either use the exact same Extension, or remain in its original name which can potentially lead to unique name conflicts. The original Names is the Names under which the objects were exported at in the model itself. The easiest for a user to have multiple models is to rename just GOB into GOB_uniquely2, GOB_thethird,..etc and it will act as a second model selectable in this list. You should avoid having it named GOB01 or so, as 01 is common and can potentially be wrongly stripped from child objects.**

- ***World Center is Game Pivot:*** **Typically GOB and the World Center are equal if you imported a Model. However since you are able to move GOB, with World Center selected the Animation will still always be centered around that. If your Animatable Character stands 1 meter away from it, in Game it will also be 1 meter away. With this you can really make Animations fit into certain scenarios. Some Animations in the Game where 2 or more Characters interact are made with a common Pivot.**

- ***GOB is Game Pivot:*** **The GOBs position will be the pivot and walking plane for this Animation. Say you make an Animation of someone operate a Door, you can import the Door too, and then you align GOB infront of this Door. Or align both. Or someone standing on a Podest, you can align GOB to the height of the Podest.**

- ***Continue from Location:*** **With this setting ,the current location will be calculated and defined as the new Pivot. This can be useful to make multiple appending animations within max ,where it may be impossible to move GOB after each one seeing you cannot animate it. In the toolset the character starts out freshly from zero, instead assuming the offset the previous animation produced. The walking plane here is always the Center grid again.**



Available Game Objects: GOB

Game Pivot Control
● World Center is Game Pivot
○ GOB is Game Pivot
○ Continue from Models Location

Sequences
.ANI
○ Export single Sequence
○ Export all Sequences
● Export current Animation Range
Name: test1fc-gad .ANI

Animation Keyframe Data
● Autodetect ☑ Only defined objects
○ Use Parametersettings (nodes only)

APR Scale Correction (use with care)
X: 1.0 Y: 1.0 Z: 1.0

Export Options (per Sequence)
☑ High Quality
☐ Additive Animation
☑ Export GAD Displacement
☐ With Entrance GAD
☐ GAD follows height
WorldScale (from Setup): 100

Sequences:

- ***Name:*** **Currently the only Sequence you can export is the current Animation Range. You will need to set a Filename, thats it.**

APR Scale Correction:

- ***X,Y,Z Scale Correction:*** **This option should be left for the advanced. This option can adjust to the Scale of the Appearance. It is only useful if applied correctly based on APR_base.xls XYZ Scale, and helps making special Animations for say Dwarfes. This is since the relative position is only approximate, and the game additionally scales. You normally would animate a Human skeleton which has a scale of 1,1,1 for example. And only if you animated a dwarf skeleton, you'd have to add a scale correction because dwarfs are scaled down.**

Export Options:

- ***High Quality:*** **Well.. high quality! Should be used for all main Character Animation. This doesnt change anything the** script does, but the conversion makes for bigger filesizes.

- ***Additive Animation:*** Additive Animations only store a difference, which allows you to run multiple Animations on top of another, for example a handwaving Additive Animation, which can be run on top of a walk Animation. The reference pose is at the start of the Sequence here, unlike Frame 0 for all other Animations.

- ***Export GAD:*** GAD is used across the Game to traverse the Models pivot and bounding box along the Terrain, so the game can determine the current position and adjust to terrain height. I think only Cutscene Animations come with builtin GAD.

  Visually there is no difference between GAD, Additive or default Animations. Only functional differences apply, and them being fundamently different calculations.

- ***With Entrance GAD:*** With this you can also create Entrance GAD. This is when your character starts away from the Pivot, you must enable Entrance GAD. So that the game can adjust the Pivot to the different Location. This is like when the Actor enters the Animation with displacement.

  It should naturally be turned off when the positions are roughly equal, so you wont need to enable it in the Toolset all the time. When off, the Models Pivot and the real Position will softly blend in. Visually there is no differences with it on or off.

- ***GAD follows height:*** Enables the bounding box to follow the characters height during GAD export, and if you need this animation to be extendable on changing heights. However this removes the ability to use "snap to walkmesh" functionality in the toolset, if all it does is hold the model down on earth again.
  Visually there is no difference with it on or off. Only functional.

Model Export

A Model requires a "GOB" named "model root" object class, any number of Child Nodes, Meshes ,Collision and Weapontrail object class and thats all items possible right now. How the Exporter is made is that it partly identifies an Object by its custom Dragon Age Parameters, and not only by its type in max. So a basic node can be practically anything as long it has Node Parameters. A mesh however has to be at least a geometric object.

In this manner ,you are first creating the objects and then add Parameters to them via the Model Manager described below, where once added you give the object its properties. Nodes will need to be set up wether they are crust nodes, snap points .... Meshes will be need to set up as shadow casting, and so on.

So what you would do first ,is create a "model root" object found in the create panel under "Helper/Dragon Age", call it GOB and place it at 0,0,0. Placing it to 0 like that should avoid basic problems, i dont actually know all the requirements on this, since objects appear right regardless. Bioware put them all at 0 0 0 anyway. This GOB is yet again to treat with special care, much like with Animation Export.

Following that, you can attach any much nodes, meshes or collision to the hierarchy, except with a few limits. Meshes shall only be attached directly to GOB, if the meshes are animated by a Skin mod and it is expected that other parent nodes would be animated in any way at the same time, wheras GOB is certainly a "static" node. Also lightmappable meshes might require Meshes to be linked to GOB directly, but im not certain. Collision shall not have any children, as those will not be exported. Rather collision should be the child of any object it must follow.

Lot of Skeletons in Dragon Age are following a fixed convention by Bioware. That is in their positional and hierarchical layout, their naming, and ultimately by their properties. You may see that for the reason that humanoids can share Animations is due the skeleton having the same exact Bones Hierarchy Layout and Names. What is harder to see is that the same humanoids who can share multiple pieces of Armor, that the Bone Index Parameter setting is equal over all Humanoid models which essentially makes this possible.

It may be hard to impossible to recreate a skeleton from scratch trying to make it compatible with existing creatures. Importing and adjusted should be done in this case. The benefit of Bones being mapped to Bone indices is nothing less that being able to add new unique bones without breaking the existing mapping and therefore compatibility. Changing the Boneindex afterwards is not possible, if the model is used as part of a multipart model.

A node can be setup via Parameters as a bone ,crust VFX node, door snap point, usepoint or none of it in which is simply acts as a helper node being animatable and such. This, the Bone Index and Parameters are described below.

Meshes should be geometric objects, like editable poly or mesh. This is the kind of meshes that are visible in game. A few modifiers and properties are supported. This is:

- UV Channel 1 and 2. The purpose lies in the material but usually Channel1 is the texture, and Channel2 is the lightmap if applicable.
- Standard and Multimaterial. Although supported, they limit the model export functionality. DA Material should be preferred.
- Dragon Age Material ,which comes with these tools. It defines the surface appearance of the Mesh in game. It allows MAO export. If the MAO is created by the Toolset or by hand, it is still required to at least set up the proper Materialtype and Materialsemantic, so as the Model Exporter works properly.
- Smoothing groups.
- Edit Normal modifier. This can be applied to multiple objects at once ,to allow you to fix

seams between them.
- Skin Modifier, to support Skeletal Animation. Only Bones with a proper Boneindex can be added to the Skinmod. This modifier can also be applied to multiple objects at once, to allow seamless animation. It must always be on top of the stack if its used.
- And hopefully any modifier altering the shape of the mesh.

Meshes will by requirements be split along UV seams as well as unsmoothed borders. This is particulary important when exporting a fully facetted object that the Vertex count can go up the roof. UV Channels should have their UV Elements stuck together as much as possible. When creating a lightmap for Channel2, you should try to take existing Elements from Channel1 and arrange them properly within UV space instead of breaking them all up again to avoid creating more vertices from split seams.

The Lightmap Channel2 needs the Elements be within UV borders, and no faces overlap otherwise black artifacts appear when rendering lightmaps.

Note: Always reset Xform ,after heavily editing a mesh or scaling it. Otherwise it can appear heavily crippled in the toolset.

Meshes can be setup via their Parameters in their shadow casting properties and the like. Custom Parameters are described below.

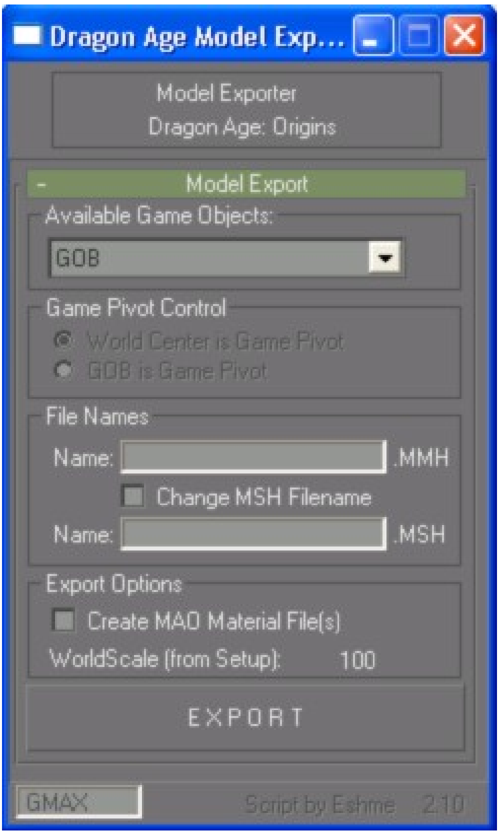
Collision object can be either type of Box, Sphere, Capsule, Cylinder or any mesh object. The first 4 are primitives and are the preferred method of collision. Mesh objects shall be used sparingly if ever, because this can be very power consuming. The exporter will warn if one has more than 300 vertices. Primitives should be left in their primitive state, and not converted into meshes. Also keep in mind that Cylinders translate into Capsules in game, which have rounded caps in their shape, so try not to use Cylinders if you have access to Capsules.

Collision objects must be setup in their behaviour. For example if you can walk on it or not, but this is described below.

Model Export Main Interface

Available Game Objects:

- ***Available GOB Objects:*** You must set which GOB is to export. This conforms with the naming done with the Importer, which allows multiple Models in the same scene. The Object must be named GOB, with whatever extension. Objects in the Hierarchy must either use the exact same Extension, or remain in its original name. The easiest for a user is probably to rename just GOB into GOB2, GOB3,..etc and it will act as a second model selectable in this list.



Available Game Objects: GOB

● World Center is Game Pivot
○ GOB is Game Pivot

Name: .MMH
☐ Change MSH Filename
Name: .MSH

☐ Create MAO Material File(s)
WorldScale (from Setup): 100

- ***World Center is Game Pivot:*** You cannot currently change this behavior. The model will be exported as is, with the pivot being the world center. Much like Animation export works at the same setting.

File Names:

- ***MMH Name:*** Models MMH Name

- ***Change MSH Filename:*** This unlocks the MSH Name edit field.

- ***MSH Name:*** Models MSH Name, if desired you can make it have a different name than its MMH.

Export Options:

- ***Create MAO Material File:*** This exports MAO file(s) according to the current materials applied to the meshes in the model. The filename of the MAO's is automatically the name of the Material.

Model Manager

With this Tool you are able to review and define Parametersets for the models. Imported Models already have defined Parameters which you dont want to overwrite, but when you add Objects you can define them here. Custom Object classes do not require and support parameters, as the Object class already defines its purpose. This is "model root" and "weapontrail" at the moment.

After a Parameterset has been added to a object, you must refine and apply your settings on the baselevel of each object as explained below.

Custom Attributes

The Importer will store important Information into so called Custom Attributes automatically to the Base Level of (almost) each Object, which hold Dragon Age specific info and allows refining of your model. The Importer will have the Parameters correctly setup. The Model Manager adds basic empty Parameters. Lastly this information is required by the Model Exporter to work properly.

Right now there is 3 kinds of Attributes:
- **Node Parameters**
- **Mesh Parameters**
- **Collision Parameters**

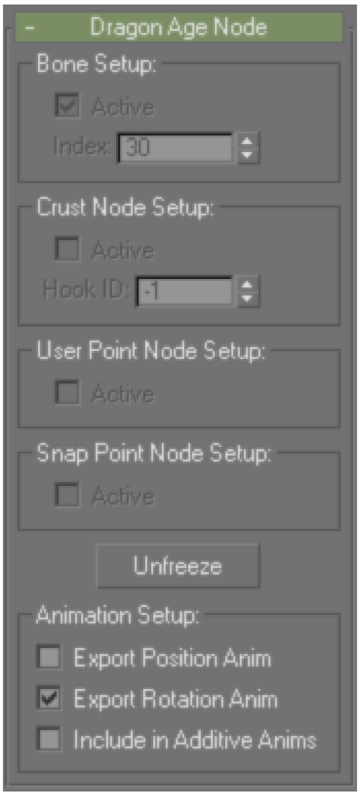
..which are addable to all of their respective objects.

Node Attributes

With these parameters you can set the Dragon Age type of Node. That is one of 4 types currently, (Bone, Crust, Use Point, Snap to Point) or no type in which it simply acts as a helper (like GOB ,GOD, Prop, etc)**

When imported ,these parts are inaccessible, because these are hopefully correct and they should remain until you export. Unless you change the purpose of the model you can change them. Make sure you do not accidently overwrite them by readding them.

You can also define animation parameters, exactly what tells the Animation Exporter to do with this Node in "use parametersettings" mode. The Animation Importer will also tinker with these Parameters, to allow the Exporter to export the Animation correctly. The Animation parameters are keyframeable, and is supported by the Exporter which will read them at the beginning of the Animationrange when deciding if it exports this Node or not.



- Dragon Age Node

Bone Setup:

☑ Active

Index: 30

Crust Node Setup:

☐ Active

Hook ID: -1

User Point Node Setup:

☐ Active

Snap Point Node Setup:

☐ Active

Unfreeze

Animation Setup:

☐ Export Position Anim

☑ Export Rotation Anim

☐ Include in Additive Anims

These attributes are accessible on the base level of each Node Object being imported.

Bone Parameters Interface:

Bone Setup:

- ***Active:*** **Sets whether this is a Bone or not. Only Bones can be used in a Skin modifier. Bones must have a proper Index. 0-...**
- ***Index:*** **This is the Index if the Node is a Bone. The Index must be unique across this Skeleton, and equal over all Skeletons shared in multipart models for boneweights to work correctly in game. (ie if Pelvis is 5, it needs to be 5 on all Pelvises of skeletons shared)**

Crust Node Setup:

- ***Active:*** **Sets whether this is a Crust Node or not. Crust Nodes must have a proper HookID. 0-...**
- ***HookID:*** **This is the HookID if the Node is a Crust Node. The HookID needs to be equal over all skeletons shared by the games VFX system. IE if there is a special effect going off from the Chest, the VFX is being told the ID only and it is the HookID that tells the location. I have a Hook ID list up on my project site if u need it.**

User Point Setup:

- ***Active:*** **Sets whether this is a User Point or not. User Points are used by the Games AI finding the correct attach location to interact with objects. (Supposedly)**

Snap to Point Setup:

- ***Active:*** **Sets whether this is a Snap to Point or not. Snap Points are "Door Anchors" allowing Doors to be easily snapped into position in stuff like the Area Editor.**

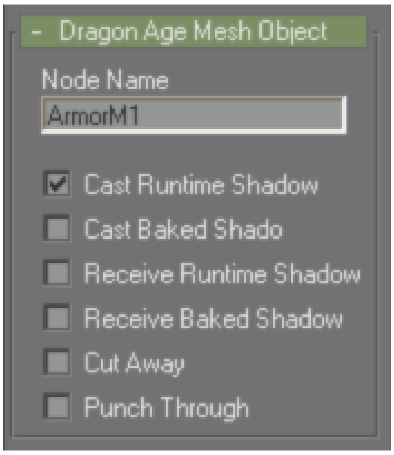
Animation Setup: *(cut)*

Mesh Attributes

With mesh attributes you tell how lighting and shading affects the Mesh. This is accessible on the base level of the Mesh Object.

Mesh Parameters Interface:

- ***Cast Runtime Shadow:*** **On or Off**
- ***Cast Baked Shadow:*** **On or Off**
- ***Receive Runtime Shadow:*** **On or Off**
- ***Receive Baked Shadow:*** **On or Off**
- ***Cut Away:*** **Hides mesh in isometric mode**
- ***Punch Through:*** **On or Off**



- Dragon Age Mesh Object

Node Name: ArmorM1

☑ Cast Runtime Shadow
☐ Cast Baked Shado
☐ Receive Runtime Shadow
☐ Receive Baked Shadow
☐ Cut Away
☐ Punch Through

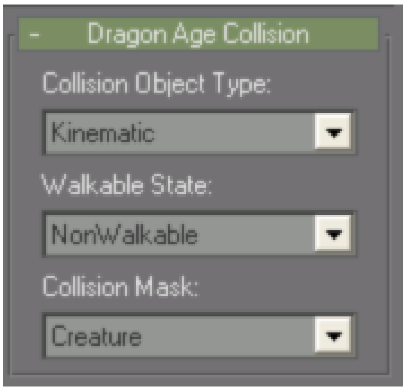
Collision Attributes

These define how the Collision object is treated by the Game. This is accessible on the base level of the Collision Object

Collision Parameters Interface:

- ***Collision Object Type:*** **Kinematic or Static. Basically if the Collision Object can move or not.**
- ***Walkable State:*** **Walkable or NonWalkable. Tells if you are able to walk on it (like a Walkmesh) or not (like a Wall)**
- ***Collision Mask:*** **Setting what kind of Collision this is. It can be none or either of this type. Importing comparable Models will help you identify the correct Mask.**

(none)	
Item	**(used by weapons and the like)**
Creature	**(Creature Collision ,Humans ,etc)**
Placeable	**(Doors,Shelfs etc)**
Static Geometry	**(Cavewalls, Bridges etc)**
Trigger	**(unknown)**
Terrain Wall	**(unknown)**
Water	**(unknown)**
Effects	**(unknown)**



- Dragon Age Collision

Collision Object Type: Kinematic

Walkable State: NonWalkable

Collision Mask: Creature

Dragon Age Material

This is a custom Plugin that adds a new Material to the Materialbrowser available in the Material Editor. With this new material added to meshes, the Exporter can generate MAO material files and it can properly generate Model Data based on the materials requirement. Thus it is needed even if you dont export MAO files.

To use the new material, you must choose "Dragon age material" when creating a new Material. You must give it a proper name ,which is also the filename of the MAO file. If you already have MAO file, ensure the Material name entered is the same.

Optionally the "standard material" is still supported, which retains how the exporter worked before, and it will ask which data channels to export during export. However MAO export is disabled in this case. The standards material name must still be the name of the existing MAO file.

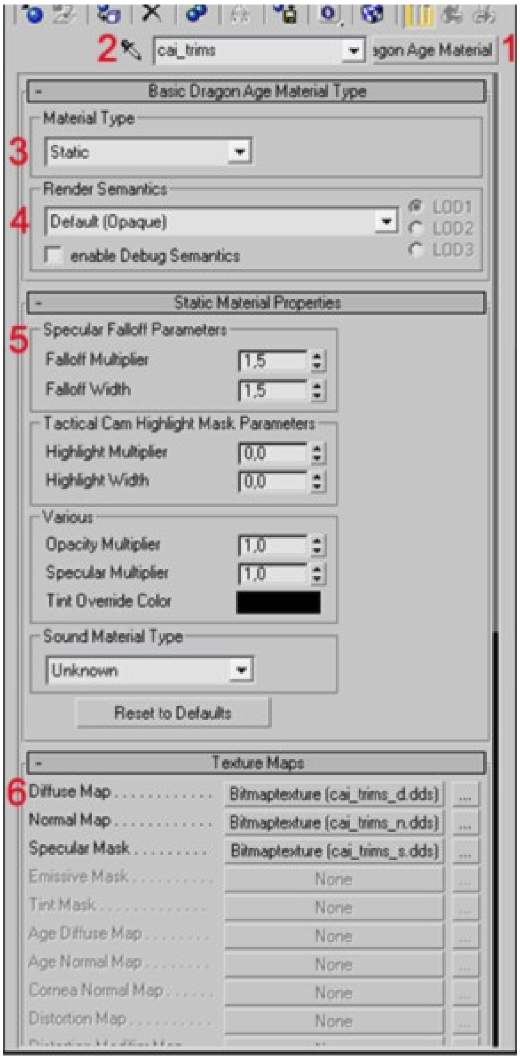
Unfortunately, 3dsmax is not able to render the Materials. Which is why Bioware made the Material Editor in the Toolset. It may be often the case, that you will create the Material there instead, since it allows to finetune all the render aspects. But it requires the model is finished, so you should be using the Material inside 3dsmax until the model is finished at least.

Not all Material types are supported yet, in which case u should use the standard material and write a MAO manually, or use a comparable type.

The Material features many settings ,some of which you will see are never used in the game, but i thought can be useful especially for the modding community. Leaving a texture map field blank for example will not inherently cause problems, if it is one of those optional textures.

The Model Exporter gives you the option to export the Material into a so called MAO file. MAO files are text files, you may edit them afterwards if you want. Or dont export at all, if using existing materials, since creating a MAO file with the same name as an existing will override it when put in an override folder.

Material Editor Interface



cai_trims
ıgon Age Material

Material Type: Static

Render Semantics: Default (Opaque)
● LOD1
○ LOD2
○ LOD3
☐ enable Debug Semantics

Specular Falloff Parameters
Falloff Multiplier 1,5
Falloff Width 1,5

Tactical Cam Highlight Mask Parameters
Highlight Multiplier 0,0
Highlight Width 0,0

Various
Opacity Multiplier 1,0
Specular Multiplier 1,0
Tint Override Color ■

Sound Material Type: Unknown

Diffuse Map .... Bitmaptexture (cai_trims_d.dds)
Normal Map .... Bitmaptexture (cai_trims_n.dds)
Specular Mask .... Bitmaptexture (cai_trims_s.dds)
Emissive Mask .... None
Tint Mask .... None
Age Diffuse Map .... None
Age Normal Map .... None
Cornea Normal Map ...... None
Distortion Map .... None

General:

- ***Material (1):*** **This can be "Standard" or "Dragon Age Material".**
- ***Materialname (2):*** **The name of the Material and MAO file.**

Basic Material Type:

- ***Material Type (3):*** **Which material the game should apply to the Mesh.**
- ***Render Semantics (4):*** **Each material type has a selection of Semantics which further refine how the material looks like, and what it is able to display. For example some types have transparent (alpha, blend etc) and opaque (No alpha ,opaque) semantics.**
- ***LOD (Level of Detail):*** **Some Semantics branch out into LOD variations. You should select your models LOD here. Most Semantics only have one LOD Variation and this is displayed as such.**
- ***Debug Semantics:*** **Enables more strange Semantics.**

All of this should be the least you need to set up, even if not exporting a MAO. Roughly is enough most of the time, and the Material Type is what makes most of the difference.

Material Properties (5):

These are various variables for the Material. This mostly corresponds to the Toolsets Material Editor. Default values are good to use, as they are taken from the semantic defaults.

Use the button "Reset to Defaults" to return to default settings.

Texture Maps (6):

Each Semantic requires a set of Textures to be entered here, and each has a specific purpose unique to the Materialtype and Semantic.

Often you may not need every texture map ,to achieve your results, and you should be leaving the field blank (none) in this case.

Click on the big button and select a texture via the Texture browser. The "..." is an alternative method to browse Textures, for Gmax users. The "C" button removes the Texture from the Slot, for Gmax users.

Note: Gmax users without DDS support may click on the "..." button to select a texture via the File browser. Gmax users can make their Version DDS compatible by downloading the Niftools plugins for Oblivion. (http://sourceforge.net/projects/niftools/files/max_plugins/)

Selecting anything else than DDS files will assume that DDS files of the same name are also present, because the game only understands DDS files. These files must also of course be in your games override folder ,so the game can access them.

Final

This is work in progress. If something's not working, just give me a hollar and i try to see whats up.

Have fun modding everyone.

Eshme

Copyright notes:

This Script was created in my free time as a modding hobby, and is free of charge.
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http://social.bioware.com/project/2336/

..or visit Nexus
http://www.dragonagenexus.com/downloads/file.php?id=895

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Dragon Age, and the Game and all this stuff

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