

Beginner's Guide to weighting/rigging a NWN2 (head) model in Gmax

Version 1.00 ([The One] Black Rider - May 2013)

Foreword:

This is a trace back of my work with my first NWN2-model, which is flagged as "SKIN". These models / the vertices of this model need to be attached/rigged to a "skeleton/bones" to show up in the toolset/IG.

I had my share in working with Gmax but I still would call myself an "elementary school modeller". So, there are probably smarter ways to do some of these steps, but the way, which is described here, seems to be working!

Also it may be, that I'm mistaken regarding a statement I make, because I'm missing the knowledge of a certain Gmax function.

Since this was all new to me and there is not much for these models and Gmax out there, I decided to write a tutorial - more for beginners, like myself.

I didn't create a model from scratch. Rather I used an existing one, which I wanted to modify. I'll describe it via a head model, but it should also apply to other skin-flagged models.

Thanks go out to Hellfire (RWS), who got me started.

And very special Thanks go out to Semper, who actually walked me through this process and double-checked my results doings.

Gmax and skinned models:

Gmax and/or the according NWN2-import/export plugin probably weren't ment to handle NWN2-models, which use the skin modifier and with this a "skeleton-structure/bones", which is needed by NWN2 to display/animate certain objects. Vertices of a mesh must be assigned to a bone with a certain "weight", so the NWN2 engine knows, how much this certain vertex is influenced by the movement of this bone.

Gmax does import correctly the properties of a skin-flagged model, but NOT the weightmaps - they get lost! I guess, it's because there is no option to import the according skeleton along with the model (in Gmax).

BUT the Gmax/NWN2-import/export plugin can import a skeleton model (*.gr2)! It won't be displayed, but one can weight vertices to bones and the model works well IG!

With the help of Semper (I'd say, a NWN2 veteran modeller), who lead me through this and rechecked my doings with his tools, I found a way to do it with Gmax.

What you'll need:

Gmax 1.2 (free - but you'll need to register):

<http://www.turbosquid.com/gmax>

The NWN2 - Gmax + 3ds Max MDB Importer/Exporter - MDB Utilities 2.3

by Tazpn:

<http://nvwault.ign.com/View.php?view=nwn2plugins.detail&id=27>

AND you need to find the "granny2.dll" somewhere! I believe, it originally came with Obsidian's "Expotron" import/export tool, which is not to be found on the vault. Do a search and look for a description, which says something on "3ds max 6, 7 or 8". That version should be working.

→ It goes into the root directory of Gmax.

Optional:

Since Gmax does not import the weight table, you can use **Blender 2.5x** to get a reference.

I found, that the Blender-NWN2-import/export-2.5-tool seems to be working with version number 2.58(a) up to 2.62:

<http://download.blender.org/release/>

The zipped version is a portable version, so it doesn't need to be installed and your system stays clean!

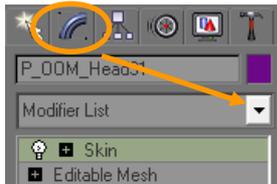
And you'll need the Blender **2.5 MDB Import/Export plugin**:

<http://nwwvault.ign.com/View.php?view=NWN2Tools.Detail&id=94>

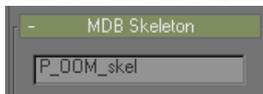
General notes:

- For quick testing, use the override folder (in MyDocuments->NWN2).
- Don't create subfolders within your override folder, which contain a model with the same name (e.g. as a backup), that you want to export. It might interfere!
- Import AND export: Have all the files (model, skeleton, textures) in the directory you import from and export to (advice from Hellfire-RWS). It might not be necessary, but this way, it's safe and it works! For Gmax to display the textures, it's easiest to put them here, too.
- **IMPORTANT: Always save as a Gmax scene**, because this way, skeleton/weighting - everything - is kept and changes can be made upon this as a base. Re-importing means the lost of the weighting/weightmap (again)!
- The model mesh must be converted to "Editable Mesh" before a "Skin Modifier" can be applied.

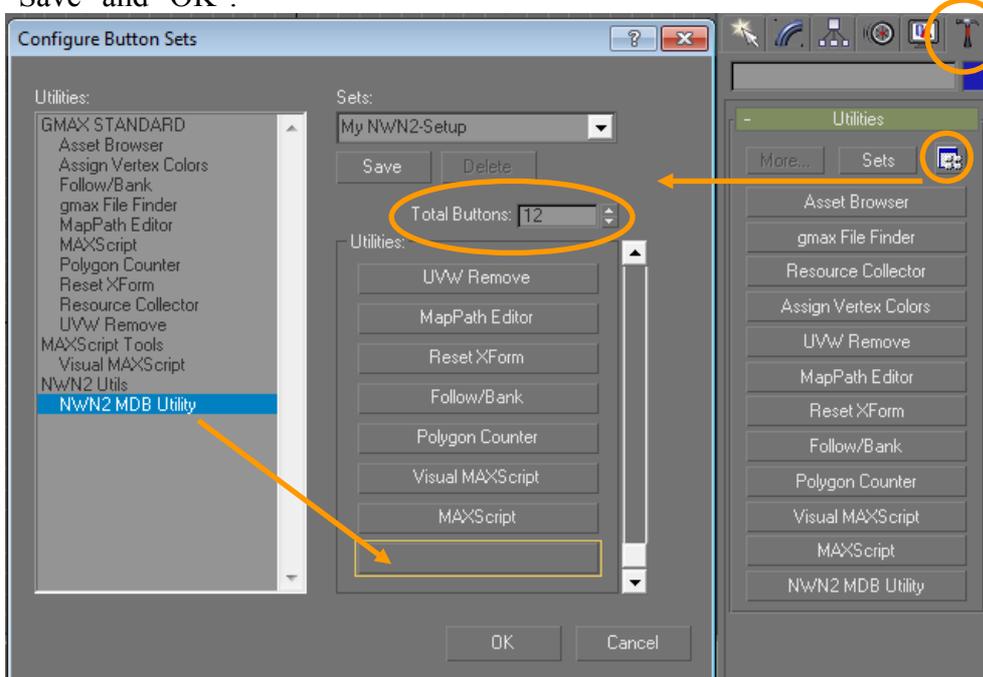
-Model-skeleton: If you are not sure, which one is needed: Import just the model, choose the model mesh, on the right side, click the blue bow-tab, click on the down-arrow next to "Modifier list" and choose "Skin".



Now use the hammer-tab, Choose the "NWN2 MDB Utility", scroll all the way down in that rollout and the skeleton file name should be displayed:

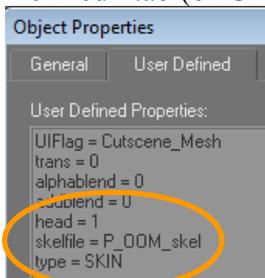


If the "NWN2 MDB Utility" is not there: Click the hammer-tab, click the "Configure Button Sets"-button, raise the number of buttons by 1, scroll the slider down until you see an empty button, drag the "NWN2 MDB Utility" onto the empty button, name it under "Sets", click "Save" and "OK".



Within the hammer-rollout, you should now have the "NWN2 MDB Utility"-button. Click it.

You could also choose the model mesh, right click it, choose "Properties" and click the "User Defined"-tab (or Gmax-Menu → Edit → Object Properties...):



→ You find skeleton files (*.gr2) in: [YourNWN2Folder]\Data\lod_merged(.zip)

- IF you get an **ERROR**, when applying the "**Skin Modifier**" to the mesh (Vista & Win7), then try this:

a) For Gmax set these properties: Under "Compatibility" set "Run as Administrator"
→ Try, if it works now. (That did the job for me!)

b) Registry-fix mentioned by tazpn:

(Quote:) If you are running gmax 1.2 on Vista or Windows 7 and get the following error on import: CoCreateInstance() failed Please check your registry entries (CLSID), open a Command Prompt as Administrator and run the following in the Gmax directory.
"regsvr32.exe MAXComponents.dll".

Excursus - Blender:

Since the weighting gets lost in Gmax, you can use Blender to check the weighting on the original or a similar model.

To see the weighting, you'll need to import the armature (= skeleton/bones), too. Make sure to have "Blender_Armature.blend" (comes with the NWN2-plugin) in the same folder as your model!

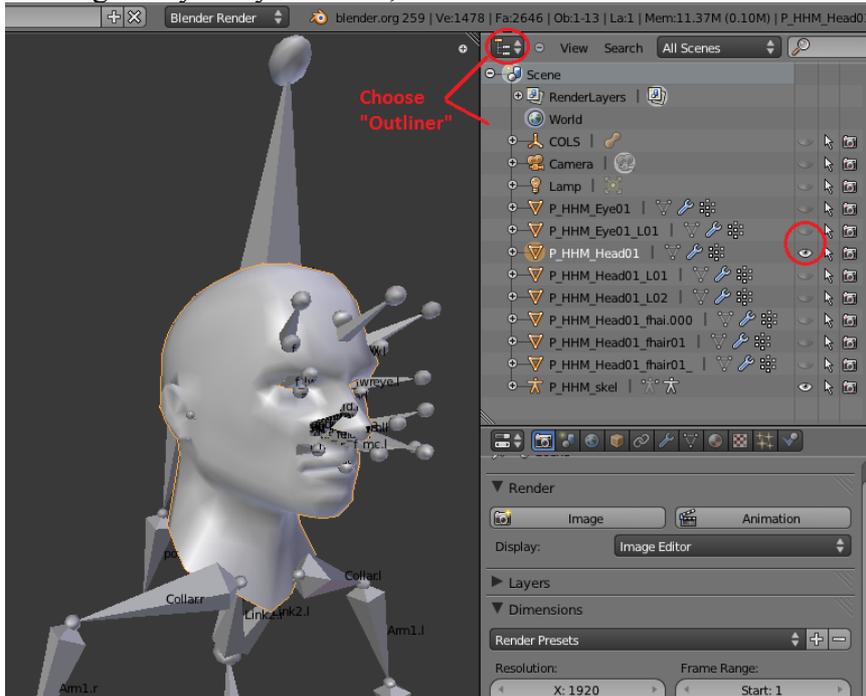


NWN2 models are very small, so choose the X10 scale to get a better view (optional).

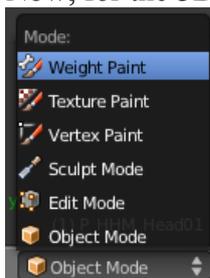
I imported P_HHM_Head01.MDB (human male) for reference.

Use pressed mouse wheel (alone or with SHIFT or STRG) to get a good view. If you accidentally move around a part, hit ESC and it will be back to its original position.

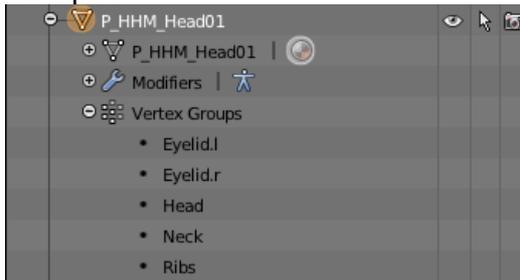
In one of the windows, choose "Outliner". You can hide parts, which you don't need, by clicking the eye. If you did so, it should look like this:



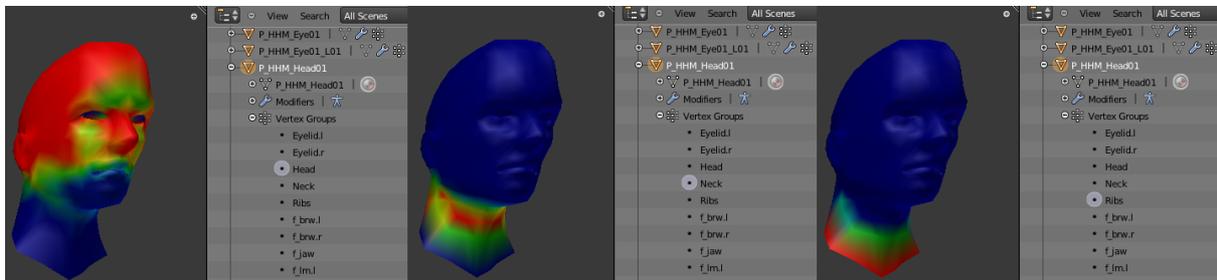
Now, for the 3D-window, change the mode from "Object Mode" to "Weight Paint"



In the "Outliner" unfold the main model by clicking the "+", so you can see the "Vertex Groups".



This head model is weighted to 3 bones: Head, Neck and Ribs. By selecting them under "Vertex Groups", you will see the amount of weight on the different parts of the model: red = vertex follows heavily the movement of the bone, blue = influence of the bone on the vertex is very low. Colors in between (yellow/orange/green) mean, that a vertex shares a weight with another bone.



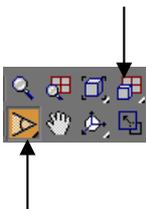
So, you can use this method to get a reference for your weighting in Gmax.

Gmax:

I wanted to scale a male minotaur head, so it fits on female (Half-Orc) bodies. So I use this model as an example.

Import the model - you may have to switch to the "NWN2 MDB Importer (*.MDB, *.GR2)"-file format/type. You don't get any options on how what or how to import the model into Gmax, so the model is very tiny!

In the lower right corner click "Zoom Extends All", then activate (click) the "Perspective"-window and roll the mousewheel to "find" the model. If it's in view, click the "Field-of-View"-button and fine-adjust. Use "Arc Rotate" to rotate it to your liking.



Very important: Make sure, that the mesh is 100% finished! After weighting, moving single vertex to adjust a position or creating new vertices will probably mess up the whole weightmap and you might get strange results only to be seen within the toolset or IG!

AND make sure, that you have not selected any vertices, when you change to the skin/weight-modifier, because the weighting will then only affect certain parts, which also might cause strange results!

Example for a messed up weightmap:



Well, as you know, you need to weight the model to show up in the toolset/IG. So what I do to check the looks/mesh of the model is, to temporarily weight the mesh with only one bone (e.g. Head-bone for a head - adding one bone and clicking "Edit Envelopes" once, so it gets a blue color, is enough!) and use the toolset to see the outcome. When doing changes to the mesh after the test, I remove the bone from the "Skin Modifier", do the changes and do a quick reweight. When the model is done, I go for the final weighting (described below).

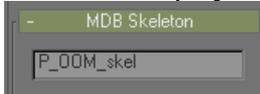
(For a quick view of a non weighted mesh/model, you could use the "Packfile Explorer 1.56": <http://nwwvault.ign.com/View.php?view=nwn2tools.detail&id=21> Make sure to have the textures in the same folder as the model.)

Weighting (Rigging):

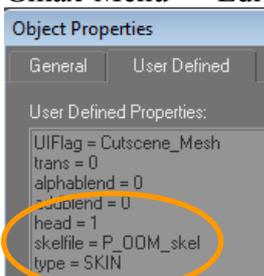
Remember to save every step in a separate Gmax-scene, because in the beginning things sometimes don't work out the right way.

If you import an already rigged/weighted model, the correct skeleton file should show in the rollout of the "NWN2 MDB Utility" or the mesh properties. If not (e.g. you made a new model or port one), you'll need to add it either into the "NWN2 MDB Utility" or type it into the properties (skelfile = P_...) [- in this case, you would also have to add the other flags like "UIFlag", "head", "type", ...]:

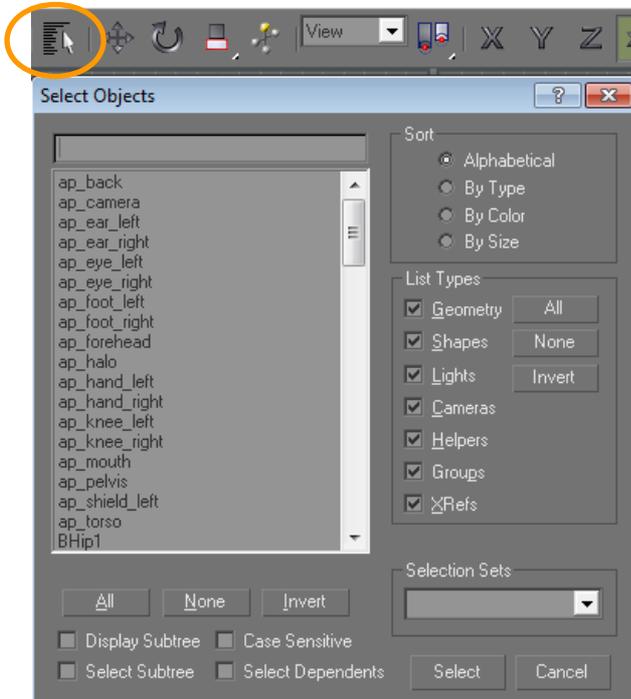
"NWN2 MDB Utility": Scroll all the way down in that rollout and the skeleton file name should be displayed:



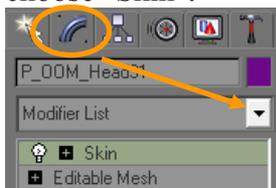
Or choose the mesh, right click it, choose "Properties" and click the "User Defined"-tab (or Gmax-Menu → Edit → Object Properties...):



If you have not done so before, now is the time to **import the skeleton**-file (*.gr2) via the NWN2-importer. They are not shown with the views, but if you click the "Select by Name"-button, you'll see, that the bones are available. (Remark: Bones are displayed in 3ds max and Blender)



As mentioned, you need to add a "Skin Modifier" to your main mesh: Choose this mesh, on the right side, click the blue bow-tab, click on the down-arrow next to "Modifier list" and choose "Skin".



First you need to add a bone. In the "Skin" rollout click "Add Bone". A list of all available skeleton bones will appear. Select desired bone (Remark by Hellfire: All vertices must be weighted to at least 1 non f bone...), e.g. "Head".

(Side note: The maximum numbers of bones, which may be assigned to a Vertex is 3!)

Now click the "Edit Envelopes" button. The mesh will be colored in blue, which means lowest weighting.

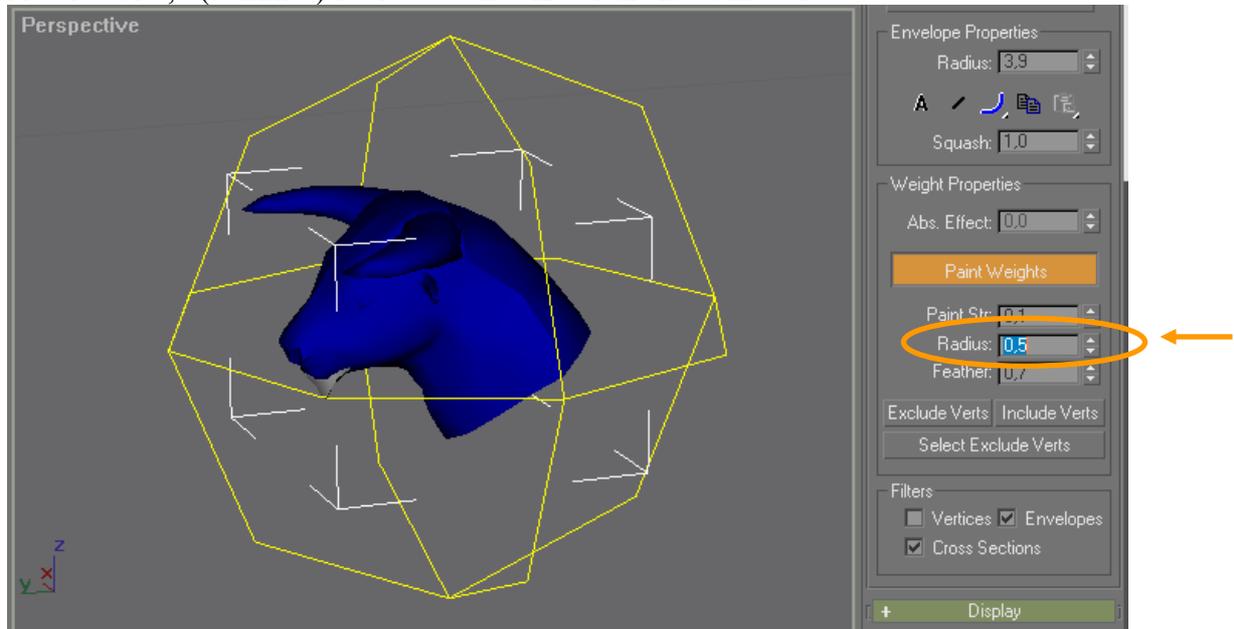
As said, to test your model (toolset or in game), this would be enough to make it show up. Of course, animations will not look very good, because every vertex is lead by this one bone.

Paint Weights:

Remark: Only the functions/buttons/settings, which have been used, are mentioned.

If you click the "Paint Weights" button (further down in the rollout), you have activated the mod to modify the weighting on vertices. Since the NWN2-model is so small, the size of the weighting-tool is far too big to work with. You need to lower the "Radius":

A value of 0,5 (comma!) is close to the size of the head model:



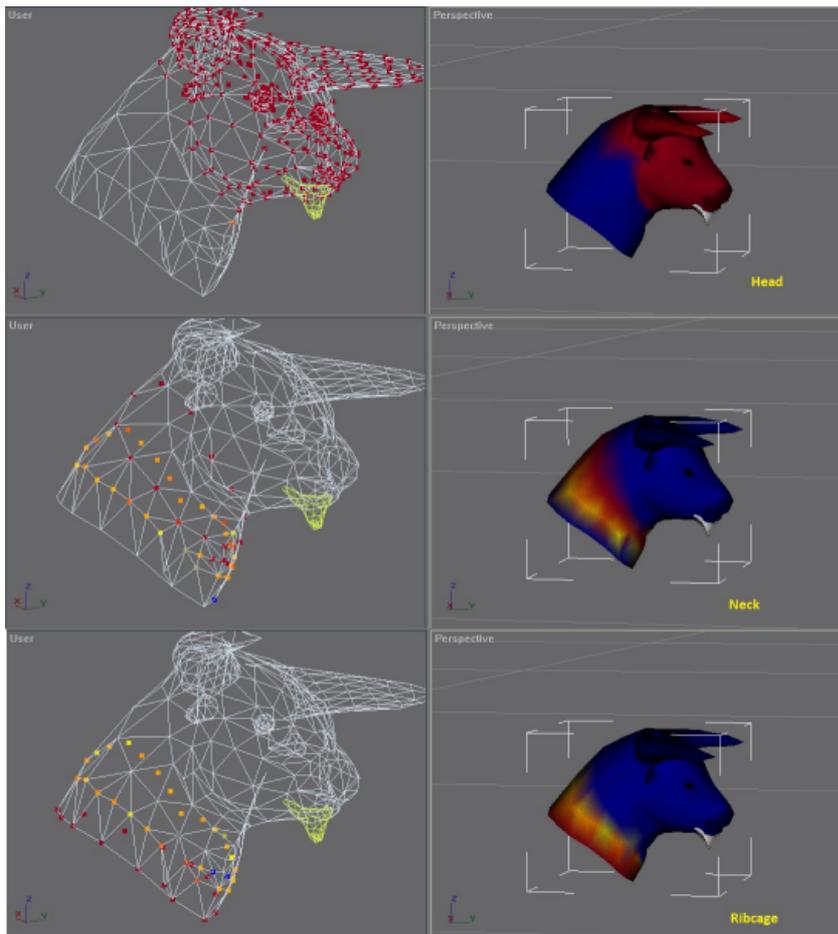
Now you see the sphere. Everything within this sphere is weighted.

A Radius value 0,01 is a good size to work on a single vertex.

One click on the mesh (with a radius of 0,5) will fully weight all vertices to this bone visualized by the red color. Also, the vertices will now show up (in the mesh-viewports).

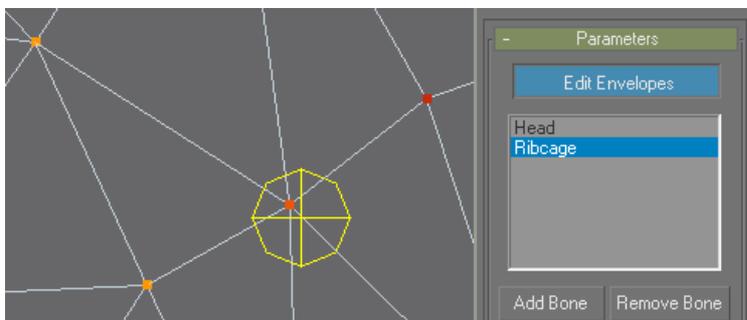
Hold down the [Alt] key to reduce the weighting. As long as there is only one bone applied, Gmax gives you the option between full weight (red) and low weight (blue). Other weightings will be possible, if a vertex is influenced by more than one bone and thus has to "share" the weight (see below).

Here you can see the result of 3 bones (Head, Neck, Ribcage) with the according weighting:



As mention above, if vertices are influenced by more than one bone, then the weight is "shared". The amount of the weight is displayed in colors ranging from a darker orange (= nearly full weight/influence of the selected bone) to yellow (= nearly no influence).

A Radius value 0,01 is a good size to work on a single vertex. (Left-) Click on a Vertex to raise the weight of the selected bone. Clicking in combination with the **[Alt]**-key will lower the weight.

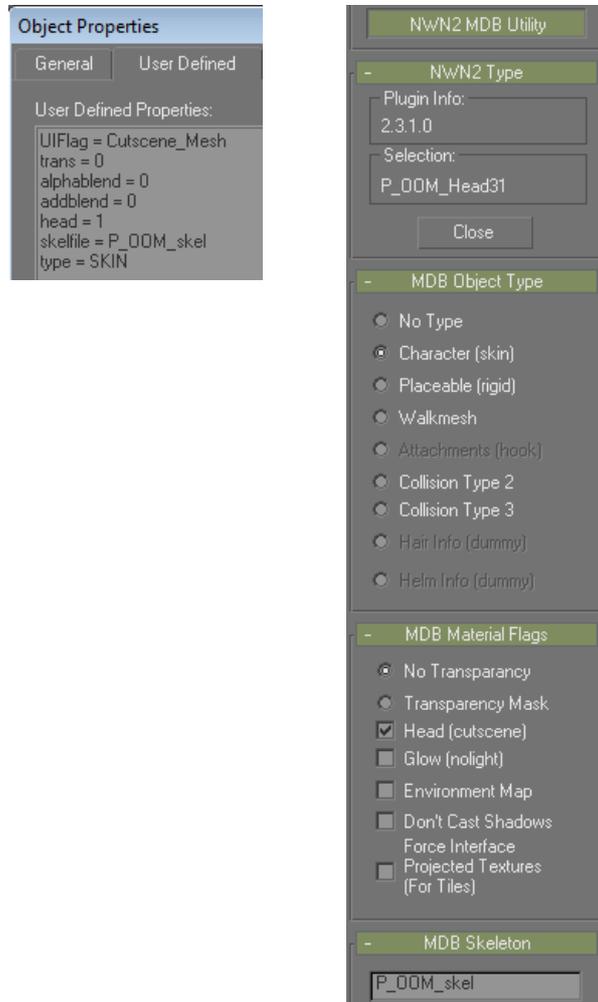


Exporting:

No collapsing is needed.

Deactivate the weight edit mode by turning "Edit Envelopes" off. (Avoid clicking on the "Editable Mesh" modifier - it will give you a warning, that manipulating the mesh may, as written above, mess up something.)

Double-check, if all properties are right (either via "Object Properties" or the "NWN2 MDB Utility" -> hammer-icon):



Now, export the model - again, you may have to switch to the "NWN2 MDB Importer (*.MDB, *.GR2)" for the file format.

When exporting, make sure, that the (main) mesh name equals the export-file name! (In this case "p_oof_head31.mdb")

To be on the safe side, have the textures and skeleton file in the export folder, too (- advise from Hellfire).

For quick testing, you could export into the [(MyDocuments->NWN2]-override folder. Naming mesh and MDB "..._head01) will replace the original default head with your version. If all is well, give it a higher number, so it appears as a new option.

- END -

Appendix 1

For convenience, here an info on naming conventions for character models:

(taken from: http://nwn2.wikia.com/wiki/Model_Naming_Conventions)

Head

P_??_Head??

First Letter is a "P" or "p"

Second is the Race Gender Code (HHM is Human Male), followed by "Head" or "head" and the model number.

Races

- HH - Human and similar races.
- HA - Aasimar
- DD - Dwarf
- EE - Elf / Moon Elf
- EH - Half-elf
- ER - Half-Drow
- GG - Gnome?
- AA - Halfling
- OO - Half Orc
- GY - Githyanki
- ED - Drow
- EL - Elf, Wild
- HT - Tiefling

Sex

M = Male F = Female

So for the female minotaur head for the female half-orc body it's "p_oof_head[number - here 31]"

Appendix 2

Since it fits: Hellfire's tips for working with head meshes

<http://social.bioware.com/forum/Neverwinter-Nights-2/NWN-2-Custom-Content/Tips-for-working-with-head-meshes-repost-3127831-1.html>

Tip 1. I would say the fastest way to rig a head mesh is to open a file with a head mesh you have already finished weighing, that has relatively the same shape and number of vertices. Build or import the head mesh you want to weigh in that file. On the weighted mesh, right click on the skin modifier, in the modifier stack window, then click copy. Click on the new mesh you want to weigh then right click in the modifier window (by editable mesh/poly) and click paste. That should copy all your bones in and get the weights somewhat close. You may need to uncheck and re-check "always deform" in the advanced parameters, if the mesh suddenly moves when you paste. You can do "tip 2" to get the mesh even closer.

Tip 2. Use 3dsmax's "SkinUtilities" to copy and paste the weights to the new mesh. (utilities tab then SkinUtilites) Click on the weighted mesh, click "extract skin data to mesh", select the new mesh and the skin data mesh, then click "import skin data to mesh". Click "match by name" then click "ok". This never works 100% perfectly and will require you to manually fix some of the verts, especially around the mouth, but it does save time. This trick works great if you are doing head mesh variants in the same file.

Tip 3. This is what I have to do if I have to start from scratch. Select the skin deformer, scroll down the advanced parameters then reduce the bone effect limit to 3. Then select all the vertices and weigh them 100% to the head bone. Then start weighing the vertices as you normally would from there. At least every bone will start with at least one correct weight, reducing the randomness creates all sorts of mischief when you try to export. Also, you will never accidentally have more than 3 weights.

Here are the things to check when rigging faces. You have probably done most of these already but I will put them all in just in case.

- 1) Expotron settings: For the facial mesh, be sure you have "Skin" set for the type AND "Head" set for the NWN2 flag
- 2) Expotron settings: Be sure the correct filename and extension is entered into the "skeleton name" field.
- 3) Make sure the skeleton inside the 3dsmax file and the skeleton in the .gr2 file are exactly the same. (any time you move or rename a bone you have to re-export the skeleton file)
- 4) Make sure the .gr2 (skeleton) file is located in the same folder as the .mdb (head mesh) file you are exporting into.
- 5) All skeleton bones need unique names, no duplicates.
- 6) Vertices cannot be weighted to more than 3 bones
- 7) All vertices must be weighted to at least 1 non f_bone (such as the head bone) and the weight to that bone must be .026 or greater.
- 8) If you have a vert that you know is correct but is reporting an error, try using SkinUtilites to copy and paste the weights back onto the same mesh. This will get rid of any hidden history on the vert's weight.