Character Animation tools

A detailed description of blenders character animation tools

August 15, 2001

Introduction

I am writing this as a tutorial about blenders character animation tools that are new to blender from version 2.20. As I write this The tools have been released for about a day so there is still very little documentation about this, most of my experience with it has basicly been playing with it and hoping I would get the desired result. I will Explain some of the stuff I have found out about the system. As I find out more this tutorial will grow bigger There for I will give you a few of the subjects I'm going to cover (or atleast try).

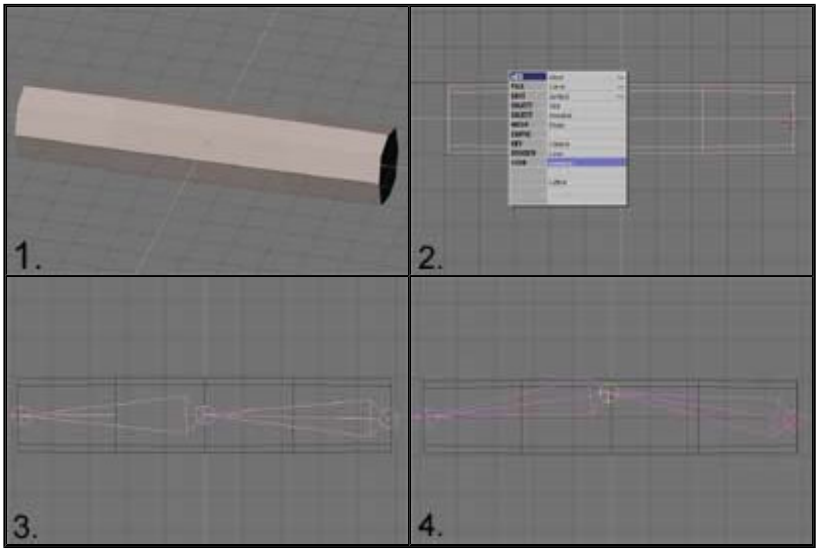
- adding armatures (page1)
- setting up mesh deformation with groups (page1)
- using the weight painting feature (page1)
- how to do IK (page2)
- using the NLA system (not yet)
- Gamemode and character animation (page4)
- got any other ideas let me know

To keep things as easy as possible I will use a very basic object (1) to apply these techniques on. When you model a arm please make sure you have enough vertices near a joint so it will deform nicely

Adding Armatures

Now go to front view and add an armature at the beginning of the arm (2). I added only 2 bones to keep things simple (3), you can stop adding bones by pressing either on the [spacebar] or the [esc] key. The difference between [space] and [esc], is that with [spacebar] the current bone will be placed, and with [esc] it won't (simple huh :).

The bones you just build have got 3 modes, editmode, posemode, and the regular mode. In editmode [TAB](4) you can change the layout of your bones, by grabbing and moving them, by adding new bones, or even by extruding bones. In pose mode [ctrl+TAB] you can rotate the bones, when parented to a mesh this will cause it to deform the assigned vertices.



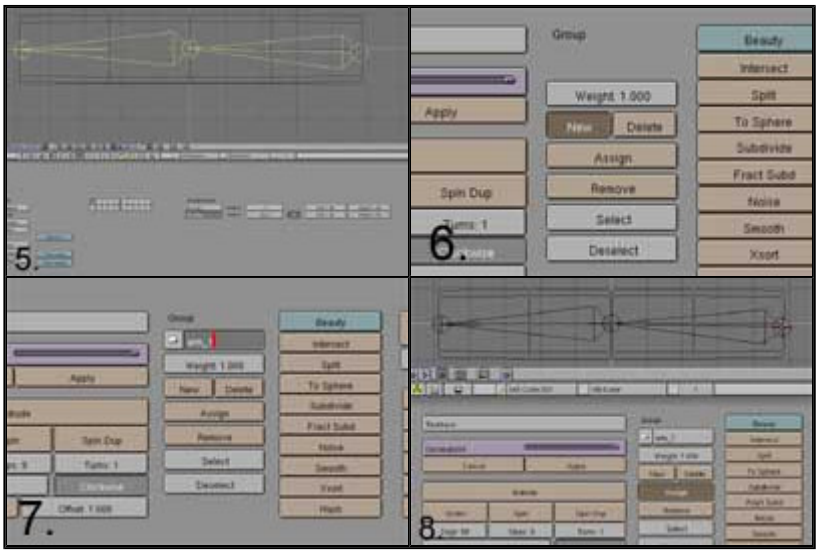
Setting up mesh deformation with groups

well lets continue by setting up some groups for deformation.
First of all we need to give each bone we created a relevant name, since I only worked with 2 bones I am calling them arm_1 and arm_2. To name the bones you select the bones, go into editmode, and select all of them, then go to the editbuttons menu and you give them a name(5).

Next go out of editmode, select your object, and go into editmode the basic idea of groups is that you can assign a set of vertices to a bone, vertices can have different weights so depending on their weight they have less or more deformation.

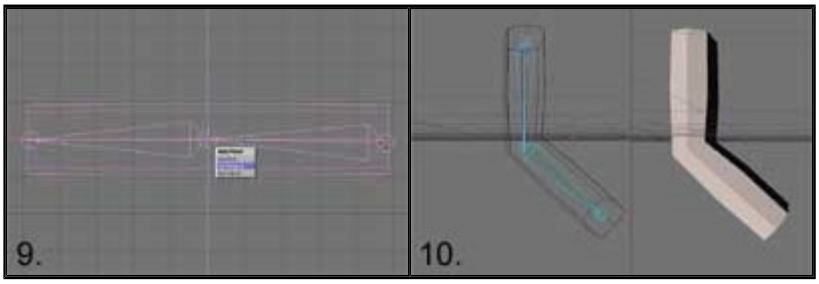
When you experiment with setting different types of weight you might notice that you don't get the result you expected. If you say add a vertice to a group with a value of 0.5, and this is the only group the vertice is added to you'll still see a deformation of 100%, while you expected it to be 50% right? .. Wrong, you should see the weights kind of as a balance, you have several groups, that all balance around the amount of deformation. So if you add a vertice to 2 groups, both at 1.0 or both at 0.5 or both at 0.261 (and so on) they will both deform the mesh by exactly 50%. now in order to say create a smooth joint, you could make your joint exist out of 3 rows of vertices, let the two outer rows be affected by only 1 group, and the inner row of vertices effected by both groups at the same amount, you will still have to tweak it a bit more to get a proper joint, so play around with it, and after a while it will feel pretty natural. But keep in mind the weights act as a ratio or balance.

The way that determines which group belongs to which bone, is very simple, if the group and the bone have the exact same name, the bone deforms that group.
Now add a group(6) and name it to the same name as the first bone (7). Then select some vertices and assign them to the group(8) (you can aslo change the weight first if you want less deformation).
You can do the same for the other bone.



Now you are set to parent your object to the bones, select the object, then select the bones, and press [ctrl+p], select the use armature

setting (9).
Before you start rotating your bones add a keyframe at frame 1 first, and then do all your editing in frame 100 and beyond. This way you are sure of it that you can always go back to your rest mode.
Now you can test the deformation of the arm by selecting the bones, and pressing [ctrl+tab], now simply select a bone and rotate it(10), if everything is right you should have a deforming object. If not hehe read this tutorial again or e-mail me to say I've f*cked up :).
If you're not happy with the deformation you can either move the bones themself a bit in editmode [TAB] or play with the grouping of vertices.



Using the weight painting feature

I planned on writing somethin up about the weight painting feature today, but I gues more people are asking about how to do IK and how do use them in the NLA system, so that's what I'm gonna describe on the next page. However this will already get you started with the awesome weight painting tool,

1) do the first part of this tute
2) now select the Mesh Object
3) press the little bone icon in the header of the 3d window (next to the vertex paint icon)
if everything goes right you should see a blue / red color on your mesh.
4) go to the paint buttons window, and set the opacity to 1.000, and also unset the 'area' button, and you might also want to unset the 'soft' button.
5) now go to the edit buttons, and select a group (if it's named exactly like a bone the bone will deform it) you want to use the weight paint on.
6) set the amount of weight you want to paint with, (1.000 to 0.000, will turn out to red and blue on your mesh)
7) start painting, then do the same for the other groups, test your deformation and so on

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