

Hair with Jahka particles (SVN 2008 / Blender 2.50)



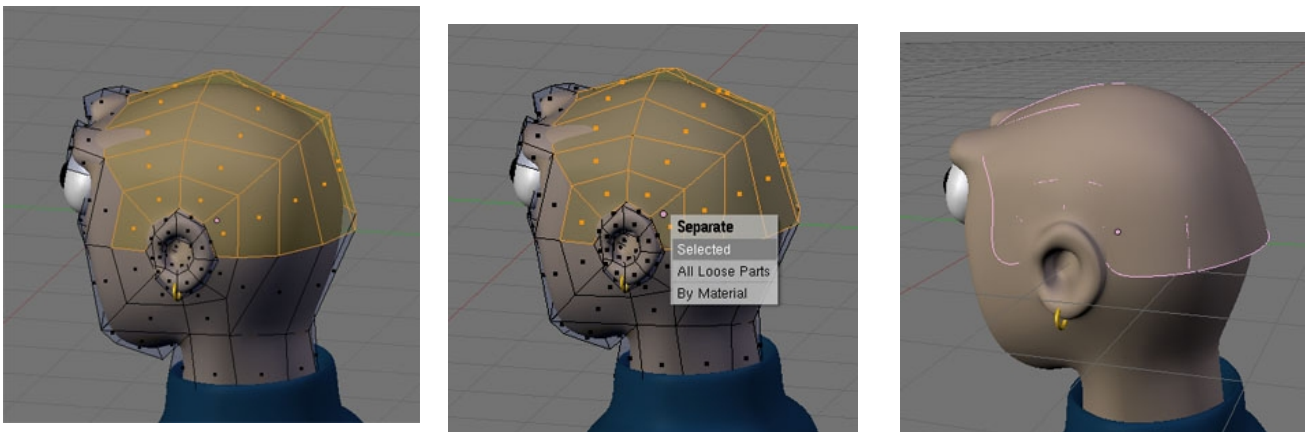
(download the blend file [here](#))

Typical, just typical. A sailor walks into your barbershop, but he has no hair. But he'd still want some cool haircut. Normally, you'd go with the good and trusty glue and horse tail, but luckily now there's something better for the problem: **Jahka Particles**. **Janne Karhu** from Finland coded a new particle system for Blender, and it also includes a very, very good hair system. Thanks a million Janne!

So, let's get on with the sailor. The expression on his face remains confused, but who wouldn't be confused when coming to a barbershop without any hair. But after the haircut, the confusion'll be over. At least it's a possibility. You can go to the last page now to get some advice on ***alternative ways***. This is an intermediate tutorial for advanced blender users, so I will not tell every hotkey and function.

Hair base mesh and particles

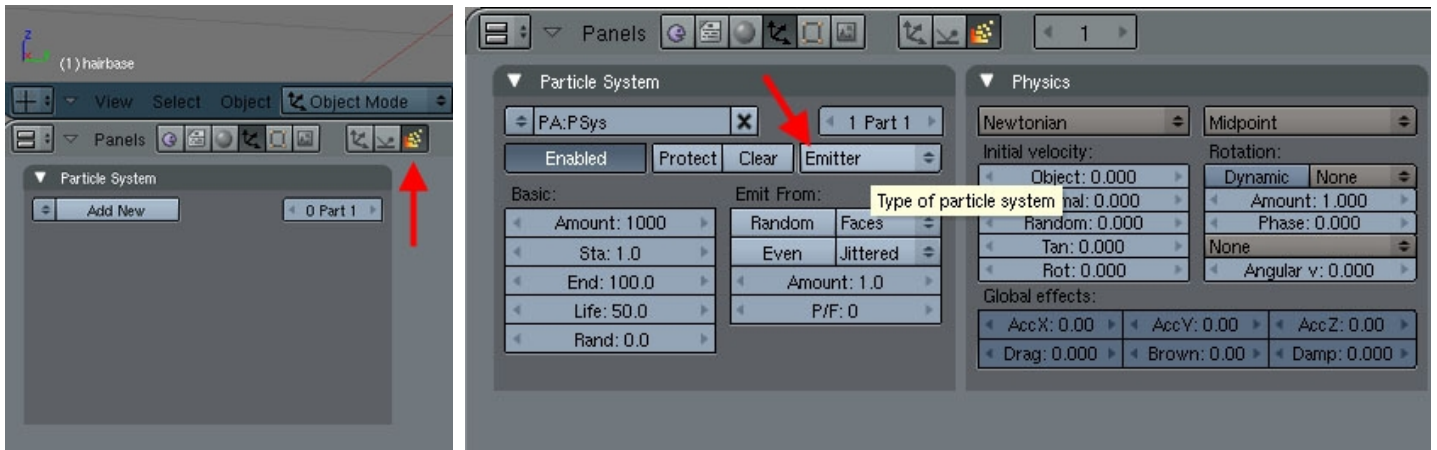
What we should do first is duplicate a part of the scalp so which defines the part we want the hair to – although this will not restrict us from expanding the hair area later on. It'll just be the starting point.



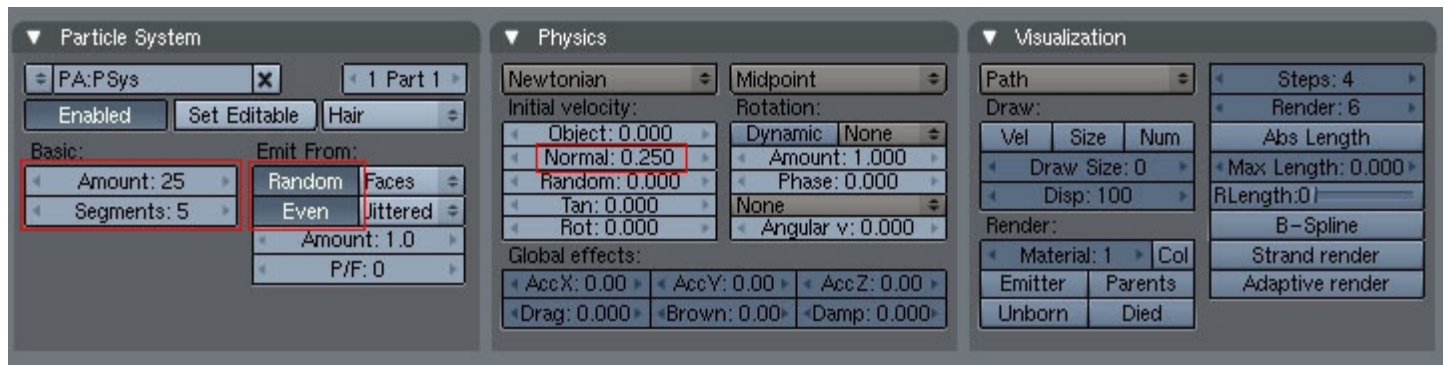
Select the faces you want the hair to grow of, duplicate them with **SHIFT+D**, and then separate them with **PKEY>selected**. Now you should have an object that looks like a helmet, rename it **”hairbase”** and give it a new material called **”hair”**. Change the colour of the material a bit so you can see the object more easily. You can also move it a bit if you want.

The hairbase object will not be rendered unless you enable it to be rendered, so its position isn't so relevant in this case. It might be wise to enable **”Bounds”** in the **draw extra** settings in the **Object buttons F7** so you can easily select the hair afterwards and not select the head or something else.

Now, having the **hairbase** selected, go to the **Object buttons F7**. There's a sublevel called **"Particle buttons"**. You can also swap through the different sublevels (object/physics/particles) with **F7**.

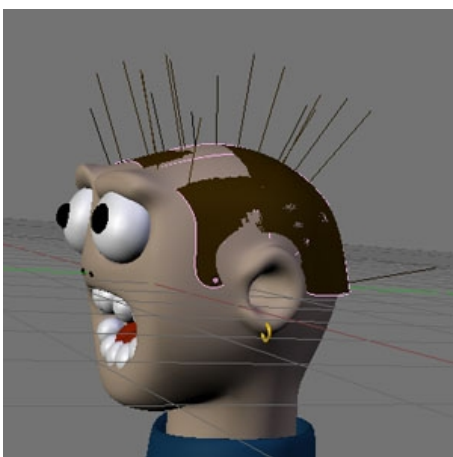


Click on the **"Add New"** button in the **"Particle System"** panel to create a new particle system. Then after that – because we want hair and nothing else – change the type of the particle system to **"hair"** from the pulldown menu where it says **"Emitter"**.



This changes the available parameters a bit. But there's still **"amount"** which in this case stands for the amount of parent strands – you can also have children strands, and we'll get to that later. The **"Segments"** are relevant for the **particle edit mode**. They basically define how many **control points** each strand has.

Set the highlighted parameters as above, and you should get something like the pic below. The **Random** and **Even** setting basically make sure that there's hair covering the whole object. You can read the actual descriptions by leaving the cursor on the buttons for a second, so I won't explain everything. The **Normal** value pushes the particles/strands out of the faces of the object (or vertices).

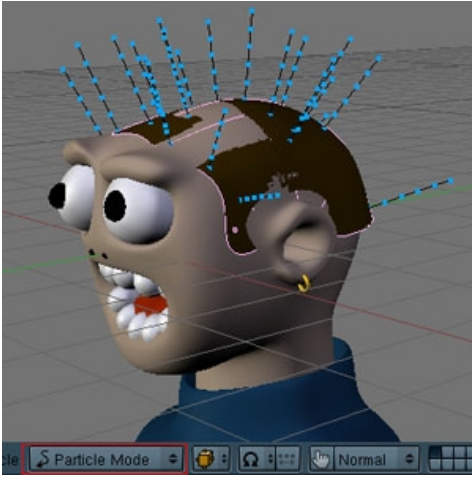


Now we got hair! But why only **25** strands? Well, we want to keep things as simple as possible but also have control over the whole hair. So what we do is we use these strands as the **guides** and then use the **children particles** to fill in the blank spots. Kinda like having an army with some generals for each platoon.

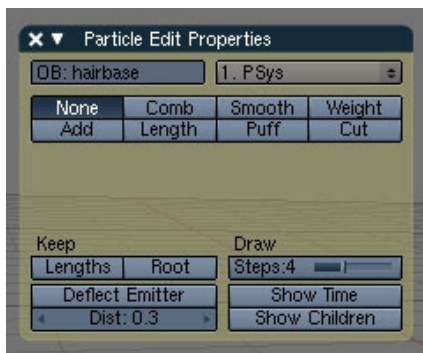
We have the general shape of the hair, but that isn't looking very cool, is it?

Now we can go to the actual **particle edit mode**, where the actual barbering happens. Click on the **"Set Editable"** button to **"freeze"** the strands so you can start editing the hair.

Ok, go now from "Object mode" to "Particle mode", either by selecting it from the menu, or by using the hotkey **CTRL+SHIFT+TAB**. You should see something like the image on the below left.



You're in the "Point select mode" of particle edit. You can control the 6 points in each strand, because you defined each strand to have 5 segments. The strands can be edited quite much like curves. You can subdivide them, delete points, and you *used* to be able to duplicate strands - now you can do it with the "add" brush and enabling "interpolate". The strands are a bit like the **old curve guides**, but better. The more of them, the more control. Anyway, when you rotate around the head you see that the strands don't grow everywhere, so there are blank spots. Remember to have at least one strand near the ear to have control there so the hair doesn't go through the ear. Press **NKEY** to bring up the "Particle edit properties" or the palette, if you wish.

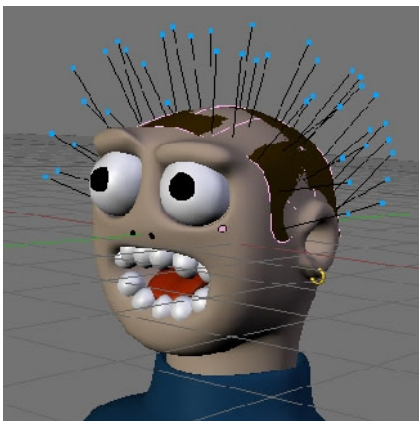


This is the panel where you can change the brushes with which you edit the hair. You can also change some view settings there. From the "Keep" settings, disable all. This way we can change the **length** of the strands and change the position of the **roots**. We don't really need the "Deflect Emitter" option either, since we're not animating the hair. Now use the "add" brush with the "interpolate" setting enabled, and use **strenght** of 1, so that each time you click you'll only create one strand and not 100. Holding the mouse button down will paint more strands, so be careful with it.

Now is probably a good time to enable the "Limit selection to visible" option so you can only see the strands in front of you and not the ones behind the head on the other side so you won't select those.



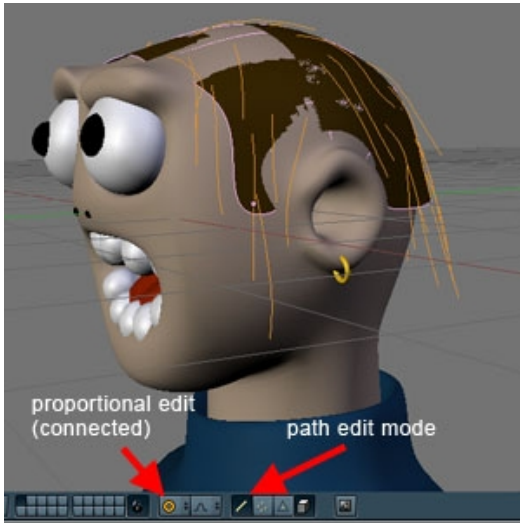
You can paint more strands and you can select strands with **LKEY** and just grab, rotate and scale them like any other object. And if you don't want a strand somewhere you can erase it with **XKEY** or **DELETE**. Also deleting **keys** (= control points) is possible, but right now there's no need for that. You can also see what features the **WKEY** menu has got. Anyway, it's very much like mesh edit mode.



When you have got strands covering the whole head evenly, so that you can control each part of the hair you want to have control over, change to the "Tip select mode". BTW, You can also swap through the different hair brushes with **CTRL+TAB**. You can also make the strands grow only from **the top**, and go all the way down. Try that too. Now, enable all the **Keep** settings from the properties panel. Well, I'm not sure if we need the **Deflect Emitter**, but you can use it so that the strands will not go through the head (except maybe the roots, but that's actually a good thing ;). Now you put some shape into the hair style we're after. **Tip**: You might need to put the strands near the ears **inside** the head to get the hair off the ears (**children strands**).

Grab the strand ends and put them nicely over the head, the way you want them to be. Or if you want them to stick up, that's fine with me. The idea is to get the basic shape of the haircut in this part of the particle edit, so you can add details to it later on, when we have the children particles enabled.

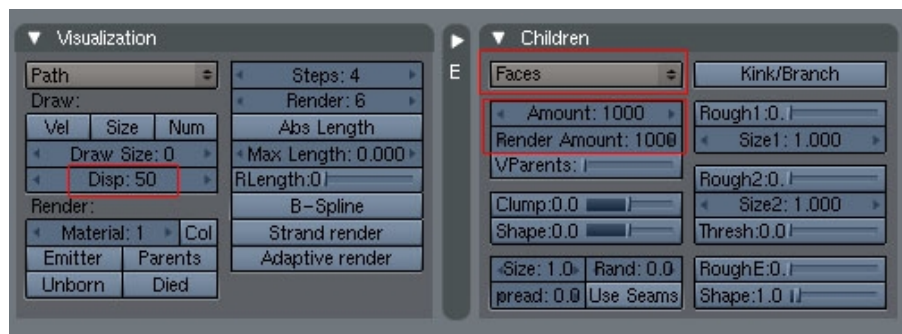
You could do this arranging with the **Point select mode** as well, if you used the **proportional edit** with the **”connected”** option enabled. However, in **Tip selecte mode** there's less points so it's clearer to edit the strands – less miss clicks. You can still use the proportional edit mode, and I recommend using the **connected** option if you want to just edit one strand at a time, or if you want to edit many strands but don't want other strands to follow. The **proportional edit** mode helps you get hold of the entire strand, so it doesn't start getting curvy. Try a big **range** for the proportional edit.



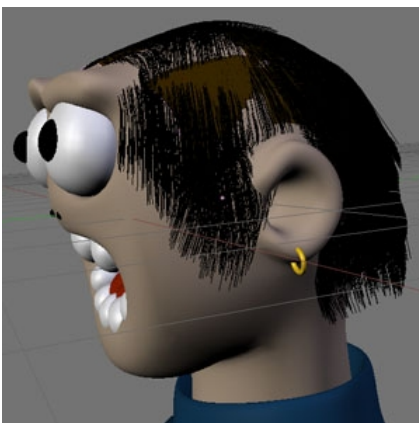
It's a good idea to grab **a couple** of strands that are near each other and then grab them and pull them towards the head. That way you don't have to move every hair individually. On the other hand, if you grab **too many** strands, they might not go in the exactly right place. Try **not** to have strands **on top of each other** cause it may not look very good with the **children particles**.

The other thing is to grab the strands **more than once**, since their behaviour depends a bit on the **form** of the strand too (curvy / straight / touches emitter / doesn't touch emitter). I put the hairs like in the pic above, so they lie on the head. I used the **path edit mode** for the screenshot so the strands show properly. The **proportional edit mode** is **”connected”**.

Ok, so now we got the basic form of the hair. Let's enable the **children particles**, so we can get some more hair in those gaps. In the **Particle buttons**, in the **”Children”** panel click on the pulldown menu that says **”None”** and select **”Faces”**. This option will create children particles from faces near the strands.



The other option is **”Particles”** but I must say it didn't seem work as well as the **Faces** option. I believe this would create children from the strands themselves, and not from around them. The **Amount** value is the total amount of children particles/strands that will be created, and the **Render Amount** is how many strands to render (if you want a specific number of particles, or if your computer cannot render the certain amount of strands you have). To see the children particles in 3d mode, you have to enable **”Show Children”** from the **Particle edit properties** panel (**NKEY** in 3d-view).



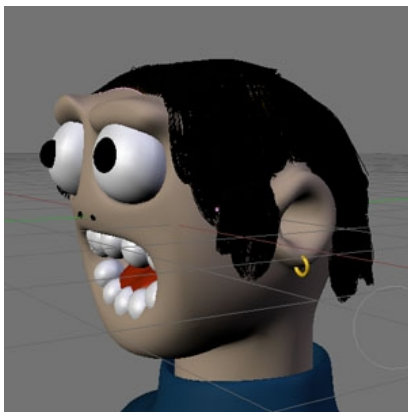
In the **Particle buttons** in the **”Visualization”** panel, you can change the percentage of the particles to be displayed in the 3d-view with the **Disp** value. This helps if you have a lot of particles/strands, and only need to see how most of them go, which is usually the case because you don't want to see all the particles while you edit them. It's good to see the head/emitter of the particles while editing so you can see where each strand goes. So keep the **Disp** value low enough. When you're finalizing your haircut, it's usually wise to disable the **Keep lengths** and **Deflect emitter (Particle edit properties)** so you can move the particles anywhere you want. Like if you have some hair over the ear, you might want to put it inside the head, or maybe use the **Cut** brush, or whatever brush you like.

The tooltips basically explain most of the functions very well, so I won't go through many of them. **Clump** setting defines how the hair spreads or narrows after the root. The (Clump) **Shape** basically defines how "sharp" the effect is. It kinda puffs the and smoothens the **Clumping**. Just try it :).

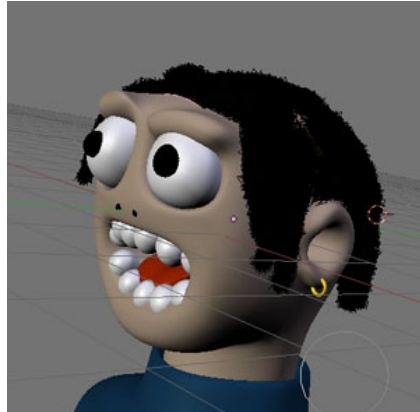
The **Rough1** setting basically makes the hair "rougher". It adds irregular form to the hair based on location (that's how I understood it). The **Size** defines how often this irregularity happens on the strand. The **Rough2** setting just makes random irregularities in the hair, and this time it looks like it's evenly on the entire length of the strand, and not based on the location like **Rough1**. Good for rasta hair :).

Remember to try **low** values first (this might be a good general tip for all settings).

One other thing you can try is the "**Kink/Branch**" button. There's some different "effects" for the childrens strands. In the next pictures I have used some different settings from the **Kink/Branch** options and **Clump** and **Rough** settings. I also combed the hair a bit for each setting. There's also the "**Extras**" panel (minimized in the last picture) where you can define effects based on the weights of a vertice group (for example: more weight, more curling). Remember that **Kink/Branch** button is only for displaying the **Kink/Branch** settings, not to disable them. You have to select the "**Nothing**" option inside it in order to disable the **Kink/Branch**. This might change in the final version (2.50).



Plain hair (some **clump**).



Some rastas, man! (**rough2**)



Some curls :) (**braids x-axis**)

You can also try all of the other settings and view the tooltips, but I'm only gonna go through the crucial parts for creating hair. So, I'll use a slightly curly hair, you go with what pleases you the most.

We'll now go to the **material settings**. BTW... You can see the hair a bit better if you go to object mode. The 3d-view shading is better in there for some reason (at least on my computer).

Well, at least we'll find out what colour the hair he has when he has some. Salty dog's gonna be cool dog... or not. If nothing else, he'll have some cover from the sun on the sea.

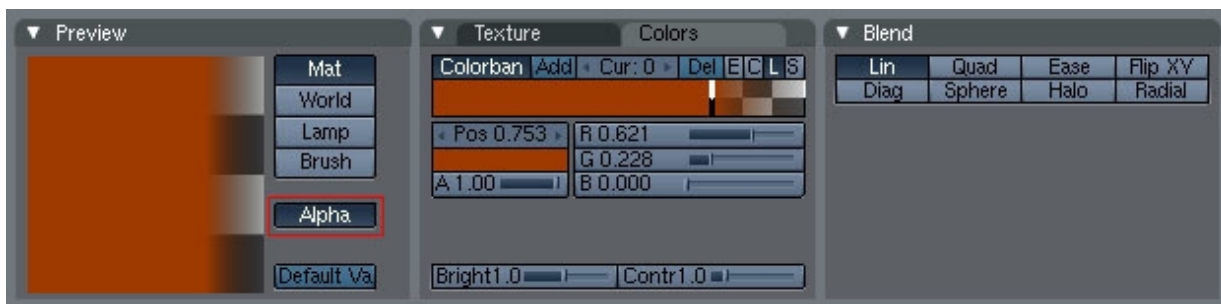
This page is kinda full, so I don't think I'll put any more pics here. If you don't want to read anymore of this text, you can turn the page, but I'd rather not waste good space so I'll just tell a story.

You know, back in **Blender 1.6** and so on, until we got raytracing in Blender, getting reflections on a flat plane was a road of tricks and a way to tweakville, McWorkaround. If I remember right - since I'm pretty old as a Blender user - you first had to put an empty, positioned as if the reflection of the camera, under the camera so the plane would be in between the camera and the empty. Then you'd assign that empty as the object in the envmap texture and maybe you even had to disable a layer in there hide the plane itself from the reflection (?). Also tweaking the "clip start" was needed sometimes. So, rejoice now for the easyness of getting reflections in Blender and be joyful! The end of this story.

Ok, either you read the story or not, it's time for the hair dye. I bet you can find some better hair materials online, but here are the basics. At this time, you should probably set the **emitter object** (the hair object) to be displayed as **"Wire"** in the **Object buttons (F7)** so you only see the hair.



Above are the material settings in their simplicity. First of all, select the material **preview** object to be "hair strands". Add some more **Spec** if you want the hair to be shinier. For the upcoming texture, set the **Ztransp** enabled and turn the **alpha** to **0**. The **Strands** settings under the Ztransp may come useful too if you want thicker or thinner hair strands..



KO, now create a **Blend** texture and make it something like in the pic above. The colour doesn't really matter unless you want to control it from the texture and not with the material colour. Remember to enable the **Alpha** setting so it uses the transparency.



Now back in the material buttons set the **Map Input** to **Strand** because we're using hair, and enable "Alpha" in the **Map To** panel. You can disable **Color** if you don't want to control the colour of the hair with the RGB sliders of the Material buttons but from the Blend texture colours. Keep the **blending mode** as "Mix". This texture will make the hair ends fade away smoothly in the ends, so it looks nicer. A bit like if there'd be very thin hair in the end of the hair.

This should be enough to get a basic hair material. Now enable **layer 2** (camera and lights + sailor cap) and render and see what happens. After some tweaking with the strands in the particle edit mode, I got this kinda hair. It's not super cool, but it's better than beeing bald on the sea. He doesn't seem to be complaining. Maybe he's still a bit shocked to get hair like this. Here's my final [blend file](#).

I hope you learned something from this tutorial, and if you got any questions you can contact me on elysium.com, or as the fancy new name says, "blenderartists.org" - but who wants to type such a long word when you've got a perfectly fine word to begin with? Or just come to #blenderchat and say "Falgor, help, the sailor is still bald!"



Ok now, let's go through the points that could've been done more wisely if this were a REAL case.

1. Enable the children particles in the early stages, unless you absolutely know how things are gonna look with them without seeing them. That way you can know how the hair will look right away.
2. Use as few guides as possible, and if you can - start them from the top of the head (not always the best solution, though). Sometimes you need more, especially in the ear zone.
3. Use the brushes more. Or not, if you don't want to.
4. Stop reading this tutorial now because there's no more advising text.
5. The sailor still looks confused, and in my case, slightly like William Baldwin in this [pic](#).

Thanks for reading this tutorial and disobeying the 4th advice. Click on my nickname to see that you can actually make something that looks a bit better (ok, that's a matter of opinion) than the sailor - with the new Jahka particles. Have fun! =D

-[Falgor](#) (Petri Rantanen)

PS. ***Alternative ways***

Now that you've gone through the tutorial OR come here from the first page...
I got some feedback from mfoxdogg concerning this tutorial:

”Falgor, that hair tut of yours is horrible
for starters you don't use the strand renderer
secondly you don't need a skull cap, use vert groups
it makes it a hell of alot easier to comb
and thridly don't need so many children
you are basically doing everything the long and hard way”

If you actually learned something, the first statement can be questioned.

But the advices are pretty good. Using the strand renderer is wise. I didn't get to it in my tutorial, I just showed the basics of making hair, and did not really go into the rendering part.

Using the skull cap isn't probably the best way to do it, unless you're making a wig. The comb comment means that when using vertice group weight for the density (= where the hair grows) the hair will deflect the whole body when ”deflect emitter is used” (assuming the body and the head are the same object). The third comment refers to using too many children. Well. I think it's kinda good to see at least a bit how it's gonna look before rendering. I did go through this on page 4.

Last comment... I must say that not everything. Good advices overall anyway. If this tutorial is too horrible for you, dear reader, there are alternative tutorials available now ;).

I made this tutorial in one evening and one afternoon, so that people might get an idea what the new particles can do. Again, have fun! ^_^

(going to the next page means your computer doesn't know how to count to 7 very well)