Blender Visualization Tutorial WS2013-14 II

CELLmicrocosmos Cell Modeling Project WS2013-14,
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Version 06.11.2013

Forum:
http://www.cellvisualization.org

Direct link to this forum entry:
http://www.cellmicrocosmos.org/Cmforum/viewtopic.php?f=21&t=737

Actual Version of Blender:
http://www.blender.org

Here, Blender 2.67b is used.

Target

This tutorial describes how to create a simple plane with hills, stones and grass moving in the wind.

Abbreviation

RMB Right Mouse Button

LMB Left Mouse Button

! For using most of the shortcuts discussed in this tutorial, you have to be sure that the mouse cursor is WITHIN the view port of the 3D View !

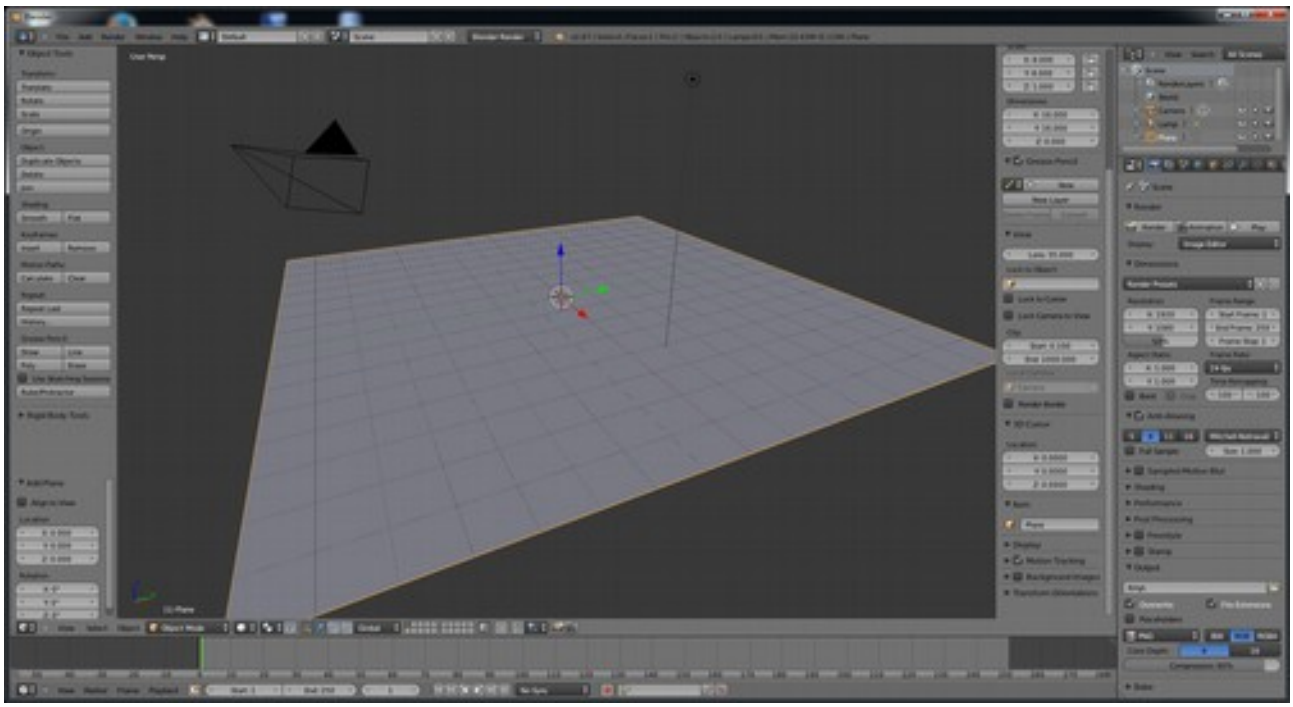
Base

Create a new project (standard project with one camera and one lamp)

Delete all spatial/3D objects such as the standard cube (except the camera and the lamp)

Create a plane: Add → Mesh → Plane

Set the size to 16 X 16 (X/Y), so that the whole Blender viewport area is filled



Go to Edit Mode, subdivide this base pane 4 times (with shortcut w)

Set Shading to Smooth

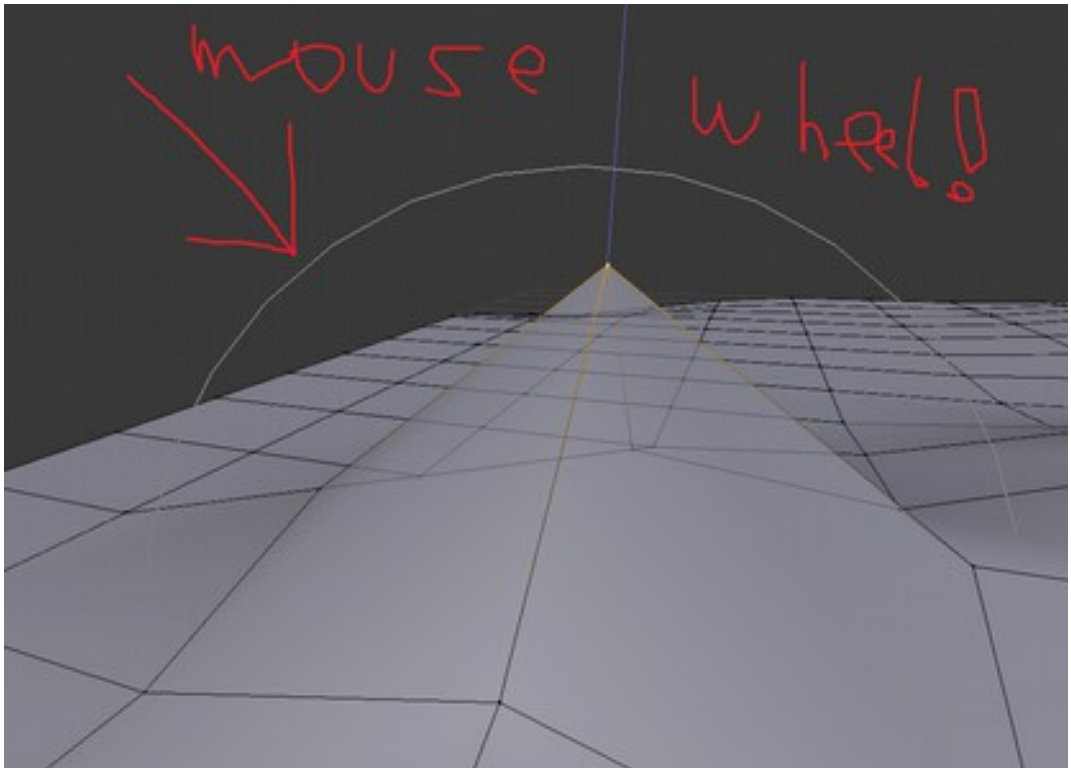
Proportional Editing/Falloff

First activate the Proportional Editing mode by selecting the blue circle

Then, additional options appear, see image below, e.g.:

Select: Smooth → Circle-like smooth fall-off

To change the falloff, this means the vertices affected by proportional editing, choose one of the manipulators you already know (by pressing G or R or S) and move then the mouse wheel. The size of the white circle changes now – and it is exactly this circle which allows you to define the affected area (see image below)



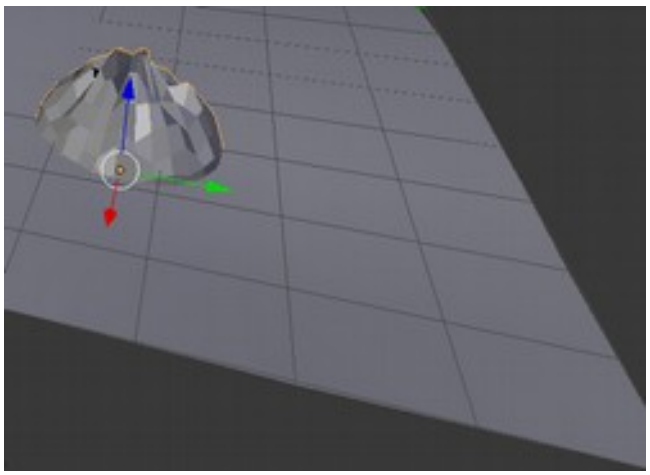
the size of the circle is toggled by the mouse wheel! Attention: It may happen that the circle is very large and you do not even see it in the view port. Remember: move the mouse wheel away from you (in the opposite direction) and the circle shrinks. Do this, in case the circle is not visible, until you see the circle again!

Back to Object Mode, add a sphere

Change this sphere to a stone-like structure with an uneven surface by using proportional editing and the random function

Random → generates rough edges

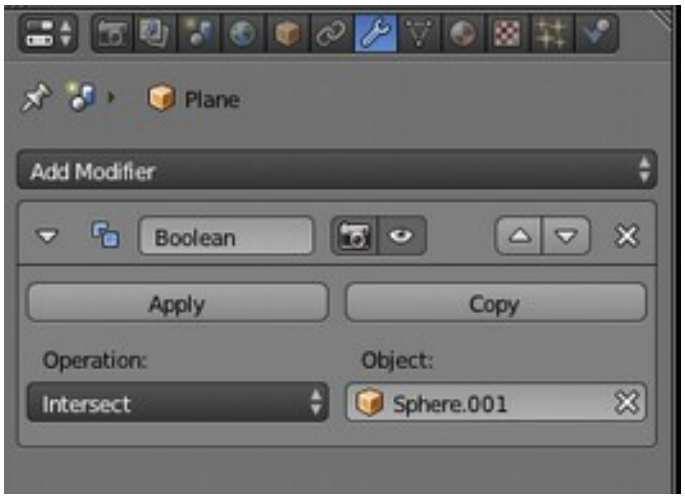
Back to Object Mode, place it into the correct place where it should stay



Duplicate it with CTRL+C and CTRL+V

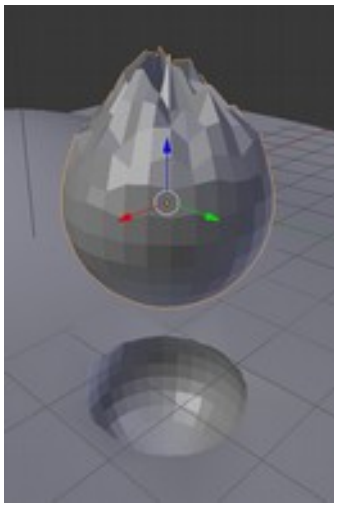
Hide one Sphere/Stone object

Add a Boolean Modifier to the plane to create holes inside the plane during the next steps. These holes should prevent that the grass is placed *inside* the stones!



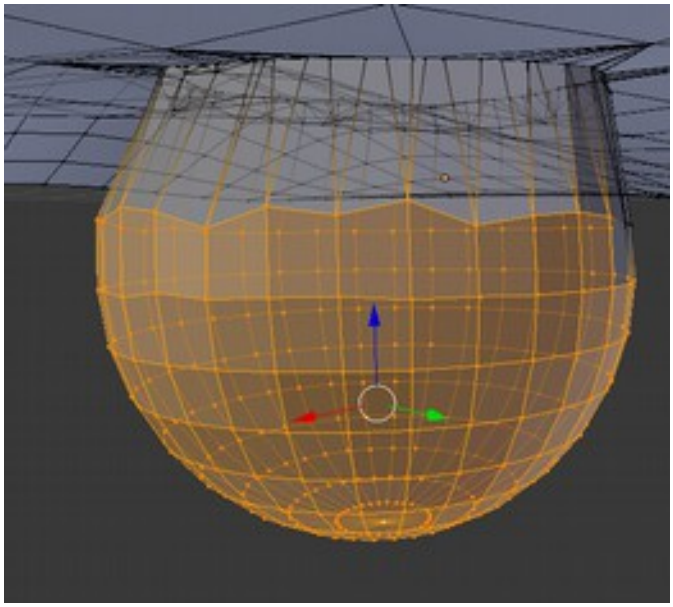
Select “Difference” and then choose the visible sphere the object of choice

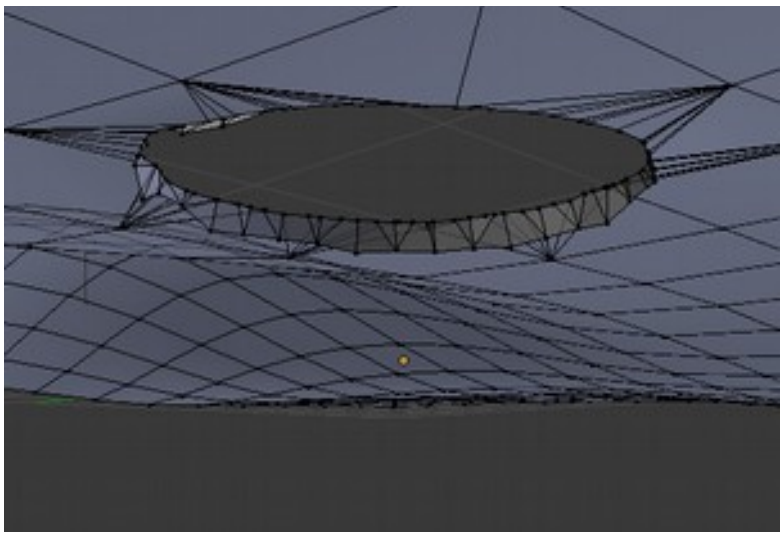
If the sphere is moved upwards, it should look like this:



Select the plane, go to edit mode, use proportional editing but this time in constant mode, select the center point with RM and use the scroll wheel as you know to select the whole sphere and then move it apart

After this, use CTRL+LM to select the whole part which should be deleted, then press DEL and delete it

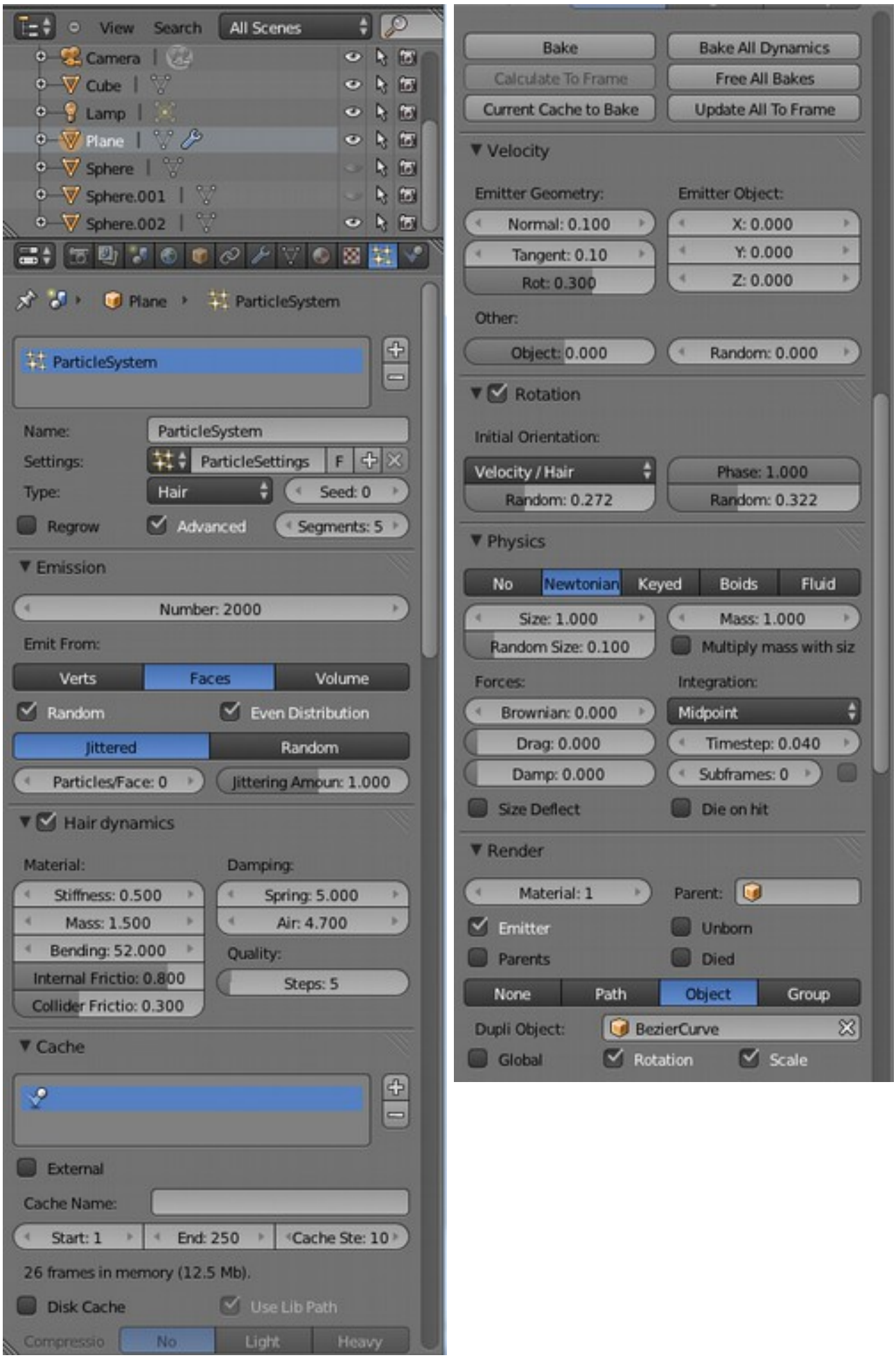


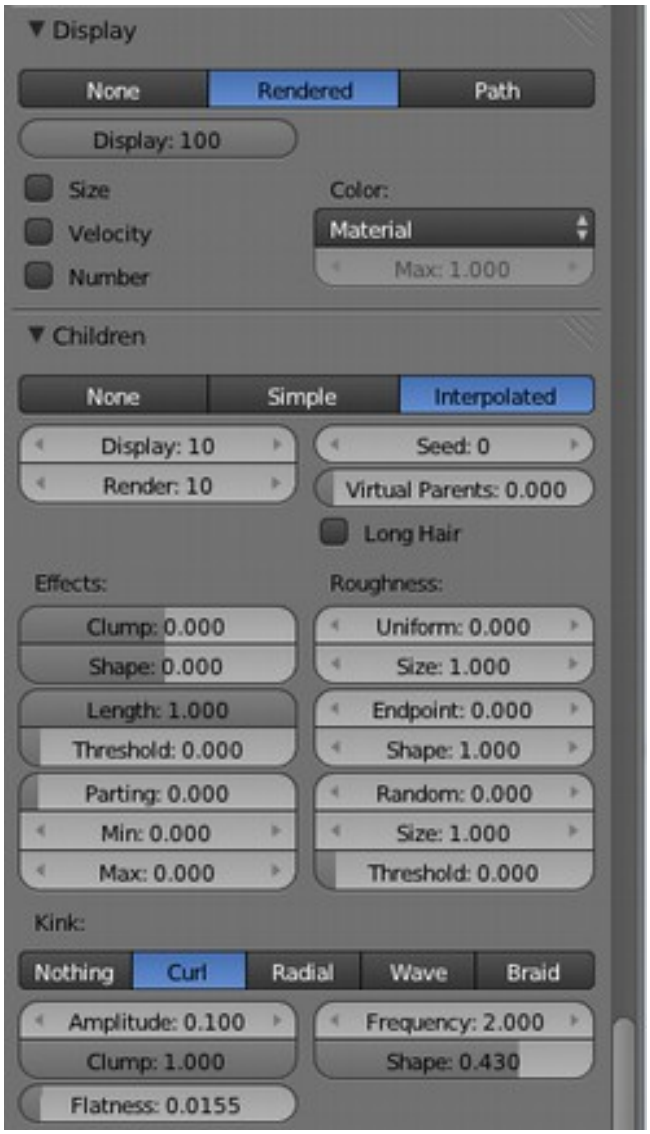


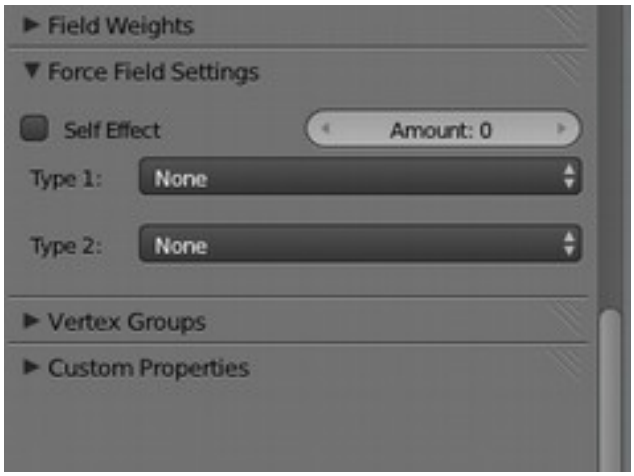
Grass

Now, we will start to add grass.

Add now a Particle System:


View
Search
All Scenes
Camera
Cube
Lamp
Plane
Sphere
Sphere.001
Sphere.002
Plane
ParticleSystem
ParticleSystem
Name:
ParticleSystem
Settings:
ParticleSettings
F
Type:
Hair
Seed: 0
Regrow
Advanced
Segments: 5
Emission
Number: 2000
Emit From:
Verts
Faces
Volume
Random
Even Distribution
Jittered
Random
Particles/Face: 0
Jittering Amoun: 1.000
Hair dynamics
Material:
Stiffness: 0.500
Mass: 1.500
Bending: 52.000
Internal Frictio: 0.800
Collider Frictio: 0.300
Damping:
Spring: 5.000
Air: 4.700
Quality:
Steps: 5
Cache
External
Cache Name:
Start: 1
End: 250
Cache Ste: 10
26 frames in memory (12.5 Mb).
Disk Cache
Use Lib Path
Compressio
No
Light
Heavy
Bake
Bake All Dynamics
Calculate To Frame
Free All Bakes
Current Cache to Bake
Update All To Frame
Velocity
Emitter Geometry:
Normal: 0.100
Tangent: 0.10
Rot: 0.300
Emitter Object:
X: 0.000
Y: 0.000
Z: 0.000
Other:
Object: 0.000
Random: 0.000
Rotation
Initial Orientation:
Velocity / Hair
Random: 0.272
Phase: 1.000
Random: 0.322
Physics
No
Newtonian
Keyed
Boids
Fluid
Size: 1.000
Random Size: 0.100
Mass: 1.000
Multiply mass with siz
Forces:
Brownian: 0.000
Drag: 0.000
Damp: 0.000
Integration:
Midpoint
Timestep: 0.040
Subframes: 0
Size Deflect
Die on hit
Render
Material: 1
Parent:
Emitter
Unborn
Parents
Died
None
Path
Object
Group
Dupli Object:
BezierCurve
Global
Rotation
Scale

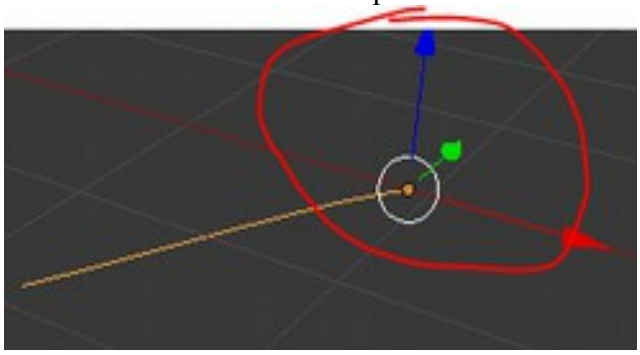




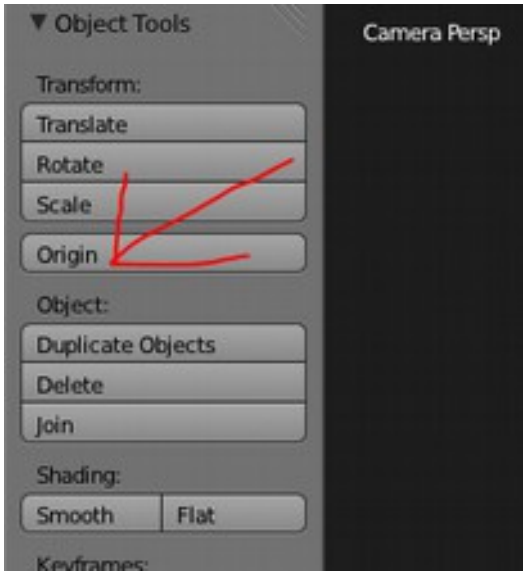
In these images, there is already a Grass Blade added. Create it this way:

Add → Curve → Bezier

Make sure that the Origin of the Bezier Curve is add the bottom of the object. In the beginning, this is not the case. Use for example the 3D Cursor to reposition the Origin

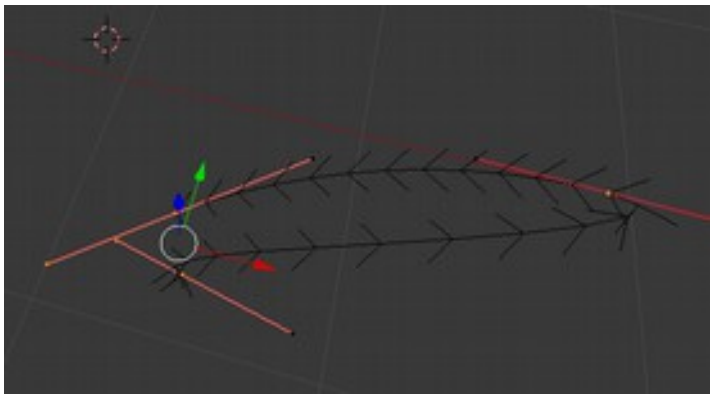


You find the option here:



Now, go to edit mode and add a second strand by using “e” for extrude

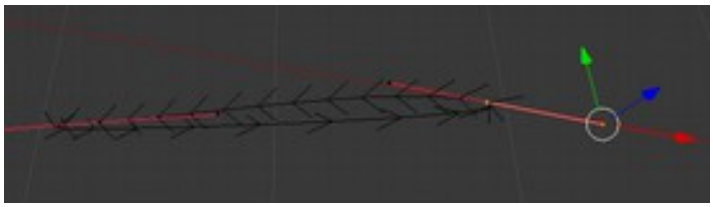
The two lines are not connected, for this purpose, just select the last two nodes



and then connect then by using “Make Segment”, just press f

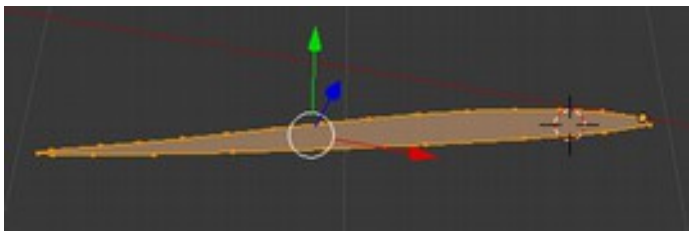
They are now connected, now you can delete the new generated connecting node, the two lines will still be connected afterwards

Adjust now the Bezier curve to create a nice grass blade



Because we want to have a surface on our grass blade, we have to convert it to Mesh; use ALT+C for example for this purpose.

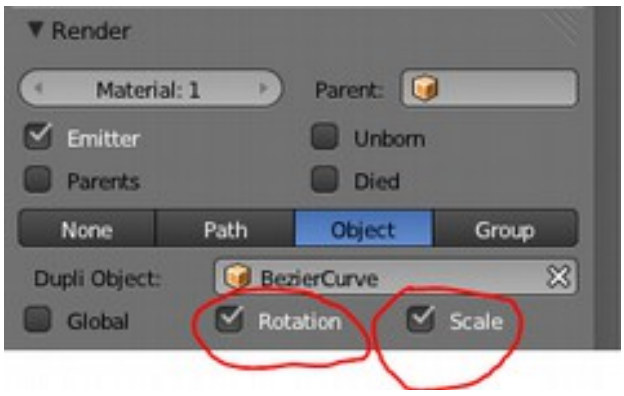
Go back to edit mode, select all points and create a face by pressing f again



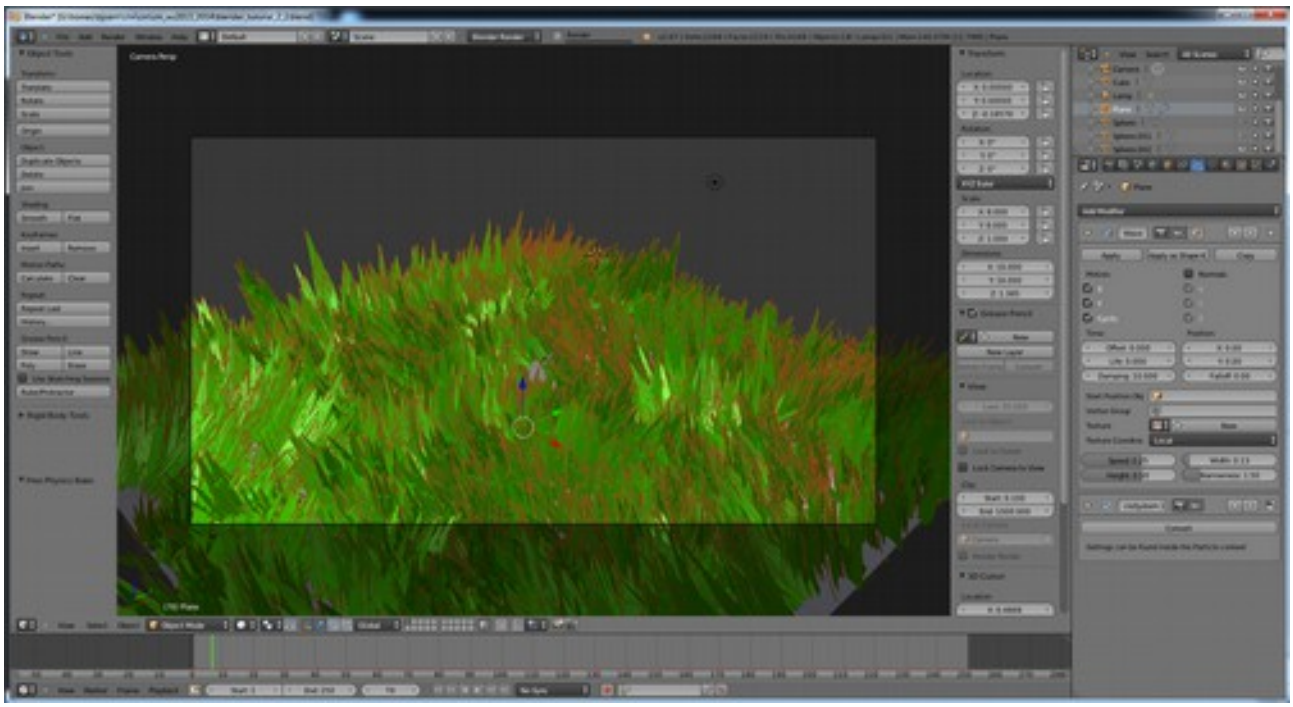
Finally, make sure that the Origin is still in the right position!

If you change now the rotation of this blade, the rotation also of the blades on the plane will change

Make sure that in the Particle System the BezierCurve is chosen (your grass blade) and Rotation and Scale are selected



This is how the result could be:



So the grass has to point upwards. After you have done the steps previously discussed, it still may be that the grass is pointing into the opposite direction.

To change this, select the original grass blade, change to edit mode (!), select the complete grass blade (e.g. with shortcut a) and

- rotate it, if it is pointing into the wrong direction,
- scale it, if it is too large or too small,
- and always keep in mind, that the origin in the end have to be at the bottom of your grass blade; you can also just correct the position by moving it towards the origin.

Finally, add a Wave modifier to the plane to keep the grass moving! Please be aware that the Wave modifier has to placed on top of the Particle System. If it is not directly placed there, then press the arrow (red circle) to move it upwards.