

# Lightning Bolts

with  blender

by S68

who, in the real word answers to the name of Stefano Selleri

[www.selleri.org](http://www.selleri.org)  
[selleri@det.unifi.it](mailto:selleri@det.unifi.it)

22-04-2002

## INTRODUCTION

My 3<sup>rd</sup> tutorial. Background: stephen2002 is deep in a complex long-term project of an animation of an Intrigue car running in a storm. I was really intrigued (hehe :) ) by the idea of modelling a Lightning bolt and I produced this image.



My solution, presented here, basically uses the L-System tree-generating script at Blender Dungeon.

(<http://www.geocities.com/blenderdungeon/lssystem/index.html>)

## The Mesh

Well, first step is to build the lightning mesh. So you need to download the L-System script and launch it. Lightnings are fractal things with a distinct direction (from the cloud downwards). There is a single stroke which forks some times slightly at the end, especially if the lightning is falling on some large surface.

My settings for the script are:

**Branches:** Split 2D

resolutionV: 8; repeat: 2; Spin: 20; Curve:-10;  
subSlope: 45; subOrient: 0.5; sublen: 1; subThickn: 0.95

**Stem:** Arm2

resolutionV: 16; repeat: 1; Spin: 5; Curve:10;  
subSlope: 30; subOrient: 0; sublen: 1; subThickn: 0.75

**Force:** Don't use thickness

Bearing: 0; Elevation: 90; Magnitude:0.47;

**Prune:** Prune first 3

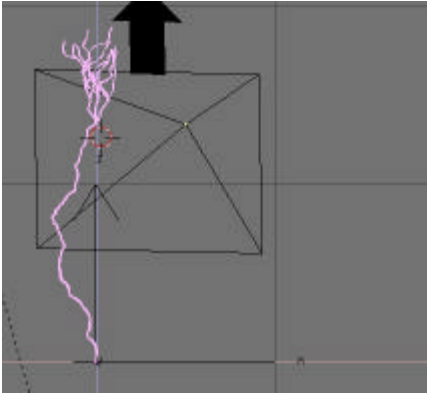
Prob. 0.250; MaxDepth: 30;

**Leaves:** who cares? Lightnings don't have leaves

**General:**

Scale: 0.5; Radius: 0.01;Shorten: 0.01;ThinDwn: 0.005;  
ReDir: 0.205; Twist:0.666; LOD:0.500; resolutionU:16  
Iterations: 7





Note that there is a fairly strong force pointing upwards and that there is a lot of pruning in the beginning (maybe you can increase the prune if you don't like much forking) Note also how thin everything is and how high the ReDir and Twist global setting. This makes lightning fractal looking yet the upward force keeps it going in the right direction.

On the left a possible outcome from the script.

## Make it Glow

Next step is to append the mesh in your scene and "rototrascalate" it to suit your needs. We will focus on the fore-left lightning in the scene.

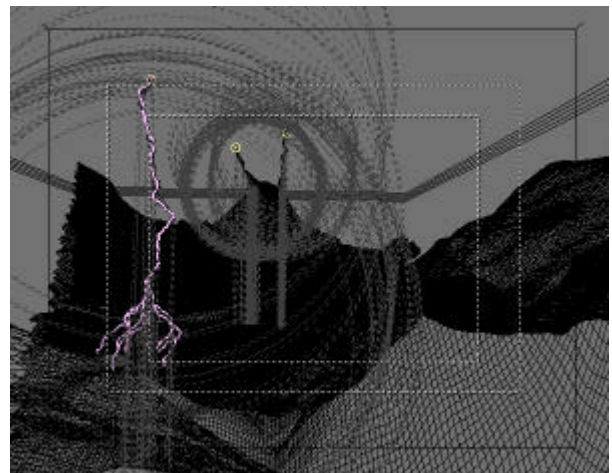
Duplicate the mesh twice. Place each duplicate on a different layer. Give meaningful names to duplicates and be sure that they are all coincident.

Go to the first duplicate. This will be the glowing electrical arc. Assign to it a nice bluish material like the one in the window, that is not completely opaque and quite emissive. I haven't used any texture, but if you want to experiment...

You can push emit more than 0.5, this is just the central very luminous stripe of the lightning. It should be shadeless, so your emit must be so high that shades are invisible or you must set 'shadeless' :).

The second duplicate will hold the halo material which will fake the subtle halo around the lightning. My material settings are these, but maybe more blue and less cyan?

Remember that you have a lot of vertices so you should keep low on alpha not to cover completely the previous mesh and ruin your image with a fat, bloating lightning.

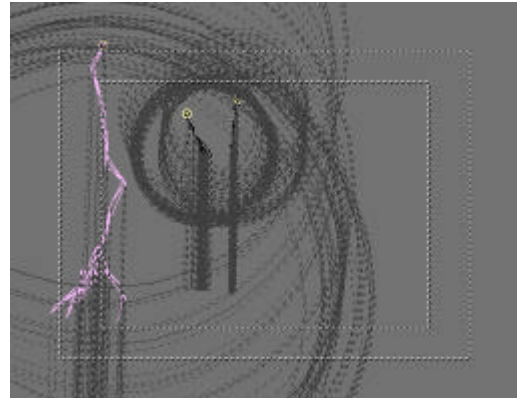


The third mesh will actually cast light (well, you can use radiosity since the first mesh is emitting, but I'm not sure you really want to wait that long for rendering...)

So take that third mesh and decimate it savagely, say have the vertex number drop down to 100.

Then create a new lamp, give it a nice, dim or not-so dim bluish light and parent it to the decimated mesh. Duplivert the Light!

My light settings were as in picture. Beware of the 'sphere' button turned on to prevent your lightning to illuminate too much.



Sadly this way you won't cast shadows at all, since lamps in blender do not cast them, but if you are really rich in computing power you can use spots, decimate the mesh much less and use DupliVerts which follows the local normal...



Oh yes, don't forget that these stuff (halo and emitting materials) looks MUCH better with the Unified Renderer!