The Blended Planet
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Information and Resources for Blender Users

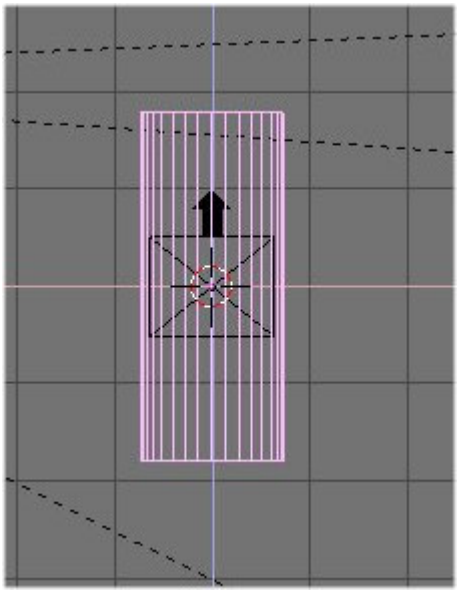
BLENDER DUPLIVERTS

Dupliverts are a useful feature related to particles. The idea is simply to have one object replicated across the surface of another. Examples of where this might be useful would be in creating short hair on a character's head or (in this example) spikes on a weapon that might be used in a game.

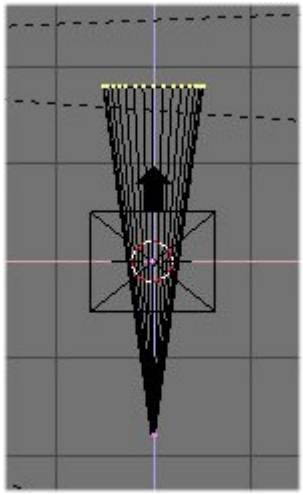
One advantage of dupliverts, as opposed to static particles, is that dupliverts can be "made real", that is to day they can be converted from their "virtual" state to actual mesh geometry. This is important if you want the replicated objects to cast shadows when you render.

In this tutorial, we'll go step by step and you'll see how it's done.

Step 1 - Create the geometry to be duplicated :
I created a simple cylinder, which will serve as both spikes and handle for our weapon :

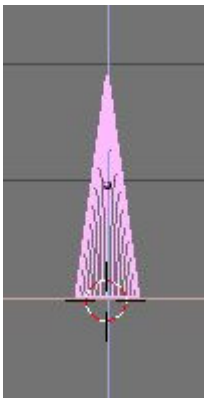


Step 2 - Finish the shape :
Go into edit mode (TAB-KEY), box-select all the vertices at one end (B-KEY) and scale down one end of the cylinder to a point using the scale/size option (S-KEY). You'll notice I also scaled the top a bit to make it pointier...

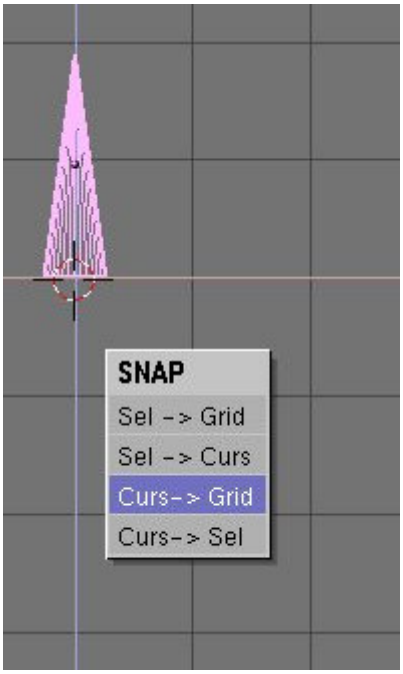


Step 2 1/2 - This is very important! It's critical that the cone be properly aligned to the global axis. So do the following :

Rotate the cone around so the base of the cone is at the center of the "world" :



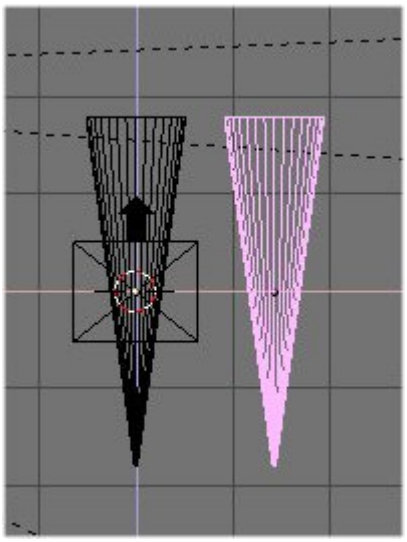
Next, make sure the cursor is at the center of the world - press (SHIFT + S-KEY) and select Curs->Grid. This snaps hte cursor to the grid at {0,0,0}



Select the cone, and in the editbuttons window (F9-KEY), press Center Cursor :

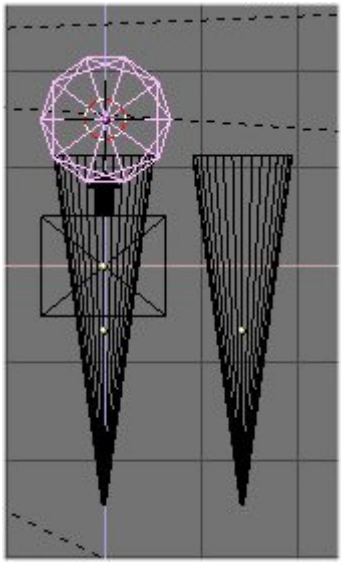
Now the cone has it's center at it's base. All that's left is to "tell" Blender that the cone's orientation is "up" - that is, that the cone is intended to point to the sky. Simply press (CTL + A-KEY) and confirm that you want to "apply size-rot". Now the cone is oriented properly. You can move it back to where it was...

Step 3 - Make a duplicate of the geometry - you'll need it... Keep in mind we're using this cone for both spikes AND handle, so we'll need an extra copy...use (SHIFT + D-KEY)..

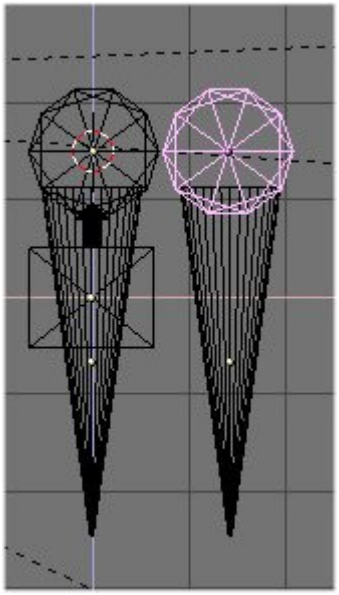


Step 4 - add the duplivert "server" :
Add an icosphere to your scene. Only 1 subdivision or it'll give you too many spikes. Important! Create the icosphere at the center of the world and set it's rotation just like you did the cone. This is good practive, so objects are always oriented predictably. Also, when possible, it is best to create objects at {0,0,0}, confirm that their centers of rotation are where they should be, then translate them to their ultimate positions.

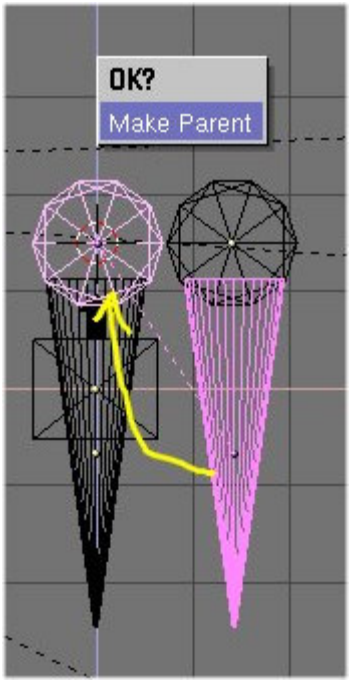
Size it so it sits like an ice cream cone on top of your "handle" :



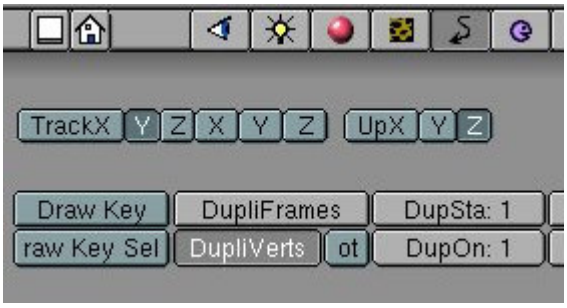
Step 5 - Duplicate the Icosphere :
When we create the dupliverts, this icosphere will not render. You'll see why in a minute. But in order for the weapon to look right, you will need to see it. So, we just create an extra by duplicating it.

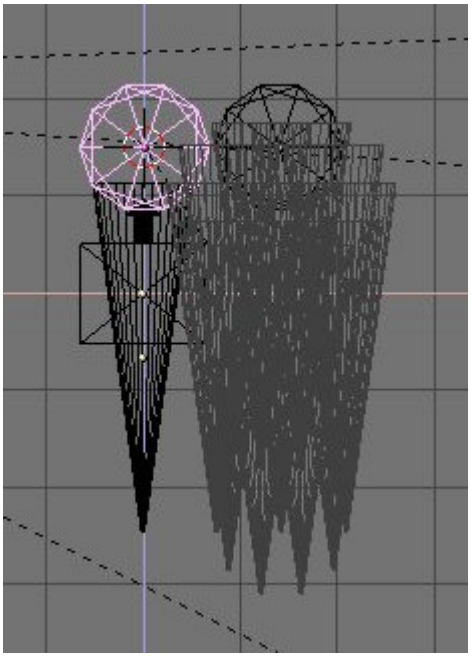


**Step 6 - Make the first ball the parent of the second cone :
What we're after is to duplicate the cone geometry all around the icosphere...**

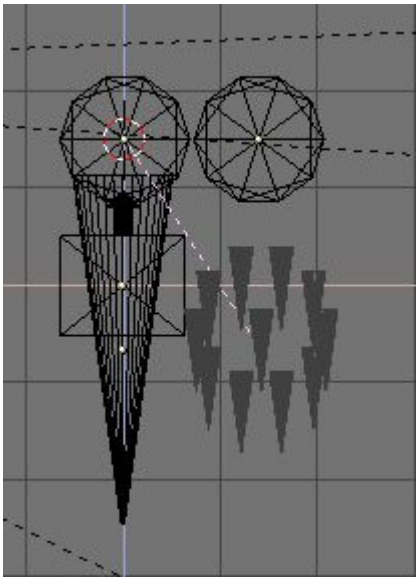


Step 7 - Select the parent object - the icosphere, then go to the animbuttons windopw (F7-KEY) and press the button labelled "Dupliverts". The cone is replicated according to the vertex distribution of the icosphere :

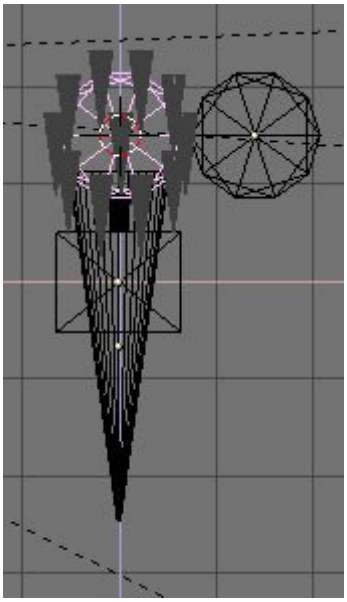




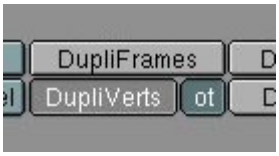
Step 8 - Grab the cone that's being dupliverted and scale it down to the right size for spikes :

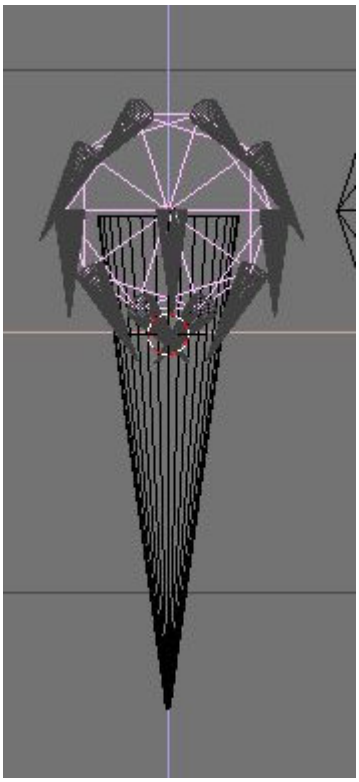


Step 9 - Move the dupliverts to the center of the icosphere parent :
Obviously this isn't quite right - all the dupliverts are pointing in the wrong direction...



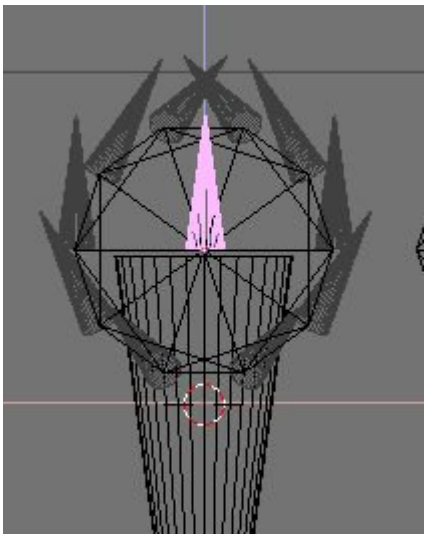
Step 10 - activate duplivert rotation by pressing the tiny "rot" button next to the "Dupliverts" button :





Hmm. That's not quite right. We want them to point out...

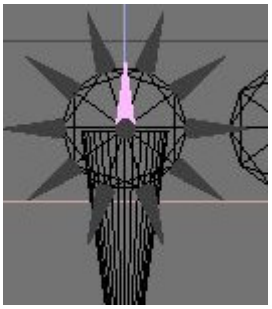
Step 11 : Re-orient the dupliverts :



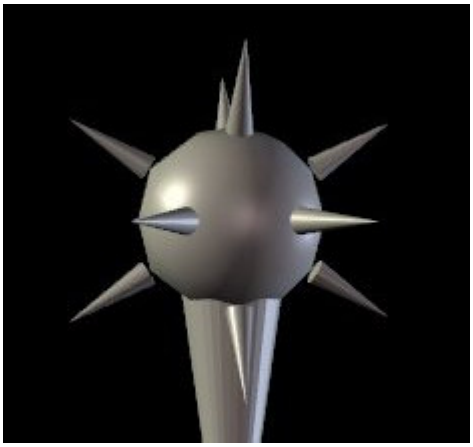
Start by grabbing the original duplivert cone and simply rotating it around so it points up instead of down...

Now the next step is a bit counterintuitive. Each operation so far, as it has pertained to the duplivert process, has required us to first select the icosphere that is the duplivert "server". For this step you need to keep the "spike" cone selected, but in the animbuttons window you need to select "Track Z" :

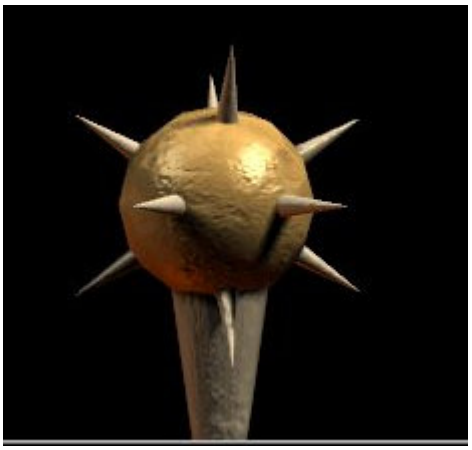
This "tells" Blender the object is supposed to "point" out from the positive Z Axis of each vertex that "holds" a duplivert :



You can no doubt guess that you need to move the duplicate icosphere over on top of the other, becasue when you render, you cannot see the Duplivert server or the base duplivert spike. Only the dupliverts are rendered.



YES, THE DUPLIVERTS DO RENDER SHADOWS, unlike static particles.
By the way, if you want to edit the individual vertices of the dupliverts, select the duplivert server, press (SHIFT + CTL + A - KEY) and confirm that you want to "Make Dups Real". Now the dupliverts are no longer married to the original duplivert shape - they can each be edited individually.



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