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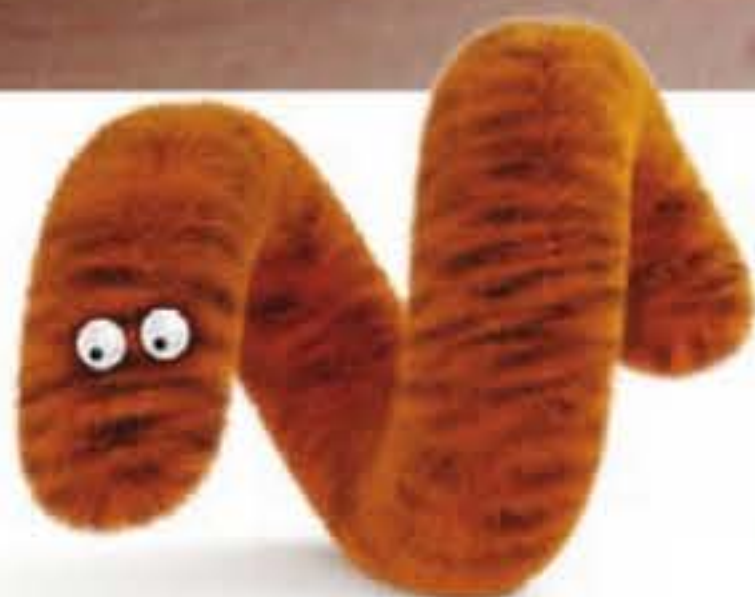
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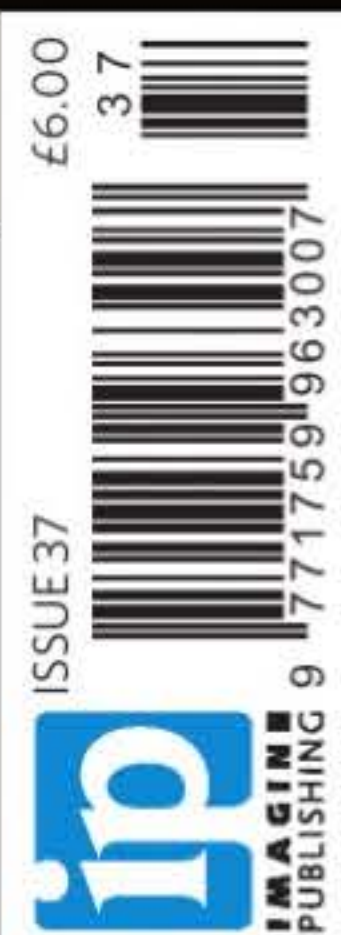
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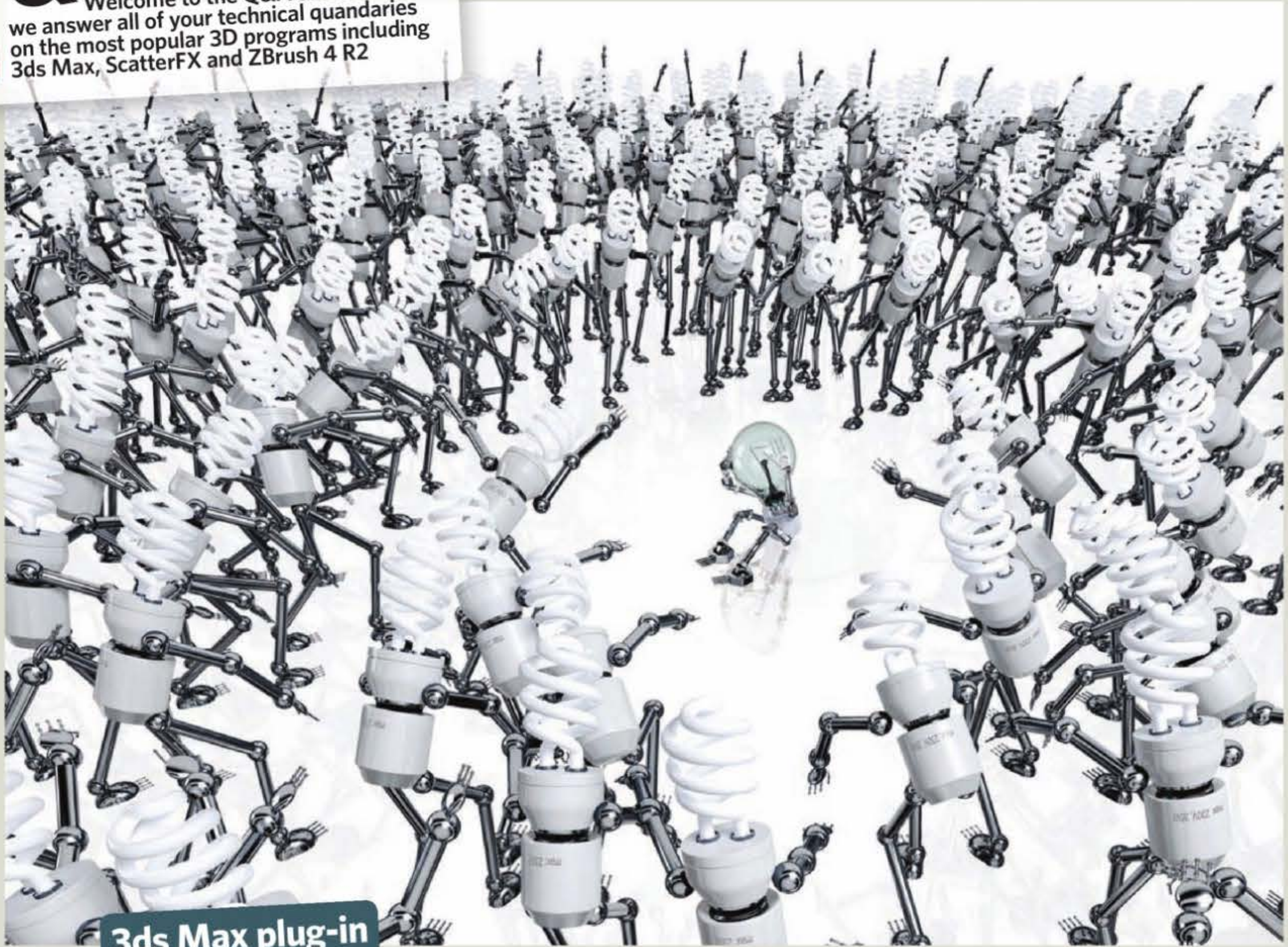


Sculpt in detail

A character design & development guide, starting in ZBrush 4 R2



Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including 3ds Max, ScatterFX and ZBrush 4 R2



3ds Max plug-in

Crowd control with ScatterFX

“How can I quickly generate an intuitive and stylish crowd?”



ScatterFX is a 3ds Max plug-in that can be used to help distribute bipeds and other objects across a scene. It does

this with the help of maps to control what will be placed and where. The maps can be bitmaps or even procedurals and they can be used for any kind of modifications.

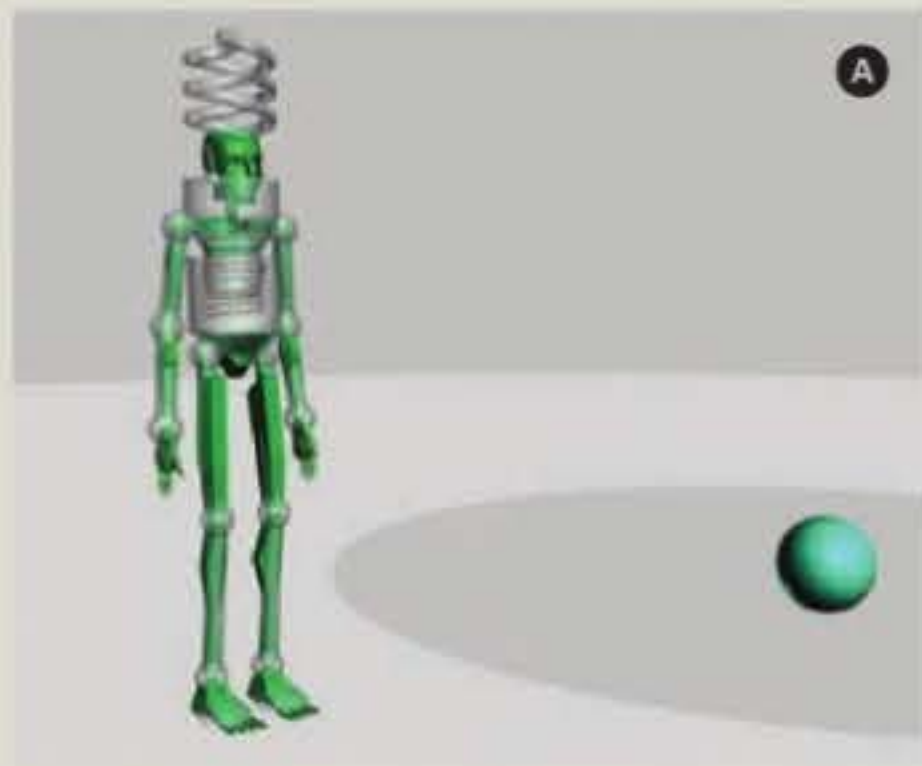
If you would like to create a crowd, ScatterFX enables you to control where figures should be, how dense the groups are, where they look and even what frame of their animation they should take their position at.

The process works by using shades to determine tasks. For instance, if a figure stays on a white texture point, it should raise its arms. If standing on black it should take the post of the last animation frame. All grey values in between should be frames between the first and last frame, so it's possible to create an image or animation where a lot of duplicate characters can be quickly placed and precisely controlled. All the figures should look in one direction at one object while their bodies are driven by the map point where they stand.

ScatterFX is a completely new approach to generating crowds without any complex workflows. The basics are: create a ground object, make one animated biped figure then set up some procedural maps with ScatterFX and alter the settings.

When you're finished with crowds, use ScatterFX to tackle other objects. One of its unique features is that it's not controlled by vertexes or faces, but texture points. This means you can control the placement with the UVW map modifier and create scatterings that otherwise would have never been possible.

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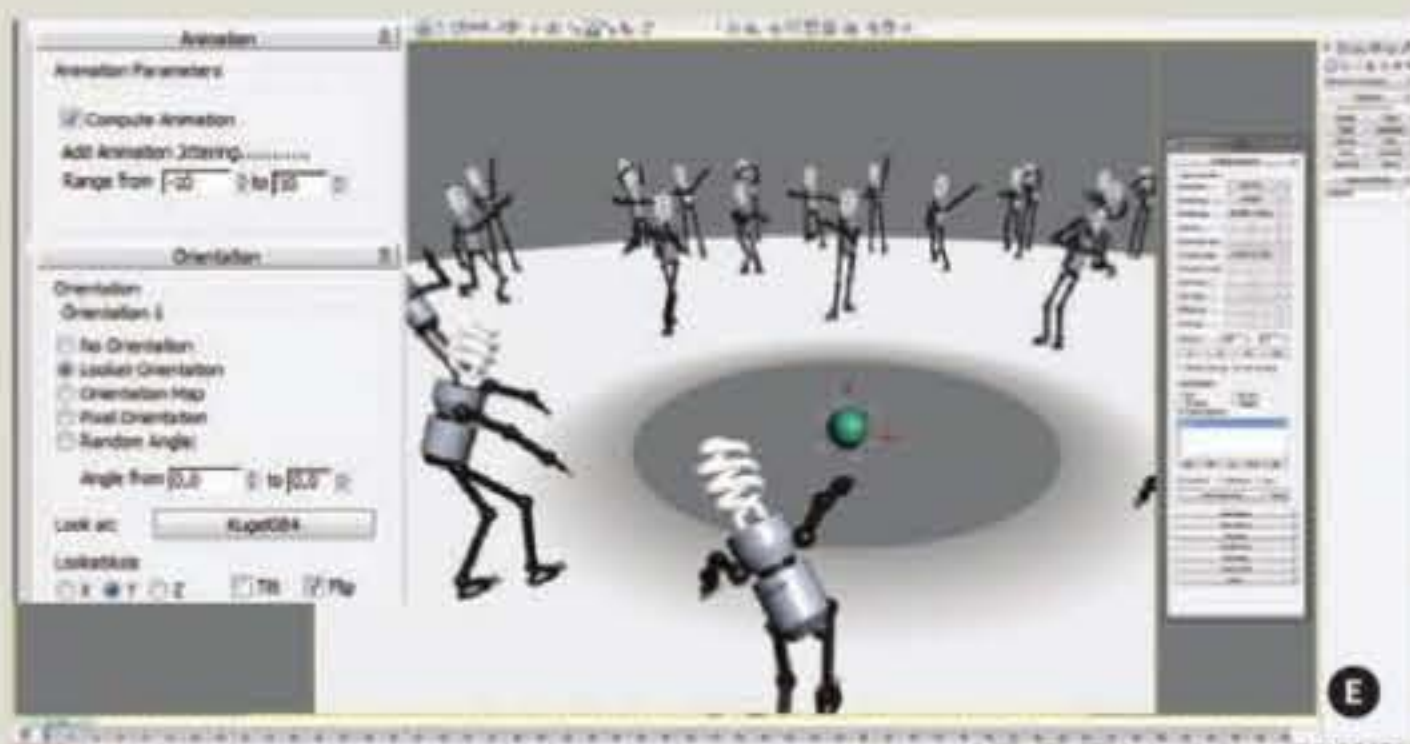


01 First figure

First we need one figure using a biped rig. My example is a figure made of primitives with one high-poly object: the energy saving bulb. Attach all the metal parts directly to the biped structure. It's important at this step that all parts have the correct pivot points and are aligned precisely onto the biped structure **A**.

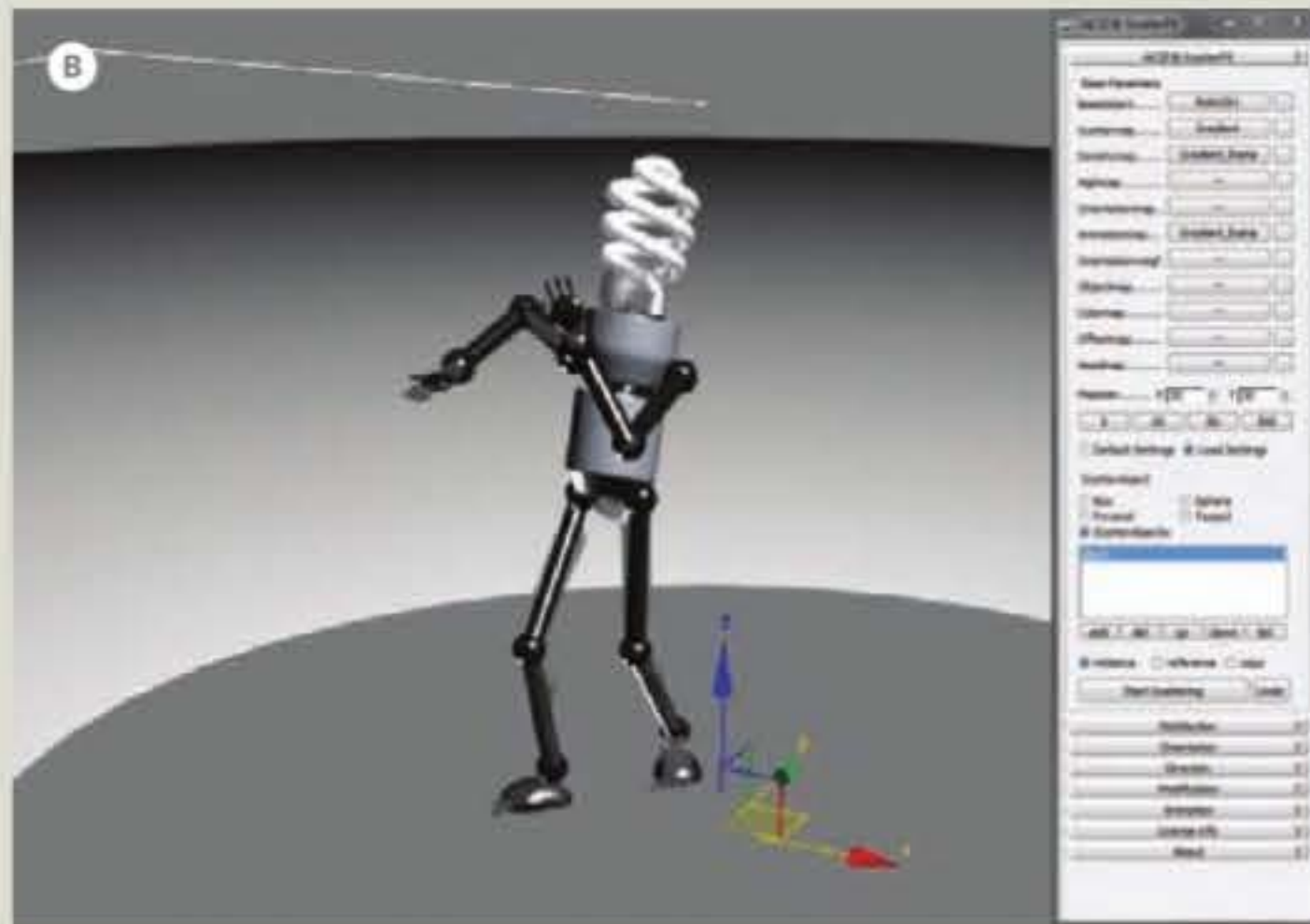
03 Simple animation

With our base figure finally rigged and attached, we can create a simple 100-frame animation by using the Autokey function. With this option we can go through the Timeline and create some cool poses. As the animation will be controlled by the radial gradient, all figures on the outside will show their frame 1, all figures at the inside will show their frame 100. This will be even more natural as we can include a little randomness with ScatterFX to that rule too. I created poses in this way within the first frames. As I like to have a more aggressive and lower pose for the figures near to the centre, I chose to create those poses next to the last frames and also created some more haphazard poses in between **C**.



05 Test and fine tune the settings

Now we can see ScatterFX in action. It places a lot of (15x15) people around all looking in the same direction and ignoring our animation! To correct this, click Undo in ScatterFX and create a simple sphere object in the centre. Open the Orientation rollout and select LookAt Orientation for Orientation1. Then click the bottom button and select the sphere in the middle. Finally open the Animation section and activate Compute Animation. In the number fields we enter -10 and 10. These numbers contribute a little randomness to the calculations, creating a more natural and chaotic result for the animation **E**.



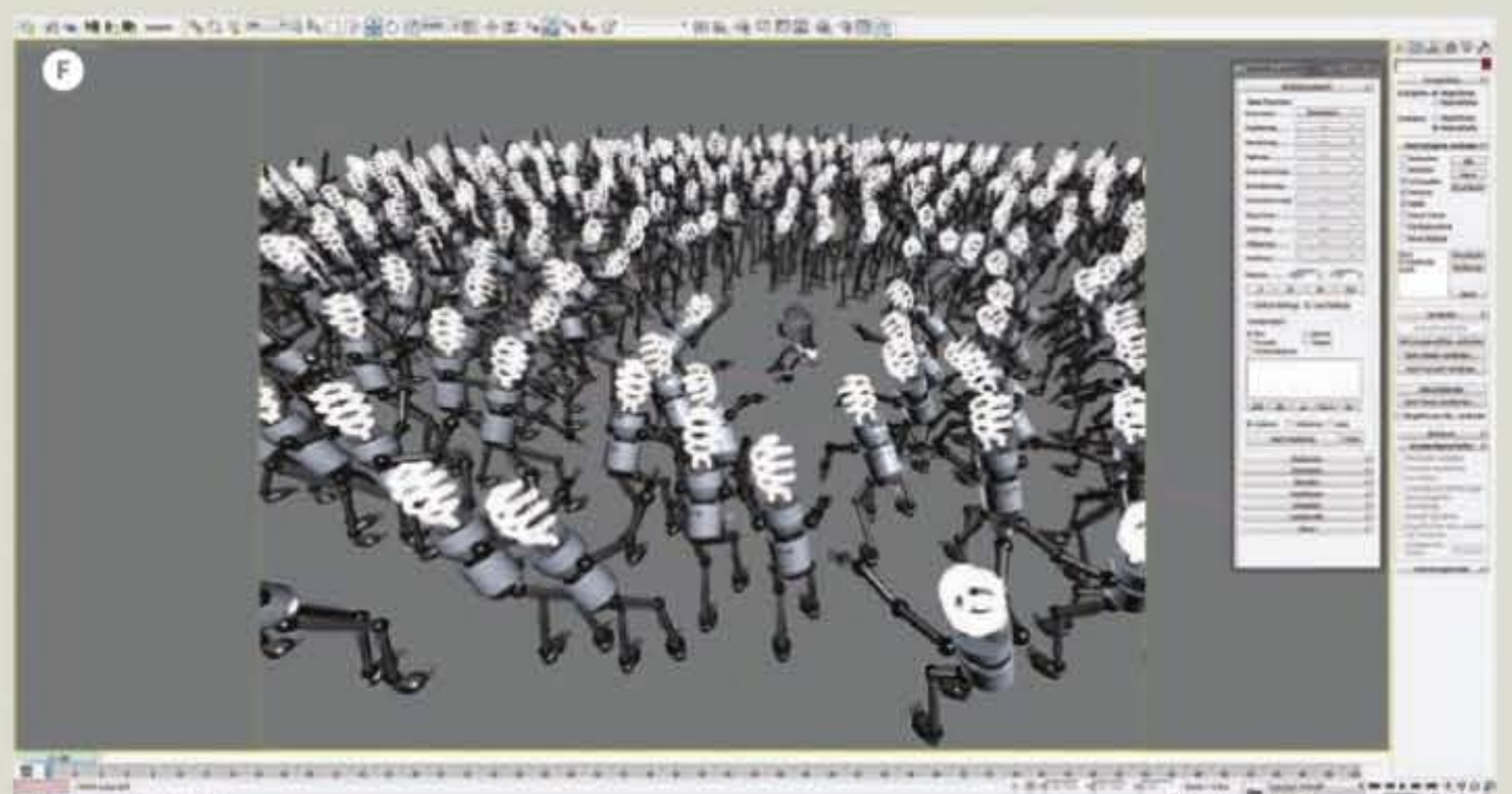
02 Modelling the ground object

Decide where the final figures should stand and what they should do. For my example, I edited a simple tube where I cut out the bottom and sides, so that only the cap surface remains. As I liked to have space around the centre and a round shape, I chose a tube as a base. ScatterFX is able to work with any kind of surfaces, as well as 3D shapes and then can calculate and even follow the direction of the scattered objects. Place a Planar UVW mapping to the tube and deselect Real World Scale **B**.



04 Control the masses

Now we are ready to start using ScatterFX. After beginning the programme, you'll need to select the previously edited tube as the base object. Click on Add in the Scatter Object section and click on the biped. Keep in mind that regardless of which element on the rig you click, ScatterFX will always select the parent biped automatically. Next we need to set up the Scatter Map. Choose a simple gradient for this by clicking on Density Map and this time selecting Radial Gradient for a Map. Also click on Animation Map and set up a Radial Gradient. Now we can click on Start Scattering in order to begin the very first test **D**.



06 The final scattering

Always use the ScatterFX Undo button, as this will bring you back to the state before scattering. In this way you can quickly try something, undo it, change the settings and scatter again. This enables you to experiment with the elements of your crowd; how dense the figures should be placed, MapSize X&Y, how fast they should change their pose from the inner to the outer ring, animation poses and so on. By altering maps and values, you will realise how many complex results are achievable with just these minimal settings **F**.

Rendering the masses

In this tutorial I generate over 450,00 objects, giving nearly 600 fully rigged bipeds. Such a large amount of objects will be decreasing the amount of memory you have available, meaning every instance will only be loaded once, so enable Use Placeholders for rendering. However, with this setting the scene will use a high amount of memory and slow down the viewports. ScatterFX does have some special settings in the Distribution rollout to be able to deal with these problems. The Show as Boxes option is extremely useful as it forces the generated Objects to be shown initially just as simple bounding boxes, so you can work in a fluid viewport once again. The other option is Show Only % Of. This function creates a new layer called 'Hidden Masses' that will show a percentage of your settings but is hidden from view.