

Creating scatter objects

The Scatter feature arranges copies of a selected object over the surface or within the volume of another object. The object that is scattered is the source object, and the object that the source is scattered on or within is known as the distribution object. In architectural visualizations, the Scatter feature's usefulness is limited primarily to the creation of vegetation. In this way, it's a great tool for scattering leaves around the branches of a tree or blades of grass around the surface of a lawn.

Figure 4-19 shows an example of the scatter routine by scattering a palm tree around the surface of a simple plane object. The top-left image shows the plane and a tree off to the side. To scatter the tree, select the source object (palm tree) and select **Create > Compound Objects > Scatter**. Complete the scatter routine by clicking the **Pick Distribution Object** button (first rollout) and then clicking the distribution object, which in this scene is the plane. The top-right image shows the result. By default, 3ds Max only places one object, and requires you to specify the number of duplicates desired. Also, notice that the plane appears to be a different color. This is because, by default, a copy of the distribution object is created with a new color and exists in the same space. The first thing to do is to turn off this distribution object. Scroll down to the **Display** rollout, open the rollout, and select **Hide Distribution Object**, as shown in Figure 4-19.

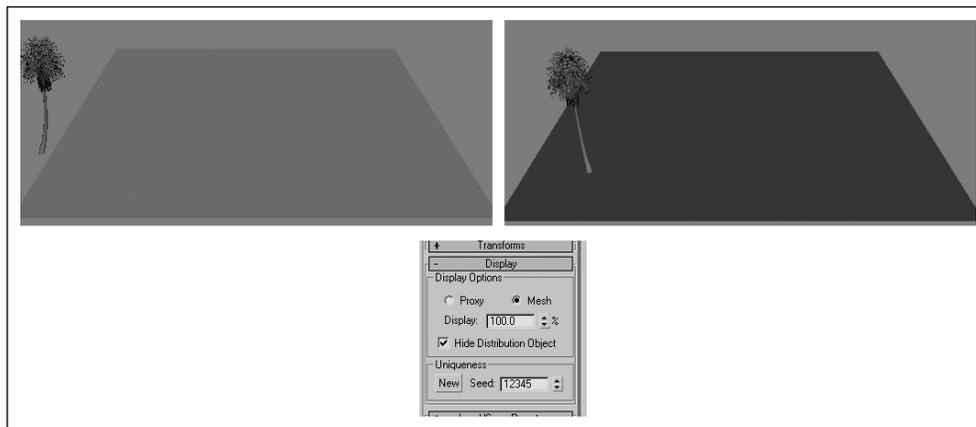


Figure 4-19. The Scatter feature

Within the **Scatter Objects** rollout is a section called **Objects**, which contains the source and distribution operands (palm tree and plane objects, respectively). In the **Source Object Parameters** section (see Figure 4-20), you can change the number of duplicates, but caution should be taken to ensure that you don't lock up your computer by entering too large a number for the particular object you want to scatter. Many operations in 3ds Max (such as this one) can consume a lot of RAM if you enter too large a value for the parameter. If you make too many duplicates of an object with a large number of polygons, the computer may run out of memory and crash. The right image in Figure 4-20 shows the result of increasing the **Duplicates** value to 20.

CHAPTER 4

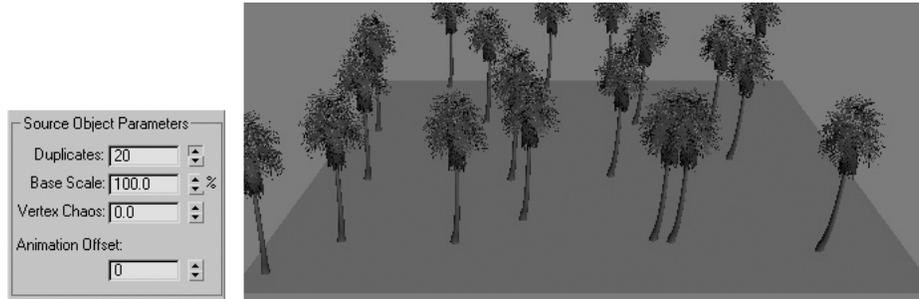


Figure 4-20. Increasing the Duplicates value to 20

The remaining three options in this section do not require any modifications, but I will explain them in the event that a rare exception arises. **Base Scale** specifies how much the distribution object is scaled before being scattered, with 100% signifying no change in size. The **Vertex Chaos** value specifies how much randomness to apply to the positioning of vertices. This option can distort the appearance of the object being scattered, but can sometimes add a nice touch of realism in certain situations. The **Animation Offset** value specifies the number of frames that must go by before another duplicate is created.

Distribution object parameters

The first option in this section, **Perpendicular**, aligns each duplicate so that the duplicate's normal is aligned with the normal of the face it's closest to. Without **Perpendicular** enabled, all duplicates would remain oriented in the direction of the initial object. The left-hand image in Figure 4-21 has **Perpendicular** enabled, and the image on the right shows the same object with **Perpendicular** disabled.

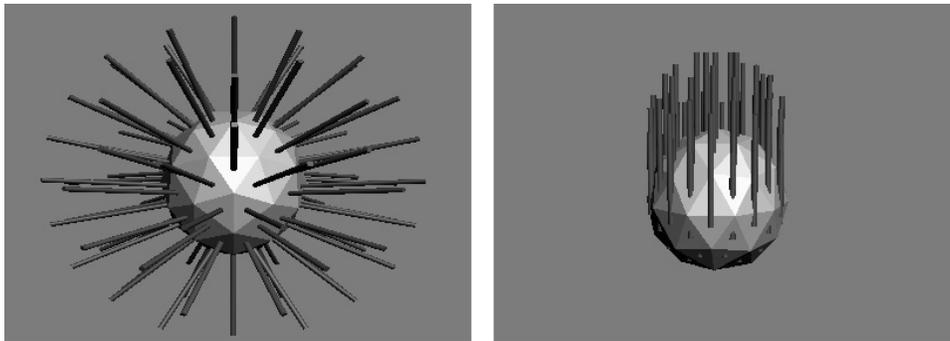


Figure 4-21. The Perpendicular option enabled (left) and disabled (right)

The **Use Selected Faces Only** option allows you to select specific faces on which to distribute the duplicates. The next variable, **Distribute Using**, determines how the duplicates are to be scattered over the distribution object.

The Transform rollout

The **Transform** rollout specifies the maximum amount of transformation randomly applied to each object. The duplicates can be randomly rotated, moved, or scaled about any or all three axes. The top-right image in Figure 4-22 shows the palm trees again, this time with a **Z Rotation** value of **90** applied. This means that all objects are randomly rotated around their z axis ± 90 degrees. The bottom-right image has a **Z Scaling** value of **50%** applied. This means that all objects are randomly scaled along the z axis between $\pm 50\%$ (i.e., some trees are 50% taller, some are 50% shorter, and some are anywhere in between). These two settings are particularly useful when scattering vegetation, which, as I stated before, is probably the most practical application of the Scatter command.

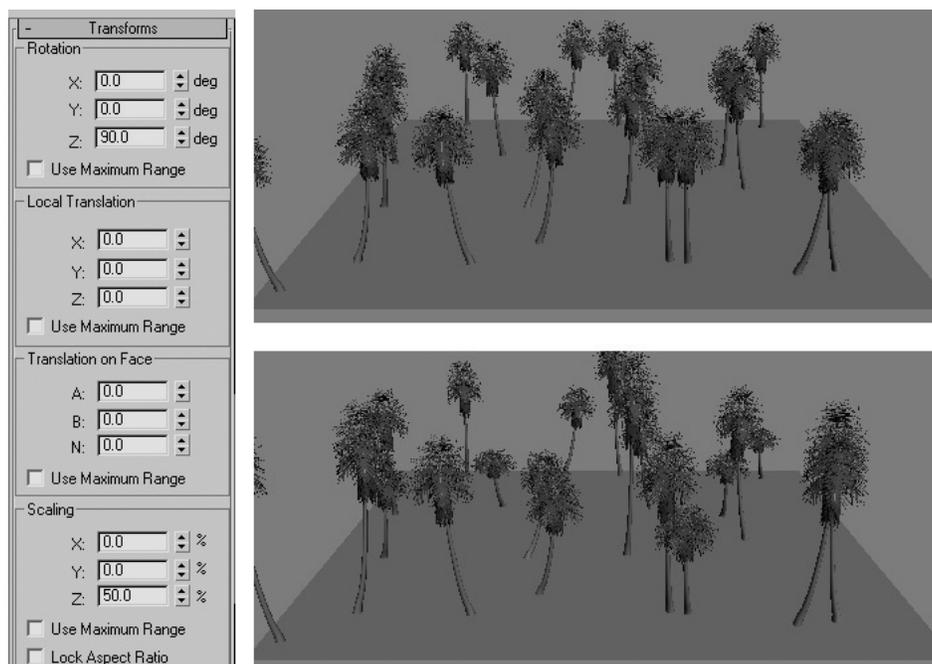


Figure 4-22. z axis rotation and scaling

Creating a scatter object

This exercise demonstrates how to create a scatter object, using a teapot as the object to be scattered and a plane as the distribution object.

1. Reset 3ds Max.
2. In the Top view, create a plane with a width and length of 100, and a teapot with a radius of 10, as shown in image 1 of the following illustration.
3. Select the teapot, and in the Command panel, click **Create** ► **Geometry** ► **Compound Objects** ► **Scatter**.

CHAPTER 4

4. Click **Pick Distribution Object** and click the plane in any viewport. The scatter object is created with only one object (by default), as shown in image 2. Notice also that a duplicate plane object is created, which becomes the real distribution object. This object, however, is not desired and should be hidden from view.
5. In the **Display** rollout, enable the **Hide Distribution Object** option. The duplicate plane disappears.
6. Within the **Source Object Parameters** section of the **Scatter Objects** rollout, type **12** in the field next to **Duplicates**, and press Enter. There are now a total of 12 teapots that make up the scatter object, as shown in image 3. Notice, however, that all of the teapots are oriented along the same axis.
7. Within the **Rotation** section of the **Transforms** rollout, type **90** in the field next to **Z:**. This will randomly rotate each teapot around the z axis somewhere between 0 and 90 degrees, as shown in image 4.
8. Within the **Distribution Object Parameters** section of the **Scatter Objects** rollout, change the **Distribute Using** option from **Even to Area**. This changes how the objects are distributed about the distribution object, as shown in image 5. You should test the **Even**, **Area**, and **Volume** options to see which produces the best look.
9. Within the **Scale** section of the **Transforms** rollout, type **50** in the field next to **Z:**. This will randomly scale each teapot along the z axis somewhere between $\pm 50\%$, as shown in image 6.

