

Building a Boolean Spacecraft in Bryce

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1 Bryce is so easy to use for landscape generation, that many times it's potential for Boolean modeling is overlooked. With a little preplanning, complex objects can be created out of simple geometric shapes that would be difficult to generate in other 3D packages. The subject of this tutorial is the result of experimentation with Boolean operations in Bryce and it assumes some familiarity with the program.

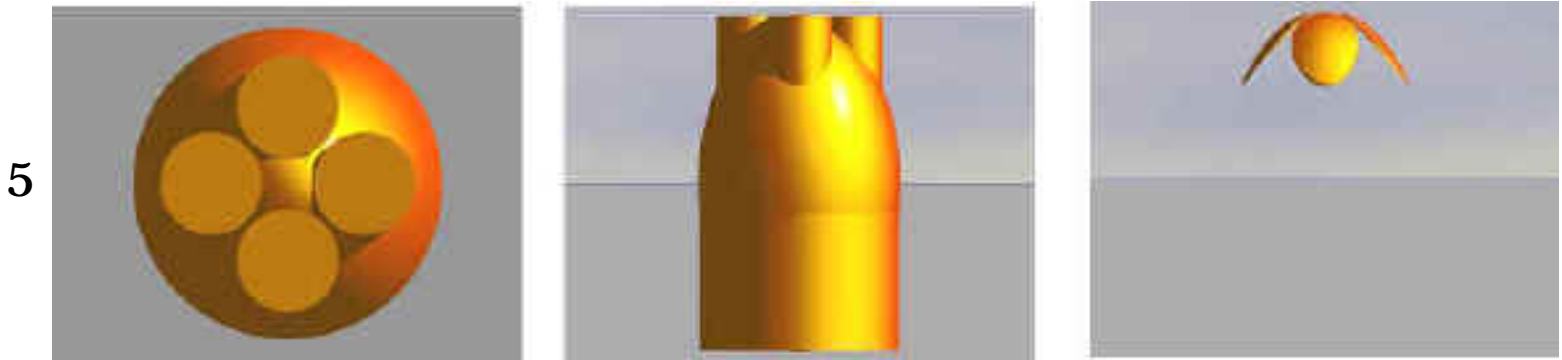
2 Once you have Bryce up and running, create a sphere. Open the attributes box (CTRL + ALT + E) and set the position (origin), rotation, and size as shown in the table below for "Outer Sphere". Also assign the object's Boolean properties (P = positive, N = neutral, I = intersect) as shown. Close the attributes box, then assign the family number as it is given in the table.

3 Next create the "Inner Sphere" using the values given in the table. This sphere can be created from scratch, or it can be duplicated from the Outer Sphere using CTRL + D. Finally, create the five cylinders using the values given in the table.

| Description | Family | Positive Negative Intersect | X Offset | Y Offset | Z Offset | X Rot. | Y Rot. | Z Rot. | X Size | Y Size | Z Size |
|--------------|--------|-----------------------------------|-------------|-------------|-------------|-----------|-----------|-----------|--------|--------|-----------|
| Outer Sphere | 2 | P | 0.00 | 98.33 | 11.36 | 0.00 | 0.00 | 0.00 | 30.30 | 50.50 | 30.30 |
| Inner Sphere | 3 | N | 0.00 | 98.33 | 11.36 | 0.00 | 0.00 | 0.00 | 30.00 | 50.00 | 30.00 |
| Cylinder 1 | 6 | I | 7.50 | 98.33 | 11.36 | 0.00 | 0.00 | 0.00 | 10.00 | 50.00 | 10.00 |
| Cylinder 2 | 7 | I | -7.50 | 98.33 | 11.36 | 0.00 | 0.00 | 0.00 | 10.00 | 50.00 | 10.00 |
| Cylinder 3 | 8 | I | 0.00 | 98.33 | 18.86 | 0.00 | 0.00 | 0.00 | 10.00 | 50.00 | 10.00 |
| Cylinder 4 | 9 | I | 0.00 | 98.33 | 3.86 | 0.00 | 0.00 | 0.00 | 10.00 | 50.00 | 10.00 |

| | | | | | | | | | | | |
|------------|----|---|------|-------|-------|------|------|------|-------|-------|-------|
| Cylinder 5 | 10 | N | 0.00 | 85.83 | 11.36 | 0.00 | 0.00 | 0.00 | 30.00 | 25.00 | 30.00 |
|------------|----|---|------|-------|-------|------|------|------|-------|-------|-------|

- 4 Select all the objects then pick the "warm gold" material preset. It's in Edit > Materials > Simple & Fast (Row 3, Column 1). If everything's good so far, a test render from the top view should look like the image below on the left. A render from the right view is shown in the center. With the seven components still selected, group them together. If your render from the right view looks like the image below on the right, then assign the group to family 11 with the name "4petal1". If your render looks wrong, you'll want to ungroup the objects and back track and find the problem before continuing. If your render looks right, now is a good time to save your work.



Now you have the midsection of your spacecraft constructed. It should have the values given in the table below for the object 4petal1. To build the aft section (4petal2), select 4petal1, duplicate it using CTRL + D, and set the values given for 4petal2 in the table. This creates an aft section twice as wide and half as long as the midsection. Repeat the process to build the bow petal section (4petal3). This creates a bow section half as wide and twice as long as the midsection.

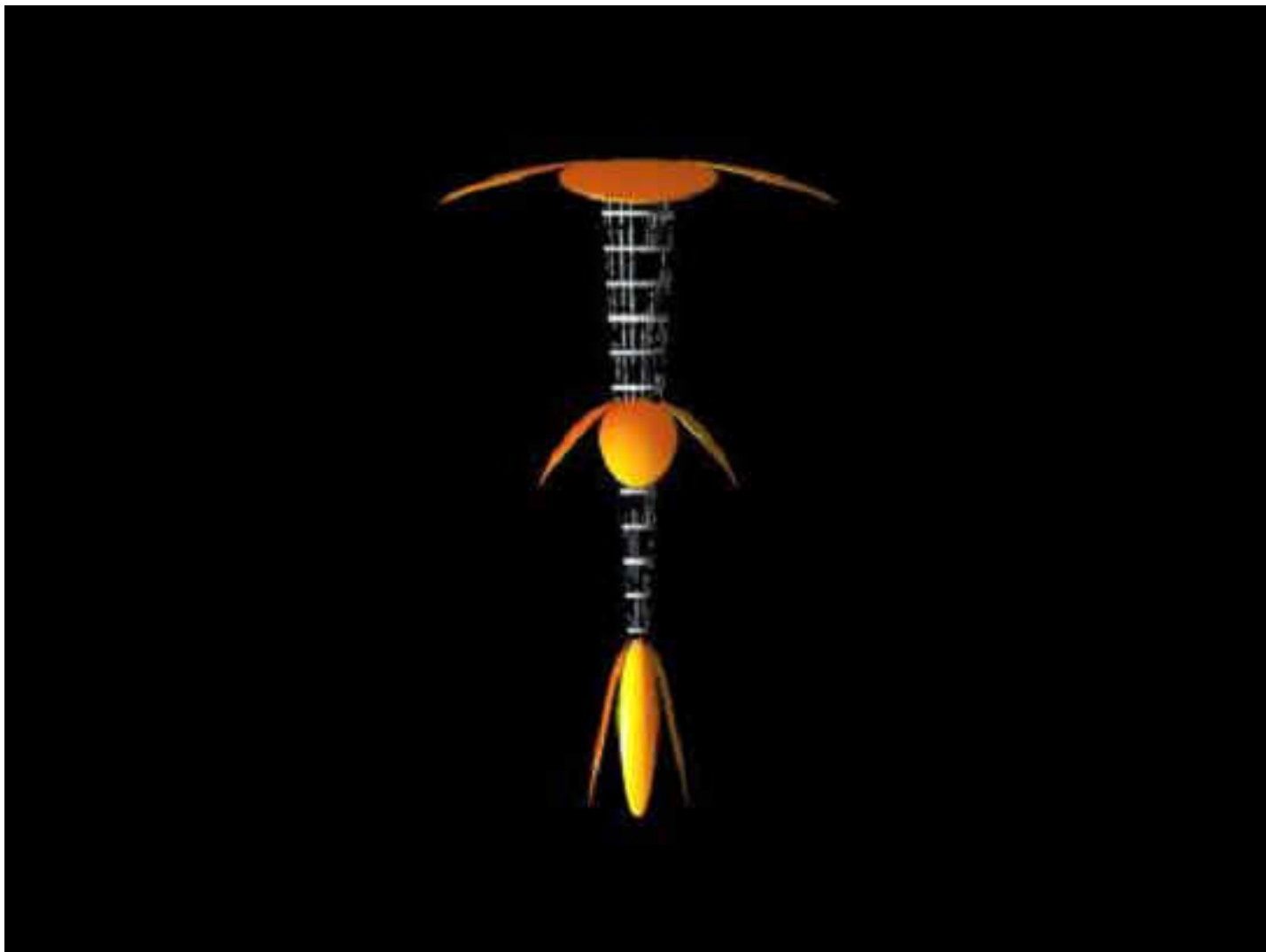
- 6 To build the structure connecting the three sections, create a cone using the values in the table for "body cone". For the cone I used the "steel cage" preset in Edit > Materials > Miscellaneous (Row 4, Column 3). This material controls transparency to create a complex looking structure out of a single object. The size of this material was tweaked in the materials editor to 80% for x, y, and z since the original values of 40% didn't give fine enough detail.

To set the scene, I went into Sky&Fog and selected the Simple Black Background (Row 4, Column 4). The ground plane was selected and deleted. When this is done, your render from the right view should look like the image following the table below.

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| Desc. | Family | Positive Negative Intersect | X Offset | Y Offset | Z Offset | X Rot. | Y Rot. | Z Rot. | X Size | Y Size | Z Size |
|--------------|--------|-----------------------------------|-------------|-------------|-------------|-----------|-----------|-----------|--------|-----------|--------|
| 4Petal1 | 11 | P | 0.00 | 98.33 | 11.36 | 0.00 | 0.00 | 0.00 | 30.30 | 50.50 | 30.30 |
| 4Petal2 | 12 | P | 0.00 | 140.96 | 11.36 | 0.00 | 0.00 | 0.00 | 60.60 | 25.25 | 60.60 |
| 4Petal3 | 13 | P | 0.00 | 43.08 | 11.36 | 0.00 | 0.00 | 0.00 | 15.15 | 101.00 | 15.15 |
| Body Cone | 14 | P | 0.00 | 113.01 | 11.36 | 180.00 | 0.00 | 0.00 | 10.00 | 80.00 | 10.00 |

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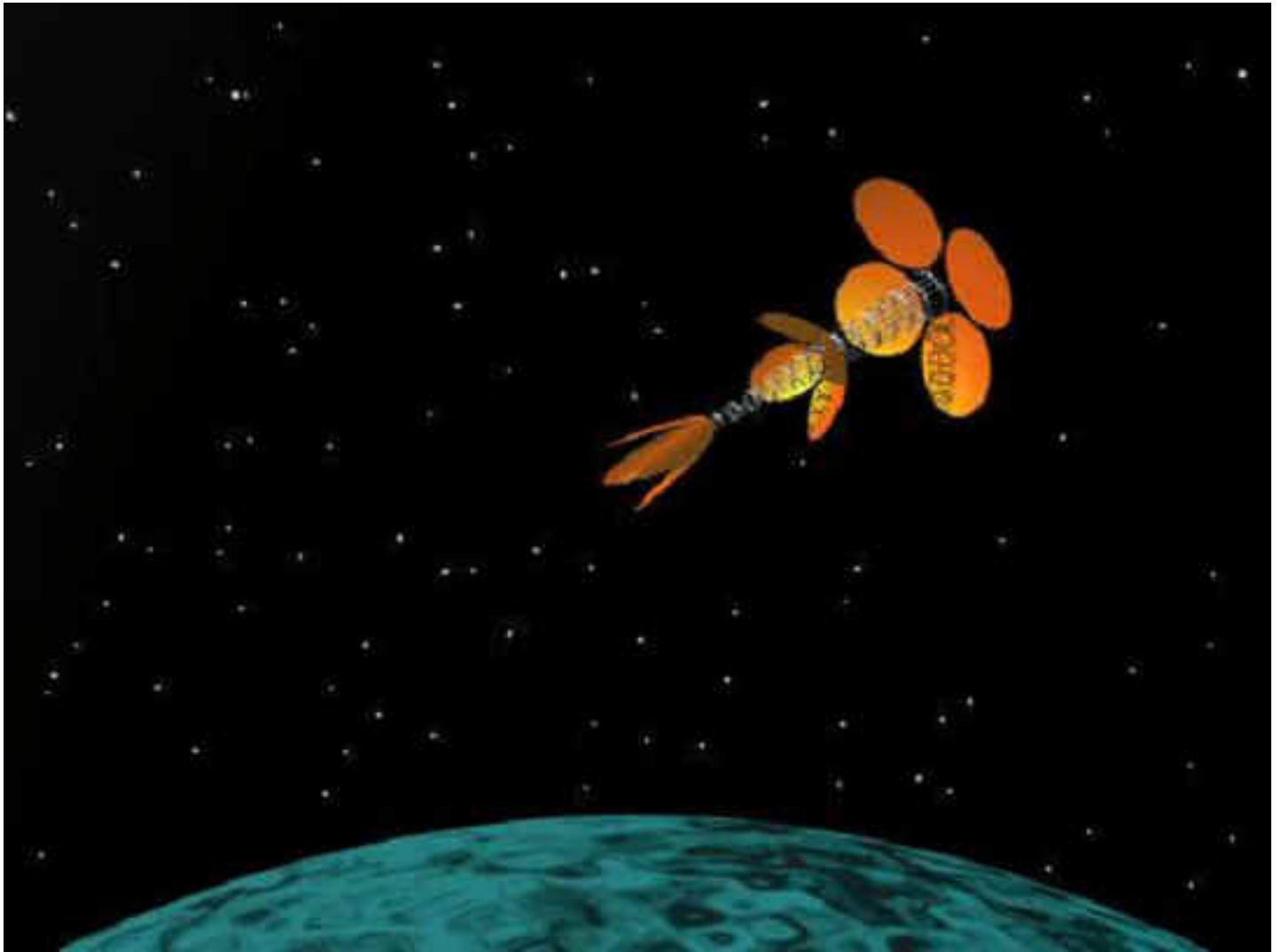


9 To make the craft into a single object, group the four components (families 11, 12, 13, 14) and assign them to family 15 under the name "Petal Ship 1". Set the X rotation in the attributes box to 60 degrees as shown in the table below. You shouldn't have to touch the other values for Petal Ship 1. Go into the SkyLab and turn on the Starfield with an intensity of 50 and an amount of 2800 or so. Create a sphere with the values for "Planet" in the table below. For the planet I used a variant of the "Flowing Contortions" preset called "Swirlwave". With the sphere selected, go into the Texture Editor, select Texture Library > Basic > Swirlwave. Set the view to Director and render. If all has gone well, you should get an image like the one below. The camera position I used was $x = -102.40$, $y = 30.72$, $z = 102.40$. The rotation in y was 135 degrees.

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| Desc. | Family | Positive Negative Intersect | X Offset | Y Offset | Z Offset | X Rot. | Y Rot. | Z Rot. | X Size | Y Size | Z Size |
|---------------|--------|-----------------------------------|-------------|-------------|-------------|-----------|-----------|-----------|--------|-----------|--------|
| Petal Ship | 15 | P | 0.00 | 73.08 | 11.36 | 60.00 | 0.00 | 0.00 | 60.60 | 161.00 | 60.60 |
| Planet | 16 | P | 0.00 | -240 | 0.00 | 0.00 | 0.00 | 0.00 | 500.0 | 500.0 | 500.0 |

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As an alternative, you could download an image of a planet from one of the Voyager missions to spherically map onto your planet. You could also replicate
12 the craft to generate an armada in the distance.

Good luck and Enjoy.

[RETURN TO TUTORIALS]

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