

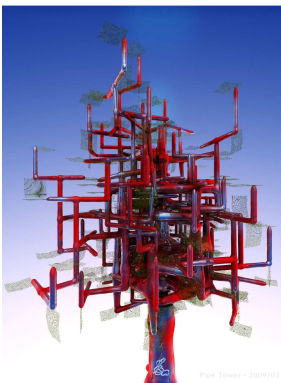
Saving and Exporting Bryce Trees

There are probably more possibilities to export a Bryce tree than you know. With Bryce 7, we got even mesh export. Exporting a tree from Bryce and re-importing it into Bryce does not make much sense, but can be done.

Preamble

The Tree Lab came to Bryce with version 5. The lab itself has not changed since then; the trees have a bit, though. Bryce trees are made of Metaballs (those came also with Bryce 5). The main issue with this was that the trunks had a bulge, which did not look natural. This got better in Bryce 7.1. Though a bulge can still be seen for some trees, it is much less offending.

Even though we would have liked to see a full Vegetation Lab in Bryce 7, the Tree Lab is still quite good, though generally not very well understood. However, it is not our intention here to give a crash course in tree building. We concentrate on how a nice tree can be saved for later use in either Bryce or in another 3D application.



And we encourage you to learn to think out of the box. There is more the Tree Lab can be used for than just making a tree. You can use it to make grass (see the video *Grass_Tree_Recipe* by David Brinnen).

And what is this at left? A tree, what else? Made after yet another of David's ideas.



At right, a mere four trees make up the forest (after an idea by Rashad Carter, see the free *Mini Tutorial 20* at https://www.horo.ch/raytracing/tuts/pdf/minitut20_en.pdf). This is just to show that a Bryce tree is more than a tree.

Exporting a Tree

David came up with yet another brilliant idea to create a terrain from a Bryce tree and export it as a mesh (do not miss the video *export_terrain_as_tree_experiment1*). As brilliant the idea is, as awkward and time consuming a method it is and the result is not the best Bryce can do. However, what can be learned from this video may come in handy for another usage.

Loading and Saving from the GUI

Of course, like the camera position or a sky, a tree can be saved in a green dot and then retrieved. But a tree can also be saved from the main GUI to anywhere on the computer.



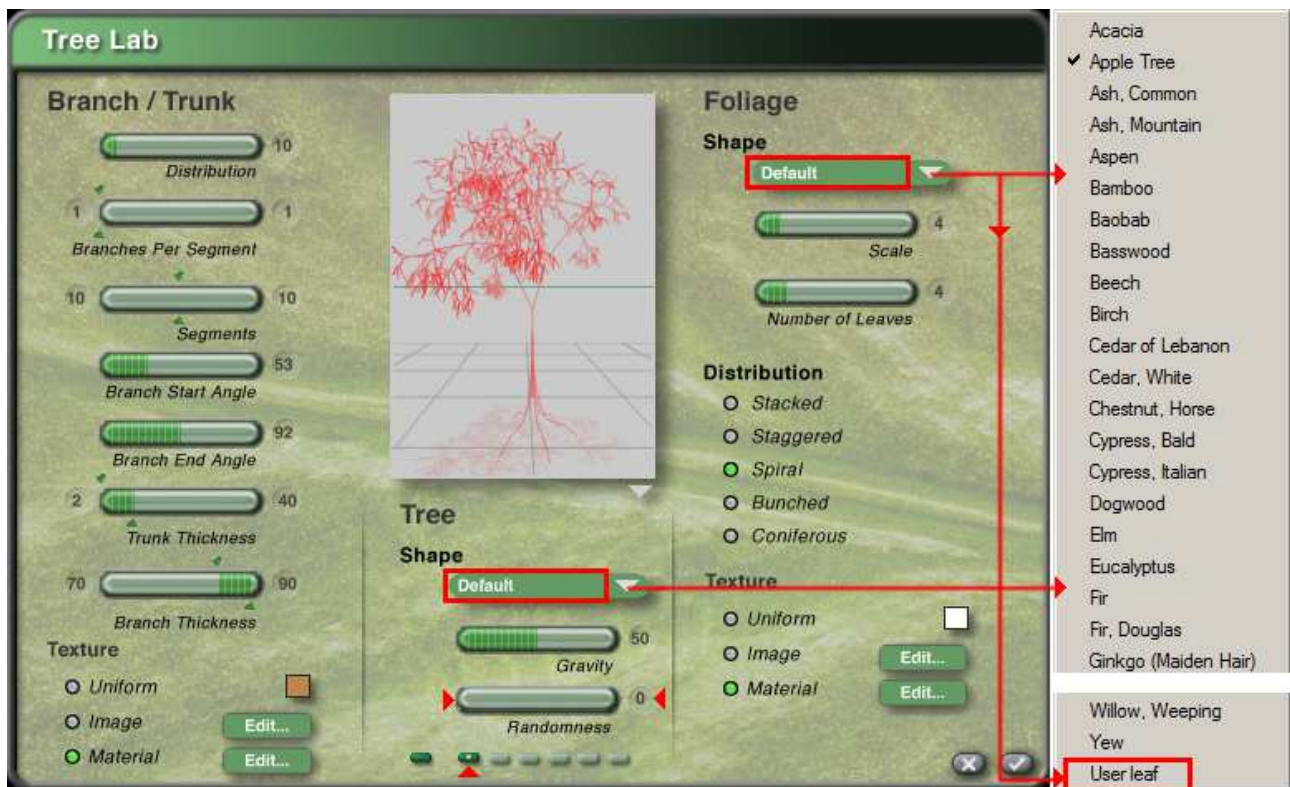
Clicking on the tree on the Create shelf puts a random tree in the workspace. If the [Alt]+[Ctrl] keys — or [Alt Gr] — are held down, clicking on the tree thumbnail opens the Save As dialogue. The file type will be bto.

The selected tree can now be saved with any name to any location. To retrieve a tree saved in this manner is also simple and straightforward: hold down the [Alt] key and click on the tree icon. The *Open* dialog pops up and you can navigate to your own tree library. But beware: only the material for the trunk is saved, the material on the leaves is lost.

And there is another catch. Each time a tree is loaded or generated, it is different because of the *Randomness* setting. If a tree is to be saved, design it with set *Randomness* set at 0. The *Randomness* setting is saved along with the tree and when it loads, it is changed. The *Randomness* value is a seed number. Each time a new tree is generated or loaded, the next random number from this seed is taken.

Loading from the Tree lab (not very useful)

This is rather for the curious and not of much help for those who do not have the unavailable, rather awkward, undocumented and crash-prone utility to create tree shapes (*.tps) and leaf shapes (*.lps). Nevertheless, it is possible to locate tree and leaves shapes anywhere on the computer just as trees themselves can from the GUI.



This is well known: clicking on the down arrow for *Tree Shape* or *Foliage Shape*, a drop down lists all available tree shapes or leaf shapes, respectively. Both have exactly the same entries, except Foliage has additionally the *User leaf*. These lists are limited to 60 entries (61 for the leaves).

If the [Alt] key is held down when clicking on the green field for the drop down, the *Open* file dialogue of the operating system appears and you can navigate to the tree or leaf shape.

Adding a Tree to the Objects Library (Preferred Method)

This is definitely the way to go, once you have created a tree you want to save. Adding a tree to the Objects Library saves the tree with all materials and when it is retrieved, there is no randomness introduced. The tree returns exactly as it was saved before. Though the tree comes out of the Object Library, it is still a tree that can be altered in the Tree lab.

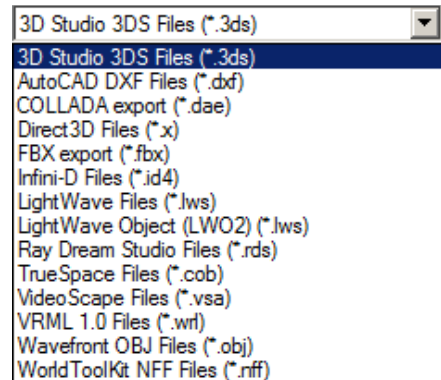
Exporting a Tree as Mesh

New to Bryce 7 is the option to export a tree in one of 14 different mesh formats. Trunk and leaves can be exported separately or together. The trunk is the wood and includes branches, limbs and twigs.

To export a tree, select it and via the *File* menu, scroll down and select *Export Object...* just as you would save any other object out of Bryce as a mesh.



First, the dialogue at left will open. Clicking on the Export trunk and Export leaves toggles them on or off. The resolution is for the trunk only. When all is set, the Save As dialogue opens and the desired file format can be chosen from the drop down (as shown at right).



Trees near to the camera should be exported at a high resolution setting; those far away can be saved in lower quality to save memory.

I only exported as *3D Studio *.3ds* and *Wavefront *.obj*. The first one is very common and can be read by many programs, the second is the one preferred by DAZ Studio. While all the OBJ files created had at least part of the name given the tree to export in the file name, this was not so for 3DS. Only the mesh got the name given, the material files have got standard names. This means that exporting a second tree overwrites the material files of the first one. If this file format is used, each tree must be exported to another destination, e.g. into another folder. The wood and the leaves are sometimes exported as 3ds in several parts. This has the advantage that the different leaf groups can be given different materials afterwards.

Best Method

Provided the tree is to be used in Bryce, there are no ifs and whens: saving the tree in the Objects Library is by far the best method. Good trees are often made up of two or more trees and they can be grouped and saved to the library with all the materials properly applied.

A tree saved from the GUI loses the material on the leaves and when the tree is loaded, the leaves get a randomly assigned material. Also, if *Randomness* was set to any other value than 0, the tree will not be the same as saved, it may even dramatically change.

Exporting a tree as a mesh saves the material of the wood and the leaves. However, these will be images, not procedurals. The exporter does not always make a good job converting procedurals to image maps. Sometimes they look rather good, sometimes completely wrong. During some testing, I got once quite a good wood on the trunk and another time a mirror...

Memory Considerations

I saved the same tree in every of the methods described and checked the file sizes. For the one saved to the Objects Library, I created an empty library. The trees were exported in two different resolutions as mesh to see how quality degrades and how much memory can be saved.

- Saving from GUI as *.bto: 29,193 bytes (no leaf material).

- Saving to Objects Library: 205,419 bytes.
- Saving as *.3DS
 - 20% Resolution: mesh 380,226 bytes, 9 pictures (bmp) of 1,048,630 bytes, total 9,817,896 bytes.
 - 80% Resolution: mesh 1,954,885 bytes, 9 pictures (bmp) of 1,048,630 bytes, total 11,392,555 bytes.
- Saving as *.OBJ
 - 20% Resolution: mesh 1,256,842 bytes, 7 pictures (bmp) of 1,048,630 bytes, 1 material file 900 bytes, total 8,598,152 bytes.
 - 80% Resolution: mesh 8,850,992 bytes, 3 pictures (bmp) of 1,048,630 bytes, 1 material file 778 bytes, total 11,997,660 bytes.

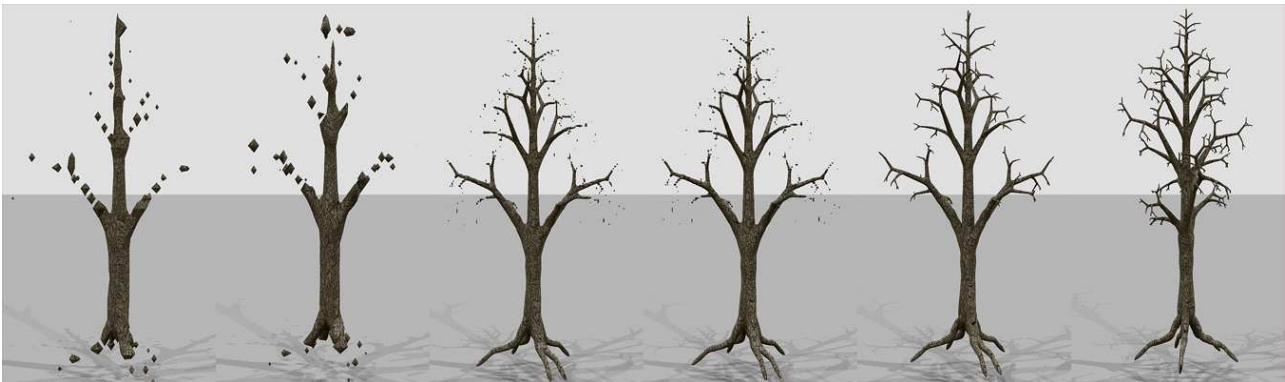
Picture Materials for 3DS: 20% and 80% three BMPs for the leaves: ambient colour, bump map and diffuse colour. Six BMPs for the trunk: ambient and diffuse colour, bump map, specular and reflection maps.

Picture Material for OBJ: 20% for the wood and the leaves each ambient colour, bump map and diffuse colour; 80% only ambient colour, bump map and diffuse colour.

Using the exported mesh for Bryce, the picture materials can be dumped and replaced by procedurals. If we look at the meshes in this way, we notice that the file sizes for the OBJ meshes are about 4 times bigger and if the two mesh formats are compared in Bryce, their quality looks the same. Considering this observation, 3DS meshes are more efficient.

Quality Comparison

All trees have been stripped of the foliage because it is the trunk that shows best the quality obtained by the different save/restore methods. The percentages (%) refer to the Resolution of the Trunk when exporting the tree mesh.



From left to right: 3DS at 20%, OBJ at 20%, 3DS at 80%, OBJ at 80%, original from the Objects Library and finally BTO as restored via the GUI.

Conclusion

If you need a tree in another 3D application, creating them in Bryce and exporting them as mesh is not the best option. Instead, use another tree generator. Carrara from DAZ is probably the best <http://www.daz3d.com/products/carrara/carrara-what-is-carrara/> but also the most expensive. Arbaro <http://arbaro.sourceforge.net/> is free, so was Dryad from <http://dryad.stanford.edu/> but is unfortunately not available anymore.

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