
sr64dd.github.io
CRUISING
the CANYON
SURVIVALIST EDITION

Preface

This is the Survivalist Edition of Cruising the Canyon!

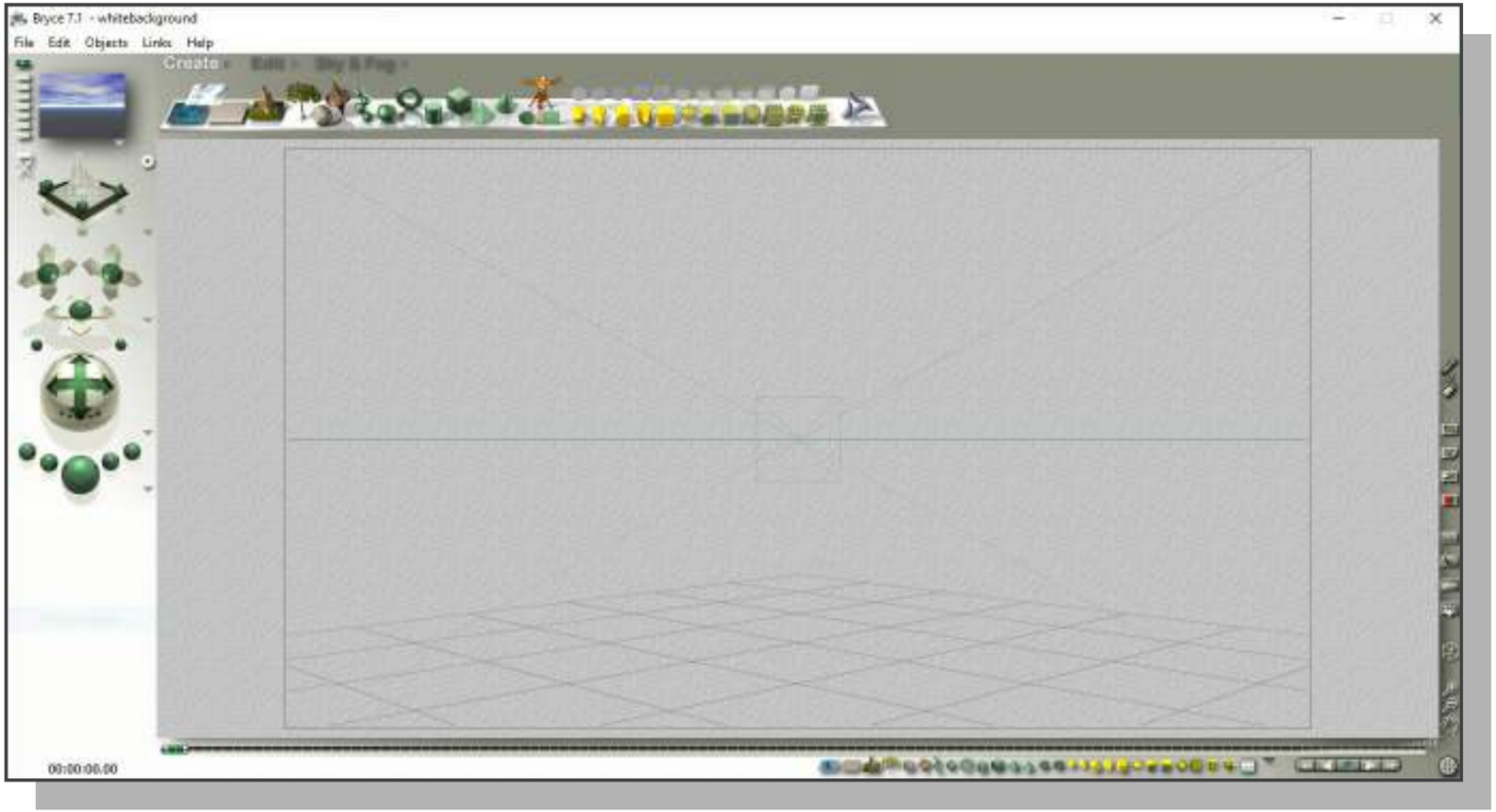
This version of the book only contains the Functions section and a few pages of the Wisdom section. This version does not include the Beginning, Applications, or Closing Remarks section.

If you'd like to read the full version, go to sr64dd.github.io and download the Revised Edition for the book as it was intended or the Slim Edition for a lightweight version. Those versions contain some prologue about Bryce, tips for creating renders and artist advice, programs that are useful in creation, and fantastic example pieces from other artists.

If you only need the functions then read ahead. This version of the book is an altered version of the Slim Edition, so most background renders aren't present.

Thank you for reading!

The Basics



When opening Bryce 7 you'll be greeted by this editor. If you are using Bryce 3, then this screen will be in the middle of a completely black background.

Everything is organized into sections with related elements. The left side is all camera controls. The top changes between objects, materials, and sky settings. The bottom changes between animation and selection, and the right is all for special tools that don't affect rendering.

The scene view in the middle is the viewport.

Object Overview

To understand what each action and shortcut does, it's helpful to know the main elements on an object. For now, the most important properties are the **type**, the **material**, and the **position, rotation, scale,** and **origin** (collectively a **matrix**).

This object is a **sphere**. This is important for selecting all objects of a type.

This object has a **material** made up of **textures**, which are made up of **components**. Those last two become important later.

This object has a **matrix** (X Y and Z for Position, Rotation, Scale, Origin)

Create Tab

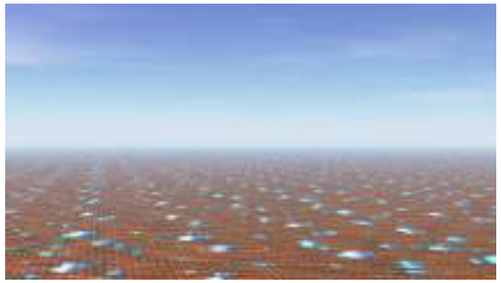
The first tab above the viewport is the Create Tab. This is where you'll be adding objects, ranging from maths-based primitives to light sources to flat planes and procedural meshes. The logo on the right sends your scene to DAZ Studio. The objects with yellow and green on them are restricted to Bryce 7 Pro and are not in Bryce 3.

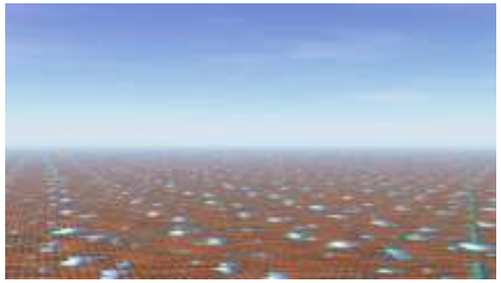
Clicking the arrow next to the Create Tab will bring up a menu full of preset objects, including more primitive shapes, boolean shapes (shapes with other shapes cutting into them), editable trees (more on that in the Tree section), objects exclusive to Bryce 7 Pro, some more primitives, household models, weird swirls, planets, animation paths, rocks, more trees, mountains, even more trees, objects featured in some Bryce tutorials (all beach themed), and various shrubs and flowers.

Infinite Planes and Volumes

Infinite planes are objects that appear as planes on the viewport, but appear infinitely large when rendered. There are three types of infinite planes; Water, Cloud, and Ground. As far as I'm aware, the only difference between them is what material they are created with, where they are created, and their starting scale. To prove it, I rendered all three using the sky "Peach Haze" and the material "Mermaid's Hair." They're basically identical, but the ground plane material was rotated slightly. Labelling them isn't even necessary!

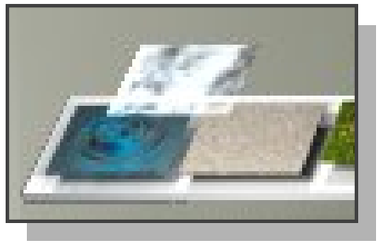
Oh, and the reason why there are only 2 renders is because the Water and Cloud renders were exactly the same.





Usually, an infinite plane works fine, but if you want more depth (say you are making a sky with clouds, and don't want to use a flat plane or the sky lab), you can use a volumetric slab! Hold one of the three plane objects on the create tab, and you should see a menu asking for either a Surface or a Volume. Release on Volume and a cuboid should appear. The top background image is a volumetric slab. It looks almost like the moon's surface, but results can vary based on material. Some just look... funky.

Despite the slab being infinite, both the width and depths can affect the slab in meaningful ways. Some materials may take a while to render, especially those in Misc > Volumetrics!



Terrains and Symmetrical Lattices

Bryce is known for its superb fractal terrain abilities. That's why the program is called Bryce. It's in reference to the Bryce Canyon in Utah!

Terrains and Symmetrical Lattices are randomly generated, so each time you click create either you'll get a brand new mountain or lattice. This is useful for making backdrops for a scene, however on their own they're pretty bare bones. This is where the Terrain Editor comes in. When selecting a terrain or lattice, click the [E] button (Edit) that appears beside it, below the [M] button (Material Lab) and above the [↓] button (Landing). This should bring you to the terrain editor. In this editor, you can paint the height of the mountain, apply various effect and edits to the canvas, and even animate it. Some of the Editing Tools are both clickable and draggable.

Nooks of the Terrain Editor

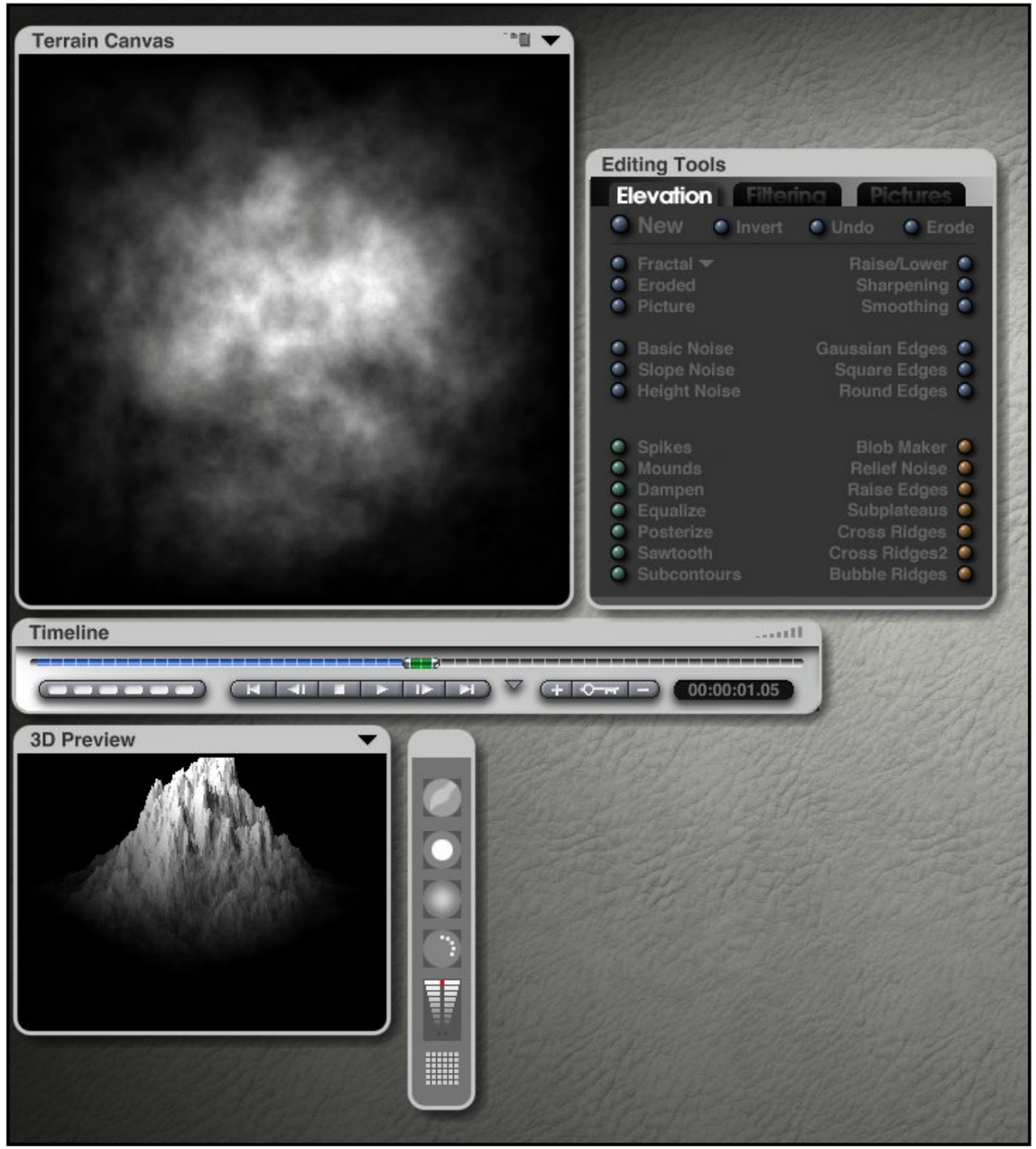
In the Terrain Editor you can edit the height map of the terrain by either drawing on the height map, applying effects, or importing an image.

The buttons next to Terrain Canvas (the two squares and down arrow) let you make the terrain solid underneath, change where the terrain becomes hollow (the red zone), and change the appearance of the terrain in the editor.

The Filtering Tab lets you adjust the height of pixels based on a graph. The Pictures tab lets you import your own height maps, even if they aren't black and white.

The Brush circle lets you change the area that you apply strokes on the Terrain Canvas. The grid of squares lets you change the resolution of the canvas, which can be good for getting huge details or smoothing out a terrain.

Try experimenting with the different effects!

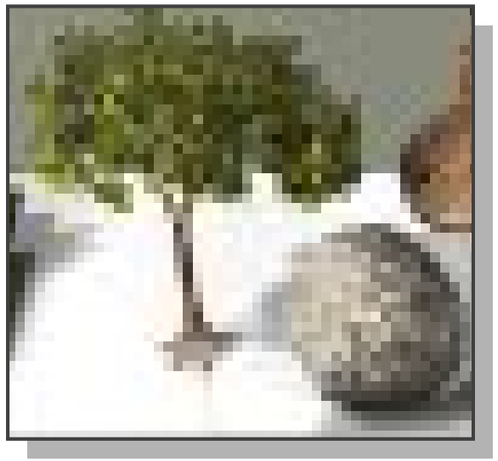


Trees and Rocks

Bryce has two other native “natural objects,” being the rock and the tree. Rocks act like any other imported mesh. They have an edit menu and various presets can be found in the Create Tab.

Trees on the other hand are much more special. They have their own Tree Editor accessible by clicking on the edit [E] button while the tree is selected. In the Tree Editor you can modify the trunk, leaves, and style of tree. There are also preset slots if you want to save certain configurations.

Trees also have some presets in the Create Tab (in Bryce Trees, Special Trees and Trees are just regular meshes and uneditable). Additionally, if you hold Alt while adding a tree you’ll have access to several other presets.



Metaballs

Metaballs are spherical objects that, when put close enough to another metaball, will attract towards it and join up. They kind of function like droplets, joining together to form one big mass but only if they’re close enough.

When two metaballs with different materials connect, the material will slowly transition from one to the other. The blending isn’t always too accurate but it can lead to some cool transitions.

Additionally, metaballs can be either positive or negative but not neutral or intersect. Negative metaballs will warp other metaballs around the area it would have occupied. Negative metaballs can still have their material appear on the main mass.

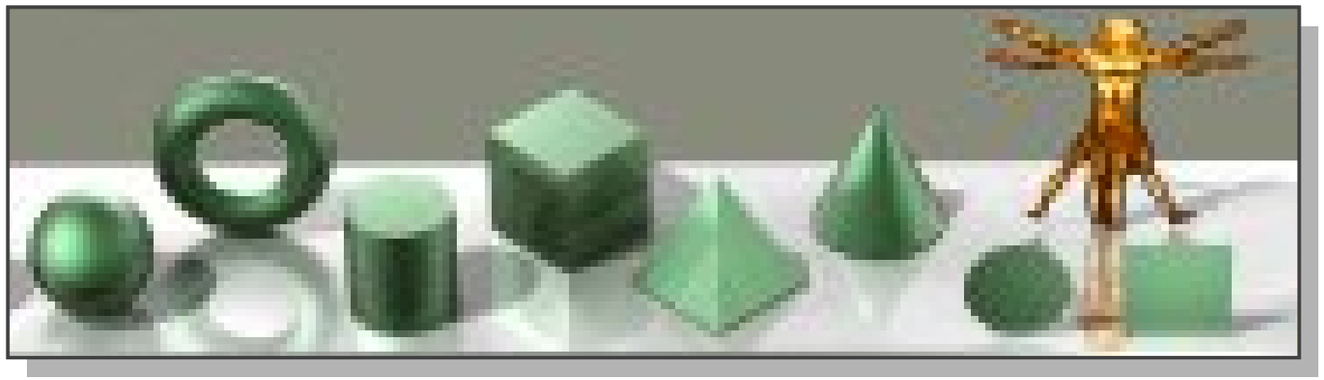
While metaballs seem very powerful, they are also prone to crashing Bryce. Whether they crash or not seems independent from how many are in the scene, so remember to save your scene when using them.

Primitives

Spheres, Toruses, Cylinders, Cubes, Pyramids, Cones, Disks, and Faces are all primitives. They are mathematically generated objects that are uneditable, except for the Torus which lets you modify its thickness.

In Bryce 3, each primitive is listed with 3 more options of varying scale. These can still be accessed in Bryce 7 Pro by holding Ctrl or Shift while adding one to your scene. Doing this for the Disk and Face will orient them facing the sky.

Along with the primitives is the 2D Picture Object, a flat plane similar to the Disk and Face. When you create one you'll be prompted to select an image, and then the object will be created. This scales the object in a way so that the image doesn't appear stretched or squished, making it ideal for importing images over putting them on a Face. This works with transparent images too.



Lights

Dang it! The lights on these pages are busted! Well, we can just do what we did last time: make our own!

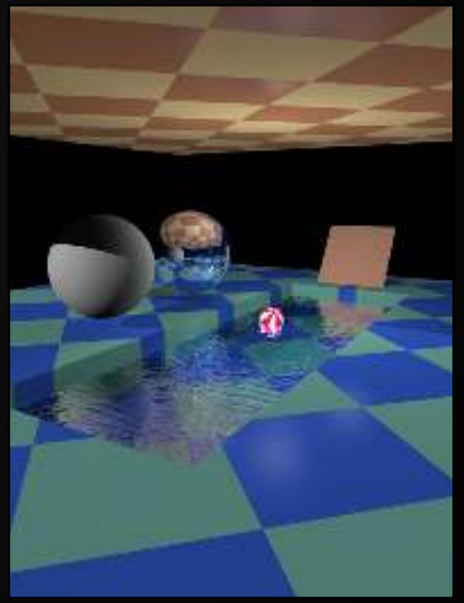
Bryce 7 has five primary light objects: Radial, Spotlight, Round Parallel, Square Spotlight, and Square Parallel (Bryce 3 has all of these except the Square Parallel). These illuminate the objects around it in various ways. Radial lights will brighten everything around it, the Spotlights will shine on a specific area, and the Parallel lights are the same but for both sides.

Luxury Bulbs

If you have Bryce 7 Pro, then you have access to seven more light sources: Distant, Round and Square Parallel, Sphere and Cube Dome, and Sphere and Cube Fill. The additional Parallel lights are just updated optimized versions of the old lights.

Distant Light acts as a sun source, lighting up everything in the scene no matter its position. The Dome lights are similar to the radial lights but are more dynamic and optimized, acting like ambient light from the sky and casting light into crevices. The Fill lights also act like Dome lights but are more so intended to tweak the lighting in a scene, rather than act as the main light source.

Below is an example of the sphere dome light in a scene.



Light Switch Configuring

All light sources can be edited via the Light Lab, letting you change the colour and intensity, how the light affects the scene, and various other options.

Gels let the projected light take the form of an image or a material rather than a colour. The colour can also be set to a changing gradient. The light can be displayed as a visible object too.

Most options on the left are specific to certain light objects. Cluster options relate to Dome and Fill lights and control how light is projected in the scene.

All of the options here are also animatable, and you can save light presets with the familiar save slots in the bottom left.

Importing 3D Models

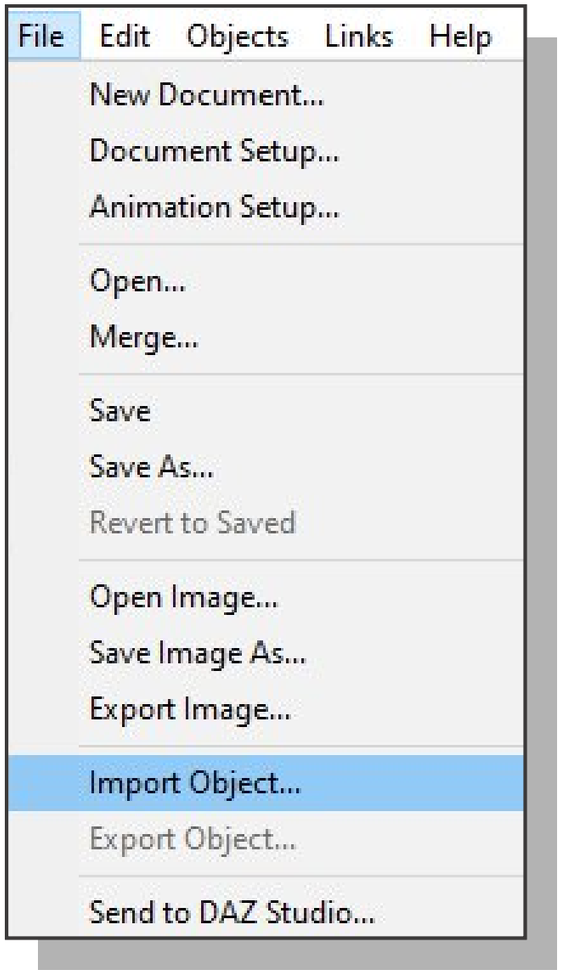
Meshes are like primitives in that they can not be directly edited, though they are defined by regular 3D conventions instead of maths. Rocks are a type of mesh, but you can import your own via File > Import Object...

Bryce supports many different file formats including the usual OBJ, 3DS, FBX, and DAE.

When models are in scene, you can change how Bryce handles the faces, either rendering them in a blocky way or in a smooth way.

On the left, the model is rendered unsmoothed. On the right, the model is rendered smoothed with the default settings.

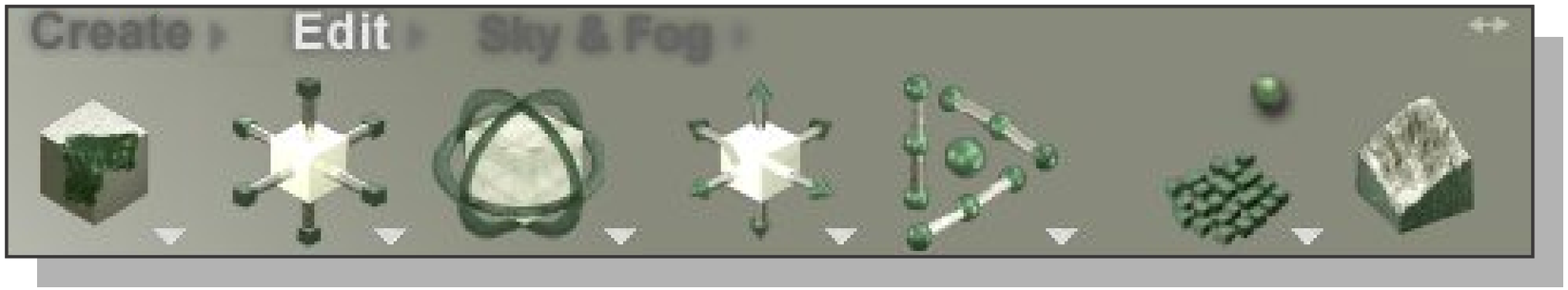
Smoothing can be done by clicking on the [E] button when selecting a mesh.



Edit Tab

While the Create Tab let you create objects for your scene, the Edit Tab is all about manipulating those objects. In order, the Edit Tab lets you enter the Materials Lab, Scale, Rotate, Move, Align, and Randomly move objects, as well as Edit Terrains or Objects with a [E] button present when selected.

Clicking the Arrow next to the Edit Tab will bring up a menu full of material presets organized into various categories and subgroups. Unlike the Objects menu, the Materials menu has a wide variety of applicable presets, so you'll become accustomed to visiting it.

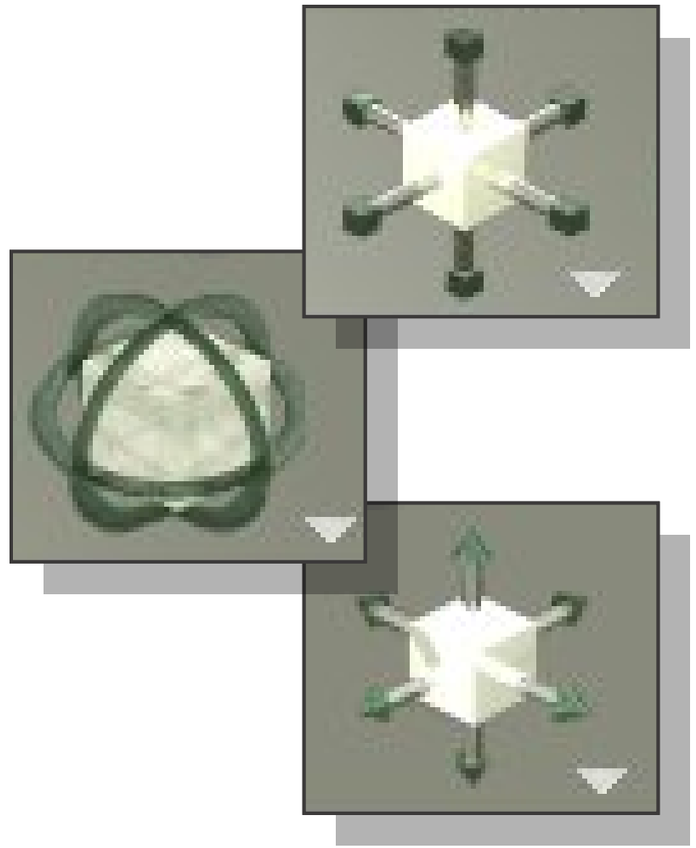


The Big Three (Transforming, Rotating, Scaling)

There are multiple ways to move, rotate, and scale your objects. One way is via the Edit Tab. Simply grab on one of the axis and drag to change the property. The first of these controls changes scale, the one next to it rotation, and the next transformation. The arrows at the bottom right of these controls can be used to change which set of axis to use, and can also reset values. The scale menu also lets you flip objects along certain axis.

Object Space moves, rotates, and scales objects according to their axis. In short, you won't get any warping and objects will always move in an understandable direction-based fashion. World Space uses the axis of the world. This can mean that objects don't always move the way they are facing. but every object transforms along the same axis. And Camera Space uses the axis based on the current view.

Objects will rotate based on their origin handle. To view an object's origin handle, go into its attributes and turn on Show Origin Handle. This is more important for animating objects.



Viewport Manipulation

Objects can also undergo these actions directly from the viewport as well. To move something, click the object on any part except the anchor points and drag. For movement on a single world axis, drag and then hold Ctrl or Alt for the Z or Y axis. To scale, click and drag any anchor. Then, hold Alt to scale from the centre, Ctrl to scale from the opposite side, or Shift to scale in increments. To rotate, hold Ctrl before dragging an anchor. Corners let you rotate freely while edges restrict rotation. Holding Shift rotates in increments and Alt rotates in fine amounts.

These key commands also change the controls in the Edit Tab too, though movement commands become Shift for moving in increments and Alt for fine movements.

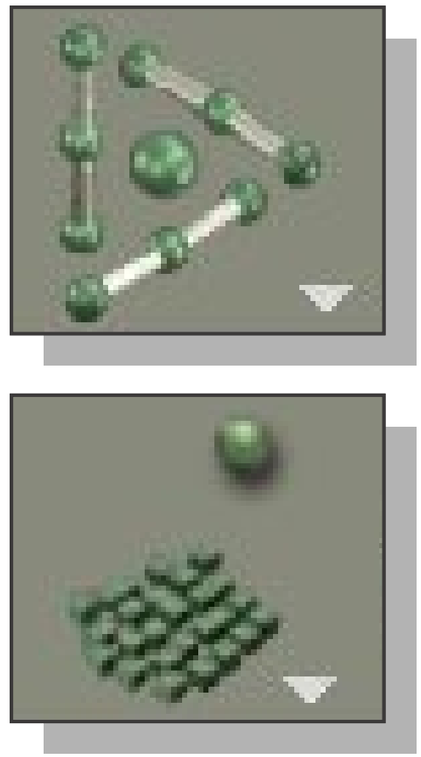
Order and Chaos (Align and Randomize)

The two controls next to the reposition control are the Align and Randomize controls.

The Align control will align all selected objects to a given axis, represented by bars separated by three balls each. Each line corresponds to an axis, and each ball corresponds to the front, centre, and back of the group. As an example, pressing the Y Bottom button will bring all selected objects to the bottom of the group, where the lowest object was. And pressing the All button in the centre will bunch up the objects in the centre of the group.

The Align tool also lets you snap objects, available by clicking the arrow in the bottom right of the control. This lets you snap objects to each other similar to Aligning on All Axis, snapping to the grid, and landing objects on the world floor (Snap to Ground) or the surface of the nearest object below (Snap to Land).

The Random control randomizes the position, rotation, and scale of selected objects. It can do this for either the X and Z axes or all three axes. First, click the arrow in the bottom right to choose the randomisation method, then drag the button in the top right to randomize!



Material Editing

The first control in the Edit Tab takes you to the Materials Lab. This can also be done by selecting an object and pressing the [M] button that appears next to them.

Layer 1 — Materials Lab

Every material is made up of various properties and values. The top six are primarily for the colours the material uses, while the rest are for how they are displayed. These values and colours can be constant values or variables taken from the textures (the little blue balls next to each property).

Diffuse and Ambient control the main colour of the material. Ambient and Ambience control what the unlit part of the object looks like and how bright it should be.

Specularity is the shine an object has from light. Metallicity controls a mixture of all Diffusion, Ambience, and Specularity. Bump Height and Displacement control how the object's surface appears. Bump Height mimics an unlevel surface while Displacement actually changes the objects shape.

Transparency makes the material look like glass, and Refraction changes how rays pass through it. Reflection reflects rays back, creating a mirror effect.

Texture Effects

Anisotropy changes how highlights and reflections are rendered, making them slightly more distorted and angled. This affects the specular shine. When plugging a material, this can lead to unique results like the ones on the right.

For every property, plugging a material will do different things. Diffusion, Ambience, Transparency, and Reflection all apply only to areas dictated by their alpha map. Bump and Displacement need a texture to define what areas to raise. Specularity and Metallicity are all defined by values within the texture.

Anisotropy on the right uses, in order, Basic Sin, foamywater, grid simple, and stepp'N tile.

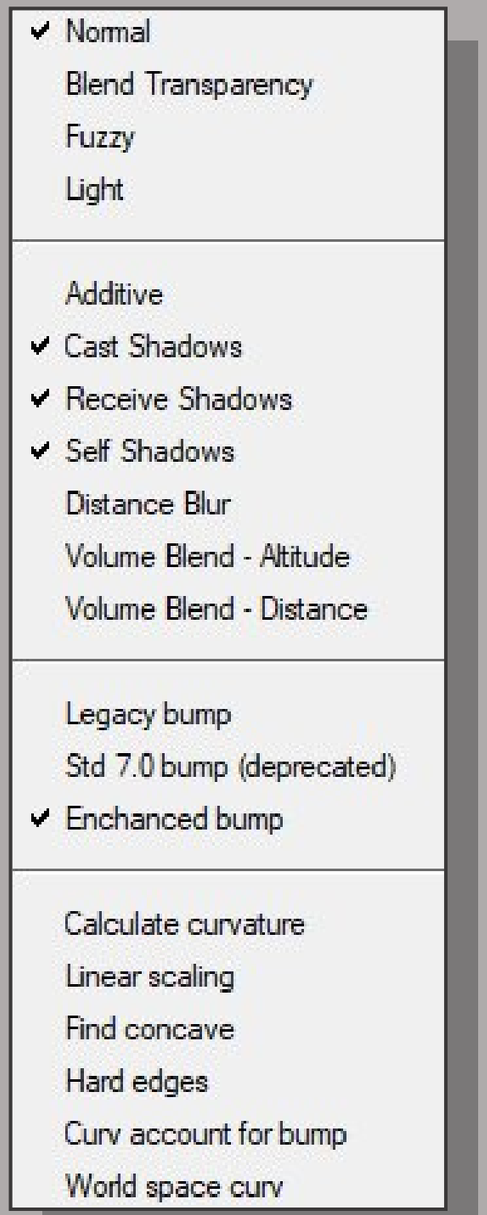
Adding and Editing Textures

By pressing an empty texture slot next to a property you can add a texture. Each material can have four textures, A through D, and their colour, alpha (where the texture is transparent), and bump (where the texture looks bumpy if applied to the bump height property) channels appear on the right.

The top right green button lets you scale, rotate, and transform the texture. The scale control actually controls the frequency, so lower values will make the texture appear bigger. The red button next to it will take you to the Deep Texture Editor. Pressing anywhere else on the top will let you pick from texture presets. Shift clicking will bring up a bigger menu to browse through.

The T and P buttons lets you change whether the texture slot is a texture or picture. If it is set to picture, then the red button will take you to the Pictures menu.

The bottom right arrow changes how the texture is mapped to the object. World mappings will scale and wrap the texture relative to the world, so that changing the size or rotating an object won't transform the texture. Object mappings scale and wrap with the object, so scaling and rotating the object will scale and rotate the texture too. The other options are for special cases regarding the shape of the object or the type of material.



Extra Settings

In the top right corner is a small arrow which brings out more configurable options.

The first four control how the material looks. Blend Transparency will make transparent parts appear invisible instead of glassy. The rest are somewhat self explanatory. The bottom options are all miscellaneous, such as Linear scaling which controls whether textures are scaled regularly or in a nearest-neighbour non-blur way.

From the Materials Lab you can copy and paste materials, change settings about the little view box in the top left, change the scale of textures with the four rods in the top, and change materials quickly using the right-pointing arrow next to the view box. You can generate a random material by pressing the blue sideways button next to Specular Halo, and you can reset the material to the default grey by pressing the red button next to Volume.

Speaking of Volumes

By pressing the rock labelled Surface you can toggle the material into a volume. Volumes have very similar properties to Surfaces, but they also have some unique ones.

Base Density pretty much controls the shape of the volume and how much is present or filled. Edge Softness and Fuzzy Factor control how soft or sharp the volume looks. Quality/Speed controls how good the volume looks vs how fast rendering it will take. It's like a game of tug-of-war between a fast render and a good material.

Volumes also have unique settings, such as different shading modes.

Layer 2 — Deep Texture Editor

By clicking the red button on a texture you can edit the components that make up the texture in the Deep Texture Editor. In short, Bryce uses various noise and combining functions to generate textures.

Each component has three colour swatches and a drop-down menu determining how the colours are interpreted. Above the swatches is a button which resets the component. The C, A, and B buttons control whether the texture uses the Colour, Alpha, and/or Bump of the component. The button below these letters randomizes the component.

On the final combination, the red button lets you pick a texture from the texture library, and the blue button randomizes all three components.

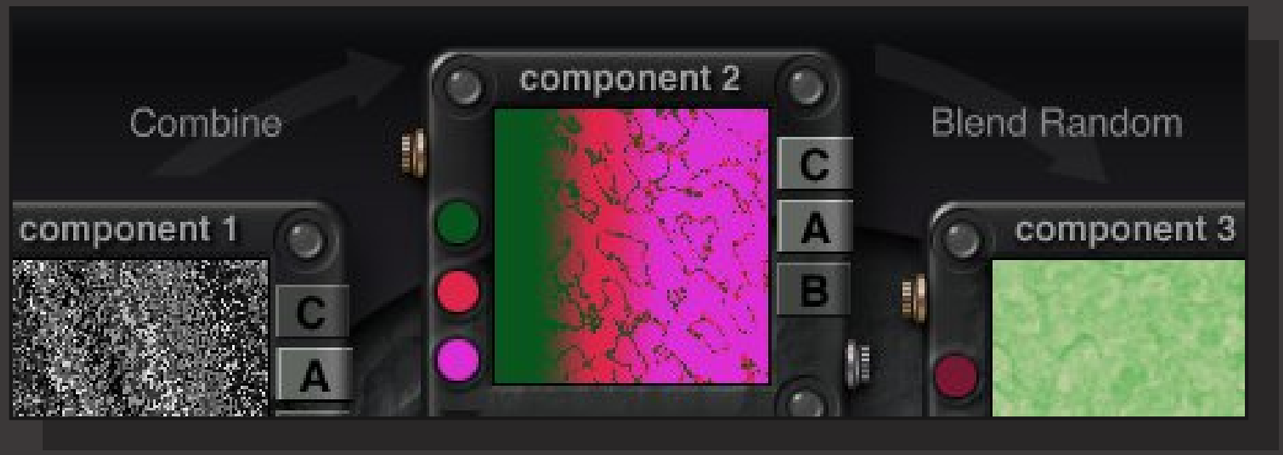
The numbers in the left corner let you set the amount of components and the objects in the other corner let you change how the components are displayed in the editor.

Noise, Phase, and Filter

The Noise is the actual shape of the component. It can be defined by pressing the Noise button in the bottom or the top left of any component, then by pressing the top-left of the noise pop-up. Bryce has various types of noises and different modes too. The octaves change how many recursions the noise does. Most of the modes require an octave of at least 1. The dimensions and frequency of noise can also be changed.

The Phase warps the noise according to another noise. It is accessed with its button in the bottom or the bottom left of any component, then the top left of the phase pop-up. Its menu is identical to the noise menu.

The Filter affects how the colours are applied to the noise. It is accessed with its button at the bottom or the top right of any component. It has a function, swappable by clicking on it, and variables influencing it, individually draggable or changed by dragging on the graph graphic.



Combining Components

The arrows between components control how the components layer on each other. Clicking on them allows you to change blending modes. Most of them follow typical blending conventions like multiplying and adding, while others act based on the orientation of the texture, and others fall off in various ways. Experiment with different combos, there's pretty much an infinite amount of combos when combined with noise, phase, and filter alterations!

In a similar manner, the mapping of colours can be changed using the menu below the swatches of any component. These follow similar types as the combination methods, and many of them consider the values of the colours picked without directly showing that colour. If you just want the colours you picked to appear with no exceptions, use Linear Interpol2 or 3. Some other options like Randomized also preserve picked colours. And no matter what setting the colour is on, it will not affect the alpha or bump of the component.

Pictures!

If your texture slot is a picture, clicking the red button will take you to the Pictures menu instead. Here you can add, delete, rename, and select images. You can also save and load lists of images.

The first box at the top shows your image with no alpha, so all of the transparent parts appear opaque. The second box shows just the alpha channel, and the third combines the two. The black and white circles above the first box will replace your image with a completely black or white version (as in fully one colour, not monochrome).

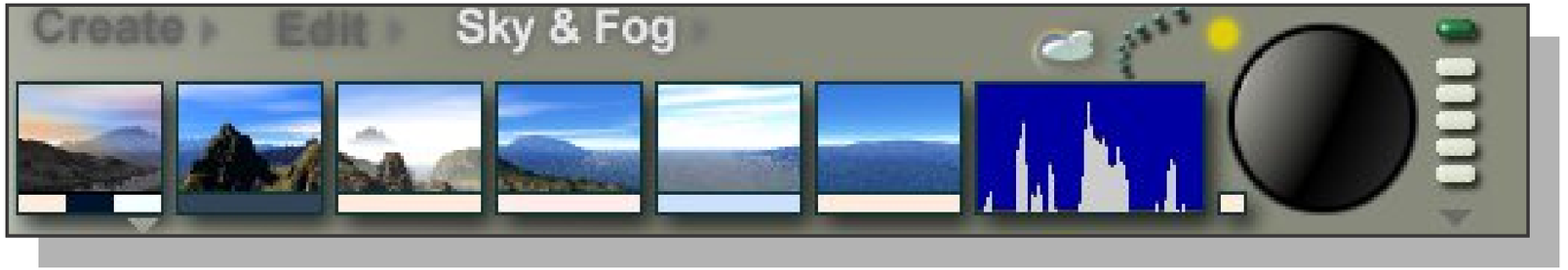
The half-black-half-white button above the second box inverts the alpha channel, so fully opaque areas become transparent and vice versa.

Nifty Replacing

The Edit Tab has one more feature in a control in the top right corner that looks like a two-way arrow. Holding it reveals an array of objects, and releasing on one will replace all selected objects with it while still preserving size, rotation, position etc. This can be useful for experimenting and creating chaos (like changing everything to metaballs) but it also has good practical use. You can position objects directly on each other without copying their matrix. Changing a terrain or lattice to a different object and then back will generate a new height map. Trees and rocks also get randomized like this, and each object selected will become a unique tree or rock. However, Swapping between terrain and lattice will preserve the height map.

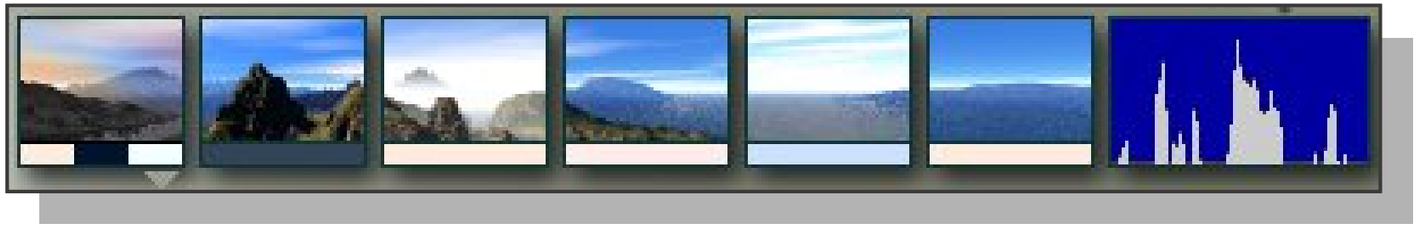
Sky & Fog Tab

The Sky & Fog Tab lets you manipulate the sky and atmosphere of the scene. This includes the sun, sky, haze, fog, clouds, celestial objects, ambient colour, shadows, and more. Although most of these settings are available in the Sky Lab, the most common settings are also available directly in the tab. Clicking the arrow as usual will bring up various sky presets.



The controls in the tab also let you randomize all settings using the button that looks like a line of dots. The sun icon to the right of that toggles the sky between day and night. The cloud and rainbow symbol takes you to the Sky Lab. The tab also has the usual preset slots, and the arrow below the slots lets you further customize the sky, changing how it is shaped and which clouds are present, and rendering the scene every time an adjustment is made.

Common Sky Controls



These boxes control the most common sky properties. For all of them but the first and last, you drag left and right to change the value and by clicking Alt on the square you can disable the feature. The image part of the control and the colour part of the control can sometimes alter different things, so look at the bottom left corner as you hover over them to see what they do.

The first box (Sky Mode) controls the colours of the sky. You can set it to be Soft, Dark, or Custom which lets you pick the colour of the sun, sky, and horizon. You can also set the mode to Atmosphere Off which sets the sky as a solid colour and disables the clouds, haze, fog, and the sun.

The other controls alter certain parts about the sky and environment, like shadows and clouds. The haze (the light part of the sky on the horizon) can also be altered, as well as fog. All of these can be altered in the Sky Lab as well.

The blue and grey graph on the right controls the frequency and amplitude of the clouds. Drag left and right to change frequency and up and down for amplitude.

Sky Lab

More intricate settings are available in the Sky Lab. It has individual sections for the Sun and Moon, Clouds, Atmosphere (Haze, Fog, etc), and IBL (Image Based Lighting).

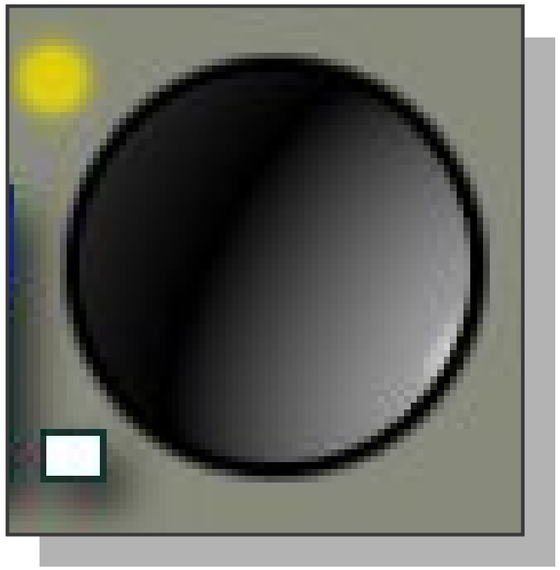
The Sky Lab has a lot of unique settings like celestial stars and comets, halo rings, rainbows, sky blending with sun, and cloud movements. It also has more controls for basic parts of the sky, like heights for the haze and fog, or size of the sun.

You can also animate all of these properties.

HDRIs

The IBL section is all about HDRI images. HDRIs are high dynamic range images. You don’t need to know too much about how they work, but note that you can make your own HDRIs in Bryce via File > Export Image, or you can simply find HDRIs online.

HDRIs change the way lighting works in your scene. They generally give your scene more realistic lighting and rendering effects similar to Premium Rendering. You can further modify HDRIs in the IBL tab, and if you don’t like the lighting you can use just the sky box.



Taming the Sun

The black and grey globe in the Sky & Fog Tab and the Sky Lab controls where the sun is and where it shines on the scene. The orientation of the control is based on World Space, so having the sun perfectly in the centre will shine light directly above objects, and having the sun near the centre bottom will cast light along the Z Axis.

If you would rather pose your sun relative to the viewport, hold Ctrl and Alt and double click on the sun control in the Sky & Fog Tab, then hold Ctrl and Alt and click anywhere on the scene. A little yellow or blue star should appear, which is where the sun or moon should appear too.

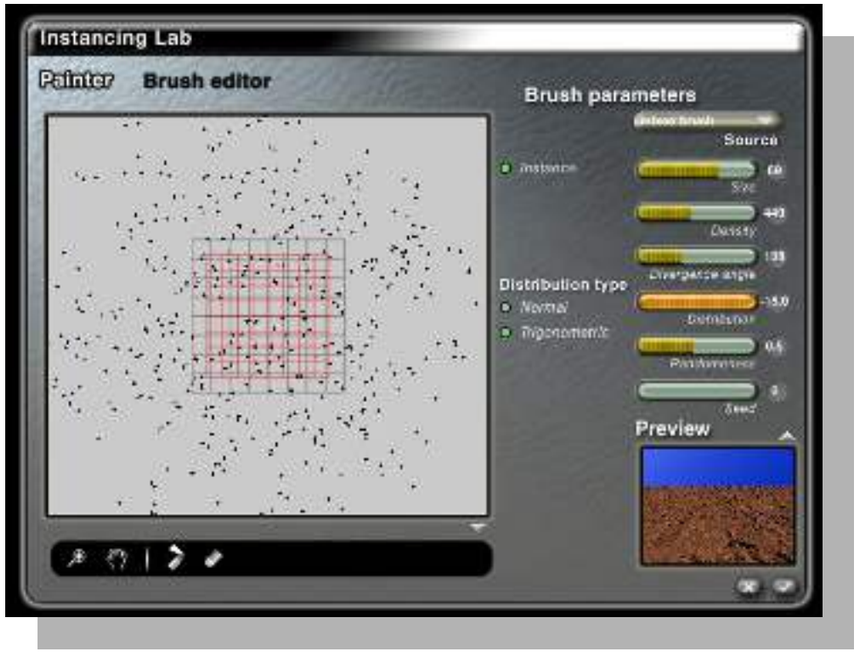
The white square bottom left to the sun control is the colour of the sun. Changing it will change the light shined onto the scene and some parts of the sky. The sun control will also change colour to match the current sun colour.

Instancing and Replicating

The Edit option in the window toolbar has a few options relating to Instancing and Replicating.

Replicating replicates your last move or addition in relation to your current selection. This means if you place a sphere, move it, and then replicate it, another sphere will appear in relation to the first. Multi-Replicate and Random Replicate do the same thing, but multiple times and with some variation.

Instancing creates a clone of the selected object. Unlike copying or duplicating objects, instance clones will copy the attributes of the original “master” object, and they can not be directly edited. The Convert to Standalone option below the Instancing ones will unlink the instance from the master.

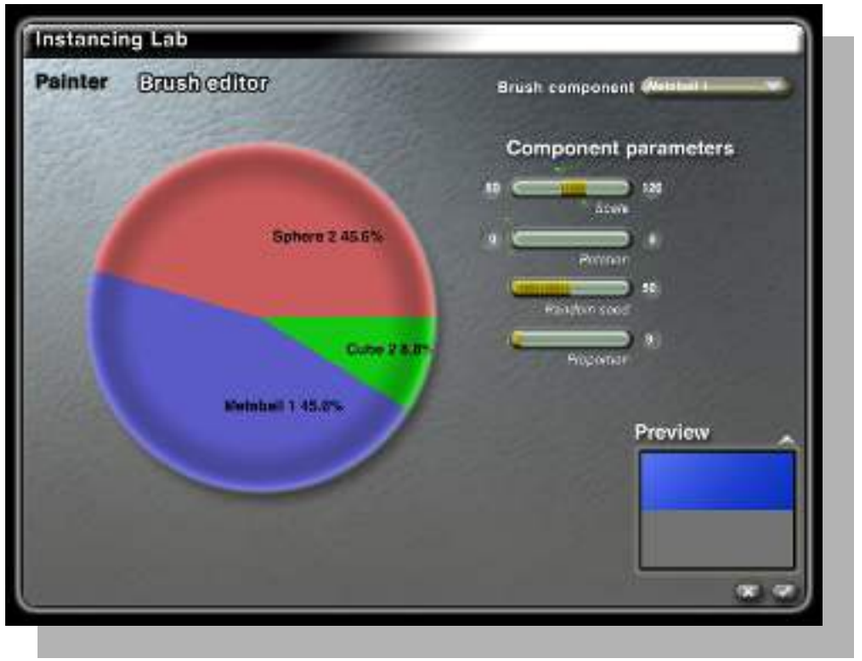


Instancing Lab

For more control in Instance creation you can use the Instancing Lab, accessed by pressing the [I] button that appears when selecting an object. The Instancing Lab lets you spread various objects on the selected object and is highly customizable.

Within the Instancing Lab is the Brush Editor, which allows you to change how instances will be created. This gives instances some randomness and variety. It also lets you pick from a collection of objects by selecting them in the Brush component drop-down. These combined can make your instances seem more natural and are good tools for decorating.

The Painter section lets you place instances, changing their randomness, spread, density, and other settings. You can also remove placed instances by using the eraser tool, and instances can be added as stand-alone objects by Ctrl Clicking on the canvas.



Grouping Linking and Tracking

Bryce has three main ways to “attach” objects to each other. Grouping will create an object that holds each grouped object, letting you move them as one and apply boolean transformations and convert the boolean to a single object mesh. They can still be selected individually and edited as such. Some actions done on the group object will affect all child objects, like changing material or showing the mesh as a box in the viewport. The group has its own matrix, so rotating it will swing the objects around instead of rotating each one. Groups can also be part of bigger groups.

Linking lets you attach an object to another (not literally, more so spiritually). Transformations done to the parent object will be applied to the child, but transforming the child wont affect the parent. You can use this relationship to produce interesting results, such as transforming both objects at once and seeing transformations double, or creating a series of links to make a rig (more on that in Wisdom!). In the attributes menu of the child you can change what the parent influences. A child object can only have one parent, and child objects can not be part of groups.

Tracking lets you make an object “look” at another. It won’t move the child but it will rotate it based on the position of the parent. In the attributes menu you can change which direction of the object should be looking. Linked parents can not track their children.

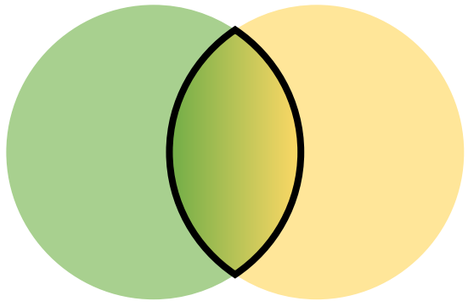
Group objects by selecting them and clicking the [G] button. Link an object to another by clicking the [🔗] button and dragging it to another. Make an object track another by clicking the [⊡] button and doing the same.

Cutting Objects (Booleans)

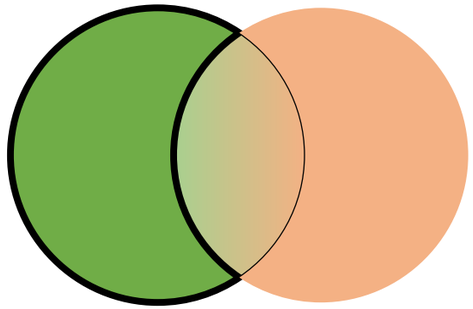
Objects in Bryce can have different states that change how they interact with each other when grouped. They can be Neutral, Positive, Negative, or Intersect. Negative objects cut out the part of the group they're covering, and Intersect objects only render the parts of the group intersecting with it. Both of these types interact with Positive objects, which are the default visible type of objects. Positive objects are fully outlined in the editor, Negative objects have dotted outlines, and Intersect objects have dashed outlines.

The other type of object is Neutral which is what every object is created as. Neutral objects do not change based on negative or intersect objects and will always be fully visible. They also have regular outlines.

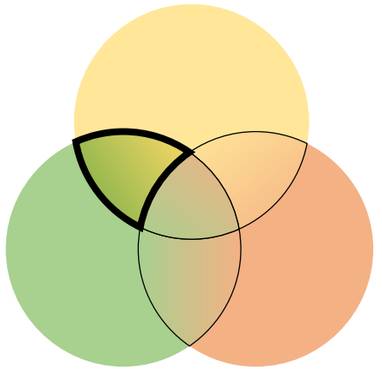
Below are representations on what different combos look like. The outlined segment is what would be rendered. Keep in mind, Negative and Intersect objects appear normal if there is no Positive objects in the group.



Positive and Intersect



Positive and Negative



All three, Intersect on top, then Positive and Negative

Selecting Multiple Objects

In the very bottom right corner you can toggle between the Time and Selection Palette. The Selection Palette has an array of objects you can select, which will select every instance of that object in the scene. This list starts with Volumetric Slabs and ends with Families. Everything else in between is referring to exactly what their image looks like.

Simply click any of these buttons and every object of that type will be selected! Shift clicking will unselected already selected objects. This applies in the Viewport too: Shift clicking will select all objects under the cursor and deselect any selected objects hit. It also wont deselect objects that it didn't hit that were already selected. Ctrl clicking will bring up a menu letting you select an object or add it to your selection. Objects in the menu are arranged by distance from the camera.

But back to families. You can give an object a family by selecting it and clicking the [■] button. There are 25 families to choose from including the default and camera family. Objects in a family will have a coloured outline on the viewport. Then, you can mass select every member of a family using the Selection Palette in the bottom right.

Other Object Buttons

The [↓] button that appears next to objects will bring them to the ground of the scene, identical to the Snap to Ground option on the Align Control. Objects will be placed on the ground so that no part of them is underground. If an object is already underground, the button will look like [↑] instead.

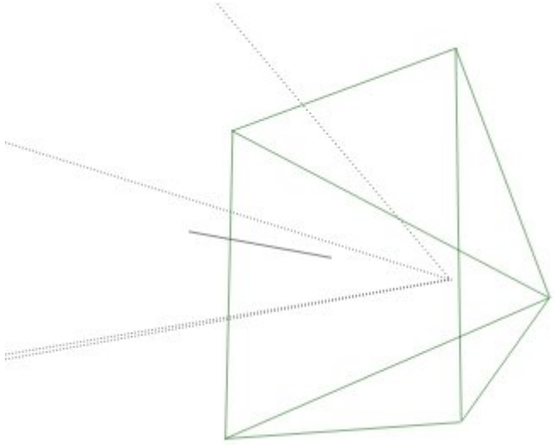
On groups with booleans a [C] button will appear which converts the group into a single mesh. This makes the object behave like a rock or imported object, where you can smoothen it but can’t directly edit it.

Camera Controls

Bryce has two main cameras, the director camera and the scene camera. The scene camera shows us as an object in the viewport (the green pyramid with lines projecting out). You can move both via the camera controls but only the scene camera can be moved like an object, and undoing will only revert changes to the scene camera. The director chair will let you switch between cameras. Dragging the Island symbol horizontally will also swap between these cameras and other orthogonal views.

The three arrows allow you to move the camera. Dragging near the tip of the arrow will restrict movement to one axis, while dragging the green circle in the middle will move the camera on two axis. The big trackball lets you rotate the camera. By default the director camera rotates around the whole scene, but by pressing the grey arrow to the bottom right of the trackball you can change its behaviour to centre on an object or behave like a tripod. The controls for the scene camera can not be changed.

The green knob to the top left of the trackball banks the camera to the left or right. The other knob next to it changes the FOV.



Normal FOV

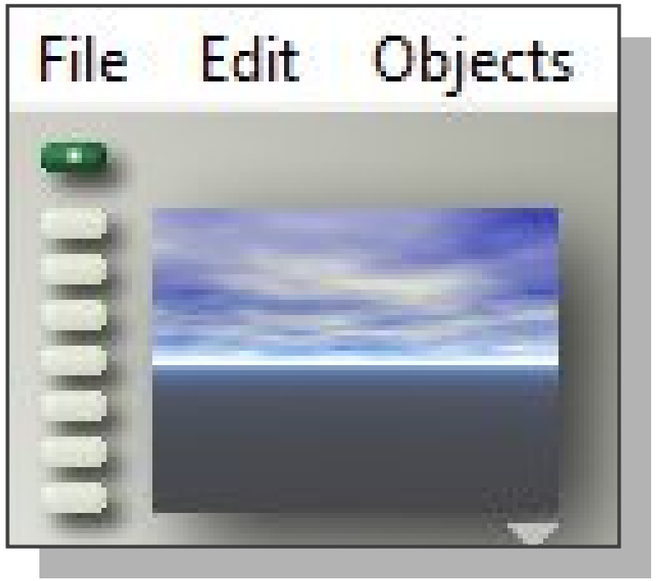
Lower FOV

Higher FOV

Even More Camera Controls

The little grey arrows next to each control also influences the camera.

The menu near the positioning arrows lets you quickly orient the camera to an object or scene centre, edit properties about the camera, or bring one camera to the other. This can be especially helpful if you forget to change to the right camera before posing.



Pressing Ctrl or Alt while using these controls also has some unique results. Almost everything clicked with Alt held down will revert it to its default value. Holding Ctrl or Alt while dragging the arrows or trackball will restrict movement or rotation to a single axis.

The circle in the top right will zoom out and spin around your scene. By holding Shift you can slow the spinning down, and moving the mouse while holding Ctrl will zoom the camera instead of rotating it. This is also accessible by pressing Ctrl-Y, and it doesn’t change the placement of your cameras.

The little square in the top right is a preview of your current render. Since it is so small, it renders your scene very quickly and can aid in seeing if a render looks good without having to wait each time. You can change the rendering type, the camera, and whether it renders everything, just the sky, or a wireframe. The knobs next to the preview lets you save camera positions. By pressing one while holding Alt you can remove a saved camera position, but you can not undo this, so be careful!

Window Toolbar

The window toolbar also houses some important actions.

The File tab will let you save, load, render, print, and merge documents. It also lets you change the resolution and frame rate of your document. The file tab is also where you can import objects and export positive booleans, trees, and other objects.

The Edit tab has the usual Copy, Cut, Paste, Select All, Invert Selection, and software preferences. It also lets you copy and past materials and matrices (or the position, rotation, and scale) of objects.

The Objects tab lets you edit materials and attributes. It also lets you group objects, and it gives you a shortcut to the Motion Lab and Sky Lab.

Links and Help are both irrelevant to making a render, but they can lead to helpful resources.

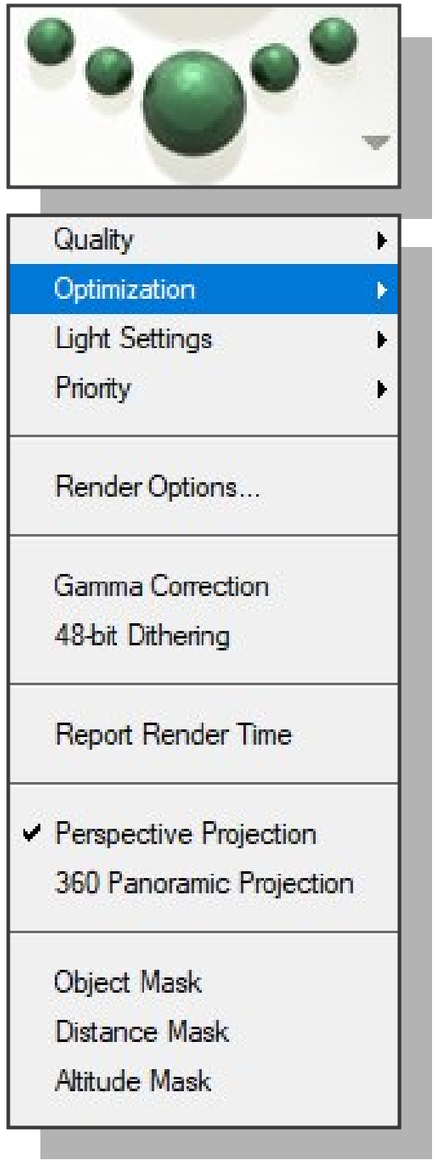
These menus do a lot more, but the most basic features which are used a lot are also available via more convenient means like shortcuts or context menus.

Rendering

The buttons below the camera controls handle rendering. Pressing the centre button will render your scene. If you stop rendering by pressing escape, the button to the right of the centre will resume. The two buttons to the left disable textures and enable Fast Preview Mode, which skips some of the rendering processes. Both buttons can help render an image quicker for previewing purposes.

The drop-down menu lets you change the aliasing (whether the render smooths out pixels), optimization (renders certain scenes better), light settings (more on next page), and priority (how much your PC prioritizes rendering). Many of these options are also available in the Render Options pop-up.

Gamma correction adjusts the colours of the render slightly so they don't appear washed out or dark on displays. 48-bit Dithering uses more colours to blend the colours slightly more. It increases render time a little bit.



48-bit Dithering

No 48-bit Dithering

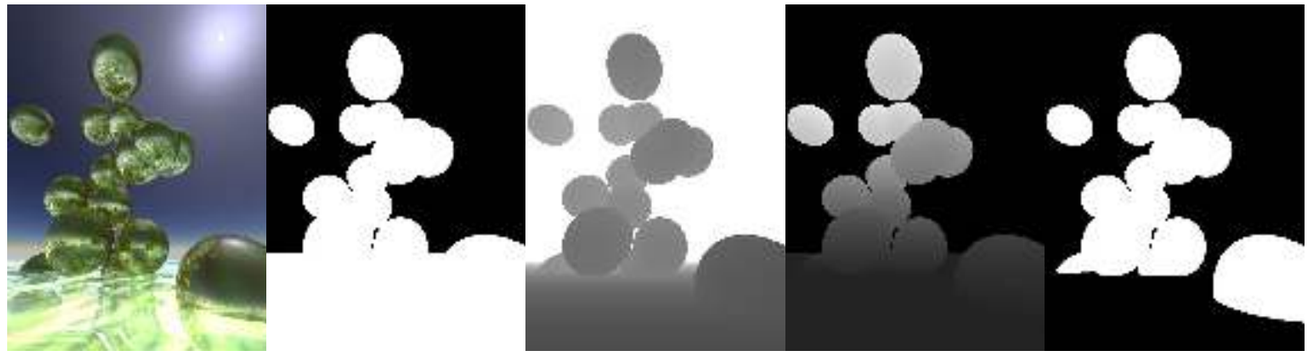
Rendering Continued

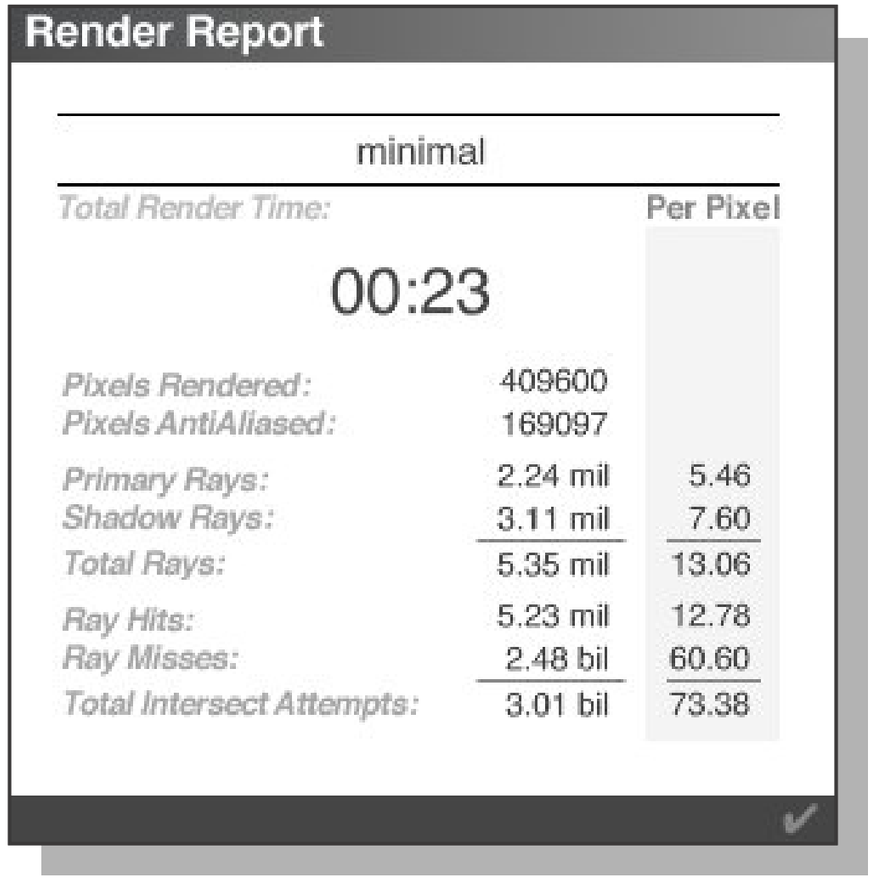
Report Render Time will bring up a small pop-up with details about your render, most importantly how long the render took, and some stats about the rays cast if you're interested. The time the render took is also displayed in the bottom left corner.

Perspective Projection and 360 Panoramic Projection control whether the camera behaves normally or like a 360 degree camera. The Panoramic option is useful for generating sky boxes.

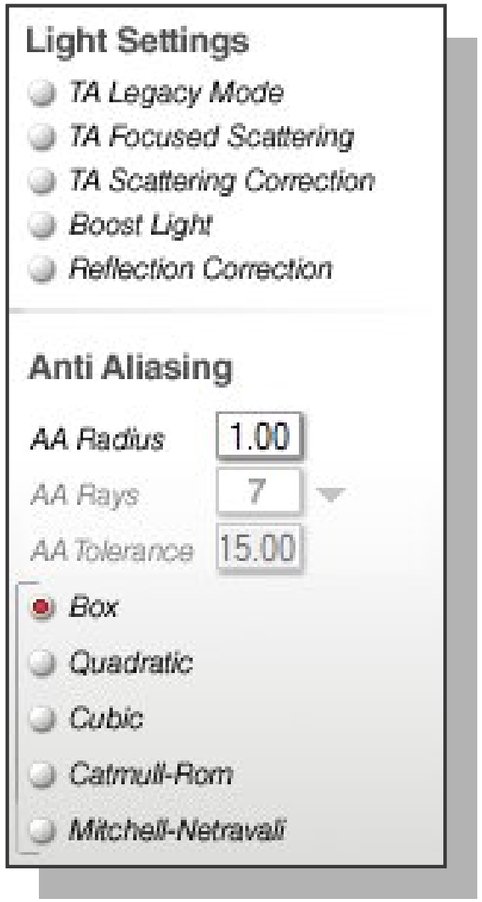
Object Mask, Distance Mask, and Altitude Mask all change your render to produce colours based on the presence, distance, or height of selected objects. If a selected object is covered by an unselected object, only the visible portion will be included.

Regular *Object* *Distance* *Altitude* *Object* *No Plane*





Premium Rendering and Render Options



For most renders, Regular AA will be enough to produce a nice render without any aliasing. However, Premium AA includes some special settings like Soft Shadows, Blurry Reflections and Transmissions, True Ambience, and Depth of Field.

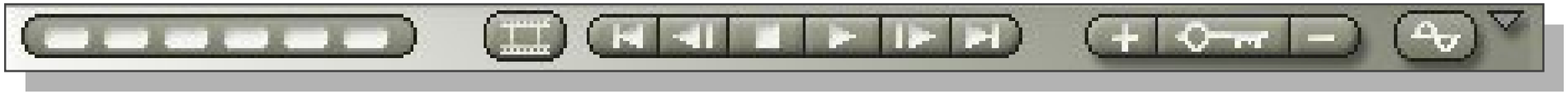
In addition, you can change more aspects about Anti-Aliasing and Lighting, though only if you are using certain AA methods or settings.

Regular AA

Premium AA
Blurred Reflections

Premium AA
Blurred Reflections
Blurred Transitions
Depth of Field

It’s Alive!

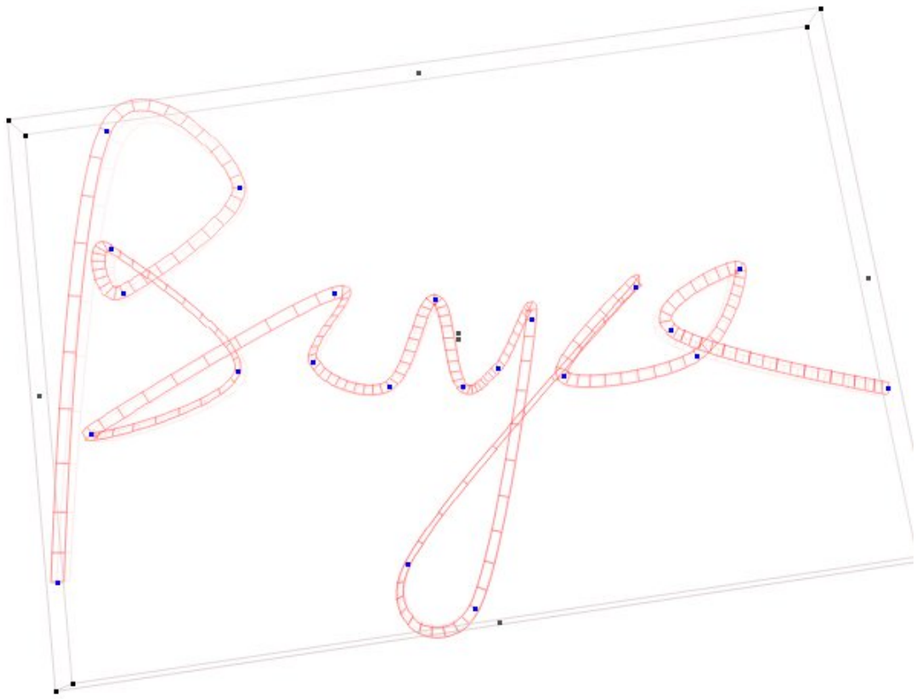


Animating in Bryce is fairly simple. At the bottom of the editor is a few animation controls. Select an object and press the plus button next to the key to add a key frame. Move the little green pill on the timeline above the controls, move the object, and press the plus button again. If you play the animation from the start, that wireframe object should be moving! Obviously there’s more to it than that, but most of it is better fit for an Animation Guide, not a Bryce Guide. So this section will just explain what the controls do.

The plus and minus buttons add and remove key frames for the selected object. To add or remove specific keys (say the Rotation of an object) or to key the sun, sky, or camera, hold down either button and select the property. If you have no objects selected, Bryce will automatically control keys for the sky and sun.

The empty slots on the left let you save timeline positions. The usual video control buttons will also let you move through the timeline and keys. The film reel button will create a tiny preview of your animation. Viewing an animation in the viewport can sometimes be unreliable since the speed changes depending on the objects in the scene, but the preview animation is more reliable (but not perfect).

Dragging on the timeline away from the scrubber lets you change the working range. Dark parts of the timeline are not part of the working range. This doesn’t affect rendering, but the Preview animation button only previews the working range.



Movement on the Big Screen (and Paths)

Animated objects will show their movement path when selected. Each key position is represented with a blue dot. You can move these around to change the position of the object at the key, though you can not change the time of the key like this.

Bryce has a separate Level of Detail for objects in motion. Auto LOD may make your objects appear lower quality in the editor while playing an animation.

Paths are presets of movement keys and positions. They can be created via the Create Tab's Object menu or by selecting an object with motion animated and clicking Objects > Create Path on the window toolbar (or Alt+P).

To make an object follow a path you need to link them so the path is the object's parent. Then move the object around and it will be bound to the path. Keying the object at different positions on the path wont make the object move straight from one point to another, but rather the object will follow the path it's linked to to reach the keyed position.

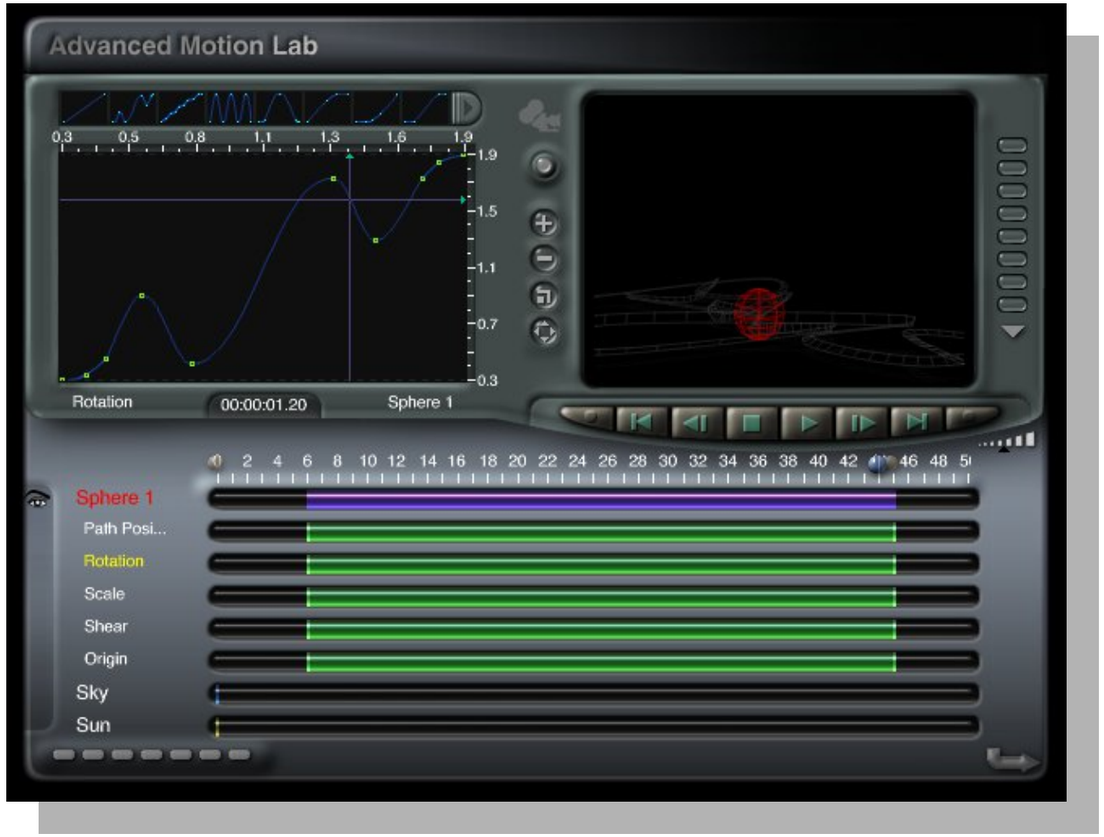
Advanced Motion Lab

The sine wave button next to the other animation controls takes you to the Advanced Motion Lab, where you can see the key frames of selected objects and change how they ease into each other.

The graph on the left controls the easing of the selected key timeline (Position, Rotation, etc). To add points to the curve click anywhere on the graph. Shift clicking a point will change its easing, and Ctrl clicking will delete it. Note that from the bottom to the top of the graph is the start and end of the timelines starting and ending keys. If you add keys, the graph will not change.

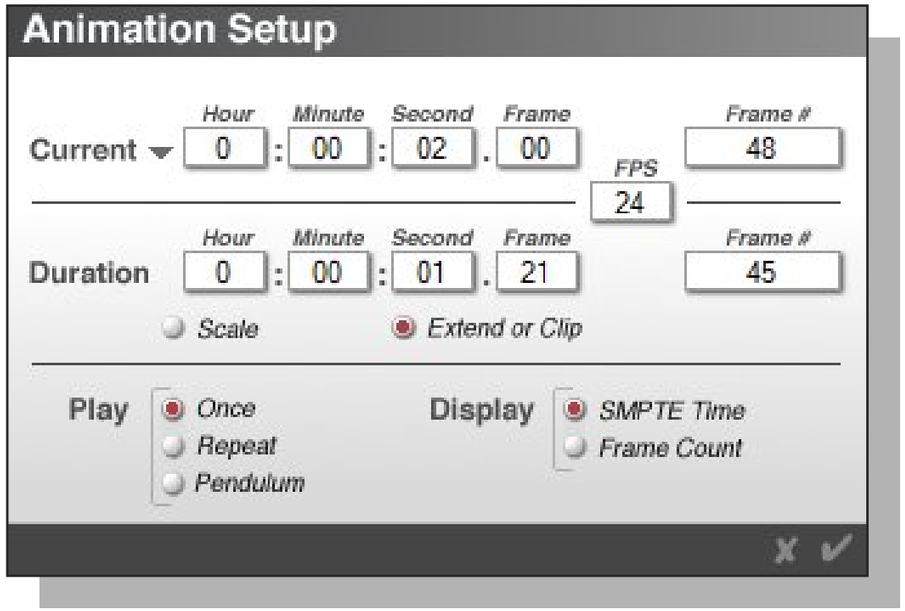
The bottom houses the keys and individual timelines for separate properties. You can drag to select multiple keys (the thin white lines), Shift click to add keys to your selection, Ctrl drag to duplicate keys, and Alt drag to move keys relative to each other.

You can hide objects in the preview window on the right. You can also move the camera around and save camera positions.



Setting and Rendering Animations

Before you can render your animation (or ideally before you even start animating) you need to pick your frames per second. This is done in the Animation Setup. This menu lets you change other properties like the duration of the animation. If you need to change fps later on, you can pick whether the keys scale to match timing (one second in 15 fps lines up with a second in 30 fps) or if the duration just extends (so one second in 15 fps would only take half a second in 30 fps).



You also can't directly input render resolution like when you render an image, so you need to use the render resolution options in the Document Setup.

To render an animation, select Render Animation from the File drop-down. From here you can change how long the animation should go for, where to save it, and what to export it as.

For the Output Module I highly recommend always using BMP Sequence, where each frame is exported as an image. It might sound daunting but render times can be unpredictably long, so if you need to cancel for any reason you'll lose one frame of progress instead of all of your progress.

Video editors and software like FFMPEG can compile these frames into a video (see Applications).

Customization

To the right of the viewport is a bunch of settings that only affect the editor and not the render. The first two, cheekily enough, let you scribble on the editor. No, not just the viewport, the whole editor... and the toolbar... and the taskbar. The spray can lets you spray in your render. Unfortunately, this is only restricted to the viewport, and it's prone to crashing if you drag for too long.

The button with the two black corners lets you expand the editor to fit the whole screen in Bryce 3. The folded button lets you change the background of the editor to various textures or a colour of your choice. The button below that will make a small version of the scene appear near the camera controls when moving the camera. The button below that toggles whether you can drag on a render to re-render a small section.

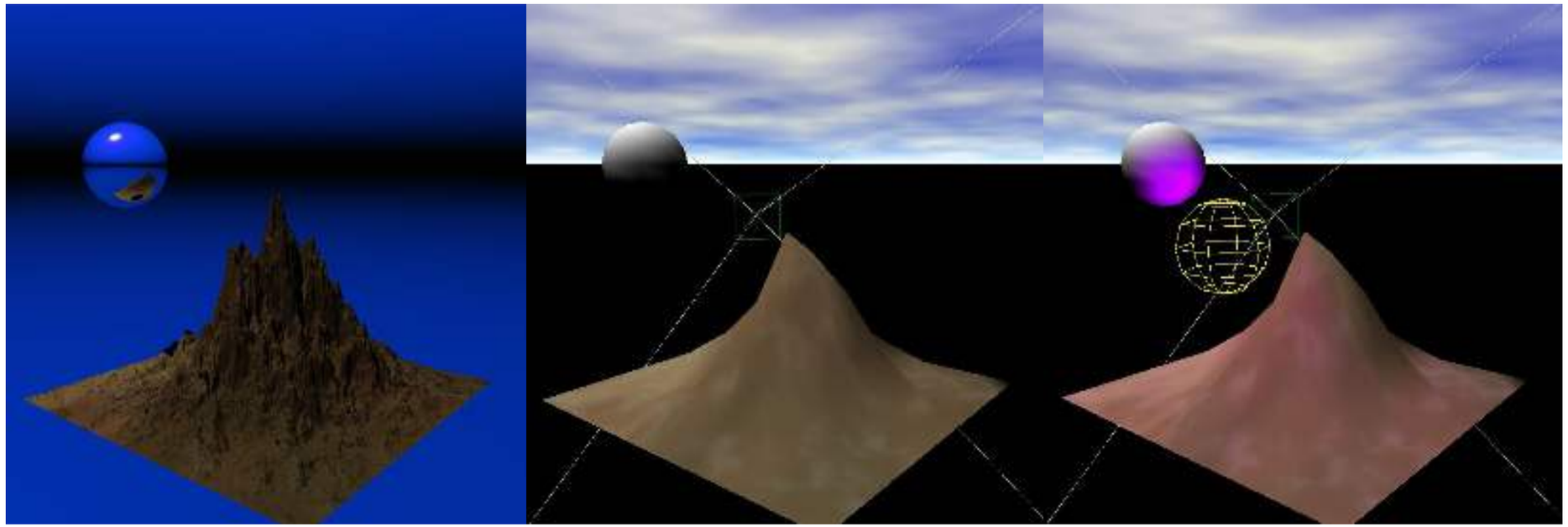
The button with the line gradient controls how bright objects appear in the viewport depending on how close they are. Ctrl clicking it disables the depth cue and makes every object the same brightness. The button below it with the A controls whether objects project a shadow to the ground in the editor. The button below that with the divided rectangle toggles the ground to be visible. The ground is represented by a green horizon, and object below the line are not shown in the editor. The button below that with the arrow lets you change the Level of Detail or LOD. This controls how detailed objects look in the editor based on if they are selected, moving, or neither. Auto LOD will lower the LOD if the scene gets too laggy.

Display Modes

The cube below all of those controls the Display Mode, or how the viewport actually looks. Default options let you layer the wireframe over the render, or simply display one or the other.

But Bryce 7 has other options that show objects in more detail as seen below. Despite textures and meshes looking crude and skies not being accurate, the objects still react to light. There are other options like Hidden Line and Lit Wireframe which do not render faces, and Smooth Shaded which does not render materials.

Test Render *Texture Shaded* *Texture Shaded plus a light source*



And to Finish It Off

Here are some extra titbits regarding various other parts of Bryce.

Holding Alt while clicking on the Zoom In, Zoom Out, or Drag controls will reset the camera. Holding Alt while using the Scrub Time control lets you move the time in your animation without the viewport updating. Alt+Clicking any colour control in Bryce will bring up a colour slider for more control. The pop-up allows you to swap between a Red Green Blue, Hue Saturation Value, Hue Lightness Saturation, and Cyan Magenta Yellow slider set.

Holding Alt while adding a terrain will instantly bring up the Terrain Editor. Holding Alt while adding a plane will quickly add a volumetric slab. Holding the add or remove key button in any lab lets you change specific properties. Bump Height can actually go from -998 to 998, though anything below -100 or above 100 needs to be manually entered. Ctrl clicking the texture slots next to material properties will use the properties of multiple textures. Dragging a component to another in the Deep Texture Editor will duplicate it in that slot.

By copying the matrix of another object and pasting it on the camera you can resize it. This actually changes how it behaves! The sun's position can be manually entered in the Sky Lab. An Azimuth value of 0 and Altitude value of 90 makes the sun shine directly down. Most light and sky properties can be set to a negative number. The Sky Mode can not be animated.

There's probably even more secret added controls in other sections like the Material Lab and Sky Lab, so play around with it! Where there's a button, there's probably a cool unique thing that happens when it's Ctrl, Alt, or Shift clicked.

All (Dirt) Roads...

With Bryce materials it can be hard to get a path that has blended sides, clear in the middle and grassy on the sides, or whatever your road predicament may be. This solution is admittedly low tech and not very elegant, but if you turn your path plane or cube into a terrain you can achieve this blending.

I'd recommend setting the material of the terrain to have the texture Basic Altitude or Fading, since the blending occurs because the middle of the path is a different height to the sides. Make sure the terrain has some height, even if it's barely noticeable, but it can't be flat.

Set the texture to map to Object Space and scale the Y Frequency. You may need to Offset Y as well. Keep fine tuning these until the edges of your path and the middle of your path is how you like. It's tedious but the results are worth it!

Nobody like a Grass

Like dirt paths, grass can be hard to emulate. There's a few different paths you could go. If you want to stick with Bryce one option is creating a noisy terrain and giving it a transparent material with spots. For a more thorough tutorial check out this tutorial by David Brinnen.

You could just skip the spotty material and make it green. This can look fine for very dense grass or a more retro scene.

If you're not opposed to using other software, many programs exist out there like Bantam 3D Grass which generate 3D models of grass, letting you import it as a mesh. Surprising these are less laggy than the terrain solution but they are much more stylized, depending on the software.

Trees of Variety

For more interesting looking trees, try layering a smaller one over the main one. Duplicate the tree, make the trunk an invisible material by turning on Blend Transparency and setting transparency to 100. Change the randomness and the colours and you'll have something more unique!

This might not look good for all trees, but bunched up branches like that of a Palm Tree can produce very good looking decor.

Light Decals

If you want to project an image onto a surface, the most... apt... method I've found is to use a square spotlight. This will make the image wrap over whatever it's shown on, but by default it will light up the material it's on.

So do this instead. Make the image inverted (via an image editor or online. If you're image is black and white this can be done directly in Bryce 3D) and import it. Then make the light have a specular value of 0 and a diffuse value somewhere around -5 to -10 depending on the desired intensity. Now the image is mapped and isn't lighting up the object behind it.

This could also result in decals being darker since they don't adopt the ambience of the back object, but with some tinkering you can get decent results, and multiple lights will play nice with each other if they're dark enough, so you won't get weird artifacts. This makes it useful for graffiti and mural art.

Light Sucker

Negative lights can be useful for other things too, mainly creating a really abstract scene.

For a great deal of chaos place two lights with opposite extreme diffuse values and see how they interact with other objects, bump, and reflections. You can get really psychedelic renders by cranking up the diffuse and letting the lights fight!

Negative lights can be used in more subtle ways too. Since negative lights and specular shines have a bit of colour and aren’t fully black they can be good for some subtle effects. The background render uses a negative specular value to imitate a blood spill.

Forbidden Displacement

Chances are your experience with displacement hasn’t been more than randomizing an objects material, getting a texture in the displacement slot, and then Bryce crashes. Usually bump is enough to make a material convincingly uneven so you don’t use displacement.

But there is a way to use it without Bryce crashing! You need to set the Render Priority to Low in the Render Options. Any higher and Bryce will throw a fit.

Granted, the displacement looks very pixelated as you can see in the render on the right. Additionally rendering the material takes ages, doubly so because of the low rendering priority.

And honestly, bump is still more useful in most situations...

Let Clouds Be Clouds

Don’t be afraid to give your clouds wacky textures!

Cumulus and Stratus Clouds are generated from textures identical to those made in the Deep Texture Editor, though only the alpha part of the texture is used to generate clouds. Nevertheless, you can still create great results by using unique textures. Square and Techno noise can produce surreal artificial results, while any noise using Auto-phased mode will look real trippy. You can also make more subtle background effects like the render to the right which uses low cloud coverage and amplitude to blend with the sky.

Remember that the colours of clouds can be changed using the colour picker below the Cloud Coverage control in the Sky&Fog Tab. Clouds are also influenced by the Ambient Colour below the Shadow Intensity control.

Which Way Does the River Flow?

When animating materials like water it’s important to know how to give the effect of a continuous, natural, and fluid flow. This might seem like a no-brainer but unnatural water looks very jarring in most animations. Simply put for a pool or a body of water with little directional movement it can be enough just to animated the Y Offset. This makes the water bumps move in a continuous and smooth manner.

This can work with cloud planes too but you might want to add some X or Z offset if you want to imply that there’s any wind or force moving the clouds. Obviously there are times where animating these materials differently can give a cool stylistic effect, but if you don’t know how to make your water ripple just remember that changing the Y Offset only will be good enough.

Getting Rigged

Bryce doesn’t support armatures or animation bones so every motion happens on an object basis and not a bone basis. However, you can still make somewhat of a rig using Linking.

Create a model where every movable part is its own object, so hind leg, fore leg, torso, etc. Select all objects and show their Origin Handle, then position each of them at the point they should rotate. For arms this would be near the shoulder, basically where the start of the bone would be. It’s important to do this now because doing it after linking will move all connected objects when moving the origin!

Finally link every object to what their parent should be. Hand to forearm, forearm to torso, head to neck, you get the gist. If you want you can also make an invisible root object and link the highest parent (most likely torso or waist) to it. And remember that you can rotate objects by holding Ctrl and dragging their anchors in the viewport.

Animation without Pain

This may dissuade some beginners, but animating in Bryce is a pain. Most quality-of-life features present in modern animators are simply absent, and what we do have isn't the best.

It's best to block out all of your animations first. Just the simple linear movements, start and end position and their times. This is because the motion graph updates when you add new keys past the last one, which misaligns everything. First get all of your keys, then change the easing.

I'd say always use the Preview Animation button because pressing play in the viewport can be inaccurate because of lag. However I've found that Preview Animation itself can also be inconsistent! For perfect accuracy just render the animation in really low quality and build using FFMPEG or your preferred editor. If you need an even quicker preview, holding shift while clicking the green check mark on the Render Animation menu will output a fully sized wireframe video.

And finally, Save! Save! Save! Always have a version of your scene with no animations in case you need to change stuff up, because without it you need to manually delete every key. This is again a tip for more complex animations but it's saved me headaches (not that I didn't get any).

Looking Fish-Eyed

You can achieve a fish-eye lens or pincushion effect where the world seems like it’s bulging out or pinching in. This is done by placing a lens object really close in front of the camera.

First create the lens. Yes, a literal lens, as the shape is integral for the effect. First create a sphere, then create another sphere, and then a cube. If you don’t transform them they should all be in the same spot. Make the cube skinnier from one of its sides and shrink one of the spheres by a bit. The cube should be as tall and wide as the sphere and about half as long. Then make the small sphere and cube negative, the bigger sphere positive, and group them. This is now a lens object!

For the material I find full transparency, no other property more than zero, and a refraction of about 250 gives a good bulge. Feel free to tweak the refraction for cooler effects.

To actually place the lens on the camera set both of their positions to all zeros. Rotate the lens so the bulge and camera are looking the same way, then link the lens to the camera, and finally make the lens really small so you don’t see it in reflections. Now you can move it around or set it back to one of your camera presets.

Lens Magic

Using the lens object you can create many other effects. Glasses which have no colour will mainly warp the perspective, but other transparent materials can produce cool results.

Glasses in the Pro Materials section like Rainbow Glass and Soap Bubble leave a rainbow spill over everything. Coloured transparent materials like those in Glass > Colour can give everything a tint.

Waters can also cause distortion. In fact, pretty much every material will look unique if made transparent. Do keep in mind that the lens is really small so materials using World Space mapped textures may look off. Render times may also become longer since all of the rays need to pass through the glass first.

Ingredients for The Bryce Render

If you want to use parts of the Bryce editor in your render then by all means screenshot elements you like and include them! Since the style is associated with Bryce, having some UI element or tab present can be fitting. However you might also want to create your own elements mimicking Bryce UI.

The font Bryce uses is variations of Helvetica Neue, bold for headers and regular or thin for body text. The colour used is white for headers and grey with a value of 43. The blue tabs in Bryce 3 use a font similar to Hauslan.

If you want to use the Bryce editor in your art then you must use Bryce 3 since Bryce 7 Pro doesn’t let you resize the window. The viewport has a top margin of 80 px, bottom margin of 38 px, left margin of 140 px, and right margin of 20 px. This means for an image with a set width and height, the size you should set the document in Bryce 3 should be 160 px slimmer and 118 px shorter. However, the document can only be 480 px wide and 360 px tall minimum. Any less won’t resize the editor.

Since most of the icons are really small, don’t worry about giving them a lot of detail. Though make sure that icons are scaled down so they become blurry, as this lines up with what the object buttons look like.