# TE – Terrain Editor

*The* Terrain Editor *is a program of itself. It has a plethora of options and many of them are not obvious how to access and use. Here we try to put all together as a reference.*

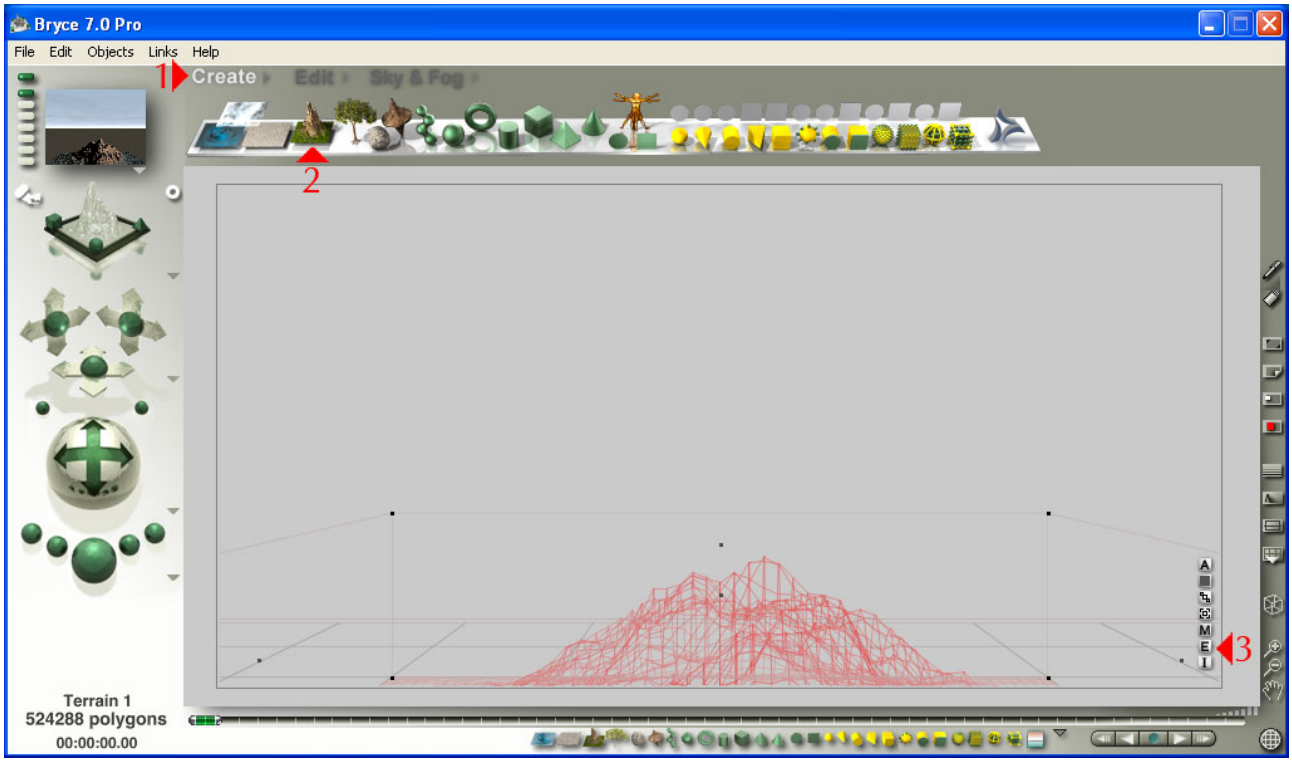
## Introduction — Keys

To access and control the options, the *Mouse* and some keys on the *Keyboard* are used in combination and we use these descriptions:

**`Click`** means just hit the button and let it go.
**`Hold`** means push the button and hold it until the effect is accomplished, then release it.
**`Move`** the Mouse **`Left`**, **`Right`** (sideways), **`Up`** (forward away), **`Down`** (toward you).
**`LMB`** is the Left Mouse Button.
**`[Alt]`** is a key on the Keyboard.
**`[Ctrl]`** is a key on the Keyboard.
**`[Shift]`** is a key on the Keyboard.
**`[key]+[key]`** is a combination of two keys to be used.
**`[Alt Gr]`** is the same as **`[Ctrl]+[Alt]`**.

## Introduction — GUI (Graphical User Interface)

To access the TE, either an existing terrain must be selected or a new terrain created. See the steps below. The TE is accessed by moving the Mouse over the `[E]` (3) and **`Click`** the **`LMB`**.




The gentle reader may have known this for years, this was added for completeness.

Now, the TE appears with 5 windows, all of them can be arranged as appropriate by moving the Mouse into the top border, `Hold` the `LMB` and move the Mouse. Let go of the `LMB` once the window is at the place you want it.

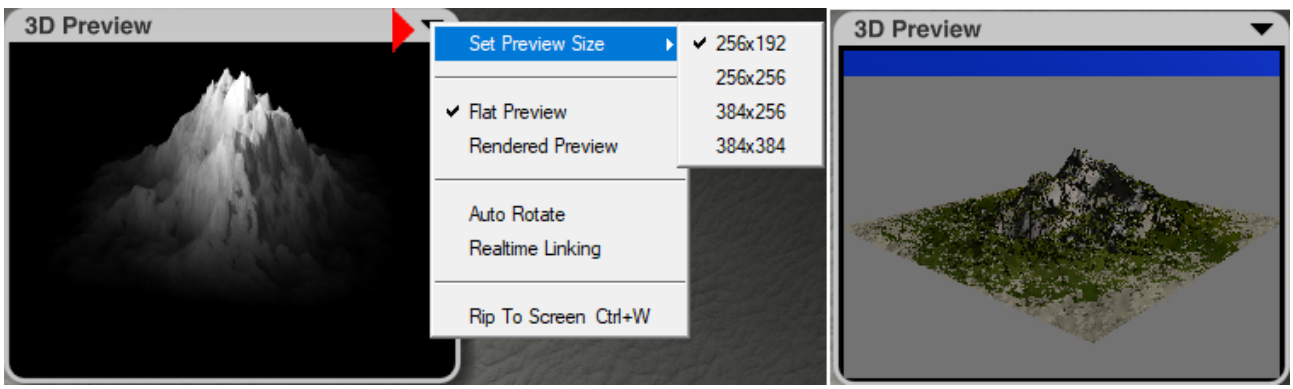
There are 5 windows. The unnamed left most one is the *Brush Controls*, the next to the right the *Terrain Canvas* followed by the *3D Preview* and finally the *Editing Tools*. At the bottom the *Timeline* concerning animations and is not covered here. At lower right, clicking on the (**X**) leaves the TE without any modifications made and the (√) also closes the TE und returns to the main GUI but keeps the modifications made.


Above, the windows are arranged on a 1024 x 600 pixel screen to show them all together.

Move the windows so that there is some space between them because some can be resized and for some additional options can be opened.

At right all windows are at maximal size and almost fill a 1920 x 1200 screen completely. You may size the windows smaller and arrange them differently. If Bryce is closed and later opened again, arrangement and sizes may be kept or change.

## 3D Preview



At top right, click on the black down arrow to open the dropdown with the options.

- *Set Preview Size* opens a dropdown with the options of the available preview sizes.
- *Flat Preview* shows the terrain in 3D like shown above at left.
- *Rendered Preview* shows the terrain in 3D with the material applied like above at right.
- *Auto Rotate* rotates the terrain counter clock wise but only if *Flat Preview* is selected.
- *Realtime Linking* is obsolete, it works whether selected or not. If the terrain is changed in the *Terrain Canvas* (e.g. with a brush stroke) the result is shown directly in the preview.
- *Flip To Screen Ctrl+W* opens a new, full screen window with the 3D terrain as shown in the preview.
  - If *Flat Preview* is selected, a bigger version of the same preview is shown.
  - *If Rendered Preview* is selected; the terrain is rendered with the material in the full screen size – which may take a moment. To return to the TE, just click in the window.

**Set to *Flat Preview***. Move the mouse over the preview picture, Hold the LMB and move the mouse in any direction to rotate and tilt it.

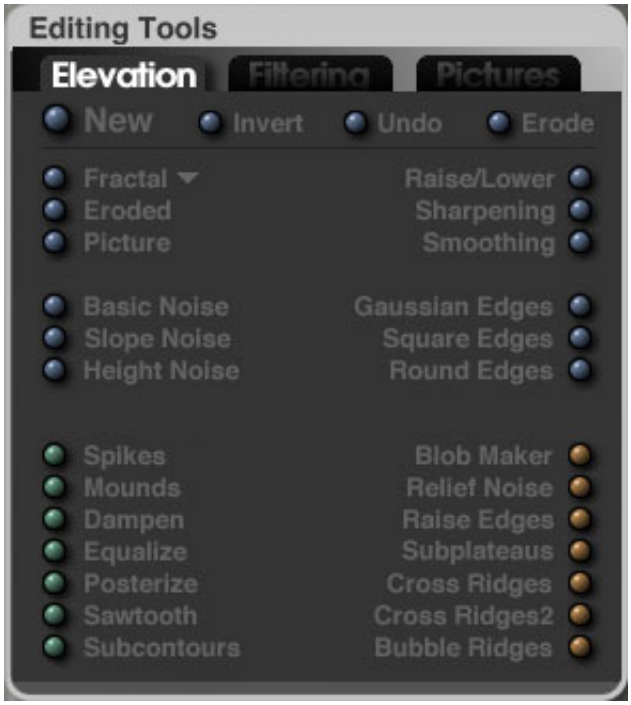
- [Ctrl] to move the terrain nearer or farther way (zoom in/out).
- [Ctrl]+[Alt] = [Alt Gr] stretch the terrain higher or lower it to make it flatter.
- [Alt] resets the terrain height to default.
- [Shift] automatically rotates the terrain horizontal counter clock wise, move mouse works.

**Set to *Rendered Preview***. Move the mouse over the preview picture, Hold the LMB and move the mouse in any direction to rotate and tilt it. While you Hold the LMB, only the wire frame view is shown, when you let go of the LMB the rendered terrain is shown in the new orientation. Sometimes, the wire frame stays but *Flip To Screen Ctrl+W* works correctly.

- [Ctrl] to move the terrain nearer or farther way (zoom in/out).
- [Alt] resets the terrain to default position.

## Editing Tools

There are three Tabs with different functions and options. *Elevation* is selected by default.




### Elevation — Top Row

***New:*** Click LMB removes terrain and sets *Canvas* to black — about what you would expect.

Hold LMB and move Mouse to the right removes contrast and fades terrain into black, actually reduces the height and makes the terrain flatter. This can be reversed by clicking on *Equalize*.

***Invert:*** Click on *Invert* to invert the terrain: the mountains become valleys and the valleys mountains. If you click on *Invert* the next time, the terrain gets again inverted and the original terrain is back. Restore the height ratio if desired by clicking on *Equalize*.

Instead of just clicking on *Invert*, you can Hold the LMB and move the Mouse to the right. The terrain gets flatter and then higher again but inverted. Let go of the LMB then holding it and move it again to the right and the terrain is slowly inverted back to the original.

***Undo:*** Reverts to before the last action was done. Clicking on the *Undo* button does not work for me. Using [Ctrl]+[z] does work. There is only one undo-level in the TE.

***Erode:*** Hold LMB and move Mouse left and right to create fine erosion lines. You can also just Hold the LMB over the blue dot and watch how the erosion builds up.

### Elevation — Upper 3 + 3 Options

***Fractal — Options:*** Click on down arrow right of the word *Fractal* to open the options shown at right. There are three sections: 27 *Fractals*, 3 *Random* options and 4 *Tiling* options.


Fractals: the default terrain fractal is *Bryce Classic* on top of the list, the *Random* and *Tile* options are greyed out and do not work. For all other fractals they are available. Select any one of them (at right Ridges) and the drop down closes.

Each time you click on the *Fractal* button, a new terrain is randomly generated. The random generator is reset when Bryce is launched and the same fractal is created. With the next click, a new random number is generated. There is no way to go back to the previous random number other than quit and restart Bryce, then start clicking again.

Hold LMB and move Mouse right over the *Fractal* button **`adds`** a bit of another random fractal and each click randomises the adding fractal.

Hold LMB and move Mouse left over the *Fractal* button **`subtracts`** a bit of another random fractal and each click randomises the new fractal.

Additionally you can change the fractal type in between and continue to add or subtract the new fractal. This gives you almost infinite possibilities to create a terrain.

Random: there are three types of randomness. Each time you click on *Fractal* randomises the terrain in the way selected. By default, all three types are selected. Each time a type is selected or deselected, the drop down list closes. Hold [Shift] and click on any one of the three will either select or deselect them all.

Tile: adjacent terrains can be created that fit on any of the four sides. It is important to deselect all *Random* options, otherwise the next terrain is differently randomised and the sides do not fit together.

To tile 4 terrains to a single, create a terrain, assume that terrain 2 is to the right of the first, terrain 3 below the second and terrain 4 left of the third. Click on *Fractal* to create terrain 1, enable *Tile East* and click on *Fractal* to create terrain 2, select *Tile South* and click on *Fractal* to create terrain 3 and finally select *Tile West* and click again on *Fractal*. Then arrange the four terrains. Better would be to position each created terrain in the GUI before entering the TE and click on Fractal. Note that there is a gap of 0.16 BU to the north and east of each tile that must be adjusted. TE-Filters, a commercial program, do this automatically: https://www.daz3d.com/bryce-terrain-editor-advanced-filters.

***Eroded:*** Click creates maximal ridges.

Hold LMB and move Mouse right builds up ridges gradually.

Hold LMB and move Mouse left creates crevices gradually.

***Pictures:*** Permits to access three options.

- Click LMB opens the Open dialogue of the operating system to load a terrain picture file.

The TE accepts several image file formats like BMP, PNG, JPG, TIF etc. but colours are converted to monochrome and the vertical resolution is reduced to 8-bit (256 greyscales). For better results, use either 16-bit monochrome TIF or PNG to get the full resolution of 65,536 shades of grey. The TE is optimised for unsigned 16-bit integer values.

- [Ctrl] Click opens the *Pictures Library*.

The images in the *Pictures Library* are usually colour ones and convert to 8-bit monochrome.

- [Shift] Click opens the *Deep Texture Editor* DTE.

The textures accepted are only [A] (ambient) and are 8-bit monochrome.

Although 8-bit monochrome images create steps in a ramp (256 steps from bottom to top), they can be nevertheless usable and charming. To create a fine ramp with 65,536 steps from bottom to top a 16-bit monochrome image is needed.

The aspect ratio of the image must not necessarily be square as displayed in the TE. It can also have a different aspect ratio; the terrain in the scene ought to be adjusted to have it appear correctly.

***Rise/Lower:*** Click on the button just makes terrain flat (black).

- Hold LMB and Move Right lowers terrain, it gets darker (Rise/Lower).
- Hold LMB and Move Left heightens terrain, it gets brighter (Rise/Lower).
- Depending on the *Brush Control Level* setting (shown at right set in the middle), without the Mouse, just keys.
  - [Ctrl]+[x] lowers terrain, if *Level* is down, it just gets black, the higher up the *Level* the slower it sinks.
  - [Ctrl]+[s] heightens terrain and the *Level* has less influence, it rises slowly.

***Sharpening:*** Sharpens the terrain but soon adds spikes and the terrain get higher.

- Click to sharpen moderately, click twice to increase sharpness (and spikes).
- Hold LMB and move left to gradually adjust sharpening. Ridges get higher; spikes are added the same way if just clicked on the button.
- Hold LMB and move right to gradually adjust sharpening. Ridges get lower, somewhat inverse to what move left does and spikes are added as well.

***Smoothing:*** Smoothes the terrain, the effect is difficult to see in the preview.

- Click to smooth faintly, click several times to increase smoothness.
- Hold LMB and move right to gradually smooth more, the effect is not profound.
- Hold LMB and move left to gradually smooth more, the effect is different but difficult to notice and depends on the terrain.

Lower the terrain first a bit, before Sharpening it and finally click one time or several times in *Smoothing* to get a finer effect and remove or dampen the spikes.

### Elevation — Middle 3 + 3 Options

The three options at left add noise to the terrain and can make it even spiky. The difference between the *Slope* and *Height* noise are not always easy to see in the render and it very much depends on the terrain type.

The three options at right lower the four edges of the terrain in different ways. Most of the time, there are hills on the terrain near the edges that are sharply cut at the end of the terrain. This is often not an issue but it would certainly not do for an island.

***Basic Noise:*** Hold LMB and move either left or right to add noise all over the terrain. If the mouse is moved so far that the preview shows an effect, the terrain is completely covered by noise. Move only a tiny bit, a few Millimetres or a tenth of an Inch.

***Slope Noise:*** Hold LMB and move either left or right to add some noise on the slopes of the terrain. Depending on the terrain type, the mouse can be moved quite far, several Centimetres or Inches. The effect produced can hardly, if at all, be seen on the preview.

***Height Noise:*** Hold LMB and move either left or right to add some noise on the heights of the terrain. Depending on the terrain type, the mouse can be moved quite far, several Centimetres or Inches. The effect produced can hardly, if at all, be seen on the preview.

***Gaussian Edges:*** Creates bell shaped edges on the terrain.

- Click creates soft profound bell shaped dark edges where the terrain sinks to the ground.
- Hold LMB and move right the size of the bell shaped edges can be fine adjusted.
- Hold LMB and move left leaves the edges as they are but raises the terrain away from the edges. It is the opposite of move right.

***Square Edges:*** Creates square shaped edges on the terrain. The moment the LMB is pressed, profound dark square edges appear.

- Hold LMB and move right the size of the square shaped edges can be increased until the terrain gets black, i.e. flat.
- Hold LMB and move left to make the transition sharper and the dark edges smaller.

***Round Edges:*** Creates disk shaped edges on the terrain. The moment the LMB is pressed, profound dark round edges appear.

- Hold LMB and move right to make size of the round edges smaller, the terrain extends to a sphere.
- Hold LMB and move left to make the transition softer, extend the dark edges and lower the terrain until it is flat (black).

The direction the mouse is moved has the inverse effect for *Square* and *Round* edges, which is a bit surprising. Otherwise, they work the same except for the shape.

### Elevation — Lower 7 + 7 Options

Here are another 14 options to modify and adjust a terrain and add yet more effects.

***Spikes:*** They may look like noise but are wider, coarse and visible in the height map preview.

- Click creates randomly distributed high spikes near to each other.
- Hold LMB and move right to control the height of the spikes.

- Hold LMB and move left to control the depth of the inverse spikes or holes.

***Mounds:*** Creates heaps all over the terrain. They can also be used on an empty terrain.

- Click creates randomly distributed irregular mounds with different height all over the terrain. More are added randomly if you continue clicking.
- Hold LMB and move right controls the height of the created mounds. Let go of the LMB and Hold it again to create more randomly distributed mounds.
- Hold LMB and move left controls the depth of the pits created by the mounds. If mounds were created by moving right, moving left without letting go of the LMB adjusts the height of the just generated mounds and they can even become pits.

***Dampen:*** Flattens the terrain either by lowering or raising the lower regions of the terrain.

- Click removes all regions below a certain altitude, makes them flat at zero altitude.
- Hold LMB and move right to control the height from which the terrain should be lowered.
- Hold LMB and move left raises the lower parts of the terrain and makes it flatter.

***Equalize:*** Stretches the terrain to its maximum dynamic range.

- Click stretches the terrain by lowering the lowest part to ground level and the highest part to its maximal height, maximal black/white contrast.
- Hold LMB and move right to control how high the terrain is stretched, top mesas can be created.
- Hold LMB and move left lowers the height of the terrain until it gets flat (black).

***Posterize:*** Lowers the height resolution as if the terrain and introduces terraces and blocks.

- Hold LMB and move left or right to reduce the vertical resolution to create a terraced terrain.
- Hold LMB and [Alt] then move left or right to reduce the horizontal and vertical resolution to create a terrain with square blocks (pixelise).

***Sawtooth:*** Creates skewed lines over the terrain and changes the height along the lines.

- Click creates a profound geometric effect.
- Hold LMB and move right creates a gradual effect of the lines and how the terrain is affected by them.
- Hold LMB and move left like move right but the effect gets inverted.

***Subcontours:*** Modifies the terrain and makes it more complicated.

- Click creates a profound modification, adds crevices and rocks.
- Hold LMB and move right creates a gradual effect.
- Hold LMB and move left like move right but the effect gets inverted.

***Blob Marker:*** Creates a round domelike hill on the terrain (see also *Bubble Ridges*).

- Click raises centre of terrain with a dome the size of the terrain. Clicking several times makes the dome higher.
- Hold LMB and move right reduces the diameter of the blob and moves it to the right.
- Hold LMB and move left increases diameter of blob and moves it to the left.
- Hold LMB and move up or down moves blob up or down and keeps its size.

***Relief Noise:*** Creates subtle noise over all the terrain.

- Click creates some subtle noise, click again to add more. The terrain gets a bit higher.
- Hold LMB and move right creates a controlled amount of fine noise and raises terrain a bit.
- Hold LMB and move left creates a controlled amount of fine noise and lowers the terrain a bit. Walls appear at the edges that may have to be removed with *Gaussian Edges*.

***Raise Edges:*** Hold LMB and move right raises edges, a bit like the inverse of *Square Edges*. The farther you move, the wider and brighter get the edges.

***Subplateaus:*** Shifts the terrain a bit to the left and adds it to the existing.

- Click shifts the terrain to the left and adds it to the existing.
- Hold LMB and move right shifts the terrain controlled to the right and adds it to the existing.
- Hold LMB and move left shifts the terrain to the right and subtracts it from the existing.

***Cross Ridges:*** Creates a horizontal and vertical trench and moves the corners up.

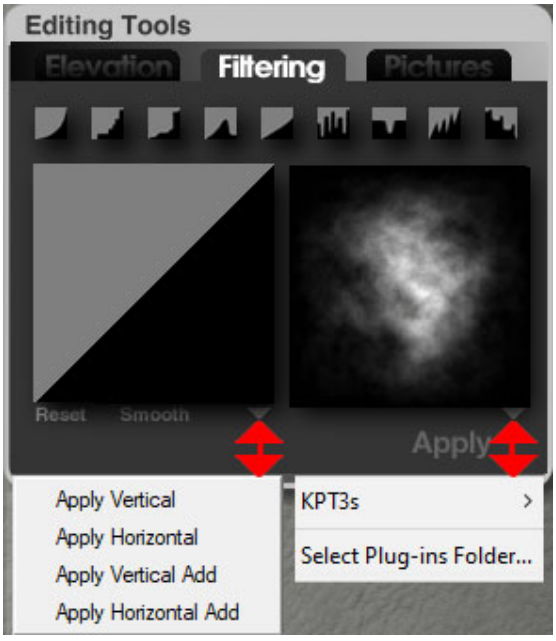
- Click creates a horizontal and vertical depression and diagonal ridges in the middle of the terrain and increases the height of the corners.
- Hold LMB and move right, left up or down creates the horizontal and vertical depressions towards the edges and thus the corners get differently higher and angular ridges appear. Release LMB and hold it again and continue moving the mouse a bit.

***Cross Ridges2:*** Like *Cross Ridges* but the direction of trenches and ridges are inverted (horizontal/vertical and diagonal) and the effect is stronger.

***Bubble Ridges:*** Like *Blob Marker* a dome is created in the centre of the terrain.

- Click creates a round dome of the size of the terrain in its centre.
- Hold LMB and move right, left up or down moves dome to left, right up or down, it keeps its size and can be moved beyond the frames or corners.

**Filtering**




On the top row are 9 filter presets to select from by clicking on the desired thumbnail. The picture at left shows the filter setting curve and at right the height map of the currently used terrain.

The filter curve must be seen as the transition from black to white, a line would be more appropriate. Hold LMB and move mouse to draw the curve. Only look at the white/black transition. The left side is the low part of the terrain and the right the high one. The preview of the terrain height map shows the result while you draw – the terrain is not updated.

Reset: click to restore the default linear curve as shown at right.

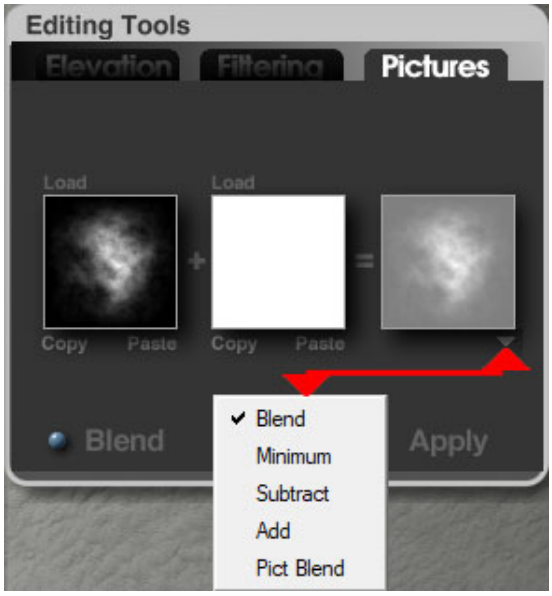
Smooth: Click to smooth the curve a bit or Hold to watch how it gets progressively smoother until it is a low, almost horizontal line.

Filter Options: Click on the down arrow at the lower right corner of the curve picture to open the Apply options drop down. If you click on any one of them, the filter curve is not applied as a filter for the terrain but directly as a 2D terrain! If you use the linear default filter curve for example, a wedge or ramp is applied to the terrain. The result is not shown on the height map picture at right but shown in the *Terrain Canvas* and *3D Preview*. This option explains why there is no line for the filter but a black/white representation. The only way to undo is by [Ctrl]+[z] or leaving the TE (X).

Apply below the right picture of the height map applies the filter as shown in the preview picture to the terrain if you click on it – about what you would expect.

Options: There is a down arrow at the lower right corner of the height map preview picture where you could open a plug-in filter, if you have any. I have the KPT3s Filters by Kai Krause & Meta Tools that came with Bryce 4 installed for Bryce 7.1 and they work.

**Pictures**




There are three small pictures, left + centre = right. The left one shows the height map of the current terrain and is the operator. The second one is initially empty but can load any height map and it functions as operand. The third image shows the result as a preview.

If the left image does not show the height map of the created terrain, just click into the picture to load it. A copy can be made by clicking also into the middle image.

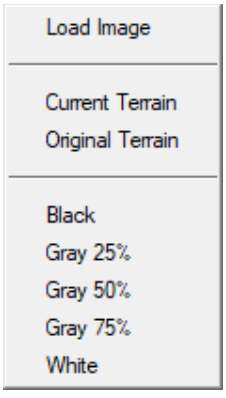
The first two pictures feature *Load*, *Copy* and *Paste* functions. The right most offers *Options* how the two height maps are to be combined. Hold LMB and move sideways over *Blend* to fine adjust.

Copy: click copies the picture like [Ctrl]+[c].

Paste: click pastes the copied picture like [Ctrl]+[v].

Load: click opens the Open dialogue of the operating system to load a terrain picture file as described for *Elevation Pictures* on page 5 above.

Load: Hold LMB opens the drop down shown at right.

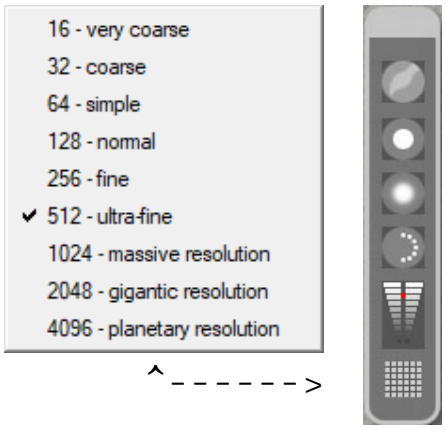



- *Load Image:* does the same as just click on *Load* as described above.
- *Current Terrain:* loads the terrain that is on the Terrain Canvas.
- *Original Terrain:* loads the terrain that is on the Terrain Canvas.
- *Black:* creates a black terrain.
- *Gray 25%:* creates a dark grey terrain.
- *Gray 50%:* creates a half bright terrain.
- *Gray 75%:* creates a bright grey terrain.
- *White:* creates a white terrain – as shown in the middle image above.

Blend: Click combines the two terrains as selected in the options equally. Hold LMB and move mouse to the left uses more of the left terrain, moving to the right more of the middle terrain.

Apply: Click to apply the settings to the terrain. The window does not close and you could work more with *Blend* and click on *Apply*.

## Brush Control


16 - very coarse
32 - coarse
64 - simple
128 - normal
256 - fine
✔ 512 - ultra-fine
1024 - massive resolution
2048 - gigantic resolution
4096 - planetary resolution
^ - - - - - - >
- Click on top button to open the *Brushes Presets*.
- Hold and move left to make brush smaller and right to make it bigger.
- Hold and move left to make brush harder and right to make it softer.
- Hold and move opens and closes circle making the brush pushes weak or strong on the canvas.
- Hold and move up or down to adjust brush brightness.
- Click on bottom square to open the resolution options. This is not a brush control but a *Resolution* Control.

***Resolution:*** this is how many pixels a height map image has as a surface. The resolution of the height is determined by how many bits are available for black to white – 8 or 16 – to represent the elevation. 16 mean that there are 16 x 16 pixels that make up the whole terrain surface; it consists of 256 squares of different height. The file size for such a 16 bit greyscale image is 512 bytes.

The other extreme has 4,096 x 4,096 pixels that result in 16,777,216 tiny squares of different height and the file size for such a 16 bit greyscale height map is 32 MB.

The difference of the resolution can be seen on the *Terrain Canvas* between the lowest 16 and the default 512. Higher resolutions do not look better when looking at the height map. However, in the render the difference is certainly very visible.

Bryce uses height maps to define terrains. This is a flat 2D representation of a 3D terrain. The height is represented by brightness: dark being low and bright high. Such height maps are created in science by flying over a landscape and measure the distance between the helicopter, airplane or satellite to the point directly below by Radar, Laser or Lidar. The professional results are also greyscale images in the resolution of GeoTIFFs – 64 bit double precision real numbers and can show differences in height in the range of Millimetres or tenth of Inches.

Bryce works with 16 bit unsigned integers, much lower than possible with floating point numbers for vertical resolution but definitely well enough for artificial landscape creation. The height map is converted to a 3D mesh grid with Quads.

The higher the resolution used, the longer it takes until the TE exits because the creation of the 3D mesh takes longer. Move the mouse over the √ sign until it changes the colour, and then click on it. Watch the *3D Preview* update.

***Remarks on changing Resolution:*** because generating a fractal in the planetary-resolution (4096) takes some time, you can start at a lower resolution like 512 or 1024. Select a fractal, change it, click on *Fractal* several times, maybe change the fractal type again and repeat clicking on *Fractal* until a result appears that you like. If the *Resolution* is now changed to a higher one, the terrain will take more memory but the created mesh is NOT at the higher resolution. Once a suitable terrain is found with low resolution, deselect all three *Random* options (see page 4) and re-generate the same terrain. This one will have the higher resolution.

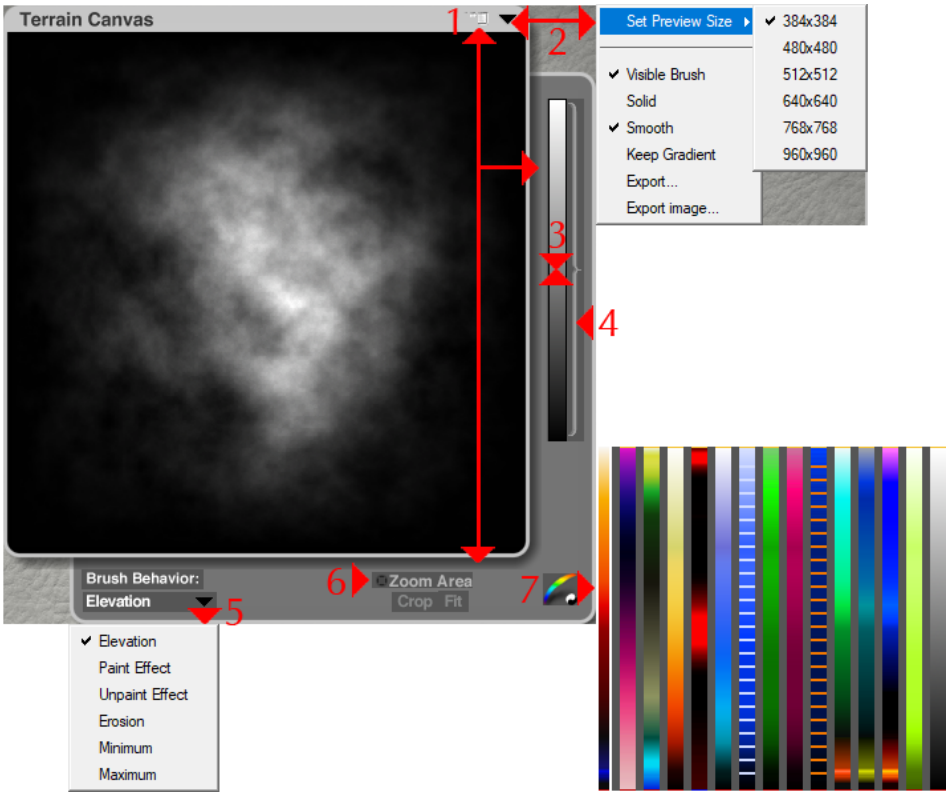
This tip will not work if you draw the terrain with a brush onto the canvas. Once you have your drawing, I doubt that you will be able to recreate it after clicking on *New* and change the resolution.

The resolution for a height map loaded from a *Picture* file (see page 5) should be set according to the picture resolution before loading it. Example: for a 2048 x 2048 pixel greyscale picture, the *2048-gigantic resolution* ought to be used.

If you use the DTE to generate a terrain from a texture, start at a low *Resolution*. Once happy how the Texture-generated terrain looks, update *Resolution* and enter the DTE again. The same texture is still there. It takes a second or two until the *combination* picture updates – just a short flicker because the picture is too small to show the difference. Now exit the DTE by clicking on the √ sign. Watch the *Canvas*; it takes a moment until the higher resolution texture re-generated by the DTE replaces the previous low resolution one.

## Terrain Canvas

There are several options and controls available. They are shown and identified by numbers.




***1:*** Click on the small thumbnail on top right to toggle the functions at the right and lower frame of the *Canvas*. The picture on page 2 shows the canvas without these additional functions and options.

***2:*** Click on the down arrow at far right to open the dropdown with more options. *Set Preview Size* on top opens a list where you can chose the size of the *Terrain Canvas*.

Visible Brush: enable to show the outline of the brush, else just a +.

Solid: if not enabled, the interior of the terrain is empty, just the terrain outline exists and you can put a light and the camera into the terrain and get a cave the size of the terrain. But there is also a limitation. If you set the terrain in the *Attributes* [A] to *Positive* and intersect it with a *Negative* object (e.g. a cylinder) and group them, you get a hole into the surface of the terrain.

However, if *Solid* is enabled, the terrain is massive inside. If it is set to *Positive* and intersected with a *Negative* object, the opening has the form and size of the intersected object. You get a natural looking cave opening.

Smooth: makes the wire frame 3D mesh softer at the mesh edges. The example at right has the terrain unsmoothed at left and smoothed at right. The nearer the camera to the terrain the better the difference is visible; it does not make much difference in the distance. Enabling *Smooth* is usually the better idea.

Keep Gradient: Does work from Bryce 4 up to 6.3 but not anymore in Bryce 7.1. The idea is that you start with a neutral terrain material, select a colour gradient, enable *Keep Gradient*, leave the TE and render. The terrain has the selected colour gradient.

Export and Export Image: these options are discussed towards the end.

***3:*** Hold LMB and move up or down moves the complete *Preview Gradient* up or down. The terrain will not change but the Canvas and 3D Preview may give you a better hint about the different altitudes of the terrain.

***4:*** This (**}**) is the *Clipping Bracket* that can be scaled. Move the mouse to the upper part, Hold LMB and pull it down. The higher parts of the terrain get progressively yellow the lower the upper part of the bracket is lowered. Whether *Solid* is selected or not, the *3D Preview* shows a flat top as if the terrain is set to *Solid*. If *Solid* is indeed selected, the *3D Preview* shows the terrain correctly. However, if *Solid* is not enabled, the part that is yellow and shown as flat is actually a hole into the terrain; no mesa but a volcano.

Move mouse to the lower end of the curly bracket. Hold LMB and push it up. The lower parts of the terrain get progressively red the higher up the lower part of the bracket is raised. The lower parts of the terrains are removed and those parts have disappeared on the *3D Preview*. The terrain hovers over the ground. If *Solid* is deselected the terrain is not closed and if turned upside down it looks like a trough. If *Solid* is enabled, the terrain is closed at its foot.

***5:*** Click on the down arrow to open the *Brush Behavior* options. Click on the desired option to enable it. To paint or draw, Hold LMB and move mouse around in the *Canvas*.

- Elevation: a dark brush draws or paints lower altitudes; a bright brush higher ones.
- Paint Effect: this seems to be a misnomer at first glance. The brush paints black, deleting what is there. [Alt] changes to *Unpaint Effect*. In fact, this great tool is not very obvious.

  *Example:* use any *Elevation* option (see page 3), e.g. *Posterize*. When done, remove what you have done by [Ctrl]+[z] – and now paint over the places on the terrain you want the *Posterize* effect appear.

  Instead of using an *Elevation* option, hit *Fractal* to get another terrain. Use *Unpaint* to restore part of the previous terrain, but those restored parts can again be changed to the new terrain when using *Paint*.
- Unpaint Effect: restores what the *Paint Effect* removed. If a terrain is shown on the *Canvas*, clicking on *New* (see page 4), the terrain disappears and a completely black *Canvas* remains. *Unpainting* restores the removed terrain. Note that [Alt] changes to *Paint Effect*.

  *Example:* use any *Elevation* option (see page 3), e.g. *Posterize*. Paint over the places of the terrain you do not want the *Posterize* effect.

  Because *Paint* and *Unpaint* are used alternatively, the option to hold the [Alt] key to just change from the selected option to the other one makes working with them very efficient.
- Erosion: fine erosion effects can be added to the terrain (and *Unpainted*).
- Minimum: depending on the *Brush Level* (see page 3), paints only over brighter parts than set with the brush level. Those brighter parts get darker.
- Maximum: depending on the *Brush Level* (see page 3), paints only over darker parts than set with the brush level. Those darker parts get brighter.

The last three effects *Erosion*, *Minimum* and *Maximum* can always be removed with the *Paint* and *Unpaint* effects.

***6:*** Zoom Area: click creates a small square on the *Canvas* that outlines the area to be zoomed.

- Move the mouse to a border until the pointer changes to a *Hand*. Hold LMB and move square to the desired location.
- Move the mouse to a corner (lower right is best) until the pointer changes to a *Cross*. Hold LMB and move to scale the size of the square.
- Click on *Crop* to enlarge the terrain within the boundary to fill the *Canvas*.

Click on *Fractal* (see page 3) to add a new terrain into the frame.

To get the terrain on all borders to black you can use *Square Edges* (see page 6) or make the *Zoom Area* exactly the size of the *Terrain Canvas*, click on *New* (see page 3) than click on *Fractal* to get a new terrain (you may disable the *Random* options first, see page 4).

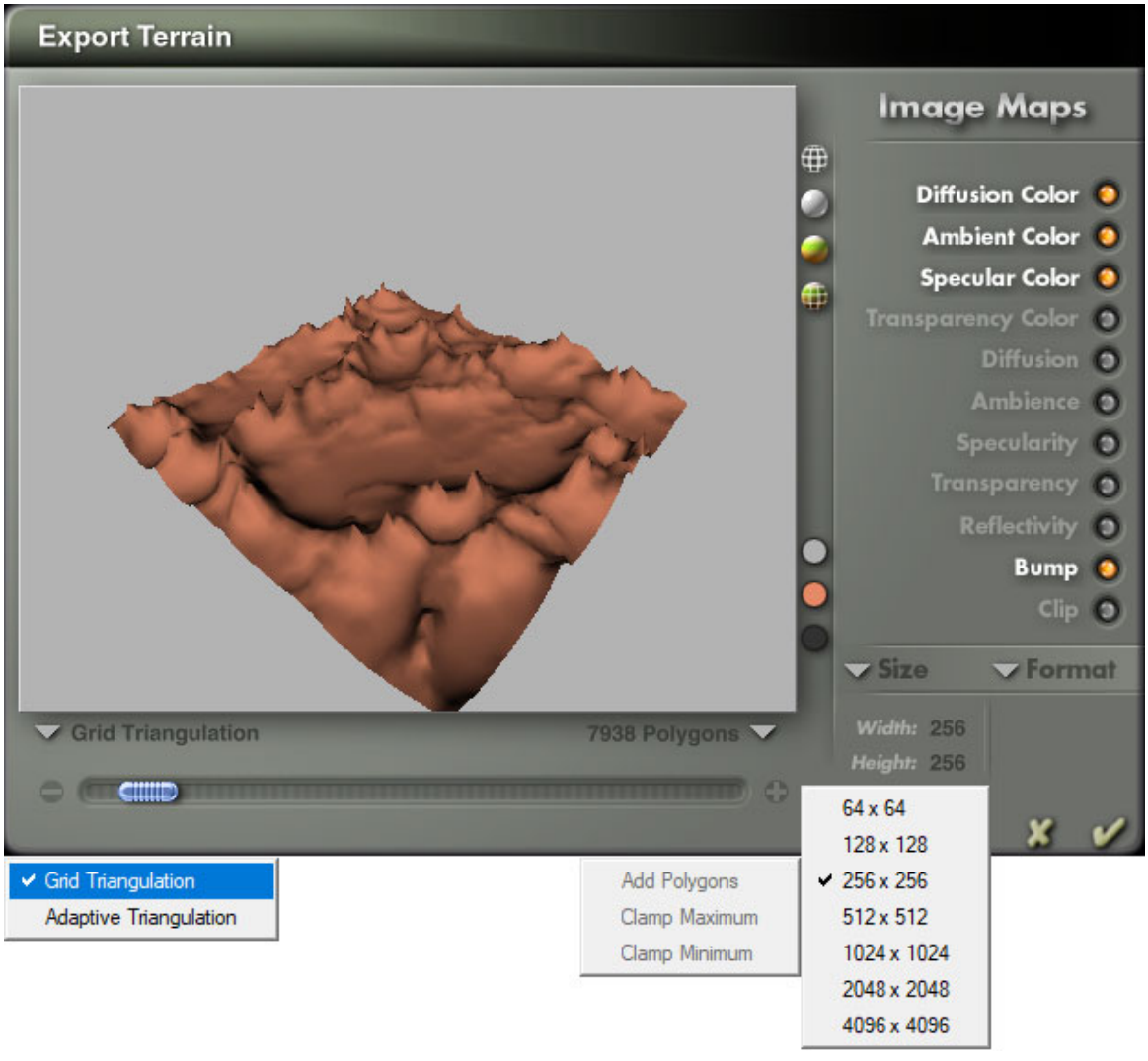
- Click on *Fit* to keep what is inside the boundary of the square and everything outside black.

  You can click on *Fit*, disable *Zoom Area* and then add e.g. *Mounds* (see page 7); those will be added to the cropped terrain and also fill the black frame.

***7:*** Preview Selector: Hold LMB opens 15 colour gradients; the most right one is the greyscale. Move the mouse over the desired preview colour and let go of the LMB. The terrain in the *Canvas* is shown with the selected colour gradient. It can be helpful to see better how the terrain is formed, more so if the *Clipping Bracket* is used and if you use the *Brush* to paint. If you exit the TE, the gradient will be back to the greyscale one when you return to the TE. At the lower right corner of the small square button with the rainbow is a tiny black and white disk. Click it to return to the default grey gradient without opening the *Selector*.

**Export ...**

Click on *Export* to open the Save dialogue of the operating system and select an object file, select one of the 30 available file types and give it a name. I recommend using the last in the list: *Wavefront OBJ Files (*obj) (Mesh Export)* but you can use whatever type you need. OBJ is quite versatile and also works for Daz Studio. The file is not yet created, only on exit.



At lower left of the preview is a down arrow, click to open the dropdown with two options how the terrain is to be triangulated and the text at right of the down arrow shows the selected one. The default is *Grid Triangulation*.

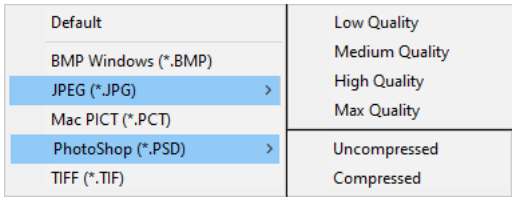
If *Adaptive Triangulation* is selected, the text changes and the options shown in the dropdown when the down arrow at lower right of the preview is clicked are activated.

Hold LMB over the blue *Slider* and move mouse to change the number of *Polygons* shown left of the down arrow update; towards left (-), the number of Polygons is reduced, towards right (+) increased.

Right of the preview are the *Image Maps* options. Depending on the material used for the terrain, the respective buttons are activated but can also be deactivated.

Click on the *Size* arrow below to open the options, in what size the image map created from the material should be saved. The selected sizes are shown as *Width:* and *Height:* below the down arrow.

Right of the *Size* down arrow is the *Format* down arrow. Click on it to open the dropdown with the image type options shown at right. *JPEG* opens another drop down to select the *Quality* with which to compress the image.




*PhotoShop PSD* also opens a sub-dropdown and lets you define whether the image file should be compressed or not.

Just to the right of the preview are four buttons above. Click on them to define how the preview should be presented.

Click on the top button to show the grid of the terrain; it lets you see the difference between *Grid* and *Adaptive Triangulation* and how the *Polygons* change when moving the *Slider*.

Click the second button to show the terrain in a uniform colour without the grid.

Click on the third button to show the terrain coloured as set in the *Mat Lab*.

Click on fourth button to show the coloured terrain with the grid.

At the lower right of the preview border, there are another three buttons. Hold LMB to open the *Color Picker*. The top colour defines the background of the preview, light grey in the example above, the middle one the terrain colour, here dark orange, and the lower one defines the colour of the grid, dark grey shown here.

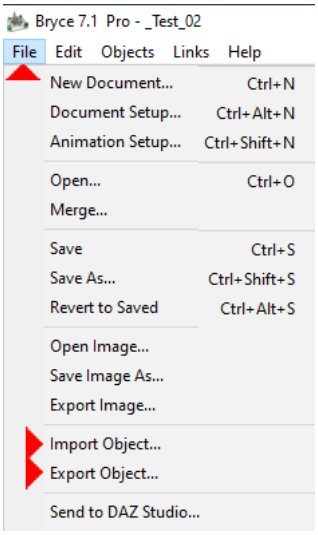
Hold LMB and move mouse within the terrain view to rotate and tilt the terrain to see how it looks from different perspectives.

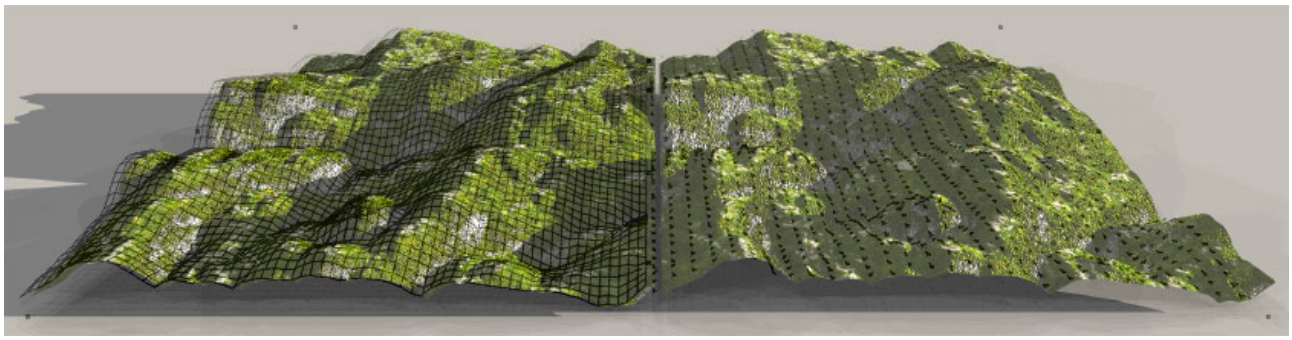
Click on the √ sign to save the object file and the material files with the name and location you defined when you clicked on *Export* ... (see page 13). This closes the *Terrain Export* window. Depending on the number of polygons and materials resolution, exporting can take a while. Click on the **X** sign to quit the *Terrain Export* without saving.

Instead of clicking on *Export* ... in the TE, you can export the terrain from the GUI under *File* > *Export Object* ... as shown at right.

Everything works the same way as described under *Export* ... on the previous page.

Though it does not make much sense, the exported terrain can also be loaded back into Bryce. Click on *File* > *Import Object* ... to load it. It is an object with a different wire frame and clicking on [E] opens the *Edit Mesh* dialogue, not the TE.





At left is the terrain that was exported and at right the terrain imported back. The grid is overlaid to show the difference.

**Export Image ...**

Click to open the Save dialogue of the operating system. There are only two file formats that can be used as greyscale height maps: `PNG` (portable network graphics) and `TIF` (tagged image file). Both are greyscale images with 16 bit unsigned integer data, png is lossless compressed, tif data are not compressed.

Problem in Bryce 7: sometimes, Bryce exports the terrain bitmap as colour image with 24 bits, 8 bits for red, green and blue but all colours are nevertheless grey – and not as a true Bryce terrain height map with the data as 16 bit unsigned integers in grey scale. This is very bad!

If you export as tif, which is uncompressed, you can see it already in the file size of the exported image. The file size must be resolution x resolution x 2 (plus a few bytes for the header). If the file size is resolution squared x 3, then you got an 8 bit RGB picture.

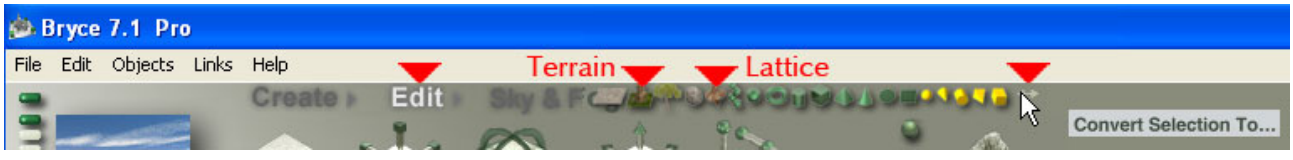
Example: Terrain Resolution is 1024 massive resolution,

```
1024 x 1024 x 2 = 2,097,152 + data header = 2 MB
1024 x 1024 x 3 = 3,145,728 + data header = 3 MB
```

This is an annoying bug because sometimes the exported image is correct and sometimes it is not. If you notice that the image exported is RGB instead of greyscale, load a true 16 bit greyscale tif into the TE. Exit the TE by clicking on the √ sign. Then return to the TE, create your terrain (replacing the loaded one) and if you export this terrain as image, it will be greyscale 16 bit. This always worked for me to make Bryce behave. Earlier Bryce versions (4, 5.5, 6.0, 6.1 and 6.3) export the terrain image always correct. Only Bryce 7 "features" this random behaviour.

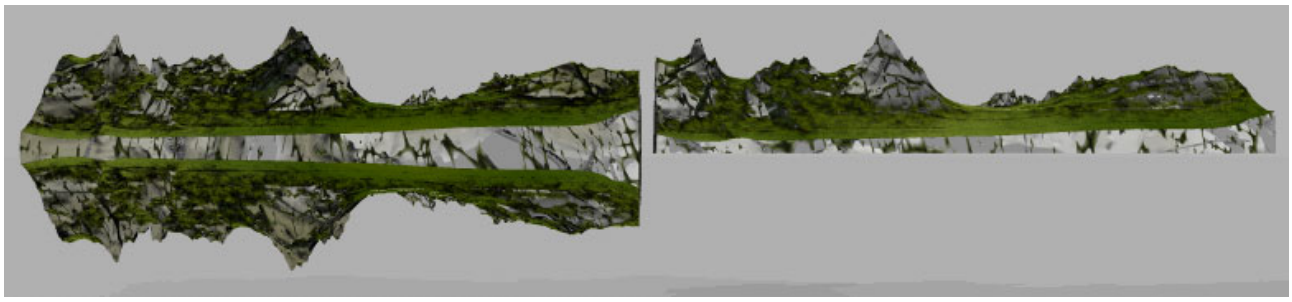
## Terrain to Symmetrical Lattice and vice versa conversion

Usually, you create either a terrain or a symmetrical lattice. A symmetrical lattice is also a terrain but the mesh created is additionally mirrored and put below the underside of the terrain, hence symmetrical.

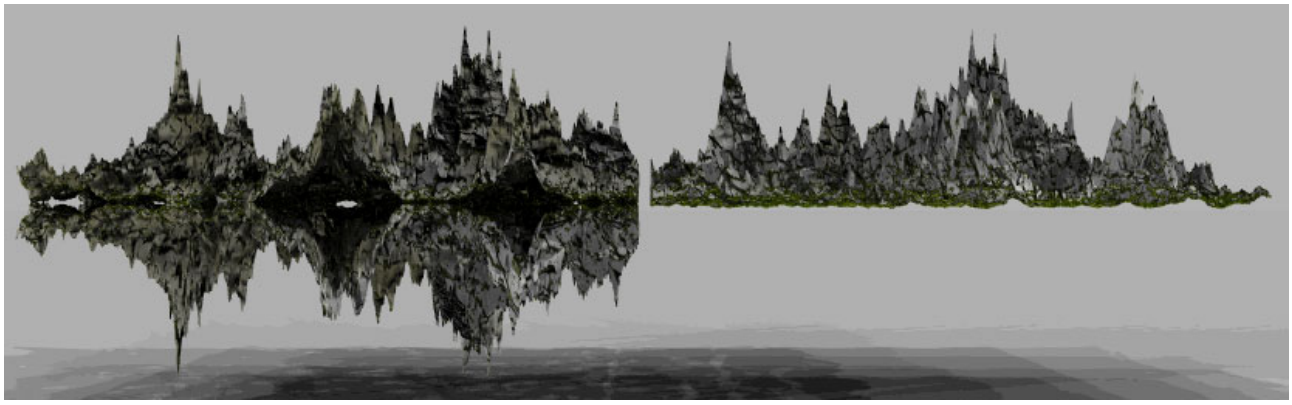



Select the terrain or lattice to change. Then select *Edit* and Hold LMB over the <-> arrows (*Convert Selection To ...*) and move mouse over either the *Terrain* or the *Lattice* and release LMB. This changes the type from terrain to lattice or vice versa. Open the TE and adjust the object using the lower *Clipping Bracket* (see 4 at page 12).

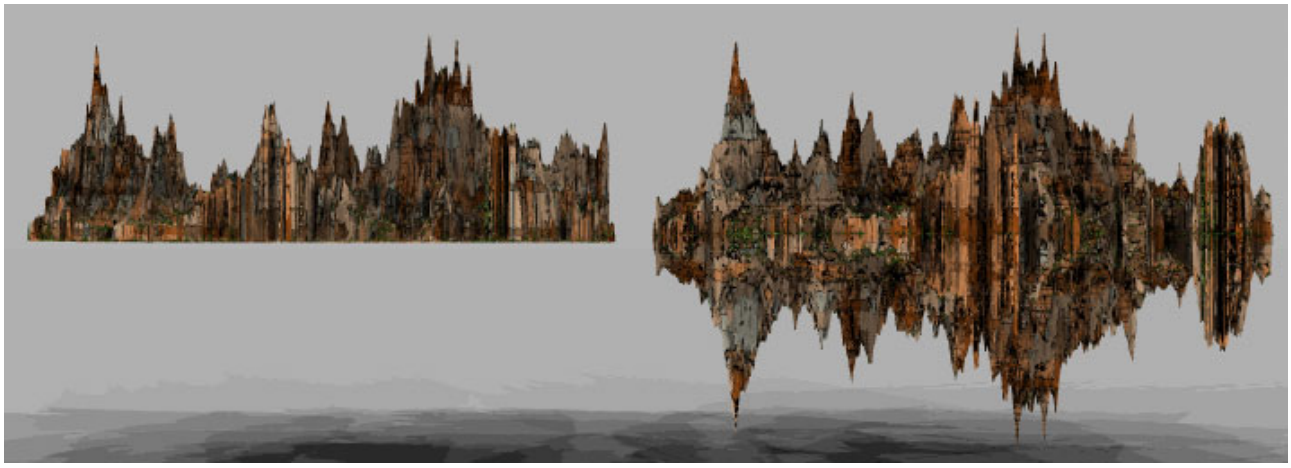
A Symmetrical Lattice can be exported like a terrain using *Export ...* but only the upper side is shown. However, when imported as object, both the upper and lower parts are there.



The terrain at right was created in the TE and the symmetrical lattice at left was created by converting as shown above.



If the borders are not cut with the lower *Clipping Bracket*, there are openings in the symmetrical lattice where the upper and lower parts meet and that does not look good.



Here, the symmetrical lattice was created and changed to the same fractal type as the previous example but the material changed. The lattice was copied and then converted to a terrain.

## Epilogue

The TE is a most versatile tool to create and modify terrains. There are so many options and effects but many of them are hidden. If the 27 fractals are not enough, a terrain can also be created in the DTE or loaded from a file, DEMs from the Earth, Moon and Mars can also be used and of course, you can even paint and modify the painting to get a terrain nobody else ever showed and used. Unfortunately, there are also still a few bugs.

June 2022/horo