Corel Bryce software is capable of creating complex and natural-looking landscapes from scratch. Many cartographers and artists play around with the fractal generation capabilities of Bryce's terrain editor and with the natural materials possible in Bryce's texture editor but generally the practical application of these fictional worlds is limited mostly used for computer gaming.

Education publisher Prentice Hall contacted me to create a three-dimensional landscape view that would illustrate geographical terms such as volcano, peninsula, mountain, hill, archipelago, etc. They wanted it all in one view and with the capability of animations at a later stage. I used Corel Bryce to synthesize the needed terrains and features for the landscape and to create a view encompassing all the landforms.
ASSIGNMENT

Many geography textbooks and atlases have an all-in-one illustration of landforms. These have invariably been created in traditional media. The challenge of combining so many varied types of landforms requires an originality in composition that precludes any single natural scene from fulfilling all requirements.
Prentice-Hall actually required a relatively small list of features. This led me to consider the use of real pieces of terrain from around the United States to create a landform illustration.
REAL LANDFORMS VS. FICTIONAL TERRAINS (FROM SCRATCH)

In approaching the problem of creating a combination view of landforms, I was faced with two basic choices. First, I could use real landforms or fictional landforms. Second, I could use one terrain composed of many pieces merged into a single dem. I of course, chose the wrong way to do it first and learned in the process.
I used a single terrain in Bryce and forced a horizon by using the neat trick of disproportionately bending the DEM in a single direction away from the camera and then tilting the warped terrain back toward the camera. This works exceptionally well for large and medium scale terrains representing real places in the world.
LAYING TERRAINS IN BRYCE’S FLAT-WORLD

The alternative method (which I used successfully in my second attempt at the illustration) utilizes a series of terrains laid out in front of the camera. Each terrain is a separate object in Bryce and can be manipulated in terms of scale, texture, color, and all its characteristics. This does, however, require that one uses the native Bryce horizon which is a flat-world (no curved earth) environment.
FIRST FULL ATTEMPT AT THE ILLUSTRATION

In my first creation (which I dubbed Frankenland), I took pieces of real terrains from around the United States and merged them using MacDEM, BSmooth, and Photoshop into a single DEM that could then be warped and placed into Bryce. The result was less than satisfactory to me and to the client. The limitations of real terrains and the limitation of needing to merge them in 16 bit grayscale were too much for me to overcome. I had to go back to the drawing board.
GOOD OLD COLORED PENCILS

I truly went back to the drawing board, I pulled out a piece of paper and some colored pencils to sketch exactly how I wanted the pieces to fit together. It was liberating to just create the mountains, canyons, islands and headlands without needing to refer to pieces of the real world or to the limits of a software program.
CREATE TO MATCH THE VISION

In the end, the success of the final landform illustration depended on my ability to envision the view. Creating within Bryce to match the view took longer but was easier. It was the initial vision that was needed. Once I had my view in mind, it was obvious that I need to pull pieces together in a certain way in Bryce. I do think that having gone through the attempt to meld real world pieces was a powerful push that sent me in the right final direction.
CREATING TERRAINS: THE VOLCANO

Bryce provides wonderful tools for creating entirely fictitious terrains. One of the terrains I created was the volcano in the background. In Bryce, I created a new terrain and open the terrain editor. I changed the pixel size to 512 pixels square, lowered the entire terrain to black (0 level) and then applied the blob effect, creating a cone. Using the filter part of the editor, I was able to lower the center of the cone to create a crater. Then a combination of eroding and raising and lowering the terrain sculpt more natural-looking features. A particularly useful part of the terrain editor is the ability to apply an effect, undo it, and then paint it back in selectively. Any filter can thus be applied in a controlled manner.
Sculpting the granite mountains in the middle ground involved a bit more trial and error using tools in the terrain editor. Again, I created a new terrain at 512 pixels square, went to the terrain editor and lowered the terrain to black. I applied the fractal-warped ridges effect and then used the guassian edges effect to lower the edges of the terrain. This made positioning the terrain in the final scene much easier. A combination of eroding up and down then carved the peaks into shape. A final application of smooth helped to give a more granite-like look to the spires.
To create the headlands in the foreground and the islands of the archipelago, I needed more precise control of the placement and depth of the terrain. I created terrain in Adobe Illustrator with a grayscale layers and drew the shapes as I expected to need them in the 3d view. These I brought into Photoshop for smoothing and converting to 16 bit for import to Bryce.
I CHEATED: THAT IS THE PART OF THE GRAND CANYON

My terrains for this illustration were not entirely from scratch. I did borrow a piece of the Little Colorado River Canyon where it merges into the Grand Canyon of the Colorado. It looked good and fit into my scheme very well.
**Canyon**

Take real world DEM then bring into Bryce as another piece.

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**UTILIZING A REAL WORLD TERRAIN**

In order to use the terrain from the real USGS DEM, I had to bring it into Photoshop and then the Bryce terrain editor to carve away the edges and scale it to an approximate fit for the space left in the g2h terrain of the foreground.
FITTING THE REAL TERRAIN INTO THE UNREAL

The most painstaking work was adjusted the scaling, rotation, and position of the canyon in Bryce to get it into correct alignment. I used multiple views and nudges and all the other tricks I had.
To create the forested coast in the foreground, I used a combination of bumping the terrain and using a procedural texture native in Bryce. The variegated tops of the trees result from a spike filter in the Bryce terrain editor. It must be applied lightly! Then I modified a stock texture in Bryce to get the varied green color and texture mixed with orange-brown rocks in the steeper areas. The advantage of Bryce's procedural texture over a simple drape is the ability to work texture into the color and create a more complex, more naturalistic look.
**Viewing Angles**

Choose angle and camera lens to get foreground and horizon in view.

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**TECHNIQUES FOR POSITIONING ELEMENTS**

Choosing a workable viewing angle is critical for creating scenes in Bryce. In creating this illustration, I used a lot of trial and error, with the camera and a few terrains in place, to adjust the viewing angle, zoom, and all the other camera settings. Getting the horizon in the view in a useful place is one of the greatest challenges. Bryce-land is a flat-land with no curve to the world’s surface.
Terrain sizing
Foreground objects are smaller and background objects larger than they should be

FILLING THE SCENE: BIG TERRAINS

I used very large terrains to fill the background of the scene. It was another small (or not so small) cheat I used to get the landscape foreshortened and get everything into my camera view with the horizon where I desired it.
I MEAN REALLY BIG TERRAINS

The disparity in scales between the super-sized background terrains and the foreground terrains is on the order of several hundred times. It meant that a fly-through animation and some other manipulations would be compromised. But working within a schedule and budget dictated such compromises.
I found that terrain and camera positioning required lots of trial and error at the start and then lots of minor adjustments as I worked the details into the scene. Working with gross shapes and little detail at first is a big help in putting together a view that works.
CONCLUSIONS: ILLUSTRATION COMPLETE

My general recommendations for creating a new Brycean landform scene are summarized here:

- visualize your final view before you even begin work in 3d in Bryce; sketch you ideas and spend a lot of time thinking of what you want
- create your own terrains instead of trying to piece real word DEMs together; you can create what you need through a combination of the terrain editor in Bryce and drawing in g2h in Adobe Illustrator and Photoshop
- use multiple terrains, you can put the pieces where you need them, don't use a single g2h terrain
- work from the parts to the whole and then back to the details; this means get the gross shapes of the terrains you need into a scene, make adjustments to terrains, placement and positioning, and then go back to add the beautiful textures, colors, etc.
- become Mother Nature as much as possible, think as you construct, know your geomorphology and biogeography so that you can make informed choices as you sculpt the land and apply textures
- read all the Bryce writings by Susan Kitchens (especially the book Real World Bryce 4) and Tom Patterson.