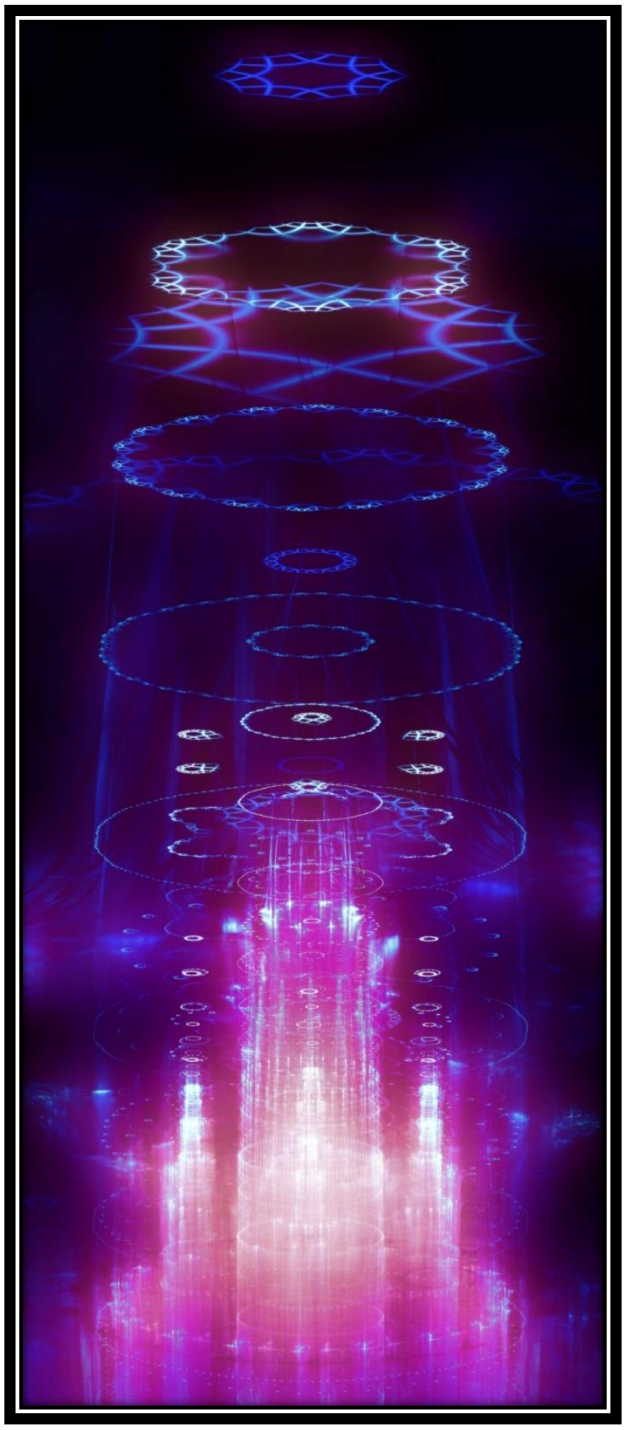
Exploring Apophysis 3D



INTRODUCTION

I feel that I should acknowledge the tutorial that led me down this path first of all, this fractal is based on this lovely tutorial log: Chat Log 3D Apophysis Help

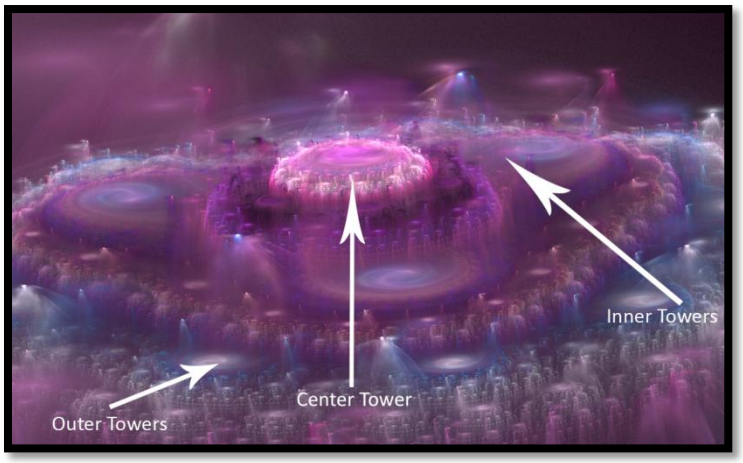
Very little is the same except for a couple of variables. I kept these variables the same because they work beautifully. Thank you for providing this resource DragonWinter! I recommend that you experiment with that tutorial before you take a try at mine.

I also request one thing; please do not replicate these same fractals. A flame file is in this zip file with the five fractals featured in the tutorial, all I ask is that you don't just change the gradient. You'll learn nothing from that! Experiment. It's the only way to learn to the program.

These fractals are by no means perfect, they are somewhat grainy, and some have ghosting issues in the fractal. They are for learning on.

These fractals can only be constructed using the 3d Hack version of Apophysis.

Also, I will be referring to the individual parts of the fractal according to this picture. For example, the center bit of the fractal will be referred to as the center tower.



Also, I have included additional ways of experimenting with these parameters. Since I have limited space to do so in I decided to make this in a more compressed way. Instructions that are necessary in the creation of Storm are bolded. Everything else is a way of showing you various methods of experimentation.

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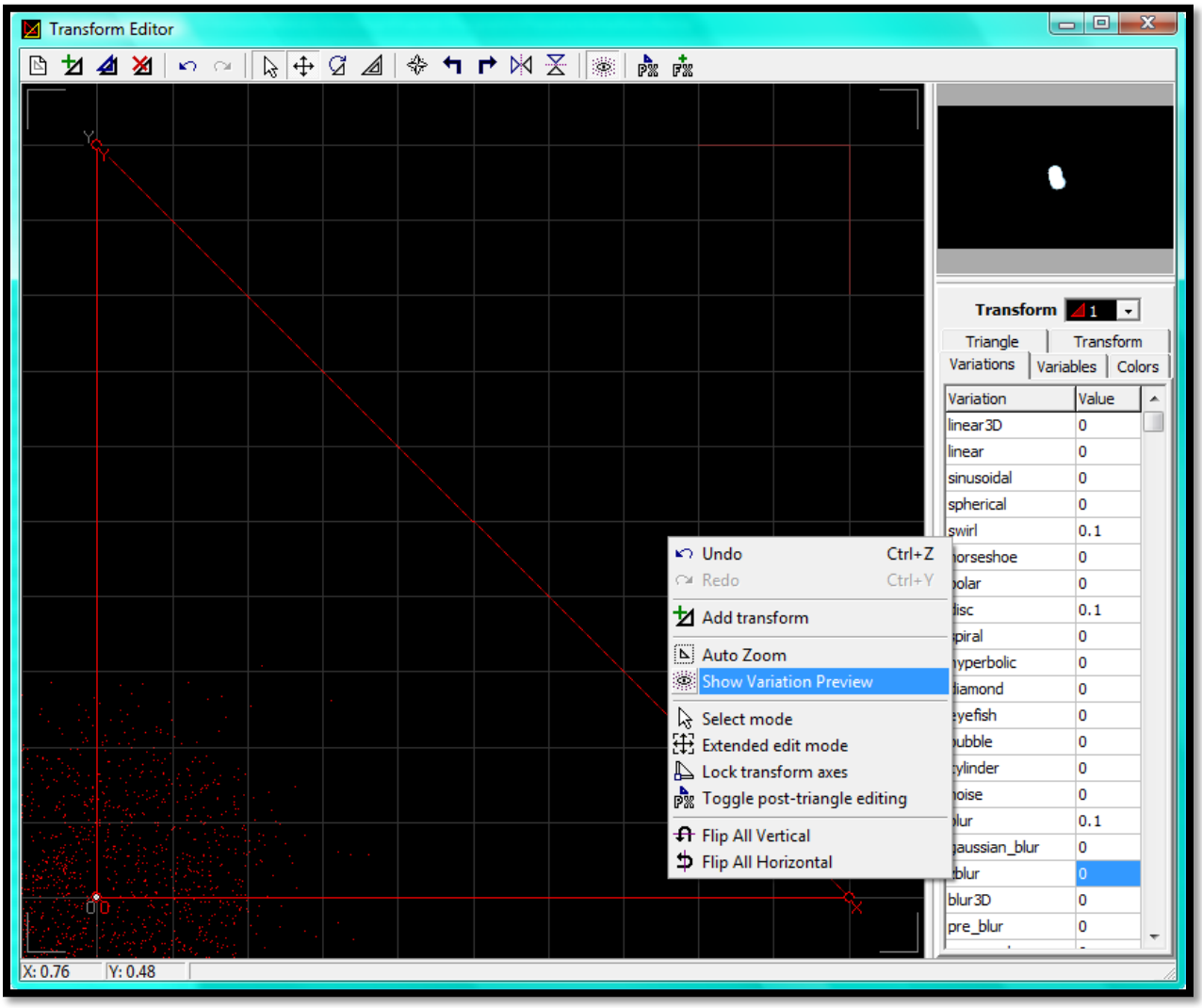
Storm

TRANSFORM ONE: VARIATIONS



Before we start right click on the grid, select the show variation preview option if you have not already. If you're just beginning in Apophysis I highly recommend using this option. Sometimes it's worth nothing, but when it shows fine detail it's worth it. This will show a low detail idea of what a variation will do to a particular fractal. It's easier to see the changes on the grid sometimes than in the fractal itself.

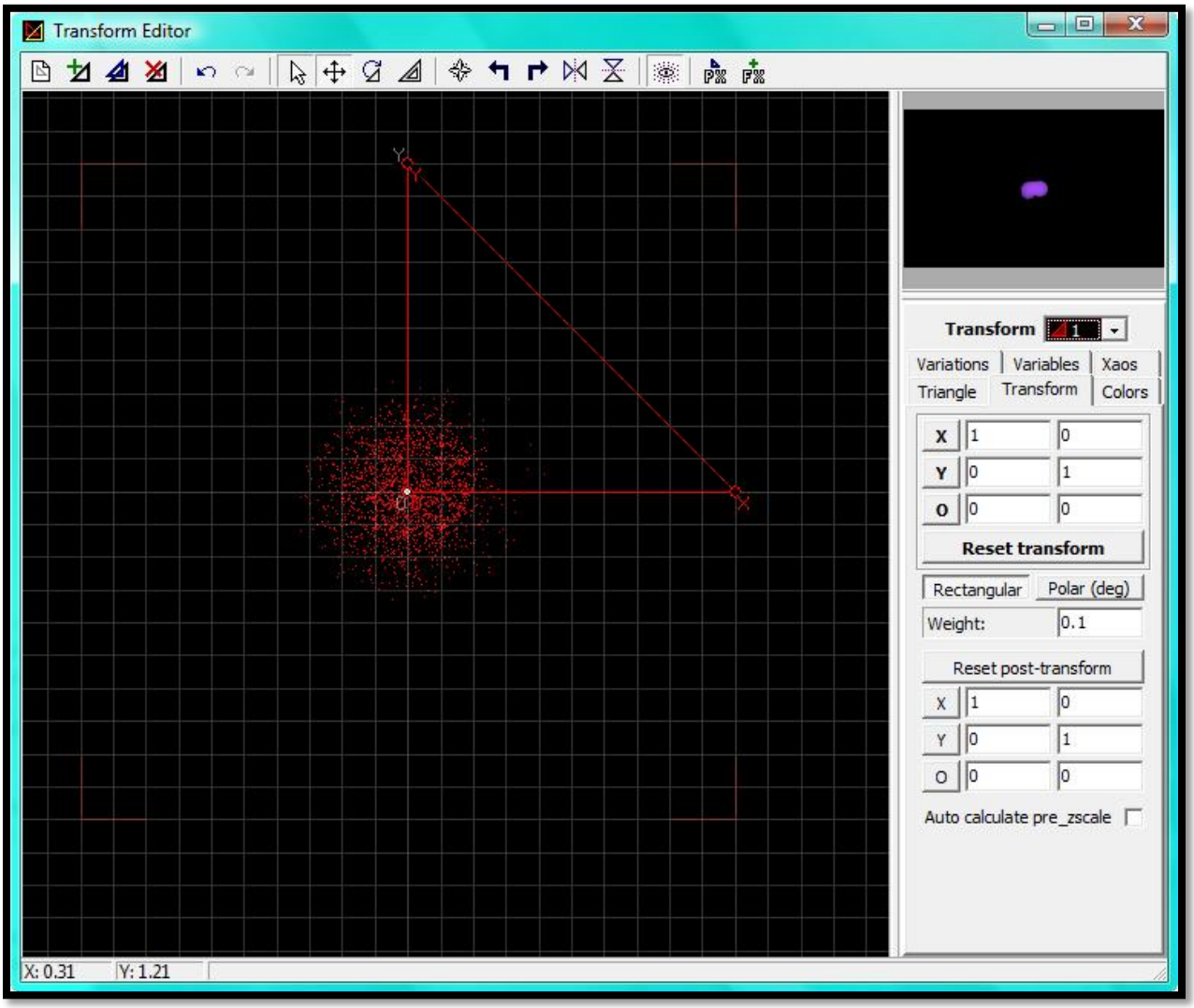
Set linear3d to 0, you will repeat this step with all the transforms.

Also Set Swirl, disc, and blur to 0.1 as shown above.

If you wish to experiment with different bases this is the point to do so, this setting will later create a swirling pattern inside the Julian tower tops. I recommend after you finish building this fractal to come back to this transform and find settings that are to your liking.

You can get ideas for Claire Jone's tutorial located here: Julia Uncovered v-2

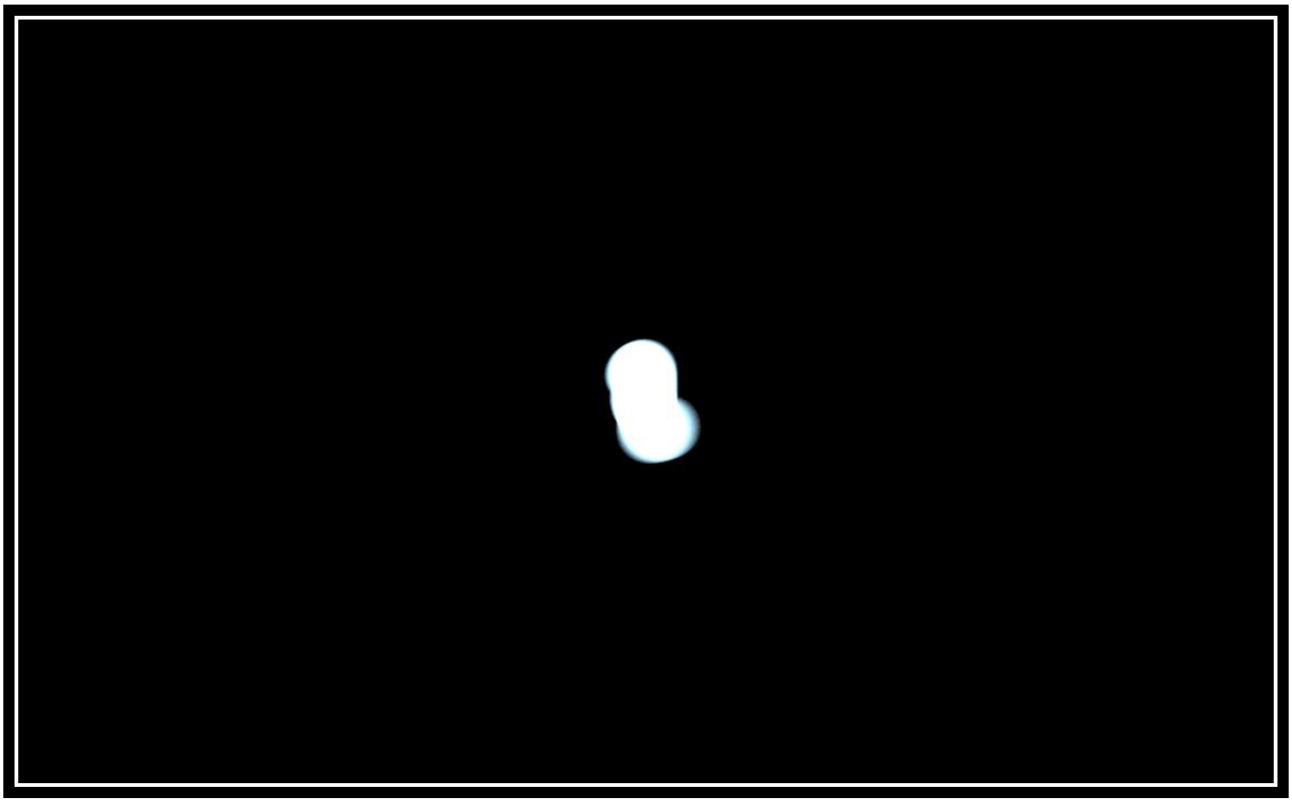
TRANSFORM ONE: LOCATION AND WEIGHT



I set the weight to 0.1, and kept the transform to its default location.

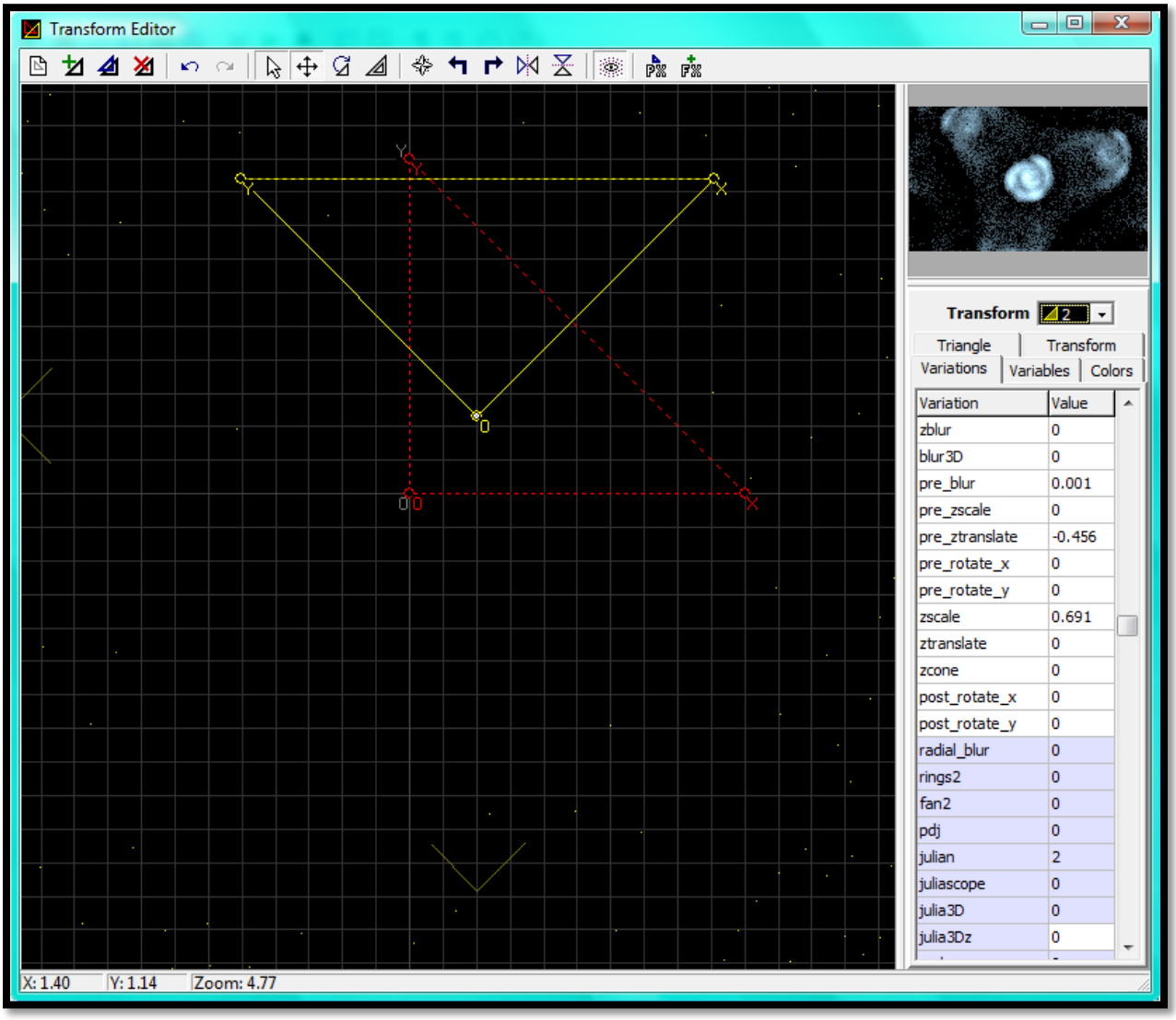
Weight of 0.1 *Weight of 0.5* *Weight of 1.0*

By setting the weight to 0.1 I got a soft look in general to the fractal. After you have constructed the fractal try playing with weights to find how sharp you want your fractal to be. I find that anything between 0.1-0.4 on this particular transform is aesthetically pleasing, at weights of 0.5 and above the fractal becomes too sharp and starts to lose its flow.



Here is what the fractal is supposed to look like. It looks like nothing so far right? This will change in the next step.

TRANSFORM TWO: VARIATIONS

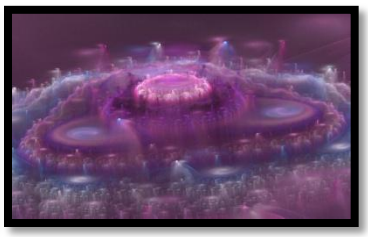


For the second transform set the linear3d once more to 0.

Set Pre_blur to 0.001, Pre_ztranslate -0.456, Zscale 0.691, and Julian to 2.

Julian 1

Julian 2

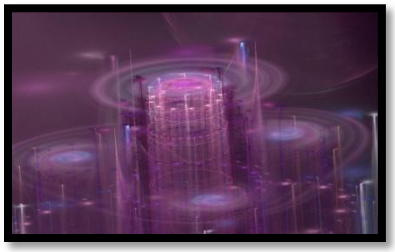


Julian -2

There are plenty of things to experiment on this transform; by playing with the Julian number you can get lots of various interesting fractals. For example if you want a slimmer, taller version of Storm place a one there. If you want to flip the fractal to the other side choose a negative two.

Zscale 0.691

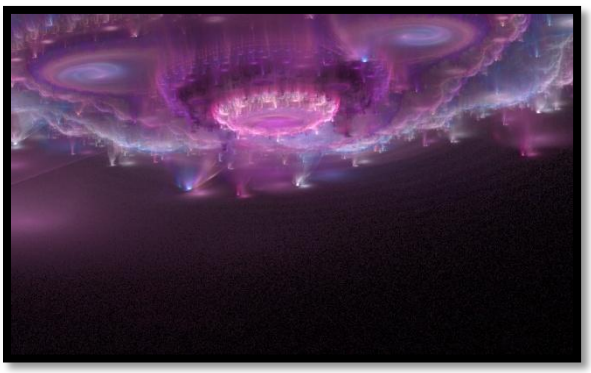
Zscale 1



Zscale 2

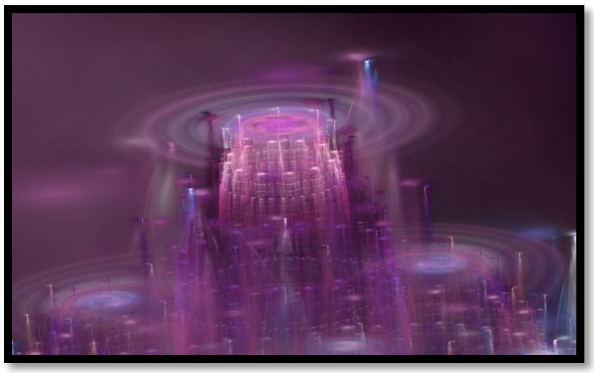
By increasing the Zscale you can make the fractal taller as well.

Pre_ztranslate -0.456



Pre_ztranslate 0.456

Pre_ztranslate -1

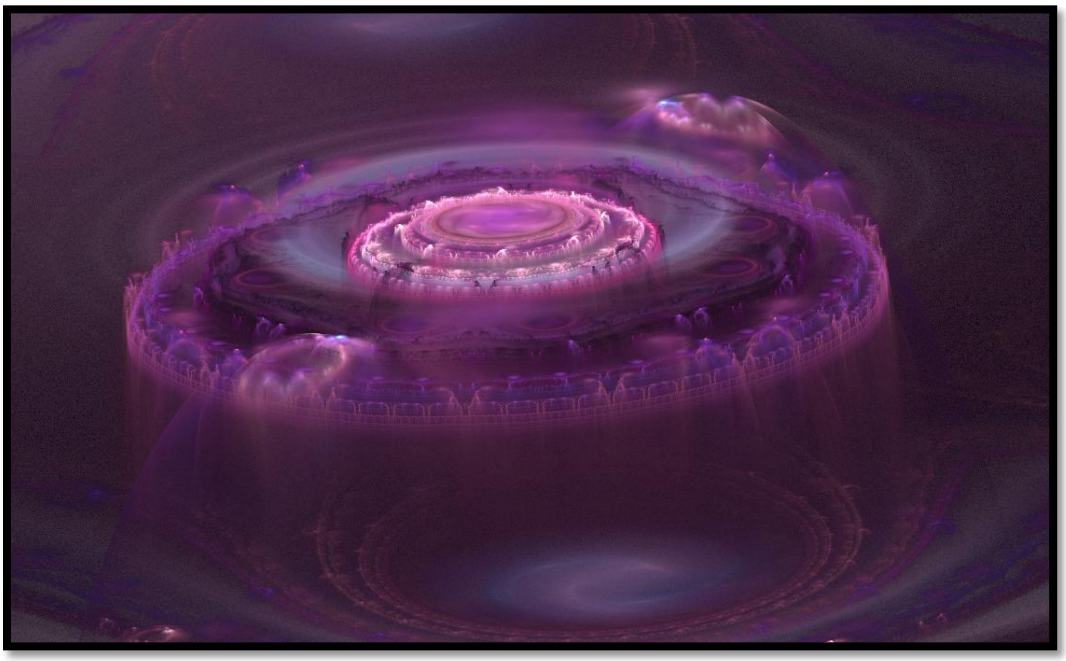


Pre_ztranslate -2

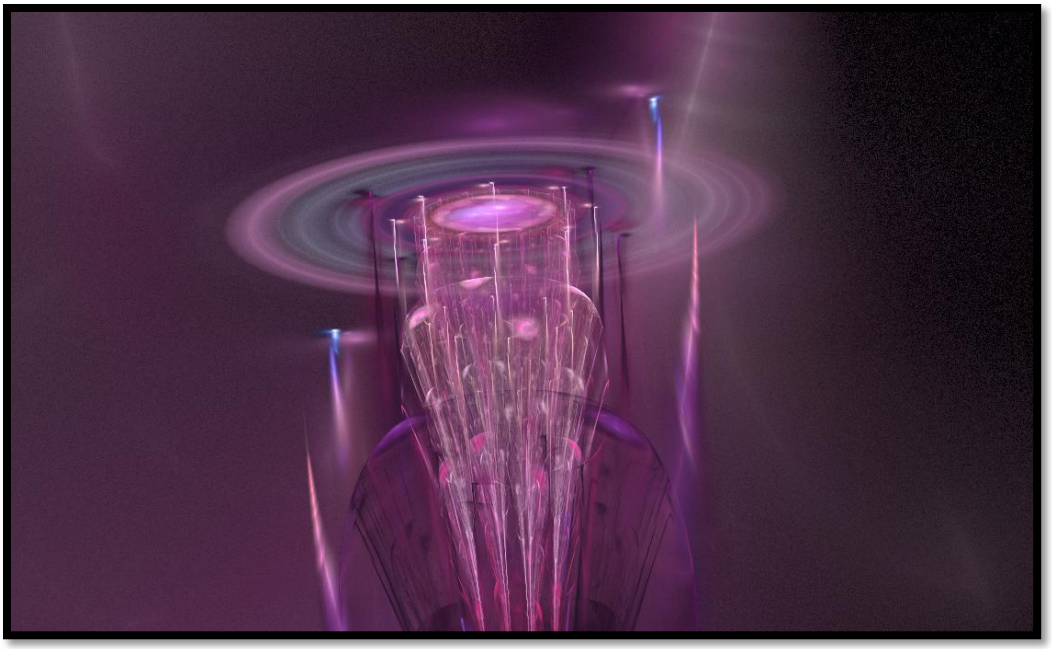
You can also influence height by playing with the Pre_ztranslate, but it must be a negative number. Otherwise you will have to manually flip the fractal in the adjust window.

Pre_blur 0.001 *Pre_blur 0.5*

Pre_blur affects the softness of the image as well, if you bump the number up rather just slightly more it will blur out your entire fractal. Its effect is very slight, so it's not a necessary variation.



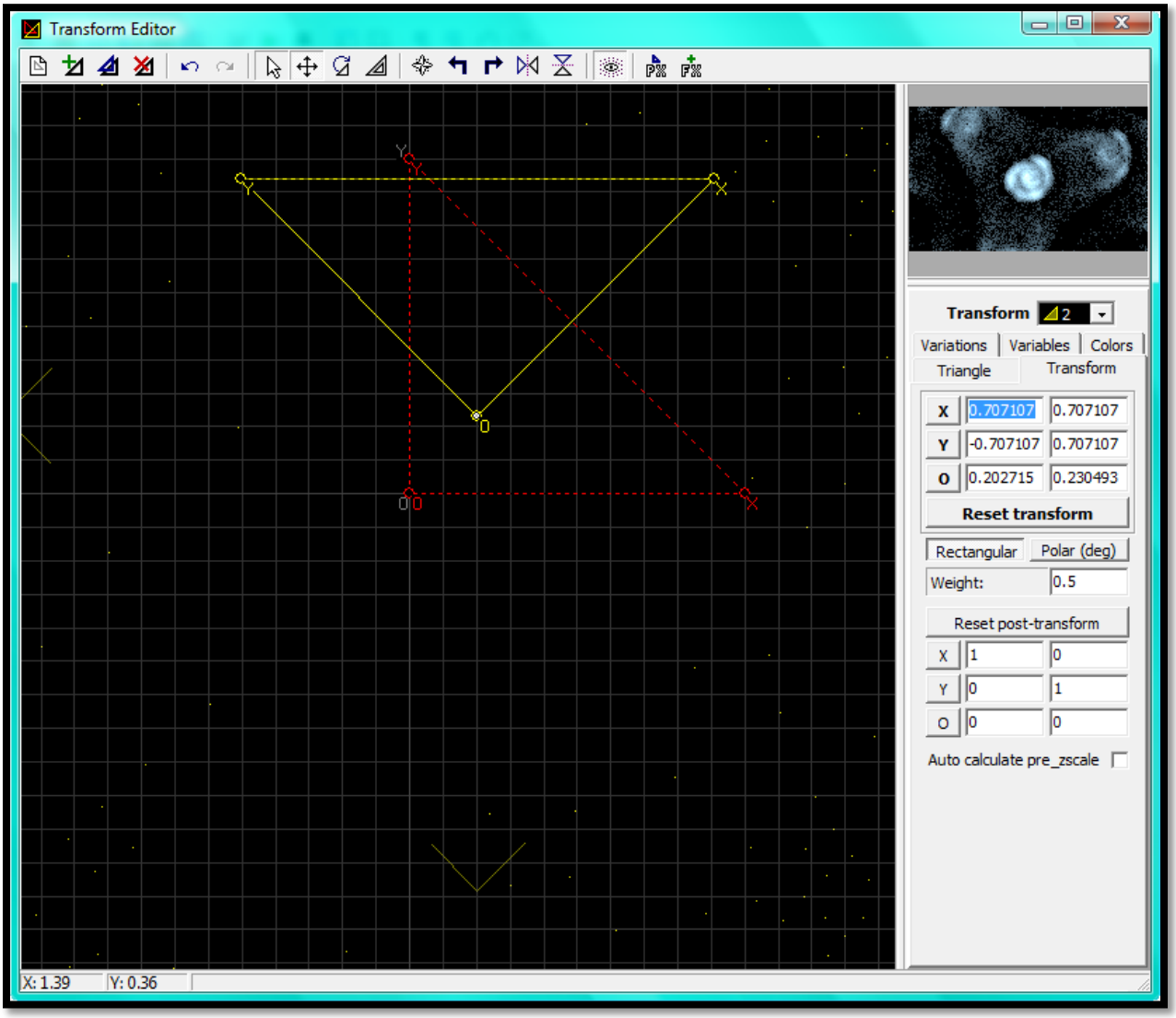
You do not only have to stick to Julian though, several variations work instead of just Julian. Try Juliascope for example; if you place a 5 in Juliascope without the Julian variation you will get an interesting effect.



If you want a space needle effect use curl3d set at 5.

The next step now is setting the fractal's location and weight.

TRANSFORM TWO: LOCATION AND WEIGHT



The location controls the shape of the fractal, if you return the fractal to the fractal will become round in shape.

Point of Origin *Storm's Original Coordinates* *Far from the Point of Origin*

The further that you drag the fractal around will increase the distances of the inner towers from the center tower. The closer you get to the point of origin the closer the inner towers become.

Here are the Coordinates for each of the above examples:

Example One:

Location	Point A	Point B
X-Axis	0.707107	0.707107
Y-Axis	-0.707107	0.707107
Origin	0	0

Example Two:

Location	Point A	Point B
X-Axis	**0.707107**	**0.707107**
Y-Axis	**-0.707107**	**0.707107**
Origin	**0.202715**	**0.230493**

Example Three:

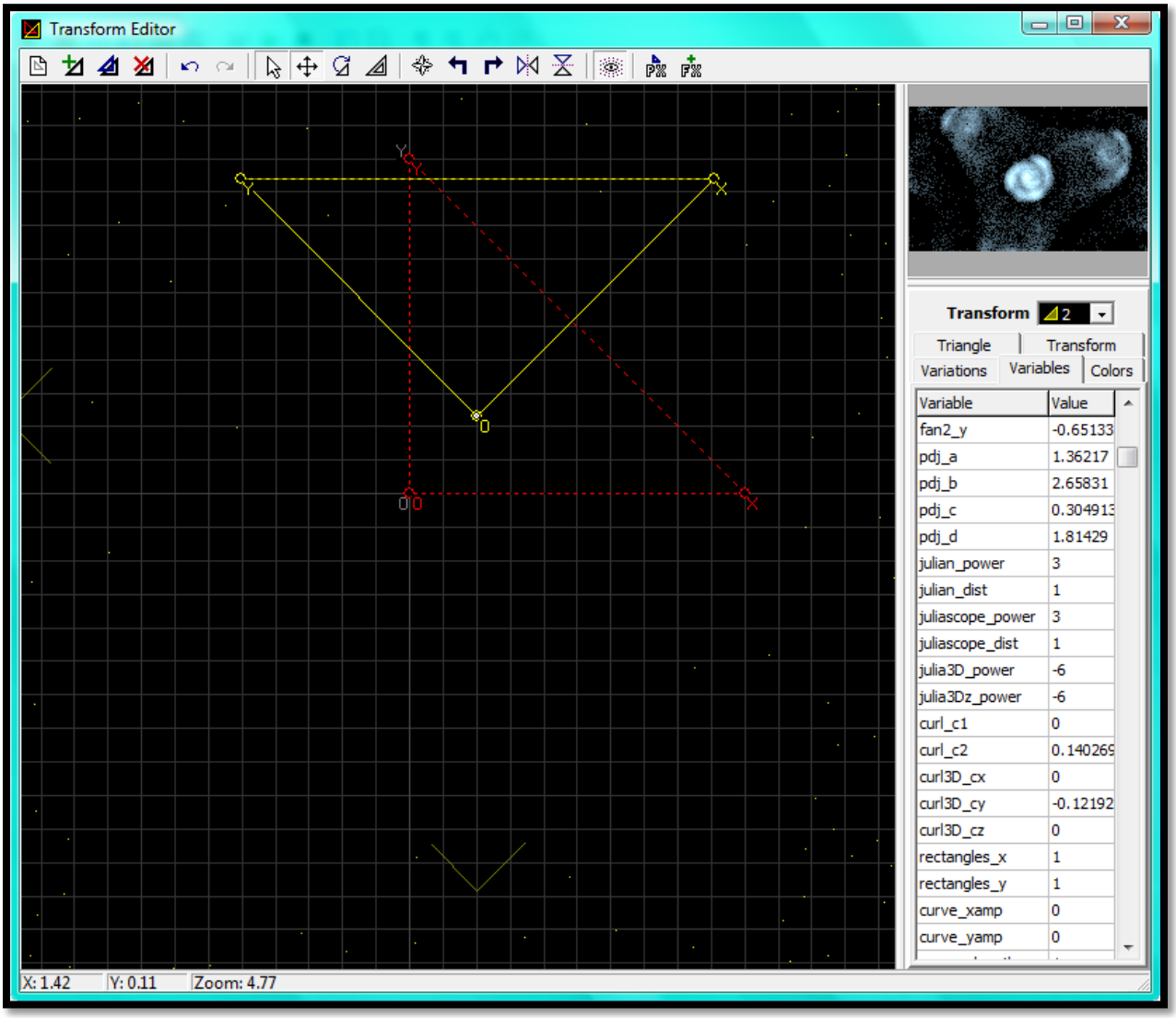
Location	Point A	Point B
X-Axis	0.707107	0.707107
Y-Axis	-0.707107	0.707107
Origin	1.70851	-0.706809

Weight should be set at 0.5.

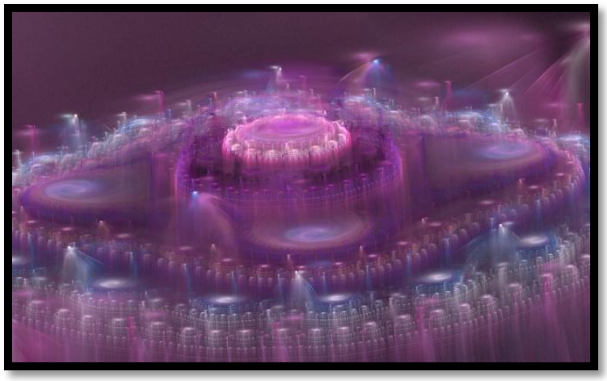
Weight of 0.1 *Weight of 0.5* *Weight of 1.0*

The weight on this transform is opposite of the first transform, lower weights make the fractal sharp, the higher the weight the less detail.

TRANSFORM TWO: VARIABLES

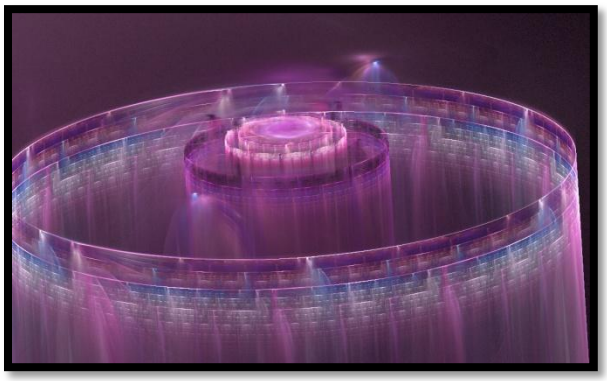


The Julian_Power should be set to 3 and the Julian_Dist should be set to 1.



Julian_Power 4

Julian_Power 3

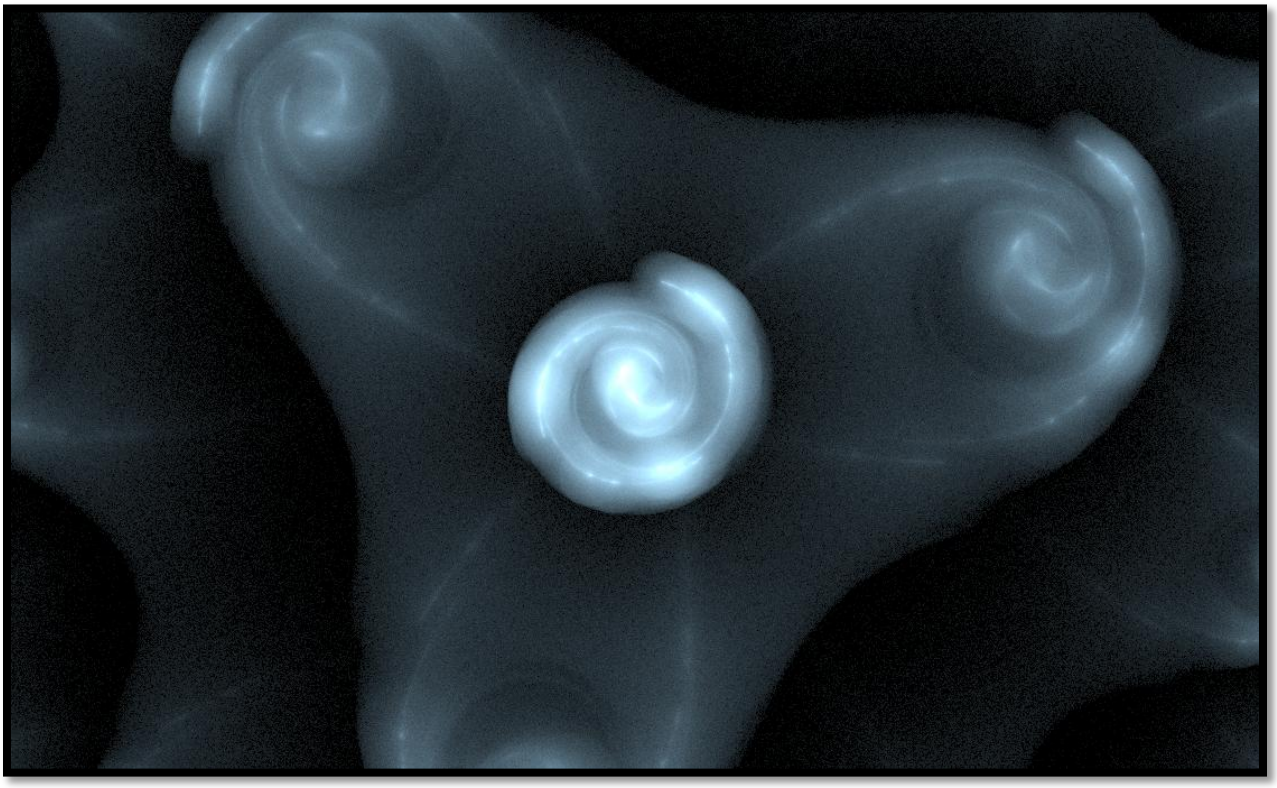


Julian_Dist 0

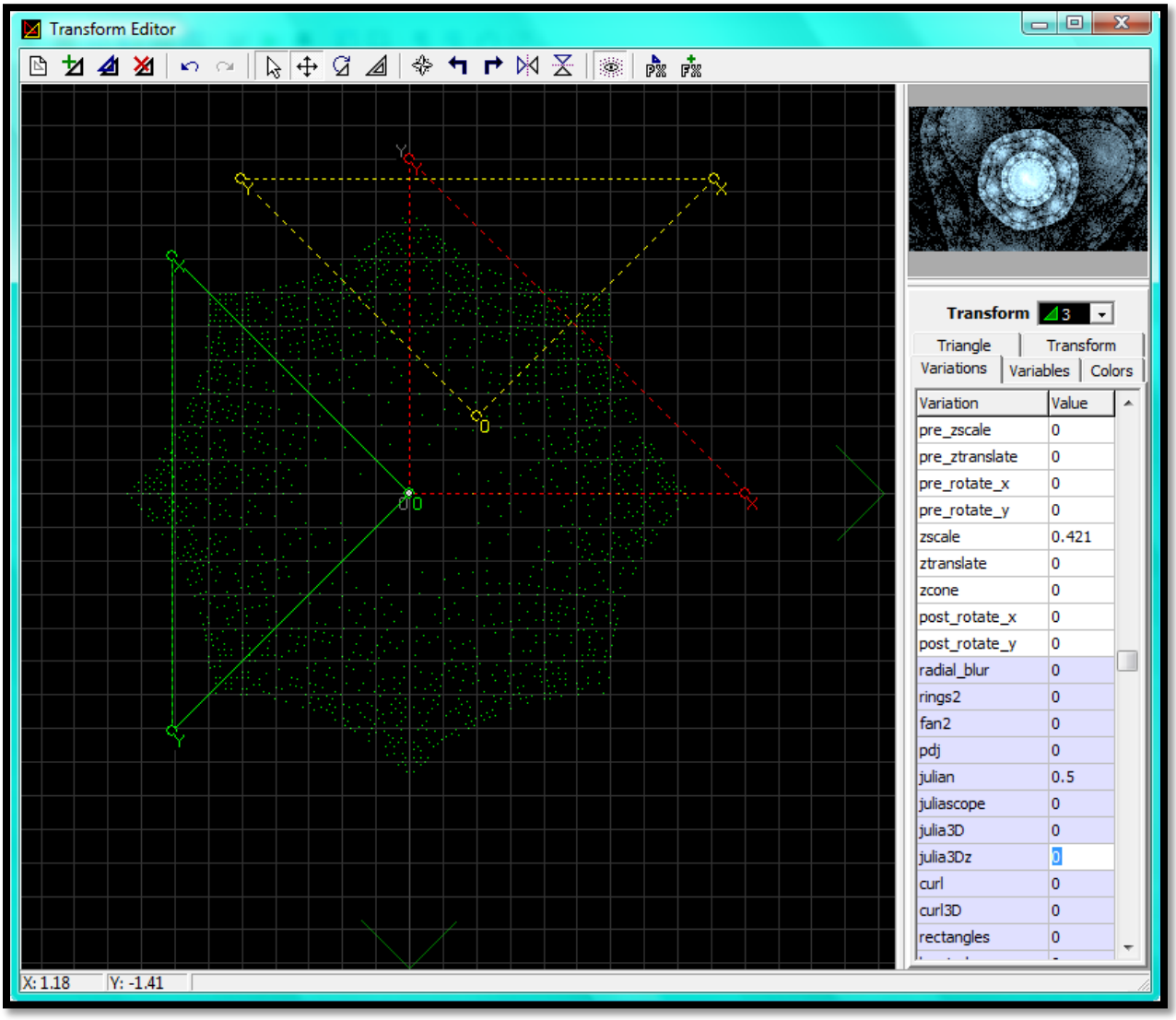
Julian_Dist -1

If you wish to experiment further you can play with the variables tab. Julian_power is what controls the number of inner towers; it is normally set on three. By setting it to four you will gain a new inner tower as well as giving your fractal city a diamond shape. Julian_dist controls everything but the center tower and compresses the shape. By setting it to 0 you will gain a perfect ring around the center. A negative one will make the outer towers become smaller versions of the inner towers. I recommend staying at either a negative one, or positive one.

Here is what transform two should look like:



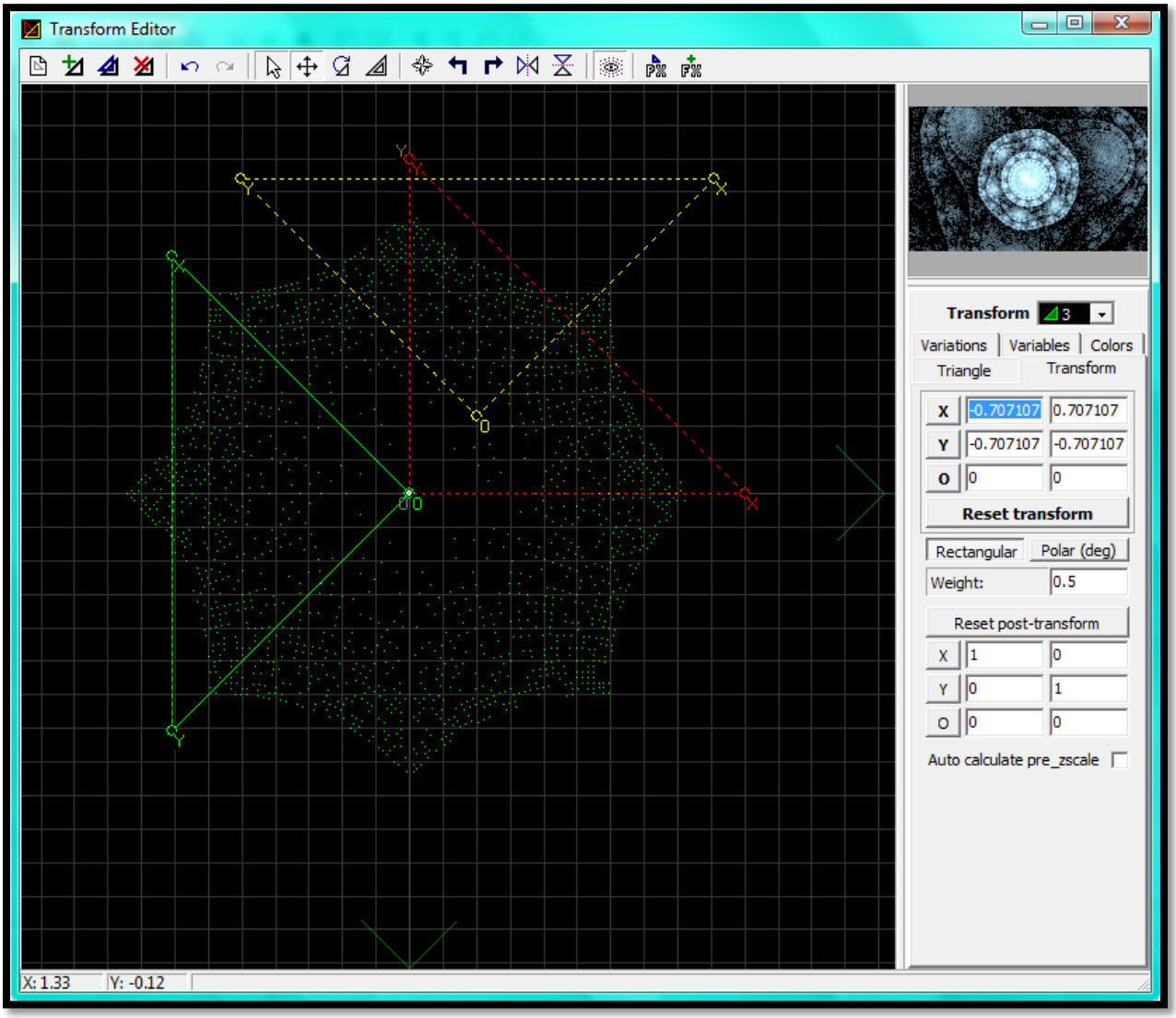
TRANSFORM THREE: VARIATIONS



For transform three set linear3d to 0, Zscale to 0.421, and Julian to 0.5.

An alternative fractal will later be covered in this tutorial for this section.

TRANSFORM THREE: LOCATION AND WEIGHT



I set the location at:

Location	Point A	Point B
X-Axis	-0.707107	0.707107
Y-Axis	-0.707107	-0.707107
Origin	0	0

Alternative Location:

Location	Point A	Point B
X-Axis	-0.707107	0.707107
Y-Axis	-0.707107	-0.707107
Origin	0.948533	-1.06607

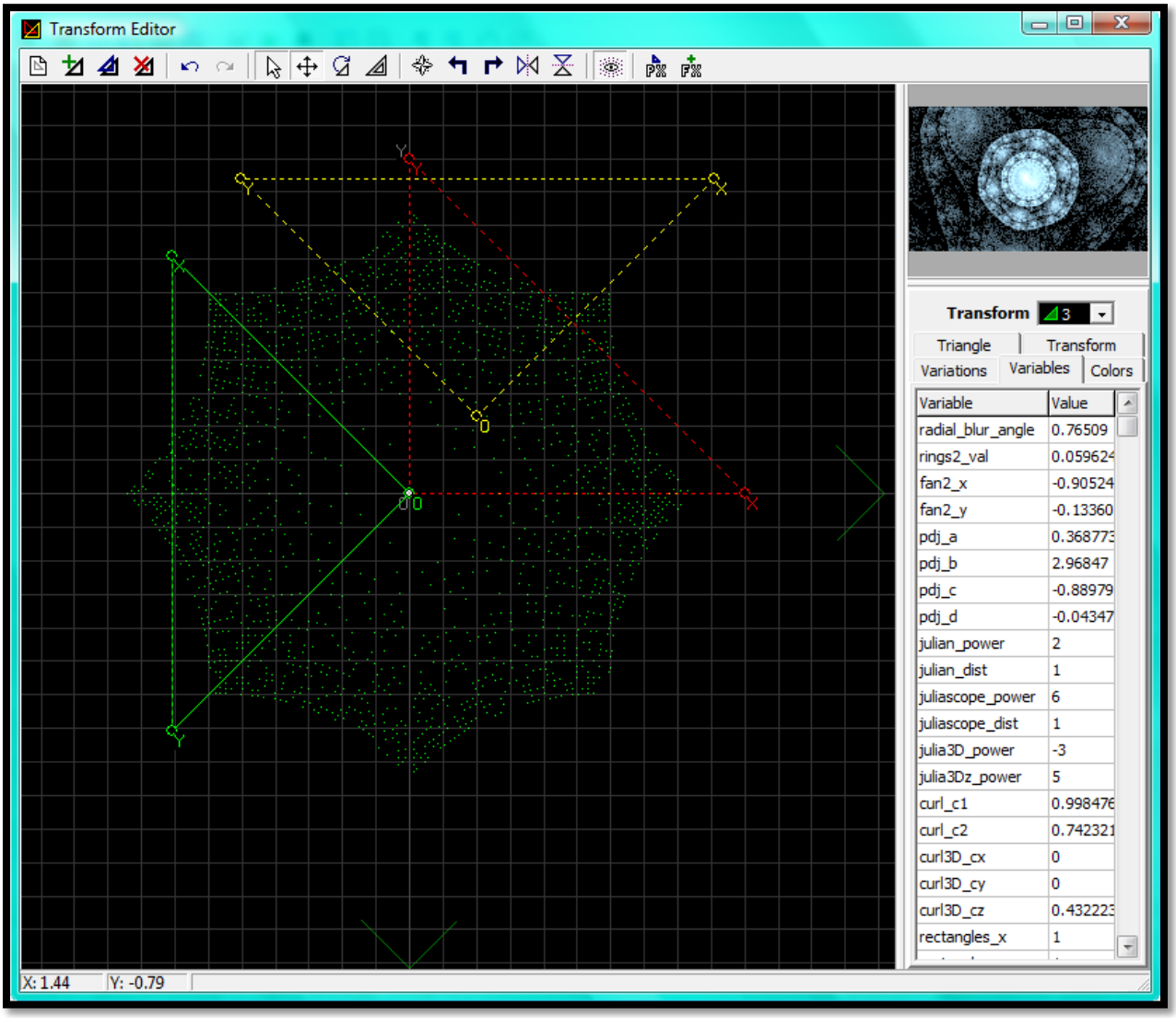
This location will split the center tower in half, and create an interesting effect as illustrated above.

Weight should be set at 0.5.

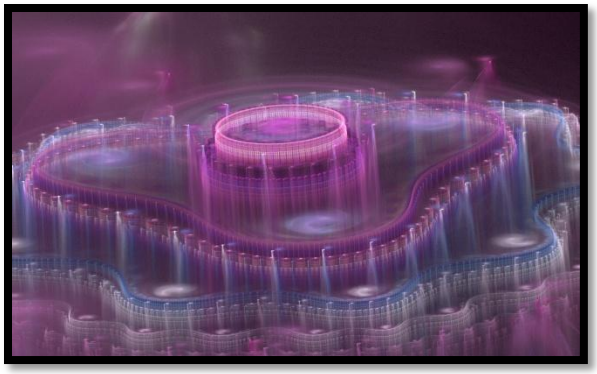
Weight of 0.1 *Weight of 0.5* *Weight of 1.0*

Once more the weight is opposite of its former transform. At 0.5 it is balanced. If you go to 0.1 your fractal will fall apart into a mess. If you set it higher than 0.5 your fractal will progressively become sharper and will start to lose detail.

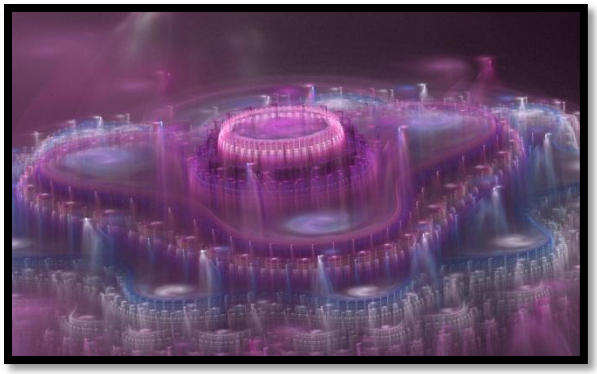
TRANSFORM THREE: VARIABLES



Variables were set at Julian_Power 2, Julian_Dist 1.



Julian_Power 8

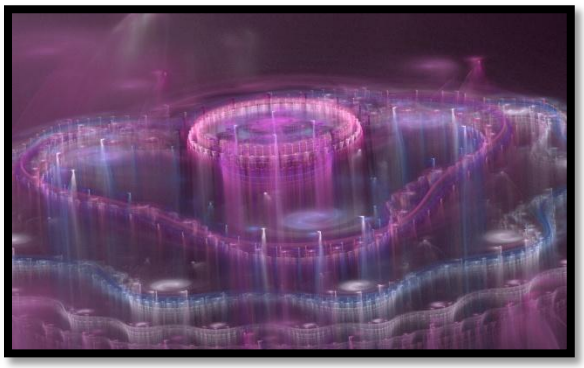


Julian_Power 4

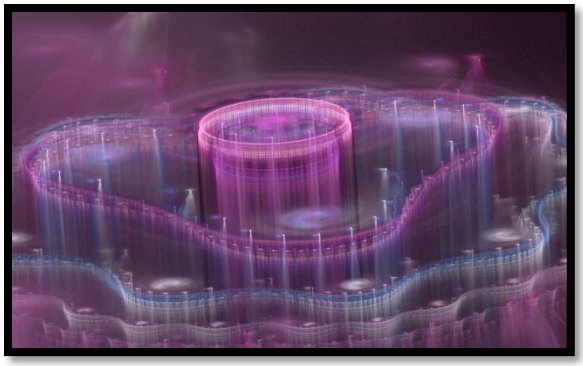
Julian_Power 2

Julian Power 1

Julian_Power -2



Julian_Power -4



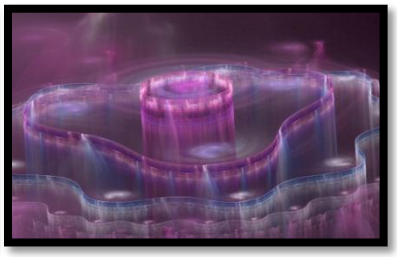
Julian_Power -8

The higher the Julian_Power the more defined the center tower becomes; the inner and outer towers suffer for it though and loose quality and numbers.

By the time you reach a Julian_Power of 8 you have lost significant detail and the fractal becomes uniform. The center tower also becomes a perfect circle.

If you go the opposite direction with the Julian_power settings by for example setting it at 1 your fractal will literally fall apart into a mess. By taking it into the negatives, for example a setting of -2, your center tower takes on a space needle shape. All towers seem to shrink into themselves. This setting still does not have as much detail as a positive 2 setting. The more negative the number the closer it the fractal comes to becoming a perfect circle.

Julian_Dist -1



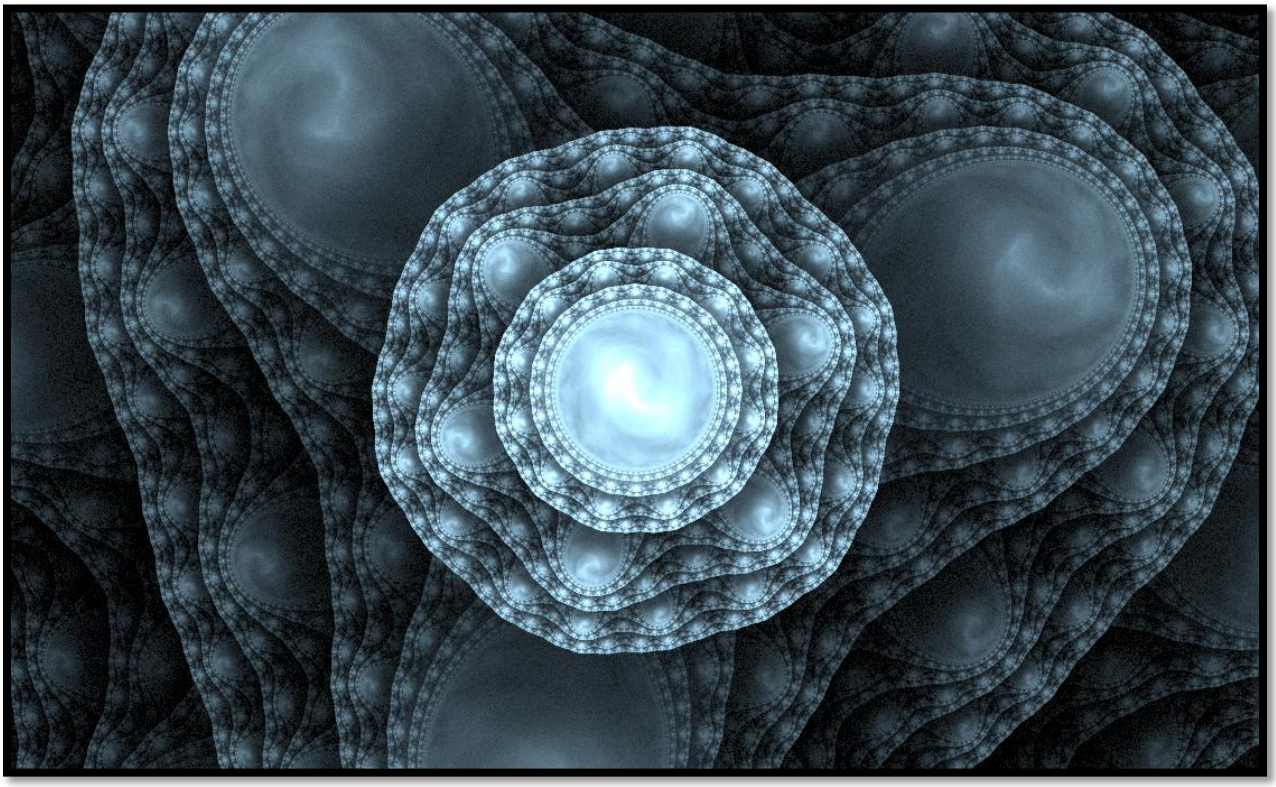
Julian_Dist 0

Julian_Dist 1

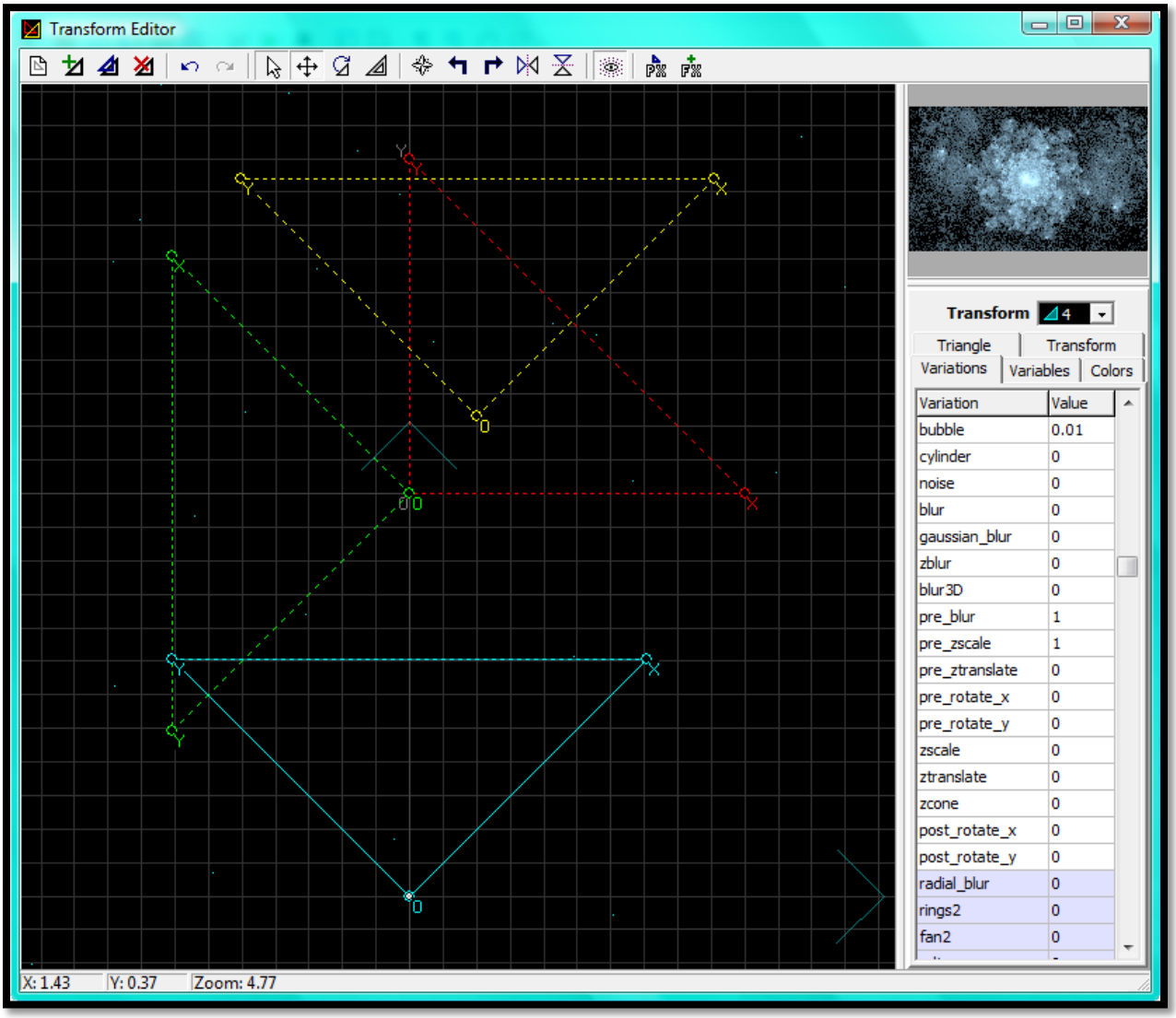
The Julian_Dist should be set anywhere from 1 to -1, but not any further. The fractal becomes chaotic afterwards; it should never be set on zero. The fractal becomes condensed into flat rings otherwise. Unless, this is the effect that you desire to create.

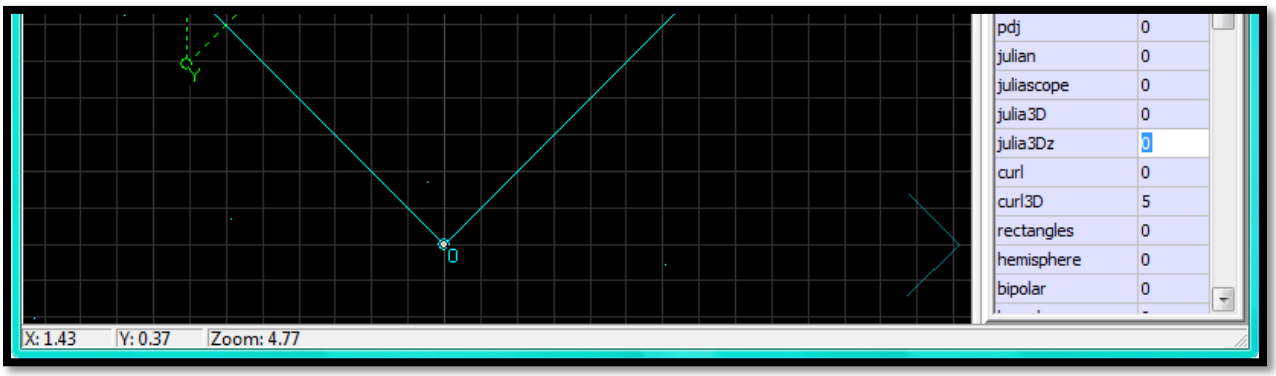
You can observe the changes in variables quite clearly with your variation preview setting on this transform in particular. Watch how the fractal changes as the variation preview changes.

Here is how the fractal should look after finishing the steps so far:



TRANSFORM FOUR: VARIATIONS





For transform four set linear 3d to 0 once more, bubble to 0.01, Pre_Blur to 1, Pre_Zscale to 1, and curl3d to 5.

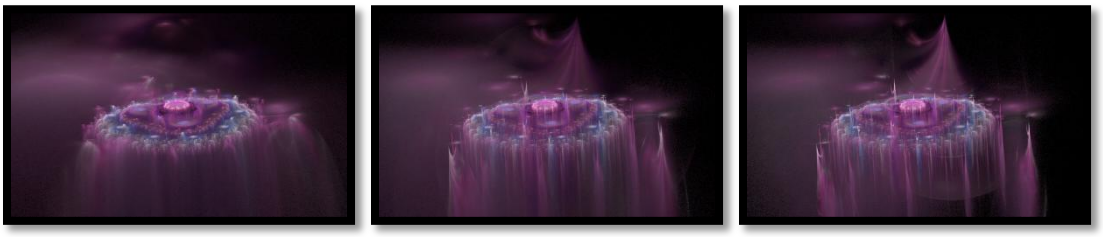
Bubble 0.01 *Bubble 0.5* *Bubble 1*

Bubble gives the fractal some of its character, adding just the slight amount of flow to it. If you raise the bubble higher you will get streaks of color rising out of portions of your fractal.

A higher amount of bubble will also solve the ghosting issue.

Pre_Blur 0 *Pre_Blur 1* *Pre_Blur 2*

I used Pre_Blur for a reason on this particular fractal; it was useful to accent the focus on the fractal. If you set it to 0 you will see a fractal behind the main image. I wanted to get rid of this extra amount of fractal. This blurred the image and gave the fractal a bit of atmosphere.



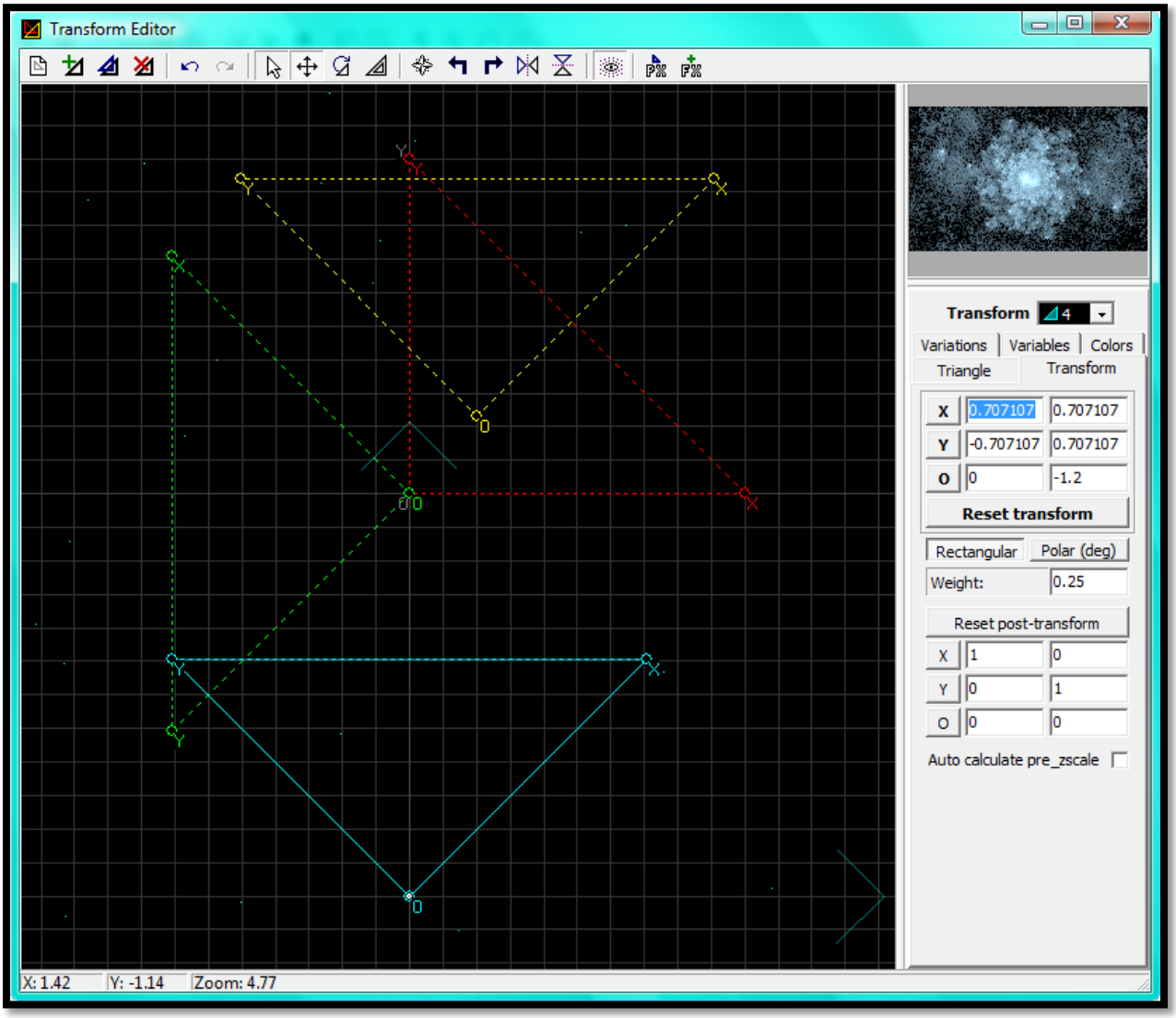
Pre_Zscale 1 *Pre_Zscale 5* *Pre_Zscale 10*

The reason behind Pre_Zscale being set to 1 is not visible unless you zoom out. The higher the Pre_Zscale the better foundation of the towers are. If you increase the setting to 5 you'll get a more solid foundation, and the image becomes slightly sharper. Experiment to find what setting you like.

Curl3d 0 *Curl3d 5* *Curl3d -5*

The curl3d setting is what's behind the flow of the fractal as well; if you take it the setting off completely you will see the fractal becoming uniform. If you use a negative number here your foundation will rise up surrounding your towers.

TRANSFORM FOUR: LOCATION AND WEIGHT



The location setting will be:

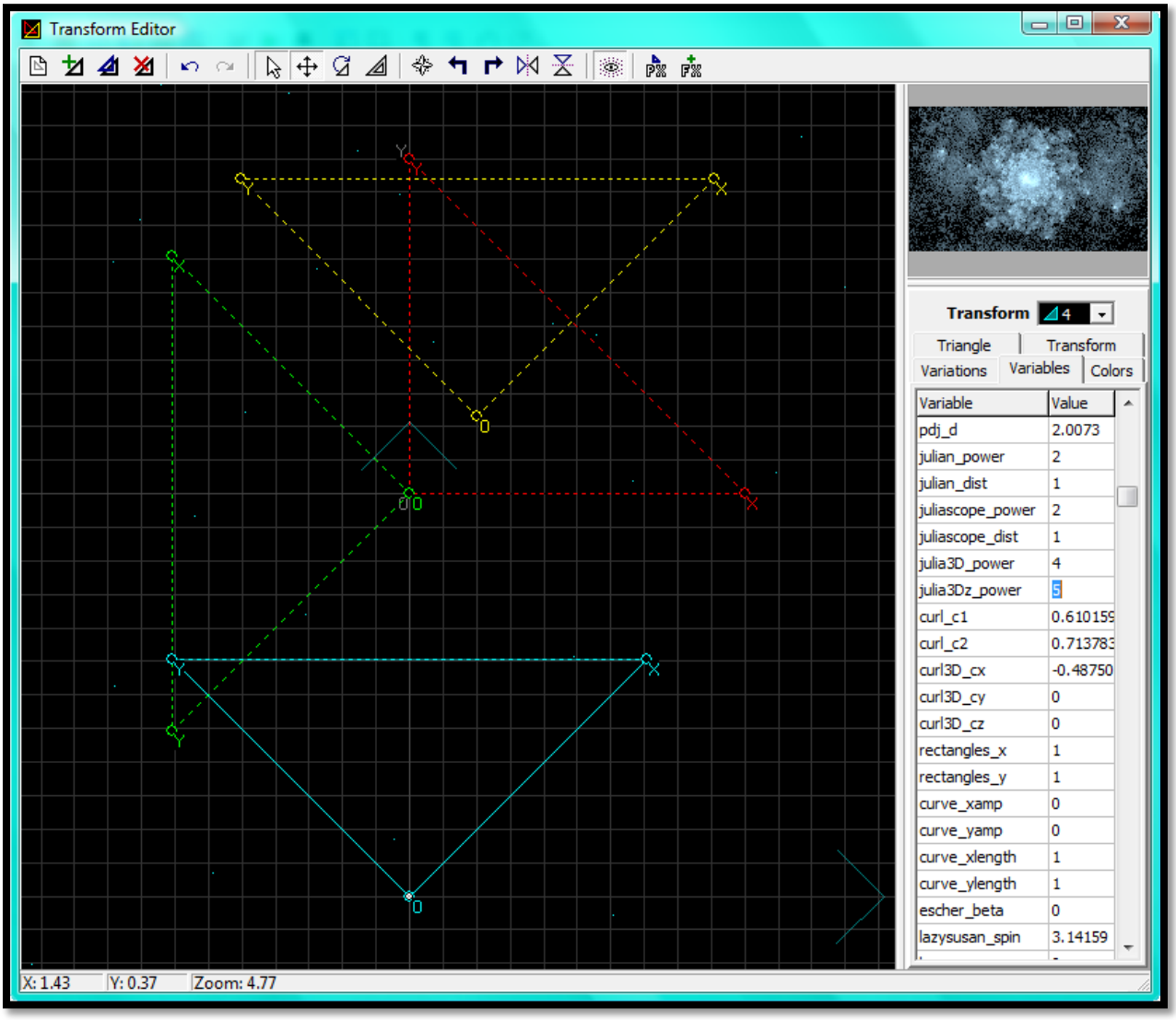
Location	Point A	Point B
X-Axis	0.707107	0.707107
Y-Axis	-0.707107	0.707107
Origin	0	-1.2

Weight is 0.25

Weight of 0.25 *Weight of 0.5* *Weight of 1.0*

For alternatives increase the weight if you want the image to be sharper.

TRANSFORM FOUR: VARIABLES

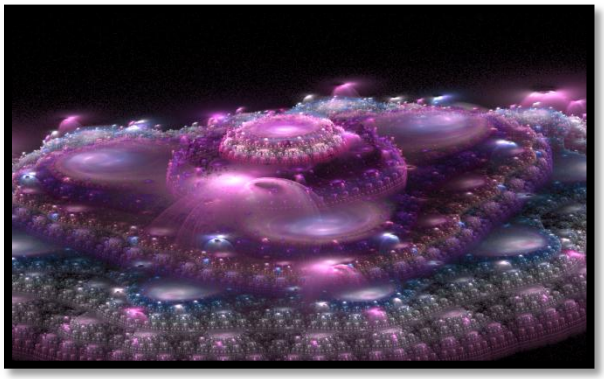


Go to the variable tab, set curl3d_cx to -0.48750. Curl3d_cy to 0, and curl3d_cz to 0.

Curl3d_cx -0.48750

Curl3d_cx 1

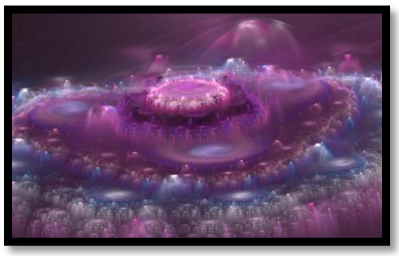
Curl3d_cx 2



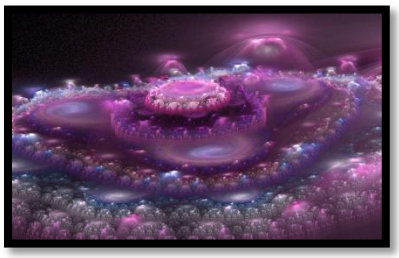
Curl3d_cx 4

By raising the curld3d_cx you will begin to sharpen your image, by the time you reach a setting of 2 your fractal will be quite sharp. As you go higher your fractal will begin to compress on itself. If you want your fractal though to take a jewel like appearance this will be the setting you should experiment with. This also helps with noise as well.

Curl3d_cy 0



Curl3d_cy



Curl3d_cy 2

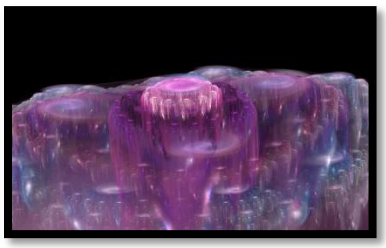
The curl3d_cy setting will also help get rid of the ghosting. I suggest for an alternative to 0, a setting of 1. By playing with this setting you can create a variety of different looking fractals.

Curl 3d_cz 0

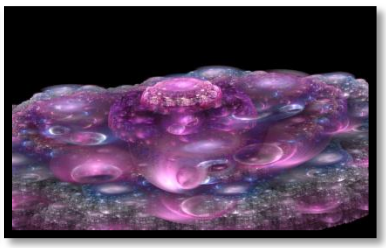
Curl3d_cz 0.1

Curl3d_cz 1

Curl3d_cz 2



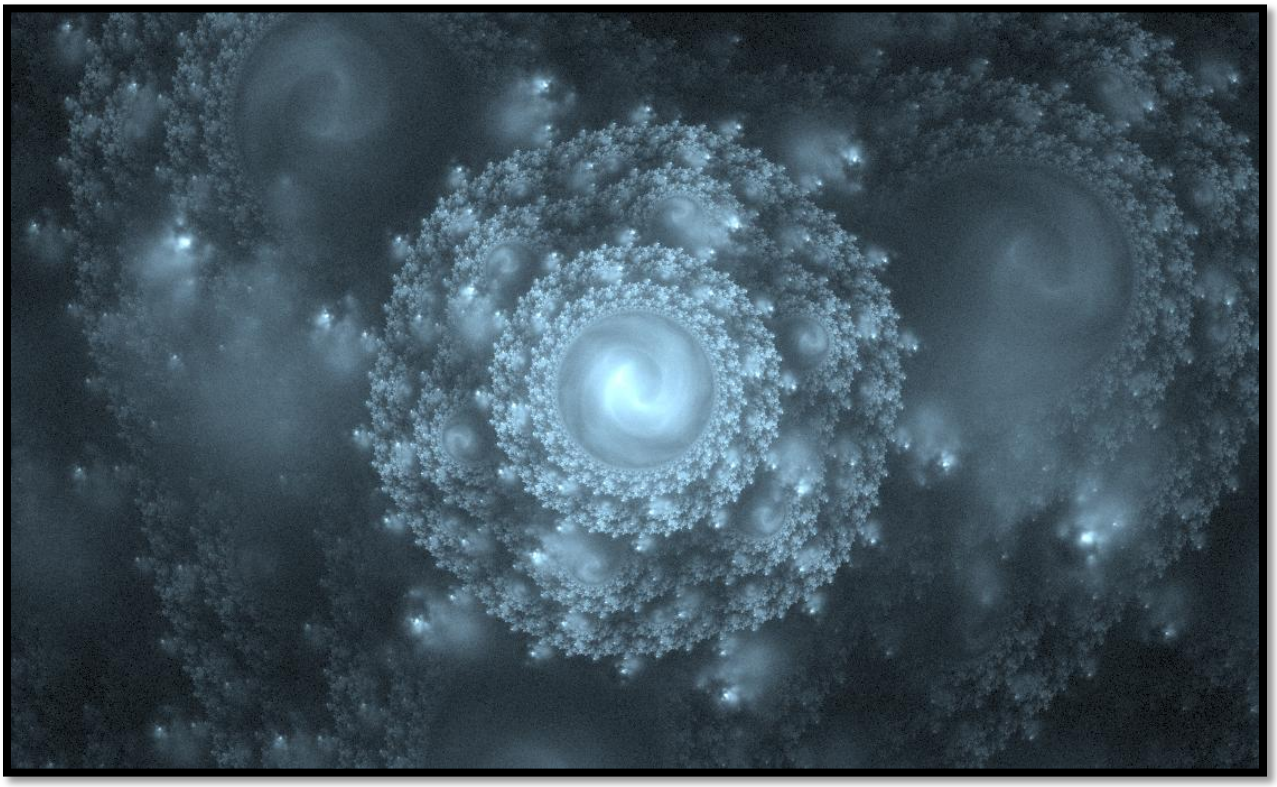
Curl3d_cz -1



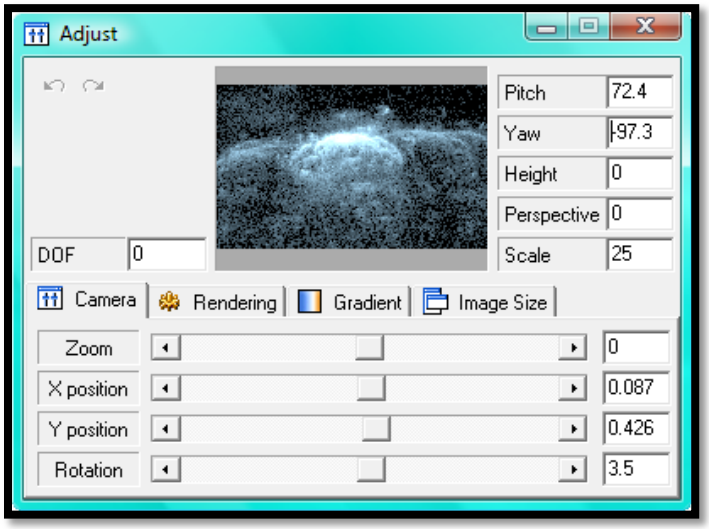
Curl3d_cz -4

With the curl3d_cz setting you can also get a variety of looks, by a setting of even 0.1 you will start to get a different look, by a setting of 1 you will start to see an interesting rise of portions of the fractal. As you go higher this setting will cause the fractal to compress onto itself, so be careful as you experiment. If you choose to use a negative number your foundations will slope downwards. Once more if you go too negative the fractal will compress in on itself.

Here is what the fractal should look like at this point:



ADJUST WINDOW

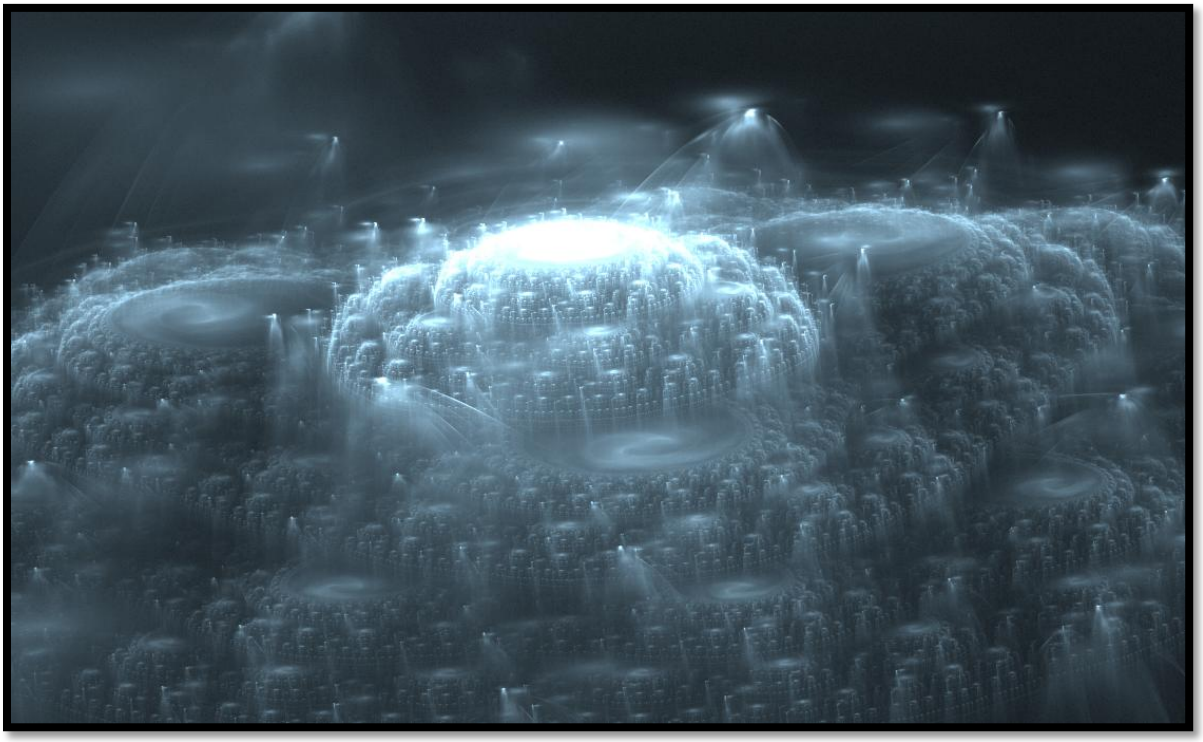


Go to the adjust window, set the pitch at 72.4, Yaw at -97.3.

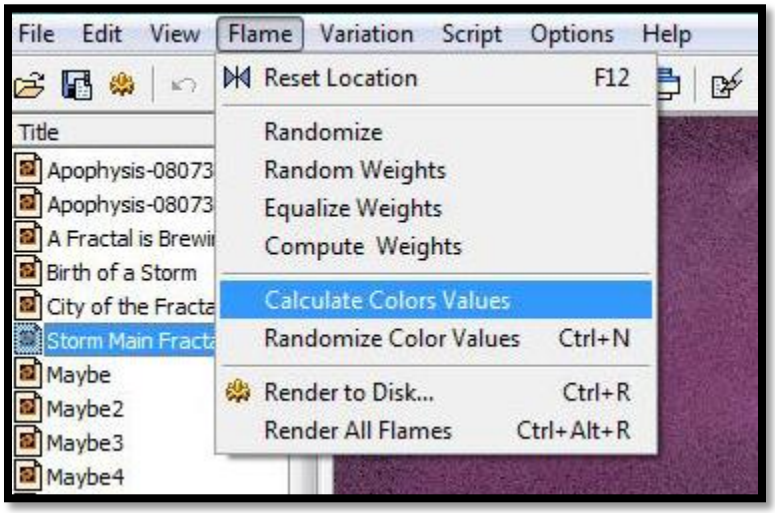
The Adjust Window is what controls the 3d portions of the fractal, without setting the pitch and yaw you would not be able to see the 3d aspects of your fractal.

The X Position should be set at 0.087, the Y position at 0.426, and rotation should be set at 3.5.

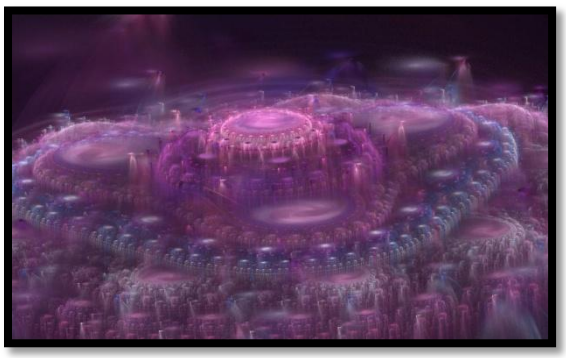
The fractal should look like this afterwards:



COLOR ADJUSTMENTS



This menu can change the fractal's colors.



Calculated color values

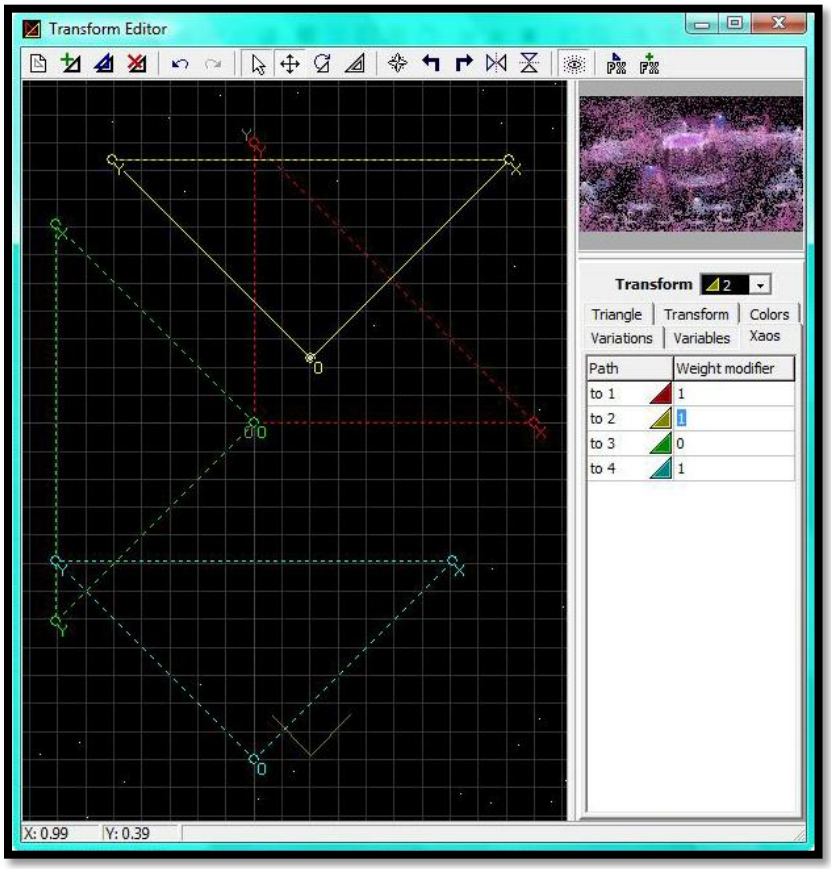
Randomized color values

There are two easy methods of changing the color of your fractal. One is by hitting ctrl+n. This will automatically change the color of your fractal. The other method is by calculating the colors.

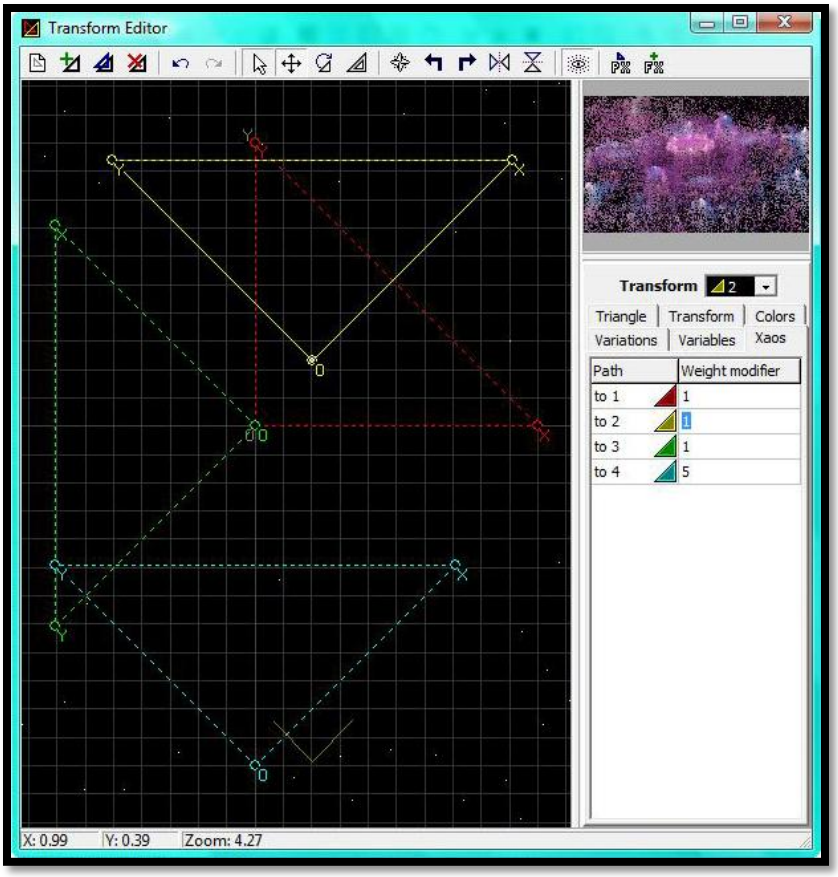
There is one more method that is manual but I will not cover that in this tutorial. I recommend reading this tutorial Toapp's Color Manipulation ApoBit. That tutorial covers it in a wonderful amount of detail, I highly recommend reading it!

XAOS

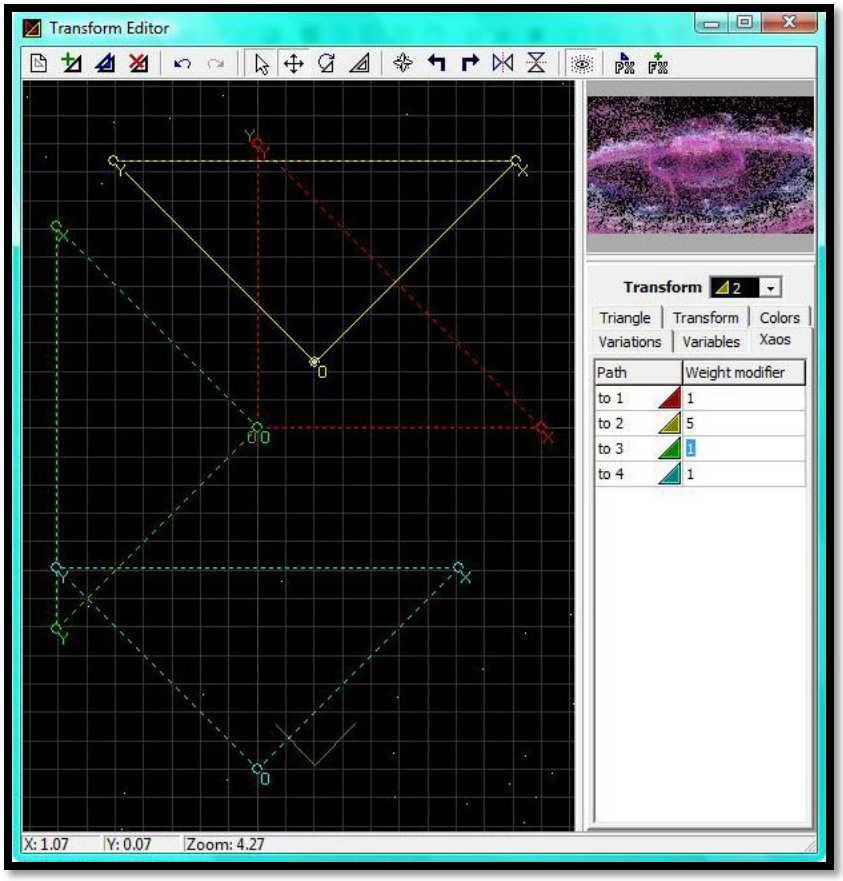
When I wrote this the new 3d hack had not been released, by using the Xaos function you can get all sorts of interesting effects.



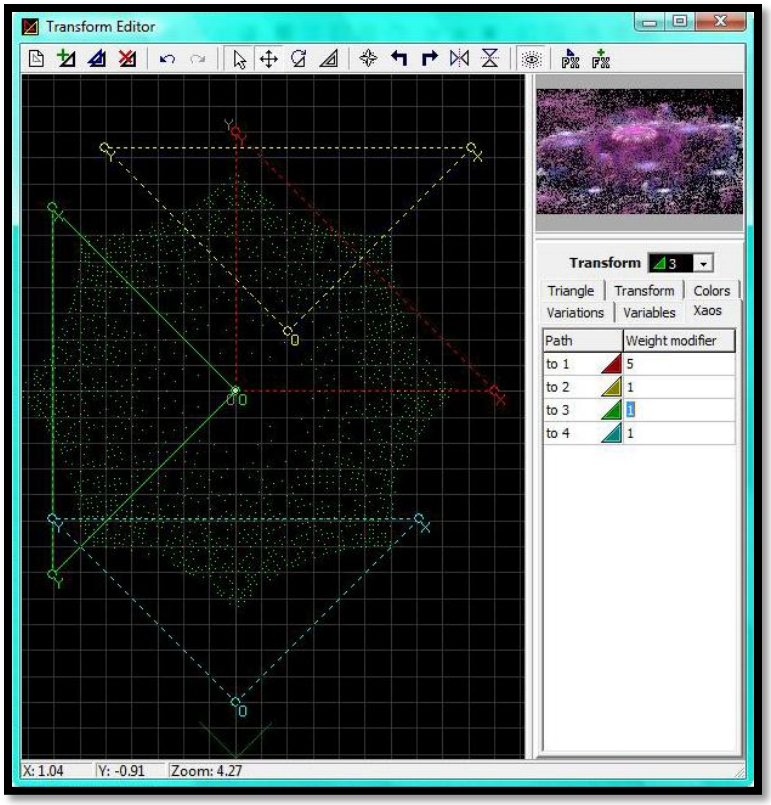
Here are just a few ideas, on transform 2, set the to 3 on xaos to 0.



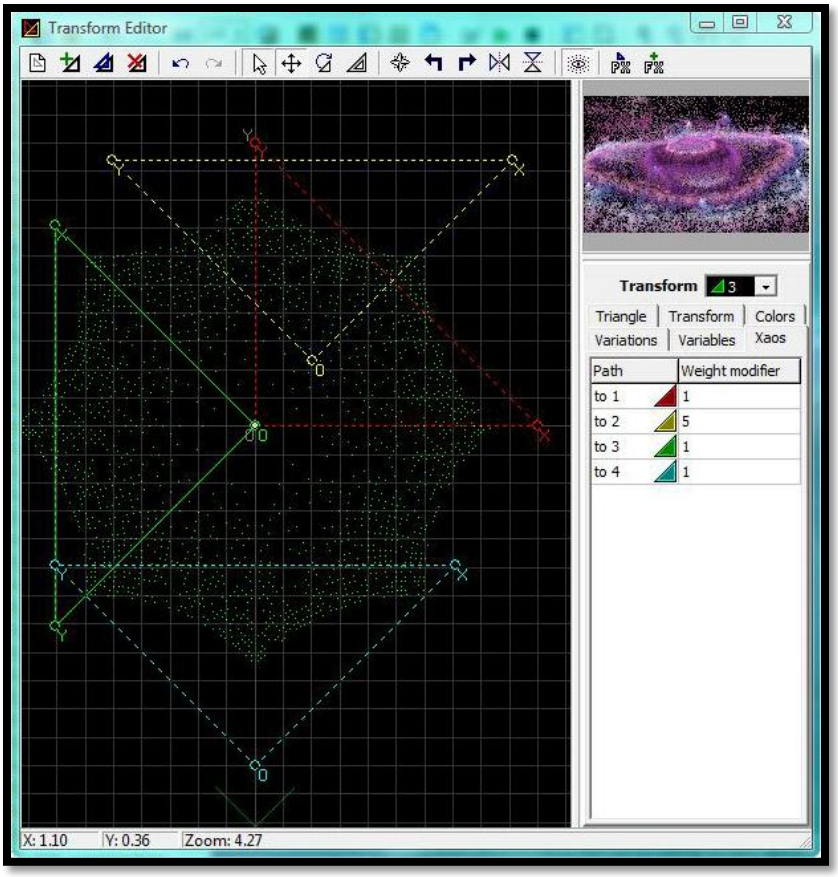
Another alternative is setting to 4 to 5.



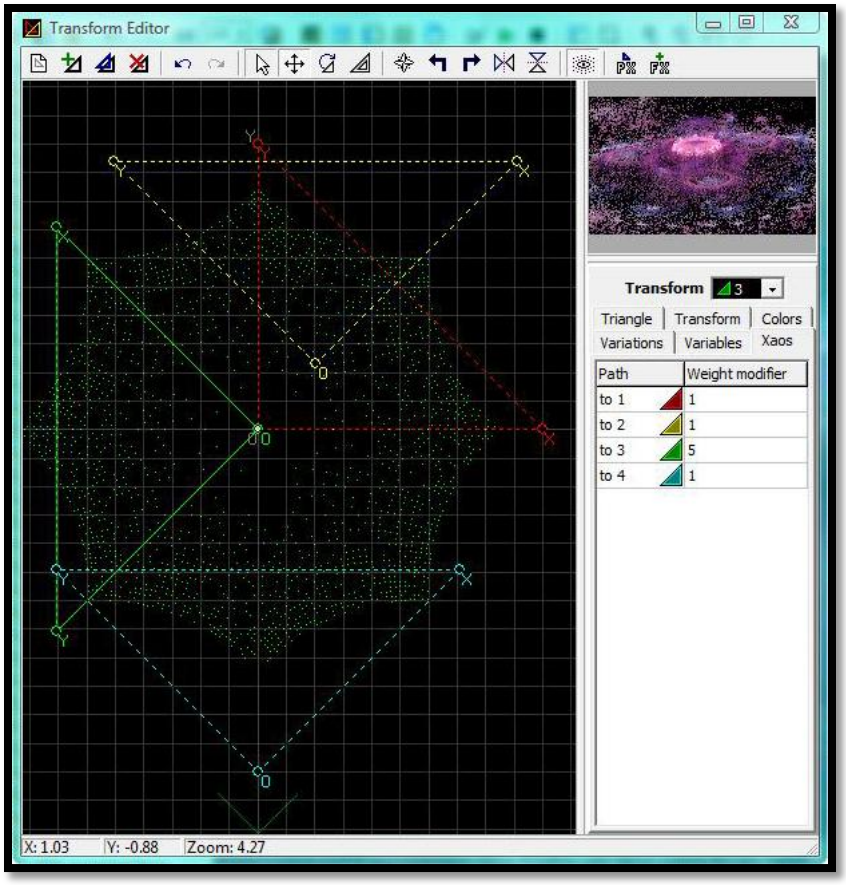
Or setting to 2 to 5.



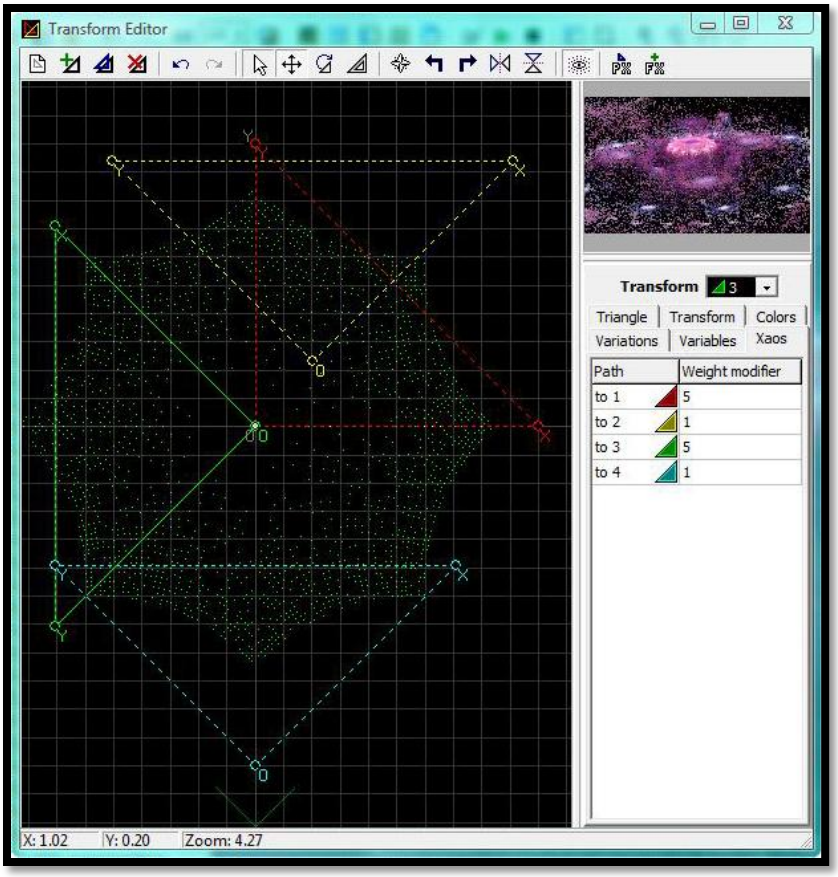
On transform three's xaos if you place a 5 on the to 1 it'll make the towers tops stand out better.



Yet by setting to 2 to 5 everything becomes more uniform.



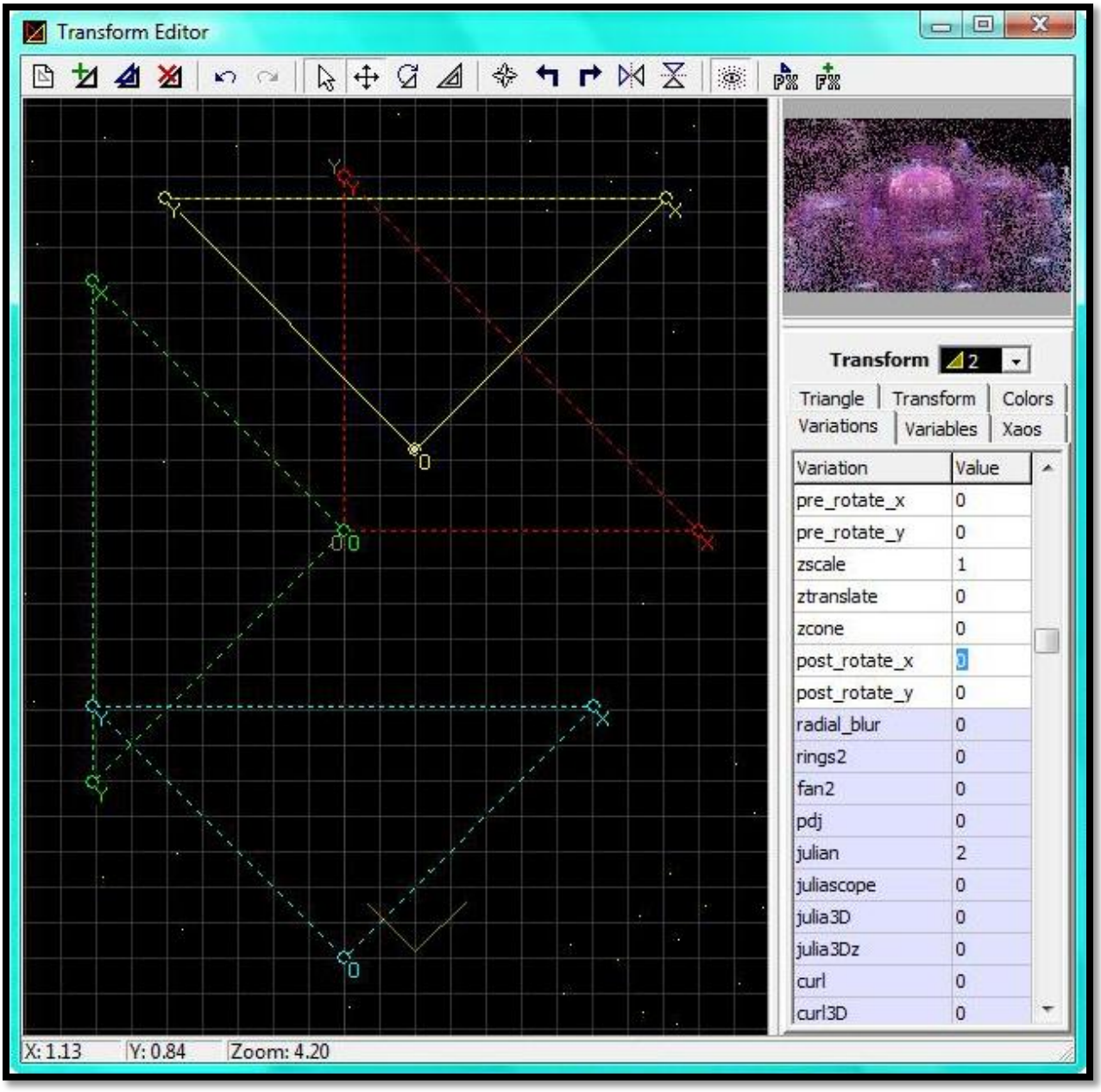
By setting to 3 to 5 the towers become outlined in rings.



By setting both to 1 and to 3 to 5 it gives a really interesting effected of outlined towers while the tower tops becoming more able to be seen.

ALTERNATIVES
CITY OF THE FRACTALS

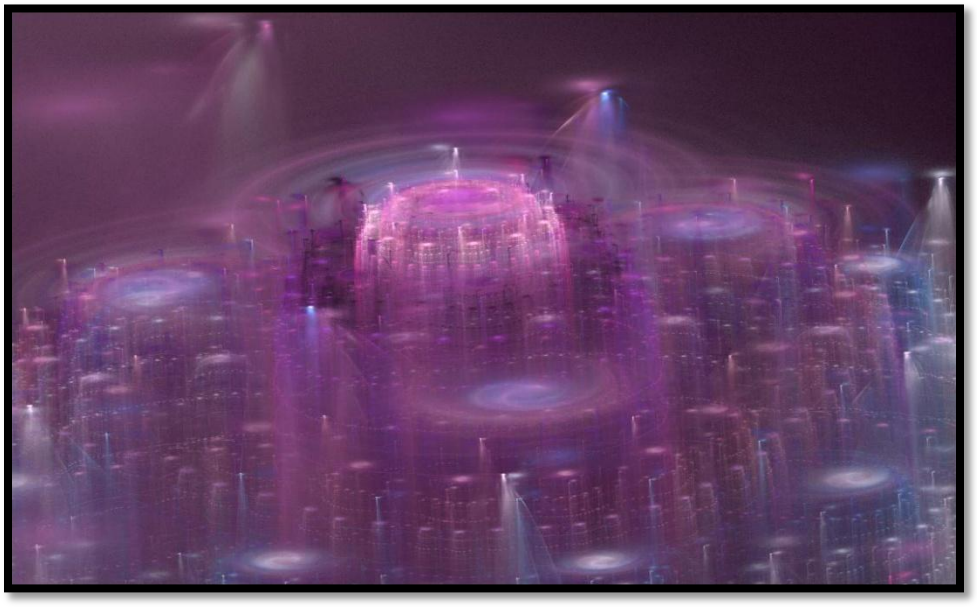
TRANSFORM TWO: VARIATIONS



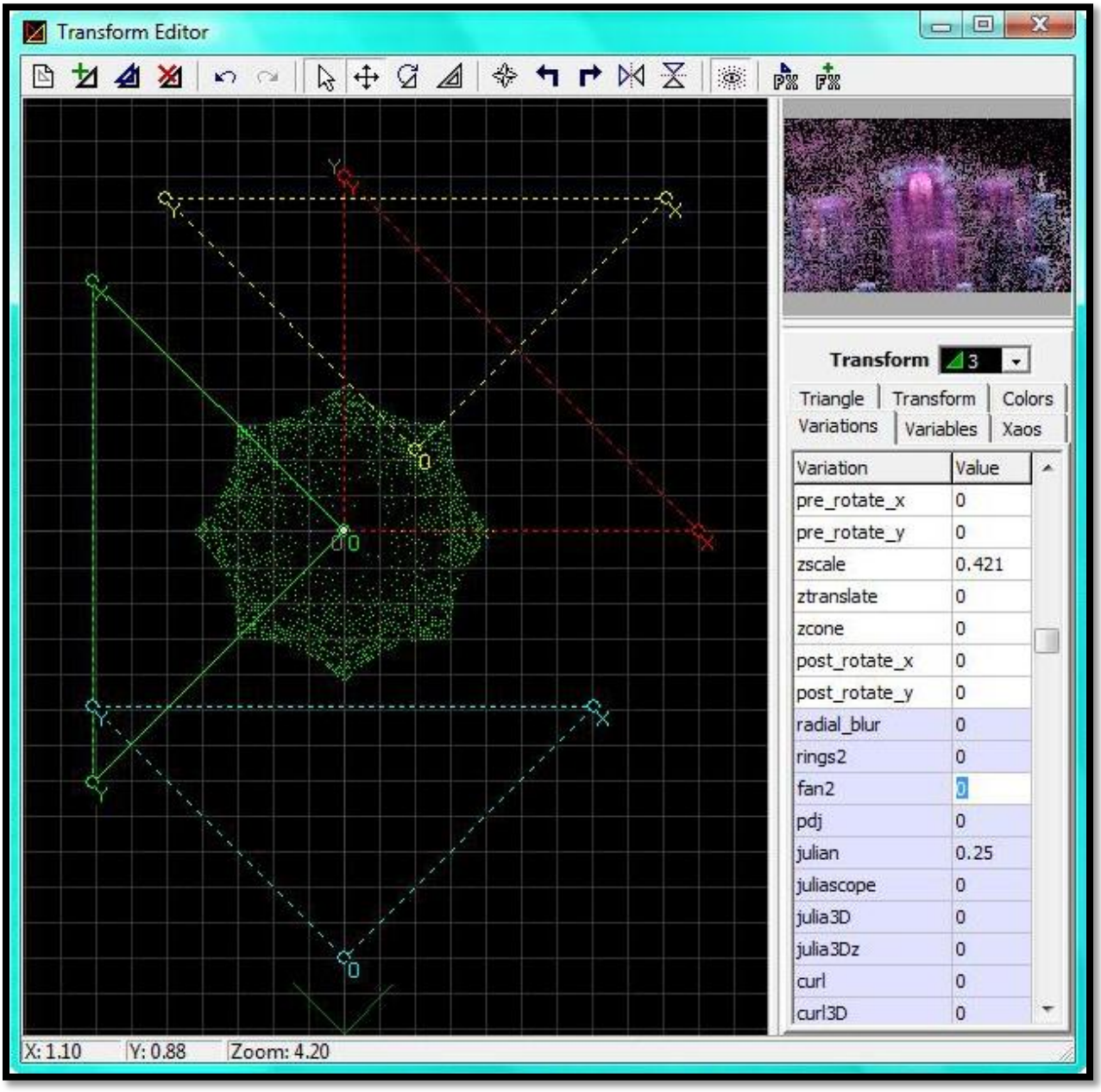
Transform one, and four remains the same as Storm's.

What is different about transform 2 is the Zscale variation. Set it to 1.

This is how it should look so far:



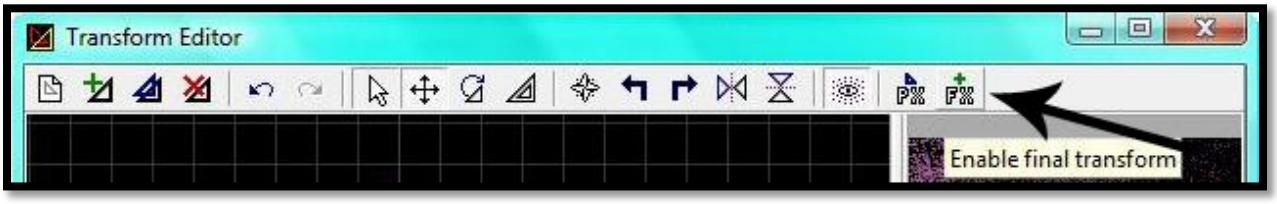
TRANSFORM THREE: VARIATIONS



Transform three's only difference is the Julian setting, set it to 0.25.

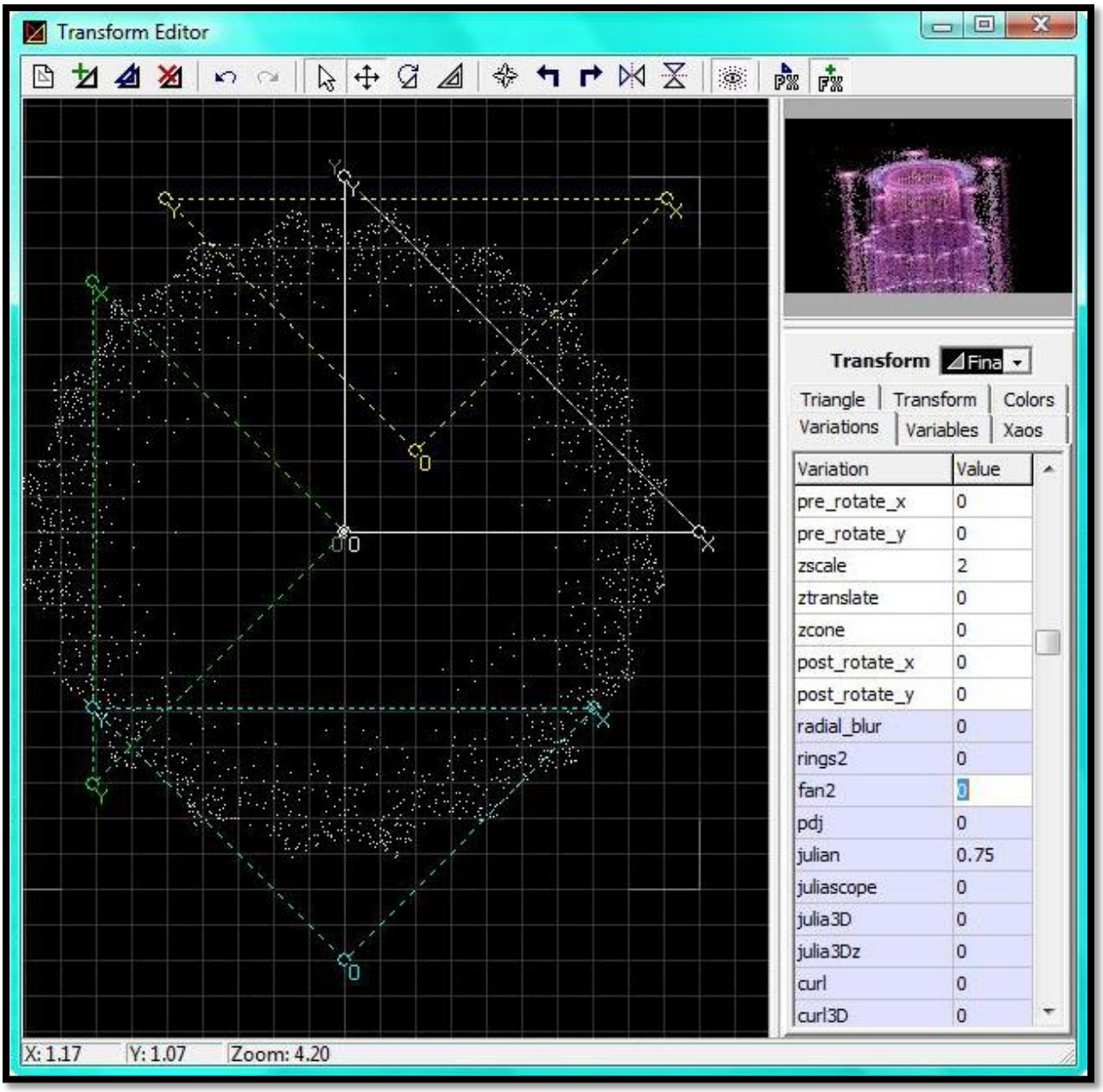
This is how the fractal should look like now:

THE FINAL TRANSFORM: VARIATIONS



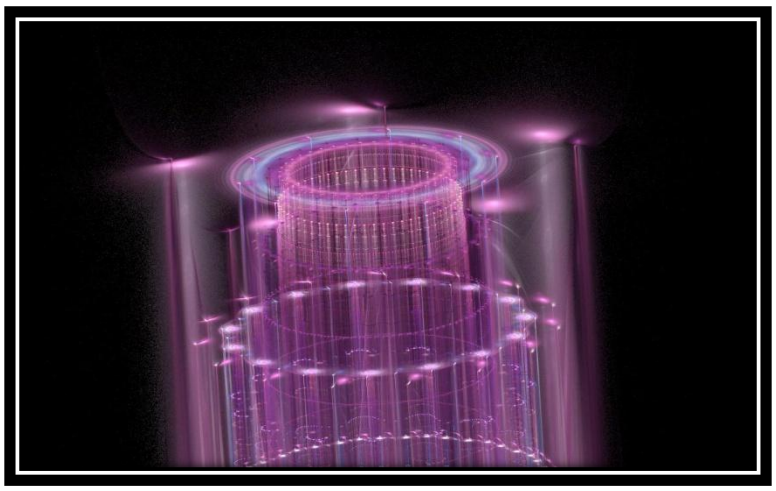
Enable a final transform by clicking the icon the arrow is pointing to.

The variations are:

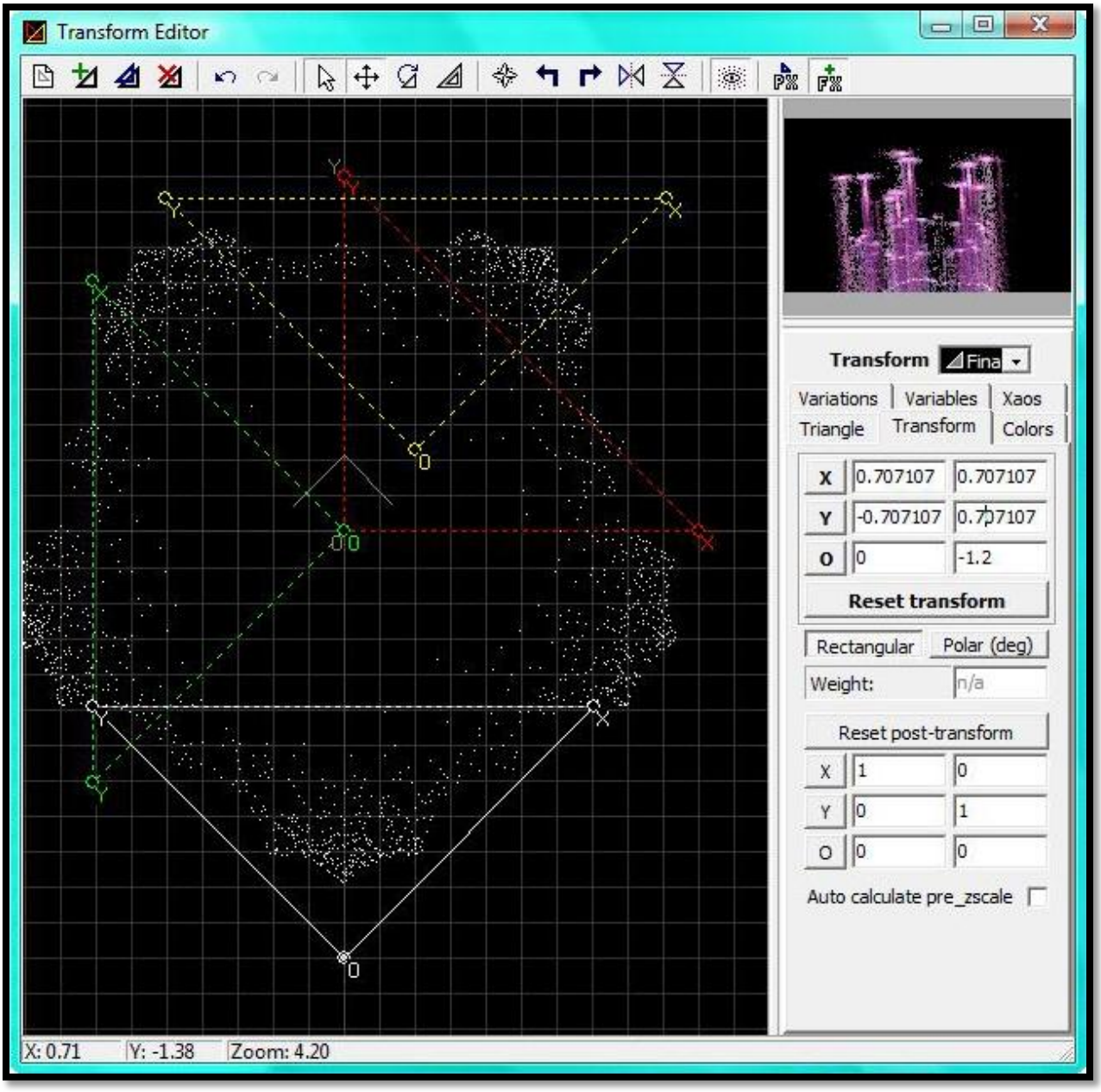


Set Zscale to 2 and Julian to 0.75.

This is how it should look so far:



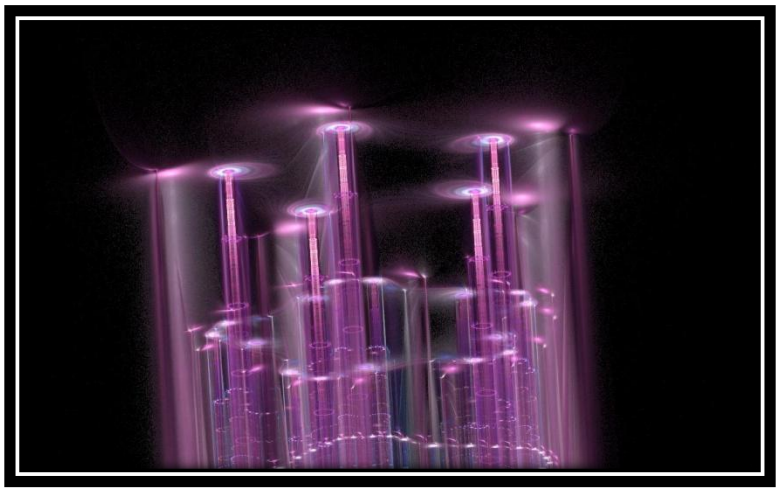
FINAL TRANSFORM: LOCATION



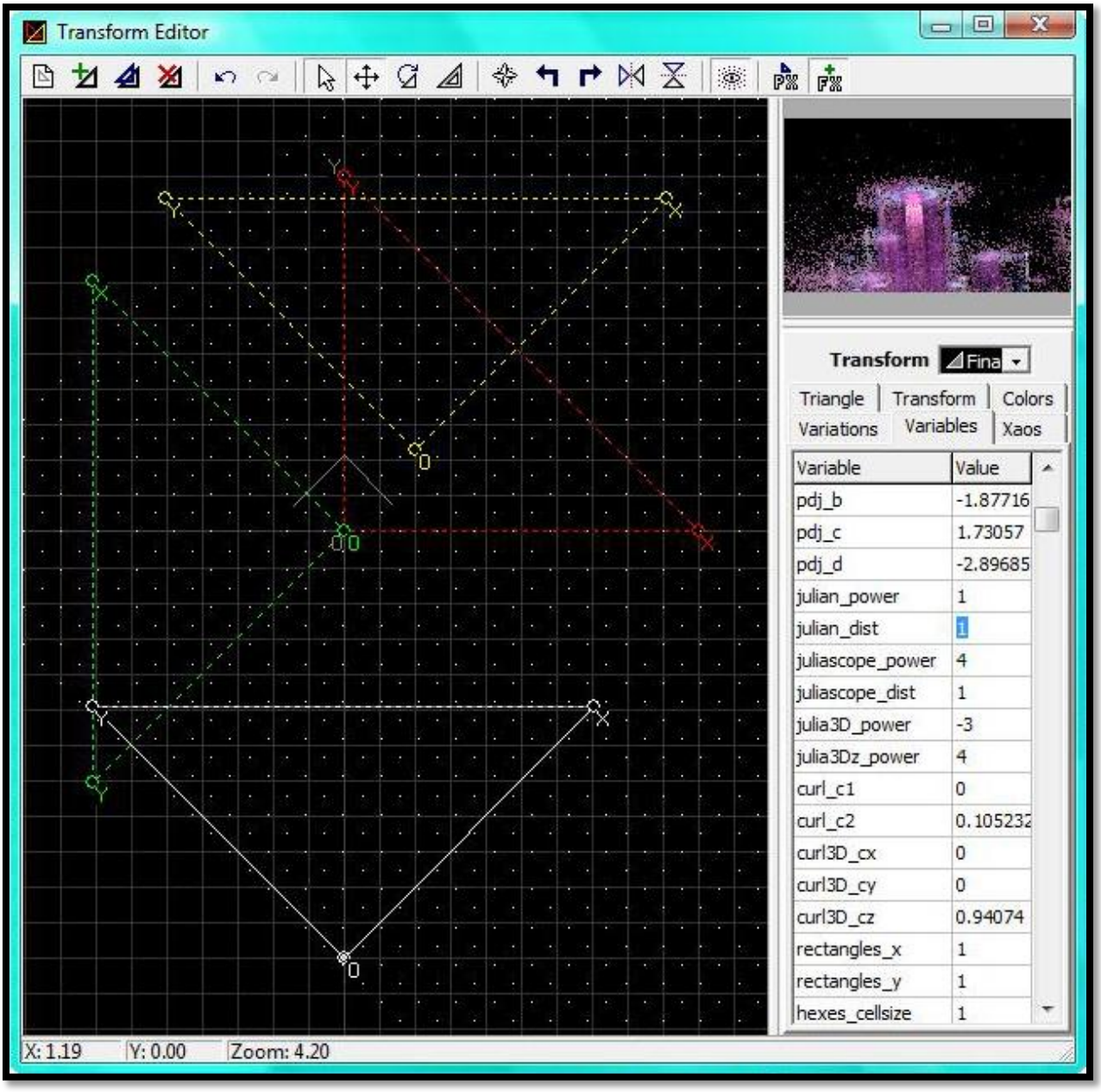
Set the location to:

Location	Point A	Point B
X-Axis	0.707107	0.707107
Y-Axis	-0.707107	0.707107
Origin	0	-1.2

This is how it should look like:

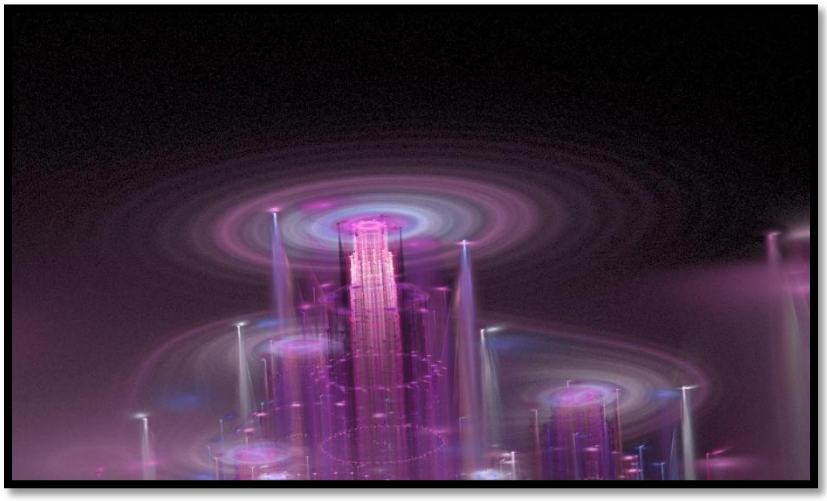


FINAL TRANSFORM: VARIABLES

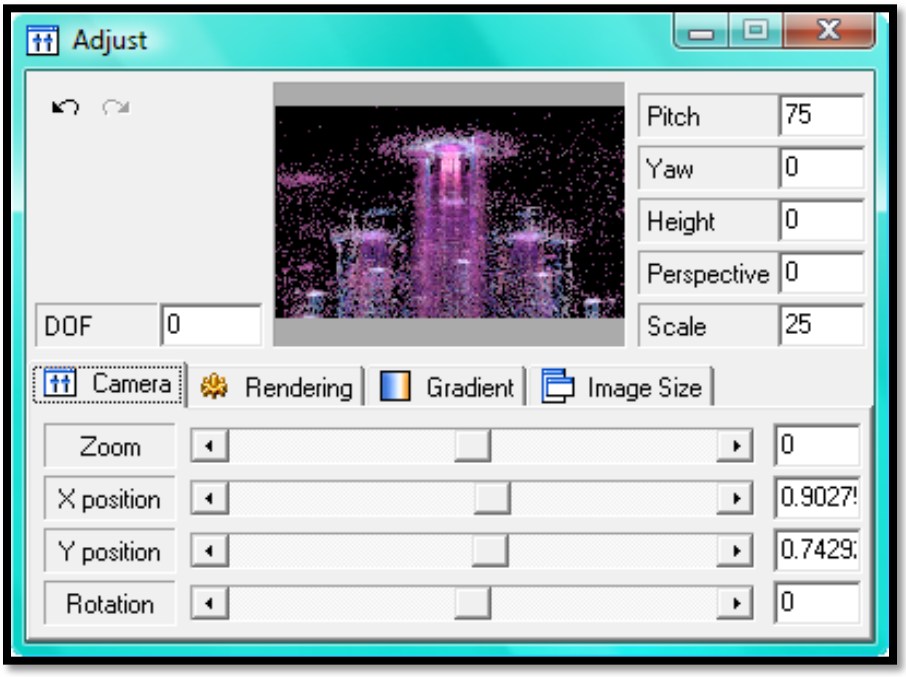


Now go to the variables tab, set Julian_Power to 1, and Julian_Dist to 1.

This is how it should look like:



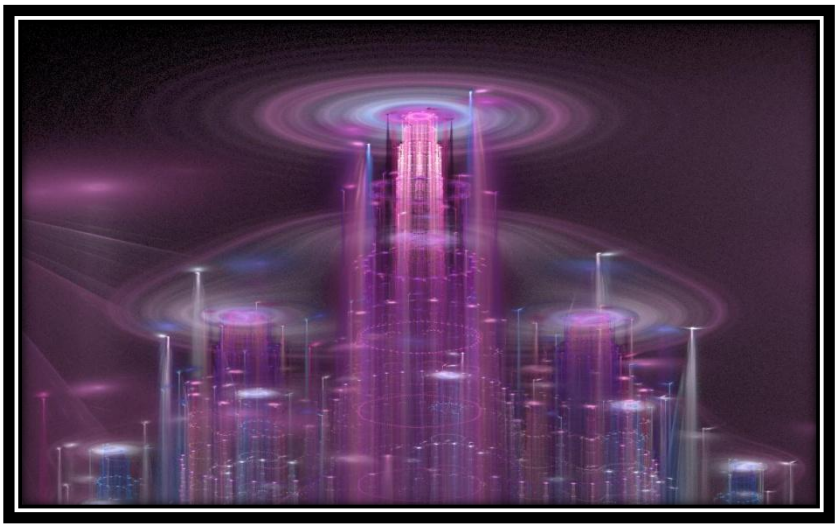
ADJUSTMENTS



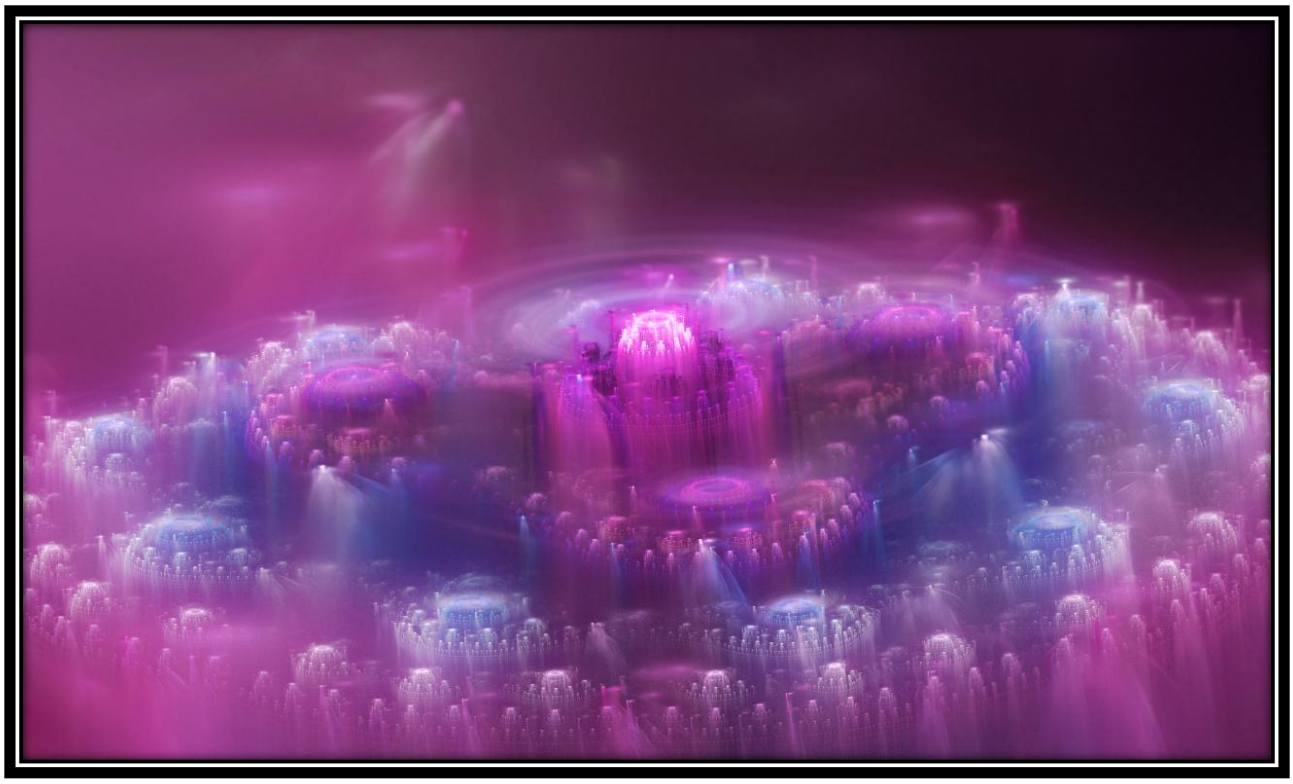
Go to the adjust window.

Set Pitch to 75, Yaw at 0. X position should be set at 0.902, and Y position at 0.742. Rotation should remain at 0.

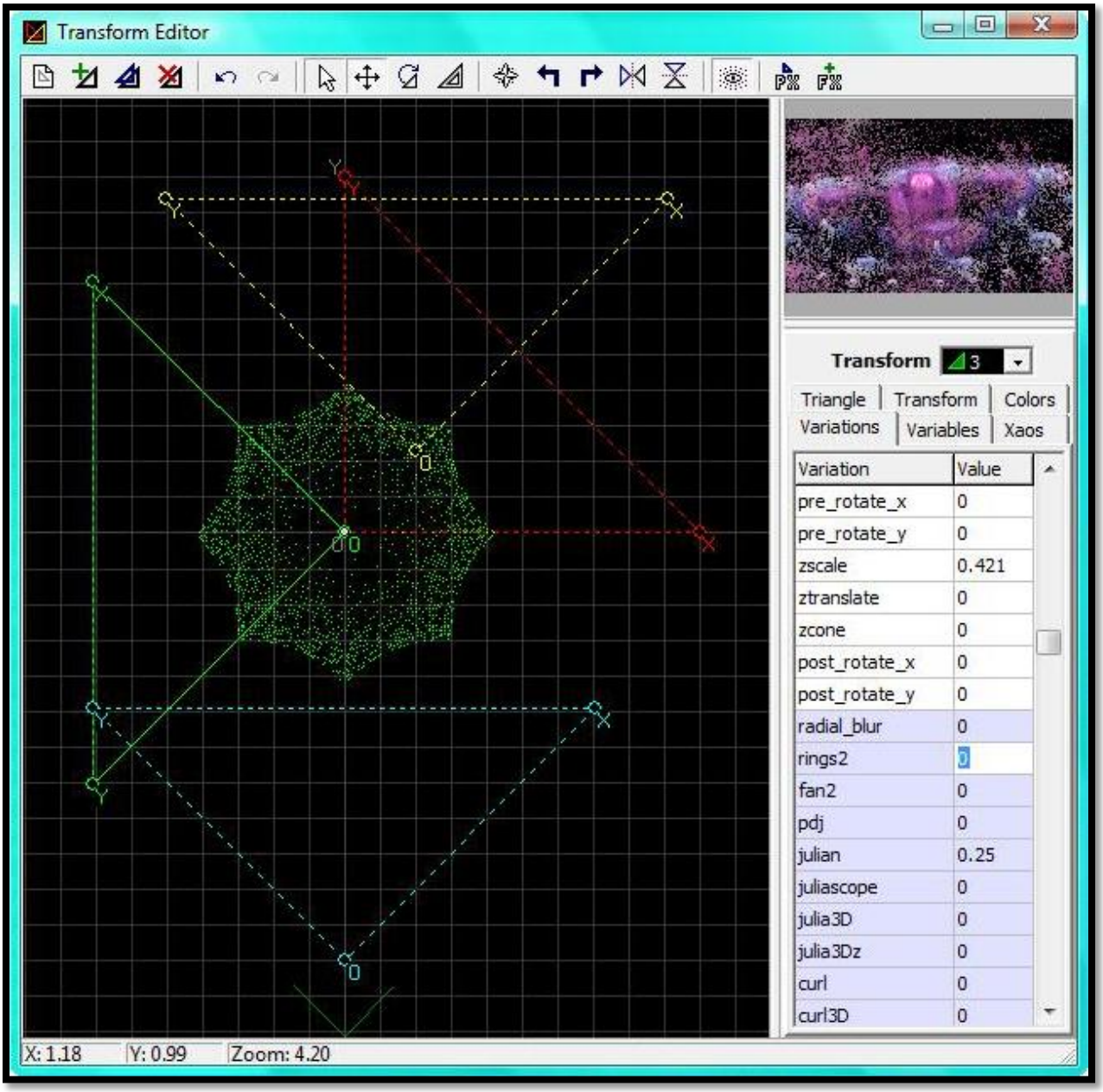
Here is what it should look like at the end:



BIRTH OF A STORM



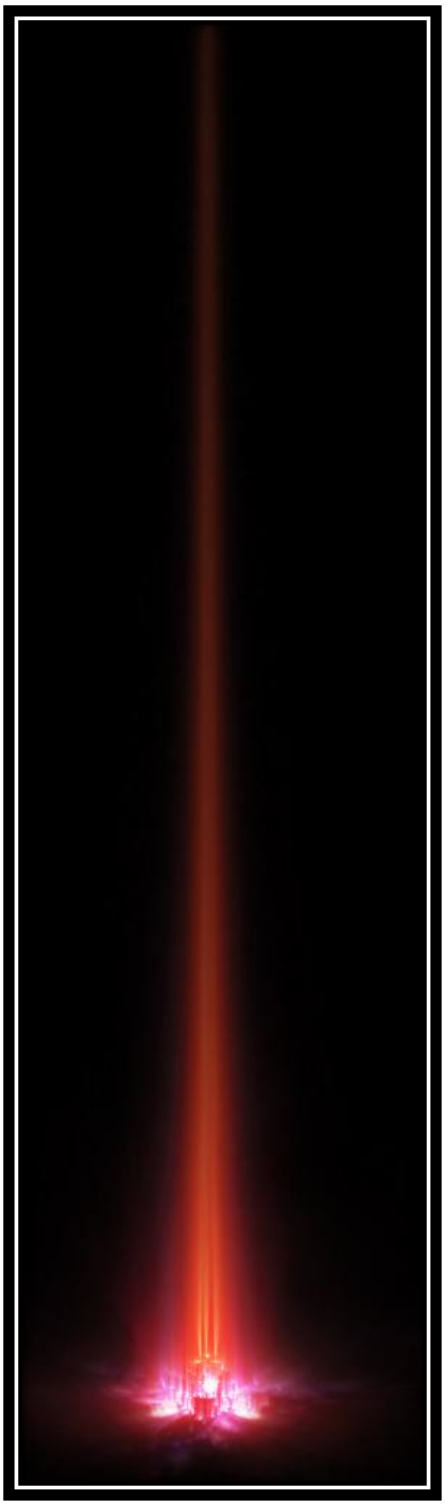
TRANSFORM THREE: VARIATIONS



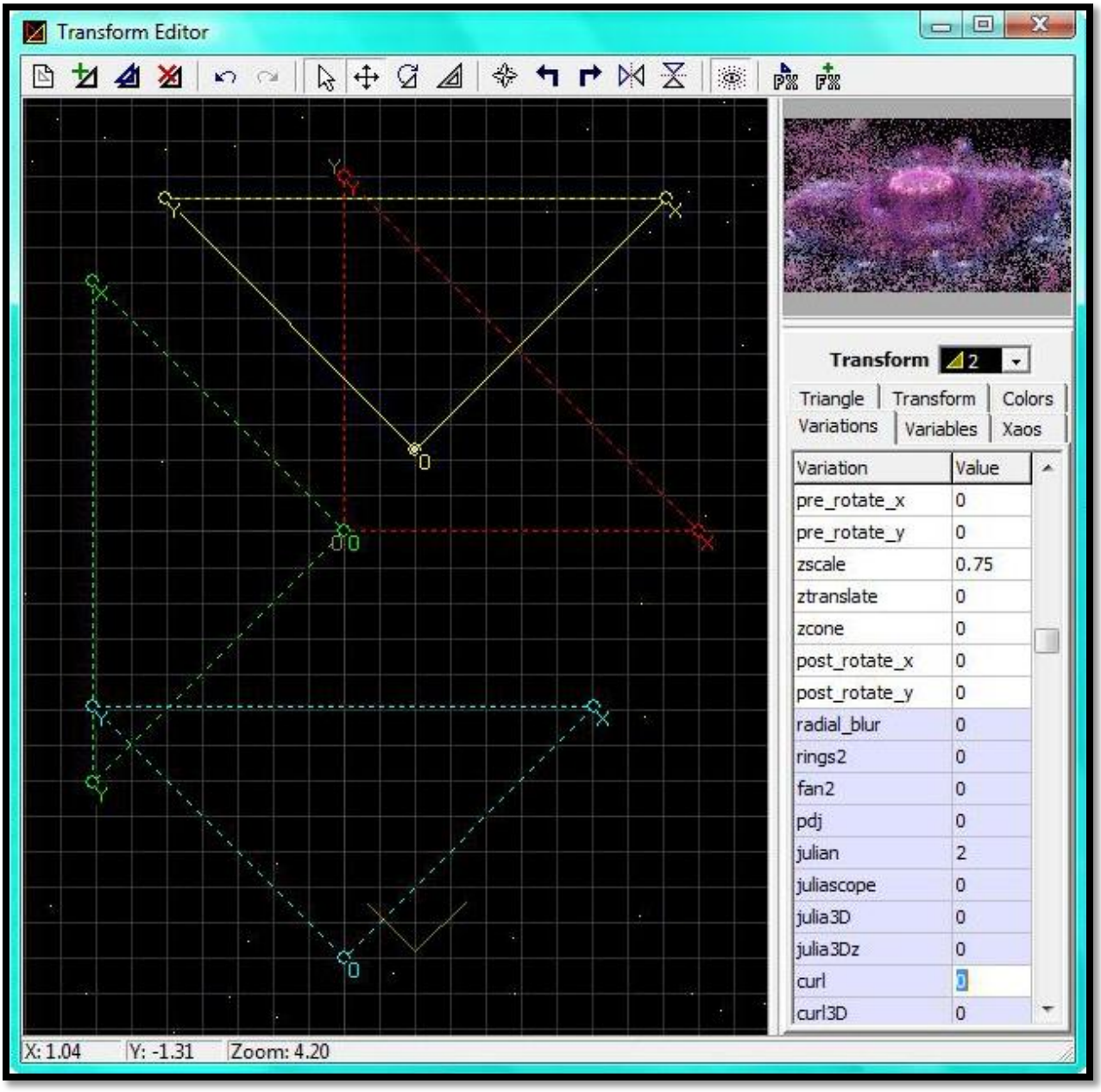
The only difference in Birth of a Storm and Storm is a setting on transform three. Place Julian to 0.25. Yet this one setting drastically changes the fractal. This is why I encourage you to experiment with the settings.

Here is what the fractal should look like:

A FRACTAL IS BREWING



TRANSFORM TWO: VARIATIONS

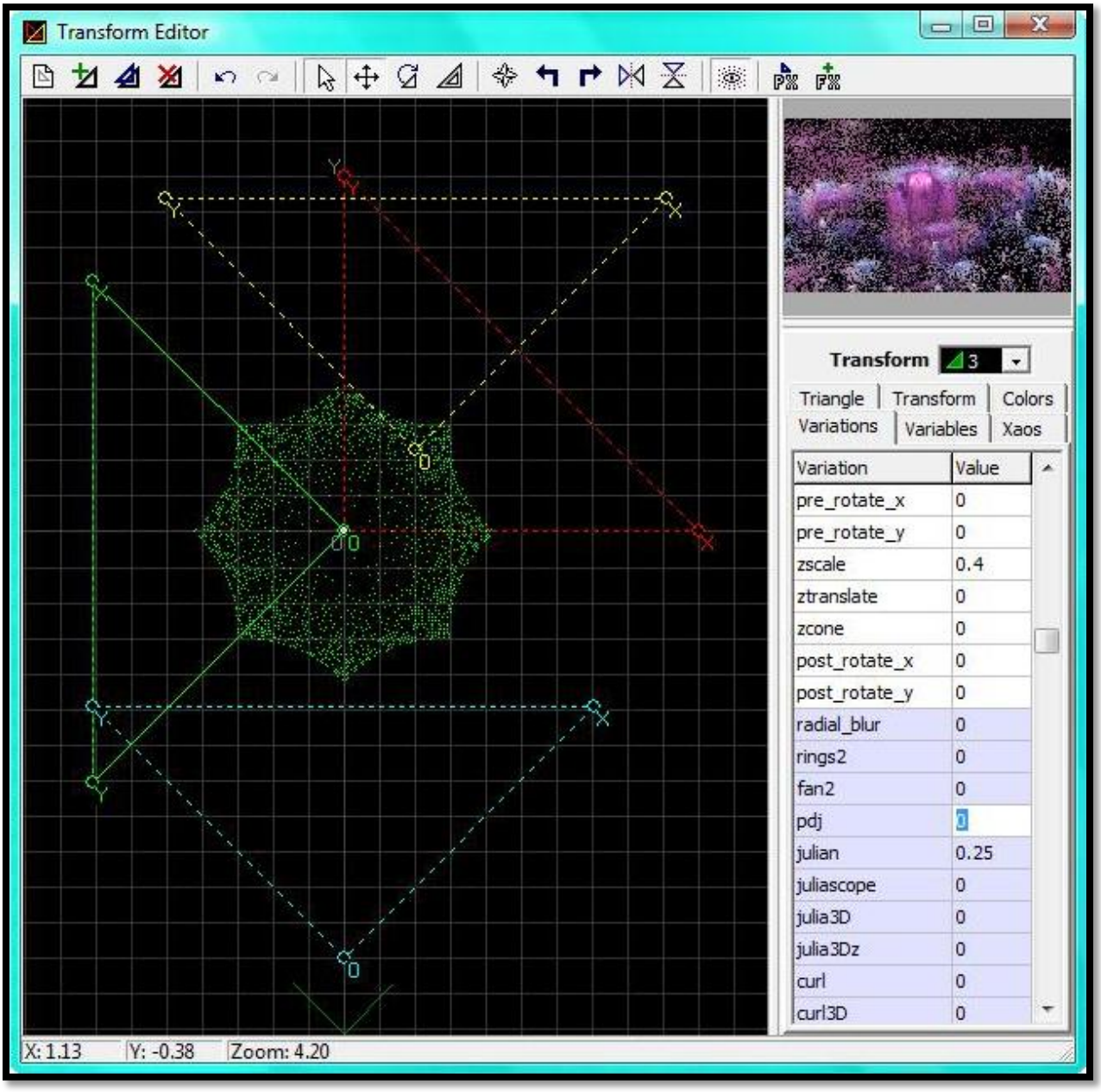


Transform one remains the same as Storms.

Transform two is quite different though, only set Zscale to 0.75.

Here is what it should look like so far:

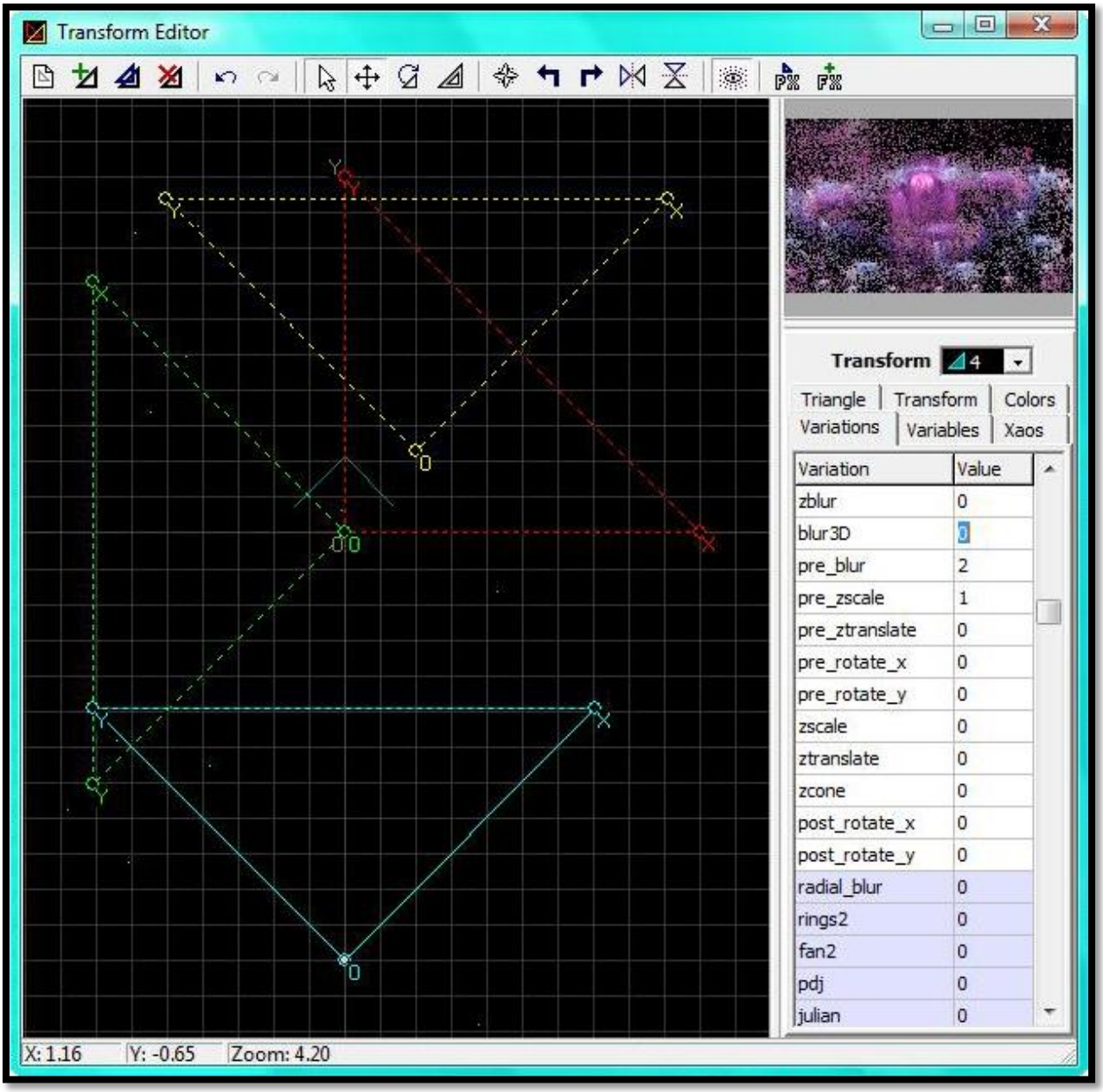
TRANSFORM THREE: VARIATIONS



Transform three should be set have its Zscale set to 0.4, and Julian set to 0.25.

Here is what it should look like so far:

TRANSFORM FOUR: VARIATIONS

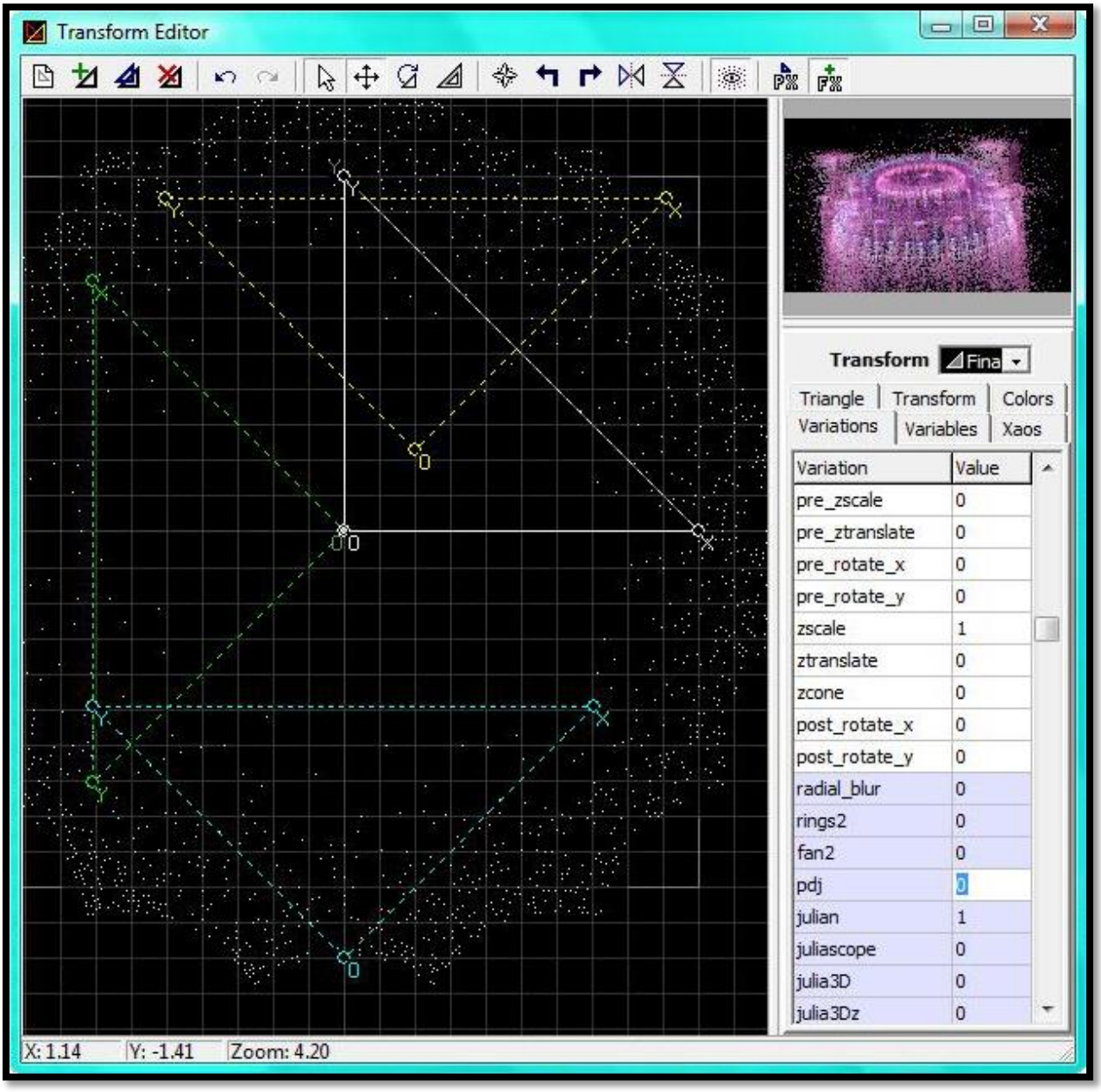


On Transform four only set bubble to 0.01, Pre_blur to 2, Zscale to 1, and curl3D to 5.

Variables are the same as Storm's Transform Four.

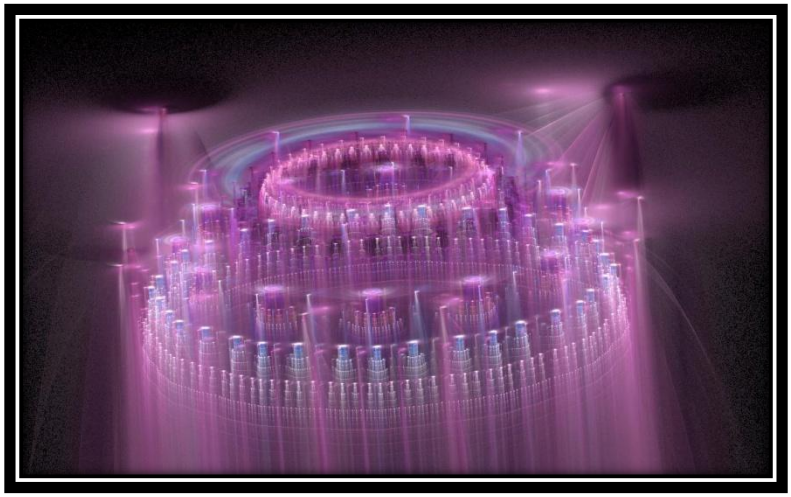
Here is what it should look like so far:

FINAL TRANSFORM: VARIATIONS

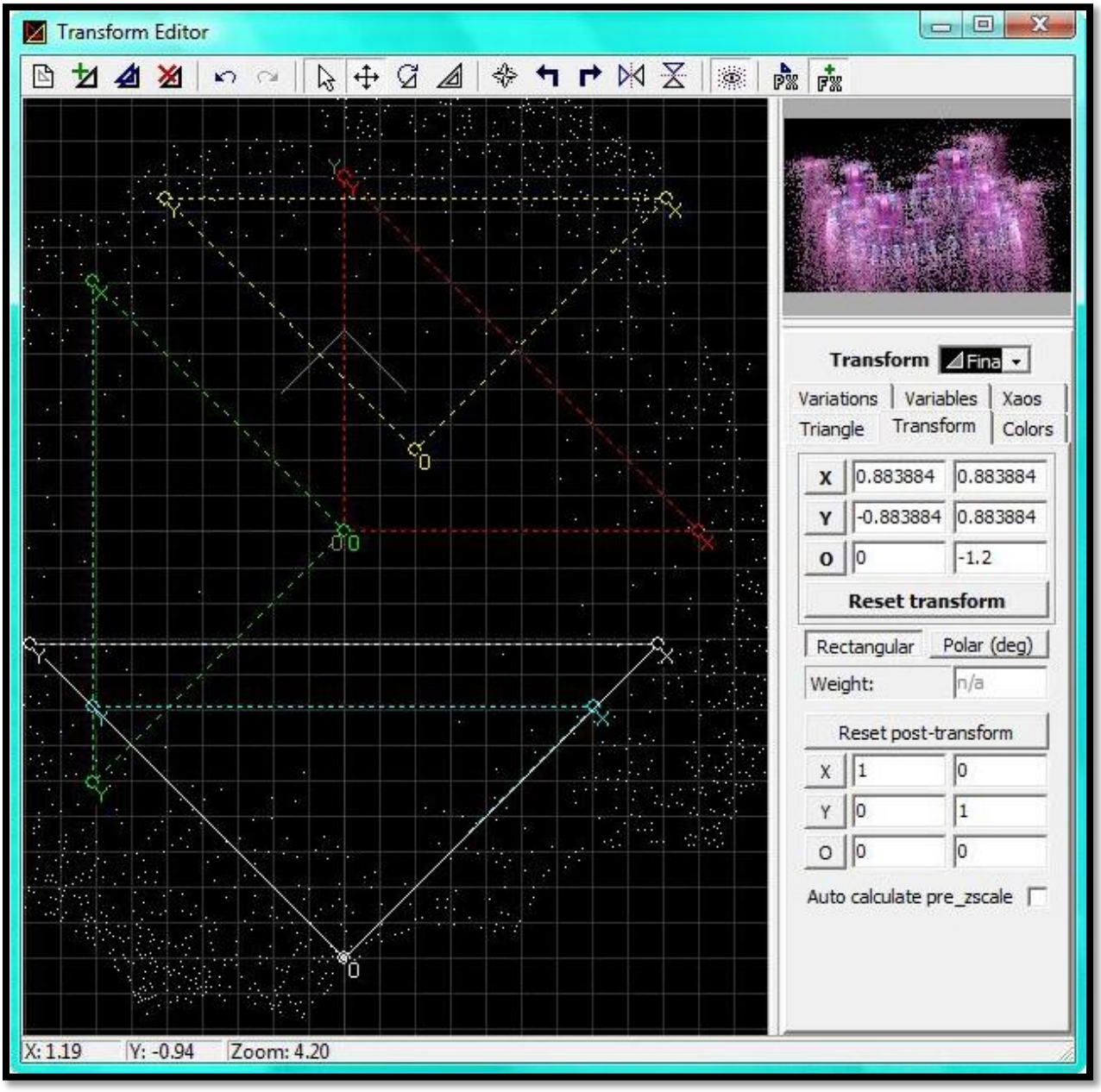


Enable a final transform, set linear3d to 0, Zscale to 1, and Julian to 1.

This is how it should look so far:



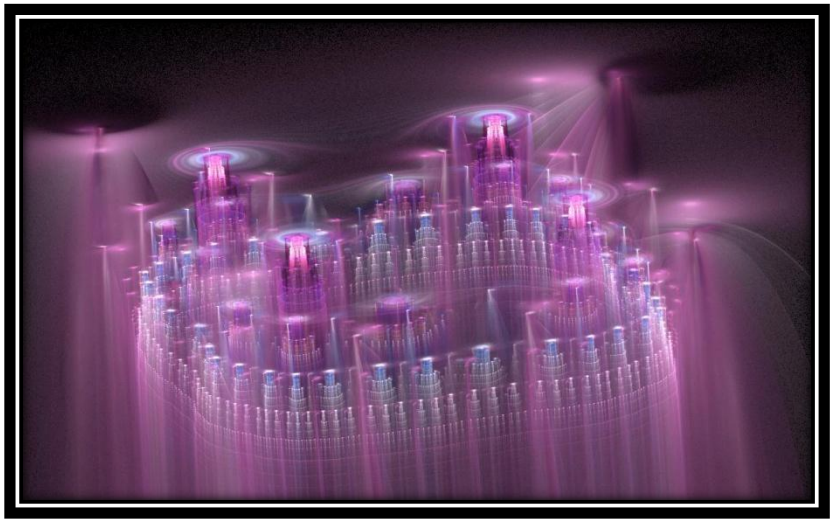
FINAL TRANSFORM: LOCATION



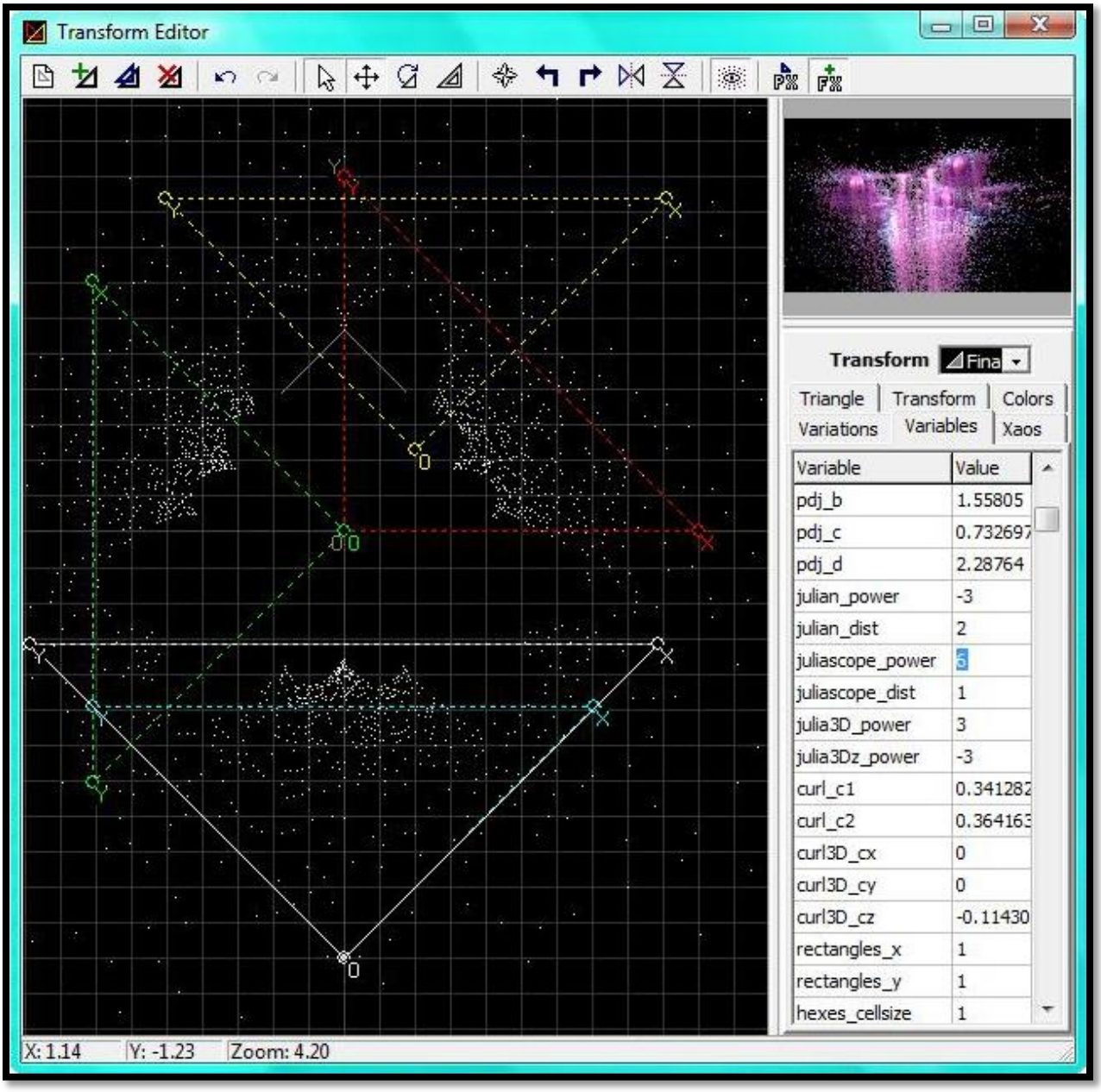
Set the location at:

Location	Point A	Point B
X-Axis	0.883884	0.883884
Y-Axis	-0.883884	0.883884
Origin	0	-1.2

This is how the fractal should look:

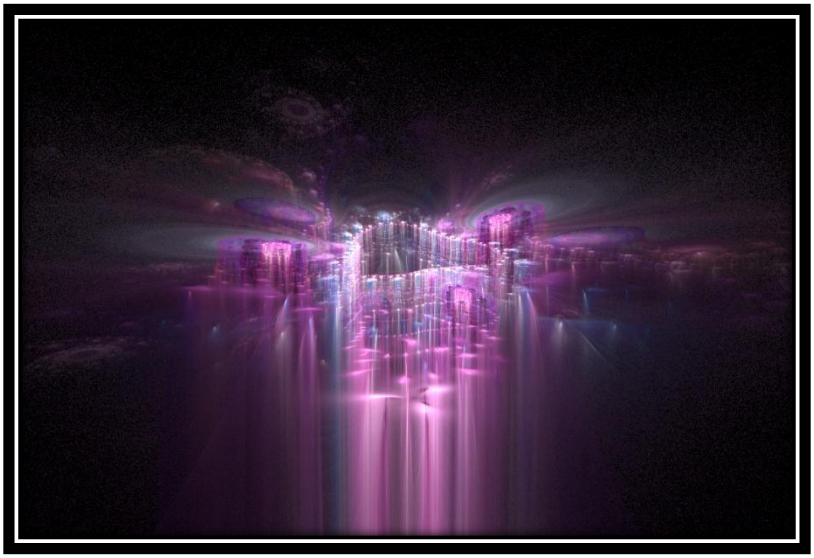


FINAL TRANSFORM: VARIABLES

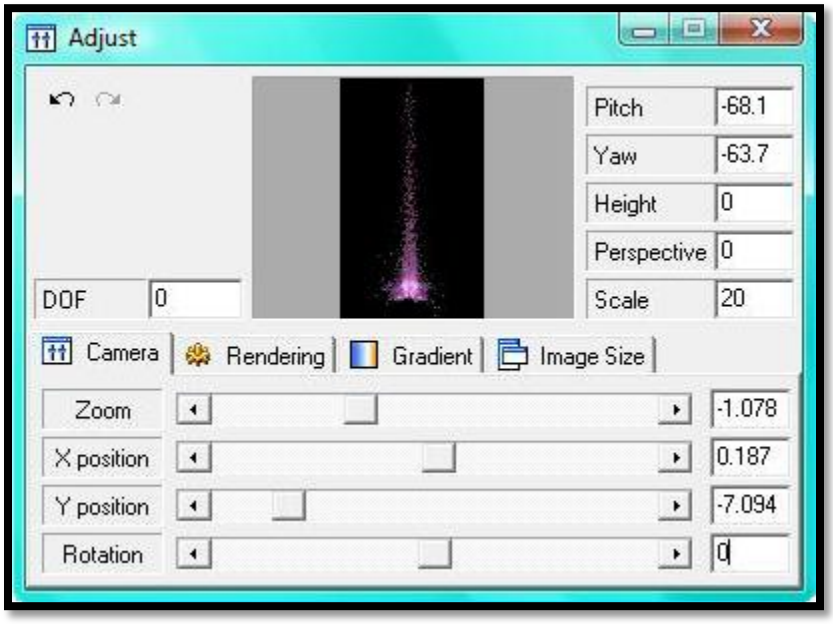


In the variables tab set Julian_Power to -3, and Julian_Dist to 2.

Here is what the fractal should look like:



ADJUSTMENTS

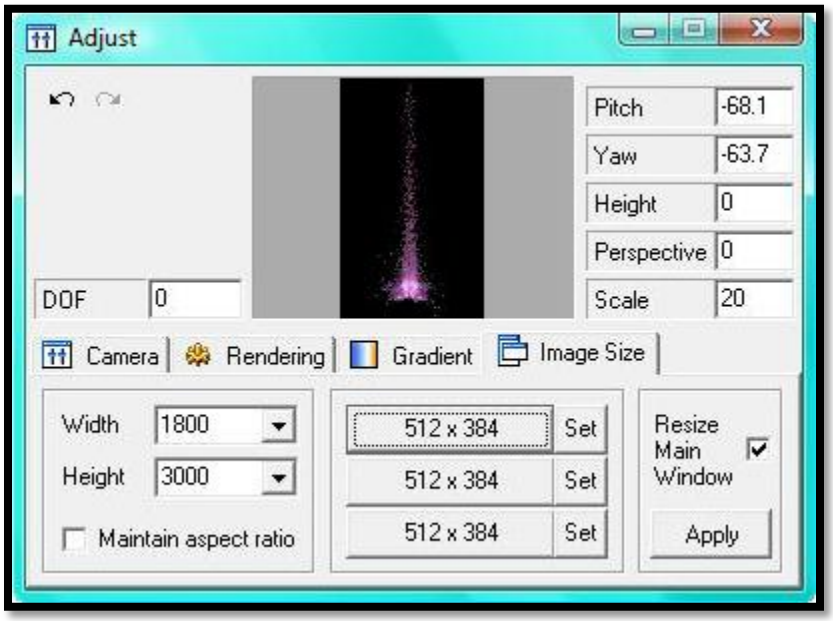


Also, adjust the fractal to this:

Set the pitch to -68.1, yaw to -63.7, and the scale to 20.

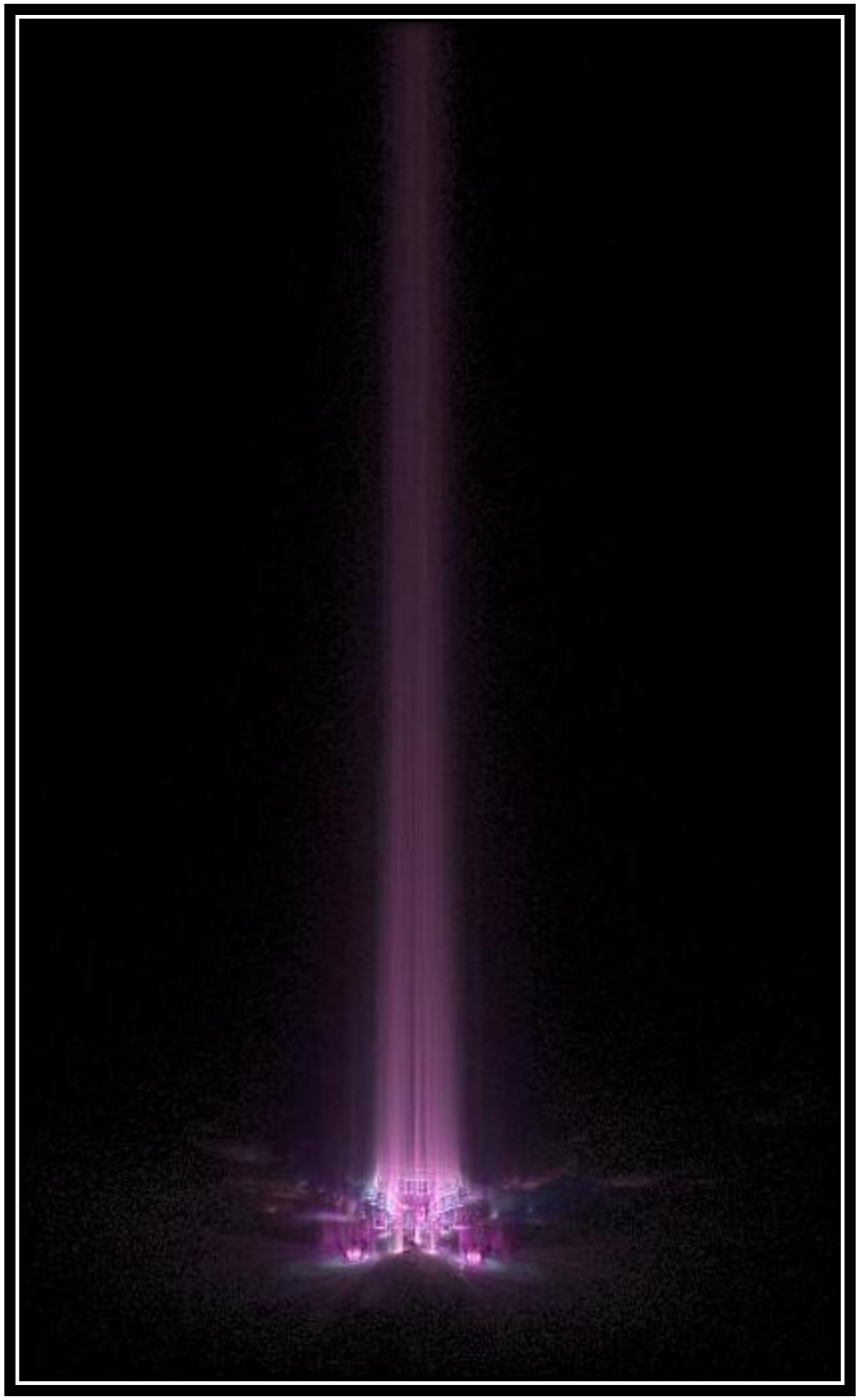
Now set the zoom to -1.078, the X position to 0.187, and the Y position to -7.094.

Now click over to the image size tab in the adjustment window.

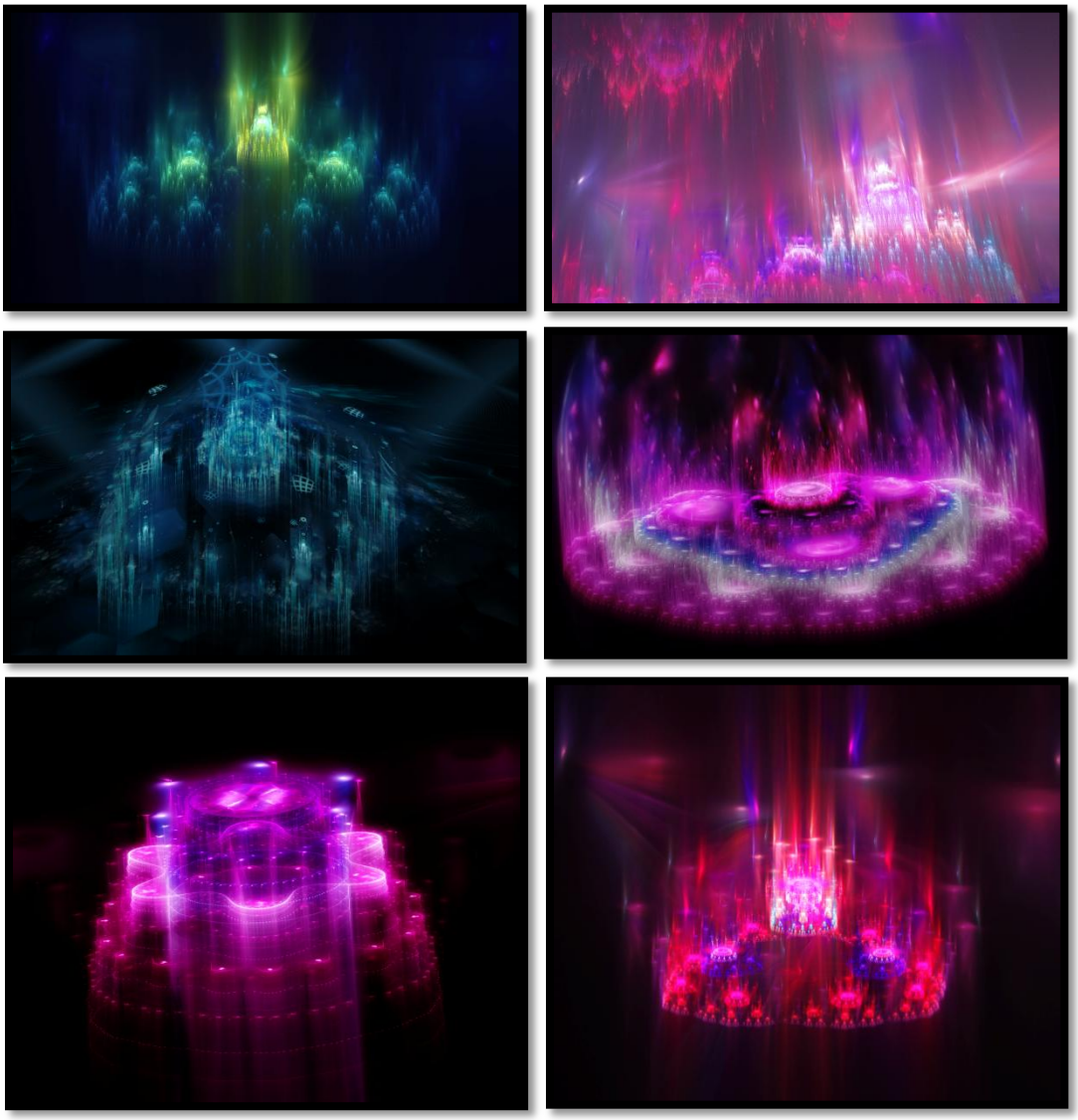


Set the Width to 1800 and the Height to 3000.

The fractal should look like this:



EXAMPLES

Here some examples of what else you can do with this set of parameters:

Best of luck playing with this, I sincerely hope that this has helped you learn something new about Apophysis.