Advanced Tutorial - Spherical Gems

For Apophysis Versions 2.08 and Newer

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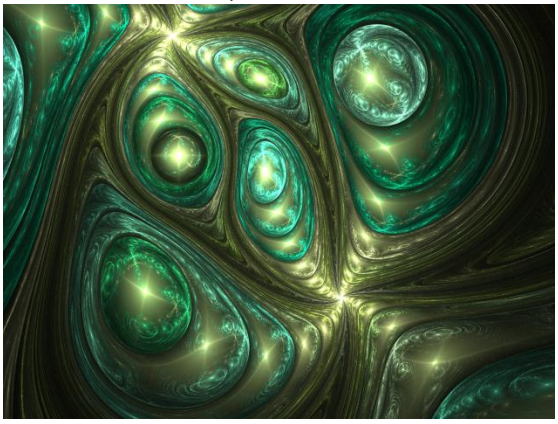
Introduction

Before we begin this tutorial, I would like to first explain this tutorial and my reasons for making it. For the last month or so, I have been studying the Spherical-Gem style, trying in vain to reproduce the effects that are rarely seen, and only by the most senior of fractalists. But let's go back a step further, to where it all began. Before I even knew a thing about fractals and Apophysis, I saw a flame by Zueuk that I fell in love with. That flame was entitled Two Elements[1], and is shown below.

Only recently, however, have I revived my love in this flame, and this renewed love has driven me to understanding how a fractal like this was created. Now after much time spent studying this fractal and much more frustration in Apophysis, I have finally been able to achieve the right fractal. My first attempt that yielded the result I wanted was Emerald Isle[2], but I found that it didn't look the same when I changed the base form, as seen in Soul Gems[3].



Emerald Isle was a great flame, and it had great reflective properties, but as the bubbles separated more, the light fell to the inside of the bubbles, rather than "on the surface" and it made the reflections look very patchy and not exactly reflected but more just iterated fractal-like. However, with a little more tweaking of weights, values, and transform positions, I finally was able to turn the old Soul Gems into the beauty shown on the front page, which is precisely what will be made with this tutorial.

Now just something to take note of when using this tutorial: **Apophysis 7x will not suffice.** For whatever reason, my version of Apophysis 7x.12 by Xyrus02 will automatically render the flame with transform 2 completely transparent, regardless of whether it is or isn't in the preview window. I have no idea whether it is just my computer or the program in general, but for the purposes of this tutorial, I will be using Apophysis 2.08 JK_4, and highly recommend you do so as well. Also, the subscripts you have been seeing correspond to a link in the credits.

And now, with all that being said, let's begin! I am going to assume that you know all of the features of the Apophysis and can find them without me needing to tell you_5. I will also assume that I can tell you how much to move a transform and you can do it. For example, transform 1 will need to be rotated 170° and moved 1.2 units. I will not be explaining what buttons to hit to achieve this.

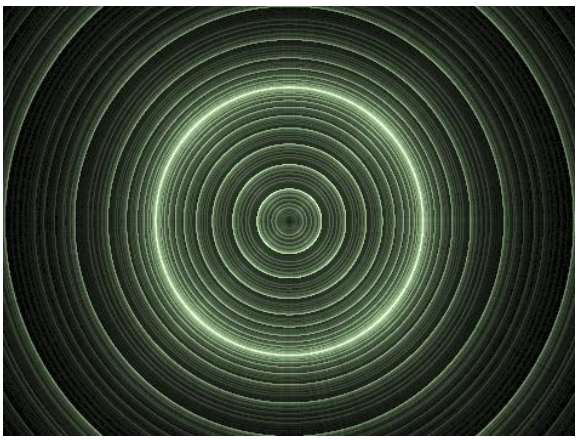
Method

Before we start making the flame, set your Zoom to -1 and then set the Gamma Threshold to 0. Next pick a nice gradient. The ones that work the best have several colors in them and a bit of white or other bright color. This is the gradient I will be using for this tutorial[6].

Now open the transform editor window and create a blank flame. Set the first two transforms to match the following, and your result should match mine.

Transform 1 – Weight: 40
Linear = 0
Spherical = 3
Eyefish = 0.2

Transform 2 – Weight: 1.5
Linear = 0
Bubble = 0.45



But it's not very interesting yet, so let's move the transforms a little bit.

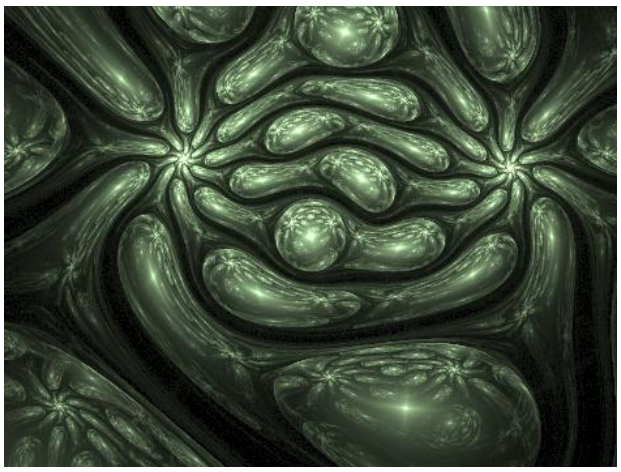
With transform 1, scale it down 2 times by 125. Move it to the right 0.2 and up 1.2. Rotate it 170° counter-clockwise(ccw)

With transform 2, Scale it up 3 times by 125. Move it up AND to the left each 1.0.

It should look like this after the transforms have been moved.

Together, these first two transforms set up the shape of the fractal and the way it gets reflected upon itself. You can play with the positioning, rotation, size, and individual point positions of transform 1 to get a different shape to the fractal. You can move and rotate transform 2 to better position the reflection to your liking, but keep the size and proportions the same. You can also slightly alter the value of Bubble in transform 2 to make the individual bubbles have more space between them or overlap more. Values between 0.4 and 0.6 work the best.

Now let's add some shine to what we have. Match your transforms to the values below.



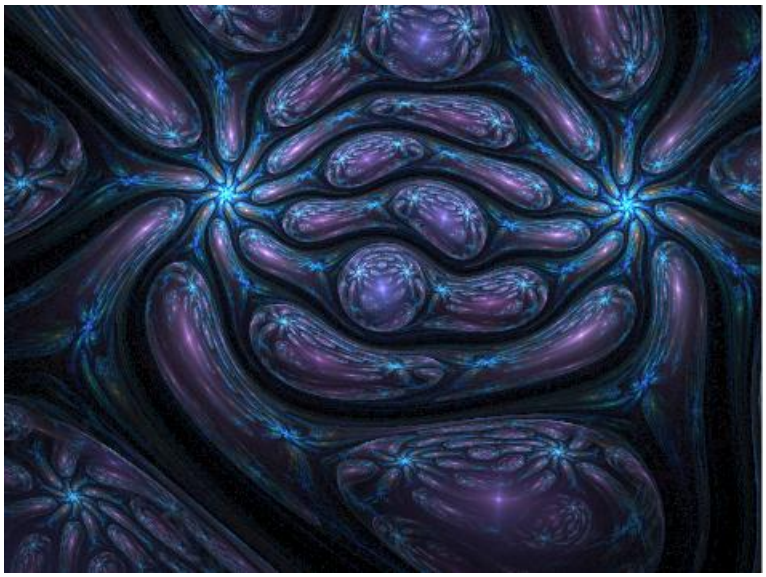
Transform 3 – Weight: 0.5
Linear = 0
Gaussian_Blur = 0.25

Transform 4 – Weight: 0.5
Linear = 0
Noise = 0.05
Turn on post-transform and rotate it 15° ccw.

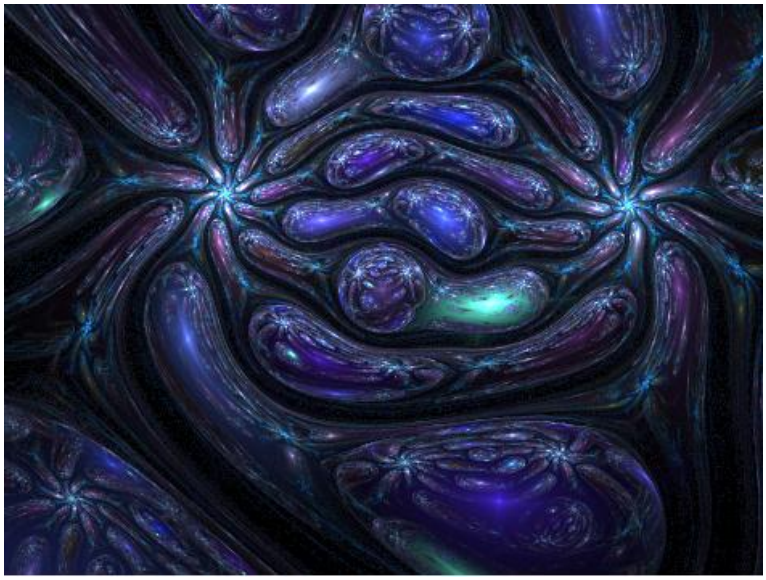
Now together, these two transforms add the metallic element to the fractal. The blur gives the overall sheen while the noise adds the highlight, making it appear quite smooth and reflective. You should know here that the value of Gaussian_Blur is relative to the value of Bubble in Transform 2. As you increase Bubble, increase Gaussian_Blur so that it will fill the bubble without spilling outside of it(a good way to get them the same size is to check the "Solo" box in the colors tab of transform 3 to try and match the blur spot with the bubble when Solo is turned off.)

At this point, the fractal is looking pretty good, but is seriously lacking in color. Match the Color Symmetry(or Color Speed) in the colors tab to mine. Then, drag the color slider in transform 1 to something you like, then match the slider of transform 2 with 1. Also change the slider in transform 3 and match transform 4 to transform 3 as well, but the sliders of transforms 1 and 3 do not need to be equal(for example: T1 slider=0.25, T2=0.25, T3=0.75, T4-0.75). If the fractal appears dark, increase the brightness, as I have done. Don't be afraid to really crank it up, here the brightness is at 100.

For colors to appear to be "coming" or "sucked into" the swirls, use these values:
Transform 1: 0.95
Transform 2: 0.95
Transform 3: 0
Transform 4: 0



For more random colors, such as a handful of pebbles, use these values.
Transform 1: 0.95
Transform 2: 0.95
Transform 3: -1
Transform 4: -1



Both these fractals have the color sliders at the same spot; the only difference is the color symmetry of transforms 3 and 4.

And now you have your very own spherical-gem fractal, to which you can do with what you like. Experiment with it: move transforms around, change the values, and experiment with different variations in transform 2 rather than bubble (although this tends to make the fractal less of a gem style than it is just spherical bubbles.) When you have had your fill of the basic style, go on to the next section.

Advanced Technique

The purpose of this section is less of a lesson than it is just a list of some good ways to tweak this style to be your own. For starters, we will make the bubbles appear to be "crackled" like many crystals found in nature look. Add a transform and match it to the following values:

Transform 5 – Weight: 0.25
Linear = 0
Crackle = 0.35

Now change the variables of crackle to the following:
crackle_cellsize = 0.3 (larger numbers can look like uneven facets.)
crackle_power = 0.2
crackle_distort = 1
crackle_scale = 0.9
crackle_z = 0

The following is a list of some plugins that I have found to work as acceptable textures, along with approximate values to fill the bubble, meaning ones that don't make copies of the fractal and reiterate them all over, turning our beautiful gems to mush. They generally aren't very pretty (ones with a * mean that I might personally use it). Also, don't think that these are the ONLY ones; I encourage you to play with various plugins and see if you can get them to work to look good.

Disc = 0.4
Pie = 0.4
Itube = 0.1
***Spirograph** = Change to suit your taste; it can look good at many values.
Square = 0.5
***Stripes** = 0.05 and 0.1 both can look good. Higher values get messy.
Supershape3d = 0.3(there is also a non-3D version of this, I would imagine it works just the same)
Truchet = ??? (I would imagine that truchet would work, but it is a plugin that I absolutely detest; I have never been able to get it to work in the way that I would like. If you can get it to work, please note me and I can fix this)
***Uncube** = 0.25
***Voron**
Waffle = 0.6(you will want to change the position of the POST TRANSFORM when using this to get it centered in the bubbles)
***Blur/Gaussian_Blur/Noise** (To add small highlights, use smaller values and scale down POST transform. Then move the post transform to change the position of the highlight)

And now that we have some pretty textures on out bubbles, let's add a final transform. The following is a list of some of my favorite variations to use in a final transform for gems, with my favorite variable values if the defaults don't do much for me.

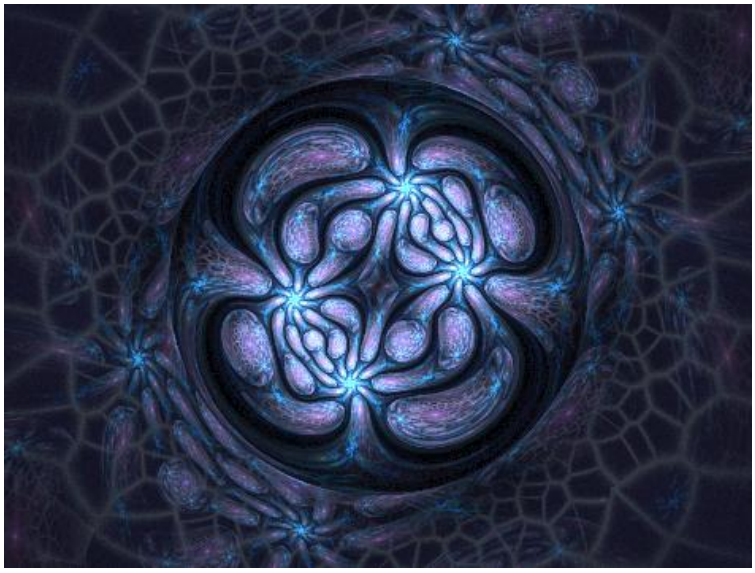
Julian (any type)
- Julian_power = 2
- Julian_dist =1 or -1, both can look good

Perspective
- perspective_angle = -0.1
- perspective_dist = 0.2

Curl
- curl_c1 = -0.2
- curl_c2 = 0

Rectangles/split (not splits, no s on end)
Boarders
Tri_boarders2/xtrb
Xheart/bubble (move triangle to look better)
Hexes
Elliptic (move triangle)
Loonie (shrink/move triangle)
Spherical (move triangle)
Eyefish/Fisheye

My final result with a Julian final transform with a -1 Julian_dist



There you have it, an original gem fractal just how you like it. When rendering, I strongly recommend a high-quality render of at least 25,000 because spherical-bubble based fractals fade as they get further away from the center of the spirals, and the last thing we want is a faded edge to take away the realism of this kind of fractal. Personally, I would set it the render to go just before you go to bed for the night and put the sample quality at a really high number, like over 100,000, and then the next chance you get you can just cancel the render(make sure you have "Save Incomplete Renders" checked) and have a fractal that is not plagued with many little specks. I would also recommend checking the "Postprocess Render" box, as it is much easier to figure out how bright you really want it and how concentrated that brightness is when you see it full size. I hope you had a great time with this tutorial and can make some really awesome stuff.

Good Luck and Happy Fractalling,

~Drummerboy08 AKA Casey

Links and Acknowlegdements

1. Two Elements by Zueuk: http://zueuk.deviantart.com/art/Two-Elements-41550705
2. Emerald Isle by me: http://drummerboy08.deviantart.com/art/Emerald-Isle-156220638
3. Soul Gems – Old by me: http://drummerboy08.deviantart.com/art/Soul-Gems-Old-156442100
   Soul Gems – New: http://drummerboy08.deviantart.com/art/Soul-Gems-Update-158114209
4. Apophysis 2.08 JK by Lu-kout AKA Jed Kelsey: http://sourceforge.net/projects/apo-mods-jk/
5. Original Spherical Bubbles tutorial by Fiery-Fire: http://fiery-fire.deviantart.com/art/Apo-Tuto-Spherical-Bubbles-127911026 *For help on changing the shape of this fractal, this tutorial is a good starting place. It might also be worth it to do this tutorial before you try to tackle mine.*
   Apo – What Icon I'm Clicking tutorial by Fiery-Fire: http://fiery-fire.deviantart.com/art/Apo-what-icon-Im-clicking-143085149 *If you are having trouble not knowing the terms I am using in this tutorial, this link will help you out. It tells what each button in Apophysis is called and what each one does.*
6. Mineral Gradient Packs by deadened-glow: http://deadened-glow.deviantart.com/art/Mineral-Gradient-Pack-1-113811967 *This is just the first of several mineral gradient packs which I find to work quite well with this style. In addition to being made from pictures of actual gemstone-type minerals, most of them seem to have a great balance of light and dark colors and have enough colors but not too many. The gradient I used for this tutorial was in one of these packs, but I cannot remember which one.*

Now on a final note, I would like to give thanks out to a few special deviants who have helped me on my journey immensely through all their tutorials and inspiration. First and foremost is ClaireJones, who started me on my long Apo journey. Her tutorial for Julia Uncovered v2.2 was among the first that I ever used, and certainly taught me the absolute most about Apophysis throughout the tutorial. Next is Fiery-Fire who has also released several tutorials that have really helped me further myself as a fractalist, as well as some flamepacks that have taught me much.

In addition to the deviants above, Zueuk and Xyrus02 have been a source of inspiration for many of my fractals as I would try to recreate them just from the image of their fractals.

If you have any questions, things about this tutorial that are unclear or badly worded, or fractals in general, feel free to drop me a note or contact me any other way on my page at http://drummerboy08.deviantart.com/.

More Examples