

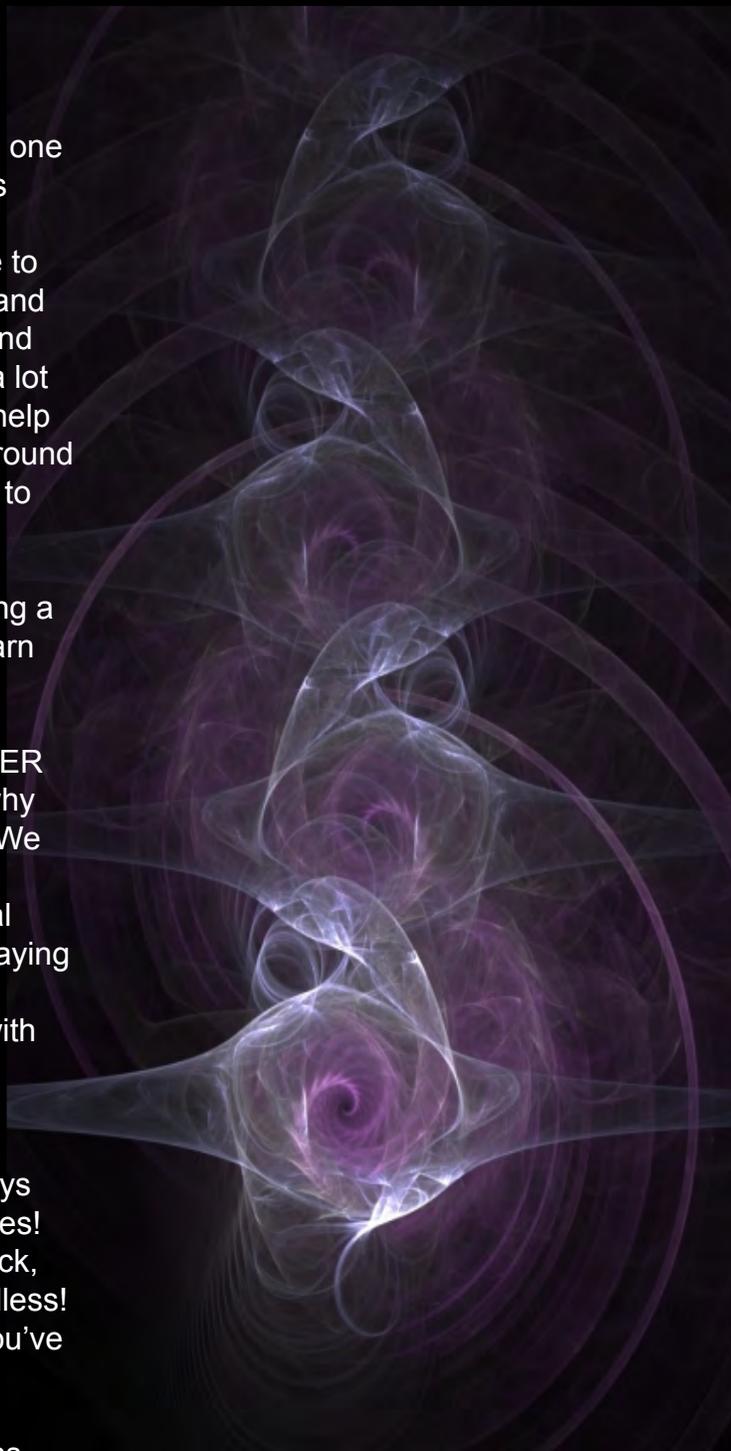
This tutorial will walk you through, step-by-step, one of my recent Fractal flame explorations. This is designed especially for beginners. I get a lot of questions from new Apophysis users asking me to help them configure their settings and options, and walk them through things like applying scripts and creating batch renders. This tutorial will cover a lot of bases, but certainly not everything. It might help for you to have Apophysis running in the background so you can reference it, but you will not be able to achieve the same exact end result.

Don't think of it as a 1,2,3 step process to making a great flame, but more as a guide to help you learn more about the program and it's many features.

I usually start out with a plan in mind, but I NEVER end up with exactly what I envisioned. That's why the whole process is called "fractal exploring". We can give the computer some basic instructions, which help to determine the structure of a fractal flame, but I believe Hallucinaut said it best by saying "I don't think anyone knows the full potential of Apophysis". It is, indeed, a powerful program with many avenues to explore. So it is important to realize that even though we would like to be in complete control of the outcome, "mistakes" or "accidents" are often a welcome surprise. Always endeavor to try new ideas! There aren't any rules! Pull triangles, change variables, add scripts, heck, add multiple scripts! There possibilities are endless! Keep in mind that you can always undo what you've done if you don't like it.

This tutorial is split into two parts. Part I contains information regarding the actual creation of fractal flames using Apophysis. Part II will show you some hints and tips about manipulating the flame with Photoshop.

Ready? Let's begin...



PART I

Creating and Manipulating the Flame:

BASIC COMMANDS:

You should familiarize yourself with some basic keyboard shortcuts, if you don't know them already.

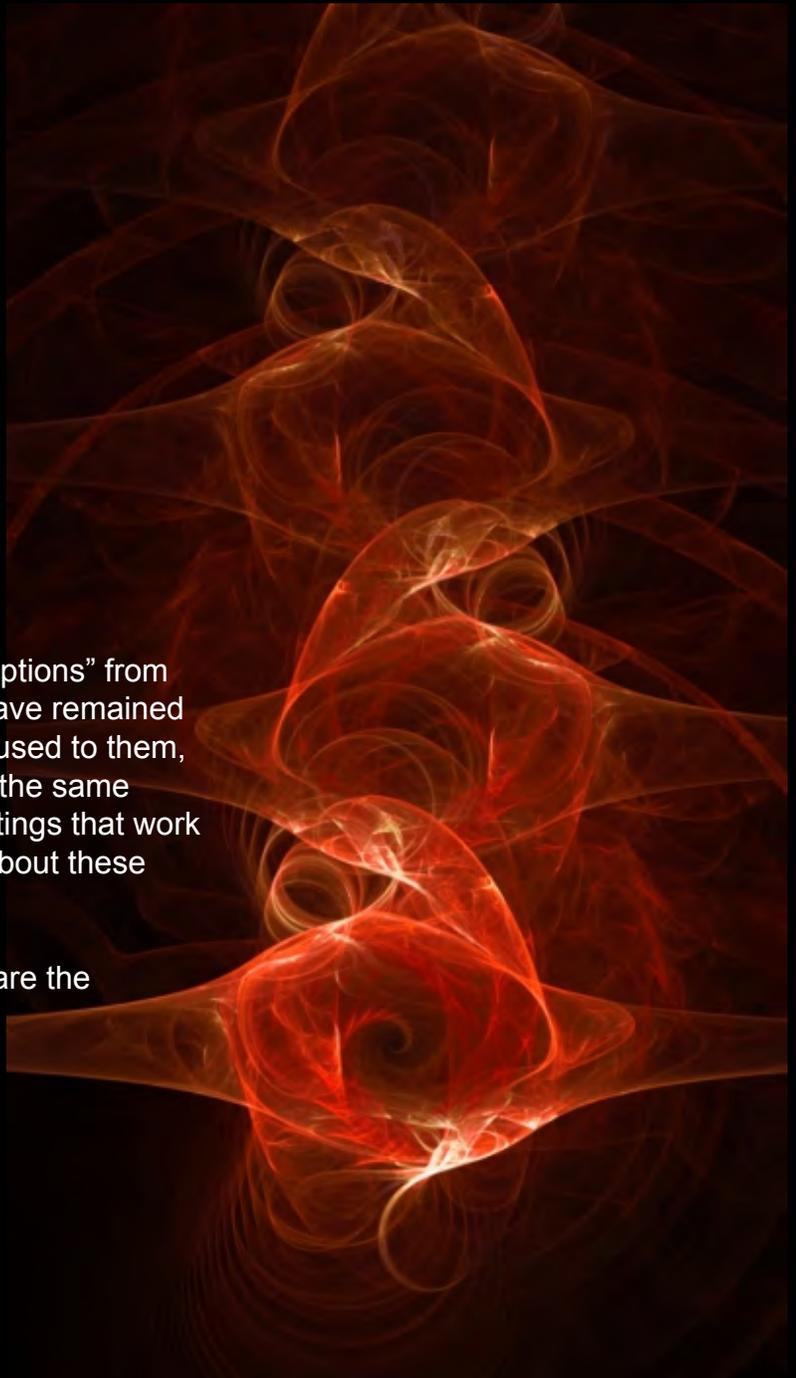
Ctrl+Z = UNDO
Ctrl+B = create new batch
Ctrl+S = Save Parameters
Ctrl+E = opens the Transform editor
Ctrl+A = opens the Adjustment window
Ctrl+M = opens the Mutation window
Ctrl+G = opens the Gradient window
Ctrl+R = opens Render to Disk window
Ctrl+D = Edit script
F8 = runs script
F1 = HELP FILES (read them. Seriously.)

OPTION SETTINGS:

Click "Options" in the toolbar, and choose "Options" from the drop down menu. Most of my settings have remained the same for a very long time because I am used to them, and they work for me. You can certainly use the same settings if you like, or feel free to find the settings that work perfectly for you. There's more information about these options in the help file.

In this tutorial, the tabs of particular interest are the following:

- General
- Random
- Variations
- Paths



GENERAL

My settings here are mostly default, I think, except for the batch size. I find it easier to work with a batch size of 20, but you can set this number as high or low as you want.

RANDOM

I usually use the name of the month as the flame prefix but you can change it to anything you like. I encourage you to change the Forced symmetry settings often. For this tutorial, I have changed the type to Bilateral.

VARIATIONS

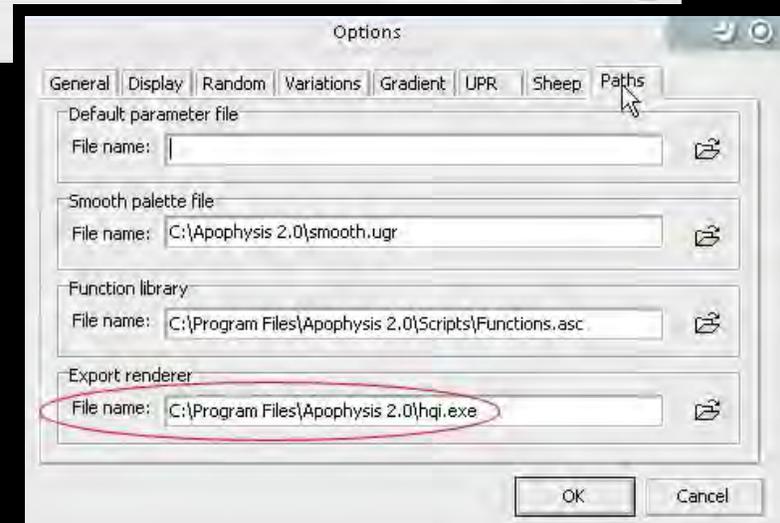
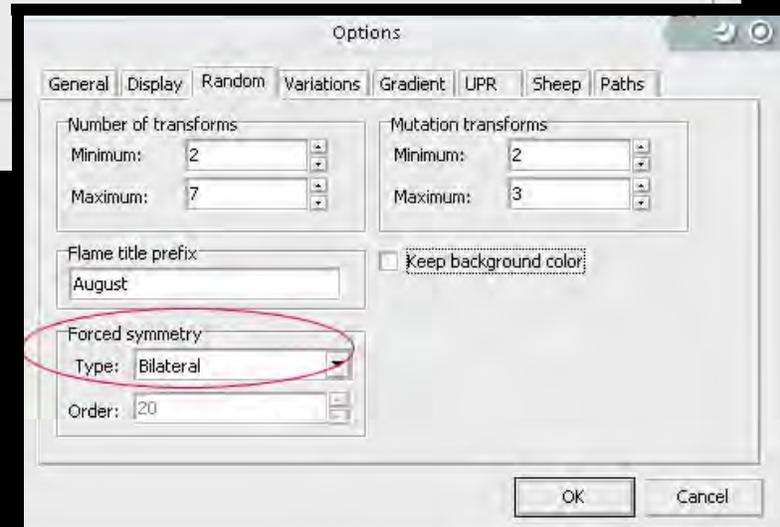
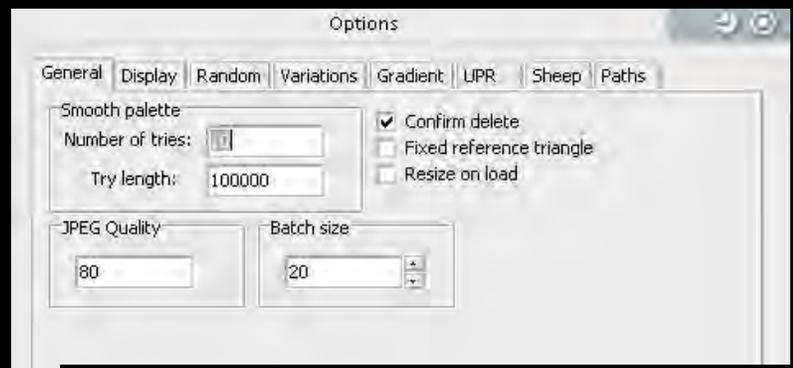
Here you can see that I have all variations ticked but I often tell those just starting out that they should tick only the linear variation at first to get themselves familiar with the basic functions of the program. When you get a better understanding of how Apophysis works, gradually replace it with other variations and then add more.

PATHS

You can set up a default parameter file if you like, but I haven't. For now, just make sure that your Export Render is directed to the hqi.exe installed in your Apophysis folder.

Click "OK" and close out of this window.

Next, I hit CTRL+B to create a new batch.



PLAYING WITH SCRIPTS:

There are many scripts floating around out there on the internet. Sometimes they are already .ASC files that you can simply unzip to your Scripts folder. In this tutorial, I will show you how to edit, save, and apply scripts. I found Hallucinaut's "Add Repetition Symmetry" script on his website (<http://www.hallucinaut.com/index.html?apophysisscripts/scripts>) where he has provided all of his scripts in text form. I copied the text in its entirety.

SAVING THE SCRIPT FILE:

To save the text as a script file, I clicked on "Script" in the toolbar, then "EDIT". I selected all of the text in the window, right clicked, and chose "Paste". Then I saved the script with a new name.

OPENING A SCRIPT:

To open a script, click on "Script" in the toolbar, then "Open". Choose the location where you store your scripts, (in the Apophysis folder by default) and choose your script. Click the "Open" button.

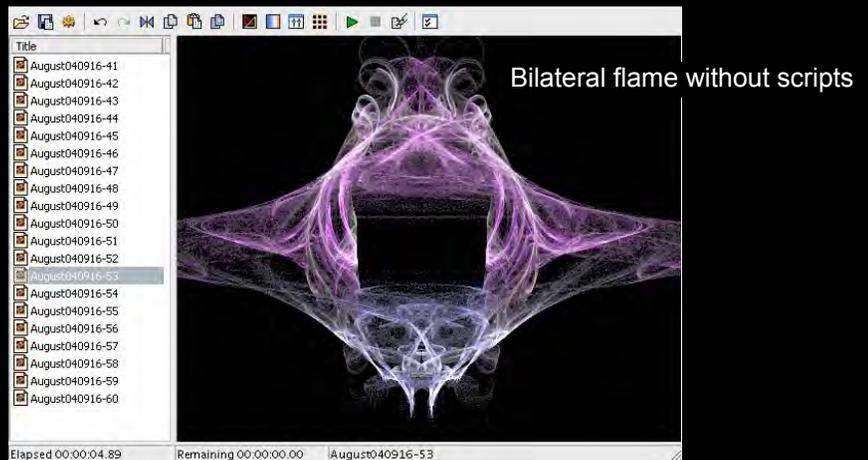
EDITING THE SCRIPT:

I clicked CTRL+D to edit the script because I wanted to change the Rotate and Variation values:

```
r := 0.3;  
V := 13;
```

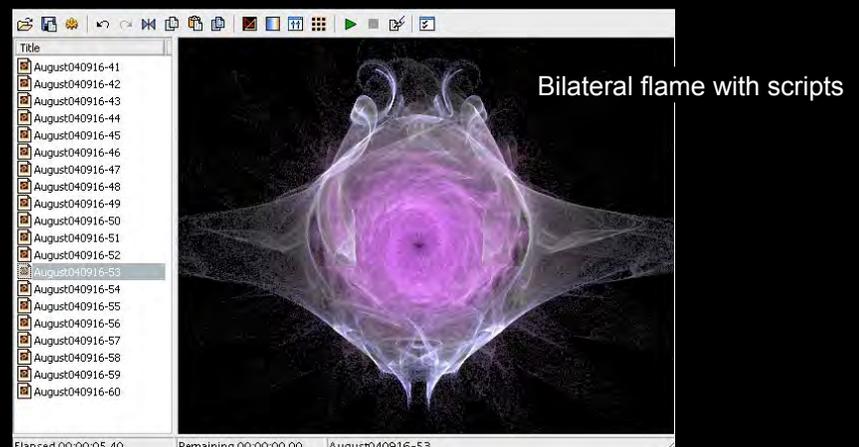
The script is pretty clean cut. The 'v' is for variation, and the author provided a Variation Reference guide at the bottom of the code:

```
{ Variation Reference }  
{00 - Linear      09 - Spiral  }  
{01 - Sinusoidal 10 - Hyperbolic }  
{02 - Spherical  11 - Diamond  }  
{03 - Swirl      12 - Ex       }  
{04 - Horseshoe  13 - Julia   }  
{05 - Polar      14 - Bent    }  
{06 - Handkerchief 15 - Waves  }  
{07 - Heart      16 - Fisheye }  
{08 - Disc       17 - Popcorn }
```



The variation I chose this time is Julia, but you can swap them around for all kinds of neat effects. Then I saved it with a new script name (to preserve the original) and clicked the green arrow button in the toolbar to run the script (but you can also press F8).

Next, I opened and applied the Spiralize script.



TWEAKING:

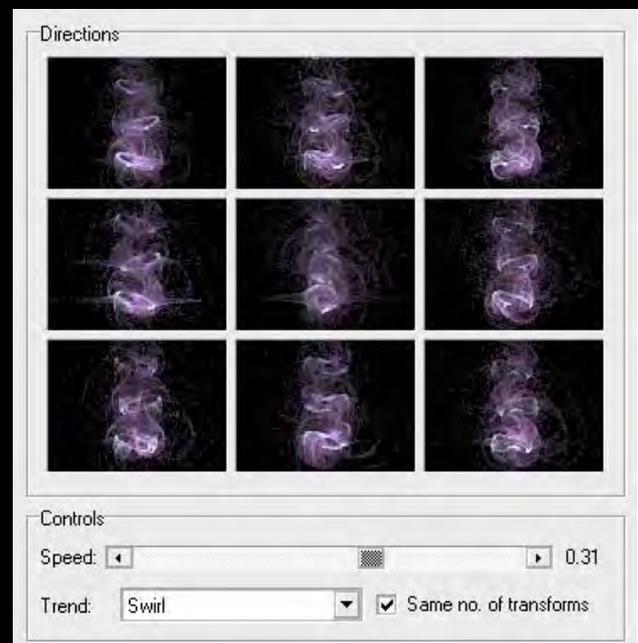
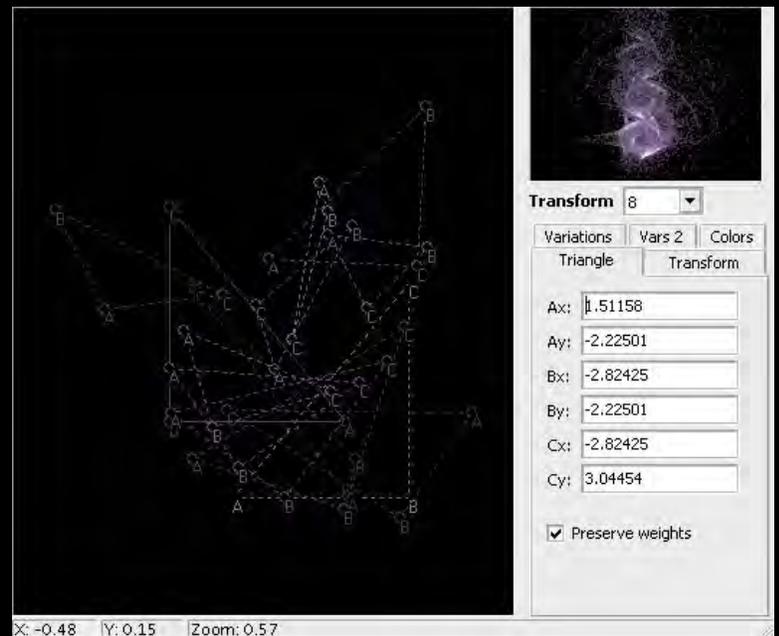
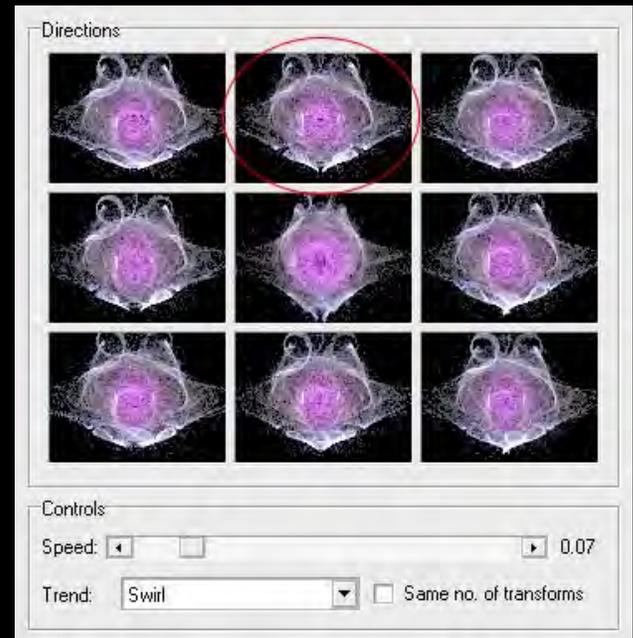
This is the stage I refer to as tweaking. We've laid down the fundamentals for this flame. Now let's see what she's really got! I opened the mutation window by hitting CTRL+M and made the following changes to the settings:

Speed = 0.07

Trend = Swirl

I clicked on the preview in the top center for its aesthetics. I then opened the Transform Editor by hitting CTRL+E. This allows you to play with the transform triangles. You'll be surprised by the results of simply tugging the corners of these triangles. For more dramatic effects, try deleting one or two, or moving a few around. This will help give you a "feeling" for the app and how it can be controlled. With finesse and experience, one can achieve desired effects, instead of simply leaving it up to luck or chance. I encourage you to explore the Transform Editor as often as you can. Even an ugly flame about to be tossed can turn into something remarkable if the triangles are moved just right. Remember, you can always go back if you don't like the way a flame is turning out. Just hit Ctrl+Z to undo your actions. I moved a single triangle, to achieve the stacked look. After having done this so many times, I can usually tell which triangle I will need to adjust, delete, or flip in order to get the desired effects I want.

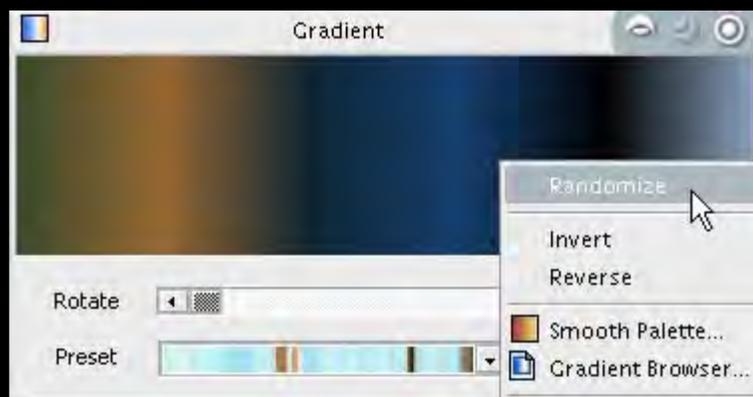
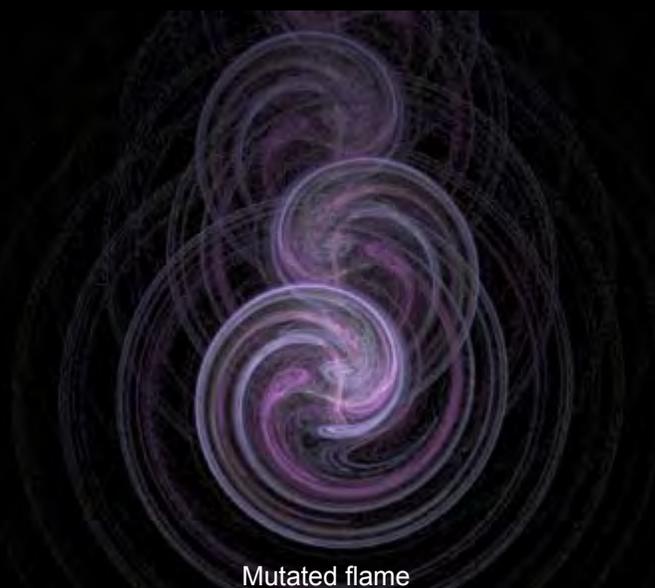
I decided to save the parameters, just in case I wanted to go back to that stage. I hit Ctrl+S to bring up the Save Parameters window and saved it to a new flame file. I thought it looked great, but I still wanted to explore it some more because I could see some interesting shapes developing in the mutation window.



I clicked through the mutation window until I saw a pattern forming that I liked and saved those parameters also. I find it works best to keep the speed low until I get trapped and don't like where it's going. Then I jump it up high to see if any wild results pop up by chance before I move on to the next idea. I know that at any time, I can press Ctrl+Z to go back to my previous state, but I save any exceptionally interesting parameters found along the journey with a different name to the same flame file so I can go back to them later. Sometimes it's a trial and error basis, though, once you have learned more about the program, you can usually predict what will appear by making adjustments to the mutations and triangles. I continued to explore mutations, but I wasn't pleased with the pattern that was emerging, so I went back, not having found anything I liked better than the last one I saved.

CHOOSING A GRADIENT:

One of the things I love most is the gradient challenge. The gradient can make or break your fractal. Some fractals become so remarkably different just from simple gradient changes, so it is fun to explore until you find one that really suits your flame. So many things can happen when you play with these settings! Don't forget, if a flame seems too dark, or overly vibrant, you can adjust those settings by opening the Adjust window. The adjustments you make automatically apply, and if you don't like the change, you can always undo it by clicking Ctrl+Z. Click on the Gradient button in the toolbar or click CTRL+G to open the gradient window. Just for fun, I like to do a few random gradients. I right click in the window to pull up the menu then choose Randomize. In this case, I did it a few times to show you some different effects, then I worked from my own saved gradient files. To pull up a saved gradient, you can click the little button in the lower corner of the window, or you can right click and choose "Gradient Browser". Direct it to your saved gradient file and open it. On the next page, I've included some images of the same flame but with various gradients.



Original

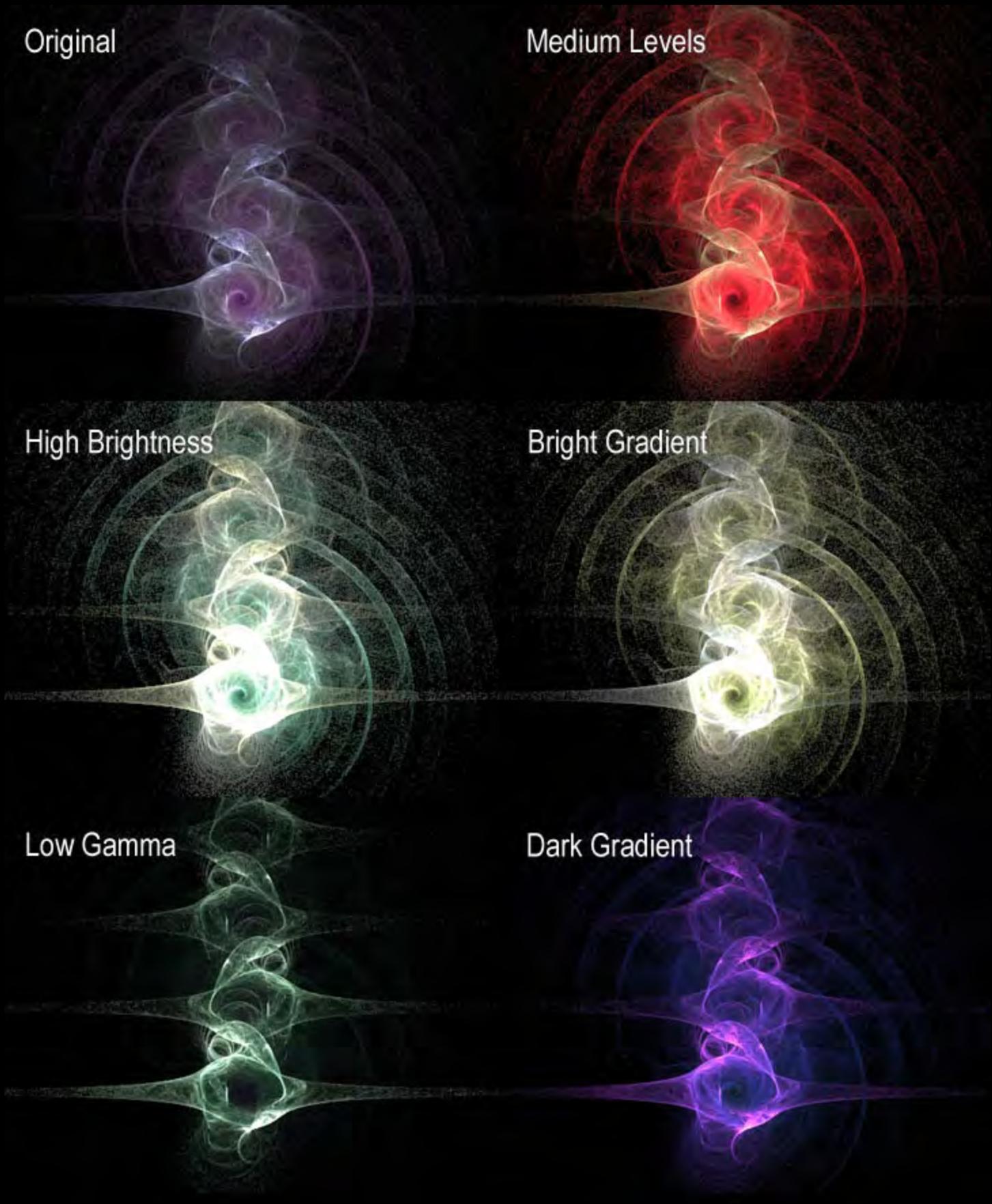
Medium Levels

High Brightness

Bright Gradient

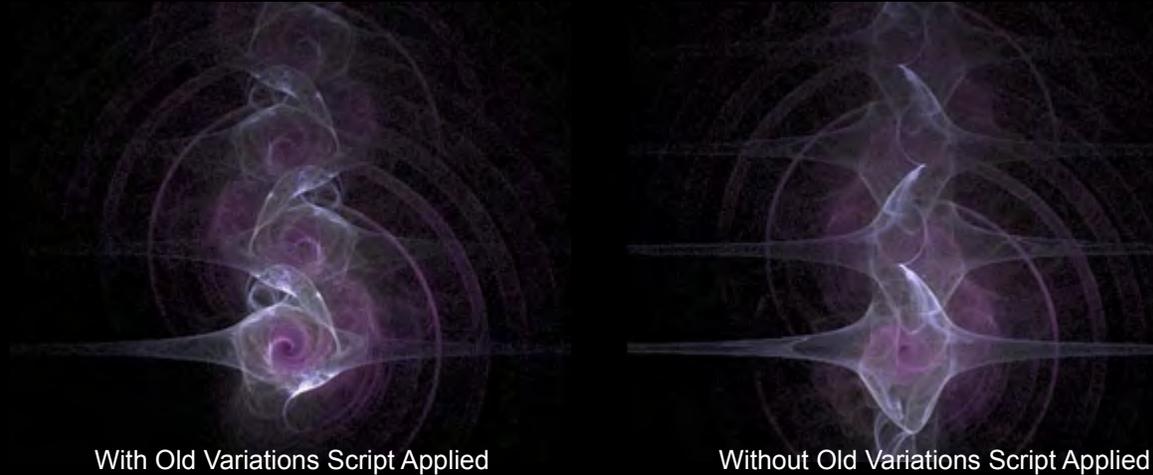
Low Gamma

Dark Gradient



RENDERING:

I saved the ones I like the most to a .flame file with a new name so I could decide which one I like the best after they were rendered. I opened the .flame file I saved them in and they all looked fine. I decided to give my machine a reboot before the night long batch render just to make sure it would have optimum processor speed. When I restarted my computer, I opened Apophysis, then pressed Ctrl+O and chose the .flame file I saved earlier. I noticed that the parameters seemed a little “off” from the originals.



So I opened the script “Use Old Variations” and ran it, hoping it would solve the issue, and it did. However, I really liked the way some of those looked so I’m glad I can go back if I want. There are a number of ways to render Apophysis images. One can export the flame as a UPR to render with Ultrafractal, or do a batch render with HQI, export a single flame to render with HQI, or even render through Apophysis itself. There are positives and negatives to each process which I won’t cover here except to say that I’m not fond of rendering with Ultrafractal because it’s always taken so long for me, and tends to screw up the gradient. So let’s walk through some of the other options.

BATCH RENDERING WITH HQI:

I opened HQI Batch.asc from the scripts folder and then edited it to give it the following values:

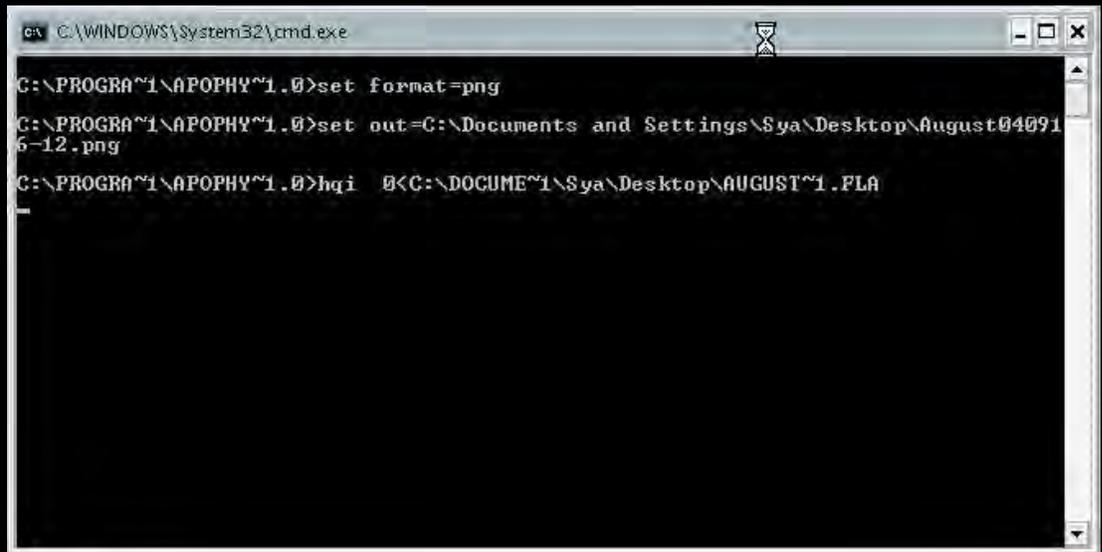
```
Flame.SampleDensity := 100;  
Flame.Oversample := 2;  
Flame.FilterRadius := 0.6;  
Flame.Width := 4000;  
Flame.Height := 3000;
```

I ran it by clicking the green arrow then opened the Apophysis folder and double clicked on render batch.bat. Some people are confused by this. They wonder what they are supposed to do. Don’t do anything. It’s already saving all of your precious flames in that batch to PNG files without backgrounds! The window will stay open until it’s done rendering all the images in that batch, but if you are still uncertain that your computer is actually working, open up your Windows Task Manager and take a look at what’s running and your performance. HQI saves the images to the Apophysis directory by default. Unfortunately, this time, the batch render did not do very well with the color saturation and for some reason, it lost the variation. It reverted back to the previous state, losing the nice swirl movement and rounded figure. All but one of the resulting images did not turn out. I was fortunate to get one good PNG file with a transparent background though, and I saved it to play with later, as you will see in Part II.

RENDERING WITH HQI:

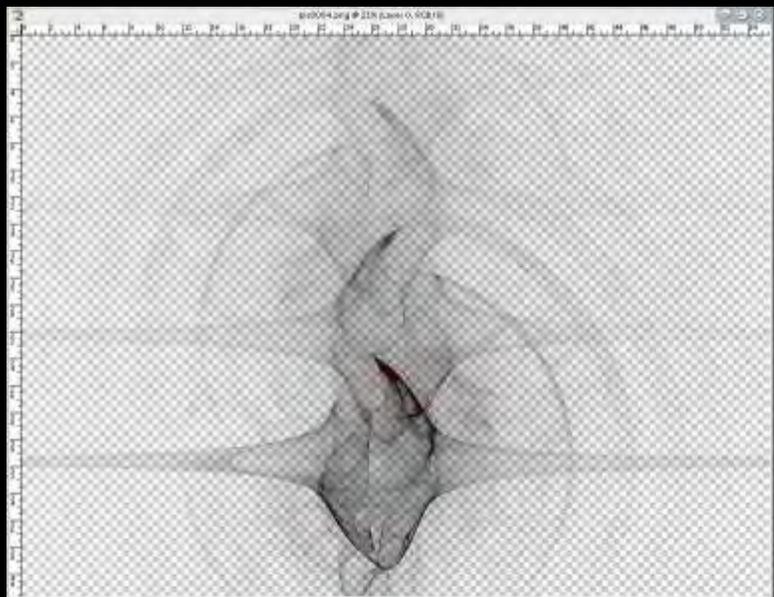
Baffled, I wanted to try rendering again with the new HQI released with Apophysis 2.01 because it allows the user to adjust the number of batches so that flames with a higher quality number might look better. To render a single file with HQI, follow these steps:

- Press Ctrl+X to open the Export Flame window.
- Click on the little yellow folder button
- Give your image a name and choose .PNG as the file type. (This will give the image a transparent background)
- Click the “Save” button
- Adjust the width and height settings to your preference, as well as your Quality, Filter Radius and Oversample settings (the number of batches will automatically change according to how high you set the Quality).
- Then click “OK”



```
C:\WINDOWS\System32\cmd.exe
C:\PROGRAM~1\APOPHY~1.0>set format=png
C:\PROGRAM~1\APOPHY~1.0>set out=C:\Documents and Settings\Sya\Desktop\August040916-12.png
C:\PROGRAM~1\APOPHY~1.0>hqi @C:\DOCUME~1\Sya\Desktop\AUGUST~1.FLA
```

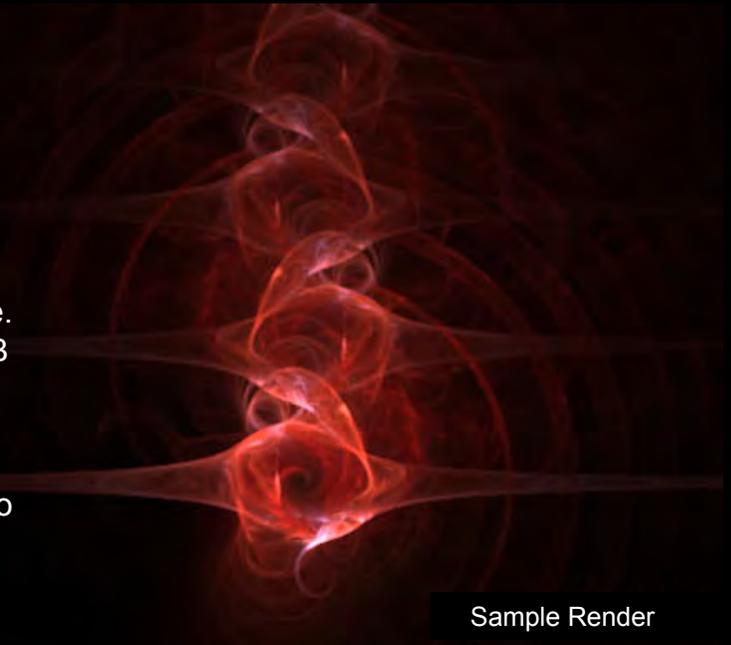
Just like with the batch render, HQI.exe will run until it has completed rendering the file. You don't have to do anything except wait. I tried to render the red version, but unfortunately, our poor flame did not turn out as I had hoped. The variation was still off, and so was the saturation. (Scott Draves is reportedly working on a new version of HQI where this will no longer be a problem. So until then, we have to resort to using Apophysis, which isn't all that bad.)



RENDERING WITH APOPHYSIS:

Just to make certain that Apophysis would render the image with both the correct gradient saturation and variation, I rendered a quick sample...

Perfect! The settings are based on both your own personal preference and the limitations of your machine. I am running an AMD Athlon XP 1700/1.47 GHz/512 MB Ram/GForce4 Ti4400. AMD processors aren't the best for mathematical processing, I'm told, but it seems to work fine for my needs at the moment as long as I'm willing to make some small sacrifices. A lot of people like to have an oversample of 2, but while that setting works fine for me with HQI, my amount of physical memory available won't allow it when I render through Apophysis. So like I said before, I make do. My settings look like this:



Sample Render



PART II

Manipulating the Rendered Image:

Once all 6 files were rendered, I had to choose one to continue on with. If you remember earlier I rendered the batch with HQI.exe, and only one flame turned out halfway decent. I saved it into the same folder as the Apophysis rendered images so I could show you some ways to fix it with Photoshop.

Let's walk through this process together.

I opened the 6 normal renders in Photoshop. They are each unique and interesting in their own ways, but it's important to find one that is consistently nice. Being picky helps in the choosing process. I can easily fix color correction problems, but I cannot easily repair an image that has too much white glare, jagged edges, or flaws in the pattern that have become more prominent due to the gradient change. I look at it this way, I have already put so much work into this flame, why spend more time trying to fix something too flawed? However, in this portion of the tutorial, I want to show you some simple tips that can help you with this process, so I'll be working on a handful this time.

Lets start with the original. I looked at it in full view and didn't notice in glaring hot spots, pixelation or other subtle abnormalities that I might have missed when looking at the flame in the Apophysis preview window.



The gold render was the least appealing, because it had a large "hot spot" glaring at me in the bottom (image) and more of them throughout the image. Sometimes, hot spots can give a nice definition and "POW" to an image, but not often, and definitely not in this instance. So I deleted that file.



Large "Hot Spot"

The next image has a teal and gold gradient, but there are some places in which there a bright green seems out of place. Luckily, we can fix that! I went to Image>Adjustments>Replace Color and selected the color I didn't like with the eyedropper tool, then adjusted the levels to my preference. I was very pleased with the results, as the nasty green was gone, and I was able to lighten the image a little.



Undesired Color



Color Correction

The blue and gold image is nearly perfect in my opinion. I love the way that the gold seems to faintly highlight the forms, also serving as an outline. There aren't any overwhelming "hotspot" but the thing that concerns me with this render is that it seems a bit dark and it shadows some of the wonderful detail in the middle portion of the form. This can be fixed easily by going to Image>Adjustments>Shadow/Highlight and adjusting the percentages according to my personal taste. Too much of either setting will ruin it, so be gentle. Here it is at 35% Shadow and 10% Highlight. See how the center now has more detail?



Before Color Correction



After Color Correction

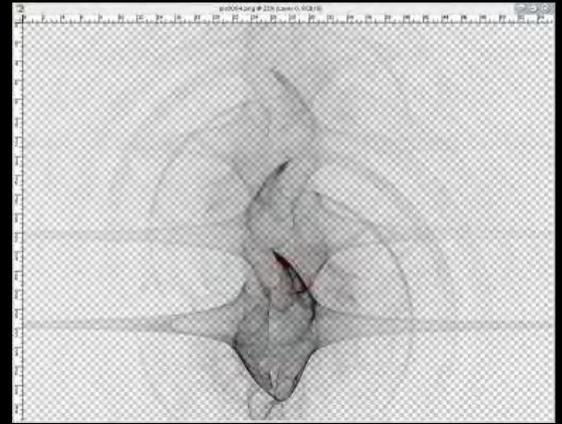
Lets take a look at the red version. Like the blue and gold one, this seems to have a very even gradient application. There aren't many "hot spots" and the ones that exist are minimal and do not seem too distracting. I really like the swirl in the center, it seems perfectly lit, offering a 3D effect. One thing I don't like are the pink highlights. Highlights are good, but I think I would prefer to have the highlights match better. Again, I went to Image>Adjustments>Replace Color and selected the color I didn't like with the eyedropper tool, then adjusted the levels to my preference. I like the white much better than the pink. I also think I'd prefer the red hues if they were more vibrant with a tinge of orange. So I go to Image>Adjustments>Selective Color and choose red from the colors drop down menu and move the sliders until I am happy with the results in the preview. Making these small adjustments can make a world of difference, just make sure you don't over do it. Remember that much of what makes a flame truly beautiful is the gradual shifting from dark to light. If you make all of the shadows too light, you will lose the emphasis of the light so use your best judgment.



The last of the six Apophysis renders is the rose and green gradient version. This flame is so lively, that it's hard for me to tell if I like it or not! One of the first things I notice that bothers me are the yellowish colored highlights. I think they would look better as a white or creamy white, so that they would appear as an extension of the center color. (image) Also, the colors have spread out further than they did in the other renders, so it loses some definition. I could use many of the same techniques as I did with the previous flames in order to get better results, or I can stick with one of the previous versions that I like better.



Last, we come to the single HQI.exe render that turned out ok. Remember that it rendered without the “Use Old Variation” script applied so the shape is quite a bit different. Also, it rendered as a PNG without a background. I opened the file and applied a new background layer by hitting Shift+Ctrl+N and then I dragged it under the flame layer. After I used the paint bucket tool to paint the background black, the flame looks like this below:



You might say, “hey, how come she considers this an ok render? Look how dark it is?” Oh yes, the saturation is indeed way off, but it can be fixed. Perhaps not to its original state, but enough so that we can play with it and perhaps it won’t be a complete loss.



With the flame layer selected, I go to the toolbar and choose Image>Adjustments>Levels (or Ctrl+L) and was able to adjust these settings so that I am able to now see very definitive lines, highlights and shadows within the colors.



Then I opened the color balance window (Ctrl+B) and worked with the highlights, midtones and shadows until I achieved the desired effect. I encourage you to continue trying new things with the settings found under the Image menu when you are manipulating your flames. There are a lot of different things you can do with just one image, too much to go into in this tutorial. Once you have gained at least some of the color back as I showed you above, you can always change the colors, the vibrancy, and glow to achieve a world of different effects!

Here are some images that have been created with our “ok” HQI rendered image:



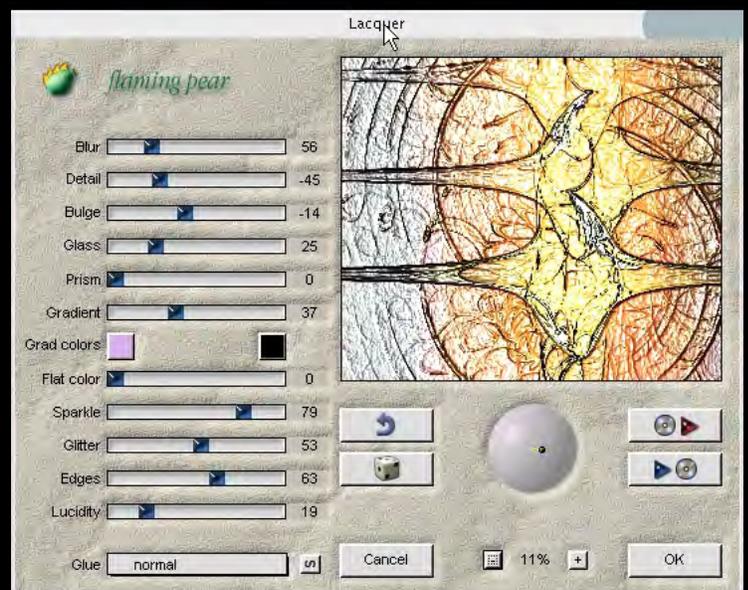
APPLYING FILTERS:

Here is the one I decided to continue with to show you how you can obtain interesting effects using filters. Not everyone loves filters like I do, but they are cool to have, if nothing else, than for a last result type thing. You can find free filters or shareware on the internet. Some filters install themselves, and others you will need to move to your Plug-ins or Filters folder. The following is just a walk through with a few suggestions, but I encourage you to seek your own methods and experiment!

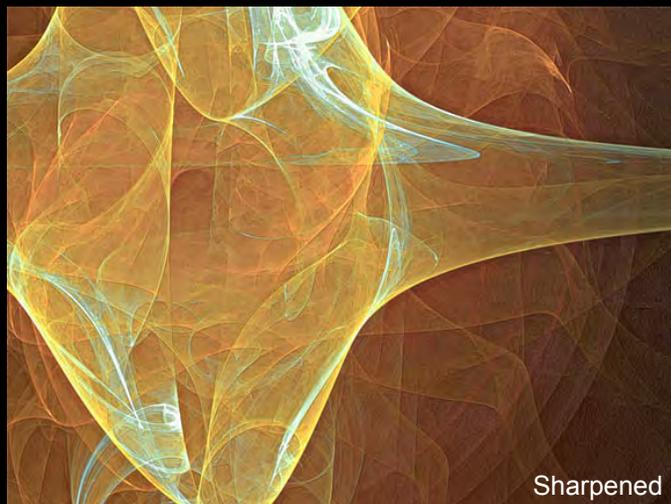
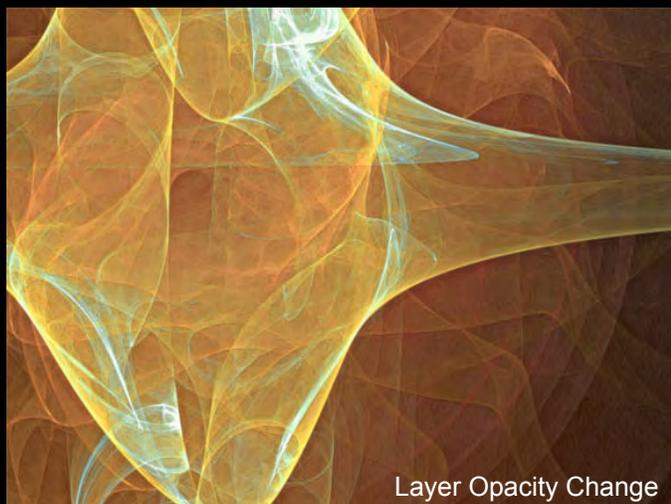


To begin with, I created a reflected gradient background and centered it behind the image in order to give it an interesting glow. This is one of the great things about having a background free PNG file rendered with HQI.

I gave it a Gaussian Blur of 0.7 to lose some of the very fine detail that might become annoying pixelated specks in the image once a filter has been applied to it. Then I applied the “Lacquer” filter from Flaming Pear and as you can see in the image on the right, there are many settings you can play with for all kinds of different effects!

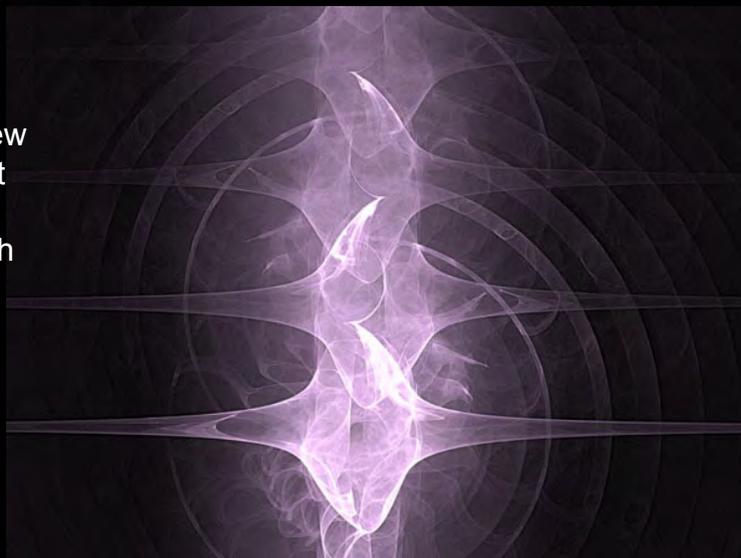


Then I selected the entire image and copied it. Next, I used the history window to revert to the image before I applied the filter, and I pasted the copied version over it as a new layer. I adjusted the opacity level to 21% and the fill to 36%. I flattened the two layers. Finally, sharpened the image.



Here are a couple of variants to the theme. Using some of the techniques I showed in the previous pages, I am able to make these as bright and colorful as I want. I can even make it monotone like you see below. All this color from an "ok" HQI render that might have been tossed out.

In the past few days there have been talk about HQI fixes that I feel compelled to mention here. Scott Draves released a new version of HQI.exe with FLAM3 v1.14 that is reported to be better at rendering high resolution images with fewer problems with color saturation. They suggest to first replace the HQI that came installed with Apophysis with the newest version, then adjust the vibrancy level of the flame to 1. Next, when you go to run HQI.exe, you should make sure that the batch size = 1. This should, reportedly, fix the problem. But unfortunately, it hasn't worked for me.



As you can see, Apophysis is a wonderful tool used alone or with a photo manipulation program. Open Source software is the best, so go give the author a pat on the back. <http://www.apophysis.org/>
If you'd like to find out more about Apophysis, and be informed of updates, new features, and other related information, join the Apophysis mailing list. <http://www.apophysis.org/list.html>
For a listing of Hallucinaut's scripts, go to <http://www.hallucinaut.com/index.html?apophysisscripts/scripts>

To see more incredible Apophysis images, please visit Apophysis at Deviant Art:
<http://apophysis.deviantart.com/>

This tutorial was a lot of fun to do, but it took a lot of time! If anything you learned here helped you, please let me know! If you have any answers or fixes for the HQI enigma, please let me know! It's upsetting that I only get about half of my flames to render properly this way, and I'd like to learn more tricks if any of you have them. Visit my user page on Deviant Art for contact information, <http://sya.deviantart.com/>

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