



**Apophysis :—
An Intermediate User Guide**

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Introduction

Welcome to my intermediate user guide to using the great freeware application called **Apophysis**, also affectionately known as 'Apo'. I first downloaded this software on December 5th 2005 and I have been hooked on it ever since. The variety of fractals it is able to produce is only limited by your creativity but saying that, your creativity amounts to nothing if you fail to persevere despite the lack of documentation out there. The definitive starter guides are those by Lance and for scripting, by Datagram. Links to both (and much more useful stuff) can be found at The Fractal Farm website : <http://www.woosie.net/fracfan/viewtopic.php?t=15>

These guides help you with the GUI and offer some basic advice on creating fractals. This guide is different. Together we will create specific flames so you can see how they are done. By doing this I hope you will gain a better understanding of Apo and use the knowledge to create your own fractal wonders ☺ It is not intended to teach you the basics of the GUI, those are covered in the docs linked at The Fractal Farm. It will show you a few tricks that you may not be aware of.

I do not profess to be any kind of expert with the software. On the contrary, there is still much I have to learn. So please take this document for what it is – a guide.

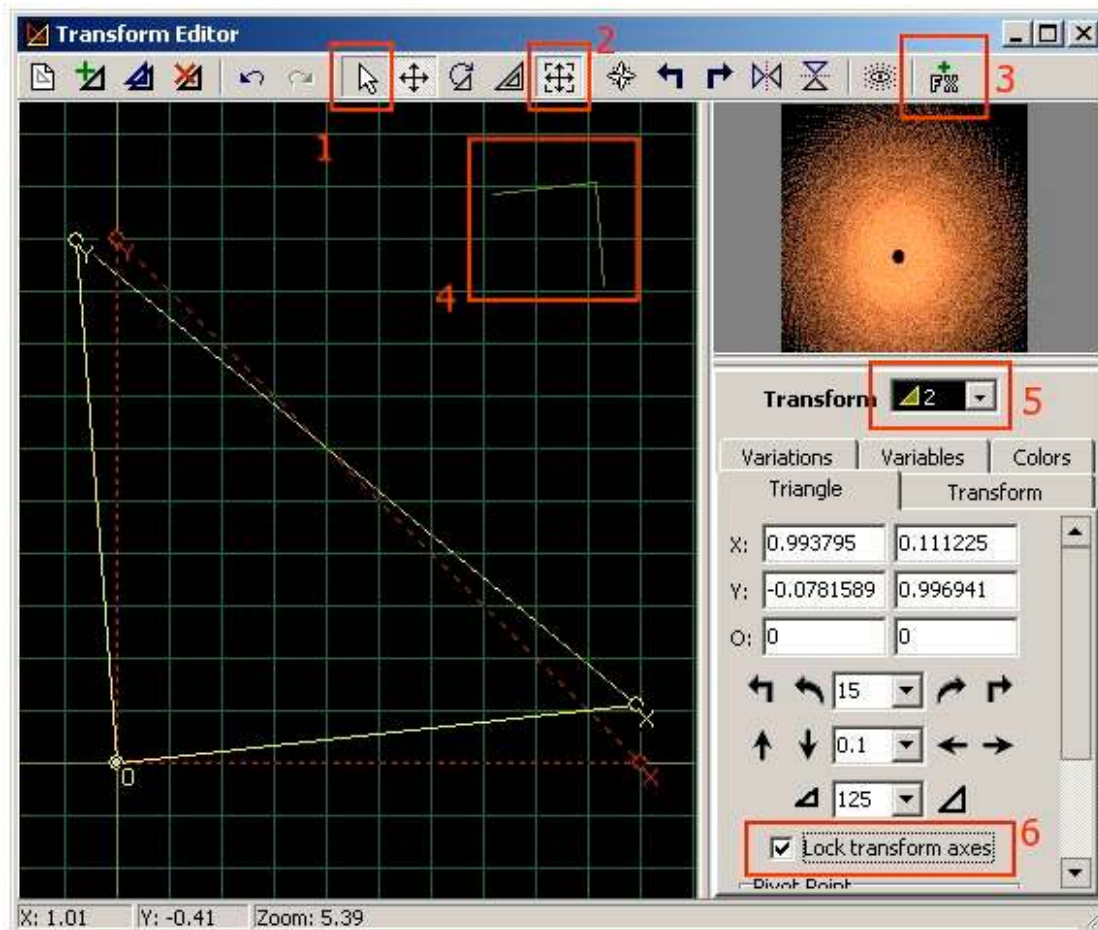
The version of Apophysis I will be using for this guide will be the much anticipated **2.04**. I say much anticipated as I am lucky enough to be a beta tester. I continually interchange the words triangle and transform so don't be confused by the switch, they mean the same. Apart from several new variations, 2.03d implements better memory management options when rendering an image to file so this may allow you to create larger images than you may have been able to previously. There is a trade off in that larger images take much longer to render. Although you would obviously expect this, the render times may come as a shock. On my system (Win2K Athlon 64 1.5GB) an 8000 x 8000 image at Q500, FR 0.4 and O/S 2 would take 22 hours approx whereas a 12000 x 12000 image would take 160hrs with the same settings.

Finally, please show respect for the artwork we are about to produce. Don't simply recolour it and try and pass it off as your own work – as great as it might look. Use the knowledge you gain here to fuel your imagination.

Now let's get cracking!

Working with the Editor

There are several changes to the editor in 2.03d. We will cover them now. Apart from the new variations (covered later) the following image shows the most obvious ones:



1. The selection cursor button.

This isn't new I hear you say. Yes but this section is about more than new stuff, I hope to show you little tips to make life easier. The first one involves the selection cursor. How many time have you created a flame where all the triangles are fairly close so selection of one of them, or its control points, is difficult?

Tip No.1

Use the + / - keys *on your numpad* to identify the triangle you want (shown both at 5 in the image above and in the editor main window) to work with. Once you have done this click on the selection cursor button and you will ONLY manipulate the chosen

triangle and it's control points. Saves lot's of fiddling ☺. Just enable cursor selction (by clicking the button again) when you are ready.

2. Extended Edit Mode

This really is neat! By clicking this button you enable one click manipulation of triangles. If you pass your cursor over the active triangle you will square corners, as shown by 4 in the image above. The corners when dragged, rotate the triangle. In addition you can also do the following:

- a) Place the cursor over any of the sides of the triangles. You will see that two of the sides are full lines and the third is made up of dashes. When the cursor is over any of the full lines, dragging it will rotate **that side only**. Dragging the cursor whilst over the broken line (xy) will scale the triangle.
- b) Try this: select and drag one of the control points from a new triangle. Now you realise you didn't want to do that. Rather than using Ctrl-Z, double click on the control point. It will return to its default position.

3. Enable Final Transform (aka Final Xform)

This has to be the biggest change to Apo and it will breathe life into old flames – trust me ☺

What is it?

Put simply. Clicking this button will add another white triangle to your flame. It will be in the default position with a variation of linear, set to 1 as with all new triangles. How this differs is this. Before when you manipulate a triangle (either by scaling, rotating or changing the variations) the effect on the flame was confined to the part of the flame directly influenced by that particular transform. Still with me? Good. If not you'll soon pick it up. Just read on. Now making any changes with the Final Xform will affect the **whole** flame and not just a part of it. Let me show you an example.

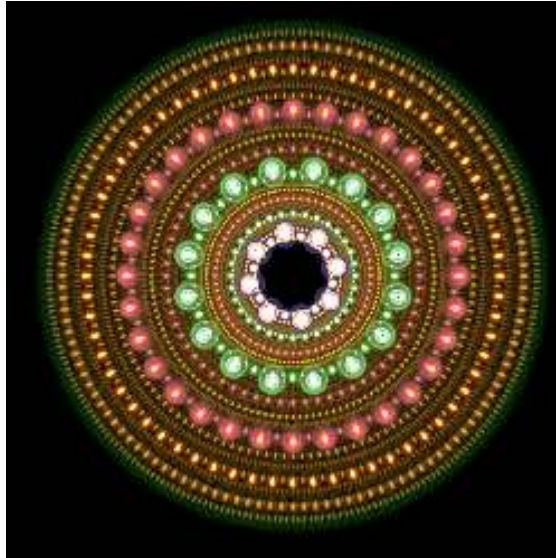
The following image, called Heavy Duty is a tiled fractal which could have been created in any version of Apo:



Now, using the Final Xform with a spherical variation setting (only) you get this:



Here's another before – a standard Julia Pattern (which, incidentally, is a pattern type we'll be covering later) :-



And after applying the Final Xform with the handkerchief variation (again only this):-



As you can see using the Final Xform has a **major** impact on your results and if nothing else, I encourage you to experiment with this.

There are a few things you need to know about the Final Xform. Firstly, only one can be applied (in this version) to your flame. This may change in the future. Secondly, to remove the effect, just click on the Enable Final Transform button again. The triangle still shows in the editor window. If you don't want this then the only way to remove it is to delete the Final Transform in the same way you delete other triangles. This will of course delete any settings you had in the Final Xform. Incidentally, the Final Xform is clearly labelled in the editor drop down (marked 5 in the editor screen shot at the start of this paper) so you always know when it's selected.

Note regarding scripts and the Final Xform:

Often when running a script it will add a Final Xform to your flame. Do not worry about this as it does not have any effect **unless you manipulate it**. If you do not intend to use it just delete it in the usual way.

5. Lock transform axes

When rotating a transform with this checked the **whole** transform moves as you have been used to. Uncheck it and **only** the side of the transform selected will move. In effect distorting it.

6. New variations

With this latest release comes several new variations. They are:

- a. noise
- b. blur
- c. julian
- d. juliascope

You will also notice that the last few in the list of variations are on a coloured background (this includes some of the variations in previous versions). If you select any of these it means they can be further adjusted by tweaking the values in the **variables** tab. This is also handy as I had never really explored this before.

I must admit, of the new variations I have used julian the most, followed by blur. Blur has been used by some artists namely Psion005 (psion005.deviantart.com) and Zueuk (zueuk.deviantart.com) with spectacular results. Grinagog (grinagog.deviantart.com) has an image in his 'scraps' at deviantArt that shows he is very close too and by the time this doc is complete, he may have resolved the problem.

I will show how to use the julian and, to a VERY limited extent, blur. I haven't really taken to any of the others so I won't be writing anything more about them.

Whilst we are talking about variations here's another tip or group of tips ☺:

Tip No.2

When changing the values in the variations section of the editor try the following:

- a) place the cursor over the variation name you want to change. The cursor changes to a hand**
- b) click the left mouse button and drag left to reduce the value and drag right to increase it. The amount goes into three decimal places**
- c) For other tuning hold down the following keys:
 - i) Shift – 2 decimal places**
 - ii) Ctrl – 4 decimal places**
 - iii) Alt – 5 decimal places****
- d) double click on the variation name to zero the value**

This about does it for the Editor – at least until we get on to adding colour to the flames.

Using My Metallica Script

Below is the latest version of my Metallica script. This code produces a specific type of fractal which can be pin sharp and colourful. I discovered this technique quite early in my Apo days (lol, not as though I've been using it for years) and I was dumbstruck when I saw the result. I soon realised this lended itself perfectly to scripting so I wrote one ;)

```
{*****
Metallic Strip Script - Version 4
by Carl Skepper 9th April 2006
web: www.ivy-cottage.net
aka 2B2H (2b2h.deviantart.com)
email: carl.skepper@ivy-cottage.net
Objective: To create a horizontal tiling effect with narrow upper
and lower strips made up of smaller versions of the original flame
http://www.ivy-cottage.net
*****}

h1 := 2; //horiz spacing
v1 := 1; // vert spacing
s1 := 20; // scale (for upper and lower bands)
clearFlame := 'y'; // flag for user choice - apply to current flame or start a new one
if not InputQuery('Metallica v4','Do you want to clear the current flame? (y/n). The
default is "y" :','clearFlame )then
exit;

if not InputQuery('Metallica v4', 'Horizontal Spacing (Between 1 and 5, suggest 2):',
h1) then
exit;
if not InputQuery('Metallica v4', 'Vertical Spacing (Suggest half of horiz spacing):',
v1) then
exit;
if not InputQuery('Metallica v4', 'Scale factor % (try 20 to start):', s1) then
exit;
s1 := s1 * 0.01;

// If the user wants to start a new flame - clear the old one and add two new
transforms
if (clearFlame = 'y') or (clearFlame = 'Y') then
begin
Clear;
AddTransform;
AddTransform;
Rotate(180);
end;
```

```

// Add the strip creation transforms
// The first 4 dictate the horizontal spacing of the pattern
AddTransform;
Transform.e := Transform.e + h1;
CopyTransform;
Rotate(180);
AddTransform;
Transform.e := Transform.e - h1;
CopyTransform;
Rotate(180);
// The next 4 dictate the vertical spacing and how narrow the edge bands are
AddTransform;
Transform.f := Transform.f - v1;
Scale(s1);
CopyTransform;
Rotate(180);
AddTransform;
Transform.f := Transform.f + v1;
Scale(s1);
CopyTransform;
Rotate(180);

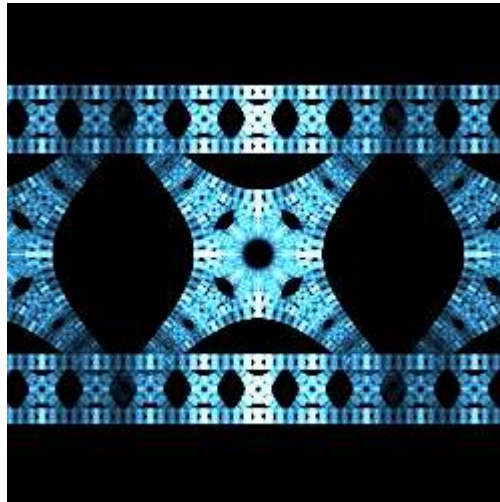
// Reset Symmetry as new transforms and even out the weights as new transforms
may have symmetry set at 1

For n:= 0 to Transforms-1 do
begin
  SetActiveTransform(n);
  With Transform do
  begin
    Weight := 0.5;
    Symmetry := 0
  end;
end;
end;
//*****

```

Previous users of this script will notice some changes. Firstly I have added the option to apply the script to a current flame. I haven't used this much so it's effect isn't tried an tested. To revert to the 'old' method, just leave the 'y' at the first prompt. The second change is that the starter variation is always linear. I have removed the random variation code because I think it restricted the use as users were finding the same fractal often. This was because at the time the 'random' variation was only random in the sense it was one of the 32 or so variations possible with the version of Apo I was using. By removing this code it will force users to experiment and with this in mind, lets create a flame using it. The final change to the script was the suggested values shown at the prompts are now the defaults.

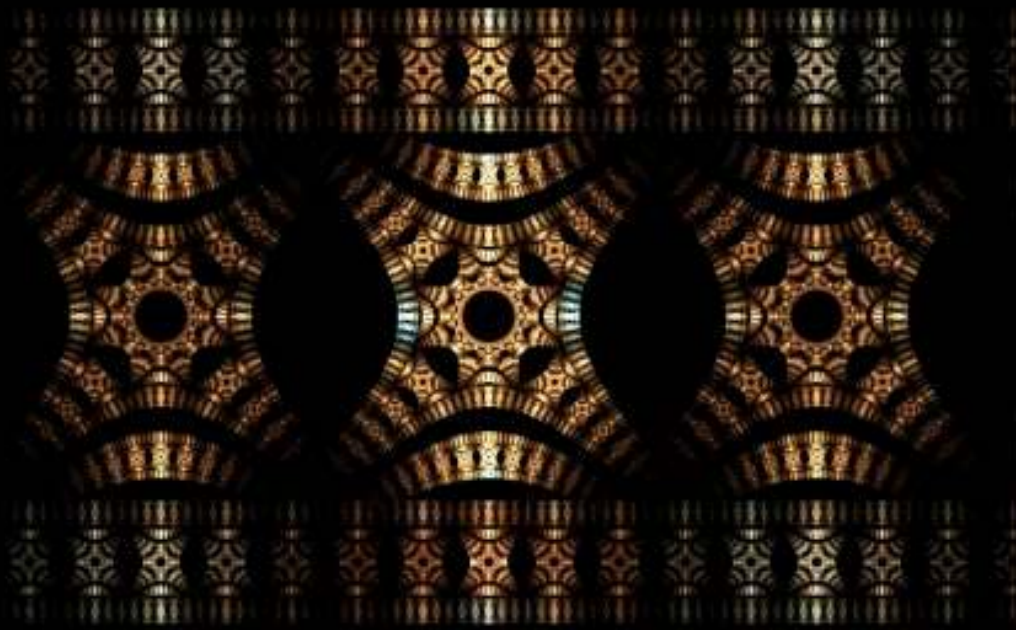
1. Step 1 – run the script and leave the default values
2. This will give a linear and not well defined flame. If you don't see anything then try changing the gradient. Sometimes the random gradient chosen by Apo is so bad you don't see anything in the preview window
3. Make the linear variation 0 and the Julia variation 1 in both Transform 1 and 2
4. This will give a better fractal but it's still not best ever. Now using the method from **Tip No. 2** reduce the value in the Julia variation in both triangles and you will get a sharp flame. Values around 0.3 or 0.4 did it for me. The following image is the result:



How it works

The first two triangles are used to create the basic pattern. The remaining 8 do nothing other than tile the pattern in a specific way. These 8 triangles all have the same variation of linear=1. So to change the fractal you only really need to change the first two triangles. You can do more if you like to alter the spacing. However, changing anything in the 8 'linear' triangles destroys the effect. To change the spacing of the top and bottom bands just move the top and bottom pairs of triangles (Transforms 7,8,9 and 10) up or down. If you remember when you started the script you were asked for horizontal and vertical spacings. You could enter different values to see the effect.

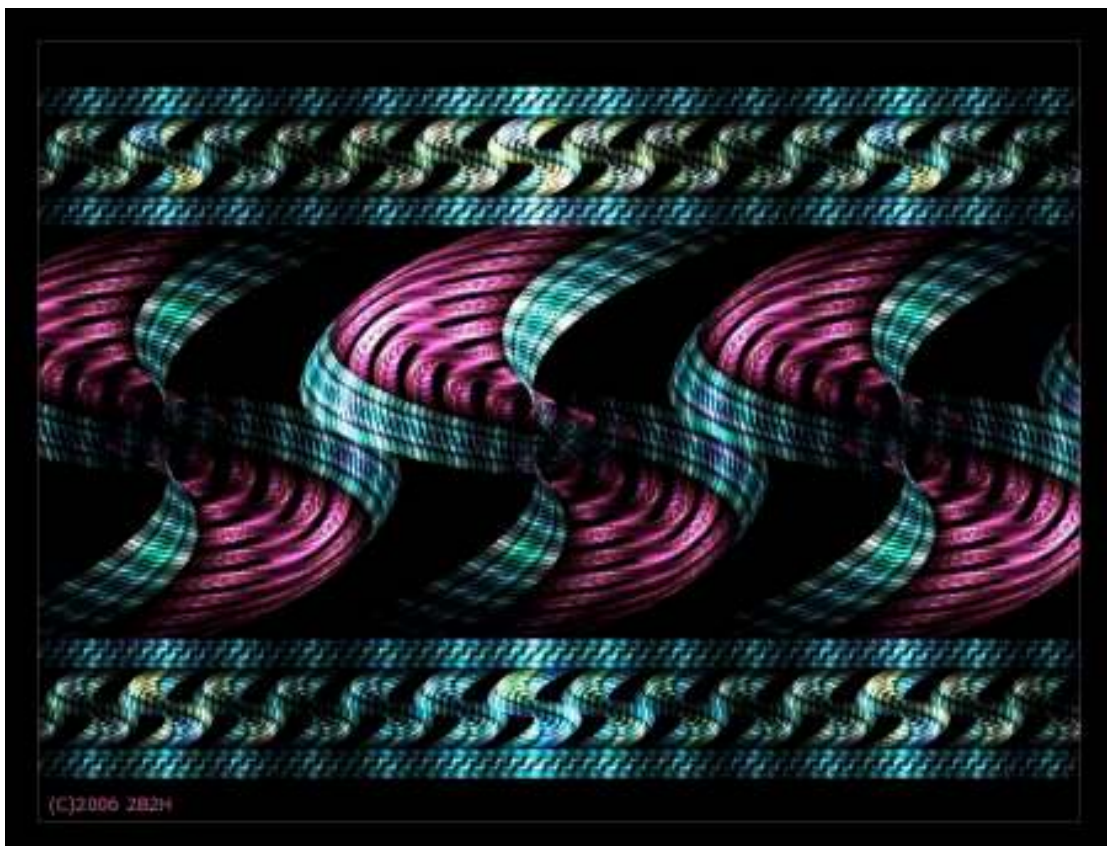
That's really all there is to this script. The emphasis is on scaling the first two triangles to focus the fractal. Try using multiple variations and you can get some really cool fractals using this. I called these fractals 'Watch Straps' as that is what they reminded me of. Here are a few I created using the above method:



(c)2006:2B2H



And the final (finest?) example:



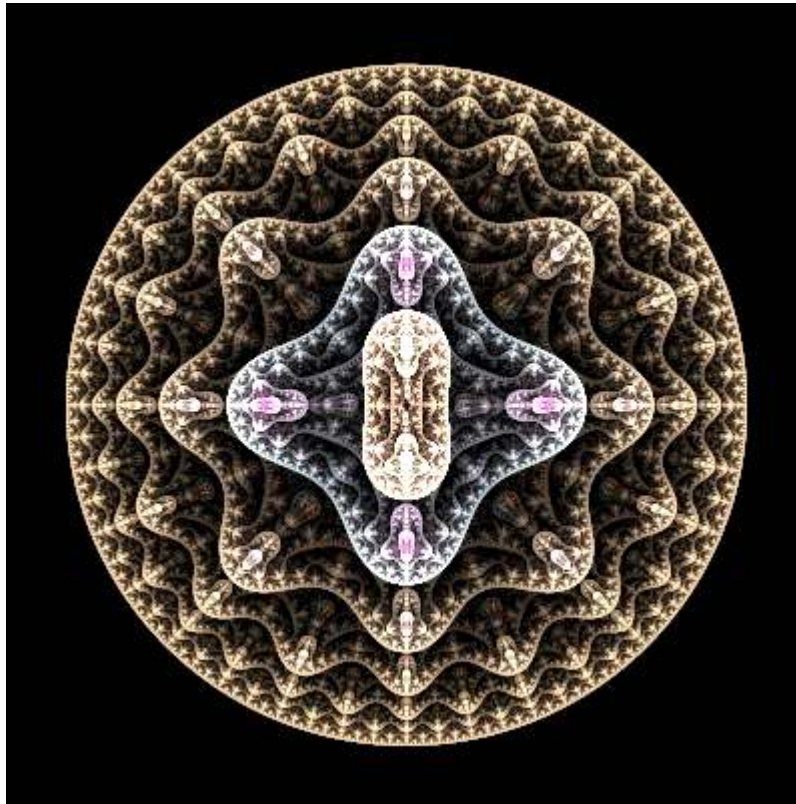
Falling in love with Julia (and Julia n)

I have a confession to make. I love this variation ☺ . There, it's out. Don't tell the wife.

I find this one of the easiest variations to work with and I go through phases where I will create fractals which are heavily reliant on this variation. Julia variation was in previous versions of Apo. Julian (Julia n) is new. Julian basically gives you much greater control over the Julia fractal. We will now create a flame using Julia then repeat the starting steps with Julian and makes some neat modifications ☺.

Step by Step Instructions.

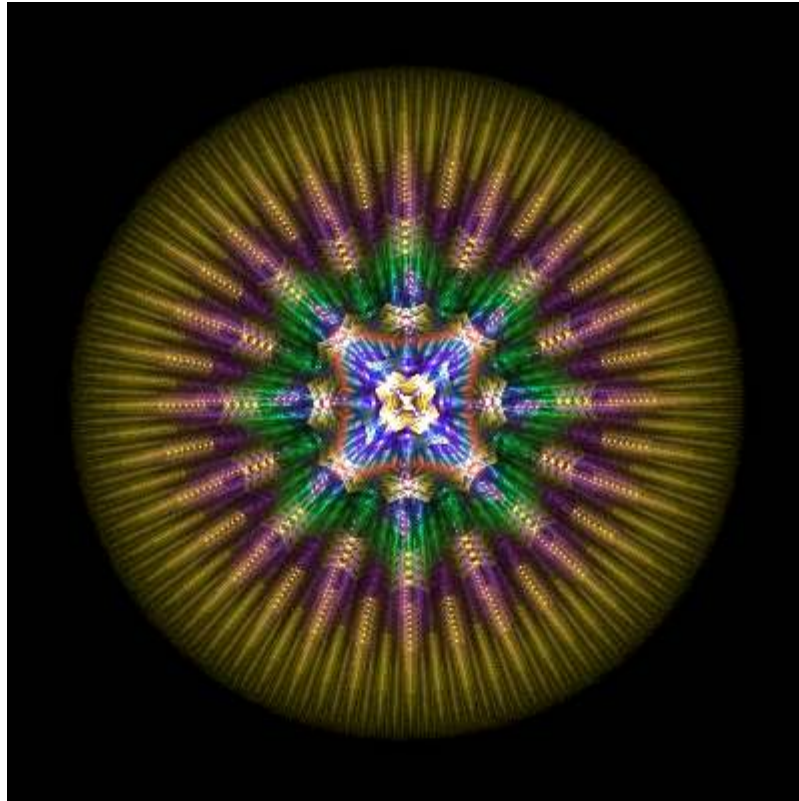
1. Create a New Blank Flame using the toolbar button in the Editor.
2. Select transform 1 and flip it horizontally. This is to make it easier to work with other transforms more than anything.
3. In both triangles set linear variation to 0 and **julia** to 1. The preview should show a perfect circle.
4. Add a third triangle. Set Julia to 0.25 and move it vertically 0.5 units.
5. You should already see a change in the preview. Depending on your gradient you should see something similar to the following:



You could simply play with the variation setting in these transforms to create numerous flames. To create 'satellites' around this image do the following:

6. Add Transform
7. Set linear to 0 and Julia to 0.75
8. Move this triangle 4 units upwards.
9. Copy it
10. Hit the space bar. This will now force any rotation about the origin 0,0
11. Rotate the copy 180 and you will now have 4 satellites. Making further copies and rotating them by varying amounts will add more but possibly at a cost of reduction of colour variation.

By experimentation you will achieve a lot of fractals using this technique as a basis. Here are some examples:



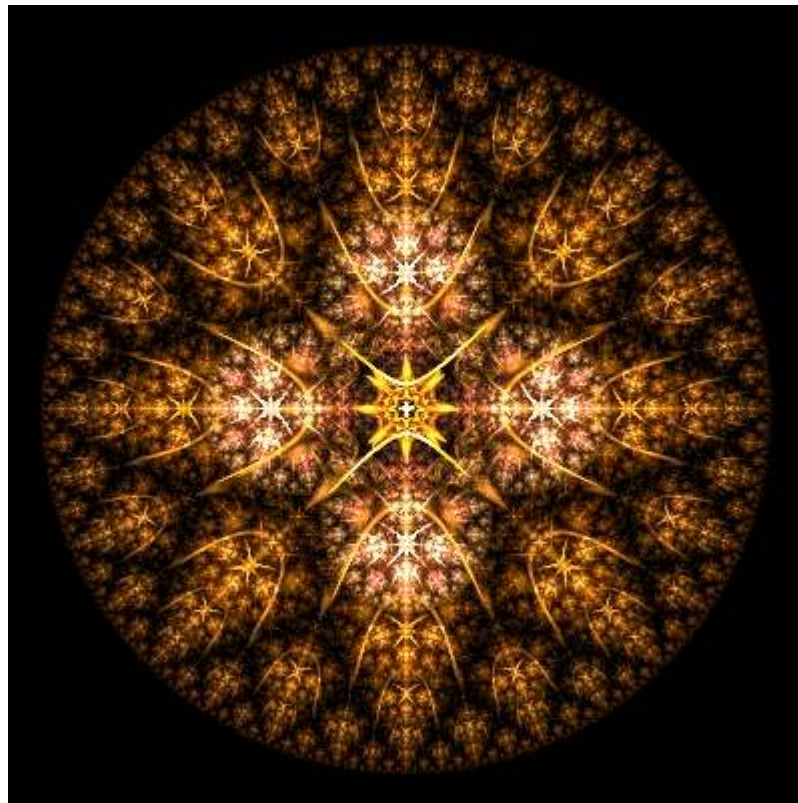
Here is the parameter file for you you examine:

```
<flame name="2b2hUrchin" size="400 400" center="0.00840142659615006 0.000754844302416124"
scale="54.34" angle="0.796742803535411" rotate="-45.65" zoom="-0.359" oversample="1"
filter="0.1" quality="50" background="0 0 0" brightness="24.4" gamma="2.68" >
  <xform weight="0.5" color="0" julia="2" coefs="-1 0 0 1 0 0" />
  <xform weight="0.5" color="1" julia="0.75" coefs="0.2 -0.5 0.2 0.5 0 0" />
  <xform weight="0.5" color="1" symmetry="1" sinusoidal="0.029" coefs="-0.256 -0.256 -0.256 0.256
0 -1" />
  <xform weight="0.5" color="0" julia="2" coefs="0.8 0 0 -0.8 0 0" />
  <colors count="256"
data="00E5DE2C00E7DD2E00E9DC2F00ECDC3000EEDB3200F0DA3300F3D93400F5D836
00F7D83700FAD73900FCD63A00F9D03F00F6CB4400F4C54900F1C04E00EEBA53
00ECB45800E9AF5D00E6A96200E3A46700E09E6C00DE987100DB937600D88D7B
00D6888000D3828500D07C8A00CD779000CA719500C86C9A00C5669F00C261A4
00C05BA900BD55AE00BA50B300B74AB800B445BD00B23FC200AF39C700AC34CC
00AA2ED100A729D600A423DB00A129D5009E30CF009B36CA00983DC4009543BE
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007A7D8A0077838400748A7E00729079006F9673006C9D6D0069A3670066AA62
0063B05C0060B656005DBD50005AC34A0057CA450054D03F0051D639004EDD33
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0042C8480042C14E0042BA540041B45B0041AD610040A6670040A06D003F9974
003F927A003E8C80003E8586003E7E8D003D7893003D7199003C6AA0003C64A6
003B5DAC003B56B2003A50B9003A49BF003A42C500393BCC003935D200382ED8
003827DE003721E500371AEB003D1CE500431FDE004A21D8005023D2005625CC
005C28C500622ABF00692CB9006F2EB2007531AC007B33A6008135A000883799
008E3A9300943C8D009A3E8600A0408000A6437A00AD457300B3476D00B94967
00BF4C6100C54E5A00CC505400D2524E00D8554700DE574100E4593B00EB5B35
00F15E2E00F760280002D6EB0006CFEB0009C9EB000DC2EB0011BCEC0014B5EC
```

```
0018AEEC001CA8EC001FA1EC00239AEC002794ED002A8DED002E86ED003280ED
003579ED003973ED003C6CEE004065EE00445FEE004758EE004B52EE004F4BEE
005244EE00563EEF005A37EF005D30EF00612AEF006523EF00681CEF006C16F0
00700FF0007309F0007702F0007402F0007102F0006E02F0006B03F0006803F0
006503F0006203F0005F03F0005C03F1005904F1005604F1005304F1005004F1
004D04F1004A04F1004804F1004505F1004205F1003F05F1003C05F1003905F1
003605F1003306F1003006F2002D06F2002A06F2002706F2002406F2002107F2
001E07F2001B07F2001807F2001D0EEB002216E400261DDD002B24D600302BCE
003533C700393AC0003E41B9004349B2004850AB004D57A400515E9C00566695
005B6D8E0060748700647C8000698379006E8A720073916B00789964007CA05C
0081A7550086AE4E008BB6470090BD400094C4390099CC32009ED32A00A3DA23
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00BFEB1600C1EA1800C4EA1900C6E91A00C8E81C00CBE71D00CDE61E00CFE520
00D2E52100D4E42300D6E32400D9E22500DBE12700DEE12800E0E02A00E2DF2B"/>
</flame>
```

Note: In order to use the params in version 2.03c and earlier you need to remove the spaces in the data section. Copy them into notepad (or similar), delete the spaces then copy and paste the parameter details into Apo in the normal way.

The next example is one of my 'deviations' at DeviantArt.com and is titled Solarity. It is on the next page.



```

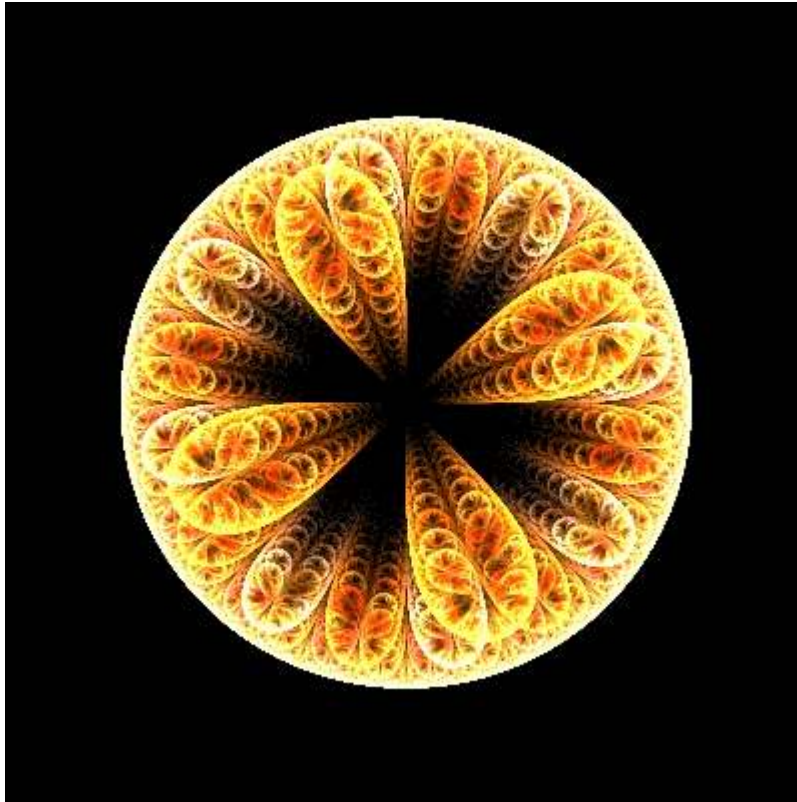
<flame name="2B2HSolarity" size="400 400" center="0.0259883114496029 -0.0318311410914605"
scale="104.31" zoom="-1.191" oversample="1" filter="0.1" quality="50" background="0 0 0"
brightness="36.8391304347826" gamma="2.68" >
  <xform weight="0.5" color="0" julia="2" coefs="1 0 0 -1 0 0" />
  <xform weight="0.5" color="0.25" julia="2" coefs="1 0 0 1 0 0" />
  <xform weight="0.5" color="0.5" linear="-0.008" julia="0.792" coefs="0.38017 0.010323 0.391165
0.001986 -0.468796 -0.128315" />
  <xform weight="0.5" color="0.75" linear="-0.008" julia="-0.066" coefs="-0.012309 -0.270788
0.05744 -0.246171 -0.002467 -0.003113" />
  <xform weight="0.5" color="1" julia="1.047" coefs="0.64 0 0 -0.64 0 -2" />
  <xform weight="0.5" color="1" julia="1.047" coefs="-0.64 0 0 0.64 0 2" />
  <colors count="256"
data="00FF000000FD0A0200FB0F0300FA140400F9190500F81E0600F7200600F72307
00F42D0800F3320900F2370A00F13C0B00F0410C00EE460D00ED4B0E00EC4D0E
00EC500E00EA5A1000E85F1100E7641200E6691300E56E1400E4701400E47315
00E17D1600E0821700DF871800DE8C1900DD911A00DC931A00DB961B00DA9B1C
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00D4882A00D3852C00D2832C00D2822D00D2802E00D27F2F00D17E2F00D17E30
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00CE703700D1713400D2713200D4723000D5722F00D6722E00D7732D00D9732B
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00E6781C00EA791800EB791600ED7A1500ED7A1400EE7A1300F07B1100F17B0F
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00FF800000FA7E0000F77C0000F57B0000F47A0000F37A0000F0780000EE7700
00E9750000E6730000E4720000E2710000E1710000DF700000DC6E0000DA6D00
00D86C0000D36A0000D1690000D0680000CE670000CB660000C9640000C66300
00C1610000BE5F0000BC5E0000BB5D0000BA5D0000B75C0000B55A0000B25900
00B0580000B55F0800B6600A00B7620C00BA651000BC681500BF6C1900C16F1D
00C6762500C8792900CB7C2D00CC7D2F00CE7F3200D0833600D3863A00D5893E
00D88C4200DC934A00DD944C00DF964E00E19A5200E49D5700E6A05B00E9A35F
00EEAA6700EFAB6900F0AD6B00F3B16F00F5B47400F8B77800FABA7C00FDBE80
00FFC18400FFBA8000FFB87F00FFB67F00FFB27D00FFAE7B00FFAB7900FFA777
00FFA07400FF9E7300FF9C7200FF987000FF946E00FF916C00FF8D6B00FF8969
00FF866700FF826500FF7E6300FF7A6200FF776000FF735E00FF6F5C00FF6B5A
00FF645700FF625600FF605500FF5D5300FF595100FF554F00FF514E00FF4E4C
00FF4A4A00FE4D4B00FC4F4C00FB524C00FA544D00F8574E00F75A4F00F55C4F
00F45F5000F3615100F1645100F0675200EE695300ED6C5400EC6E5400EA7155
00E9745600E8765600E6795700E57B5800E47E5900E2805900E1835A00DF865B
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00D39D6100D39E6300D49F6400D4A06600D5A16800D5A26900D6A36B00D6A46C
00D6A56E00D7A67000D7A77100D8A87300D8A97400D9AA7600D9AB7800DAAC79
00DAAD7B00DAAE7D00DBAF7E00DBB08000DCB18200DCB28300DDB38500DDB486
00DDB58800DEB68A00DEB78B00DFB88D00DFB98E00E0BA9000E0BB9200E1BD95"/>
</flame>

```

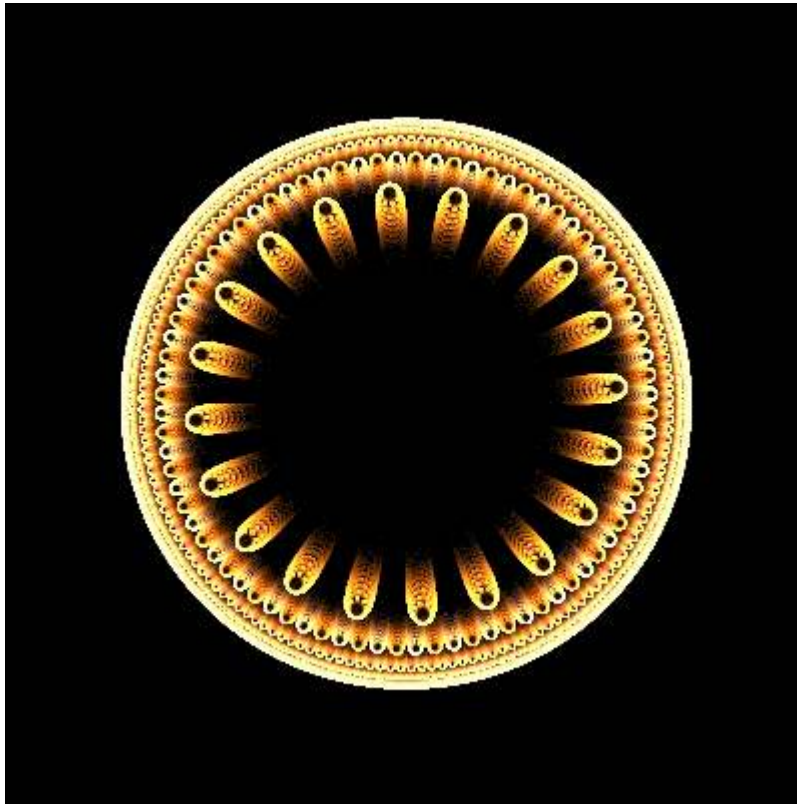
I think these should give you enough examples on how you can use the Julia variation. Now for something with a bit more control - **Julian**

Step by Step – Julian

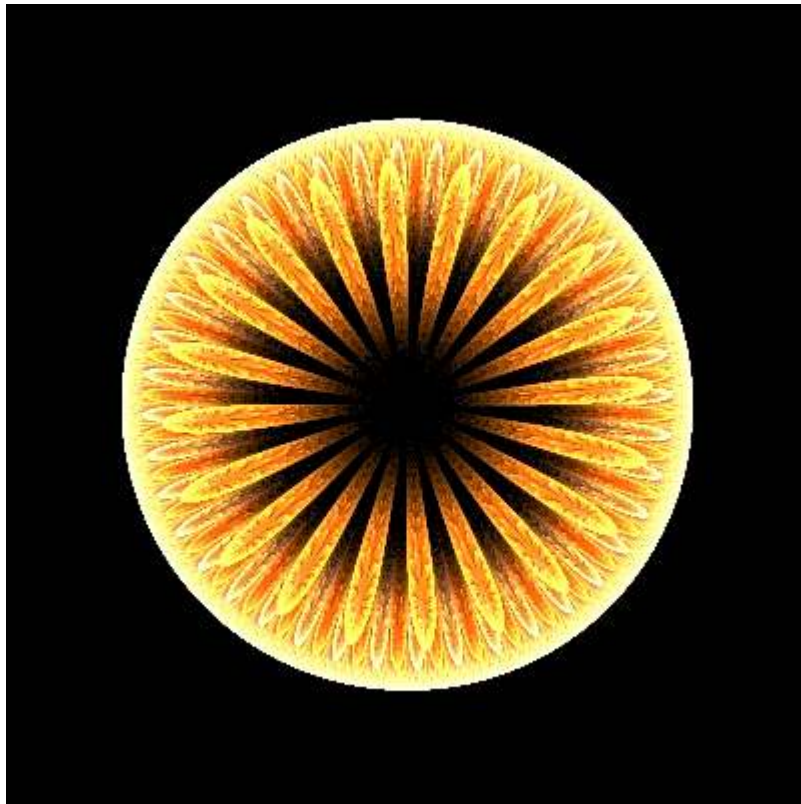
1. Repeat steps 1-5 above, replacing **Julia** with **Julian**. At step 4 move the newly added triangle 1 unit instead of 0.5. This is what I get (remember you may have something different depending on your gradient):



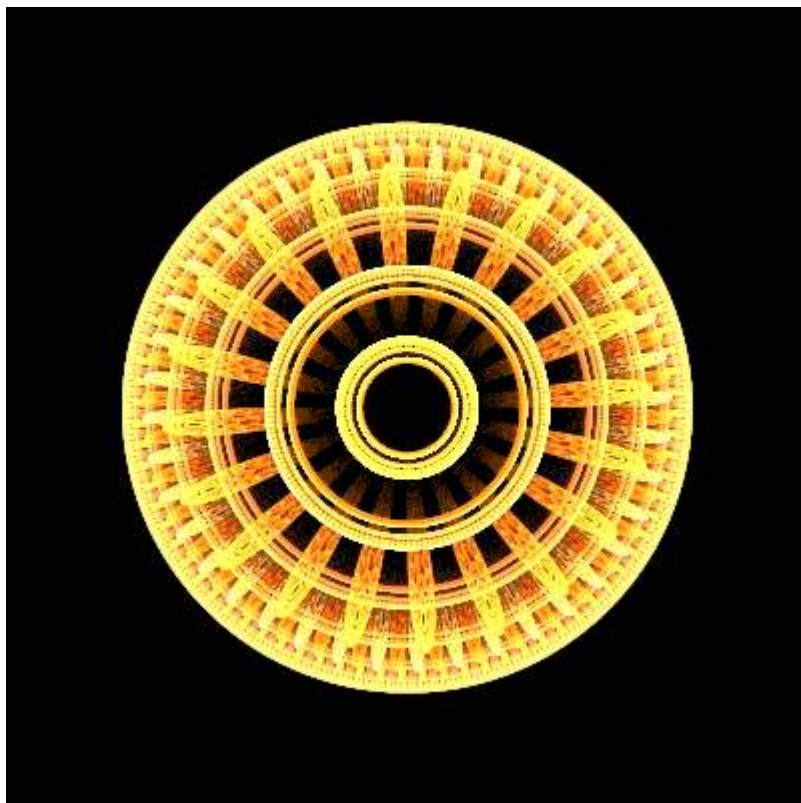
Now the fun bit 😊 Switch to the **variables** tab. We are only interested in the **julian_power** and **julian_dist** values. Change the value in julian_power to any integer (whole number) – say 8 and watch the change in the preview. Here is what I get with a value of 20 (!):



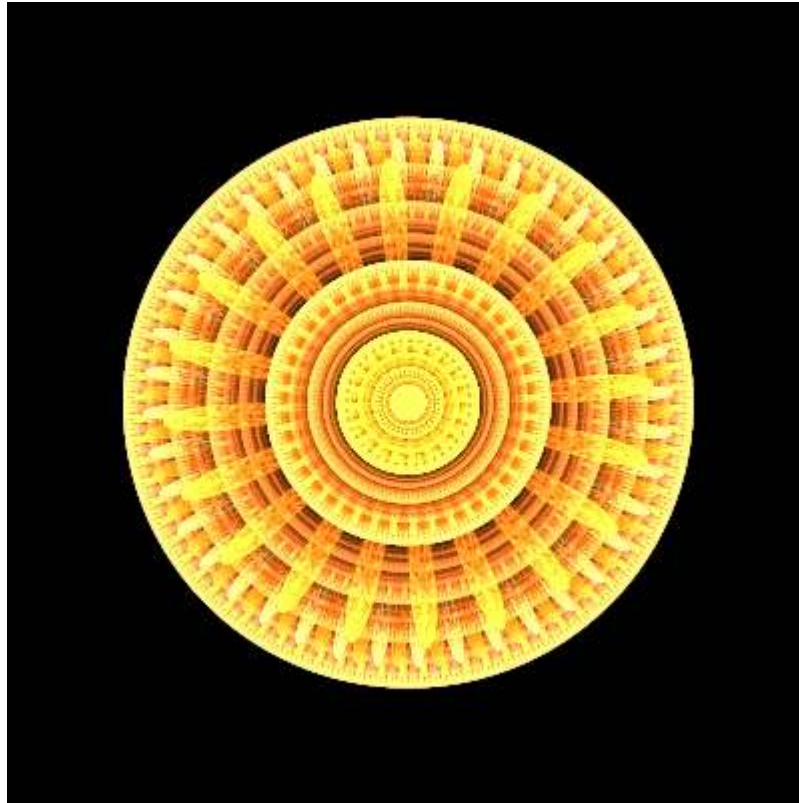
Starting to look interesting eh? The middle is a bit bare so lets try and put some interest there. Entering 4 in Julian_Dist does this to the previous image (see image, next page). Again you can experiment with values here (they have no need to be integer btw). Some **really** cool stuff can be done with these settings, but we haven't finished with our flame just yet



The middle is still not complete so lets add interest. Add another transform. This time after removing the linear (set it to 0), set julian at 0.5 without moving it. This is my result:



Now this is getting interesting. Time to tweak some more.... Set both the Julian_Power and Julian_Dist variables to 1. This fills the middle nicely:



This gives you an insight into the power on Julian. Here is the param file for the previous image:

```
<flame name="2B2HJulian" size="400 400" center="-0.00173617559048694 -  
0.000126149121412233" scale="142.375" oversample="1" filter="0.1" quality="50" background="0 0  
0" brightness="36.8391304347826" gamma="2.68" >  
  <xform weight="0.5" color="0" julian="1" coefs="-1 0 0 1 0 0" julian_power="2" julian_dist="1" />  
  <xform weight="0.5" color="1" julian="1" coefs="1 0 0 1 0 0" julian_power="2" julian_dist="1" />  
  <xform weight="0.5" color="0" julian="0.75" coefs="1 0 0 1 0 -1" julian_power="20"  
julian_dist="4" />  
  <xform weight="0.5" color="0" julian="0.25" coefs="1 0 0 1 0 0" julian_power="1" julian_dist="1"  
/>  
  <colors count="256"  
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00FF800000FA7E0000F77C0000F57B0000F47A0000F37A0000F0780000EE7700
```

```

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00C1610000BE5F0000BC5E0000BB5D0000BA5D0000B75C0000B55A0000B25900
00B0580000B55F0800B6600A00B7620C00BA651000BC681500BF6C1900C16F1D
00C6762500C8792900CB7C2D00CC7D2F00CE7F3200D0833600D3863A00D5893E
00D88C4200DC934A00DD944C00DF964E00E19A5200E49D5700E6A05B00E9A35F
00EEAA6700EFAB6900F0AD6B00F3B16F00F5B47400F8B77800FABA7C00FDBE80
00FFC18400FFBA8000FFB87F00FFB67F00FFB27D00FFAE7B00FFAB7900FFA777
00FFA07400FF9E7300FF9C7200FF987000FF946E00FF916C00FF8D6B00FF8969
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00DAAD7B00DAAE7D00DBAF7E00DBB08000DCB18200DCB28300DDB38500DDB486
00DDB58800DEB68A00DEB78B00DFB88D00DFB98E00E0BA9000E0BB9200E1BD95"/>
</flame>

```

Tips

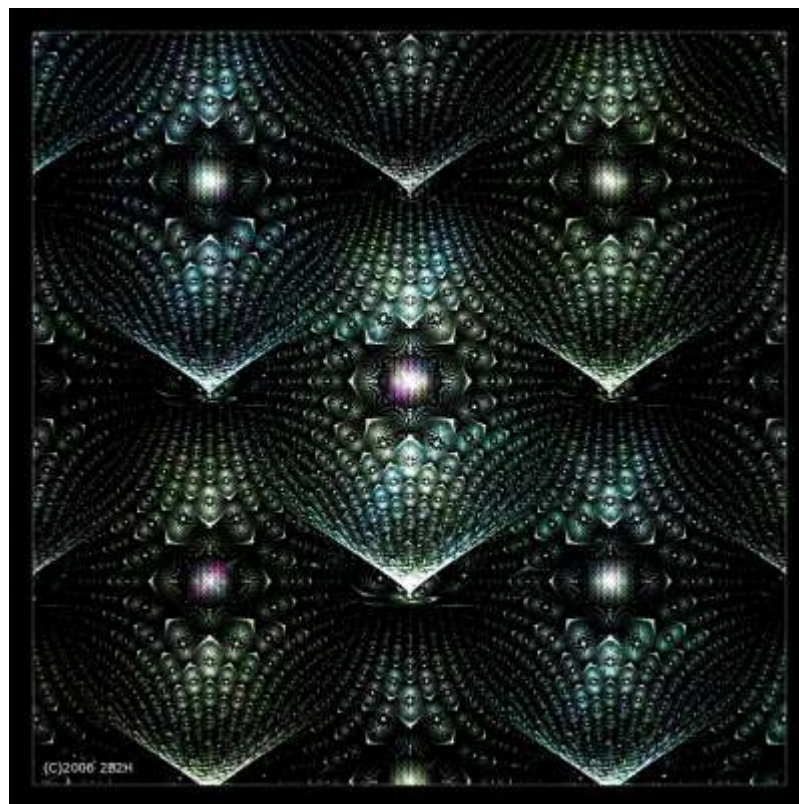
As I have already stated, I have used the julia /julian variation **a lot**. Here are a few ideas for you to try:

- Try adding triangles with different **julian** values. Larger values expand the flame diameter
- Try mixing **julian_powers** in the same flame – they don't have to be the same value. Don't be afraid to try small values or larger ones like 64 or higher. Remember you can use whole numbers only in this field. Try negative values too 😊
- Try mixing values for **julian_dist** too These can also be negative values 😊
- Move the triangles further away from the centre. If the edge pattern gets too small just scale the triangle larger
- Try deforming the triangles.

We will be using the Julian again later but that should be enough to whet your appetite 😊

Tiling

I have kind of dreaded writing this section in particular because I don't yet feel its an area of Apo that I have sufficiently got to grips with. In addition to Zueuk, Psion005, Grinagog I would add MichaelFaber to the list of experts in this area. I think I have got close with some aspects but it's not quite there. Perhaps you will unlock the key? One of the most (if not **the** most) important aspects of repeating patterns is the placement of what I term the patternmaker transforms. These are the triangles that are placed to repeat the pattern. Going back to the Metallica script as an example. Of the 10 transforms created by that script, the last 8 are purely to repeat the pattern in a very precise way. After discovering this I figured this was the way to go to tile. At this time I am still very much experimenting and until I get it right I don't feel confident releasing any teachings on the subject. When i do eventually master it that should change. I apologise for any disappointment to those looking for a solution to mastering this technique. The only reason I have included this section is because tiling is a popular flame type and I reason that something should be included – even if it is somewhat negative at this time. However, all is not lost. What I will do is show a few images and give you the parameter files so you can get an idea as to how they were done. Who knows, maybe you can find the 'missing link' and tell me how to do them properly! Firstly my favourite in this series: Dragonscales

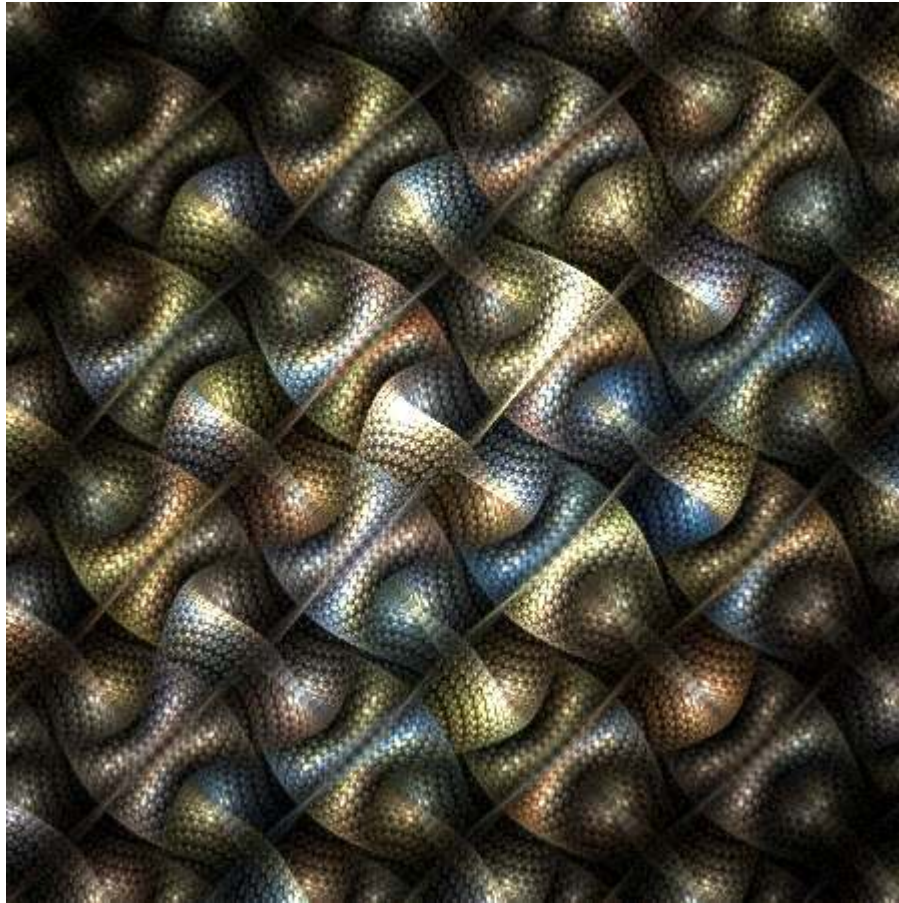


```

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0.102881494418569" scale="140.98155" oversample="1" filter="0.1" quality="50" background="0 0
0" brightness="30" gamma="3" >
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  <xform weight="0.5" color="0.0058770002797246" linear="1" coefs="1 0 0 1 -0.75 -0.75" />
  <xform weight="0.5" color="0.490701110335067" linear="1" coefs="1 0 0 1 0.75 -0.75" />
  <xform weight="0.5" color="0.085411346051842" linear="1" coefs="1 0 0 1 0.75 0.75" />
  <xform weight="0.5" color="0.603561342461035" linear="1" coefs="1 0 0 1 -0.75 0.75" />
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0.512 0 -0.75" />
  <xform weight="0.5" color="0.683" symmetry="1" linear="0.721" polar="-0.848" coefs="-0.083886
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  <colors count="256"
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00A985DE008F83E200818FE5007EAAE9007CC9EC0079EBF00076F3D70073F7B5
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</flame>

```

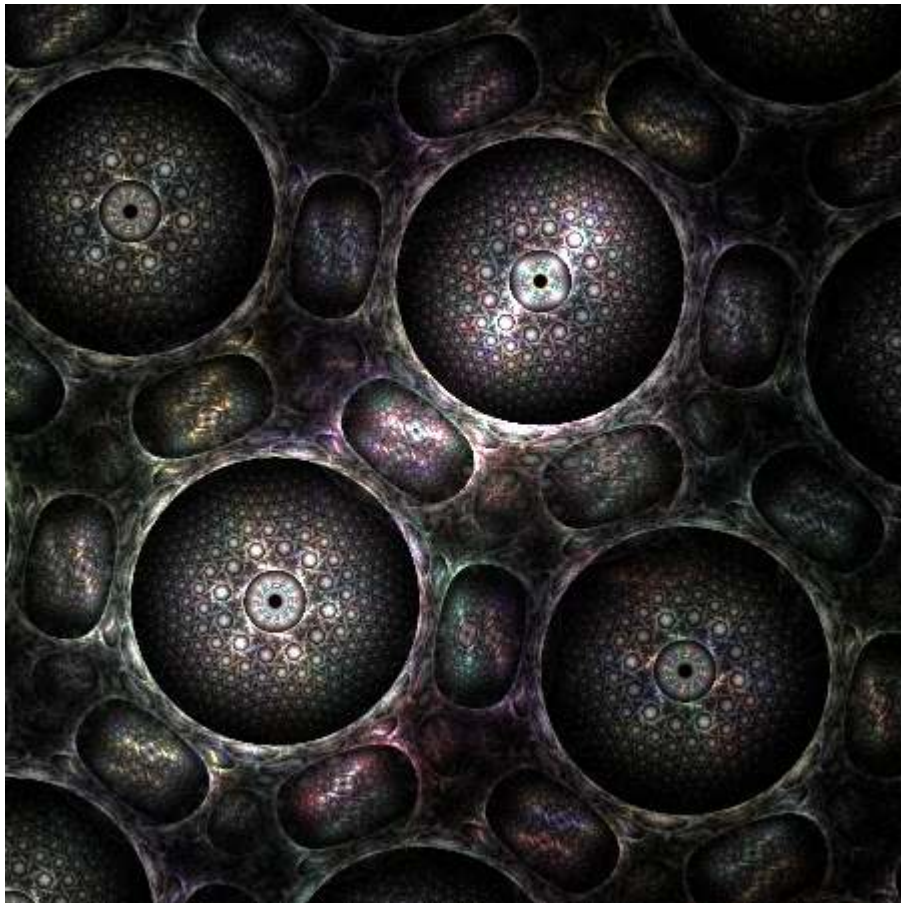
Next, a previously unpublished flame:



```
<flame name="2B2H-Tiling2" size="398 333" center="-0.00274961403875462 -  
0.000868652739079323" scale="87.7789" oversample="1" filter="0.1" quality="50" background="0 0  
0" brightness="30" gamma="3" >  
  <xform weight="0.5" color="0.672973338747397" linear="1" coefs="0 1 1 0 0 -1.010017" />  
  <xform weight="0.5" color="0.857" linear="1" coefs="1 0 0 1 -1 0" />  
  <xform weight="0.5" color="0.234370272373781" linear="1" coefs="-1 0 0 -1 1 0" />  
  <xform weight="0.5" color="0.00220772158354521" linear="1" coefs="0 -1 -1 0 0 1" />  
  <xform weight="0.5" color="0.471299953060225" linear="1" coefs="1 0 0 1 0 0" />  
  <xform weight="0.5" color="0.340553615707904" linear="1" coefs="-1 0 0 -1 1 -1" />  
  <xform weight="0.5" color="0.427122345892712" linear="1" coefs="1 0 0 1 -1 1" />  
  <xform weight="0.5" color="0.41815753467381" linear="1" coefs="-1 0 0 -1 0 0" />  
  <xform weight="0.5" color="0.687" handkerchief="0.31" coefs="0.091904 -0.110284 -0.091904 -  
0.09453 -0.06849 -0.981838" />  
  <xform weight="0.5" color="0.634" linear="0.1878" handkerchief="-0.16" coefs="0.167772 0 0  
0.167772 1.064728 -1.966305" />  
  <colors count="256"  
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```

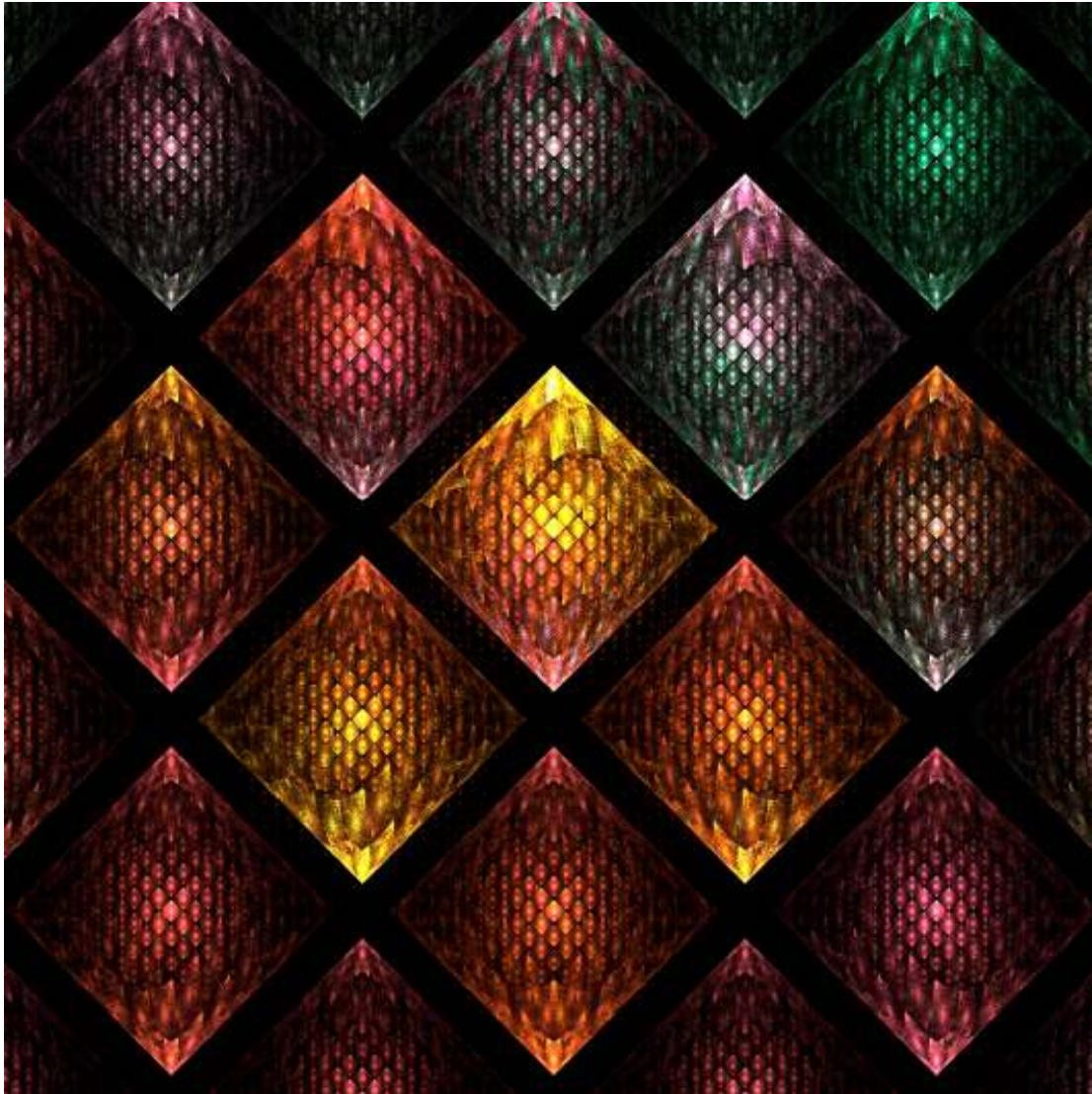
```
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</flame>
```

The next one (another deviation) shows a slightly different method of transform placement:



```
<flame name="2B2H-Tiling3" size="398 333" center="-0.328524321340426 -1.35398647650595"
scale="81.7257882352941" angle="2.45009320394964" rotate="-140.38" zoom="-0.416"
oversample="1" filter="0.1" quality="50" background="0 0 0" brightness="5" gamma="3"
vibrancy="0" >
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  <xform weight="0.3" color="0.166666666666667" linear="1" coefs="1 0 0 1 0 -3" />
  <xform weight="0.3" color="0.333333333333333" linear="1" coefs="-0.5 0.866025 -0.866025 -0.5
0 -3" />
  <xform weight="0.3" color="0.5" linear="1" coefs="-1 0 0 -1 0 -3" />
  <xform weight="0.3" color="0.666666666666667" linear="1" coefs="-0.5 -0.866025 0.866025 -0.5
0 -3" />
  <xform weight="0.3" color="0.833333333333333" linear="1" coefs="0.5 -0.866025 0.866025 0.5 0 -
3" />
  <xform weight="0.6" color="1" julia="-0.265" coefs="0.733389 0 0 0.733389 0 0" />
  <xform weight="0.6" color="0.833333333333333" linear="0.078" spherical="3.506" coefs="0.5 -
0.866025 0.866025 0.5 0 -3" />
  <colors count="256"
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006E9F700071A96C0070B065006FB85F0075C75B007FC95600ECBD3100D48C20
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</flame>
```


And a final one...



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gamma="3" >  
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  <xform weight="0.5" color="0.447" linear="1" coefs="1 0 0 1 1 1" />  
  <xform weight="0.5" color="0.366" linear="1" coefs="1 0 0 1 -1 1" />  
  <xform weight="0.5" color="0.276" linear="-0.086" coefs="1 0 0 1 0 0" />  
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</flame>

Use of blur

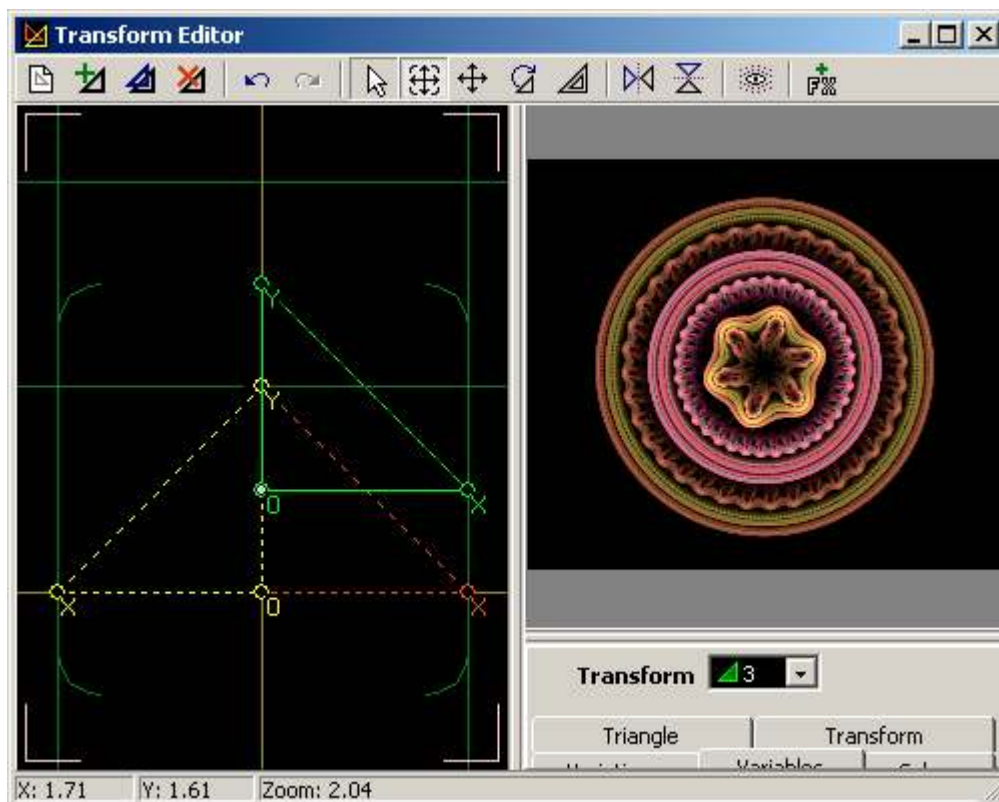
Zueuk, Grinagog and Psion005 have used this variation to create some extraordinary flames. They look solid as though constructed from metal or plastic.

The way I have found a use for blur is to use it in a triangle on its own with no other variations. Lets create an example and fall back to our friend julian.

Step by step.

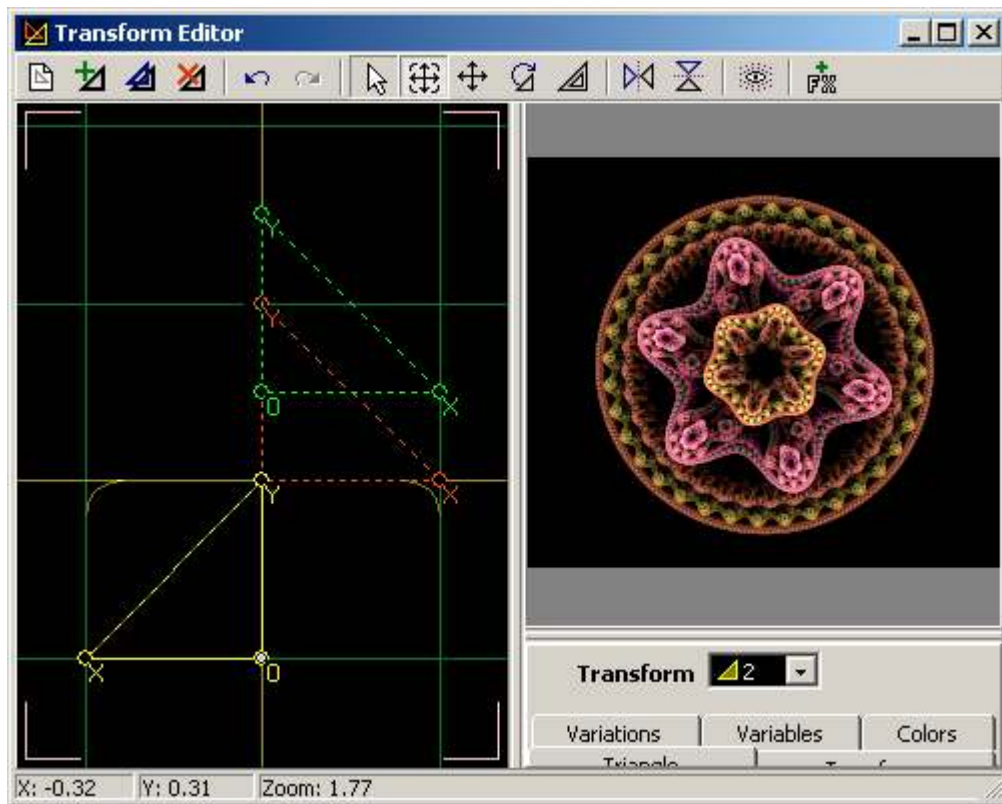
1. Create a New Blank Flame
2. Remove the linear variation from both and set julian to 1.5 on triangle 1 and 1 on triangle 2. Flip one horizontally if you prefer
3. Add another triangle, set linear to 0 and julian to 0.5 and move it up 0.5 units
4. Now go to the **variables** tab and make the following changes
 - a) triangle 3: Julian Power = 6, julian dist = 1
 - b) triangle 2: julian power = 4, julian dist = 1.5
 - c) triangle 1: julian Power = 6, julian dist = 1.5

Again depending on gradient, you should get something like this:

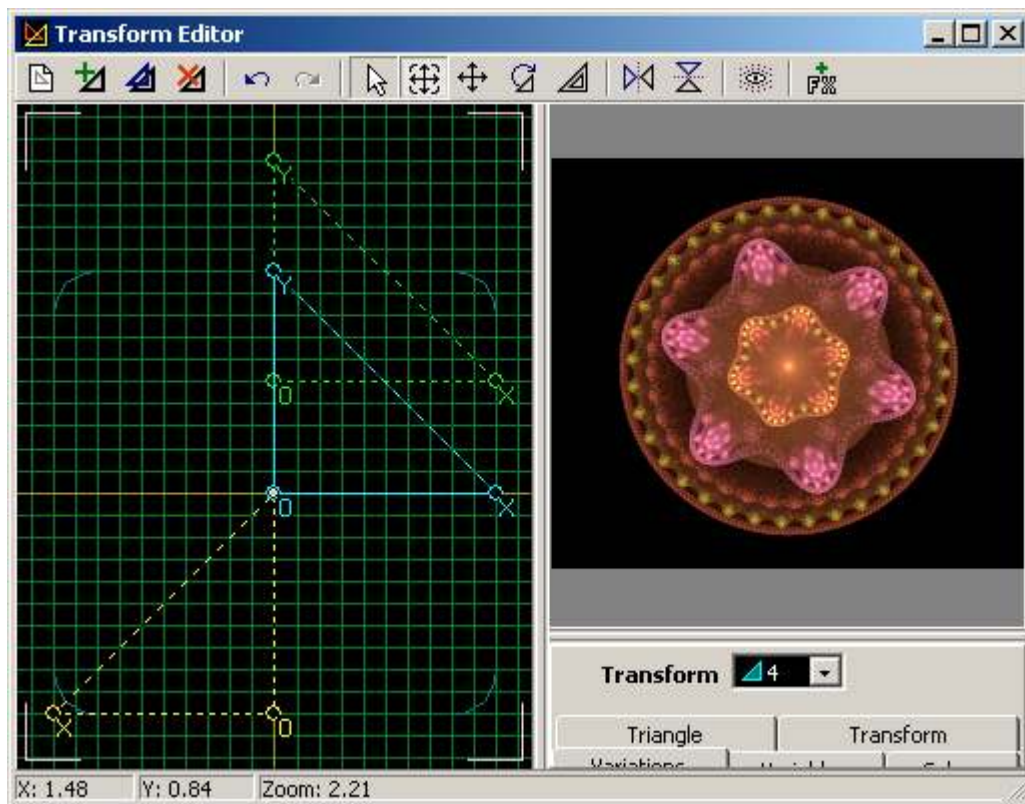


Ok now we need something for our blur to work on.

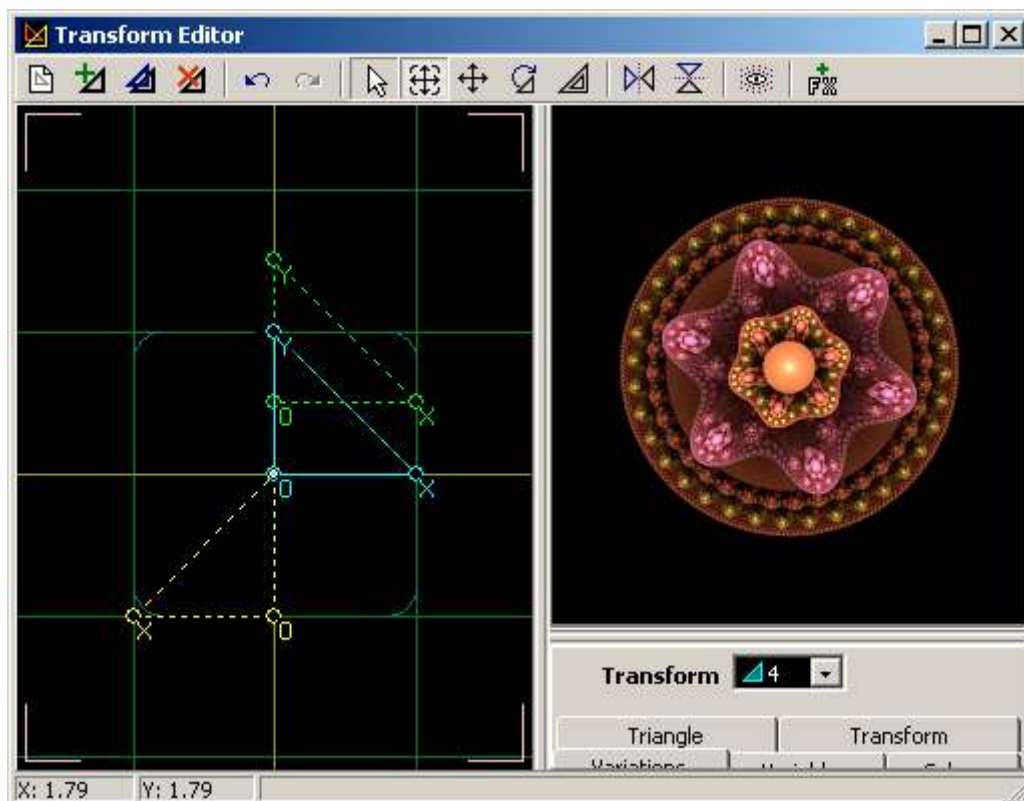
5. Move triangle 2 down 1 unit:



6. Add another triangle, set linear to 0 and blur to 1 (screenshot on next page). Now the image looks fuzzy so we need to reduce the amount of blur to sharpen it.



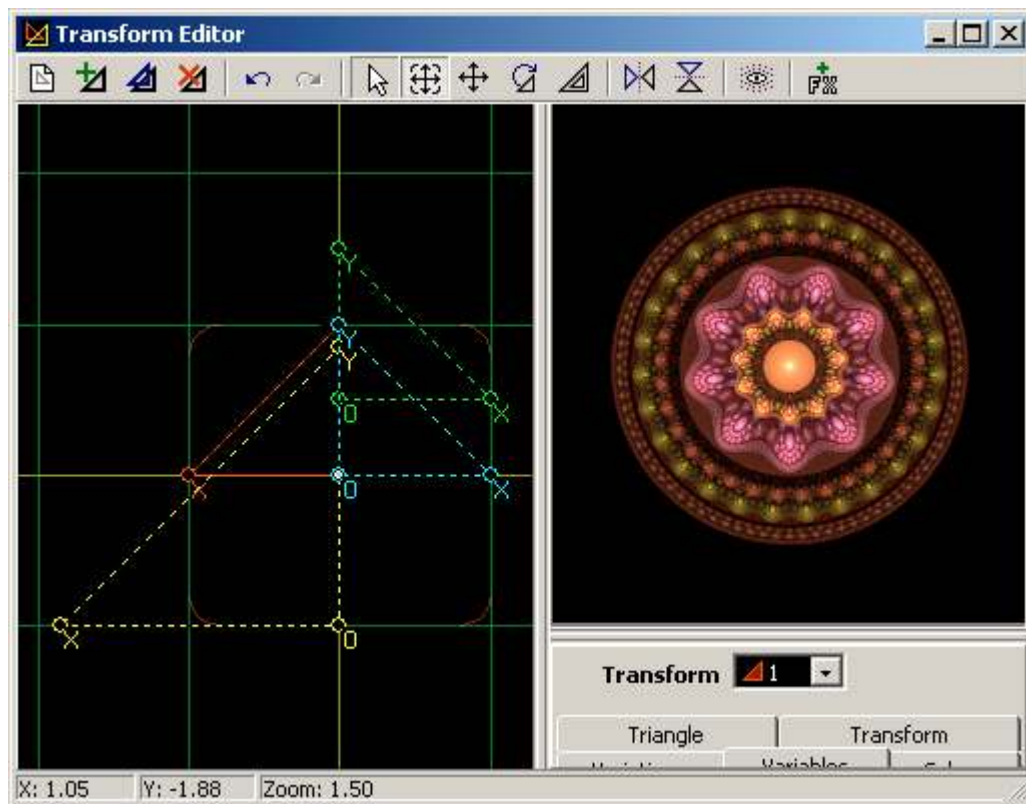
7. Reduce the blur to 0.25. This is what I now get:



Now this is quite cool but I think some improvements can be made. To finish make the following changes:

8. Triangle 1: julian power change to 3, julian dist to 0.75
9. triangle 2: julian variation change to 0.75, julian power to 9 and julian dist to 2
10. triangle 3: julian power to 11, julian distance to 2

This is the final image:



Here is the parameter file:

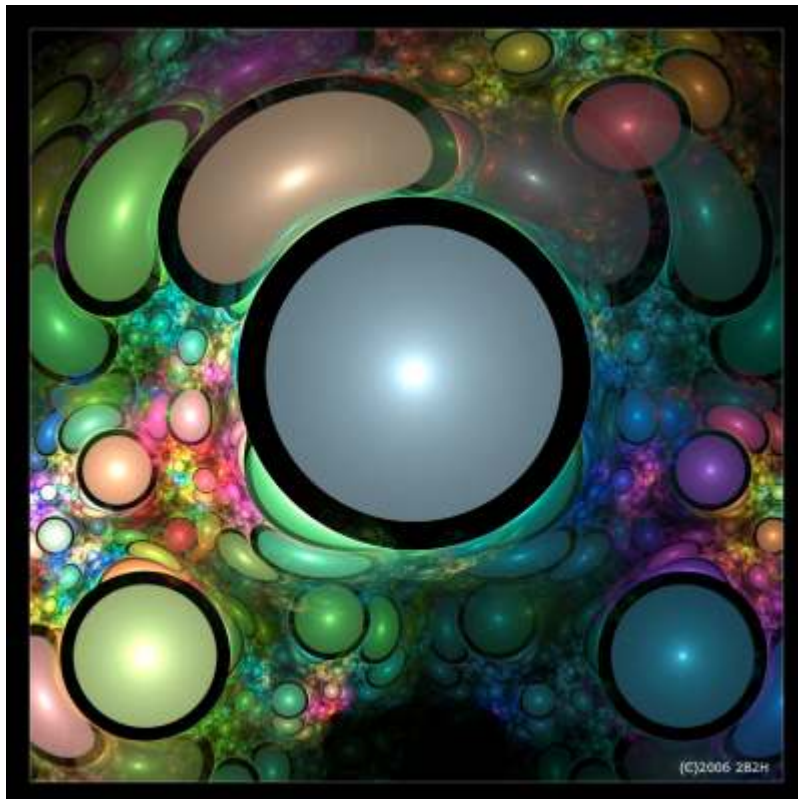
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<flame name="2B2H Julian + blur" size="319 350" center="-0.00284983071869949 -  
0.0206714257266298" scale="69.3554661016949" oversample="1" filter="0.1" quality="10"  
background="0 0 0" brightness="5" gamma="3" >  
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julian_dist="0.75" />  
  <xform weight="0.5" color="1" julian="0.75" coefs="-1.848363 0 0 1.848363 0 1" julian_power="9"  
julian_dist="2" />  
  <xform weight="0.5" color="0" julian="0.5" coefs="1 0 0 1 0 -0.5" julian_power="11"  
julian_dist="2" />  
  <xform weight="0.5" color="0" blur="0.25" coefs="1 0 0 1 0 0" />  
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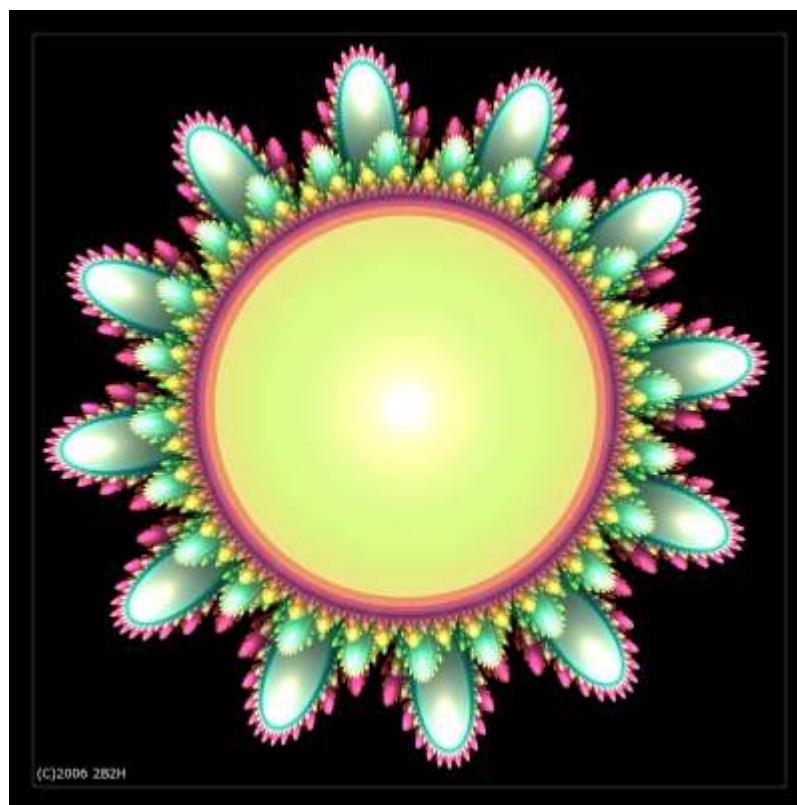
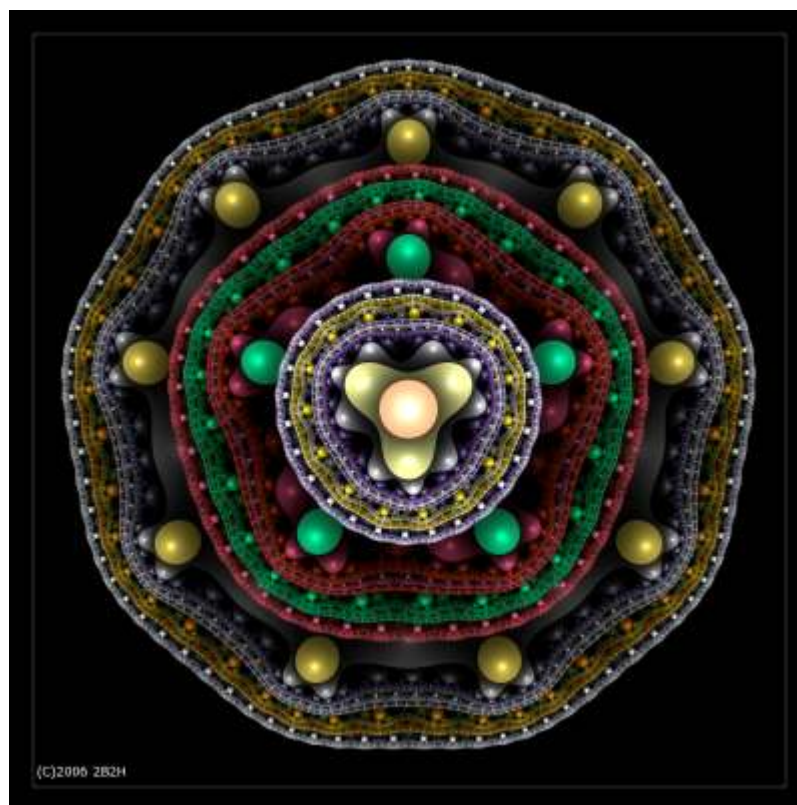
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</flame>

```

What blur does is fill the 'holes' to give the appearance of spheres and 'solidify' the flame. A few examples using this technique can be seen below and on the next page. 'Wild Thing', one of my more colourful flames was created using this technique, but using the spherical variation instead of Julian:



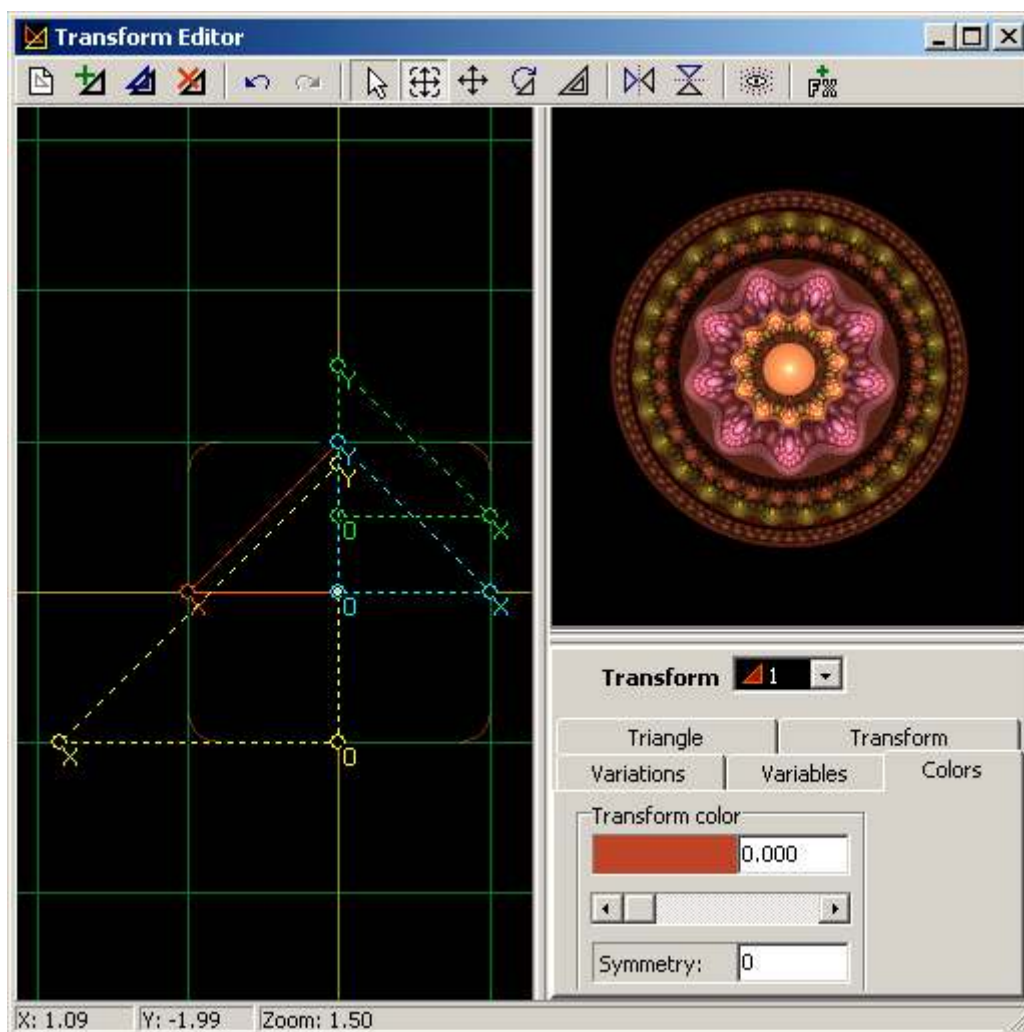


Adding Colour to your flames

There are two ways you can do this. The first is simply to use the **Flame** menu and select **Calculate Color Values**

The second method is the one I tend to use now and I will describe this next. Before I do so, if you have had problems colouring flames in previous versions (particularly 2.03c) you should find it much easier in this latest version. The reason is this. When you used AddTransform (either via script or the toolbar) when a transform was added *it also included a symmetry value of 1 by default* (except for the first two transforms when the New Blank Flame button was used) This was only discovered during beta testing of 2.03d and fixed so if you want to go and tweak your old flame colours, check the symmetry values first ☺

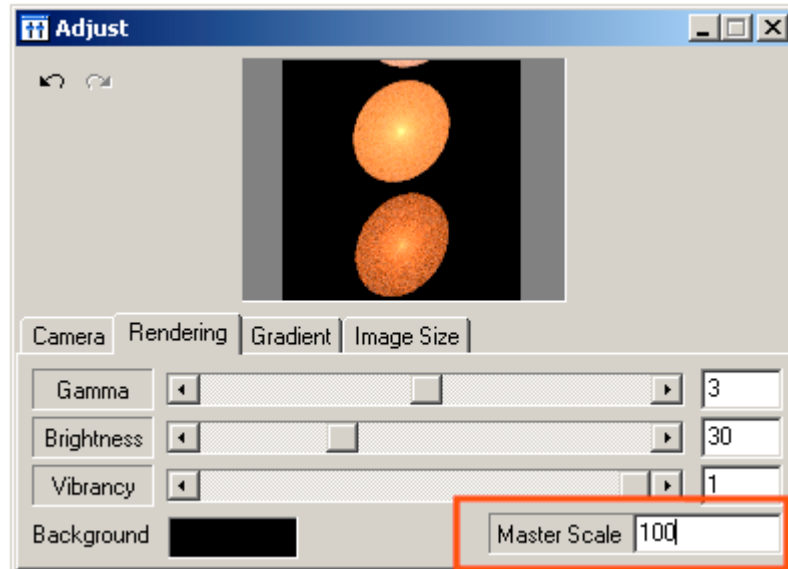
Ok onto tweaking colours. Another confession. Up until using this version I was content using the menu option mentioned in the previous paragraph. Now I rarely use it. For this exercise we will use the **Colors** tab in the editor:



This method is very simple but extremely effective. Using the method of changing variables described in **Tip No. 2** back in the section **Working with the Editor**, place the cursor over the section filled with colour and hold the left mouse button down and drag left or right. The value will change in the same way as it does for variations but the important things are you can finely adjust colours very easily **and** see the influence on the flame. This allows you to make very subtle changes which can make all the difference. It's as simple as that. No magic tricks and probably one of the more important things I can teach you about, assuming you weren't already aware 😊

Final Tip:

Don't use the zoom icon in the main window. It is MUCH faster to use the Master Scale in the Adjust Window:



Conclusion

That about does it. All the flames in my gallery have been created using these methods – even the solid looking ones. For the solid look, I would suggest starting with the julian and experiment using the tips I have given in the julian section. The important thing is that the blur must be used on it's own in one triangle. Once you get the hang of this try using other variations instead of julian with blur. I find this more difficult but I have had some success.

Before I finish I would advocate looking at the galleries of the following Apo artists whom I have a lot of respect for. There are others too but I want to let you have time to create your own flames as well ☺ I hope I have managed to expand your creativity just a little as this great little program has addictive qualities once you start to get creative.

Apo Artists

Zueuk (Apo artist and developer) : <http://zueuk.deviantart.com>

Psion005 (Apo artist and 2.03d beta tester): <http://psion005.deviantart.com>

Grinagog (Apo artist and 2.03d beta tester): <http://grinagog.deviantart.com>

MichaelFaber (Apo artist): <http://michaelfaber.deviantart.com>

Lastly, should anyone wish to look at my gallery of Apo artwork, it can be found at:

2B2H (Apo artist and 2.03d beta tester): <http://2b2h.deviantart.com>

email: carl.skepper@ivy-cottage.net