Combi-flames: an advanced level Apophysis tutorial

Introduction

This is not a simple technique, and it can be a little hit-and-miss as to which styles and frameworks are suitable, but the following points should be borne in mind:

- Avoid styles that include linked transforms or those that rely on zero-opacity transforms.

- The best styles are those that are naturally self-contained (e.g. rings2-julian) rather than extended (e.g. splits-elliptic).
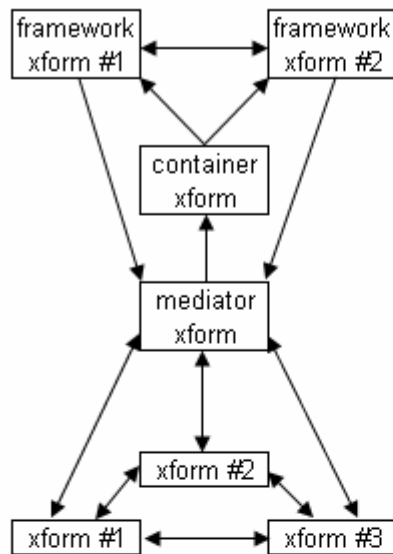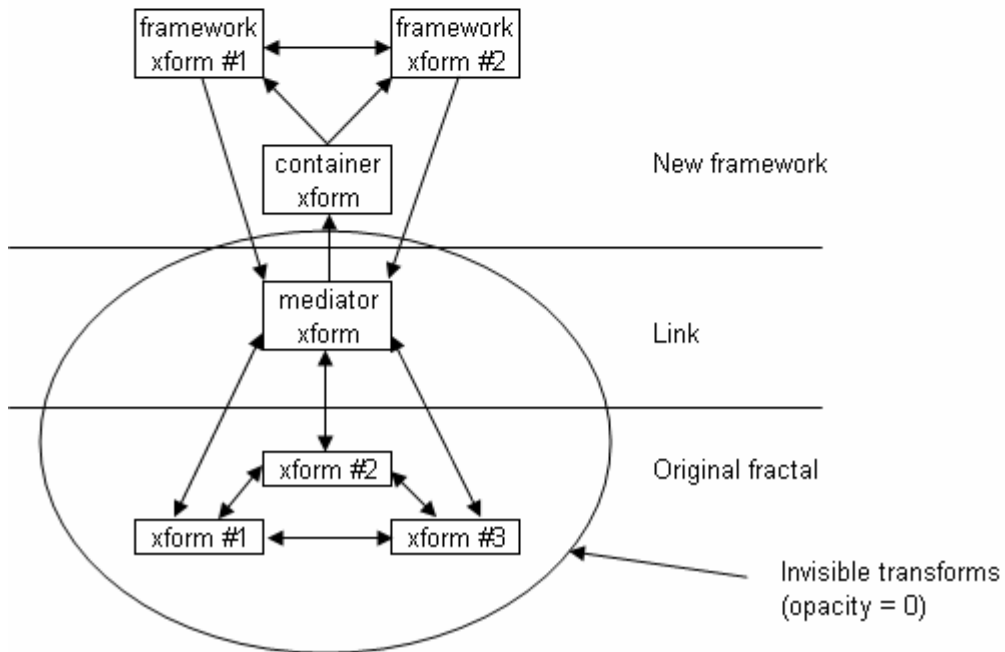
Theory

A rough outline of the method:

1. Reset the original flame weights but compensate using xaos.

2. Make all transforms invisible.

3. 'Take up' the flame again by adding a linear transform – if it doesn't look as it did, it's not suitable for this technique.

4. Link a container transform exclusively from the linear.

5. Feed the framework transform(s) from the container/each other but let them only feed back to the linear/each other.

A detailed view of the structure is best envisaged by use of the xaos flow diagram:

Combi-flames xaos flow (basic)

```
 ┌──────────┐               ┌──────────┐
 │framework │←────────────→│framework │
 │ xform #1 │               │ xform #2 │
 └──────────┘               └──────────┘
            \    ┌──────────┐    /
             \   │container │   /
              \  │  xform   │  /
               \ └──────────┘ /
                \     ↑      /
                 ┌──────────┐
                 │ mediator │
                 │  xform   │
                 └──────────┘
                /     ↑      \
               /  ┌────────┐  \
              /   │xform #2│   \
             /    └────────┘    \
    ┌────────┐              ┌────────┐
    │xform #1│←────────────→│xform #3│
    └────────┘              └────────┘
```

Combi-flames xaos flow (unabridged)

```
 ┌──────────┐               ┌──────────┐
 │framework │←────────────→│framework │
 │ xform #1 │               │ xform #2 │                New framework
 └──────────┘               └──────────┘
            \    ┌──────────┐    /
             \   │container │   /
              \  │  xform   │  /
               \ └──────────┘ /
   ─────────────────────────────────────
                 ┌──────────┐
                 │ mediator │                            Link
                 │  xform   │
                 └──────────┘
   ─────────────────────────────────────
                /     ↑      \
               /  ┌────────┐  \                          Original fractal
              /   │xform #2│   \
             /    └────────┘    \
    ┌────────┐              ┌────────┐
    │xform #1│←────────────→│xform #3│
    └────────┘              └────────┘
                                              Invisible transforms
                                              (opacity = 0)
```

This is an example only – your actual flame may have more or fewer transforms in both the original fractal and the new framework. If this all looks rather daunting, things will hopefully become clearer with a worked example.

Example: filling a splits tile framework with a flipped disc flame

Some basic flipped disc parameters to work with:

```
<flame name="flipped-disc" version="Apophysis 7x Version 15" size="640 480" center="0 0"
scale="160" oversample="1" filter="0.4" quality="1" background="0 0 0" brightness="4" gamma="3"
estimator_radius="9" estimator_minimum="0" estimator_curve="0.4" enable_de="0" plugins="" >
   <xform weight="1" color="0" symmetry="0.5" disc="1" coefs="0.4 0 0 0.4 0 0" opacity="1" />
   <xform weight="1" color="0" symmetry="0.5" disc="1" coefs="0.4 0 0 0.4 0 0" post="-1 0 0 1 0 0"
opacity="1" />
   <xform weight="0.5" color="1" symmetry="-1" linear="0.5" spherical="0.5" radial_blur="1" coefs="1
0 0 1 1 0" radial_blur_angle="1" opacity="1" />
   <xform weight="0.5" color="0" symmetry="-1" linear="0.5" spherical="0.5" radial_blur="1" coefs="1
0 0 1 -1 0" radial_blur_angle="1" opacity="1" />
   <palette count="256" format="RGB">
      7454638377698A6B73966368A35D55A45C50A0393ABB0B16
      C53439B34933DA4C36E05250B4624CA95A55A75353883A4A
      752A3E6F1225470F2C4202273A05172E081F0E091F060821
      0C0C24180E26281A333F264463415A8E6F74B09582B99E89
      B3AB94B89D8AA58B7A937C6C7D6D5E6C4540624340472639
      3D223534193830172A341B303B1934442739572B446D3946
      7A4348836B619D8674B79589E4BB85F7E094F7E79AFFEBB0
      FFFFADF4E799FFE691F4E497F0CF8CEFC382F2C87CF4D07C
      F0C674E8C279E1C178E3B874E8BF7FE3BE89E8C67FF4D98C
      FEDA86FFE47DFFC26FFBB256F5B263F2BB6BD4AF69D18D5E
      C96B52A75F538A47507249597A525B856A63978473B4938A
      B89C87E0A175D6B160E7A85BF48655F28751F1894ACE7C56
      C97149B3583D91423D90433B83313D7E37497441406F4553
      745565907466B2937FC49C79ECDA50FEFF09E1B256C89659
      A471526E5C504C3F483526432717341D102C140A250E0A23
      100F21130D291B112C1A16312214352417311E122A1A0E26
      1A102926142C2E102A2C142A2B1933371837421D3C4B2941
      5D33496438456C36466F354B722642691F40661D38692929
      7A3C2F9252539B7574A29582B09A83A99A879A8A7A7A766B
      6F576D4E3E59412A462F223E271A34271734241B3A342441
      472847593E51695F56807A6E8D897E938D7F908A7A9B8577
      8D7A6B806E6070465E6D435762455B614055683C4D693647
      5F394E60355052345043294C3E2A463C2444442A43442C42
      4830485D4056654D4D6958507471688581768F897D9D9485
      9F8A75C08F54CD8C54EB7F41B18603A254408D464269404E
      714556764C5A9C5A5CAB6156AA685CBA6B5EBE6753B67356
      9881719B8F7FA19587A29686A09486948B7A8D7A6B8E636C
      783B4A692B36471F374317322C191F1B0E1818032219001D
      0C06120001100B081B100C27160F301D1635251A3A291C3A
      38213E3A213E3A1D393E21373E223B3D264243263C472229
      4C18255D181B7605238A3731784242736153776B5D63554A
      5F564D56504464474B5A3135601C2947152124142E300F2A
   </palette>
</flame>
```

First task is to prepare the base flame: we'll analyse exactly what's required, then I'll provide an automated method for doing it, because I'm generous in that way :D

We can best assess what's required by listing transform weights and xaos values then performing a simple series of calculations:

		Selected transform			
	1	2	3	4	
		Xaos before			
to 1	1	1	1	1	
to 2	1	1	1	1	
to 3	1	1	1	1	
to 4	1	1	1	1	
		Transform weight			
	1	1	0.5	0.5	
		Xaos corrected*			
to 1	2	2	2	2	
to 2	2	2	2	2	
to 3	1	1	1	1	
to 4	1	1	1	1	
*corrected xaos to n =			transform weight n		
				0.5	

So, the weights of transforms 1 and 2 are reset to the default 0.5 and the xaos values are set as per the above table. Or you can just run the following script snippet on the copied base parameters:

```
//reset weights and correct via xaos
for i := 0 to transforms-1 do
begin
SetActiveTransform(i)
xc := Transform.Weight
Transform.Weight := 0.5
Transform.Opacity := 0
for j := 0 to transforms-1 do
begin
SetActiveTransform(j)
Transform.Chaos[i] := xc/0.5
end
end
```

Now to add the link and framework transforms: recall that a splits tile consists of a pair of splits transforms plus a filler. With the linking transform, that makes a total of 4 transforms to add – just hit the **New transform** button 4 times then amend as follows:

```
xform #5: leave as is
xform #6: add post_crop @ 1
xform #7: remove the linear, add splits @ 0.5 and set splits_x to 2
xform #8: remove the linear, add splits @ 0.5 and set splits_y to 2
```
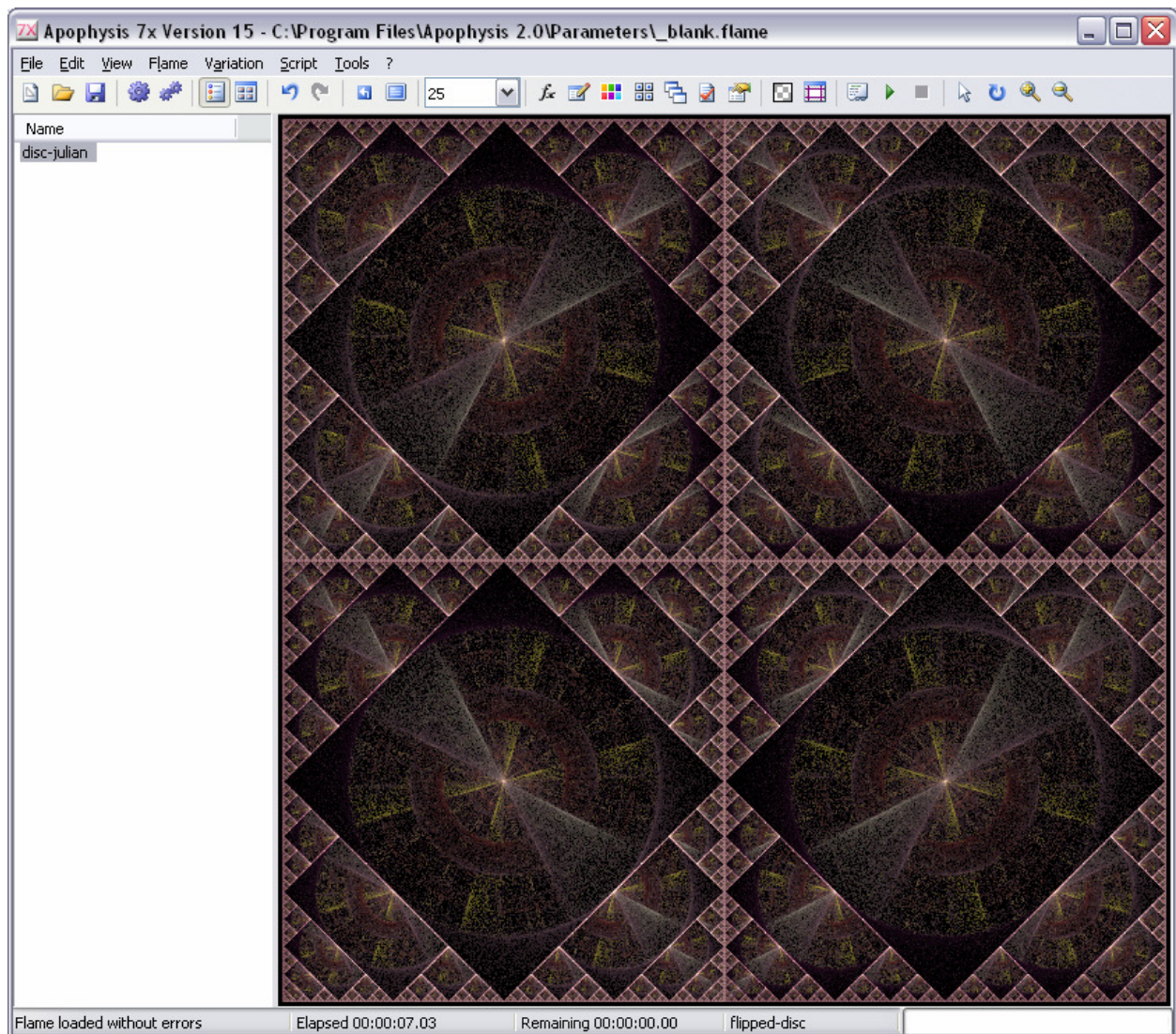
Finally, set xaos, color speed and opacity as the following table:

	Selected transform							
	1	2	3	4	5	6	7	8
to 1	2	2	2	2	1			
to 2	2	2	2	2	1			
to 3	1	1	1	1	1			
to 4	1	1	1	1	1			
to 5	1	1	1	1	1		1	1
to 6					1			
to 7						1	1	1
to 8						1	1	1
Speed	Original				1	1	1	1
Opacity	0	0	0	0	0	1	1	1

Note that xaos values of zero are omitted for clarity. I find it helpful to set the transform weight of the container/filler transform (#6 here) to be equal to the sum of the original weights (1 + 1 + 0.5 + 0.5 = 3). You should see the following:
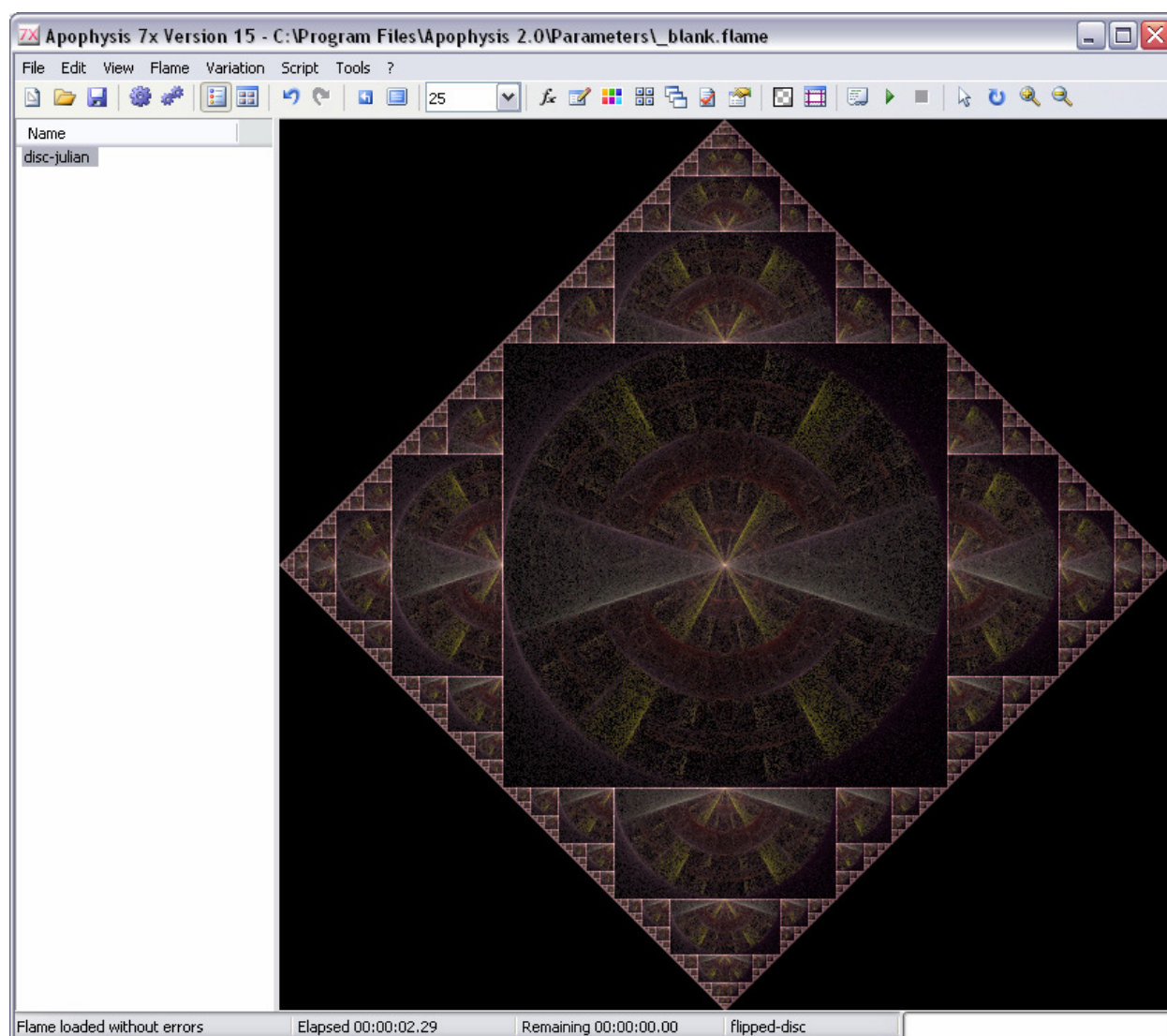
And that's it for the basic structure – you may now play around with the base fractal to adjust the flipped disc pattern as required. Increasing the brightness is almost certainly desirable. And a final cool trick with this particular flame: rotate 45 degrees within the Camera tab of the Adjustment dialogue then add a final transform. Remove the linear and add MobiusN, change the MobiusN_Power to 4, shift the final transform 2 units along any axis and set the scale to 17.5 – you should see the following:

Credits

http://guagapunyaimel.deviantart.com/

Method originally defined here:

http://guagapunyaimel.deviantart.com/journal/38896626/