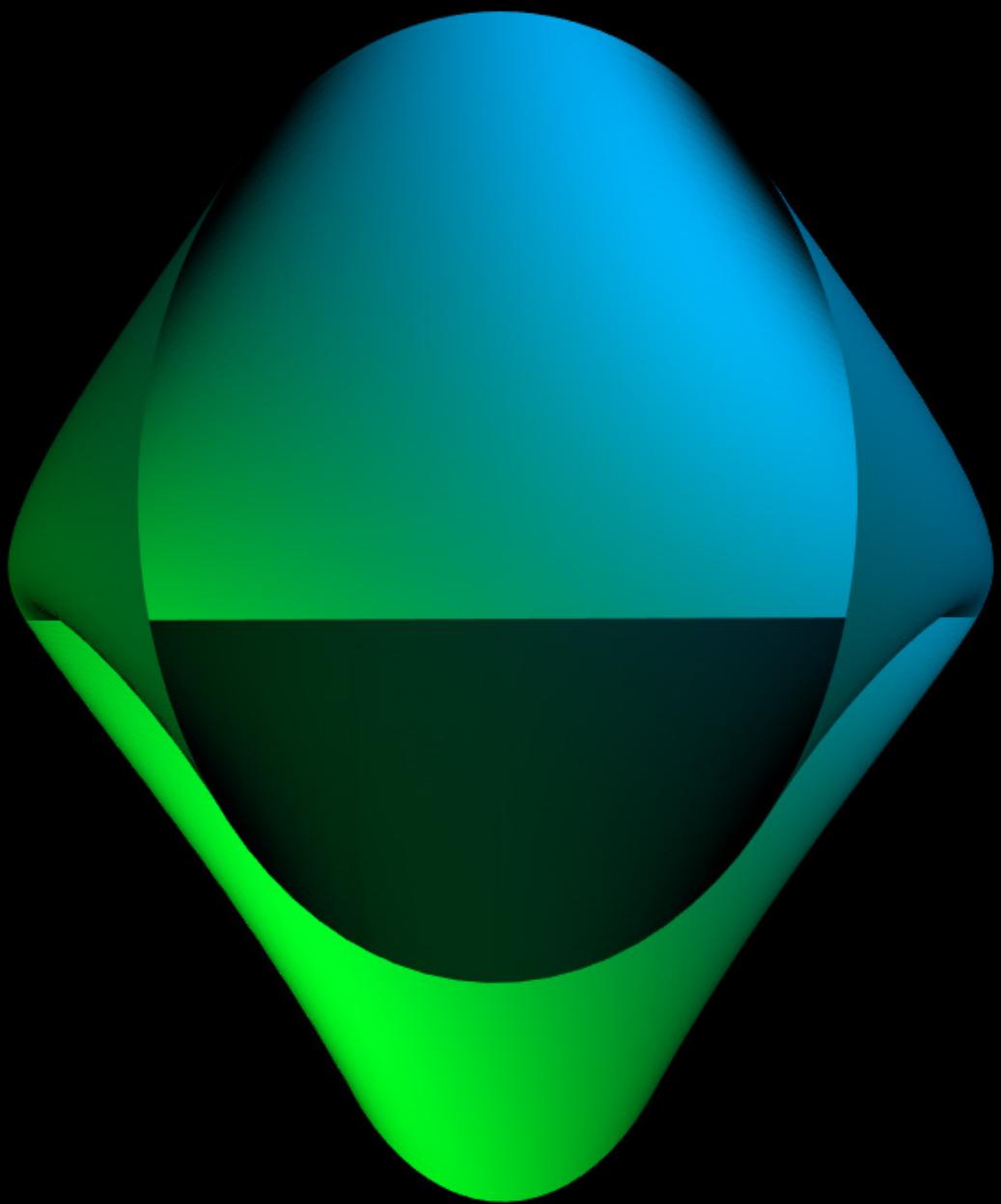


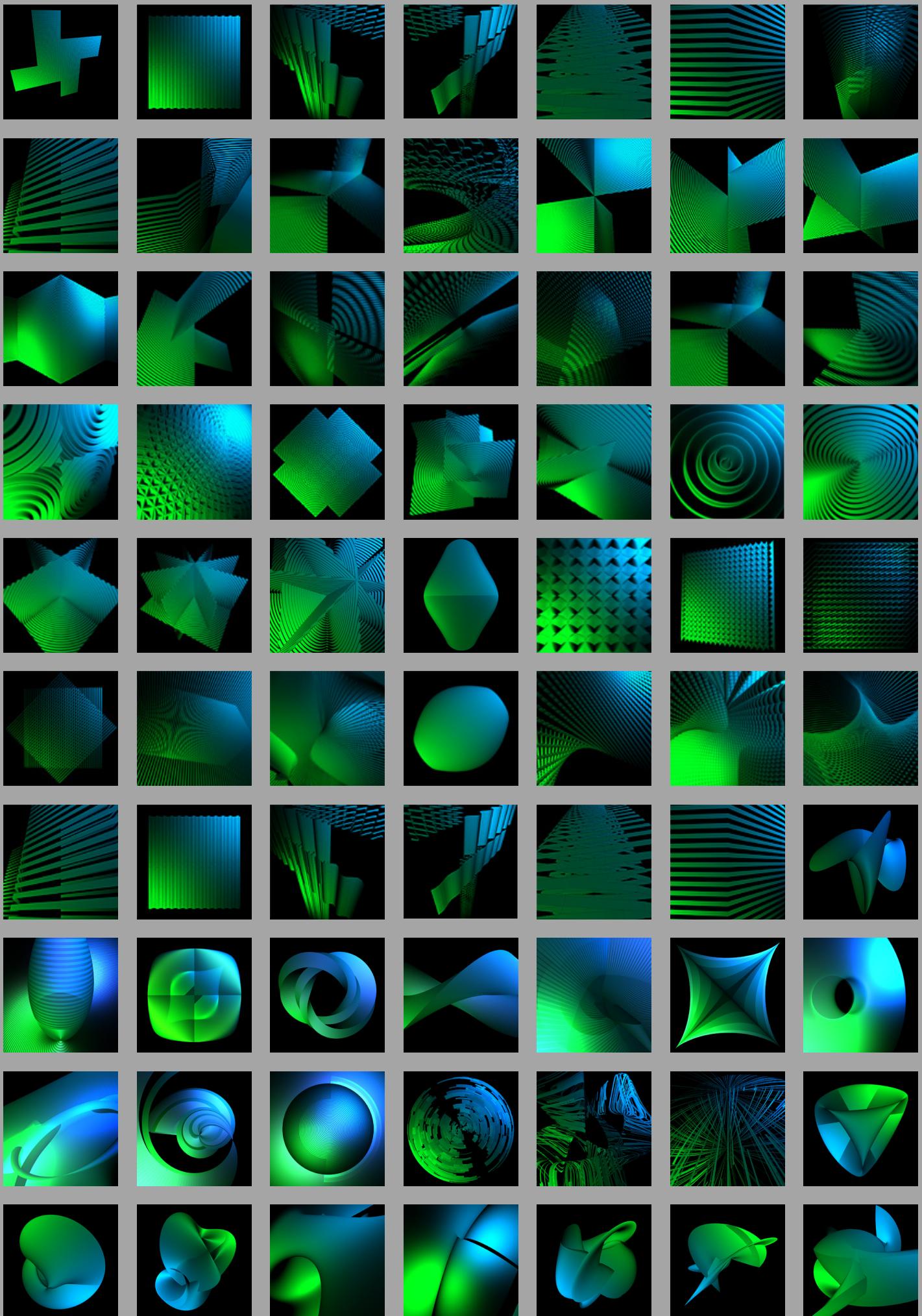
Modeling



My first contact with 3D software was in 1994 when the commercial version of Bryce 1.0, appeared for the Apple Macintosh. Two years later Bryce 2.0, shipped including the possibility to create a kind of semi-realistic mountain ranges, light sources, complex atmospheric effects, booleans and a texture editor. But the program was not very stable so I switched to NewTek's LightWave 3D. And at this moment I still have a copy of LightWave 11.6 available but I almost stopped working with the program. Working in 3D-space in the programming language Processing is completely different compared to a 3D application. In a commercial software program like LightWave 3D the manual process of preparing geometric data for 3D-graphics is similar to sculpting. In Processing 3D everything is code. There is no manual sculpting involved. You are defining objects in a much more abstract way. You tweak the code. Run the program. See the result. And make a new change until you are satisfied with the output. The upcoming programs learned me how meshes (or models) can be modified by numbers.

When Auguste Renoir became so old and crippled that he could not hold a brush, he took modeling nudes in clay for his own entertainment. August Rodin, the sculptor, asked why he did not stick to painting. Renoir replied gently, 'I am too old to paint. I must do something easier.'

Pierre Auguste Renoir, 1841 - 1919,
French impressionist painter.



MyCodeHistory: 6 March 2015

Creating a grid is not a spectacular job but it is very helpful during the production phase of the design process. When objects or pages have their elements aligned they seem to make more sense when you are a follower of order and functionality. You can use grids everywhere. Its usefulness ranges from architecture to typography. I use grids all the time. These programs use a regular grid of points in 3D space. Without these points it is not possible to bend the plane in 3D space.

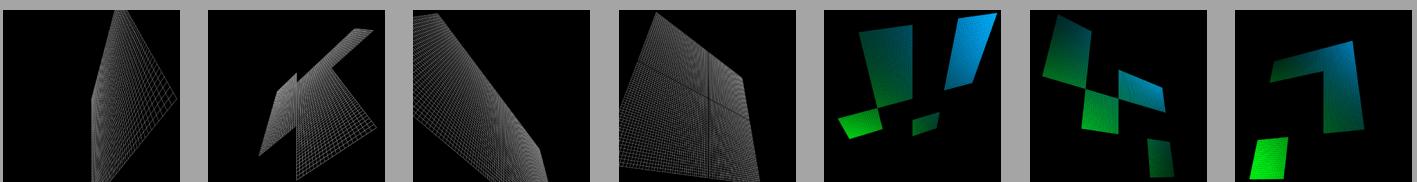
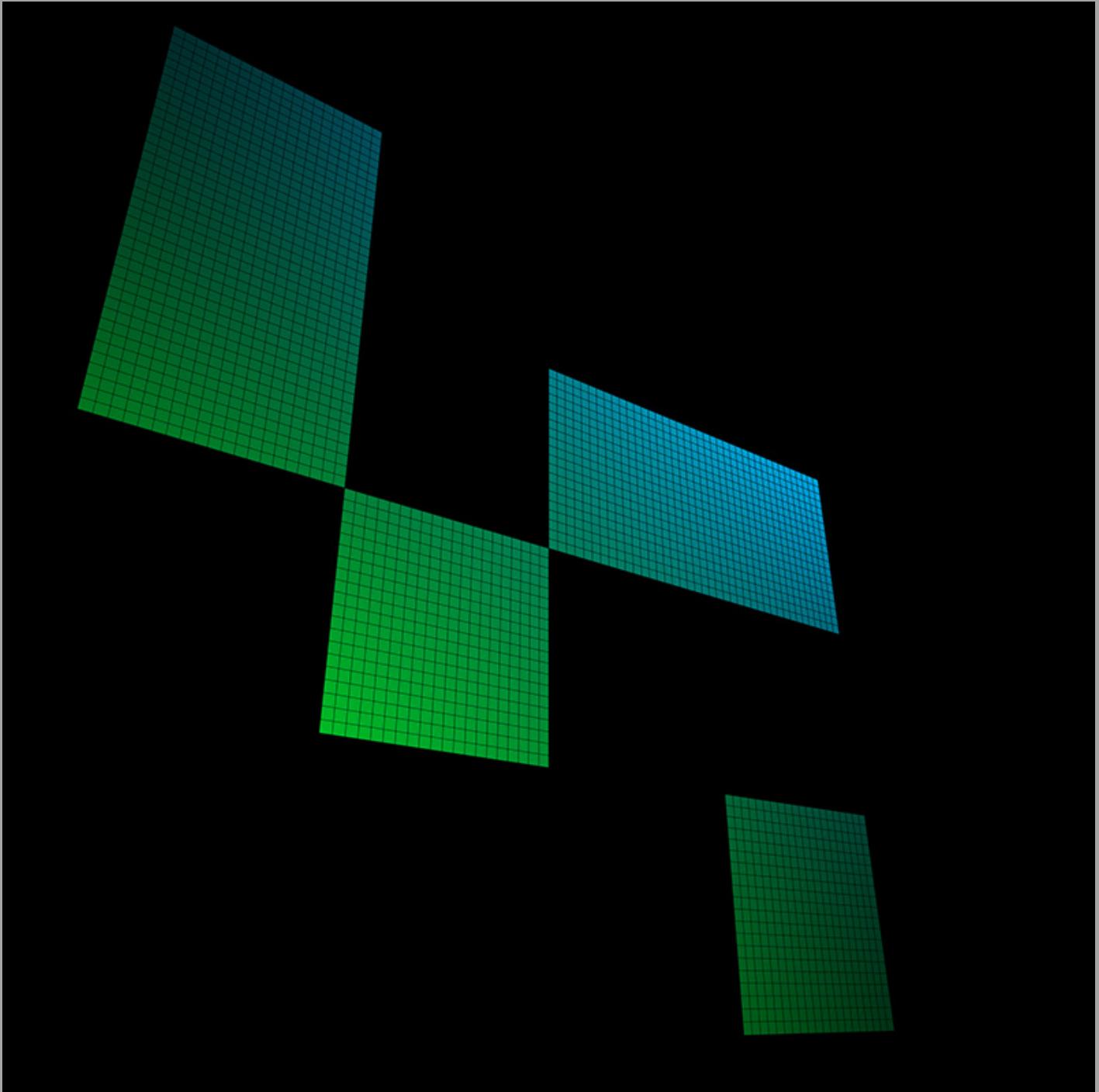
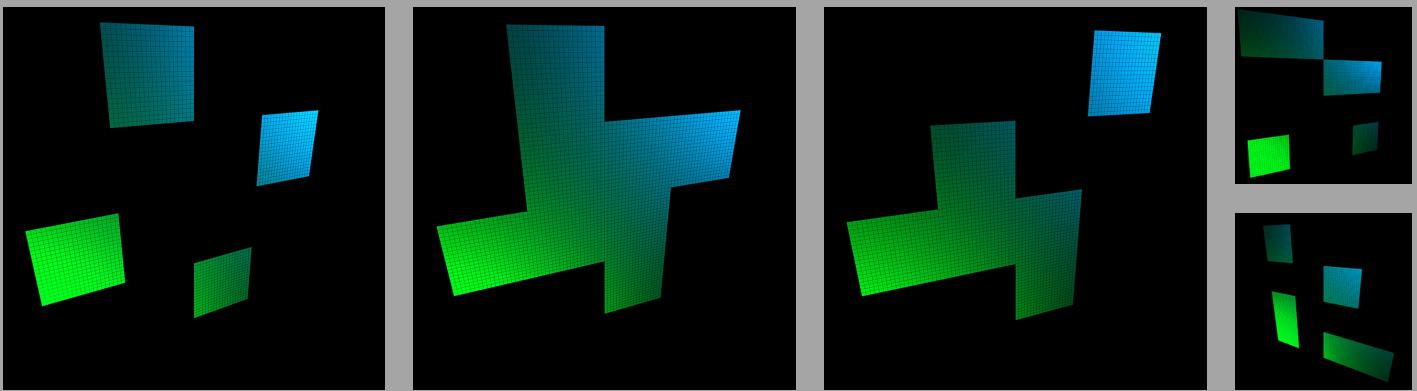
When I let this program run for the first time I got a totally different image than what the attached pict-file in the accompanying programs folder showed me. Lines were extremely thick. So I checked if there was a strokeWeight involved. But that was not the case. Then I checked if there was something wrong with the QUAD_STRIP parameters. But everything seemed to be fine. I checked the next program (M.3.2 in the Generative Design book) and it used the same extremely thick lines. But that program did use a strokeWeight. So I changed the strokeWeight to 0.01 pixels. And that seemed to work. Back to the original program (M.3.1 in the Generative Design book) I added also a strokeWeight of 0.01 pixels. Changed the global variable names for readability and understanding purposes. Switched the background to black and the lines to white. And I added functionality to the s-key for making screen grabs. Did a test with a png-file. But the image quality was very poor. I imported Marius Watz ImageTiler class. But the image quality was still terrible. I thought that saving the image as a pdf-file might help. That helped but it did not render the background black. So I had to restore everything in Photoshop or Illustrator. TileSaver worked. But creating a pdf-file didn't. After cranking up the horizontal and vertical tiles to 20 the pdf-file gave me an indexoutofboundserror. So pdf-files are no option. I'll stick to the png-format.

Looking at the original object its origin is now in the middle of the display window. And that's fine because that is where the coordinate system begins. It evolves down and to the right. But I find that way too difficult to handle. It is connected to the top left of the grid-mesh. So I copied the existing for loop with a translate function to the left and with the same amount of horizontal and vertical tiles. That gives me four grids of 40 x 40. As a check to make that visually clear I added one grid-unit in between. The idea is now to create four grids of a different size. And put them together as if it was one large object. In this way you can arrange the grids separate from each other. And now I can re-arrange the grids as if they were four different grids. I have the idea to make several objects that use the grid plane as a base. These are very simple objects of course. I have drawn sixteen variations of this grid-system on paper. I also imported the light settings from my previous 3D scenes again. It is now just a matter of creating those variations.

When you make an object which consists of several elements it is very easy to make variations. Just reposition the elements differently in space for every other composition.

If you look at any leaf on any tree branch, it's similar to but not exactly a repetition of the previous branch. So the new science of complexity or showing how an architecture can be produced just as quickly, cheaply and efficiently by using computer production methods to get the slight variation, the self-similarity.

Charles Alexander Jencks, 1939–, American architecture theorist, critic, landscape architect and designer.



MyCodeHistory: 12 March 2015

Until now I have used 3D in a very straightforward way. I only rotated the total surface on a certain angle in the z-axis. But because I'm using a lot of points I also have the possibility to bend the surfaces. Bending a surface would be impossible without these points.

When I started I was made unsure by a formula on page 373 that was discussed in the Generative Design book. I was confused because I could not track that formula down in the code. The formula should be on line 87 of the program but that line says: float $z = \sin(x)$; So I thought that it would be worth a try to use the formula from the book in the program in a later stage. But then I saw that this formula was used in the next program (M_3_2_02). So for the time being I continued to go through the same routine as I used in M_3_1_01. I put the origin point in the middle of the display window. Copy and pasted the mesh four times. And than you get a kind of large curtain. I used the same light settings as I used in the previous program. And for a while I looked at the curtain at several angles.

I was a bit bothered by that curtain. It was too straight and there was not much interesting happening. To get away from that idea I introduced a global variable called `ModifyDistance`. It multiplies the value of a variable. This is not something new but it gives you the possibility to modify certain parts of the grid curtain. And what's even better, it gives you the possibility to make interesting compositions with it. Especially when you move the camera into difficult positions.

I've broken a few other parts of the curtain. Some of them are now changed into small strips. I think this might be a good theme to continue. So now it's not alone about bending the grid but also about breaking up the mesh. Made all the loops the same. Which is of course a bit silly. But although this change is very simple it still gives me interesting images. Switched off all the strokes. Which gives even nicer images. The object has now changed from a curtain to a kind of windshield or a wall. You get interesting images when looking from behind into the front where the light bounces of the front.

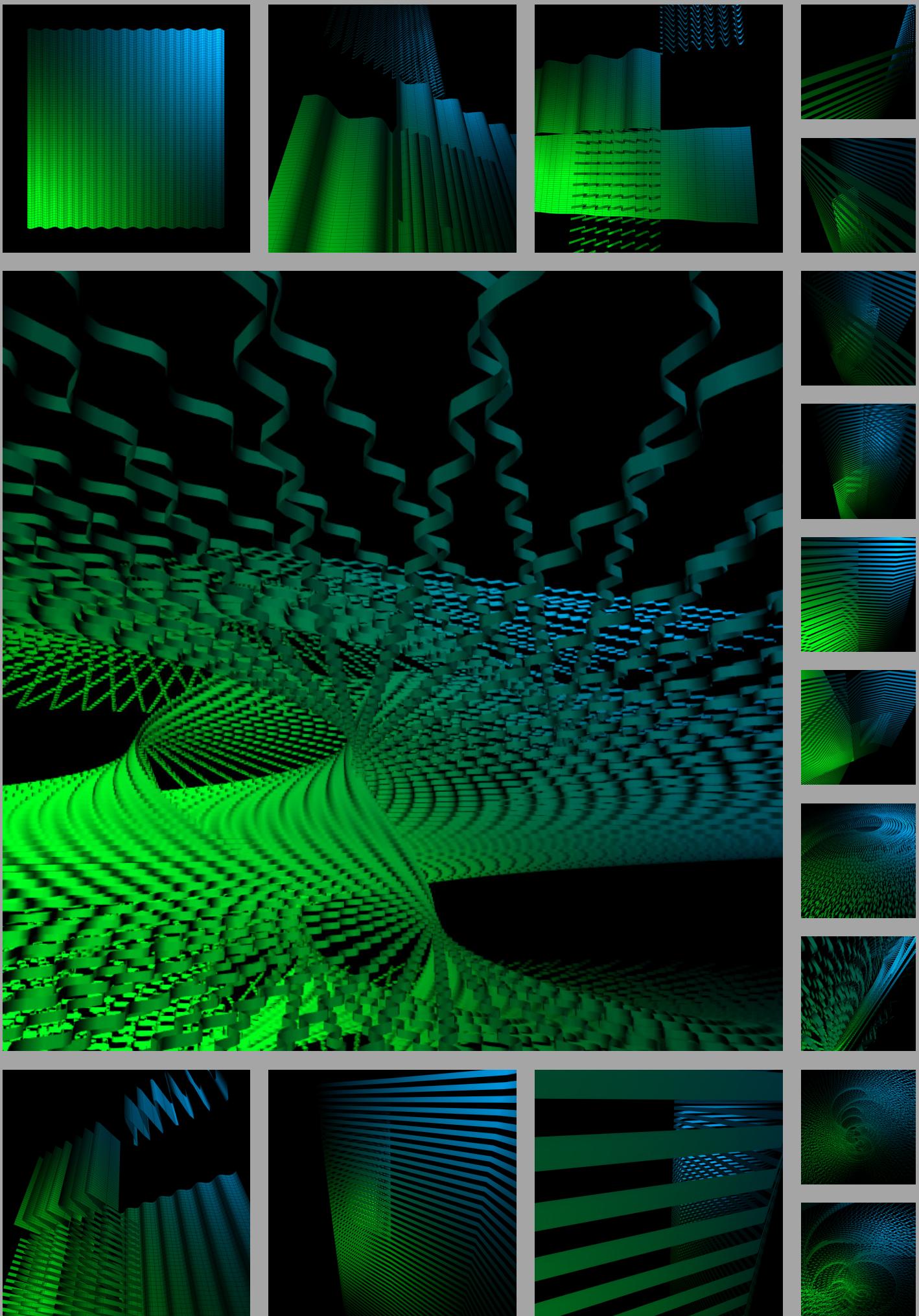
Used $x + 2$ for the z value. Which makes the windshield a bit more complex than the earlier version. Looking from the top down gives even more interesting angles. Replaced $x + 2$ by $x / 2$ for the z value. It makes not much difference but just enough to be different. Made a filled rectangle which is located horizontal. At least that is what I thought at that moment. But what I saw at a later stage is that it is not 1 rectangle but there are 16 rectangles located each above each other. And that is nice. That unpredictability! You never know what is going to happen with the images.

At a certain moment I thought what about introducing some rotation into the object. So I used the variable `ModifyDistance` for the amount of radians. Which on their turn are responsible for the rotation or the curvy-ness of the object. In the last version of this series I only replaced the `rotate` command for `rotateY` in the for loops. And that makes a big difference for the images. Finally there is not much left from the grid except for the rhythm. But the object is surely curved and broken apart.

By bending an object you can definitely get interesting images. But without bending the object still keeps giving interesting compositions. Even when you break this object down it does not make chaotic images.

A quote about an object which is broken apart but still keeps its architectural qualities. In 1933 Elsie De Wolfe traveled to Greece with some friends. Like most visitors, Elsie found her first sight on the Acropolis a stirring experience. 'It's beige! My color!' she cried.

Elsie De Wolfe, 1865-1950, US designer and fashion leader



MyCodeHistory: 17 March 2015

I have been working on the third example of the M.3 Formulated bodies chapter. In the earlier examples I could perfectly match four rectangles together without any gaps between them. In these example the rectangles and the waves are not symmetrical so they cannot match perfectly to each other. That means that I have to find another solution. But sometimes you don't have to find another solution. Because when the separate rectangles cannot match I make a proposal with rectangles that do not match to each other. That doesn't solve the matching problem but it gives you new opportunities to create other images with new compositions. I started to draw a rough object in my sketchbook. But during the programming it turned out that an unfinished version of it would be much more suitable to make good compositions. Those happy accidents sometimes happen.

At a certain moment I created a kind of fence. I increased the grid points to 400. And than I got another java.lang.ArrayIndexOutOfBoundsException error when I hit the 'p' key. So I will not be able to save .pdf-s. Knowing that error from the previous session I just save every image as a png file. Sometimes it's better to work around a problem instead of solving it. That saves time but you don't learn much from that particular problem. So you have to find the right balance. When you think you can solve the problem, just give it a try. When you worked on it for an hour or so and you didn't get any further just stop searching and get on with the work you were doing before the problem occurred.

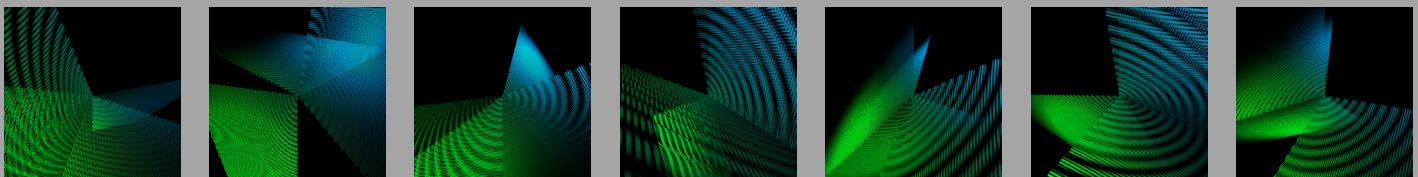
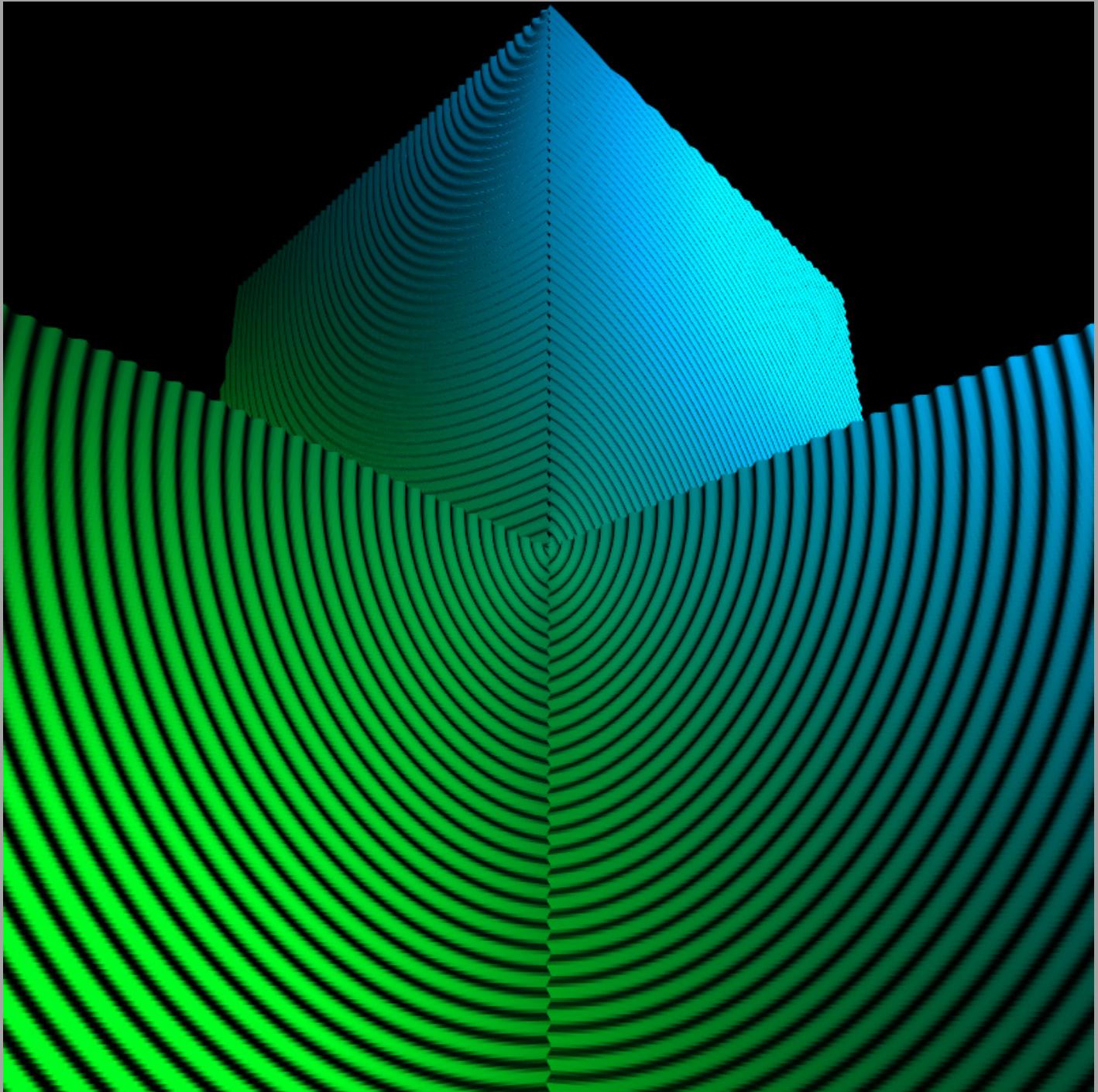
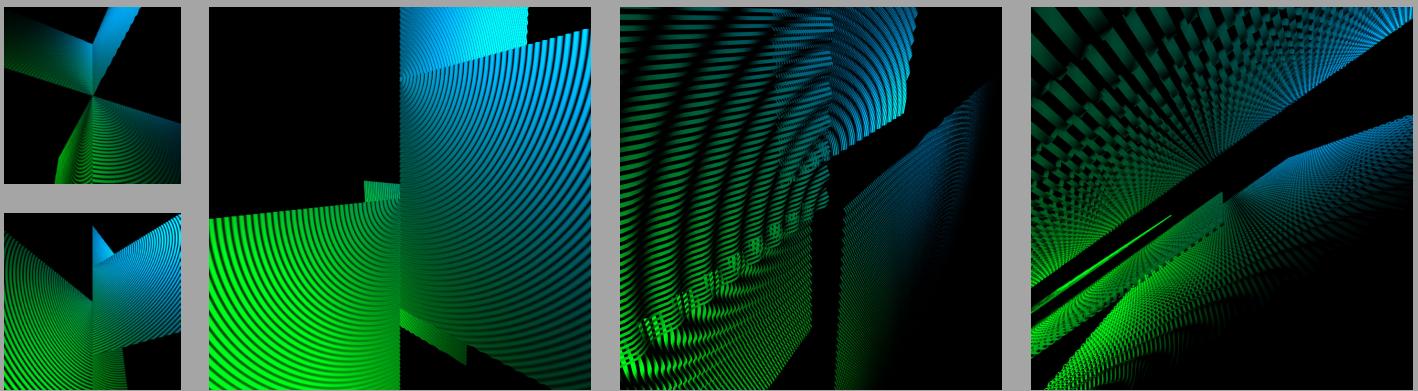
Until now I have only worked with squares. I used rectangles of different sizes in these examples. And I have taken my 'old' ModifyDistance variable from the previous M.3.2.1 session into these sketches. Fact is that the values of ModifyDistance can be used to open up the objects. Because the objects have patterns made of parallel lines you sometimes get interesting moiré patterns. But I will try to use that optical illusion better in the upcoming variations.

Made some variations were rectangles are overlapping each other. Which makes the chance on chaos or interesting moiré patterns even bigger. In the previous sketch the gaps in the rectangles were pretty close to each other. I doubled the size of the gaps. And I used rotateX for two of the rectangles. Increased the grid points from 100 to 200. This might give me more moiré patterns. I also have connected all four rectangles to the same origin point (which is in the middle of the display screen). This gives me fewer options to see unexpected compositions. But it is also less chaotic in that way. Experimented with rotateX and rotateY for a while. Used rotateZ too. Increased the number of grid points from 100 to 150. Which made the program slow. But it gave me some extra variations.

And now some background information. Because the objects are all the same (only their positions in 3D space are different) I have given them bright colours to recognise them better during the positioning. When the position of the rectangles is fine I comment out those bright colours and restore the light settings.

'These happy instincts which do occur to one sometimes so unaccountably & fortunately.'

Augusta Ada King-Noel, Countess of Lovelace, 1815–1852, English mathematician and writer



MyCodeHistory: 20 March 2015

Instead of one we are now using two different coordinate systems. One for the original two-dimensional grid. And another for the positions in three-dimensional space. In the beginning I found it very confusing to introduce a second coordinate system. It's getting even more confusing (for me) when I have to use the variable 'u' for horizontal and the variable 'v' for the vertical grid definition? I could understand the choice for 'v' as an abbreviation of 'vertical'. But 'u' for horizontal? I changed that to 'h' for the global variable H_GridDefinition. But maybe after working for a while with those two coordinate systems it will all fall in its place. We will see. I used the same tactics as in the earlier examples. Repeated the shape four times. Which lead to a bit boring setup if you ask me. Increased the H & V_GridDefinition to 300. But in a later stage I found out that a GridDefinition of 400 was better. I changed that afterwards. And because I need sometimes to zoom in and out of an object I gave the up and down key's zoom functionality.

Increasing the H & V Min and MaxValueRange from 40 to 80 leads to a combination of the four objects. Which on itself leads to interesting patterns in the places were the four squares overlap. And that overlapping of objects occurred a lot in this session. After a few variations I rotated the four rectangles 45 degrees. Which generates a totally different pattern in the overlapping zone. And since we have a 3D object it is also possible to look at the object at different angles.

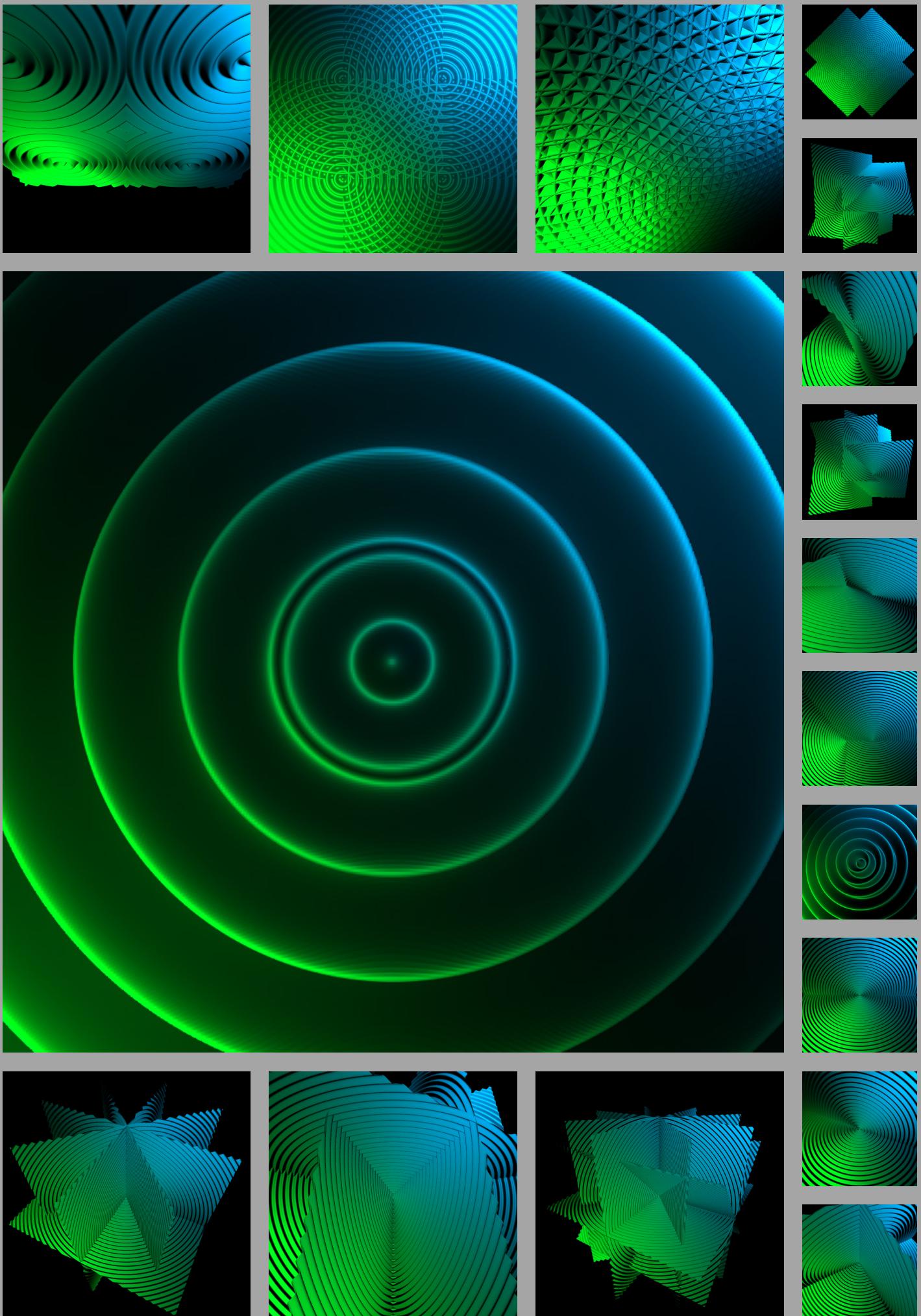
Another series of variations were created by making a combination of rotateX and rotateY. I also stucked the objects on different angles into each other. And I increased the H & V GridDefinition to 600. Increased it again to 800. And I noticed that this is hard work for my 2010 MacPro. The response was very tiresome. But it gives interesting images. And that is what I am after.

On a certain moment it was time to throw all my earlier copied objects away until there was only one left. I thought it would be interesting to see what you can do with just one object. I increased the z-value 6 times which makes the illusion of three-dimensional rings higher or deeper. But a while later I thought it would be better to add a second copy of the same object. The only difference I made was to rotate it at the x-axis for 90 degrees. Again I added a third copy of the same object. This time I rotated it at the y-axis for 90 degrees. Soon I had five identical objects intersecting each other. The first one is not rotated at all. Second one is rotated on the x-side for 90 degrees. The third one rotated on the y-side for 90 degrees. Forth one is rotated-y 135 degrees and the fifth shape is y-rotated for 225 degrees. Finally I added two more shapes. One shape rotated-x with a rotation of 135 degrees and one shape rotated on the x with 225 degrees.

During a project I have always the habit to throw everything away what I did before. And start again if nothing has happened. I see that as a good thing in the journey to a better result in the end.

Something about habits. For many years, every time they met, Samuel Goldwyn's first words to Groucho Marx would be 'How's Harpo?' Marx grew rather tired of this. Finally, on meeting Goldwyn again and facing the inevitable inquiry, he said, 'Listen Sam, every time we meet—every time for years—you always ask, 'How's Harpo?' You never ask me anything else, and to tell you the truth, I'm getting goddam sick and tired of it. Why don't you ever ask me how I am?' 'How are you?' asked Goldwyn obligingly. 'I'm fine,' replied Groucho. 'And how's Harpo?'

Groucho (Julius) Marx, 1895-1977, US comedian, one of the Marx Brothers.



MyCodeHistory: 25 March 2015

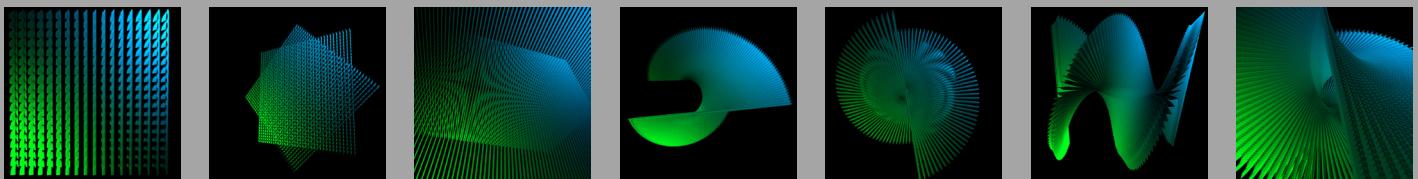
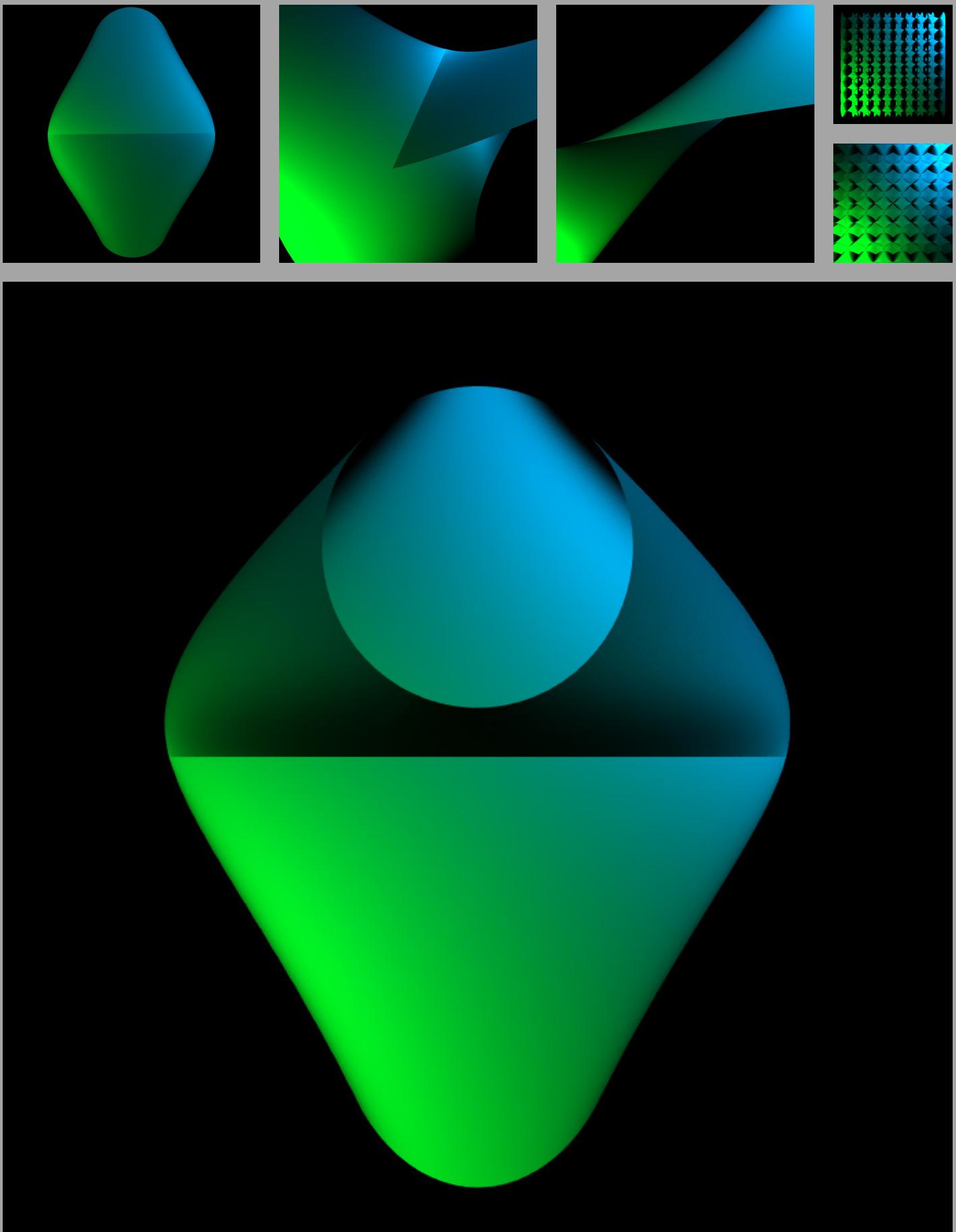
This is the fourth example of variations based on the 'Formulated bodies' chapter from the Generative Design book. And I started (very impolite) to remove the functionality for the arrow down/up: vMin, vMax -/+ . I also removed the functionality for the arrow left/right: uMin, uMax -/+ . The functionality of those keys was used twice (you can find the same functionality under the keys 1-8). I did this because I needed those keys for zooming in and out. It seems that you can make pretty abstract objects with this program. Used the first image (which looks like a helmet) as an icon for the Generative Design Variations Facebook page. I didn't do much to create that icon. It just suddenly appeared.

I tried to reconstruct the examples of M.3.2.4 on page 375 of the Generative Design book. But the settings from the book gave me totally different objects in the program than the printed examples in the book showed me. And because that did not work out well I started working on more than one object. Using a for loop I have repeated the object 9 times. Horizontal and vertical. This gives me the possibility to make complex patterns with 81 3-dimensional objects. However, I think these objects are much too complex. In that case you can do two things. Either reduce or increase the amount of objects. I have chosen the latter. I increase the amount of 81. Of course this leads to a tradeoff between the amount of objects and the image quality divided by the variables H & V GridDefinition. I have now 18 objects horizontal and vertical which is 324 objects in total. And they are still listening to my keystrokes of 1-8. Made some variations by adjusting the horizontal and vertical min-max value range.

Used a small modification on line 128 and 135 of the program. Changed that setting from 0.75 to 1.01 showing just one plane with different structures. It looked not too interesting so I decreased the H & V GridDefinition to 1. That would be an opportunity to increase the complexity again. But that setting gave me a dull flat object. But a setting of 2 really makes a difference. At the same time I doubled the amount of objects. I introduced a second field with meshes. And this makes the program terribly slow. Rotated one field 45 degrees. But because this was not working I decreased the H & V GridDefinition again but now to 10. It fills the planes with patterns. So I decided to rotate one of the planes on the x-angle. That makes it a bit more interesting. Then I increased the amount of objects to 100 (-50, 50). Kept the H & V GridDefinition to a very low 4. This gives me plenty of room to use more objects. And because I will not zooming in very close with the camera I am able to do this without losing image quality. Used 1 * 1.5, 2.0, 2.5, 3.0 and 3.5 for bending the object. That has a big impact on the object. Now I can use the original objects to put a structure on. After a while I found out that it was no problem to go up closer with the camera into the object. The image quality was still good enough. I made a copy of the first object and rotated it on the y-axis. And that gave me plenty of possibilities to create even more interesting images.

A heavily made-up lady was having her portrait painted by Rigaud. She complained that his colors were much too bright. 'We buy them at the same shop, madame,' retorted the artist.

Hyacinthe Rigaud, 1659-1743, French painter



MyCodeHistory: 29 March 2015

The Generative Design book mentioned that this part of the book is about optimising code. Therefore I will concentrate on creating different shapes. I also closed the example-object which was originally open. It's now only open at the sides of the object. Or at the top and bottom. It depends on how you look at it in the display window. Used that single object to make a pattern with two for loops which I also used in the previous programs. And I picked up my last bending possibility from M.3.2.4. using rotateX for a minimal bending of the total object.

I increased the amount of objects to a matrix of 32 x 32 objects. Doubled the amount of objects again to 64 x 64. And I had to decrease the H & V GridDefinition to 10. Otherwise the sketch would behave very slow. At that moment I had two almost equal objects. Except one of them is rotated an extra 90 degrees. 90 Degrees gave me better results than rotating it 180 degrees. This is now a matrix of 256 x 256 objects. And that still seems to work. Decreased the H & V GridDefinition to 4. But I think at this moment the object gives me too much noise and moiré effects. This can be nice sometimes but it is not in this case.

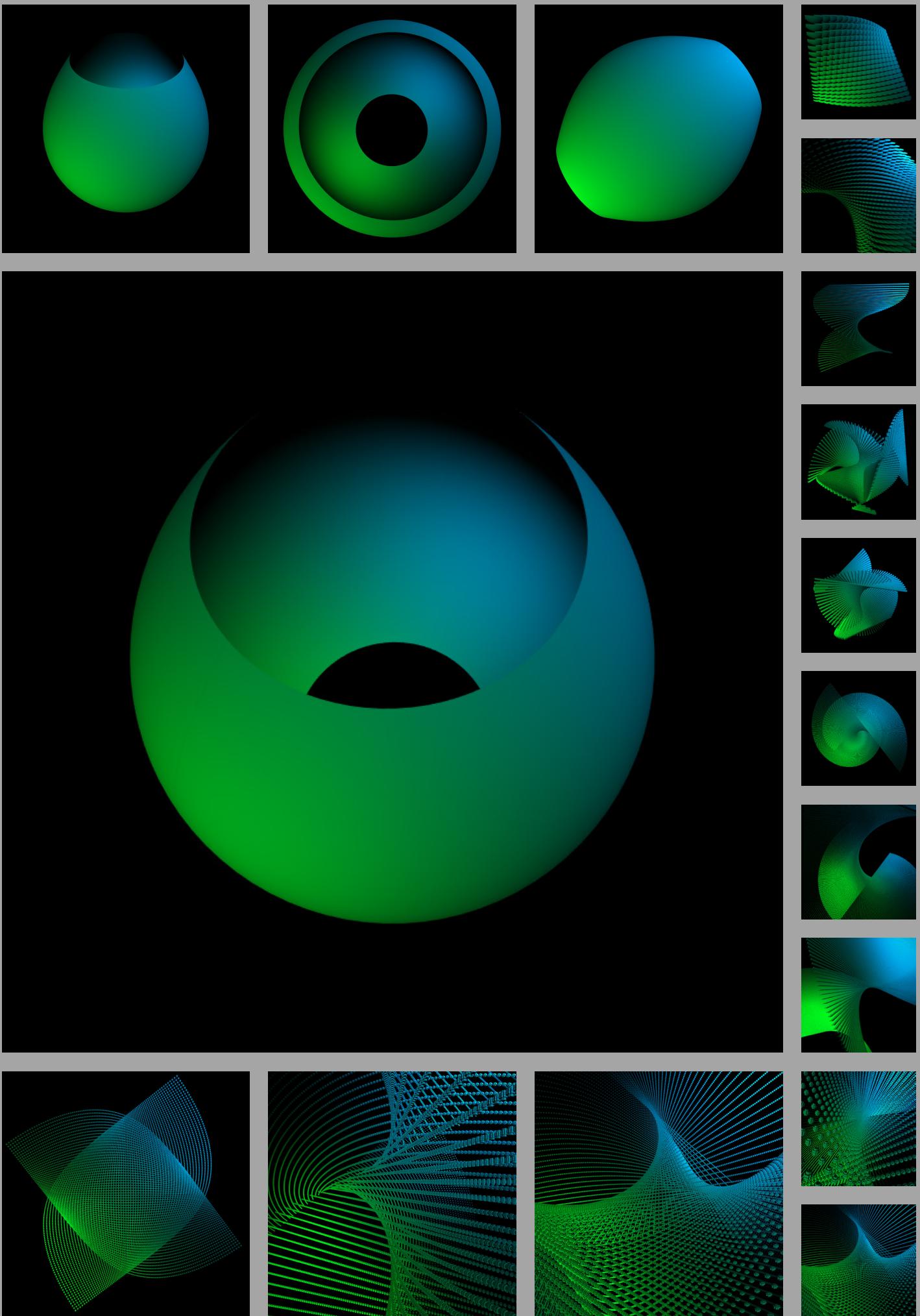
The object is still a bit noisy but it's getting better. Especially when you get up closer to the object. Decreased the H & V GridDefinition again to 2. But I agree that this would also work with ellipses, rectangles or another object. That is an option because the objects are now so small that they are just a few pixels in the x, y and z direction.

I still felt the need to increase the amount of object. Just to see how far this could go. I arrived at a point were the total object used a matrix of 512 x 512 objects. That makes a total of 262.144 objects. Both rotated by rotateX. I made another change in the the for loop (on line 122) `j += 2` and on line 123 `i++`. Everything is copied and an extra rotation of 90 degrees is added. Than I replaced the vertices by the 3D Primitive box. Using 262.144 boxes is of course slowing down my machine. Fortunately I am not in a hurry. I will half the amount of boxes. That seems not to be enough so I halved the amount again to a matrix of 64 x 64. Which is still 4096 boxes. The last example is the same object as the previous sketch. I only modified the for loops a bit.

At a certain point I asked myself why should I still use those small objects. And that is a very relevant question. But I cannot answer it. Sometimes you arrive at a point which is not really based on logic. By just doing things step by step you accept that you have arrived at that moment in the process. You never know if something you do is useful.

According to tradition, the solution to the problem of preventing the loss of energy in the Newcomen engine occurred to James Watt as he observed a kettle boiling on the fire at his home. His aunt came in and rebuked him for idly fiddling about with the kettle, holding a spoon over the spout, pressing it down, and so on. She suggested that he go out and do something useful.

James Watt, 1736–1819, British engineer.



MyCodeHistory: 7 April 2015

All parameters and functions for calculating and drawing a mesh are summarised in a mesh class. The mesh class is a part of the Generative Design Library. There are 22 predefined meshes available: plane, tube, sphere, torus, paraboloid, steinbachscrew, sine, figure8torus, elliptictorus, corkscrew, bohemian-dome, bow, maedersowl, astroidallipsoid, triaxialtritorus, limpettorus, horn, shell, kidney, lemniscape, trianguloid and the superformula.

My idea was to make variations of all the 22 predefined meshes. I started with the steinbachscrew. I broke the mesh down which gave me very unexpected results.

The plane mesh is a flat, two-dimensional surface that extends infinitely far. It did not look very interesting to me. I replaced the object for a tube mesh.

The sphere mesh is a perfectly round geometrical ball. Decreased the value range which leads to a thin ellipse. Increased the value range which gives me a bowl.

A torus is a donut shaped object. Removed the top half of it and I made a version in which I removed the top sides. Finally I have cut away the bottom and a part of the sides.

Warszawa Ochota railway station and the Calgary Saddledome are examples of a hyperbolic paraboloid. I'm working with an elliptic paraboloid. Which is shaped like an oval cup.

I continued with the sine mesh. Which renders a very odd object. It is difficult to judge how this object would look like when it was printed as a 3D object.

A figure8torus is also known as a figure eight torus. Which is an immersion of the torus that has a single (circular) double curve down the middle. I did not change any angles.

An elliptictorus is a surface of revolution which is a generalisation of the ring torus. I have cut off the top and bottom. Filled the bottom which shows the point element better.

The corkscrew mesh gives me two objects. When you decrease the radians you can get very nice ribbon-shaped objects.

When you rotate a circle which is parallel to a plane in a circle that is perpendicular (a straight line at an angle of 90°) to the same plane, the resulting envelope is a bohemian-dome.

The bow mesh is a continuous part of the circumference of a circle (circular arc) of an other curve. This object doesn't look like a bow.

The meadersowl mesh exists out of flat planes if you look at the object under a zero angle. But rotated on the y axis it seems it exists out of ellipses which are sticked together.

An astroidal ellipsoid is a surface which is the inverse of the ellipsoid in the sense that it 'goes in' where the ellipsoid 'goes out.' It behaves totally unexpected on my input.

The triaxialtritorus looked pretty complicated when it showed up for the first time in my display window. It's still not completely clear to me.

When opening the limpettorus it looks like an ellipse with a hole in the middle. Did I cut away the bottom? Did I cut away some piece of the front? Unsure about it.

It looks like there are two horns involved in the horn object. I have cut away the inside of the horns. I have managed to make a not so perfect 'c' and a not so perfect '6'.

With the shell mesh it is possible to make the inner and outer swirl longer. But that is not endless because when you continue you end up with lesser and lesser points.

The kidney mesh looks like two squashed balls on top of each. Rotating it on the z-axis seems to make no difference. Except when you cut away a part of the object.

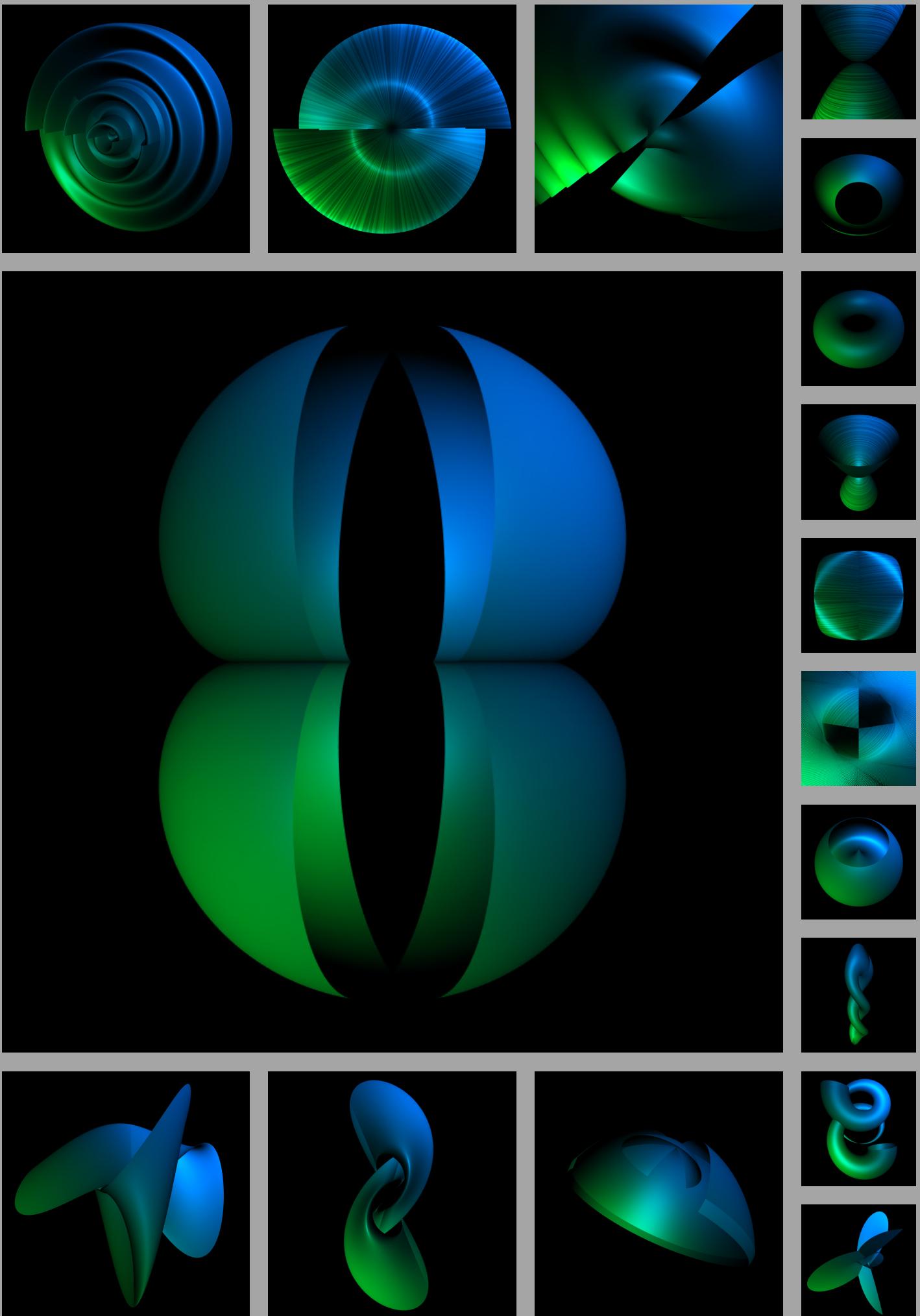
The lemniscape mesh looks like a flattened four-leaf clover. The anti-aliasing doesn't work well here. It is a mystery for me how this object should behave.

The trianguloid mesh is a kind of knot. When you rotate it on the y-axis it is a very complicated knot. And when you cut away a lot you can see that the shape looks like a Toyota logo.

And the last mesh is the super-formula. It can be used to describe many complex shapes and curves that are found in nature. But I only see a not so perfect sphere.

Calgary Saddledome
Warszawa Ochota railway station





MyCodeHistory: 14 April 2015

This program is presented as a tool. So I did not modify a lot of the program itself. But I found it necessary to modify the lights. So, as usual, I imported them from my earlier examples. I think it would be a good thing to get through all the meshes again. Since we have additional possibilities to navigate and to modify I think this could lead to very different images than I was able to generate with the previous versions of the program.

I just go through all meshes I have used. And I see that the plane mesh is skipped in the program so I start with the tube mesh. Increased the mesh scale to 500. And I added the smooth (8) function. Don't know if that helps when using the OpenGL render engine.

I spend a lot of time with the sphere mesh. I modified the sphere to a 2-dimensional object. How strange can it be. You have the opportunity to work in three dimensions and you spend most of your time working in two dimensions.

Worked most of the time in the torus itself fiddling with the parameters. I did not feel the need to use the mesh distortion. Don't know why.

The paraboloid mesh was a real challenge. But I think the results are good. I begin to miss the fact that you only can rotate in the x- and y angle. But alas we don't have a mouseZ function.

The steinbachscrew is an intriguing object. It gives you so much unexpected images. And when the object is interesting. And the lighting is good. The compositions grow naturally.

The sine mesh gave me a bit fewer possibilities. Or maybe I did not take enough time to check it out. But anyway if you run through it with the param-extra slider the objects you can create are almost endless.

I think I only scratched the surface of the figure8torus mesh. I could have made hundreds of images if I had continued. Now I have just 217 images.

The elliptictorus mesh had another kind of behaviour. I could not get that line-pattern on the mesh. Don't know why it was not possible. You can use it on some of the meshes but not all of them will allow you to do that. But maybe I am missing a setting.

The corkscrew mesh was a bit difficult to handle. But in the end there were a few interesting results.

The bohemidome gave me very different images than the previous examples. There was not much of a pattern or structure to look for. There just wasn't any available.

I am still not really finished with the bow mesh and the maedersowl mesh did give me several interesting shapes.

And I only came to vcount 7 of 400 during working with the astroidalellipsoid. Anyway that number of 400 can easily changed to a higher number.

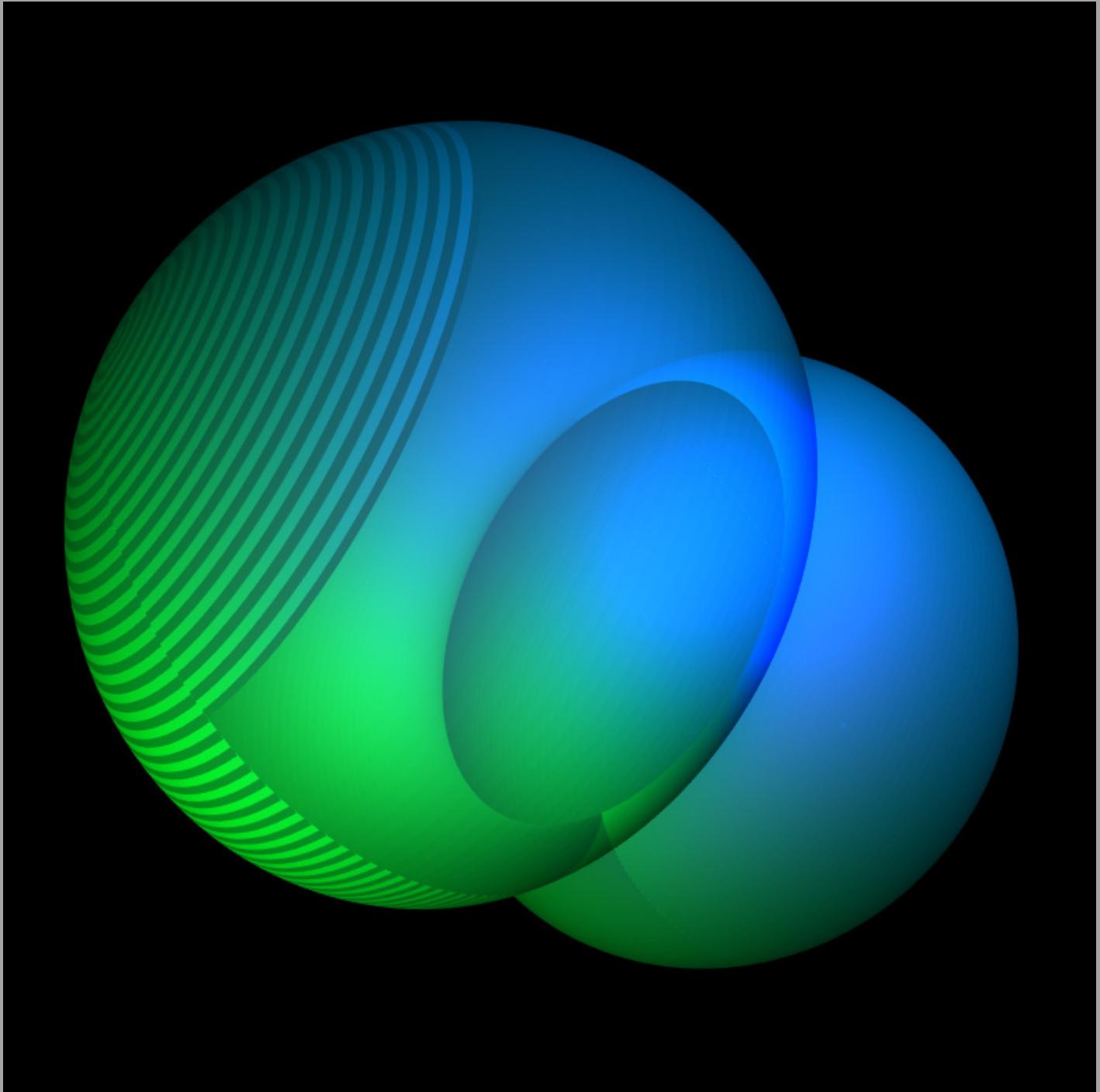
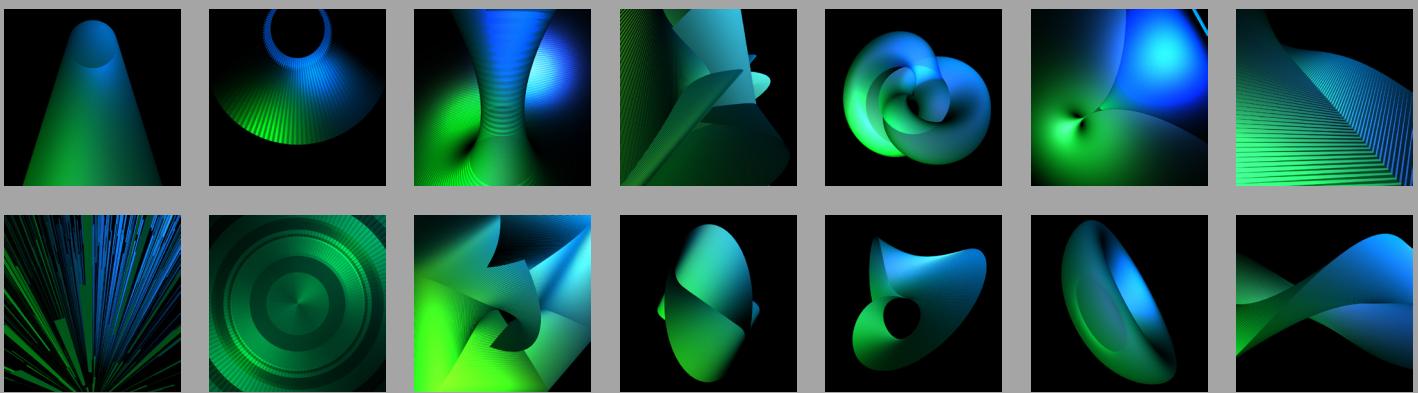
Made some variations with the triaxialtritorus and the limpettorus mesh stays in a way a UFO. The horn mesh gives interesting rounded shapes. Not ready yet with the shell mesh.

The kidney mesh gave me some funny results. Which is also true for the lemniscate and the trianguloid mesh. I think I found the super-formula mesh the least interesting. I could not get very interesting images from it. But maybe that will happen in the next session.

The longer I worked with this tool the more I got the impression that it has endless possibilities. But there is another funny thing that happened. The need to deconstruct these objects is decaying the longer you work with the tool. Maybe its because it behaves too much as a filter. Do I have something against filters? Maybe not. But I do have problems with people who are convinced of their or her superiority in matters of taste, intellect or the use of their tools.

A snobbish Bostonian approached Whistler at a party one evening. 'And where were you born, Mr. Whistler?' she asked. 'Lowell, Massachusetts.' replied the painter. 'Whatever possessed you to be born in a place like that?' exclaimed the lady. 'The explanation is quite simple,' said Whistler. 'I wished to be near my mother.'

James Abbot McNeill Whistler,
1834–1903, US painter.



MyCodeHistory: 20 April 2015

This is the second part of grid dissolving. Several grid sections of the mesh are now displayed and they can also overlap each other. I started to increase the plane mesh to 2000. But I noticed that it was no problem to increase them to 20.000.

I changed the plane for a tube mesh. Completely unexpectedly it changed the planes also into the z-axis and all of them were on different angles. I think the z-axis came from my previous setting.

While working on the sphere mesh I wondered why we have no shadows in Processing 3D. Processing is using OpenGL. But it seems it does not support ray tracing. But for ray tracing, you need to trace the secondary rays and test for intersection with the geometry. That might be a bit too much to ask.

The torus mesh is a very compact mesh. But it still had some interesting qualities in it which I did not see before.

The paraboloid mesh looks interesting from the top and from the bottom. I think that is true for a lot of meshes. It might have something to do with the balance between chaos and order.

The steinbachscrew stays an intriguing object (like it was in the earlier examples). Strange enough the mesh distortion does not work very well with it (if you ask me).

The sine mesh gave me a bit fewer possibilities in the beginning. But when I lowered the uMax, uMin, vMax, vMin variables there was suddenly a lot going on.

In the end I only used three figure8torus meshes. But even than it is a very fine mesh.

The elliptictorus mesh gave me also some interesting images. But I do not know why the resolution (which was on 200 for uCount and vCount) did not work out so well. I sometimes still see patterns in the objects.

The corkscrew mesh is still a bit difficult to handle. It's a very long object so it is difficult to make interesting compositions without zooming in very deep.

The bohemidome mesh gave me very different images than I got in the earlier examples. Even with seven meshes it still gives interesting compositions and angles of the object.

I was not finished with the bow mesh in the earlier assessment. And I am still not really finished with the bow mesh now. Let's see what it delivers in the next program.

The maedersowl mesh is very interesting in a way that it receives very high contrast in light. It has very bright areas while at the same time it has very dark areas.

The astroidalellipsoid is even more interesting than it was in the earlier assignment. It combines large planes where almost nothing happens with complex geometry in one place.

Made some variations with the triaxialtritorus. These are not the best images but they are at least something I could not think off before I began working with the triaxialtritorus mesh.

In the previous examples the limpettorus mesh stayed in a way a UFO. That changed in these series where you can break up the mesh with multiple grid sections.

There is not much left of the original horn mesh. Although I think that long meshes are difficult to use in a good composition. To avoid a bad composition I mostly zoomed in. The downside is that you have to increase uCount and vCount. Which makes your system slow.

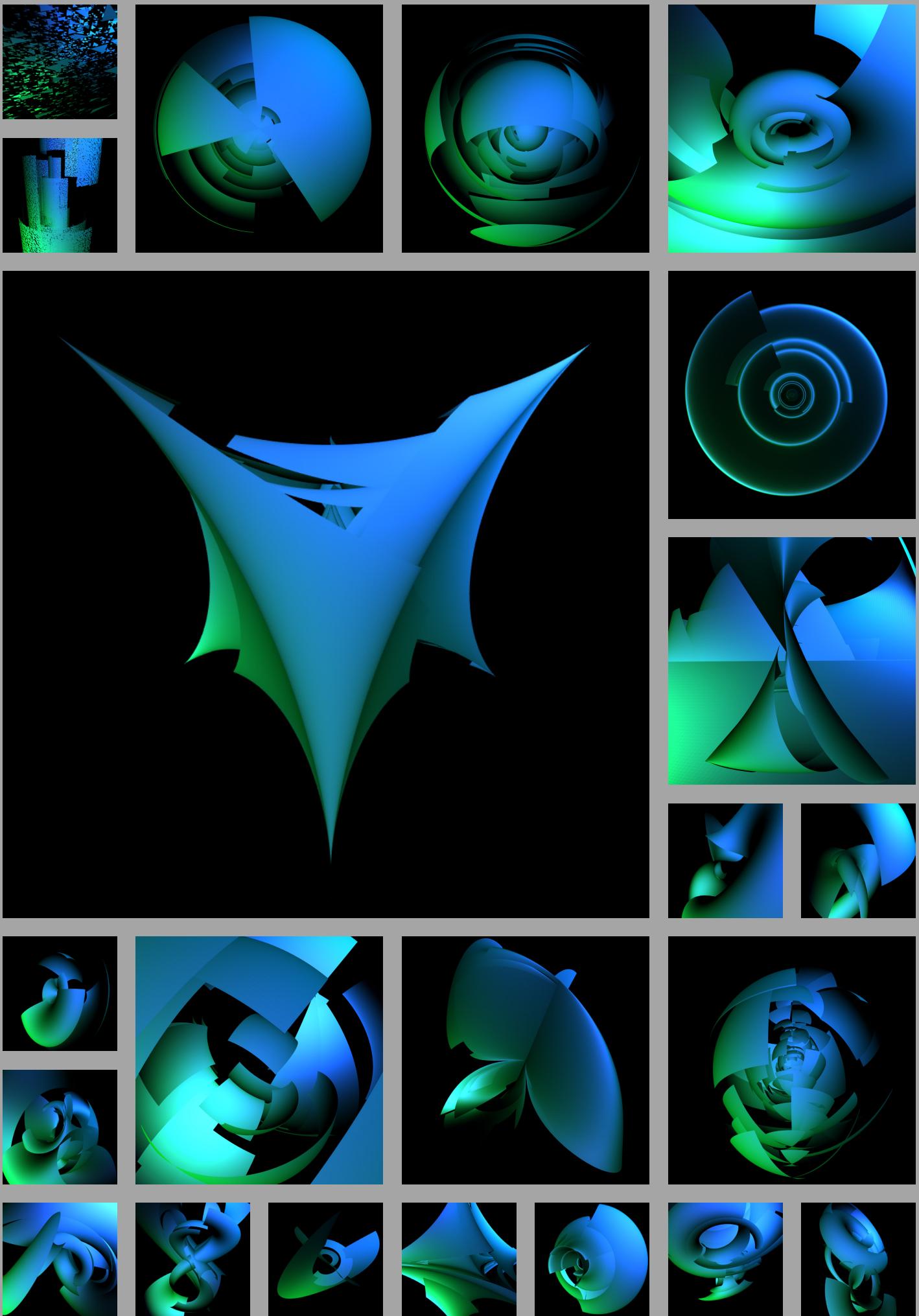
I did not do much do with the shell mesh. Increased the mesh count to 128 and then I zoomed in. From the other hand I could not do much because my system reacted terribly slow. It had a refresh rate of about 15 seconds after every mouse event.

The kidney mesh is hardly recognisable now. It's just a collection of broken down spheres.

The lemniscape mesh is fully unrecognisable as the original mesh. Maybe it's because the original was also very mysterious.

The trianguloid mesh is also very challenging. All those different angles make it very unpredictable. You never know what kind of composition you get when you zoom in or click and drag to rotate it.

I found the super-formula mesh still the least interesting. Maybe it's because it's not a sphere. It is sphere-ish. The shape is not fully clear to me. I also do not know why it is called a super-formula. But maybe that will become clear in the next range of programs.



MyCodeHistory: 14 May 2015

Just as I did in the earlier assignments I go through all twenty-two meshes with this tool program. Starting with the plane mesh. This time it gives me the impression that the triangles are fully dissolved into a painting like pattern.

In a way this working with the tool program has a lot resemblance with photography. You have a subject (the form). And you have light. The only thing you have to do is to search for a good viewpoint that makes an interesting image and a good composition.

While working on the sphere mesh I found out how to make use of the mesh distortion. It is a strange option. It doesn't matter what kind of object you distort because you always end up with a cloud of triangles, rectangles, lines or dots. The end result is always the same.

The torus mesh gave me a lot of interesting images. It is also very nice how you can work from the center of the image to create all kinds of different models. Again I did not use the mesh distortion. It leads too much to disorder or chaos.

The paraboloid mesh took a little more time but finally I succeeded to find some interesting variations.

The steinbachscrew form is still an intriguing object. To create the first image I did nothing. Only turning the most interesting side into the camera view. It's unpredictable and sometimes acceptable chaotic.

The sine mesh gave a lot of strips with interesting chaotic sweeping lines. Could have going on for hours. If I would. But I did not.

I increased the u-count and v-count for the figure8torus because I thought it was giving me not enough smoothness in the surfaces. So I increased it to 80. But than my system responded very slow. Reset it back to 40. And increased the total meshCount to 800.

The elliptictorus mesh gave me some interesting images but they were difficult to find. Also the resolution was not high enough. Thats why I got these arcs which are not so smooth as I would like to see them.

The corkscrew mesh showed me a totally different range of images than I expected. In the beginning I thought it was a very simple mesh. But you can make very strange patterns with it. But that leads to the question: do you want the form to be recognised or is an interesting image enough?

For the bohemidome I used mesh distortion for the first time. It makes fluffy objects. Not sure if I am happy with that.

During using the bow I thought it would be interesting to create space with as few as possible objects. What illusion of depth can you create with the use of just a few simple lines.

I did almost nothing with the maedersowl mesh. I just turned it with the standard settings and I have chosen some images which just looked good. That seems to be an option too.

The astroidalellipsoid keeps on being an interesting object. But as with all the other meshes I like its appearance in a broken way instead of a totally filled surface.

Some variations with the triaxialtritorus mesh. I tried to keep the mesh visible but not too visible. Very vague... I know... but that is what I tried.

The limpettorus mesh (UFO) has lost its original geometry. In fact its geometry is still there but it is just partly filled in. And that goes for a lot of these meshes.

The horn mesh is degraded to a whirlwind or hurricane-ish object. Instead of a fine smooth surface I ended up with curvy lines only.

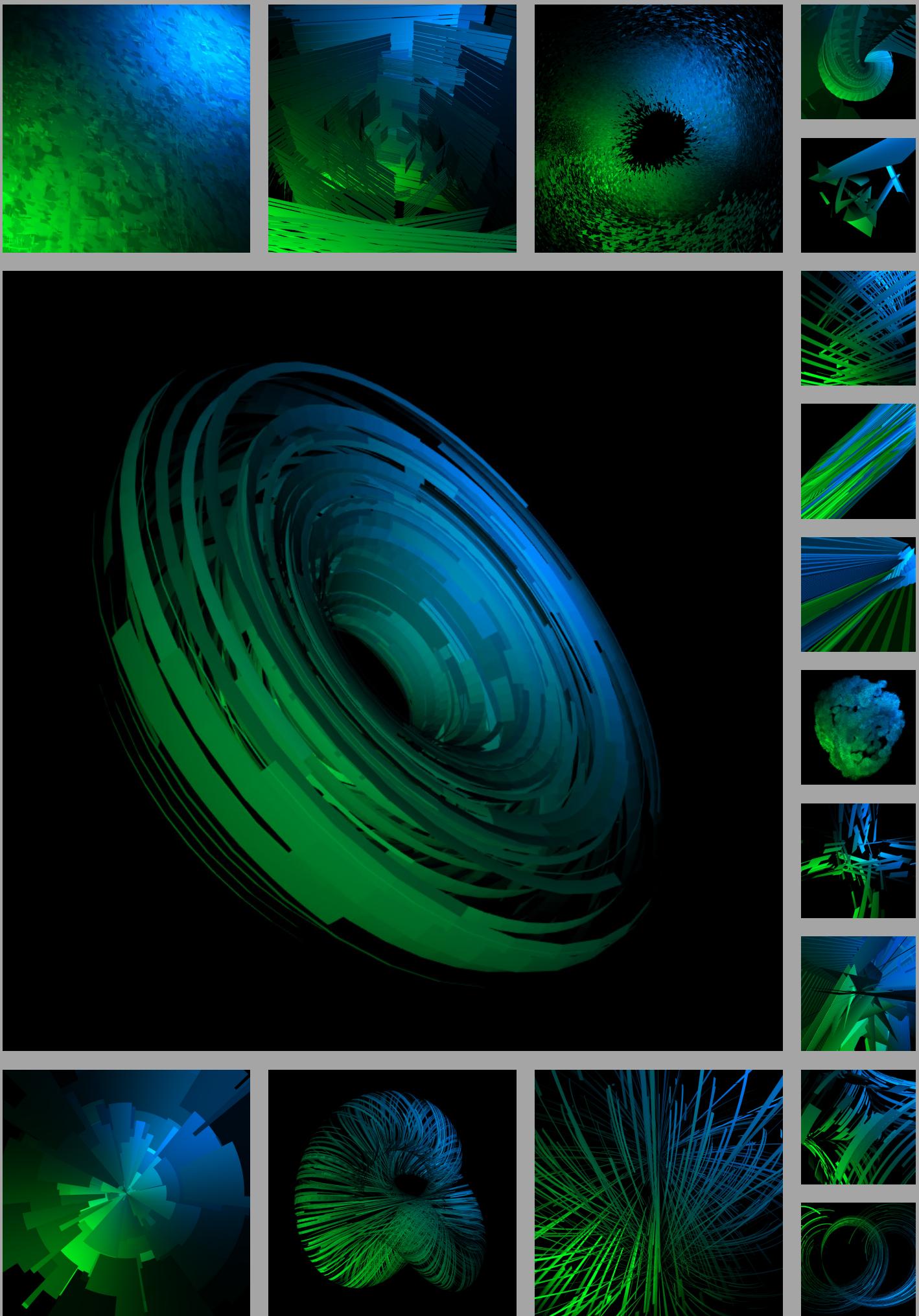
The shell mesh delivered me some images which also could have been made with the horn mesh. Maybe it's because of its curves.

The kidney mesh showed me that when using the paramextra (as the word indicates) is an extra array of parameters that change the appearance of some shapes. I did not know that. In fact you could make a kind of limpettorus from the kidney mesh. Well, sort of.

The lemniscape mesh is absolutely an interesting mesh. But the general thing is that at the moment I don't like any mesh which is totally filled with a surface. They are much more interesting when you fill them with lines or strokes (at least when using this tool).

The trianguloid mesh is also very fluid mesh. Which gave me the idea to decrease the fluid lines until it were just straight. So every opportunity leads to the opposite (sometimes).

I find the superformula mesh still the least inspiring mesh. Hopefully I can come up with some surprising variants in the next use of a program.



MyCodeHistory: 19 May 2015

Just as I did in the earlier programs I go through all the twenty-two meshes. I started with the plane mesh which gave me an error: 'The function Plane (float, float) does not exist.' So I skipped the plane mesh. I will try to morph just to the next mesh. In this case that is the sphere. Which gave not so interesting images so I replaced the sphere by the torus. Which was also not very interesting so I replaced that torus by a paraboloid. And again it wasn't interesting enough so I replaced it again by the steinbachscrew. And that worked well. I think it has something to do with the shapes. If the shapes are too simple they do not create an interesting morph between them. But one simple shape and a complex one morphs fine.

The combination tube and sine did not work so well. So I changed the sine with the figure8torus. Sometimes you will recognize the original mesh. But during this session I found most interesting shapes are generated somewhere at the point when none of both shapes are recognizable.

Changed the sine for a sphere mesh. But that gave me a lot of sometimes not so elegant objects. But here is a good example of geometry which is boring for the most part but when added a little more geometry on a certain position it's getting interesting again.

Morphed the torus with the figure8torus. They seem to work pretty well together. This is a good example of an object which has just some minor variation. But even than... in it's simplicity it does a very good job.

Made a few variations using the paraboloid morphing into the figure8torus. These objects are completely unpredictable. You never know what kind of object there is going to be generated.

The steinbachscrew is morphed into the figure8torus. Zooming in on objects is also a very handy way to generate images. Sometimes showing the total object is not so interesting. But when you zoom in you might find more interesting things.

The sine mesh is morphed into the figure8torus. But I found the forms it delivered not interesting. So I thought this would be a fine moment to switch the figure8torus into the elliptictorus. And that generates images that are way too perfect. You can see this specially when you enlarge the object. But sometimes perfection is also a quality.

Figure8torus morphed into the elliptictorus. I think I've seen a few of these images before. But I might be wrong. However this is not bad geometry at all.

Figure8torus morphing into the corkscrew. Some very interesting forms when working in the middle of the display. A few of these are looking very much the same. But if you give it a more detailed inspection you can see that they are actually very different from each other.

The figure8torus morphing with the bohemian dome. These are good examples of objects which are looking very balanced. Ok... I have to admit they are a bit too balanced.

The figure8torus morphing with the bow. A bit more of the same. But they are not bad.

Figure8torus morphing with the maedersowl. I think that the unpredictiveness of each geometry is a very interesting part of this program. You never know what comes next. And that keeps it interesting to continue. Which I did.

Elliptictorus morphing with the astroidalellipsoid mesh. On the outside it was not looking very promising.

So I went into the object. That's also a fine option. You can get close but you can also get into the object itself. So inside it was the opposite. At a certain moment it is getting a bit too minimalistic.

Morphed the corkscrew with the astroidalellipsoid. Stayed very close to the object. Also very minimalistic.

Some variations with the corkscrew mesh morphing into the triaxialtritorus. On a certain moment it is getting very complicated. I would like to see these objects in a 3D program. But unfortunately you cannot export the object to the dxf-format.

Morphing the bohemian dome into the limpettorus did not make much sense. So I replaced the limpettorus with the shell mesh. And that made the images better.

The bow mesh is morphing into the shell mesh. Very simple but interesting.

The bow mesh morphing into the kidney mesh. I think we are slowly getting somewhere.

The meadwersowl morphing into the lemniscate. The zoomed-in images are the best. Large amounts of surfaces and smaller points with complex geometry.

The maedersowl morphing into te trianguloid. This is a very lucky combination. Te shapes seem to be endless. But sometimes it's almost getting over the top.

The maedersowl morphing in the superformula. A very fine combination. I could have continued with this for a while but I think this is enough for now. This program gave me 211 fine images. And it's very odd that the last image seems to be one of the best if you ask me.

