DECO2011 Assignment 1 - DESIGN PROCESS

The Brief

The following is my interpretation and analysis of the brief.

- Develop a sketch that draws a variation upon the design each time it is run. This implies that here must be at least one change in any one variable each time the program is run. However, it is also part of the criteria that the sketch should consist of a number of variations upon the design. Therefore one change is not sufficient and the sketch has to incorporate, and utilise, variables that in some way complement each other to create a visually pleasing design.
- The sketch should include variables; randomness; conditional statements; loops; drawing commands; and colour. By my understanding of conditional statements and loops, loops make use of conditional statements, so using loops is sufficient to satisfy the requirement to use both. In terms of colour, it is my belief that in the computer context, black and white are also classified as colours, so I shouldn't rule out those colour options.
- Creativity was not stated explicitly, but is implied also.
- The sketch should be 600x200 pixels in size. A size and orientation constraint.

Constraints

There are some constraints other than outlined in the brief. Only drawing commands within the Processing environment are to be used i.e. no external images. This is not a problem seeing as my little experience in Processing limits me to the basic drawing commands anyway. Creativity will be limited to what I can do, and whether I can make the program do what I want it to, with what I already know or can find out. Time is also a factor. There are only 2 weeks to complete this task.

Research – Existing Designs

Jared Tarbell

Jared Tarbell does some interesting things using basic geometric shapes such as circles and triangles. This one uses the simple idea of parallel lines.

(www.levitated.net)
Although for this assignment, the focus is only on static variation, I liked Tarbell's *Pond Ripples* animation, comprised only of coloured circles that "breathe", which gave me an idea of the types of variables I may be able to adapt to a static design. These are as follows:

- **Outer Radius** - this controls the size of the circle
- **Ring thickness and ring thickness variation** - this changes what is essentially the 'stroke' of the circles
- **Centre point offset and offset variation** - this changes the centre points of the circles slightly so that they are not perfectly co-centric.

I also really liked the idea behind Tarbell's *Triangulation*. Basically, the program takes any given triangle and randomly selects a midpoint to divide the triangle into three smaller ones, and this process is repeated. The result is that some lines that share edges with other triangles are highlighted more than others and creates an interesting glowing effect.

This is probably still a little complex at this stage for me to try to emulate, but I might be able to do something simpler using triangles.
Casey Reas

Casey Reas’ approach is much more organic. He works a lot with organic shapes and varying opacities to create some very natural-looking works.

Reas uses some rather complex systems to create his works, but I think what I can take away from looking at his work is that just the layering of different opacities can create complex-looking shapes and patterns, without necessarily having a complex system to generate it.

Examples of Reas’ work.

Top Left: This one looks very organic, almost like a flower or the layering of a whole lot of different opacity petals.

Top Right: Again, very natural looking. This time it looks like the formation of crystals.

Left: Although there was a more complex system than it seems that generated this one, the geometry is not all that complex. Looks interesting and makes use of randomness.

http://reas.com
Initial Ideas – Beziers

Evaluation

The first of my ideas involved use of Bezier curves. It was developed at a stage where I was still trying to come to terms with how they worked. This one was not inspired particularly by any artist’s work I have previously seen; I just wanted to see what I could do. The idea behind this sketch was that a whole series of Bezier curves would be drawn, anchored to the bottom right-hand corner, but the control points would be determined randomly, thereby dramatically changing the extent of the curves each time the program is run. I started out with only the blue set of curves, but later added the purple set (anchored to the top-left corner this time) for more visual balance. The opacity of the lines also changes to add a bit more variety.
This idea produced two very interesting consequences. One was that in most, if not all, cases the randomised control points drew two sets of curves that complemented each other very well, creating a well-balanced sketch. The second was that, because any one set of curves shared the same control points, they tended to converge and/or overlap in the middle, which created kind of shading (or crosshatching) effect. This I believe added to the aesthetic appeal of the work.

As an overall work, it this idea could still be developed upon. It lacks a certain element of interest. I believe changing the white background, perhaps to a more textured one may be the key.

**Initial Ideas – Petals**
Evaluation

It may not be immediately apparent, but this one was meant to have a Casey Reas influence. Although Reas works a lot with natural looking textures, he also does a bit of work with simple geometric shapes that build upon each other. I also remembered the petal/flower looking design I came across in my research. I thought of trying to make a complex shape out of Bezier vertices, but the idea struck me that I could make a simple flower design out of a simple petal shape (drawn with 2 Bezier vertices). I then researched how to use the Rotate function so that I could duplicate the petal by putting it inside a loop. While I was at it, I decided to research the Translate and Scale functions as well.

The flower design worked well. The loop did exactly what I intended it to do, and the flower looks the way I wanted it to. I experimented with the Translate and Scale functions, but they did not work exactly as I planned it. What I hoped to achieve was a random scattering (through Translate) of different sized flowers (through Scale). Instead, what was created was this linear pattern of flowers, which changes in spacing. I probably used the Translate and Scale functions incorrectly inside the loop. However, it still created a design that changed each time the program was run, so it succeeded to a small degree.

The black background with the grey lines was meant to add more colour to the sketch. The lines in the background change in stroke weight and spacing. However, I feel that the effect of this neither adds to nor detracts from the impact of the work as a whole.

Overall, I’m not particularly satisfied with this sketch. I don’t think it changes enough, or in a way that is interesting. Though I am quite happy with the flower design, I don’t think I will be further developing this idea.

Initial Idea – Barcode
Evaluation

This one was more of a Jared Tarbell inspired work. I liked the way Tarbell could make interesting works out of very basic geometry, like circles or triangles. I also saw that he had created works with parallel lines, and being a greyscale fan, I thought of this barcode-like idea. This idea basically randomly assigns different stroke weights to lines running parallel down the display window. Since it would not have been visually interesting if that was all that was produced, I added the middle block, which basically does the same thing but within the boundaries of the middle rectangle. The result of this was a kind of offset effect, which bears some resemblance to optical art.

I created two versions of this – “black on white”, i.e. primarily black middle rectangle, on primarily white background (see first image), and “white on white” (second & third image). Both work in their own sense, but there are two issues I need to work on. In the case of “black on white” the changes between the lines in the background and those in the middle rectangle are more easily seen since the middle section is so clean-cut. However, I feel the impact is slightly lessened because of it. In the case of “white on white”, the impact is greater – there is more optical illusion as the inconsistency in the lines is more subtle and plays on the eye more. However, even though the line thicknesses are randomised, I don't feel the change is obvious enough to be immediately perceived.

Overall I like this idea. It just doesn't satisfy one criterion – the sketch should consist of a number of variations upon a design. As it is, there is really only one variation, which is stroke weight. It also does not make extensive use of colour, but black and white are considered colours, and I think that it is also the lack of other colours that makes this sketch more visually appealing.
Developed Ideas

I could not decide between the Bezier idea and the Barcode idea to develop further, so I experimented with both.

** Beziers 

Since one of the problems identified in my first evaluation was the plainness of the white background, I addressed this by changing it to black. Though not the most creative approach, the difference it made was quite substantial. I think there is much more impact as the lines seem to glow more.

I then thought about filling in the background with some sort of pattern or texture, so that it was not just a solid colour – it might add more interest. However, because my design style is more of a minimalist approach, fine textures or ‘hard’ lines would not visually work with the
flowing Bezier Curves. My solution was to fill the background with the same sort of Bezier curves, but less prominent so that they do not take focus away from the blue and purple lines. Furthermore, I wanted them to move with some sort of correspondence to the primary lines. In this way, they act as a kind of offset shadow to the blue and purple sets of lines. So I halved the co-ordinates of the control points, and the results are shown above.

Overall, I actually think the original solid black background sketch worked better. I think minimalism was really the key to creating the visual harmony. Adding the grey lines in the background did not have the quite the effect I wanted.

Barcode

The barcode idea underwent several stages of development as I attempted to add more randomness and change to the design.

Stage 1

Firstly, I had to address the issue of colour – or lack of it. However, I was determined to keep the greyscale look, since it loses its identity as a barcode otherwise. I therefore decided to use a gradient-fill bounding box for the middle section. The random-thickness black lines are drawn over the top and acts to break up the linear gradient. After testing this, I found that I had inadvertently fixed another problem – that the change in the middle section, when the program is rerun, was not obvious enough. I found that by using the gradient fill, the black lines block off different sections of the gradient as they move, so that different amounts of light and dark colours are seen, making the change much more apparent.

Stage 2
Having managed to get the linear gradient to work, I still found the variations insufficient. I thought I might add some elements that have potential to change. I filled the background with the same linear gradient, but running in the opposite direction to that of the middle section. It worked the way it was supposed to, however I found that this was a bit too chaotic.

**Stage 3**

Reverting back to the sketch at Stage 1 Development, I decided to use the Random function to determine whether the predominant background colour was black or white. This involved using the Random function to select a number, and then the Modulus to determine if the number was odd or even, and then a conditional statement to assign either black or white.

**Stage 4**

Finally, having had Stage 3 work the way I wanted it to, I wanted to try adding more variety again. Using the same principle as Stage 2 Development, I had gave the linear gradient the option of running in either direction. However, since the idea turned out too chaotic in Stage 2, I changed it so that the gradient can only run in one of the two directions at any one time. I did this by adding some dependencies – if the background colour is predominantly white, then the middle section will be filled with black strokes and the gradient running dark to light; if background was predominantly black, there will be two white strips across the top and bottom of the display window, each with a gradient running light to dark.

Overall I think this idea worked out quite well. It did what I intended it to do, despite the code being a little messy. This is the idea I will be using. All that is left to do is tidy up the code and comments and fine-tune the variables for the final sketch.
FINAL SKETCH
Changes and Evaluation

Upon reviewing the code, I found that I overlooked a much easier and equally effective way of randomising background colour. Where I had previously used the Modulus to determine if a number between 0 and 100 was odd or even, I have now replaced it with a much smaller range of 0 and 2, and used the condition if \( r > 1 \) as the determinant.

What I meant by “fine-tuning” the variables was simply to test out different number ranges for the Random function to see which offered the most variation visually. This did not necessarily mean the higher the number the better. I increased the range from 20 to 50 for the line spacing in the final sketch as I found this has the ability to change the proportions of black and white and alter the design more significantly. Also, by doing so, there is now not so much a “predominant colour”, but for convenience I still refer to the stroke colour as the predominant colour.

I also realised from looking at my previous code that I had declared and used the variable (x) three times i.e. in each of the for loops. Though that did not seem to have an effect on the resulting sketch, I realise now that if I wanted in future to change only one aspect of the program without affecting any others, then complications could arise. Therefore I changed them to three different variables in the final sketch, which still produces the same result.

I am sure there must have been a more efficient way of writing the code so that I did not have to use the if \( r > 1 \) condition three times, such as placing it all inside a single if...else statement. However, at this early stage of programming, I do not as yet feel confident enough to do so without confusing myself, which is why I chose to write it as I did.

Finally, I am quite satisfied with the result. Throughout this process I have developed a better understanding of variations in static images, and the incorporation of randomness into my designs. I managed to create what I believe to be an interesting work out of simple parallel lines, expressing my minimalist design style.