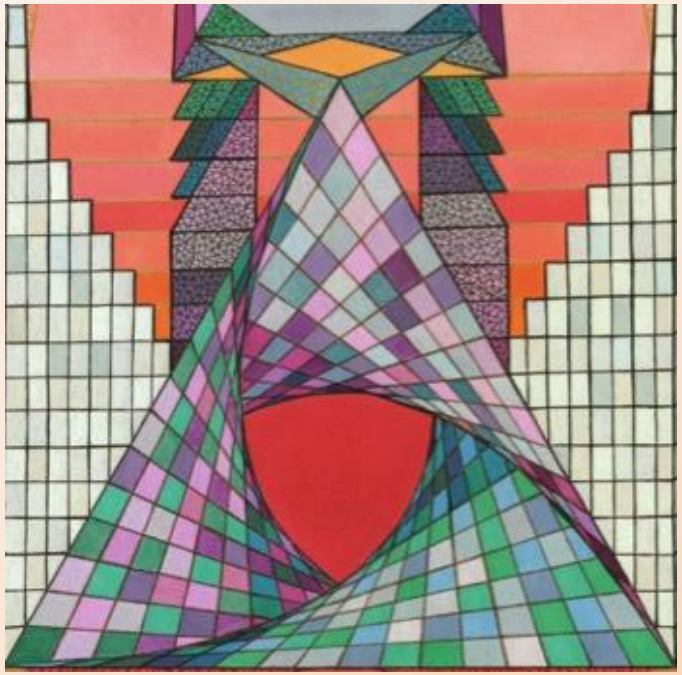
Creating Non-Digital Maths Art:

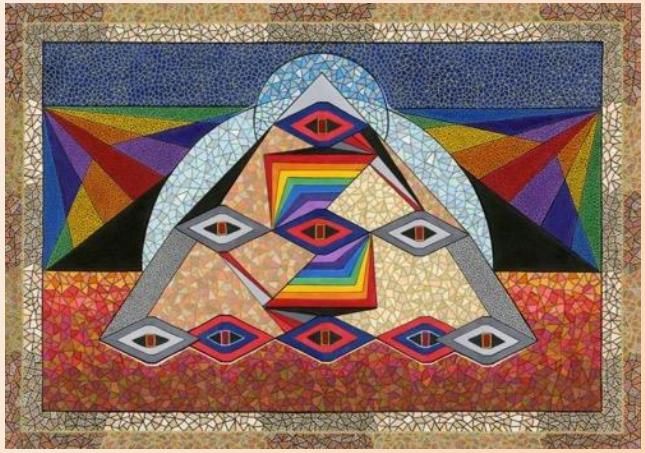
decisions, discipline and dizzying possibilities



Karen Amanda Harris
University of the Arts London, UK

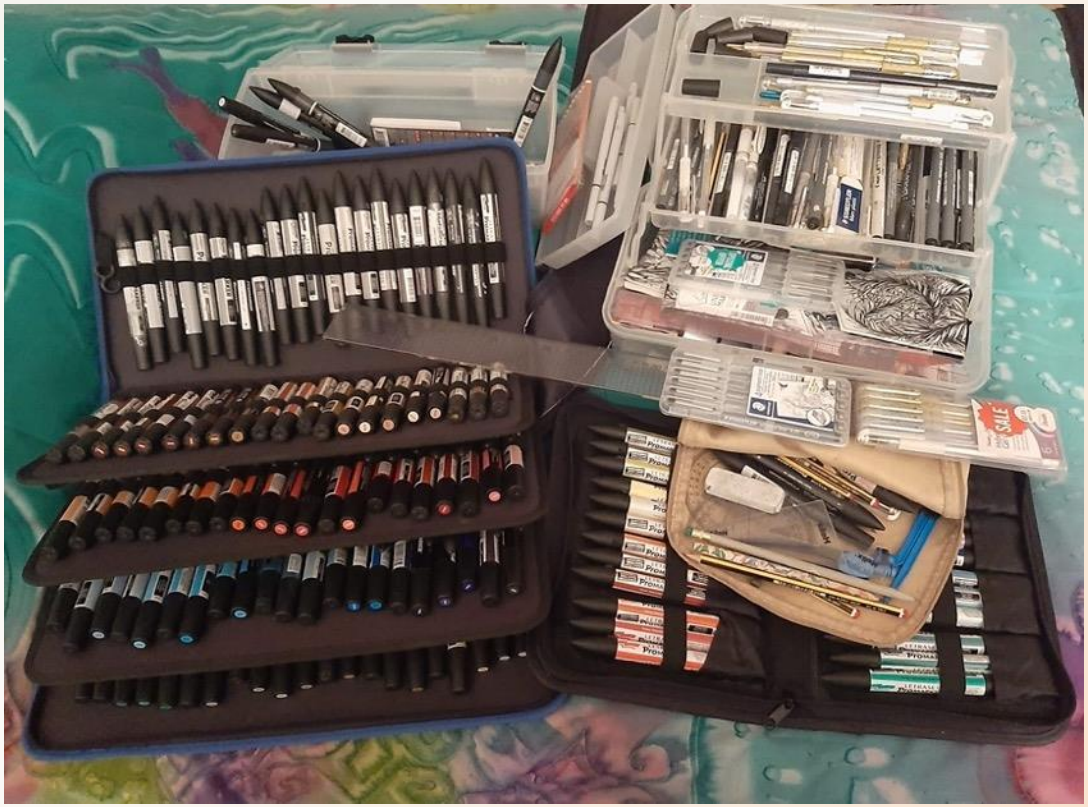
Contents

- A love letter to mathematics
- The essential toolkit
- What if I start with a zigzag, and then…?
- *"Why no heptagon?"*
- Adventures with a clock face
- *"What do you mean? Of course there's a curve!"*
- French curves and philosophising
- Other things



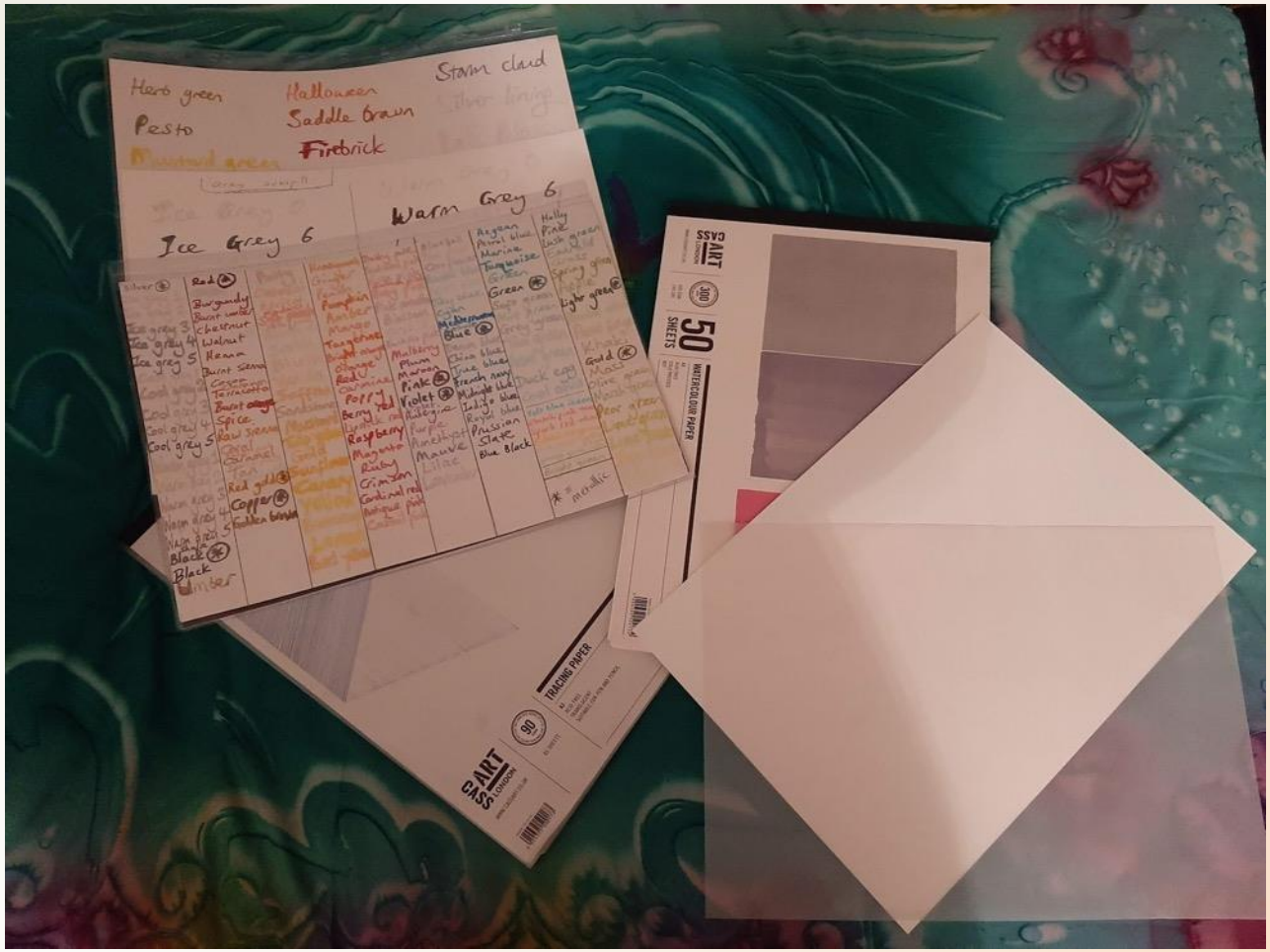
Nine-Eyed Pyramid (2019)

The essential toolkit (i)



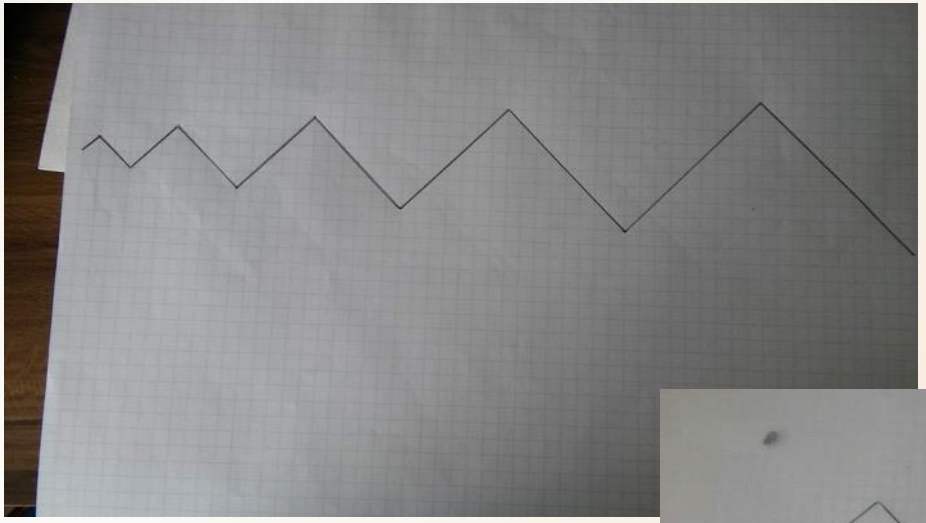
- *Very* sharp pencils, plus erasers
- Rulers, compasses, protractors, set squares, etc.
- Ink liners (varying thicknesses)
- Metallic gel pens
- **ProMarkers ♥**

The essential toolkit (ii)

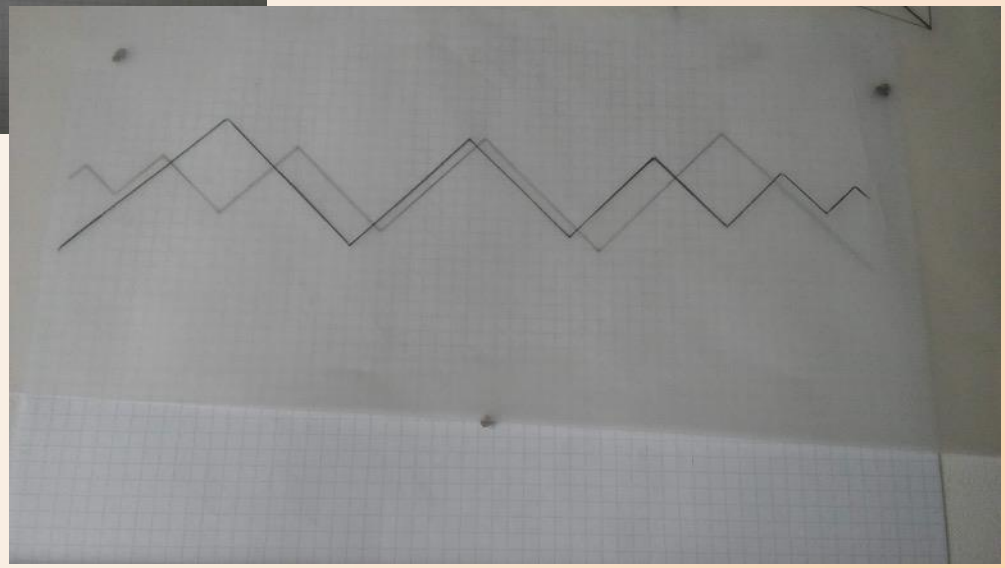


- Watercolour paper
- Tracing paper
- Colour charts

What if I start with a zigzag, and then…?

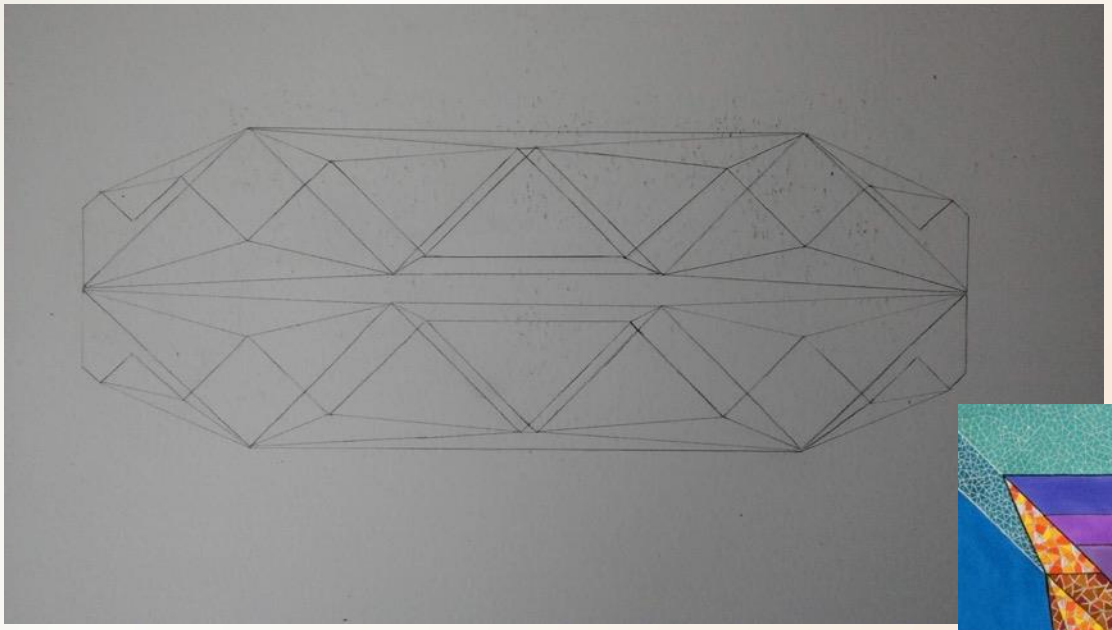


With every 90° turn, the length increases by 1 unit.



Trace, reverse, superimpose.

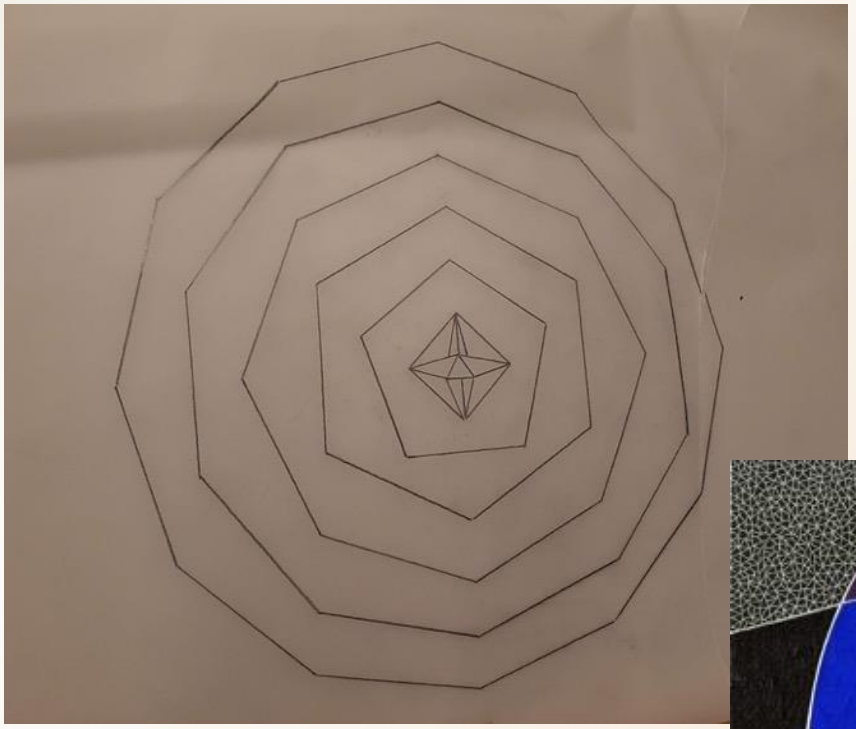
What if I start with a zigzag, and then…?



Vertices! Joining the points gives a crinkly, 3-D effect. Connect it to a mirror image beneath … and voila! We have a central aperture, just beginning to open.

Sarcophagus (2018)

"Why no heptagon…?"

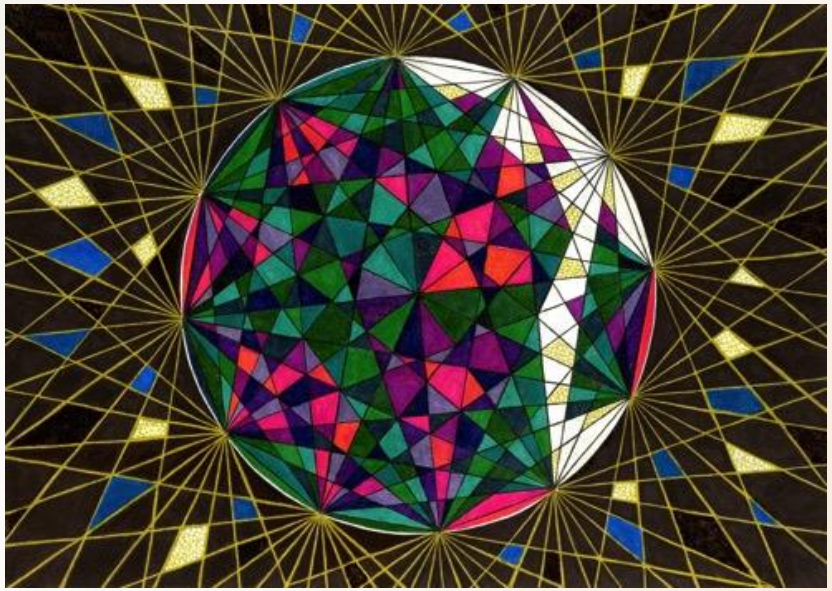


Deliberately limiting the geometric possibilities:

- A crisper, more stable aesthetic
- Reduces excess choice – options become more clearly defined, more focused

Spirit of the Silver Web (2020)

Adventures with a clock face



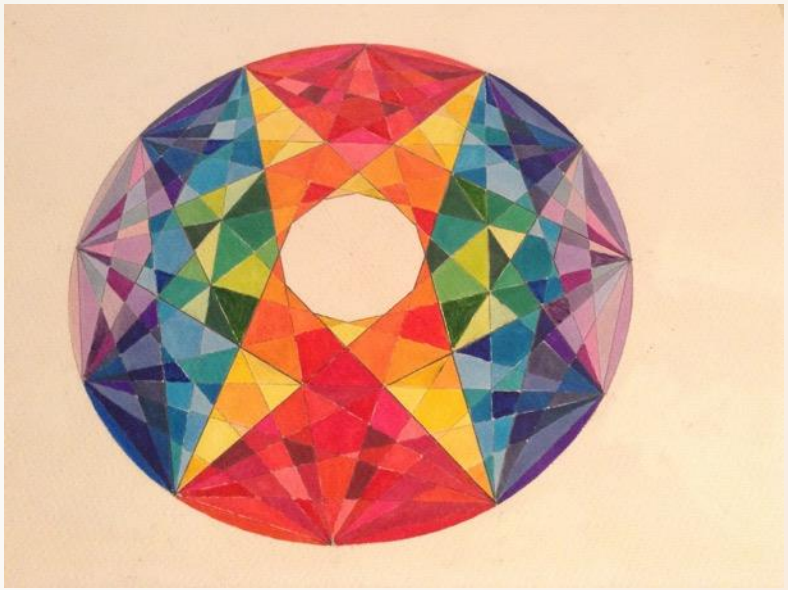
Broken Sphere (2016)

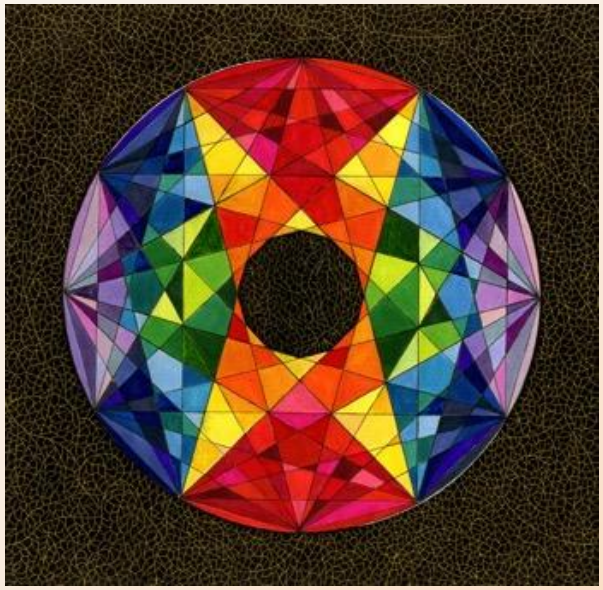
Crystal Torus (2016)

- Connecting twelve points around a circumference
- The closer the connected points, the narrower the band. Thus receding towards the edge (3D illusion)

Adventures with a clock face:

Crystal Torus (2016)



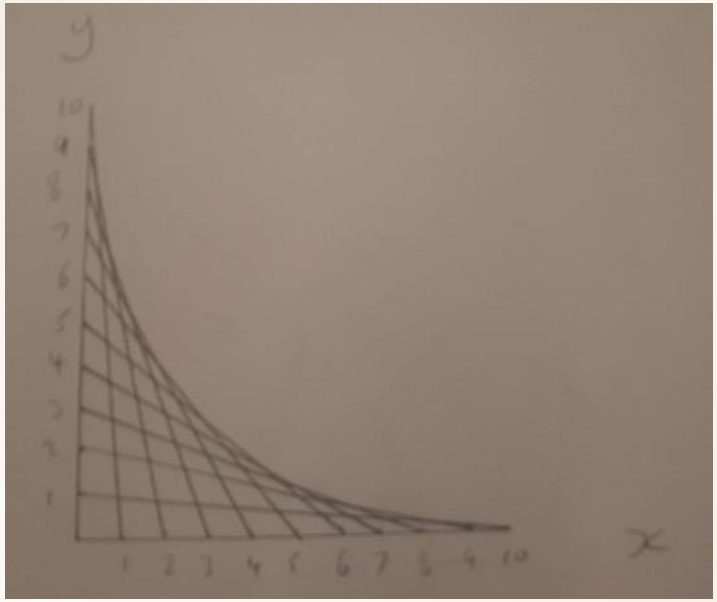


What happens to a pattern when an element is omitted? And then another pattern is superimposed?

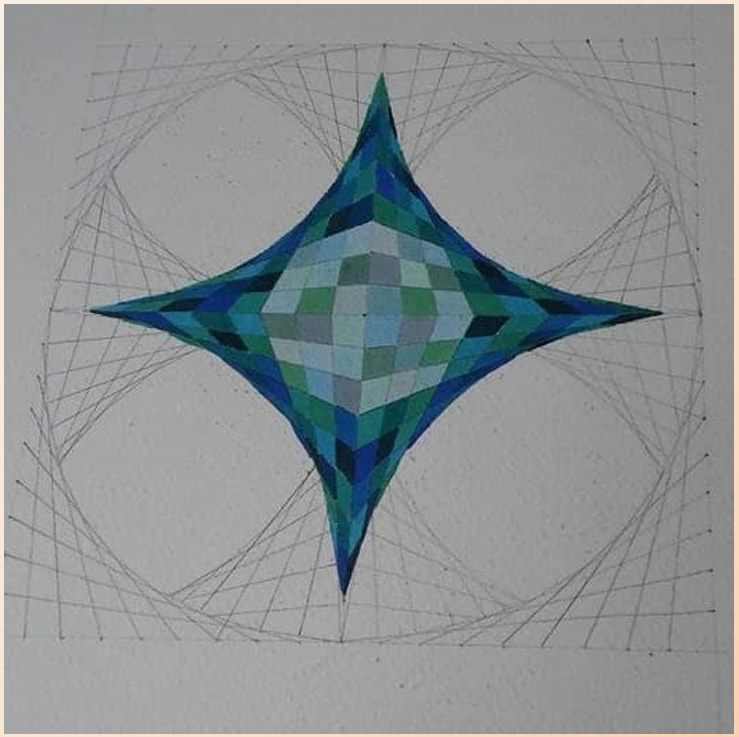
- Connection of points … all bar one
- Colour sections: left/right and top/bottom reflective symmetry
- Random distribution of individual hues within each section

And the effect is…?

"What do you mean? Of course there's a curve!"

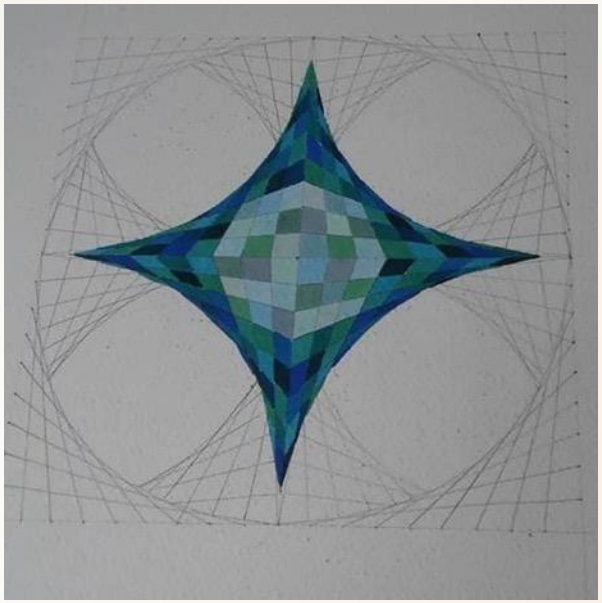


Two illusions: curvature + 3D



Reverse, reflect, repeat throughout, and…

"What do you mean? Of course there's a curve!"



…the centre jumps out, while the sides squish inwards

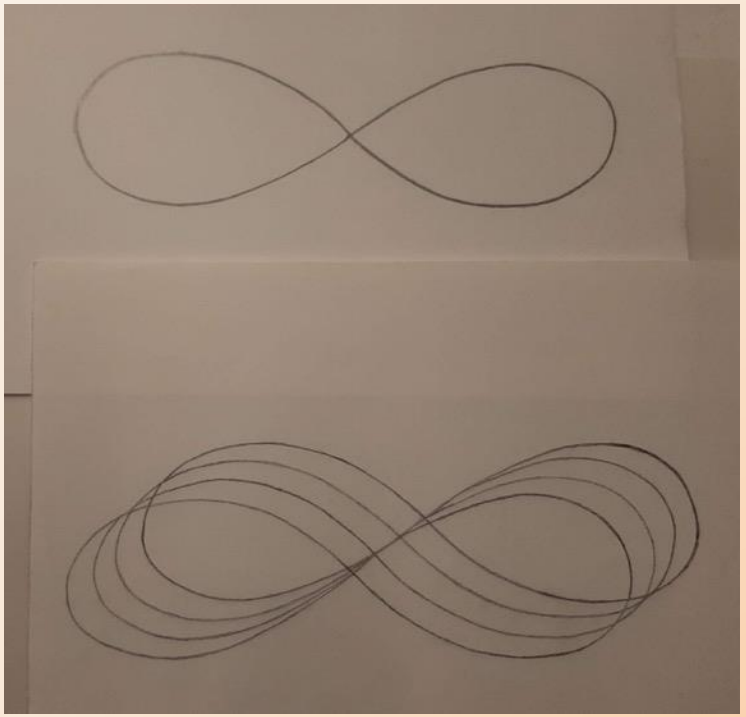
Be careful with the alignment!

No Curve (2018)

French curves and philosophising

A new direction

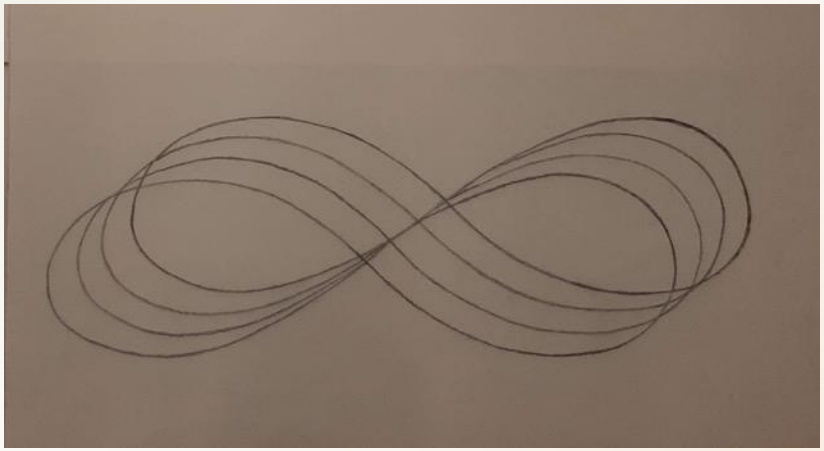
Graceful, swooping elliptical arcs



Draw, trace, then triplicate

An interesting visual ambiguity…

French curves and philosophising

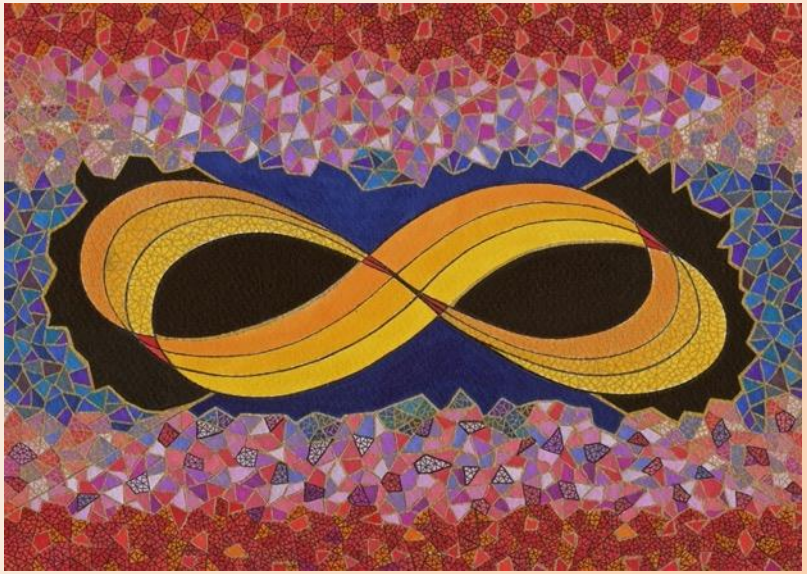


From this…

…to this. Single-sided or not?

Beyond a geometric experiment;

a focus on the symbol itself



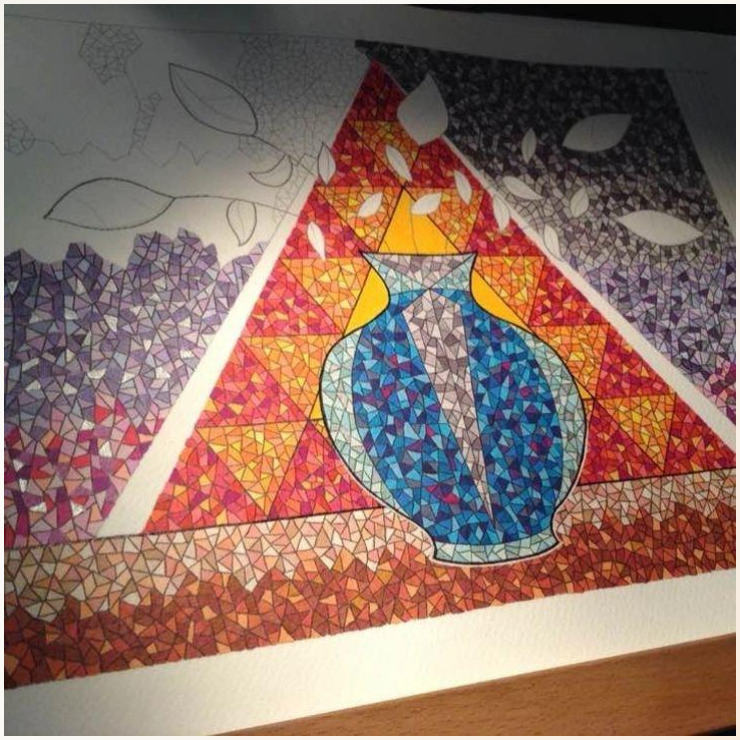
Beyond Limit (2020)

Other things

- Concealing errors (metallic pens, thickening of lines…)
- Colour distribution (including carefully-planned randomness)
- Being in the zone, physicality and the relationship with one's materials

The geometry does much of the hard graft. At every stage it offers choices, but we create the adventure.

Thank you!



Karen Amanda Harris
k.harris@arts.ac.uk
karen@scarletfruit.com
https://scarletfruit.com/

The artwork in these slides can be seen at
https://scarletfruit.com/mathematical-gallery