



Everlasting Tulips



## HOW DOES MY MIND WORK: THE DROSTE EFFECT

MIKE MARTIN

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**H**ow does my mind work?  
Where does the creativity  
come from?

The answer to the second question is easier than the first – we are bombarded daily with images through multiple channels. You just have to recognise that and see the opportunities some of those images present. As to the first question, who knows?

Let's focus on one narrow genre that I have been looking at during the pandemic.

I've been a lifelong fan of the drawings by MC Escher. As a younger self I, along with many others, had a poster of that never-ending staircase on my



Eternal Search For Meaning

wall. I also had posters of work by Dali, Magritte and other surrealists. I love optical illusions too.

I watched Adobe introduce then withdraw their Pixel Bender feature and Droste filter for Photoshop CS4 and CS5 and then 'forgot it' until the Pandemic, when once again I started looking at the potential of the Droste effect (or picture in picture effect).

*Everlasting Tulips* (at the head of this article) is an early image created in 1998, pre-digital, from a slide scanned and modified in Photoshop. This uses simple recursion using a plug-in for Photoshop.

The same effect can be achieved using the **Transform, Again** feature as in *Eternal Search for Meaning* (previous page) created during lockdown. There is a step by step video guide to producing this on my website.

Developing this idea, I started exploring online tools that enable the Droste effect to be applied to images. **Photospiralysis** is one such tool – it's easy to use but requires you to render the image and output.

The first image that I produced was the cliché spiral clock, just to understand how the tool worked.

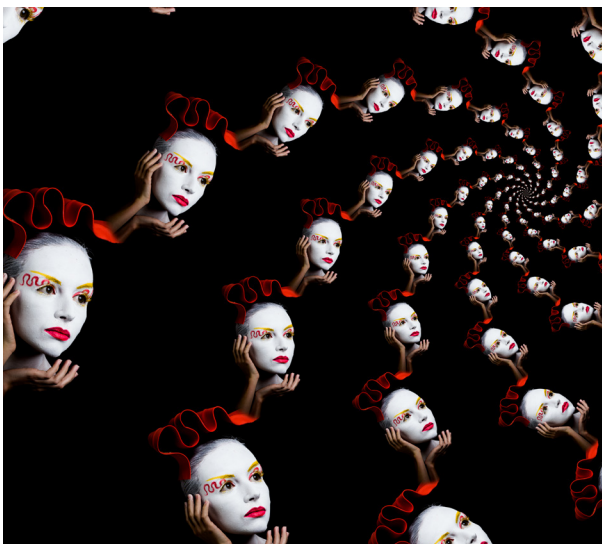
This was closely followed by an exploration of what can happen if applied to pictures of people, then moving into just hands!

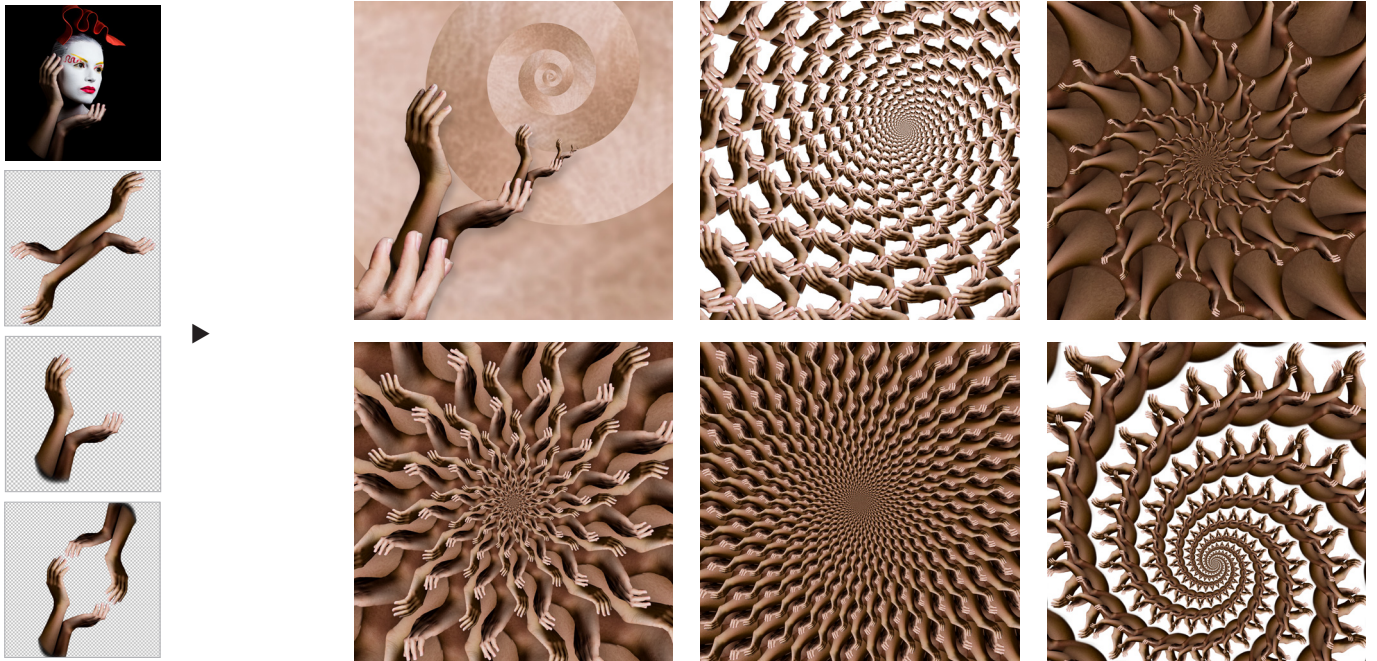
## What is the Droste Effect?

It is named after a Dutch confectionary company and an advert created by Johannes Musset around 1900. Musset created an image of a nurse representing the wholesomeness of their product, carrying a cup of the beverage on a tray, accompanied by a tin of the Cocoa, itself bearing an illustration of the same nurse holding the tray establishing a recursive visual effect now known as the Droste Effect, notwithstanding examples of the same effect predating this by more than 500 years! [Giotto painted an altarpiece in the 14th century comprising a triptych, in the centre panel of which St Peter is seen offering the triptych altarpiece to Cardinal Stefaneschi].

Throughout the 20th Century the Droste Effect has featured in a variety of media including the obvious adverts, illustrations such as the album art for Pink Floyd's *Ummagumma*, music videos such as Queen's *Bohemian Rhapsody*, TV such as *Doctor Who* title sequences and even into Model Village tourist attractions: the model village in Bourton-on-the-Water contains a model of the village, itself containing a model village and so on!

One of the most famous uses of the Droste Effect was by MC Escher in his 1956 lithograph, the *Print Gallery*. This shows a gallery displaying a print depicting the gallery reduced by a scaling factor, but also rotated. Whilst the original had a void in the middle where Escher signed the print, later mathematicians worked out how to fill this with further iterations of the recursion. There's a fascinating 'fly through' video included in this lecture available on YouTube. Oxford Mathematics Public Lectures: M. C. Escher - Artist, Mathematician, Man - Roger Penrose and Jon Chapman (first half of the lecture!): [youtube.com/watch?v=clQA6WhwCeA](https://www.youtube.com/watch?v=clQA6WhwCeA)

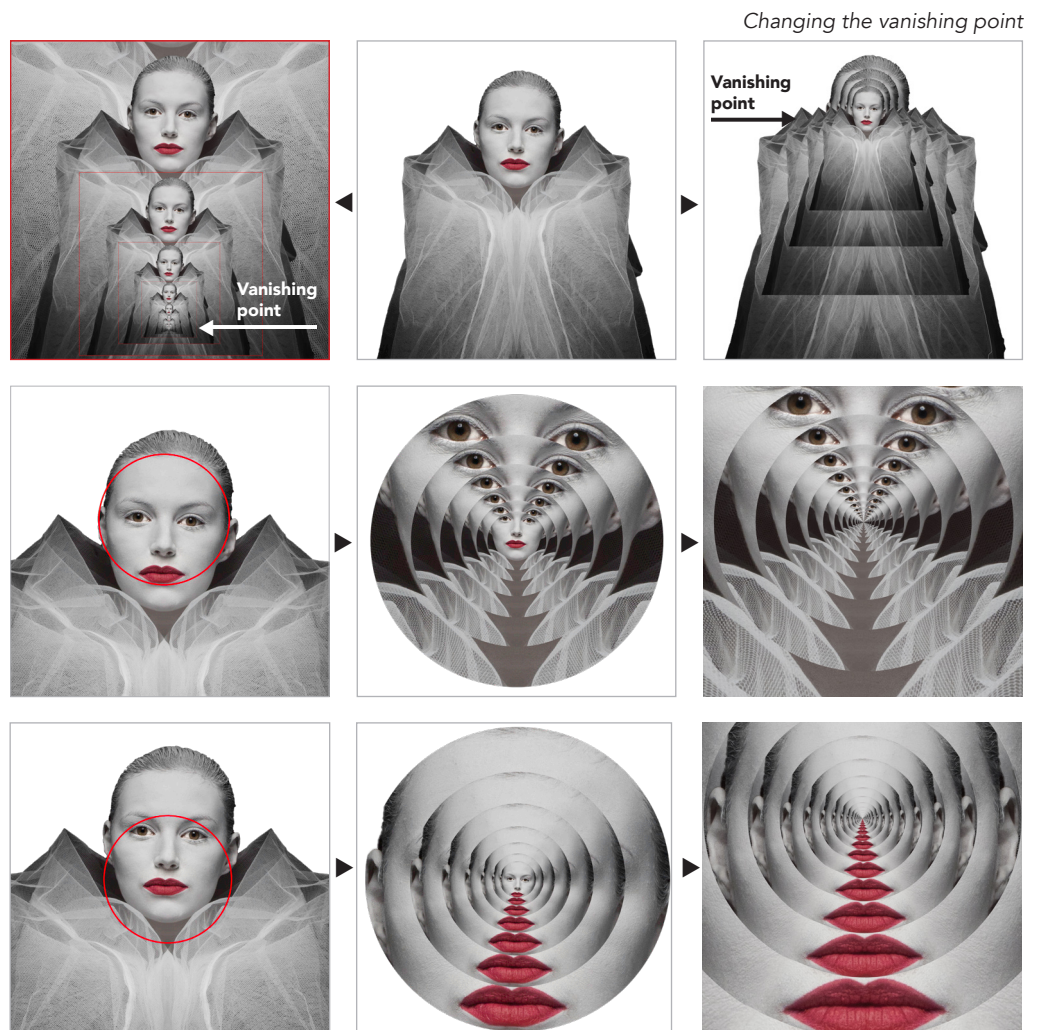




Hands with a transparent background

Whilst I quite like *Cactus Hands* (top-right), many viewers may struggle to recognise what they are looking at! As to the debate of whether these are photos or digital art, these are possibly at the cusp – you can still see recognisable photographic elements within the image; the hands. Personally, I draw the line at the *Twirl* images that were so popular at the beginning of the pandemic.

However, this playing with the tools was key, enabling me to conceptualise how I could build into some of my image making. One thing I noticed early on is that if you use PNG files with transparent backgrounds it's possible to avoid the tell tale sharp edges, or to control the shape of the repeating element. Another critical point is where the 'repeat' or 'vanishing point' is centred. This is illustrated in the adjacent images.



Changing the vanishing point

**Echoes of Consciousness**

*Model: Anna Randall*

Pulling these elements together and combining them, allowed me to create this image. The repeating elements of the fabric seem to produce a 'guard of honour' in an infinite corridor, in front of which I have placed the single figure from which the image is derived.



**Watching the Passage of Time**

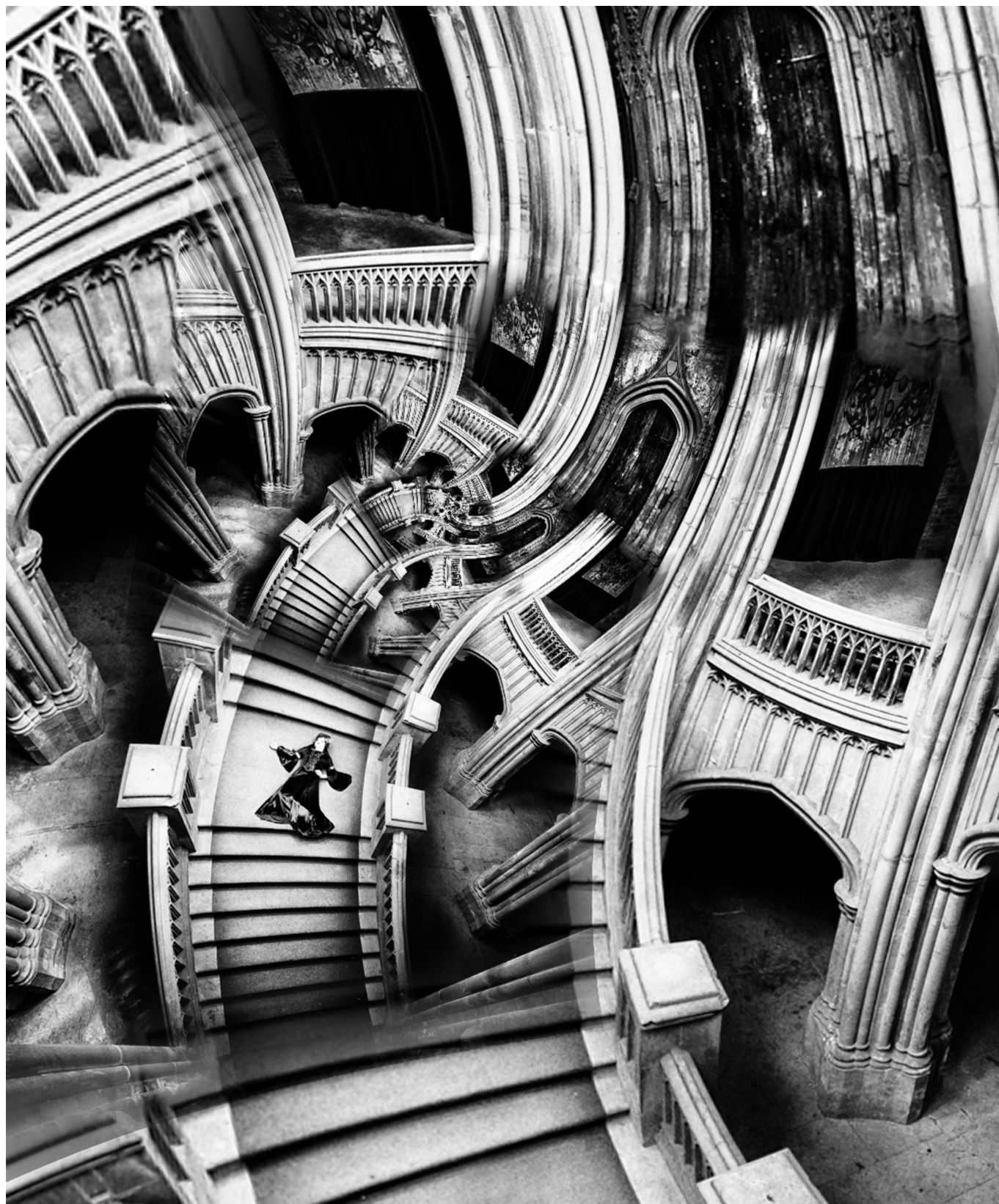
Here I have used the receding eyes to form an arched passageway or corridor of eyes, under whose watchful gaze my wife and son walk. I've re-introduced the element of time by placing the un-ending spiral of the clock as the floor.



**Final Journey**

Drawing upon my relationship with London Underground, I've extended/repeated the passageway such that it goes on into infinity, then placed a masked out figure front centre and adjusted the opacity to provide a commuter reflecting upon the futility of the ceaseless tedium of commuting!

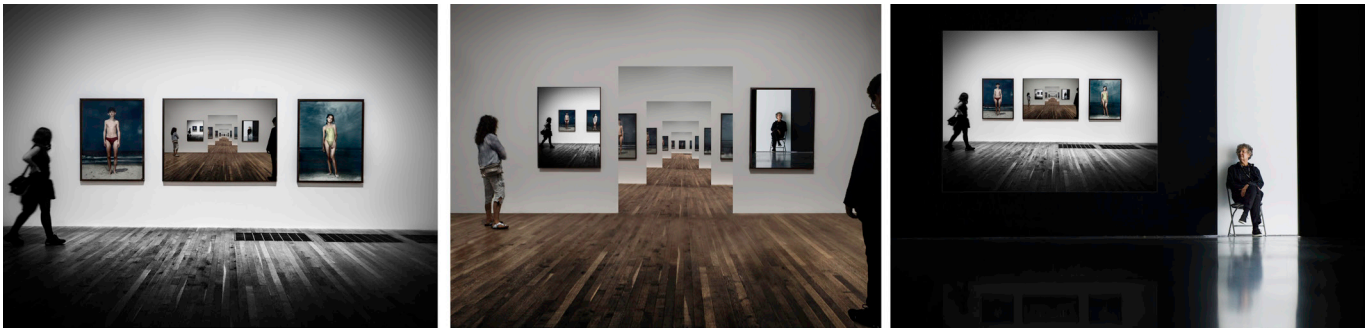




## Vertigo

Model: Azadeh

Here, I've taken an already complex image of the magnificent staircase at Margam Castle, Port Talbot, partially erased the edges to give some transparency then used Photospiralysis to introduce the spiral and recursive repetition. The shape was carefully adjusted to allow the stairs to merge with columns. This was finished in Photoshop to blend the tones and remove the repeated figure to leave just one on the thirds.



Returning to where we started, with a 'simple' picture in picture concept, for those with a bit of patience you can produce a triptych with each image containing the others, nested one inside the next.



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If anyone has worked out the answer to "how does my mind work?" please let me know. However, I hope this has given a tiny insight into how I draw upon different sources of inspiration, mix in a few ideas, but above all have a play and just see where it takes me.

## FIND OUT MORE

Visit Mike's website at:  
[mikemartinphotography.co.uk](http://mikemartinphotography.co.uk)

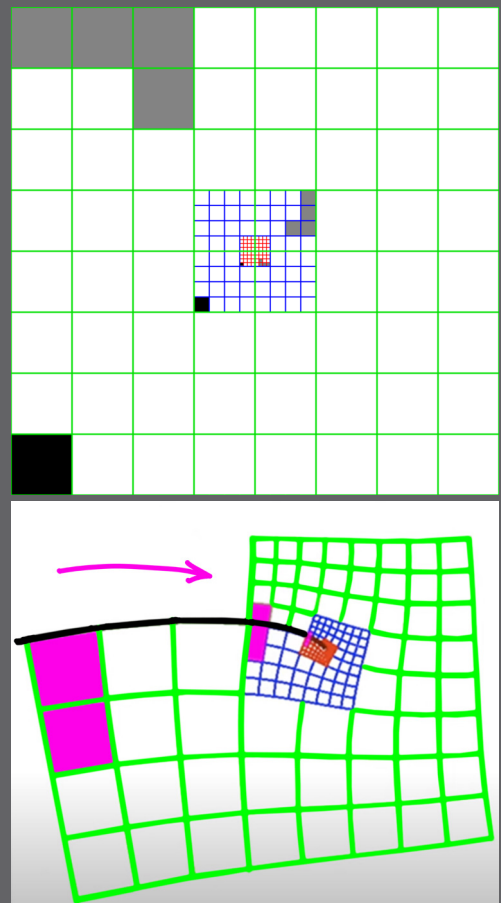
## The maths and geometry behind the effect

In this illustration you can see a grid (green) that is reduced (scaling factor x4) to give the blue grid, which in turn is further reduced to produce the red grid.

Taking the black square, bottom right, this is repeated in both the blue and red grids in a simple reduction basis.

However, if you take the four grey squares starting top left, and reduce AND rotate 90 degrees clockwise, its easy to see how you can establish a rotational element too.

Whilst this can produce a spiralling effect, there is a discontinuity. However, if you distort the grid as below, you can get a true spiral / infinite recursive effect.



Instead of shrinking the entire green grid, it is slit from one edge and distorted so in the above, the top of three pink squares is displaced to the right to align with the repeated and reduced copy of the two pink squares, so as to be indistinguishable from the original three squares had they simply been reduced in size. Any image distorted in this manner will spiral on into infinity, completely seamlessly. It is this transformation that forms the basis of all Droste type filters, actions or tools.