MSQ_4x4_Loop_Shadow

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A Short Note on Odd Physical Outcomes from Generative Art Concepts

When working on realizing an idea in Generative Art with the intention to create an output in some physical form, like a sculpture or a plotter drawing, there are two phases of the process – a digital design phase and a physical creation phase of the artwork.

In the design phase, we are forced to be precise. Precision is mandatory in order to define the generative process from start to finish and in such a way that the program will do exactly what we intended.

The moment we start creating the physical artwork, imperfections often get introduced, no matter how hard we try to prevent this from happening. So it seems good advice to accept or even embrace it. The step from the digital to the physical representation can be seen as a realization process which has a lower and an upper boundary of precision. Within these two margins we may have an “optimum” with respect to functionality for our intended output. Below the lower margin we have failure, breakdown, destruction.

From an artist’s point of view, and acknowledging the breathtaking liberty this involves, the allowable space between the margins is nothing but sort of a concept. If viewed this way, it can be exploited deliberately from the utmost achievable precision (what we usually aim for) to almost failure (which is hard to control). The output we get (or what is left at the end) may be exactly what we were looking for, maybe even without knowing it. I call those results “odd” outcomes. Needless to mention we find such odd outcomes all over art history. A desire of artists finds expression in them to not stay inside the allowable margins and sometimes disregard them in shocking ways. It is my belief that we should try this with Generative Art! It can be applied to Generative Design and Generative Architecture as well.

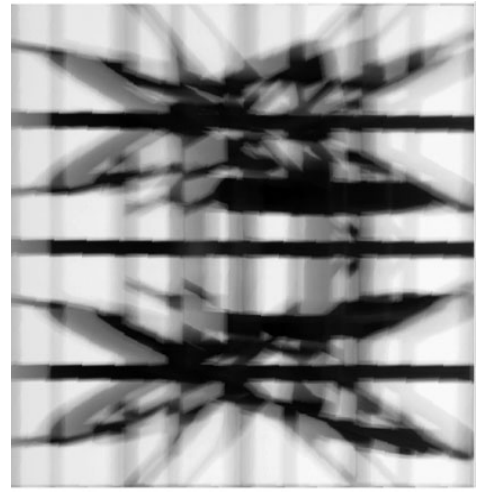
Unsharpness can, for example, be considered an imperfection introduced during the physical realization process of an artwork. However, a line drawn on a pen plotter is by default sharp. This is the nature of a straight line between two points. Likewise, drawings generated from such lines are by definition sharp. I have extensively experimented with line drawings on pen plotters that *appear* unsharp. The question was, how can we achieve this effect with a generative

program? I regard this as an interesting question from an artist's point of view, because it is related to the shortcomings of human sight. Two lines can be separated by the human eye only up to a lowest threshold, which is called the 'minimum separabile' in optometry. Below this threshold, the lines merge into a grey-scale. The minimum separabile is an individual measure and it depends on the viewing distance (the sfumato of Michelangelo comes to mind).

Within this context of considerations, but a different category in their own right, are those art images which *are* blurred and unsharp. They are confusing to an extent, and precisely therefore they attract our attention. It is not surprising that artists have used this effect and developed techniques to create images accordingly. We find them frequently in photography, but in many other areas as well (1). In some cases, it may not at all become clear what they depict. In other cases the unsharpness may deliberately enhance what the artist intended. For the construction of an "aesthetic event" (a piece of art), unsharpness can be considered an interesting feature.

I am making use of it for my contribution MSQ_4x4_Loop_Shadow. The piece is a print on paper with a blurred image of a generatively constructed object. It depicts a 4 x 4 Magic Square with a Möbius strip. The strip runs in a designed order as a closed loop through its defined positions in the square. Mathematically there exist altogether 880 different such magic squares of "order four" (2). The one used here is randomly picked. The shape of each such loop through the square strictly follows the mathematically based order and arrangement. It is the application of these rules which generate a unique aesthetic event each time. In this case it is realized as a 3D-printed sculptural model. For a generative approach to art it is interesting and worthwhile to explore the many conceivable approaches for the design and realization of aesthetic events on the basis of mathematical properties.

MSQ_4x4_Loop_Shadow



The Magic Squares used here are a prominent example (3). But we are free to choose any squares in any dimension or order in any arrangement, as long as we are able to formulate a systematic relation between their elements.

The MSQ_4x4_Loop_Shadow presented here as a blurred image is a homage to the hidden mathematical precision in it.

(1) Ulrich,Wolfgang: Die Geschichte der Unschärfe. Wagenbach Verlag, Berlin, 2002
(2)http://www.markfarrar.co.uk/msq4x401.htm (lookup Sept. 2023)
(3) See also the work of Vera Molnar on Magic Squares.