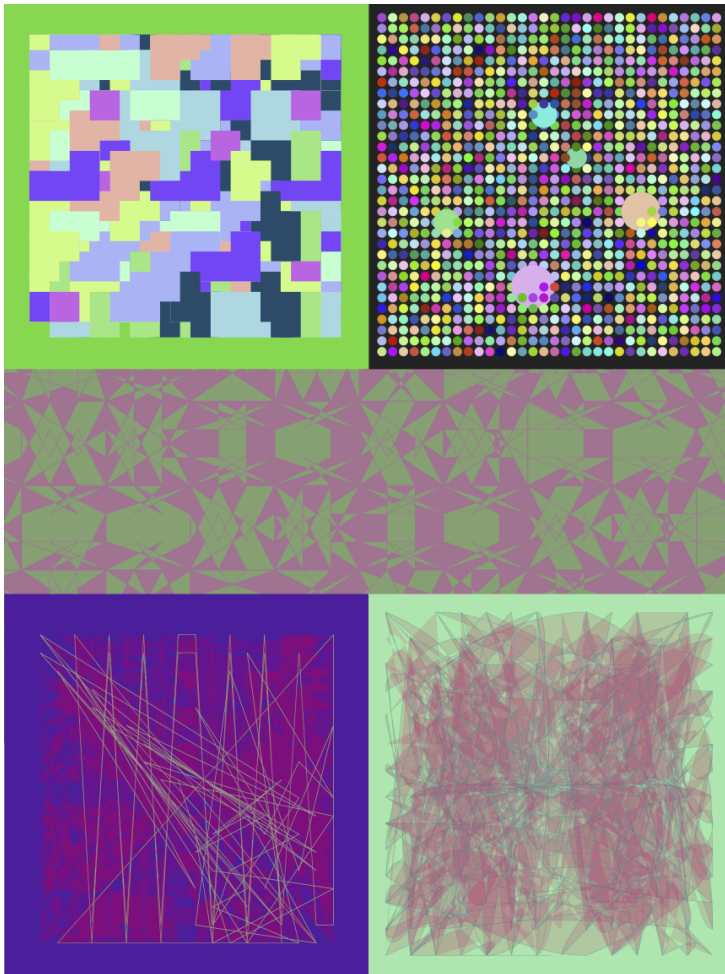


New Generations @ Digital Art Month



Nonlinear Magic

Fania Raczinski & Dave Everitt

"This work is part of an extensive long-term project

""cubeLife"" that investigates the patterns created by mathematical objects known as magic squares and magic cubes. This particular work takes the 2-dimensional arrays formed by magic squares and uses the ""magic line"" that connects each number in sequence to create various journeys through the array of numbers. We have created algorithms that generate curated variations of this line, as well as randomisations of colour and style produced solely by computation.

The concept is to take the grid layout of these deceptively simple yet precise numerical series (for example: 1,10,7,16,14,11,6,3,15,8,9,2,4,5,12,13) and create visual representations of the invisible underlying pattern. The process translates these items of pure mathematics into a visual space of surprising variety and beauty.

All the code for this work is entirely original and hand-written (the huge number of possible lower order Magic Squares were generated by a mix of C and Haskell, higher orders are collected by hand as current computing power is not yet able to generate them) and is stored in a GIT repository on

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GitHub. Backend is a Node server and Couch database that provide the environment and storage to run the browser-side JavaScript frontend.

The web app itself is also used for research into the mathematical patterns behind the work, about which we have published two papers so far.

This exhibited version juxtaposes the computational process of weighted algorithmic randomness with a humanly curated approach – showing them side by side:

- Left: the 'random' showcase.
- Right: the 'curated' set of hand-crafted designs, generated by adjusting software parameters.

Displayed along with the live work there will be two prints generated by manipulating the software settings."

"Fania is a part time lecturer/academic at De Montfort University in Leicester, the University for the Creative Arts in Farnham, and the University of Hertfordshire in Hatfield. She teaches Web Technologies and is a researcher in creative computing, 'Pataphysics, and generative algorithms. Over the last three years she has been invited to publish computer-generated poetry and other work.

Dave is an artist, writer and musician who has been working with art-technology partnerships since 1998 at Loughborough University, where in 1999 he exhibited the heartbeat-driven artwork cubeLife. He has been a lecturer in web technologies at De Montfort University, a freelancer in environmentally-aware publishing, and a computer consultant working in arts & disability.

They have worked together since around 2015 on art-code projects, research and presentations on the subject."

[@cubeexplorer](#) | <https://fania.uk/now> | <https://daveeveritt.org/art.html>

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