Tesselles

Françoise Lombaers
& Guillaume Slizewicz

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After twenty years restoring heritage mosaics, Françoise Lombaers joins Guillaume Slizewicz to explore unmapped territory. Four algorithms—drawing from fungal networks, fractal patterns, and cellular automata—become mosaics where square tesserae generate unexpected organic movements. A quiet investigation into how ancient techniques might evolve.

At a time when traditional crafts struggle to find new practitioners and digital tools are revolutionizing the creative industries, mosaic art—which requires years of training—faces a dwindling pool of artisans while emerging artists flock to digital media. Rather than pit these worlds against each other, Lombaers and Slizewicz prove they can enhance one another: algorithms unlock formal possibilities beyond manual capability, while the tactile nature of mosaic grounds digital concepts in physical reality.

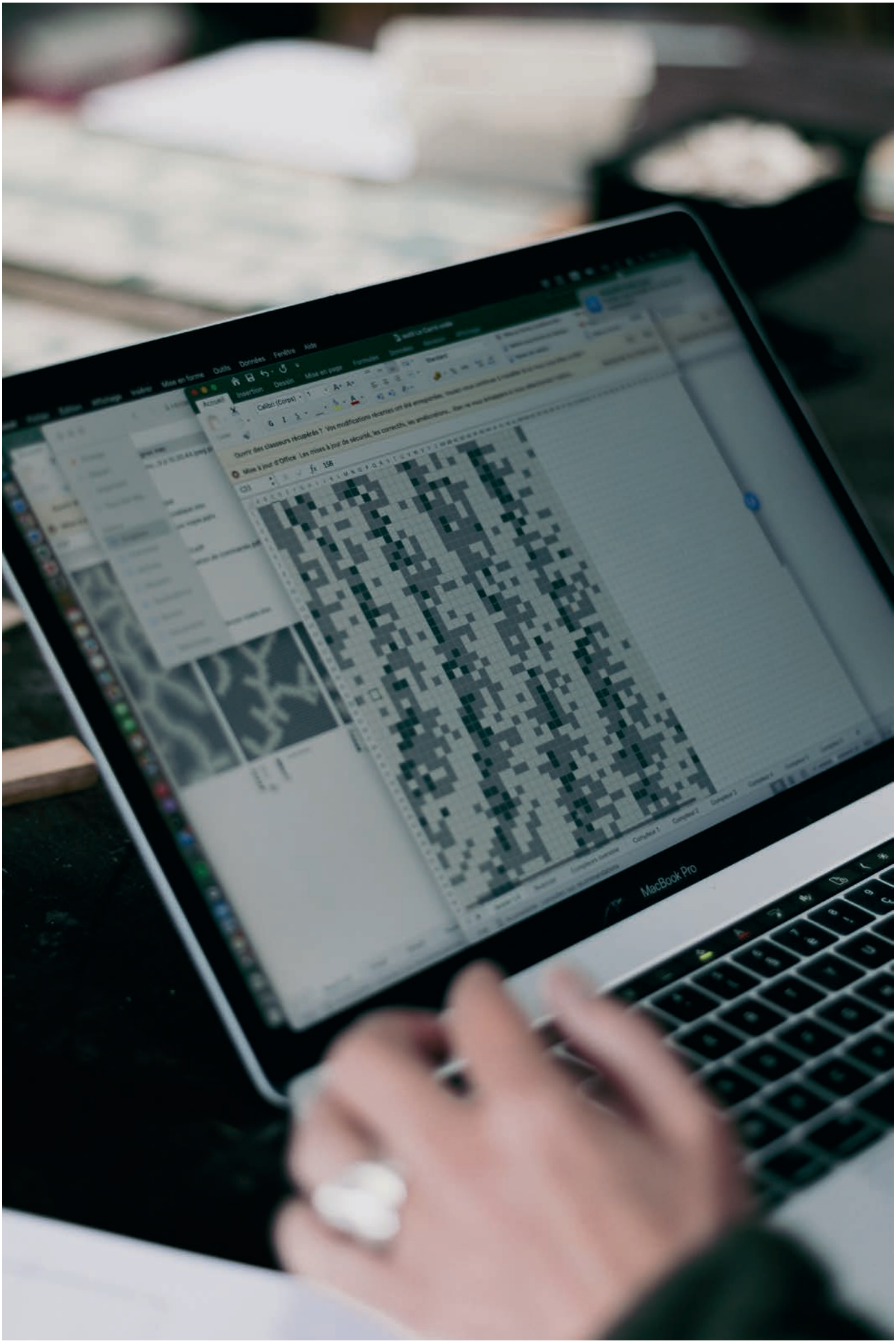
This approach also meets growing market demand for unique pieces that blend cutting-edge technology with traditional craftsmanship. By making mosaic more accessible through generative systems, the duo is paving the way for a new generation of creators who can embrace this ancient art without mastering every traditional technique—a particularly relevant approach as AI tools challenge our understanding of craft's role in contemporary creation.

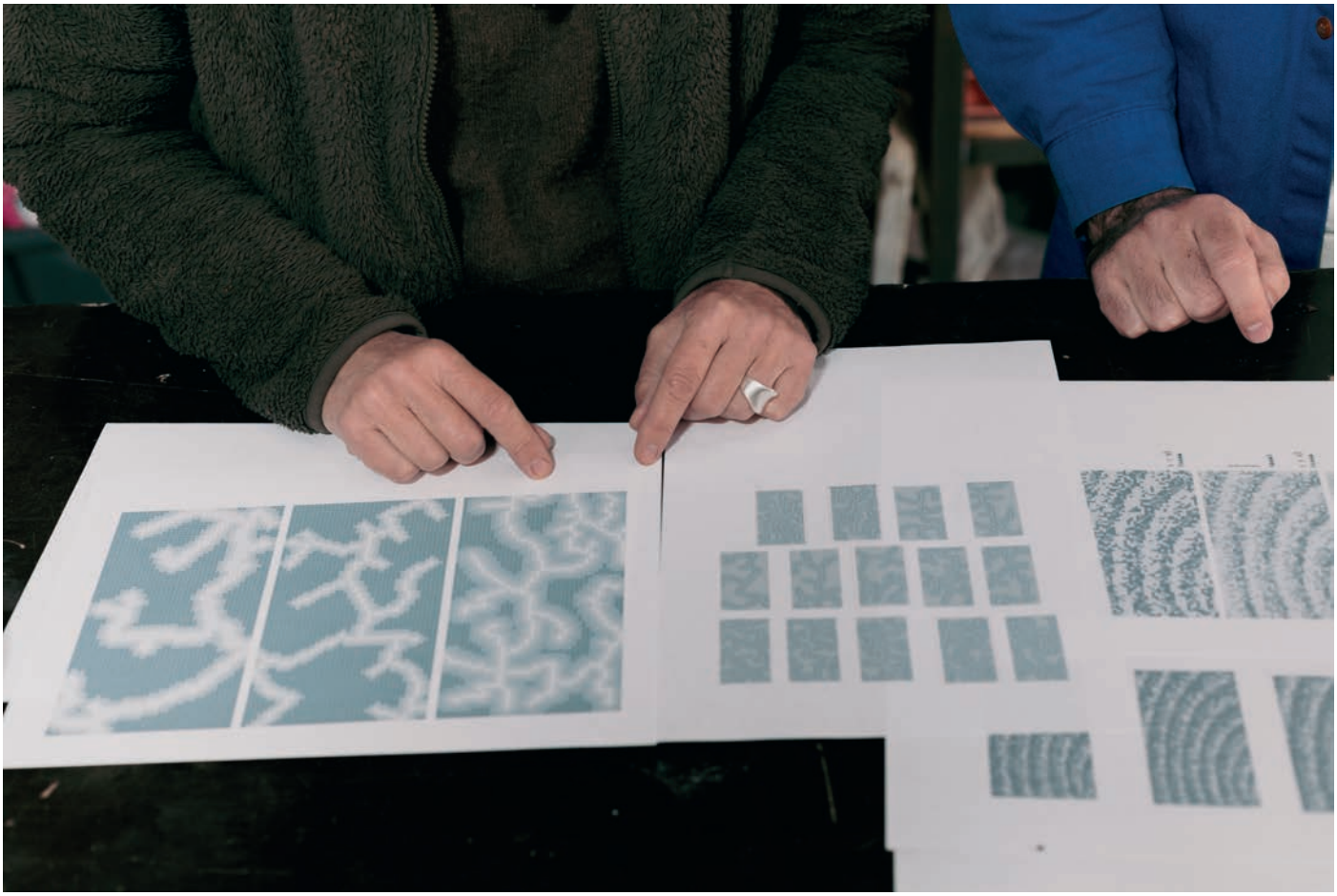
The collaboration centers on process. To work at scale, Françoise developed a system using square tesserae, drawing patterns from textile and ceramic traditions. Together they wrote algorithms that respect the square's constraint while generating new forms. Each algorithm follows its own logic: mycelial branching, minimum spanning trees, cellular evolution, wave propagation. The research focused on representing movement through fixed geometry—finding where mathematical rules yield organic behavior. Four pattern systems emerged: Mycelium, Prim–Jarnik, Game of Life, and Waves. Each offers infinite variations, natural forms emerging from simple rules.

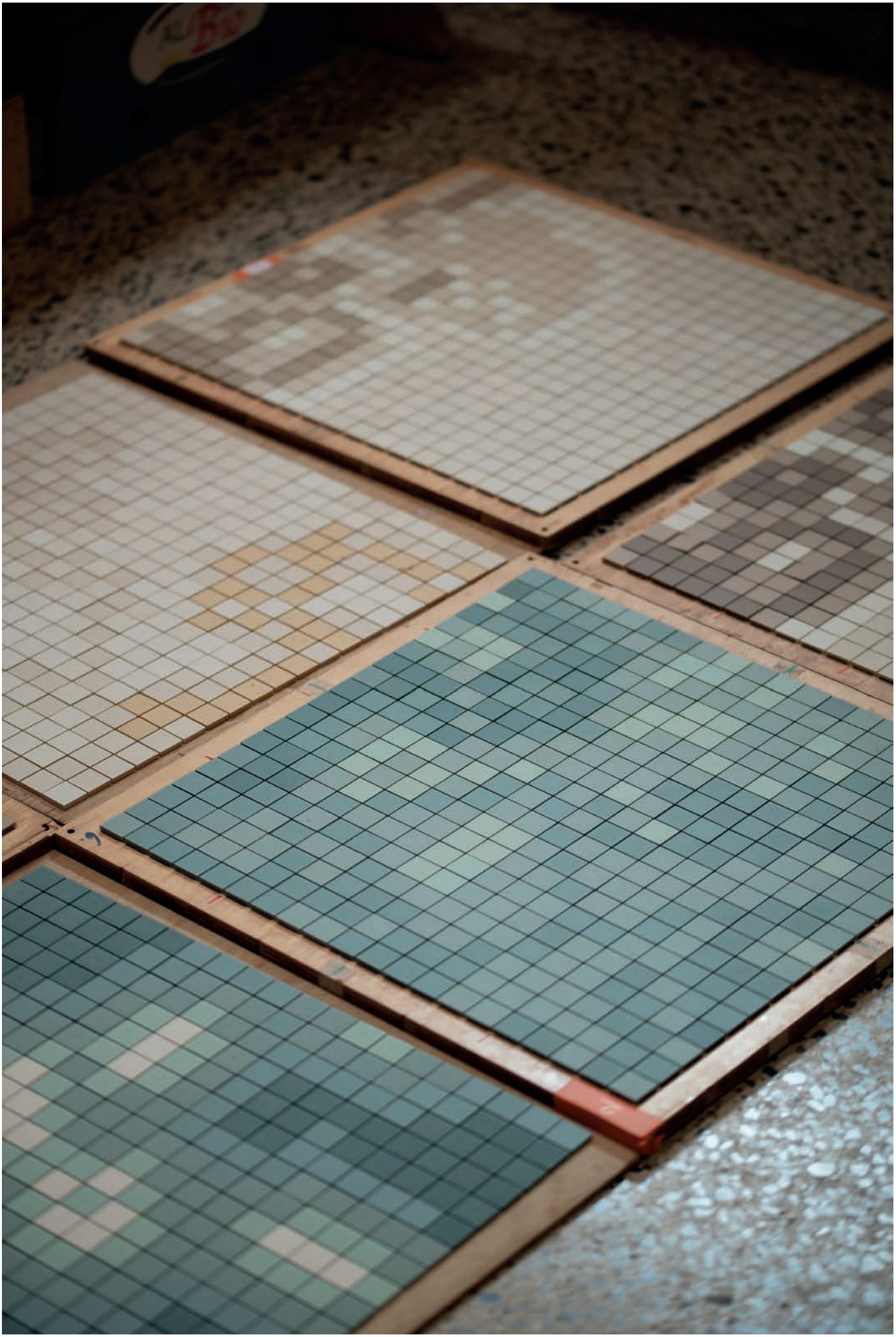
Françoise Lombaers spent 20 years preserving and restoring historic mosaics, keeping traditional craftsmanship alive. In recent years, she's shifted her focus to original work, bringing ancient mosaic techniques into contemporary design and making them accessible to a wider audience.

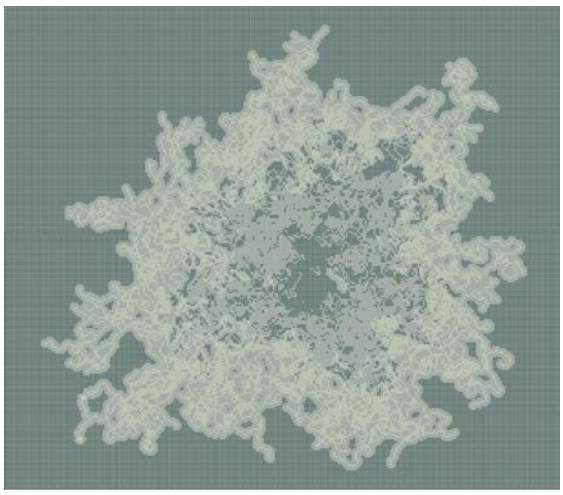
Guillaume Slizewicz is a designer and digital artist whose work sits at the intersection of technology, the environment, and societal issues. Through his practice, he engages with the evolving dynamics between innovation and sustainability, using technology in poetic, evocative and critical ways. His approach draws connections between ancient craft practices and contemporary digital tools His works, often developed within collectives and with other designers, connect the past with the future, linking craftsmanship with computational processes.

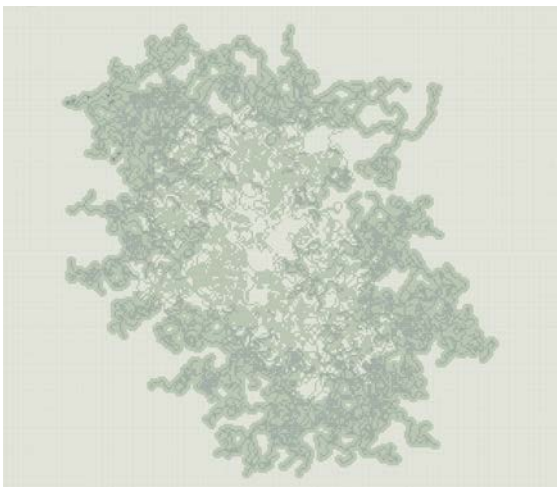

Pistache

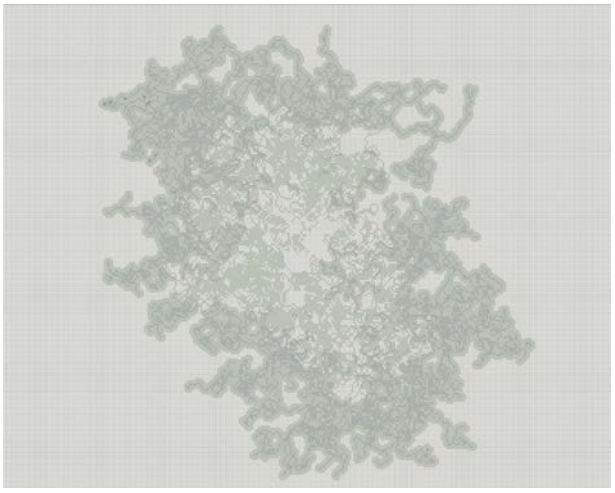

MacBook Pro

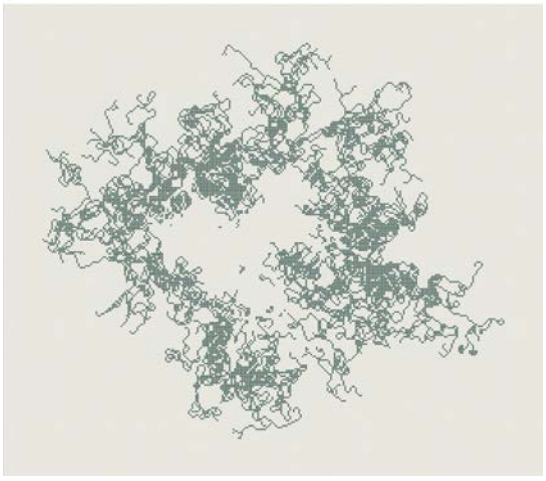








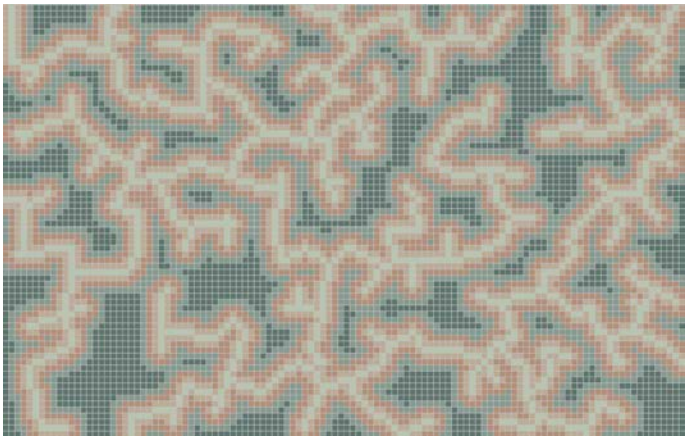
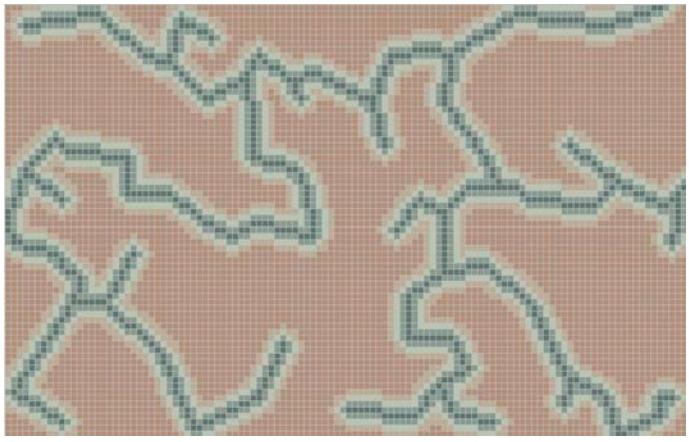
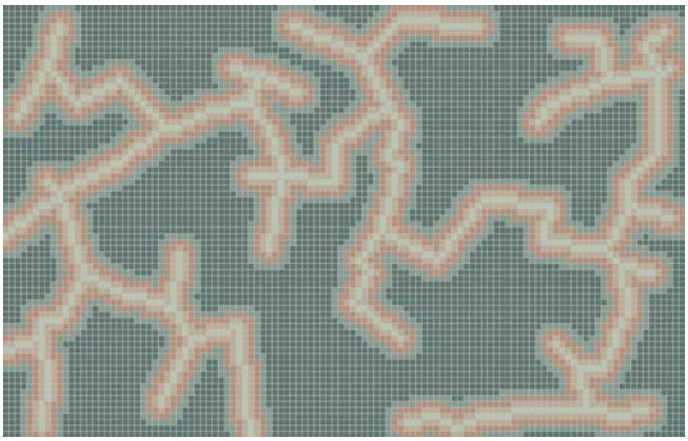
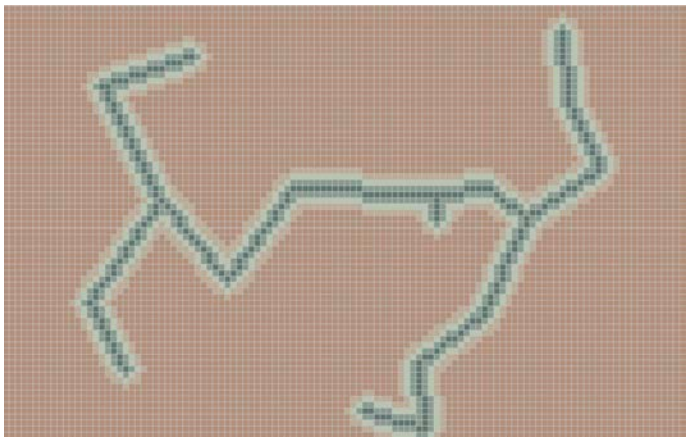
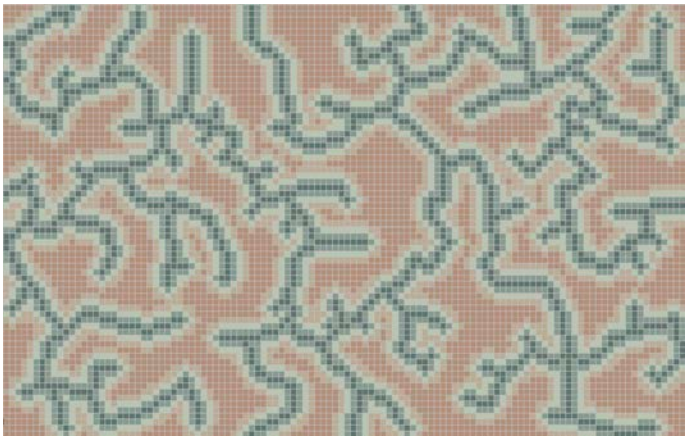
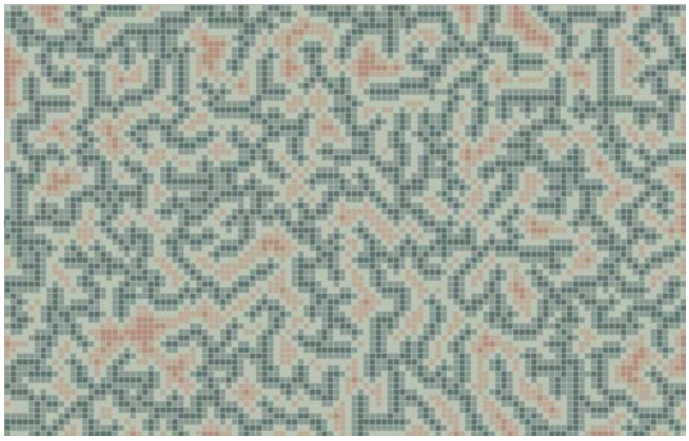




560 x 640 cm

Mycelium

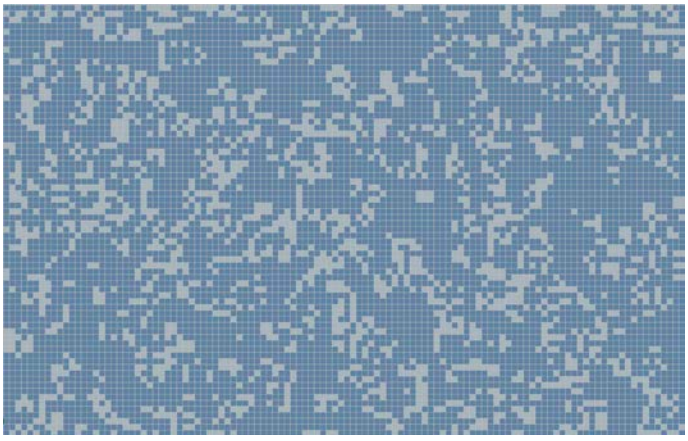
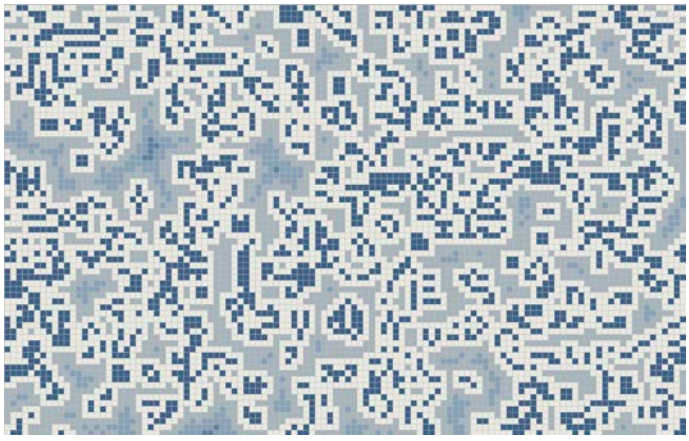
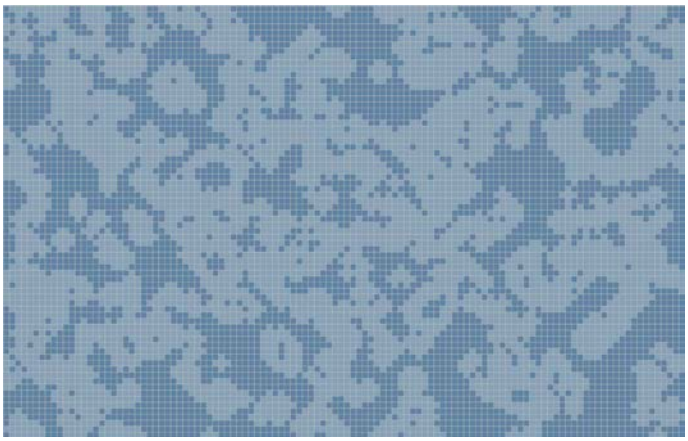
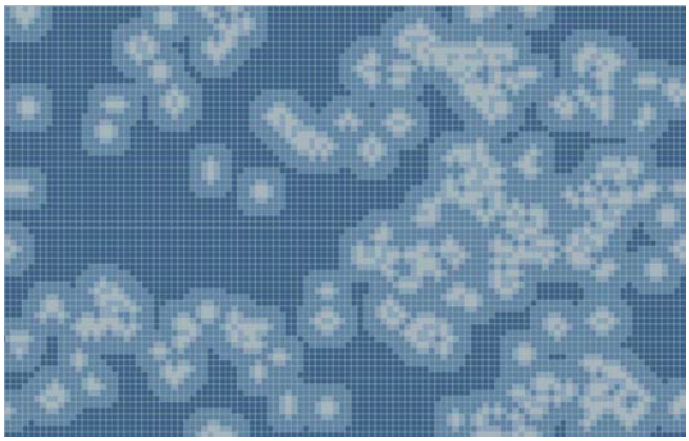
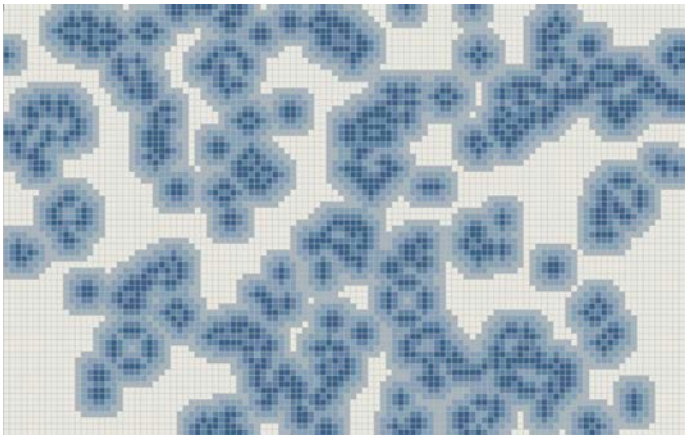
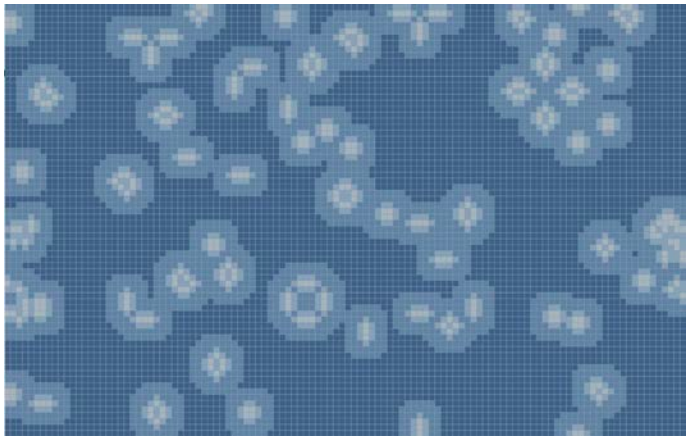
This algorithm simulates the emergent growth patterns of fungal networks, one of nature's most efficient self–organizing systems. Inspired by how fungi form hyphal networks in three–dimensional space through a process of branching and directional growth, our creation follows the path of «growing tips› that extend and bifurcate according to mathematical rules. These rules are influenced by randomness parameters that aims to mimic natural variation. As these branches extend, they create intricate patterns reminiscent of real mycelial structures. The algorithm creates a gradient effect by assigning color values based on the age of each pathway segment, allowing older hyphal routes to be visually distinguished from newer growth.

150 x 240 cm

Prim–Jarník Algorithm

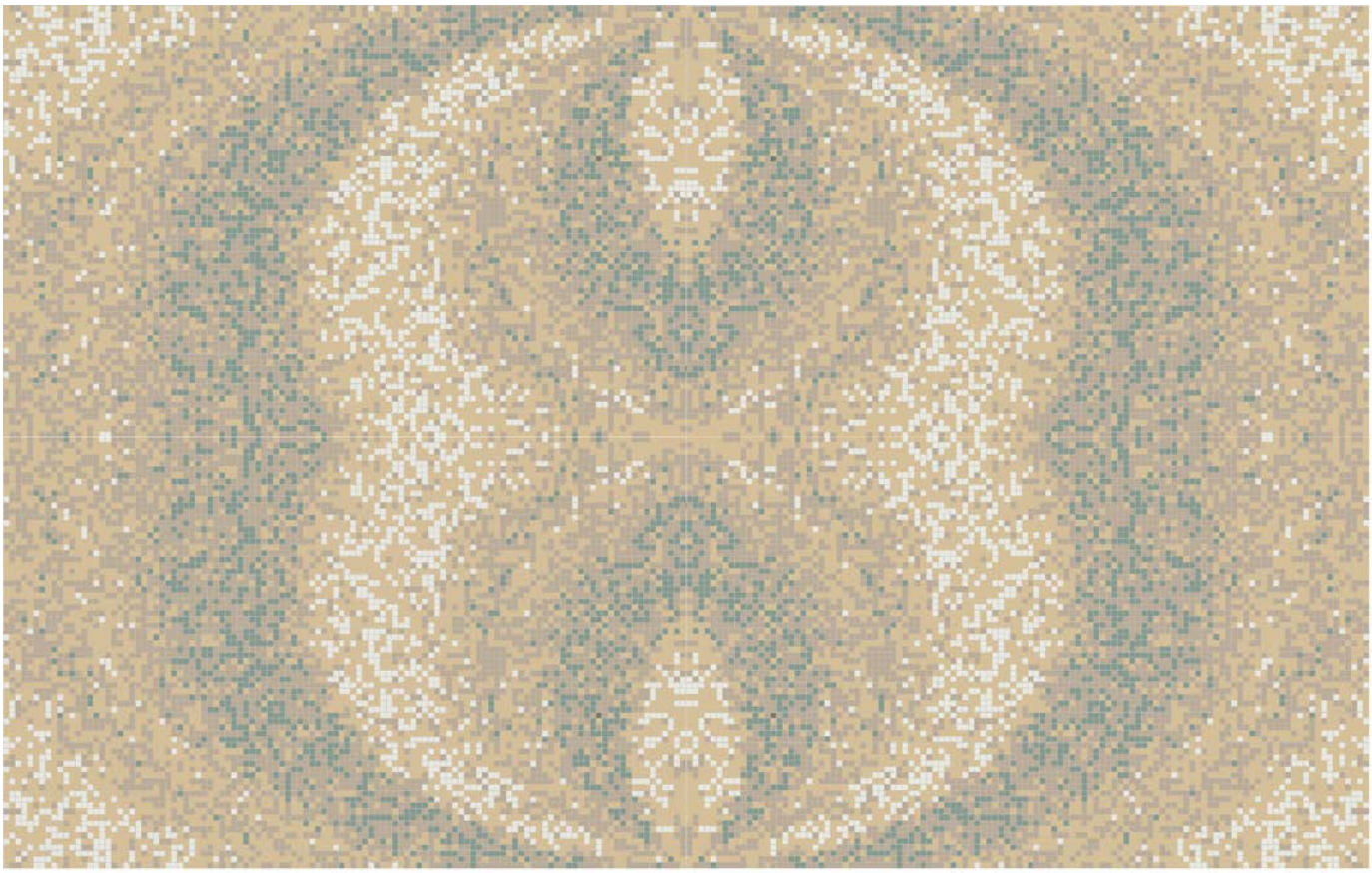
In our interpretation of this graph algorithm, we explore the problem of connecting all points in a space using the minimum possible total distance. The algorithm grows a tree by repeatedly selecting the shortest possible edge that connects the existing structure to a new point. Rather than representing connections as present or absent, we apply a ridge gradient that creates a topographical landscape where the tree's edges form elevated ridges that gradually taper off into valleys. This approach transforms the mathematical precision of finding optimal connections into organic, flowing patterns that can evoke natural systems like river networks or leaf veins.

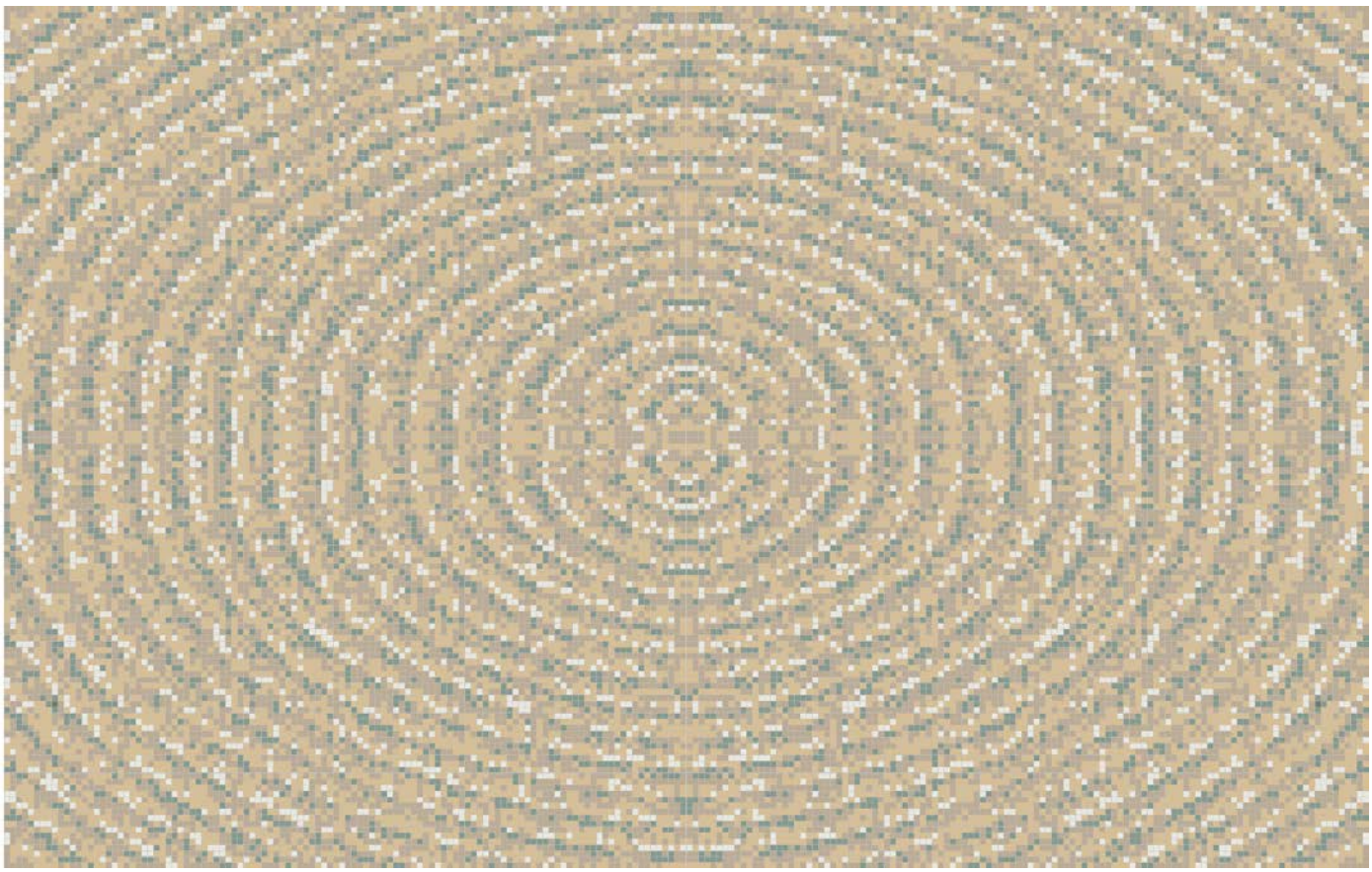







150 x 240 cm

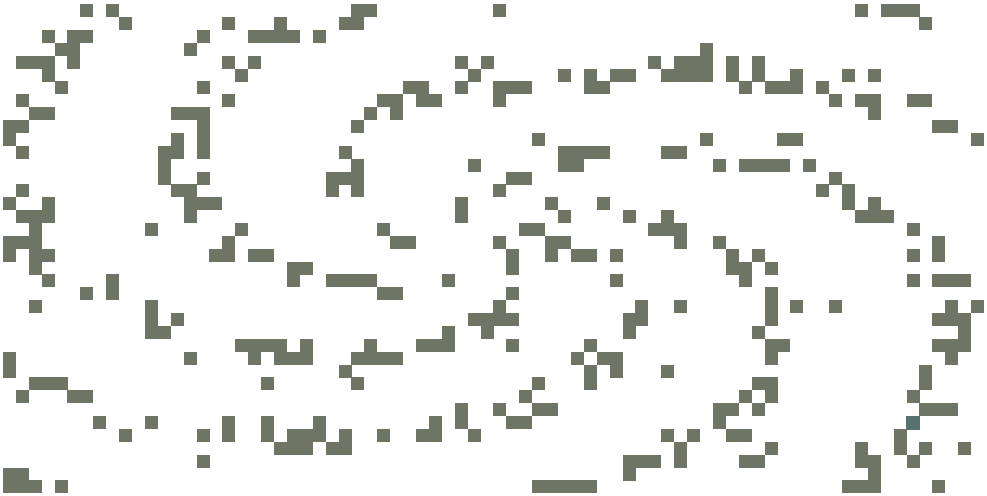
Game of Life

In our interpretation of the algorithm created by mathematician John Conway in 1970, we explore a dynamic system designed to evolve over time. Conway's Game of Life simulates cellular evolution on a grid where each cell's fate depends on its neighbors: cells with too few neighbors die from isolation, those with too many die from overcrowding, and new cells are born with exactly three living neighbors. The beauty of this algorithm lies in how simple rules generate complex, evolving patterns when observed across multiple generations. Our implementation captures this evolutionary process by freezing the simulation at a specific moment, then applying a ridge gradient technique that transforms the traditionally binary states into an undulating landscape. Living cells become peaks while surrounding areas fade based on proximity, creating a discrete spectrum of values allowing the mathematical rules to manifest in forms that translate to the color palette of the mosaic work.





300 x 480 cm



Ondes

The French term for «waves» describes oscillating patterns created when frequencies modulate each other, like ripples meeting on a pond. Our algorithm calculates these patterns using radial distances from a central point and applies multiple octaves of fractal noise with decreasing amplitude. The resulting fluid gradients aims to create dynamism with square mosaic tiles, where creating movement is challenging. Unlike conventional techniques where artisans must cut tesserae into specific shapes to achieve flow, our approach generates wave-like patterns that can be translated directly using square tiles. This offers a contemporary alternative to traditional andamento techniques enabling fluid visual movement within the constraints of a modular grid system.

Tesselles.com

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