

# The Extinction Illusion

Jacques Ninio  
Kent Stevens  
2000

Ninio J, Stevens KA (2000) Variations on the Hermann grid: an extinction illusion. Perception:Vol.29:1209-12017  
DOI:10.1068/p2985

## Can you see all the dots at once?

I'm going to take that as a no :)

This visual phenomenon can be explained as the Extinction Grid Illusion (also known as Vanishing Dots). It heavily draws upon the learnings of the Hermann Grid and the Scintillating Grid. While experimenting with the two famous grids, an interesting phenomenon was recorded. As one reduces the size of the black dots, to the width of the alley or smaller than that, the scintillation effect gives way to an extinction effect.

Simply put, the dot in focus and maybe 1 or 2 other dots in close proximity are visible at a time, whereas the remaining dots appear to be a uniform network of grey alleys. The surrounding area gets filled-in and one discovers new clusters of dots while scanning the entire grid.

Also the dot placed on an intersection of 6 lines as compared to 4 lines, has a higher local grey-scale contrast as compared to the other one.

## Hermann Grid Illusion

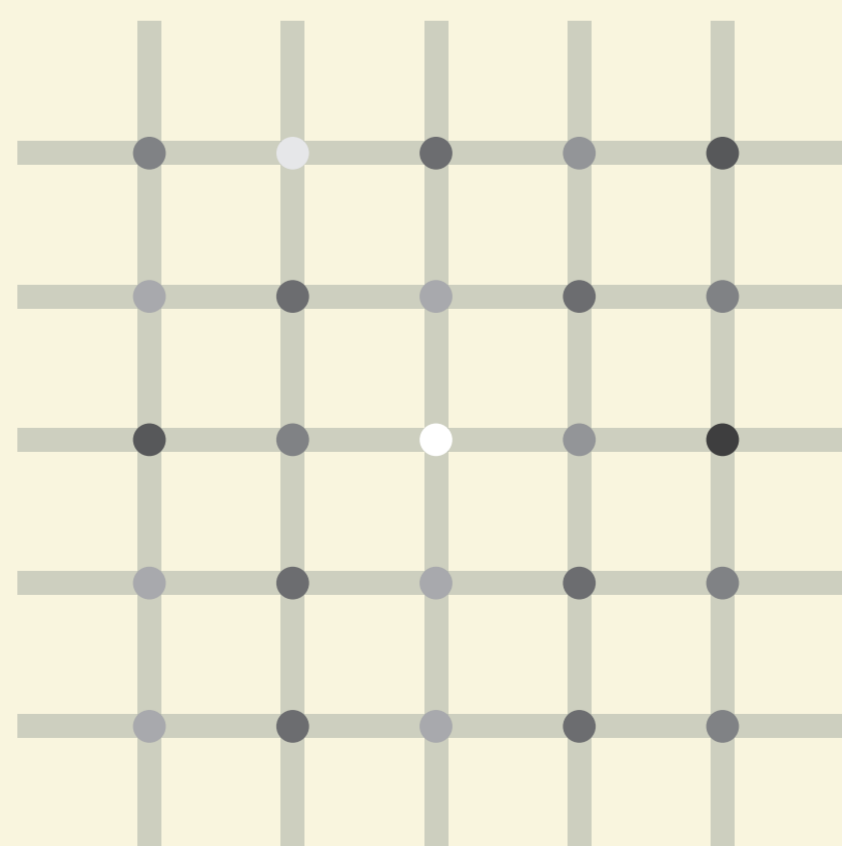
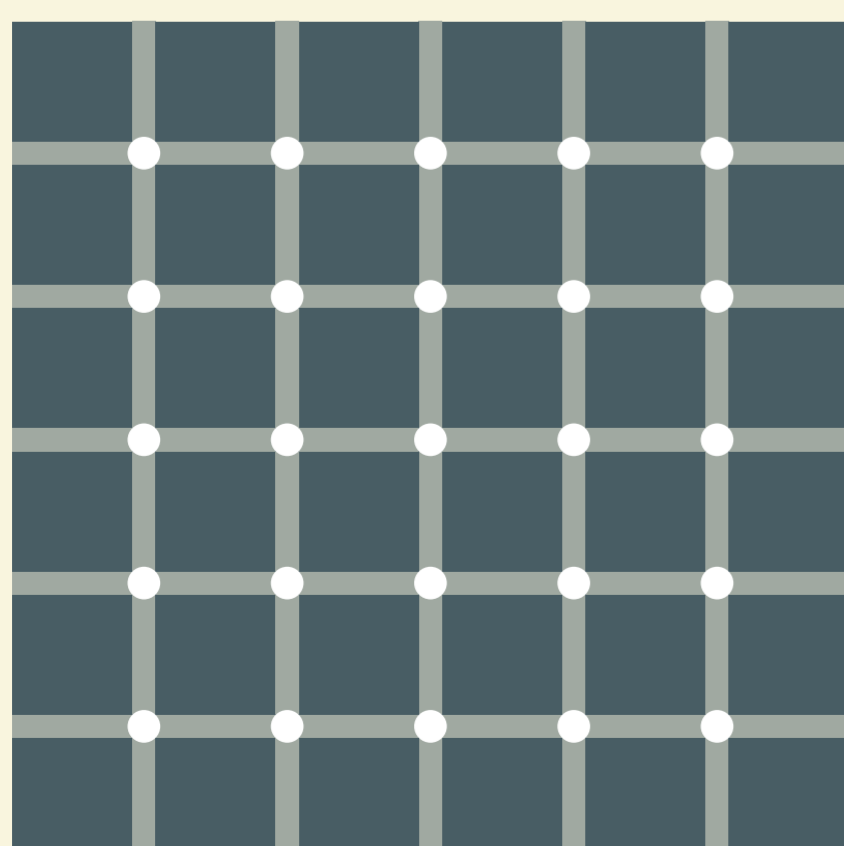
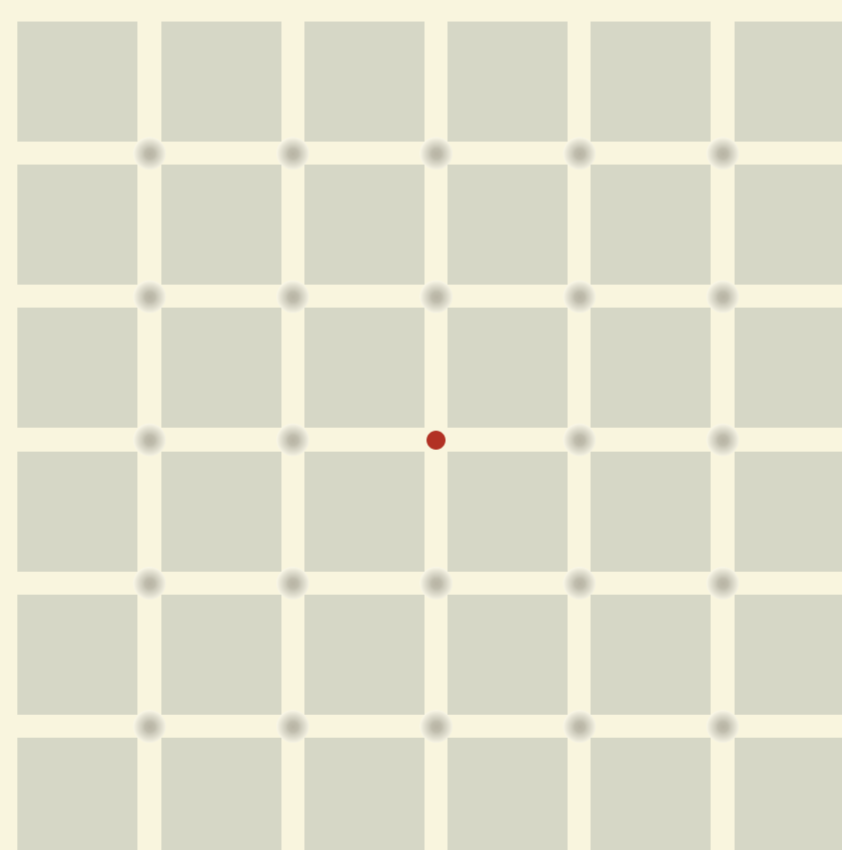
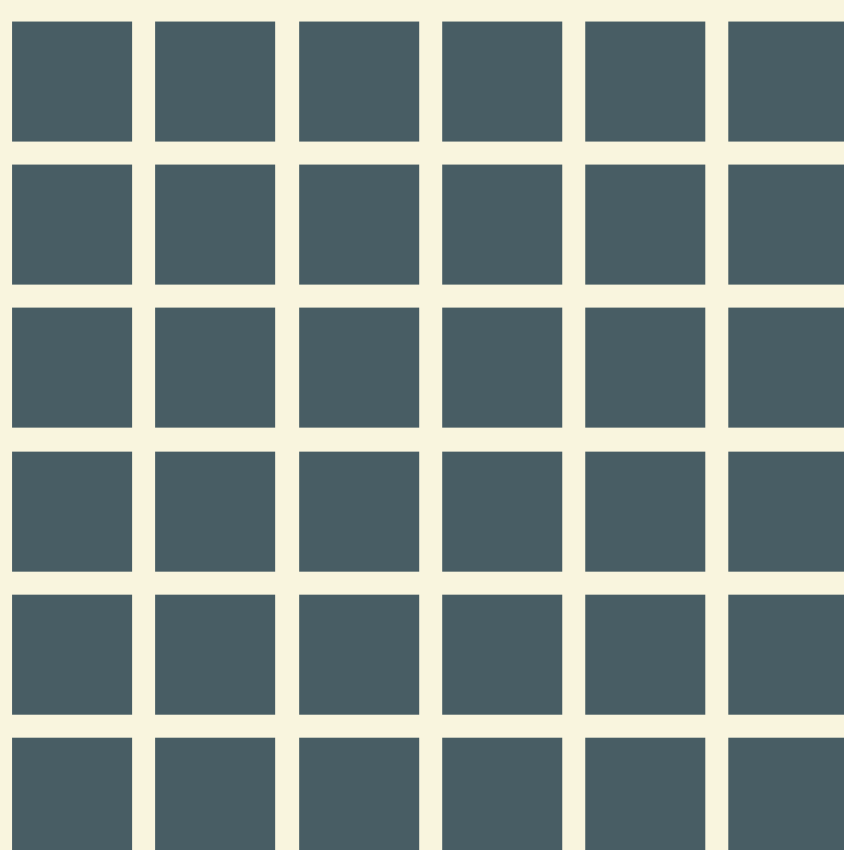
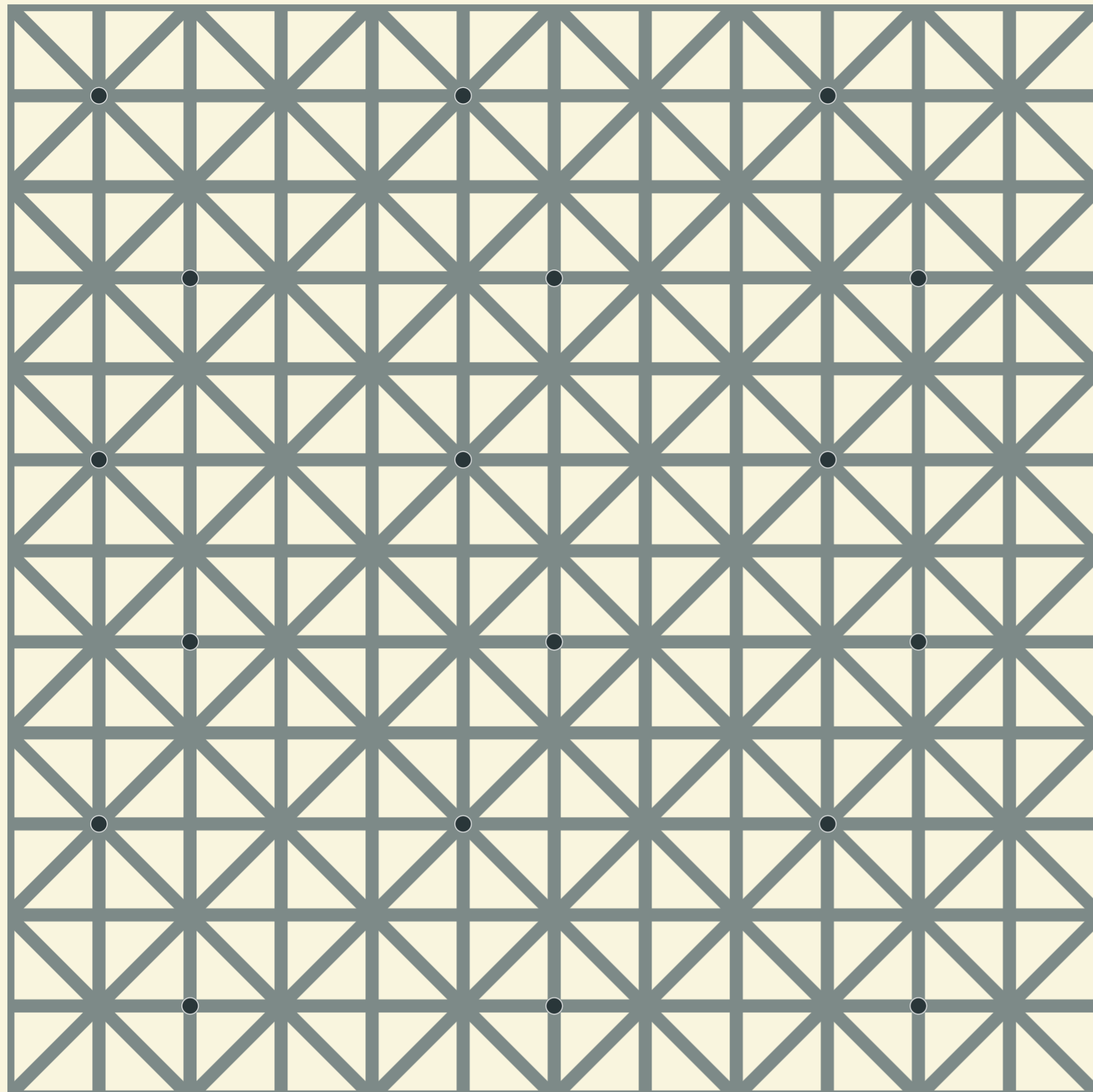
The Hermann Grid (1870) was originally presented as a 2D array of black squares separated by white rectilinear alleys.

As one focuses on one of the intersections, the surrounding intersections appear to have grey dots. This illusion holds true for many geometric variations of the Hermann Grid. e.g. Rounded corners, alleys that are not orthogonal. In such cases one could see patches of grey and not just dots.

## Scintillating Grid Illusion

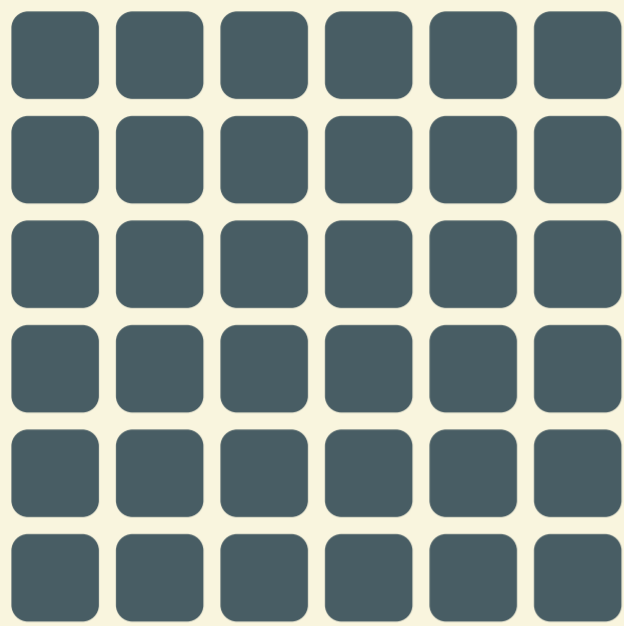
The Scintillating Grid (1994) is often confused with the Hermann Grid, but it has different properties. The 2D array of black squares are separated by grey alleys. The intersections here are already superimposed with white dots.

As one tries to visually scan the grid, dark dots seem to appear and disappear randomly at a fast pace, hence the name 'Scintillating Grid'. Both these illusions can be explained by the neural process of 'Lateral Inhibition'.

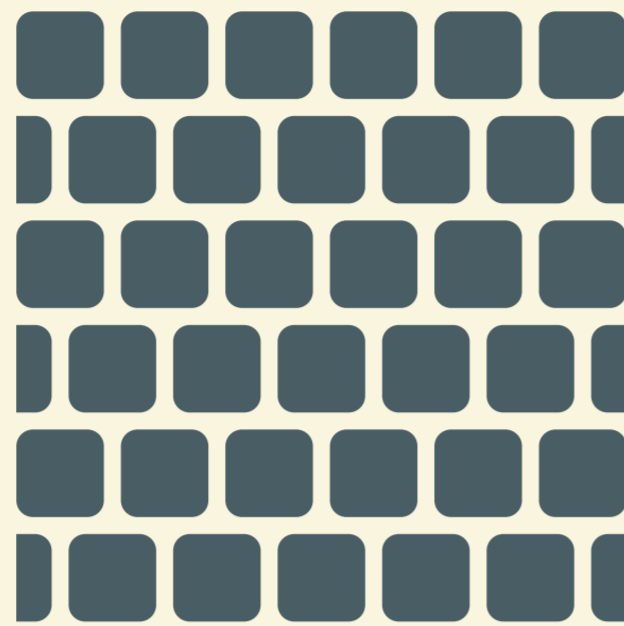


# The Extinction Illusion

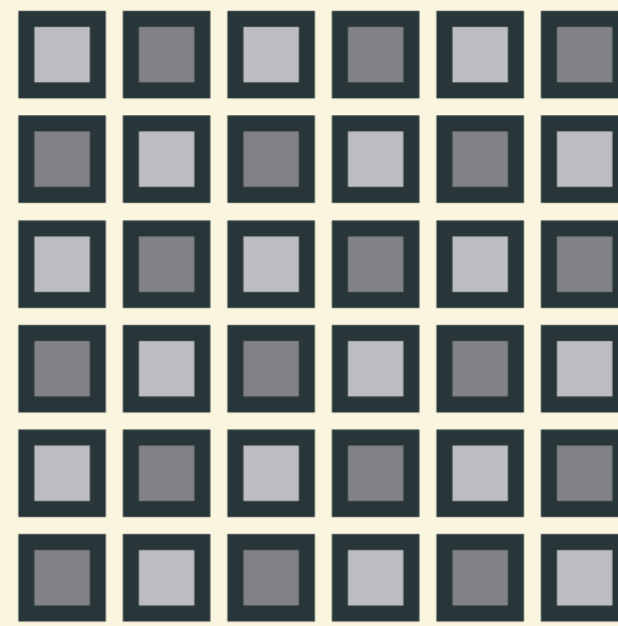
Explorations with the Hermann & Scintillating Grids



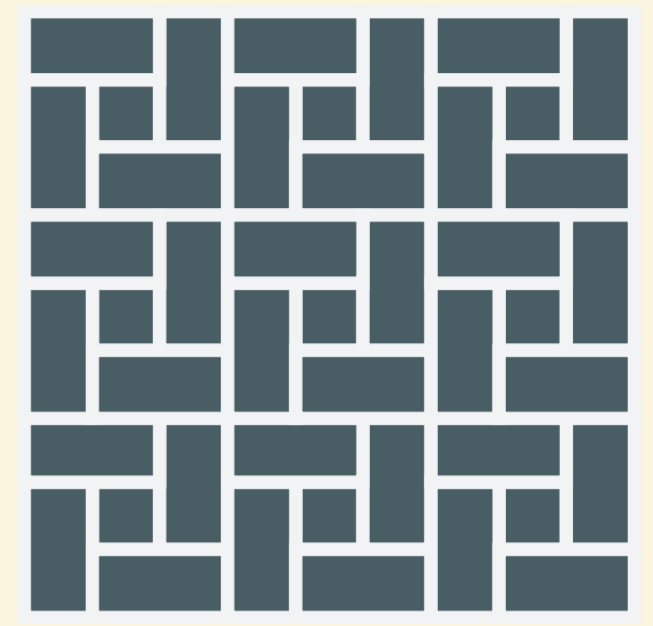
The illusion stays intact with Rounded Corners.



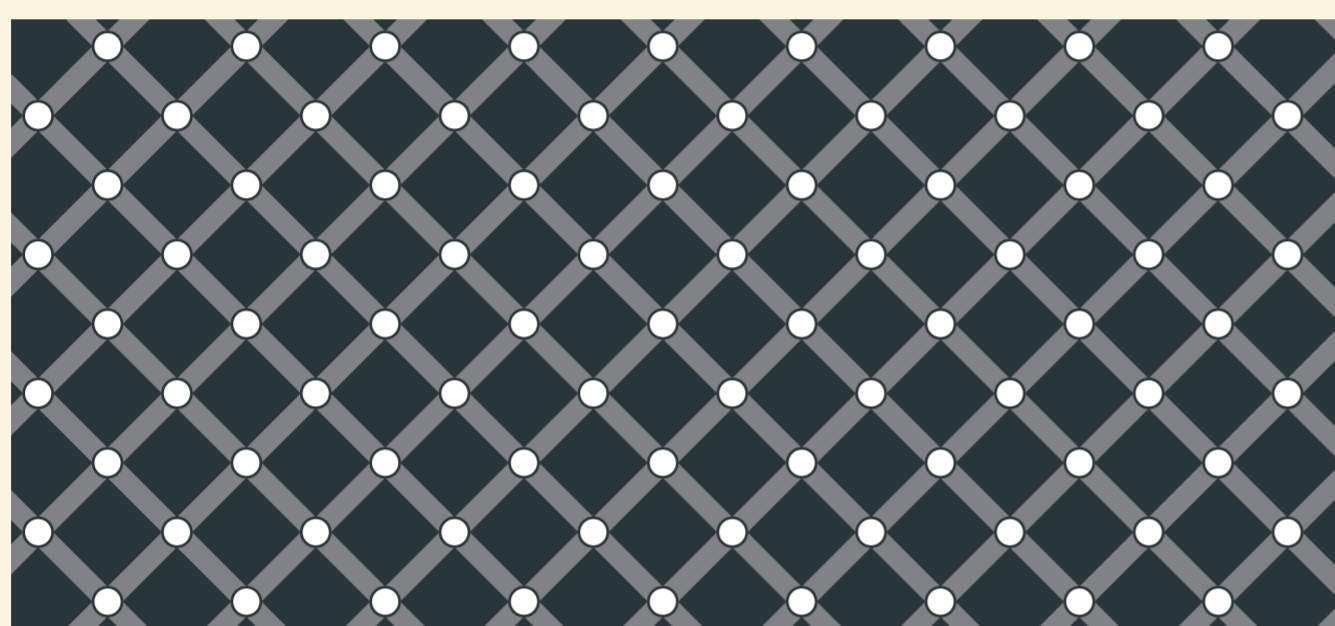
The illusion becomes weak with Rounded Corners and staggering the orthogonal grid.



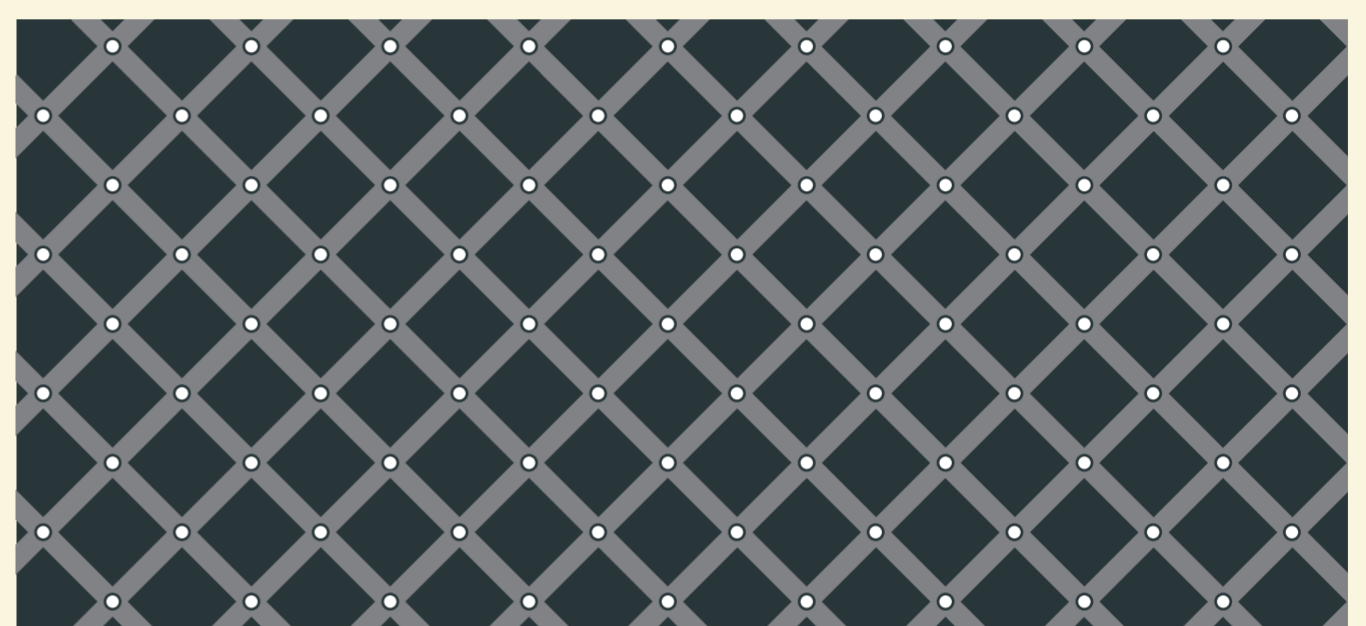
The illusion stays intact with squares of different grey values, outlined with a thick grey line.



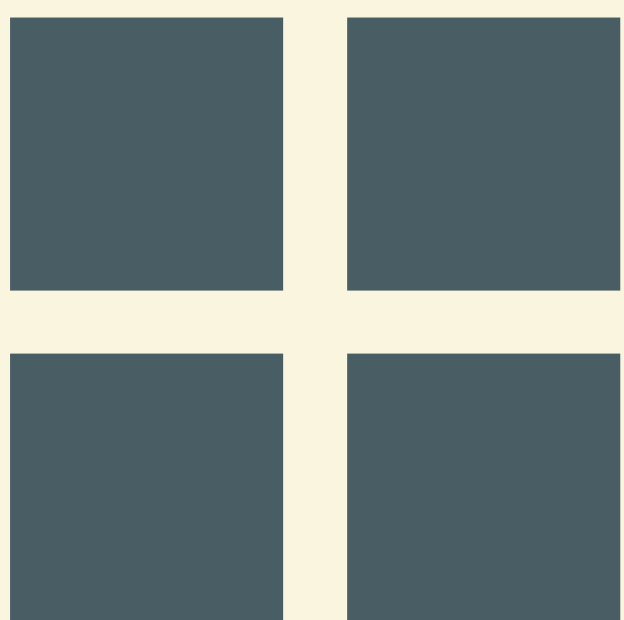
The illusion stays intact with a repetitive pattern of squares and rectangles. One can see dots and patches of grey.



Turning the grid by 45° the Scintillating Grid illusion is achieved. Here the dots are slightly bigger than the width of the alleys.



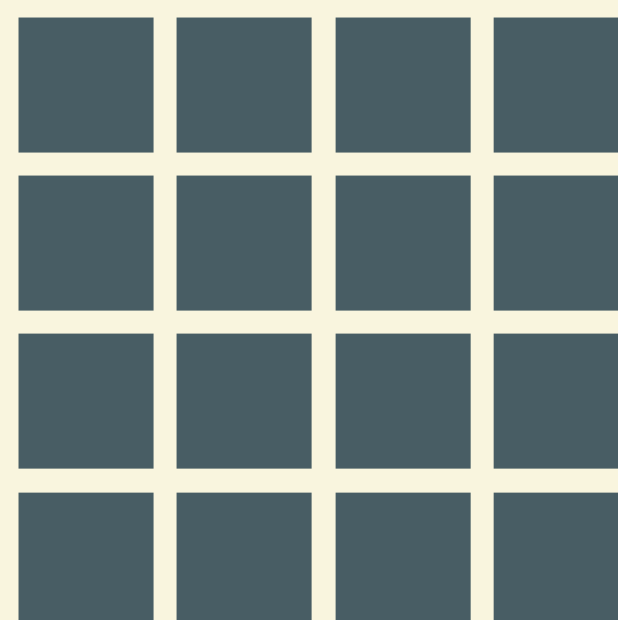
In the same grid, as we reduce the diameter of the dots, an extinction effect is visible. On shifting the eyes then holding fixation, all but a very few dots, generally in the vicinity of the point of gaze, disappear; elsewhere, the alleys appear uniform in brightness.



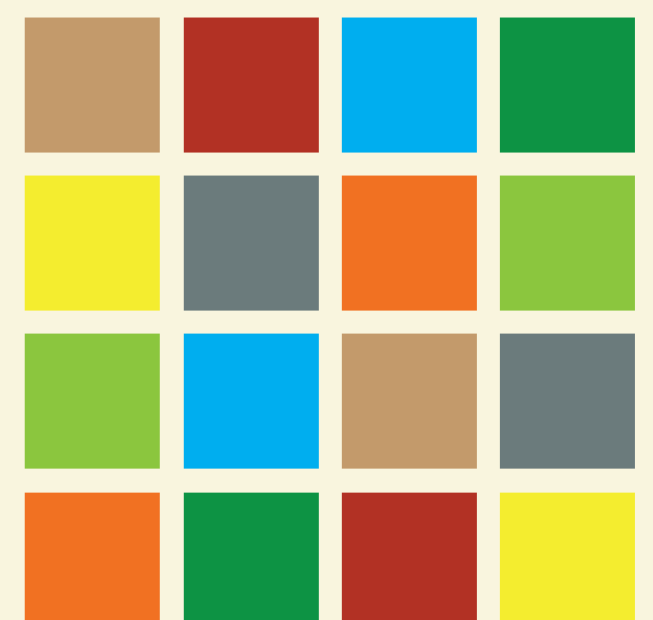
The Hermann Grid illusion cannot be achieved on a 2x2 grid.



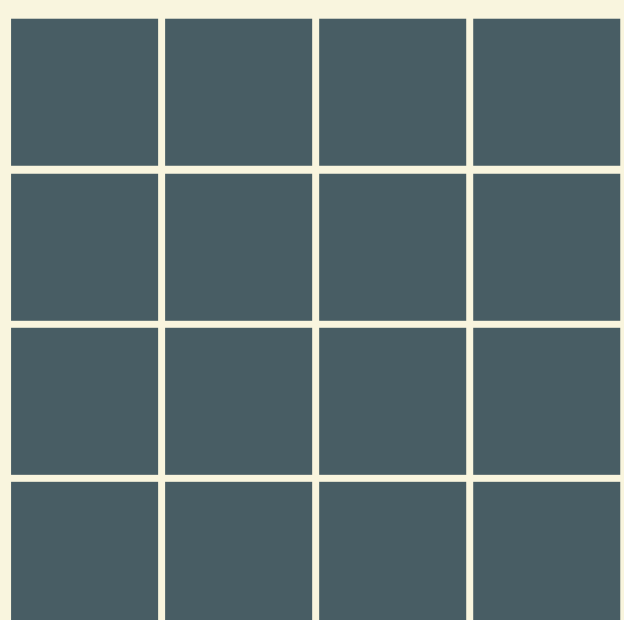
The Hermann Grid illusion requires a minimum of a 3x3 grid.



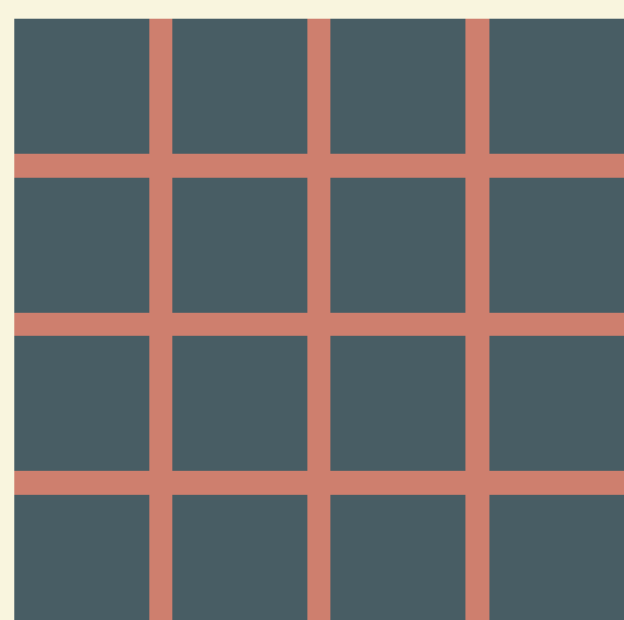
The Hermann Grid illusion with uniform grey squares is robust.



The Hermann Grid illusion with coloured squares is also robust.



The Hermann Grid illusion vanishes as the width of the alleys reduces.



The Hermann Grid illusion becomes weaker as the alleys (background) are coloured.



The Hermann Grid illusion vanishes as the width of the rows in between is increased.

- Ninio J, Stevens KA (2000) Variations on the Hermann grid: an extinction illusion. Perception:Vol.29:1209–12017/DOI:10.1068/p2985
- <https://uxmovement.com/content/how-the-hermann-grid-illusion-affects-what-users-see/>