

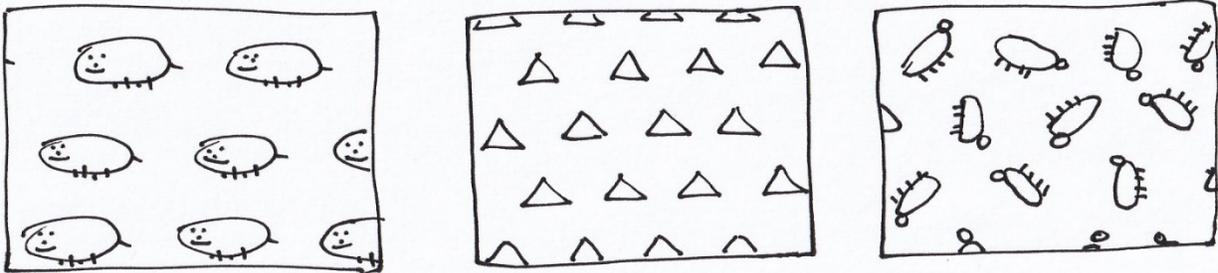
Distressing Wallpaper

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If we follow the usual rules for wallpaper, there are exactly 17 possible symmetry groups for a wallpaper pattern. John Conway has given them names such as \circ and $\times\times$ and $*236$ and $3*3$, and he uses these names to prove that no other symmetry groups are possible. This week we will retell Conway's story. Then we will take apart an old book of wallpaper samples and try to find examples of all 17 groups.

This being DMC, we might not always follow the usual rules. The wallpaper groups live in two-dimensional Euclidean space. If we drop to one dimension we find frieze groups, which Conway represents as dance steps. We can dance them. Three dimensions gives us actual gems and minerals, and if someone brings a suitable industrial press we can make diamonds. Hyperbolic space brings us groups like $*237$ that don't occur in commercial wallpaper but can be found in Escher prints and Math Mag covers. (If you have some hyperbolic space handy, please bring it with you.) Even in two dimensions, we can relax the rules in more subtle ways. If we have time to open our jar of Penrose tiles we will find that they, too, can be distressing.



Date: Tuesday January 28, 2020

Time: 7:00 p.m.

Place: Park 328