6.885
L9.3
Oct. 6, 2004

Corridor = region delimited by perpendiculars
- constant "width", measured perpendicularly
- either "linear" → eventually reach infinity
  or "circular" → closed loop.
- circular corridors are the challenge
- **CONJECTURE**: max. degree 2 ⇒ linear corridors with prob. 1

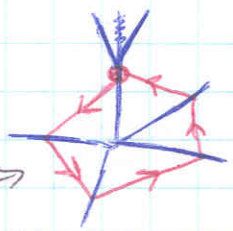
Linear-corridor case: (sketch)
- each corridor folds as an accordion ⇝ alternates M/V
- corridors form a tree structure ≈ projection
  ⇝ vertex = connected component of perpendiculars
  ⇝ edge = corridor

- fold tree flat ⇒ fold origami flat
  (argue noncrossing)

Mountains & valleys:
- "default": skeleton edge mountain if bisects convex angle
  valley if bisects reflex angle
- assign each graph face "above" or "below" cut line
  (for a collection of polygons, use face 2-coloring ⇒ cuts "separate"
  if no such coloring, all "above", say)
- invert default assignment in "below" faces
- fold graph edge valley if both sides are "above" faces
  mountain if both sides are "below" faces
- perpendiculars: read from tree folding

Circular corridors:

CONJECTURE: with prob. 1, look like "normal" corridor →



- can argue flat foldability in normal case (with a few extra creases)
  when all graph faces are "above"

PROJECT: implement crease pattern algorithm
(ideally with degeneracy tool, M-V assignment, folded state...)

PROJECT: design a collection of nice (foldable) examples of fold & cut