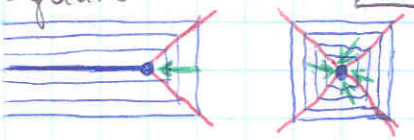
Details of the straight skeleton

6.885
L9.2
Oct. 6, 2004

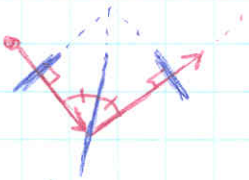
- treat degree-1 vertices like end of small rectangle & degree-0 vertices like small square
  - virtual "length-0" edges



- one-to-one correspondence between graph edges (desired cuts) & skeleton faces containing them
- straight skeleton has $O(n)$ vertices, edges, & faces
- every skeleton edge is a subsegment of the bisector (angular) of the two incident skeleton faces' corresponding graph edges

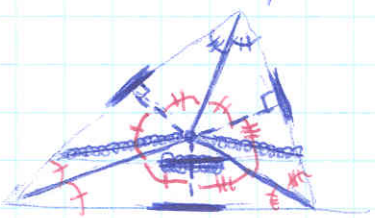
Perpendiculars

- generic vertex of straight skeleton has degree 3 ⇒ not flat foldable
- add creases that meet desired cuts at right angles ⇒ preserve alignment
  - from each skeleton vertex, try to enter each incident skeleton face with ~~edge~~ ray perpendicular to corresponding graph edge
  - if ray hits another skeleton edge, reflect (remains perp. to next graph edge)

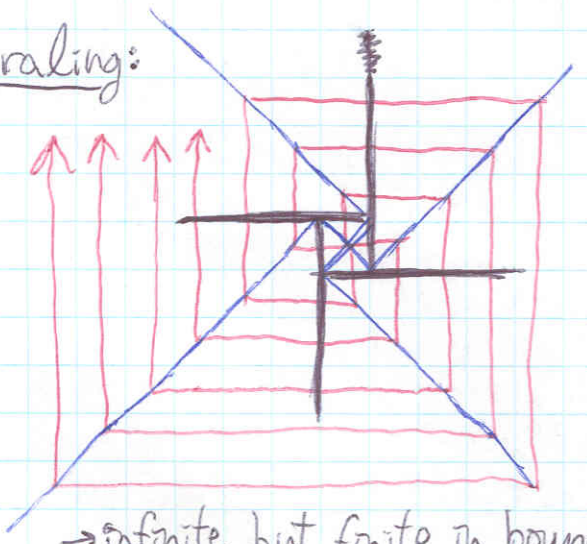


- typical behavior at a skeleton vertex now:
  - skeleton edge bisects two consecutive perpendiculars

⇒ Kawasaki ✓

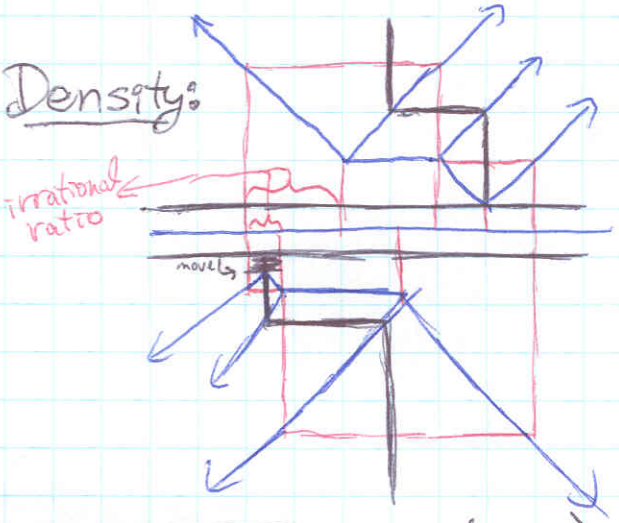


Spiraling:



→ infinite but finite in bounded paper

Density:



CONJECTURE: rare (prob. 0)