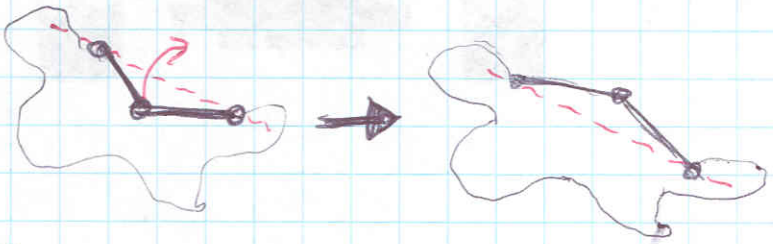
6.885
L23.2
Dec. 6, 2004

Michael Burr: Pops

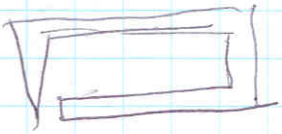
- pop of a 2D polygon flips two incident edges through line of support



& vice versa

- OPEN: can every polygon be popped to convex?
  - not necessarily avoiding self-intersection

[Thurston]

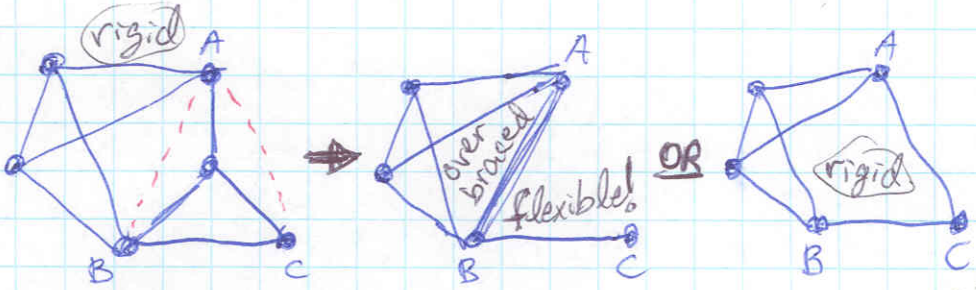


has no pop avoiding self-intersection

  - equal length ⇒ possible [Toussaint 1999]
  - almost every ⇒ possible? [Thurston?]
- implementation for experimenting with algorithms (LEDA)

Benjamin Hebert: Faster algs. for generic rigidity

- goal: identify rigid components, overbracedness, flexibilities [pebble algorithm is $O(n^2)$]
- idea: use Henneberg (reverse) operations
- there are higher-order operations for vertices of deg. > 3
- can also replace high-degree vertices with minimally rigid graphs & get max. deg. 5
- but: reverse Henneberg ops. are ambiguous & it matters which choice you make :(



- lower bounds? as hard as matching ($m\sqrt{n}$ currently)?
- applet implementing pebble game (Java, OpenJGraph)