

6.849: GEOMETRIC FOLDING ALGORITHMS
Fall 2010 — Prof. Erik Demaine

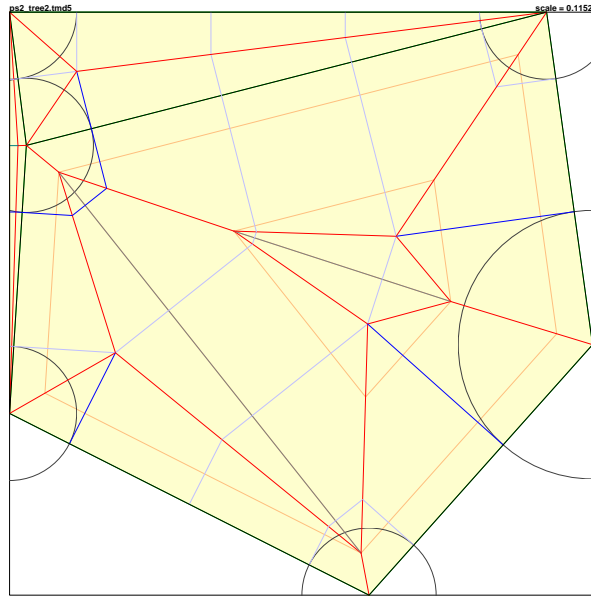
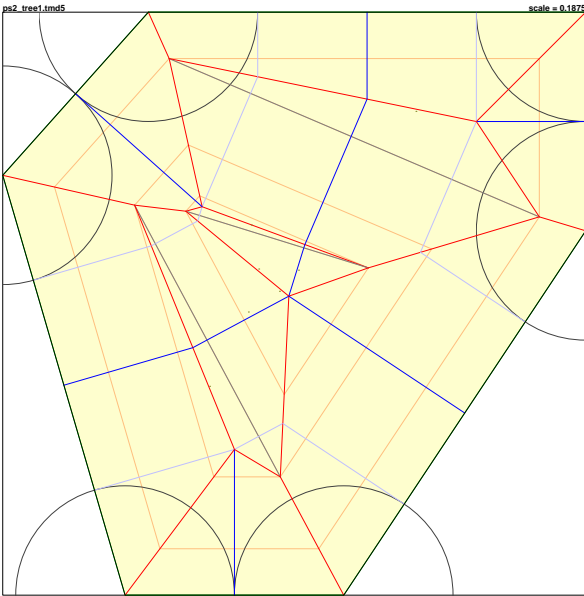
Problem Set 2

Due: Wednesday, October 20, 2010

Problem 1. Who designed the following origami models? (Review the slides from Lectures 4 and 6 to help recognize the styles, then verify on the web.)



Problem 2. Draw the shadow tree for the origami base defined by the following crease patterns.



Problem 3. Design and fold an interesting fold-and-cut model (different from those on <http://erikdemaine.org/foldcut/examples>). Apply the straight-skeleton method from Lecture 7, using a vector drawing program that will find exact intersections between lines and circles, such as Inkscape (free), Ipe 7 (free), Adobe Illustrator, Cinderella, or most CAD programs. I recommend drawing the straight skeleton and all perpendiculars, printing and precreasing, then folding that flat, marking which creases are mountain and which are valley, and then modifying your drawing to remove unused perpendiculars and denote mountains versus valleys.

Problem 4. Characterize each of the following graphs as generically flexible, minimally generically rigid, or nonminimally generically rigid. Prove your answers.

