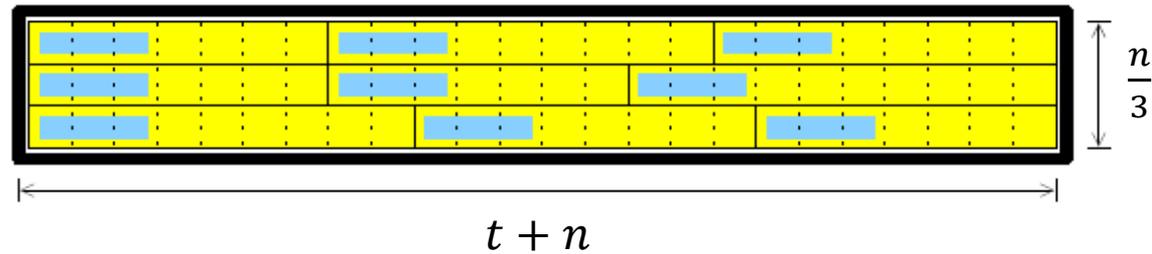
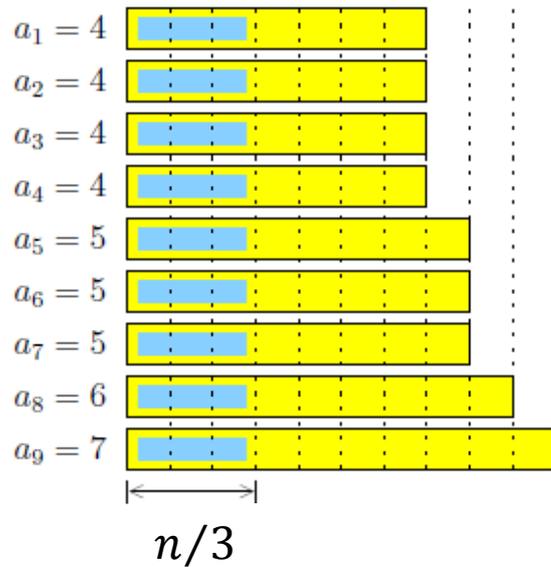




Rectangle Packing

[Demaine & Demaine 2007]



Edge-Matching Puzzles

[1890s—]



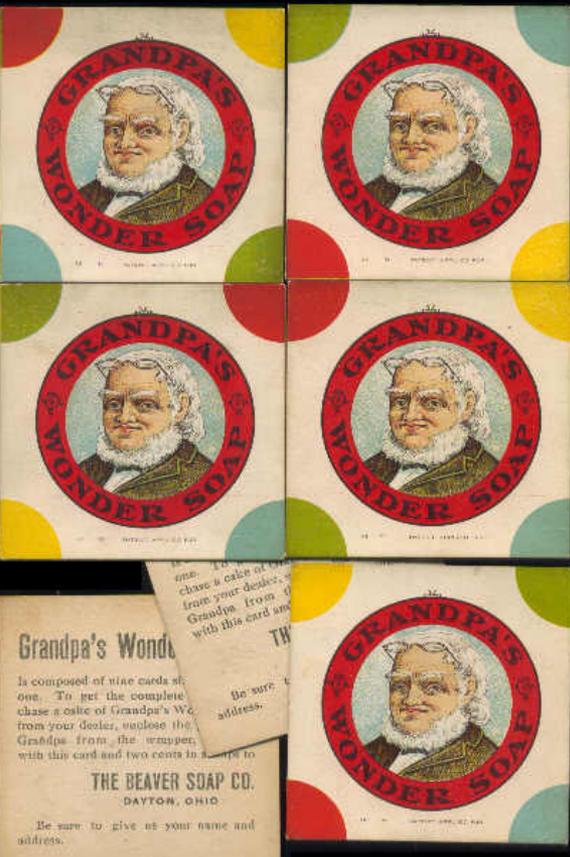
"Grandpa's Wonder Puzzle"

The object of this puzzle is to form a square of the nine cards—three each way.

NOTE THIS CAREFULLY: There must be the four colors in each circle and two colors in each half circle appearing in puzzle. Grandpa's head must be in an upright position.

There are twelve of these GRANDPA'S WONDER PUZZLES in this color scheme, but a different combination of colors.

(over)



Grandpa's Wonder Soap

is composed of nine cards as above. To get the complete chase a case of Grandpa's Wonder Soap from your dealer, enclose the Grandpa from the wrapper with this card and two cents to ship to

Be sure to give us your name and address.

THE BEAVER SOAP CO.
DAYTON, OHIO

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ALL RIGHTS RESERVED

ETERNITY II™

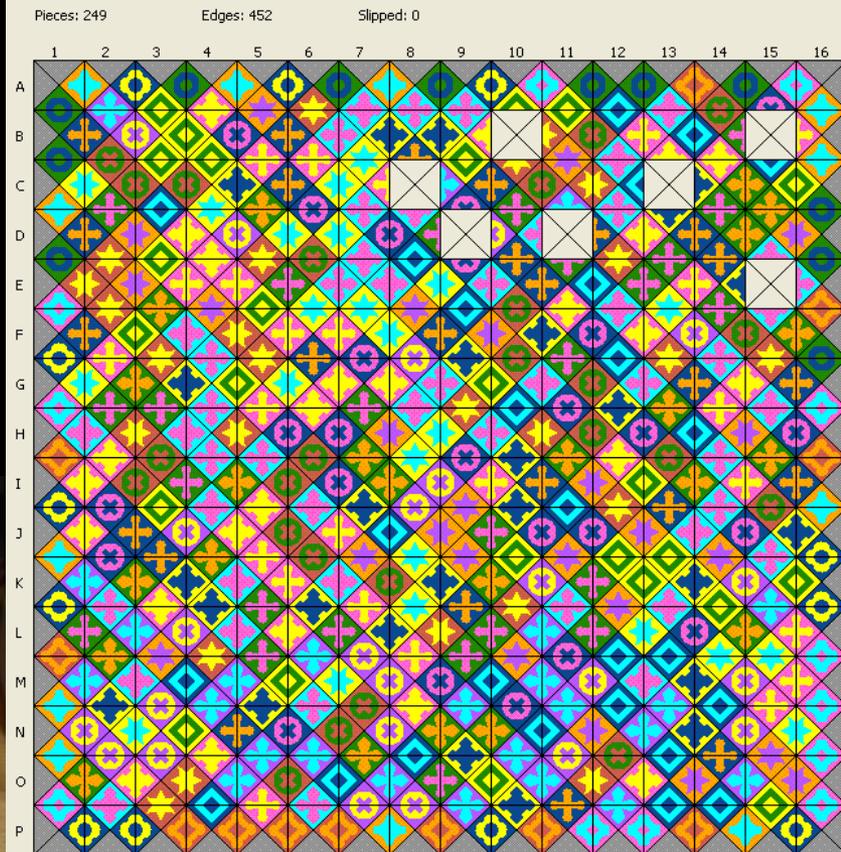


US\$2,000,000
prize

Near-Solutions to Eternity II



467 edge
matches
out of 480
(\$10,000)



Louis Verhaard
[http://www.shortestpath.se/
eii/results.html](http://www.shortestpath.se/eii/results.html)

“Solution” to Eternity II



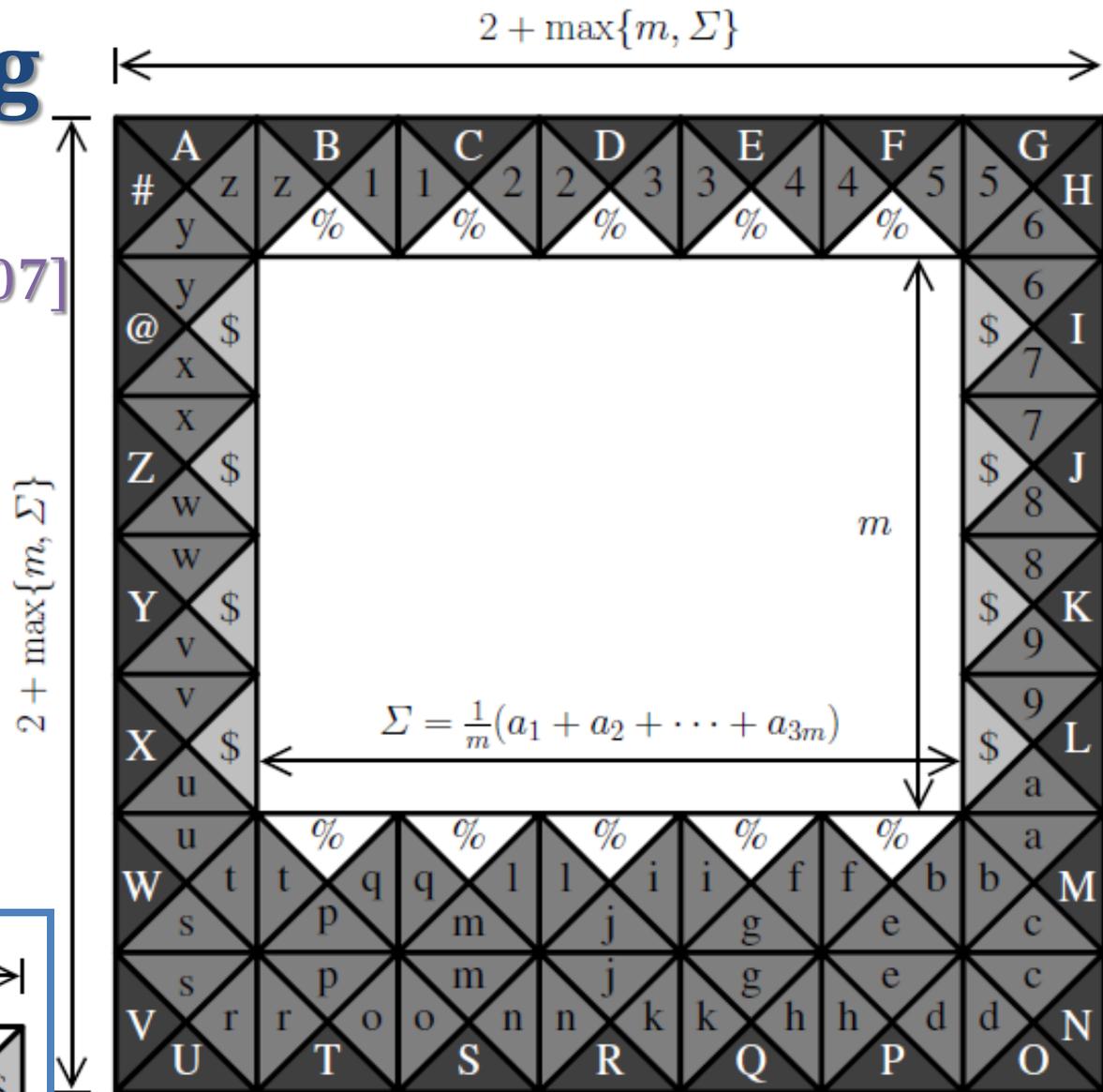
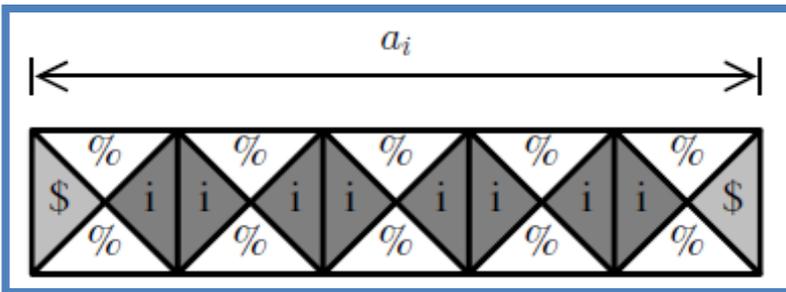
Louis Verhaard

<http://www.shortestpath.se/eii/results.html>

Edge-Matching Puzzles

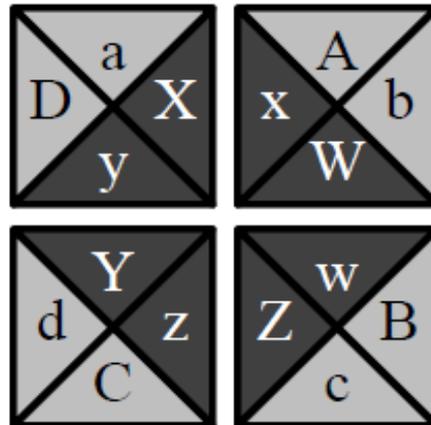
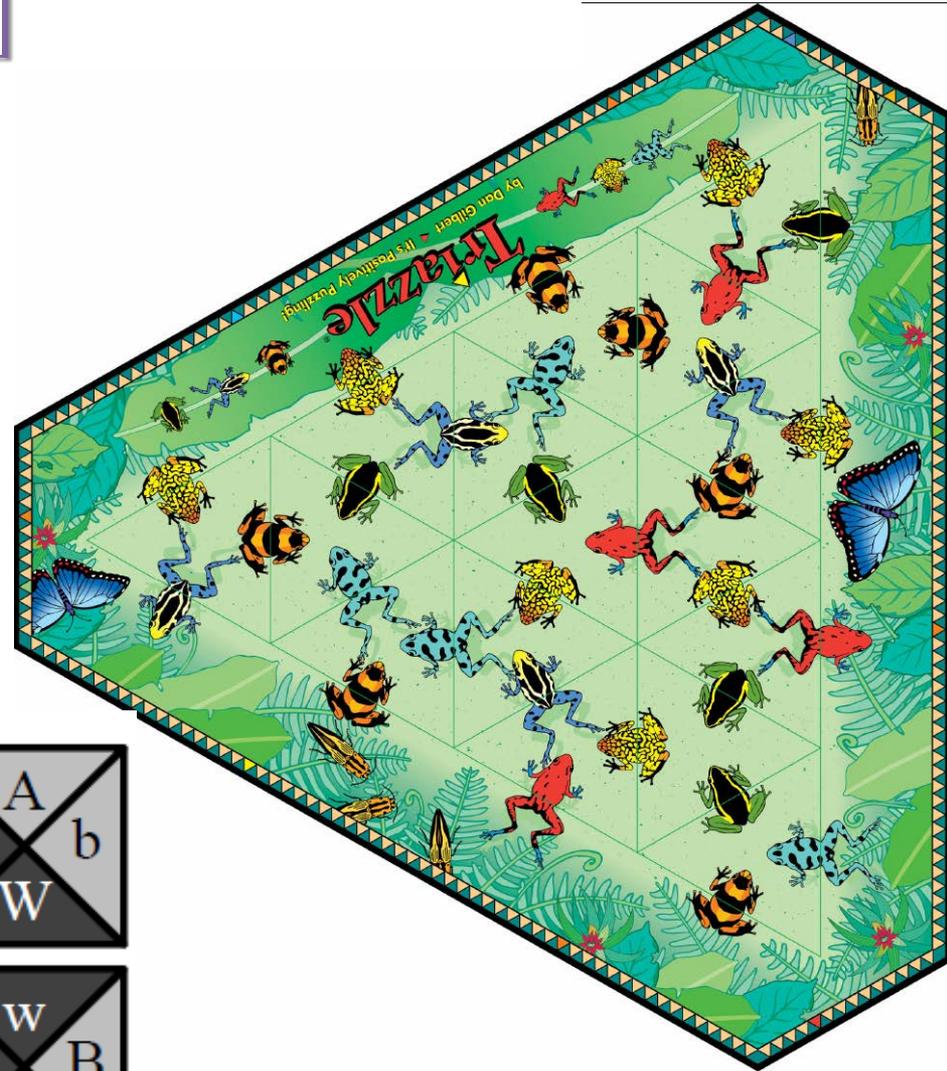
[Demaine & Demaine 2007]

- Simulate rectangle packing

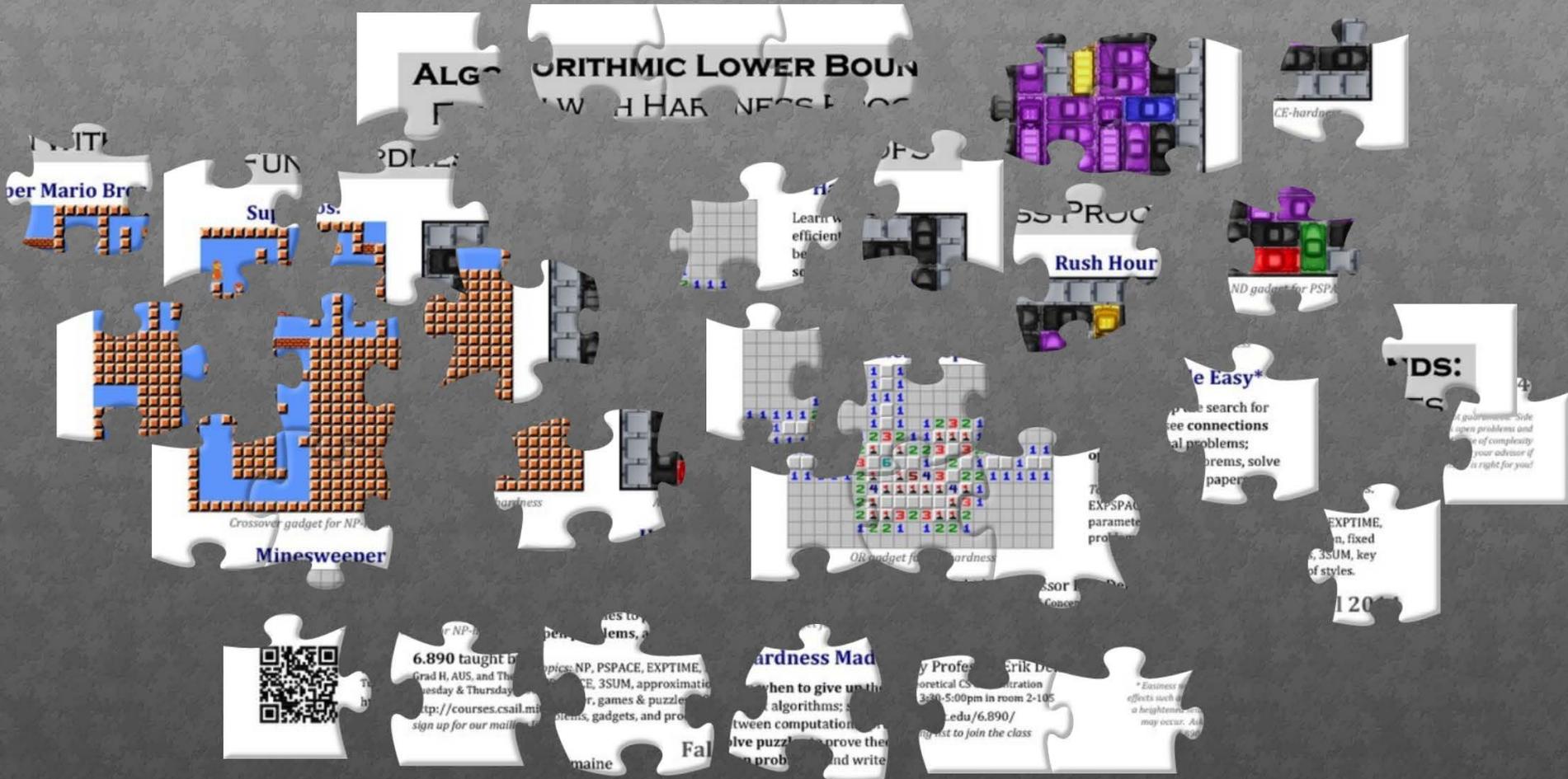


Edge-Matching \rightarrow Signed Edge-Matching

[Demaine & Demaine 2007]



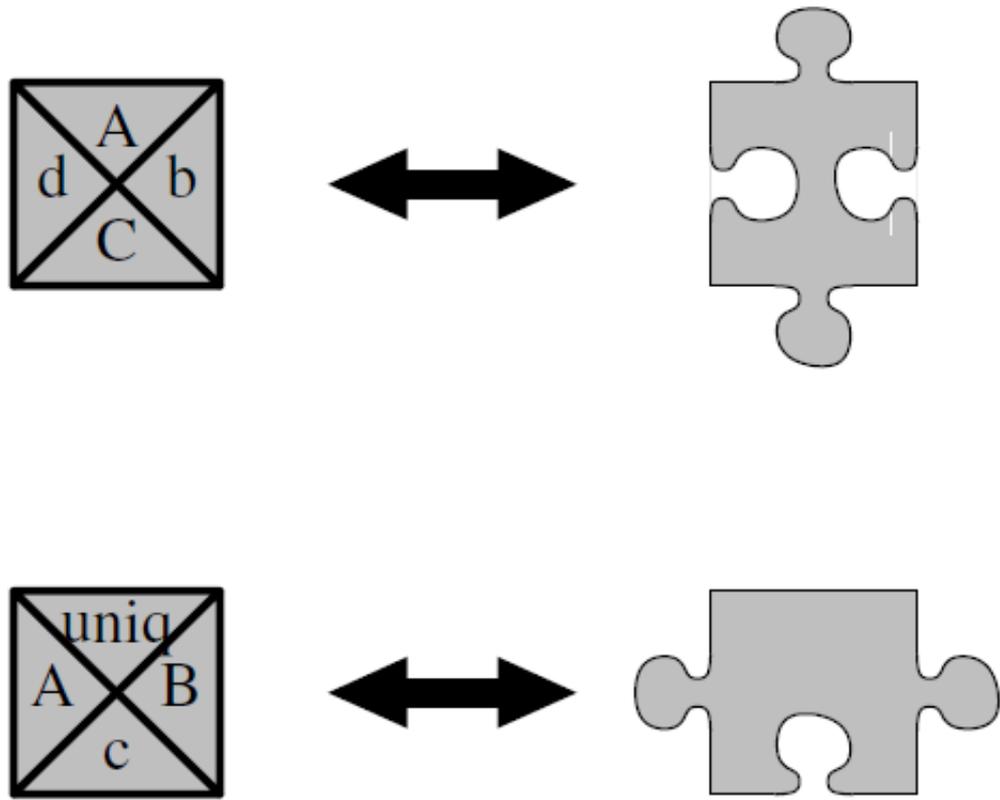
Jigsaw Puzzles [1760s-]



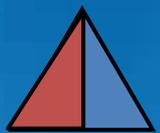


Signed Edge Matching \leftrightarrow Jigsaw

[Demaine & Demaine 2007]



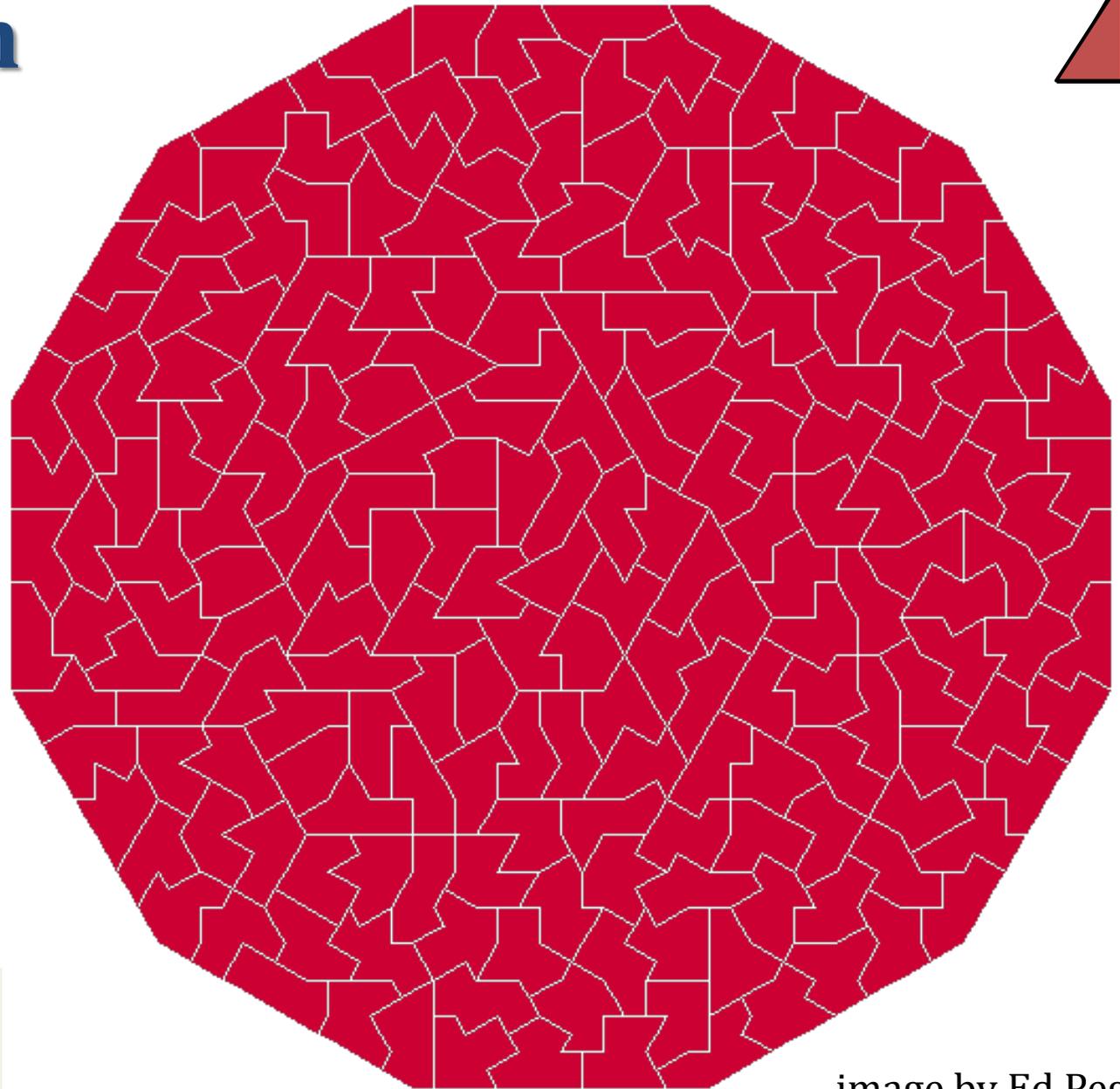
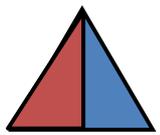
Polyform Packing Puzzles



£1,000,000
prize



Polyform Packing Puzzles

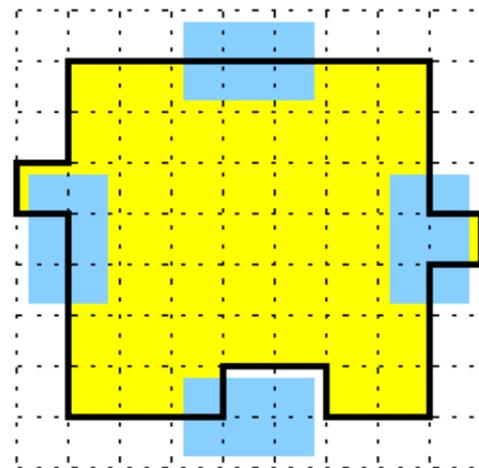
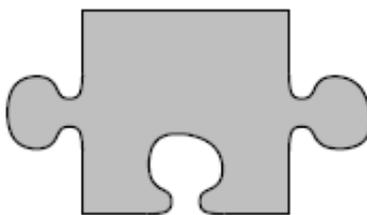
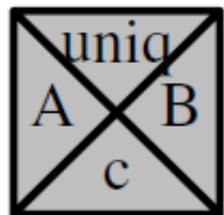
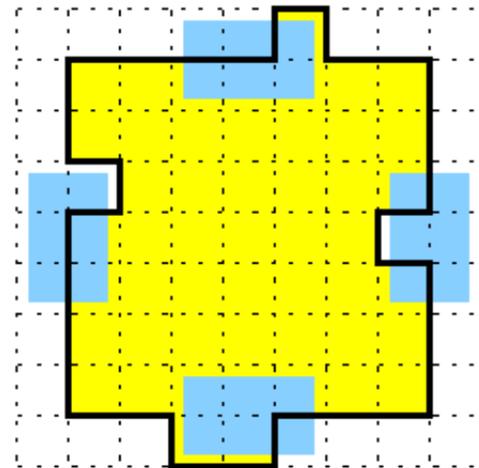
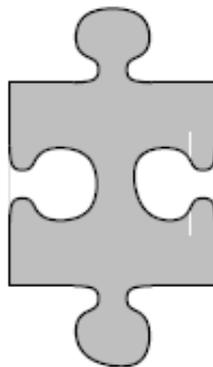
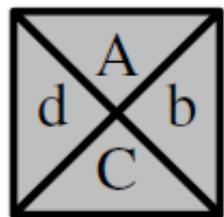


£1,000,000
prize

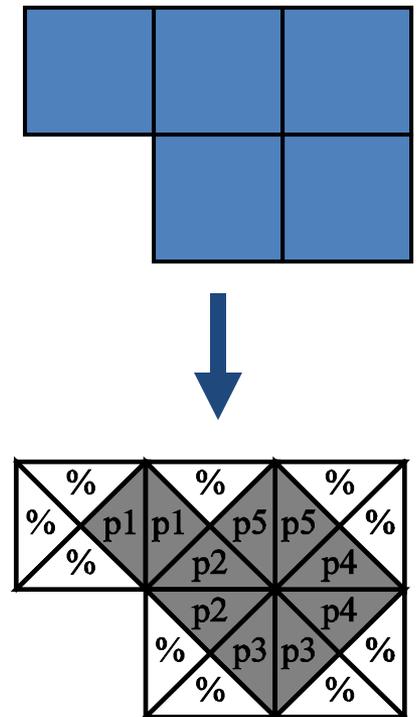
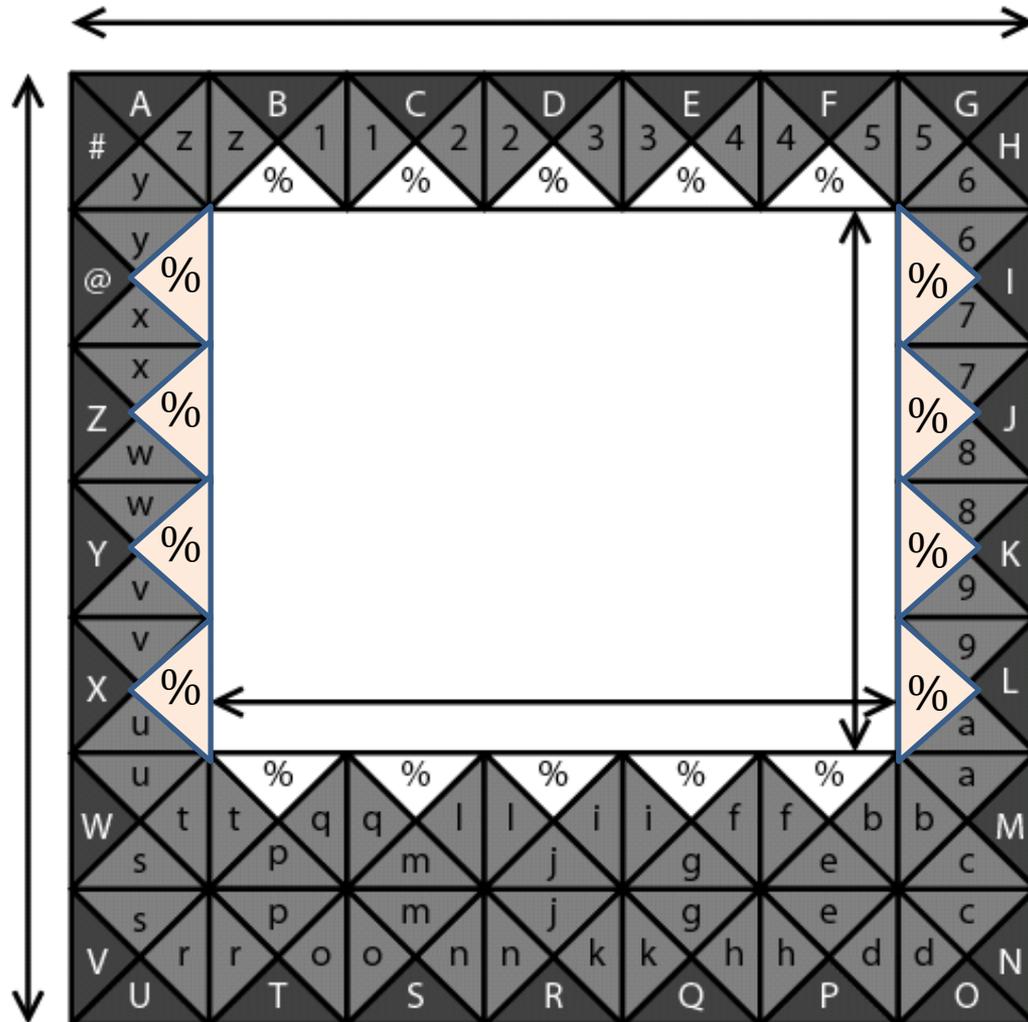
image by Ed Pegg Jr.
solution by Alex Selby & Oliver Riordan, 2000

Signed Edge Matching \leftrightarrow Jigsaw

\rightarrow Polyomino Packing [Demaine & Demaine 2007]

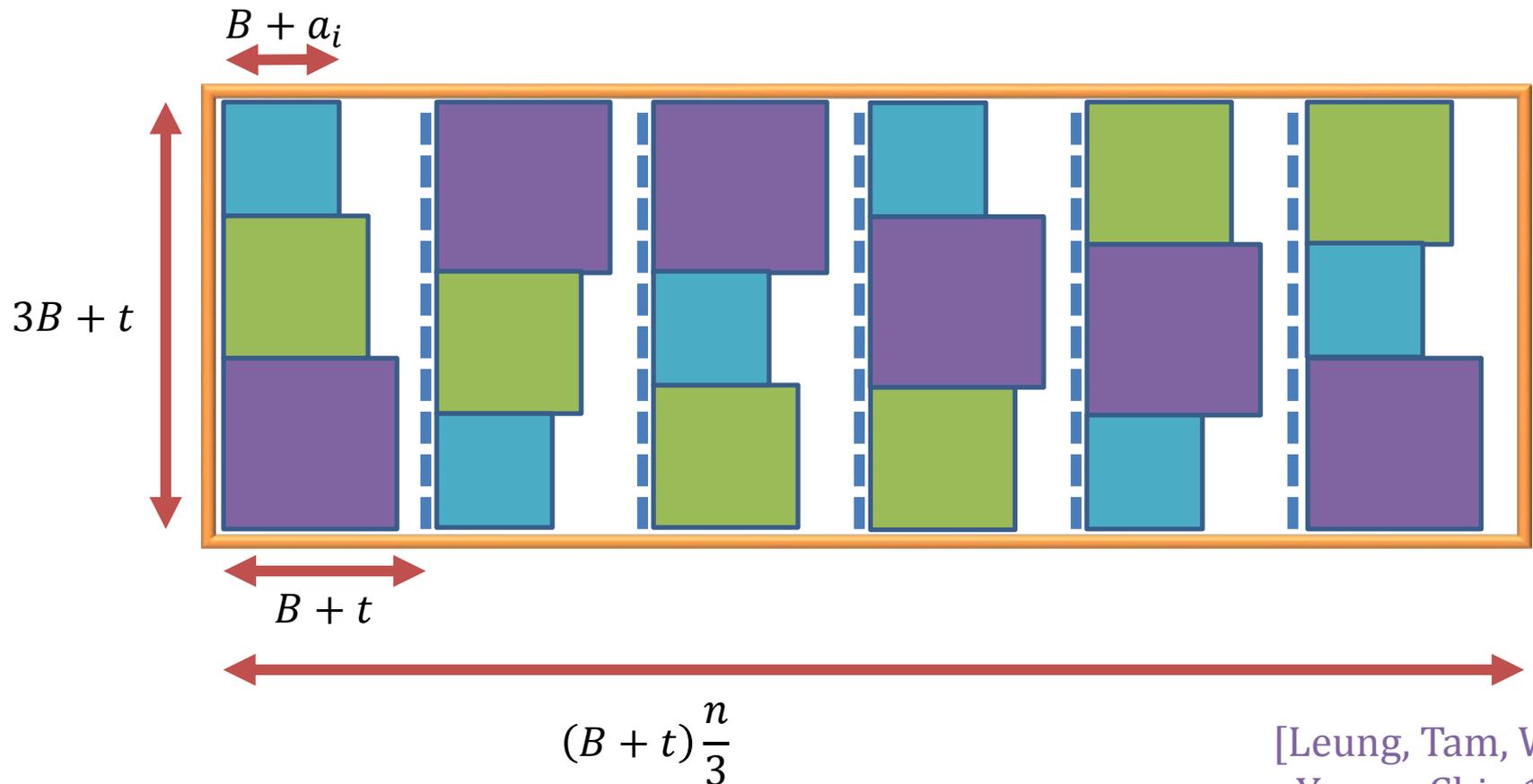


Polyform Packing Puzzle → Edge-Matching Puzzle [Demaine & Demaine 2007]



Packing Squares into a Square is Strongly NP-complete

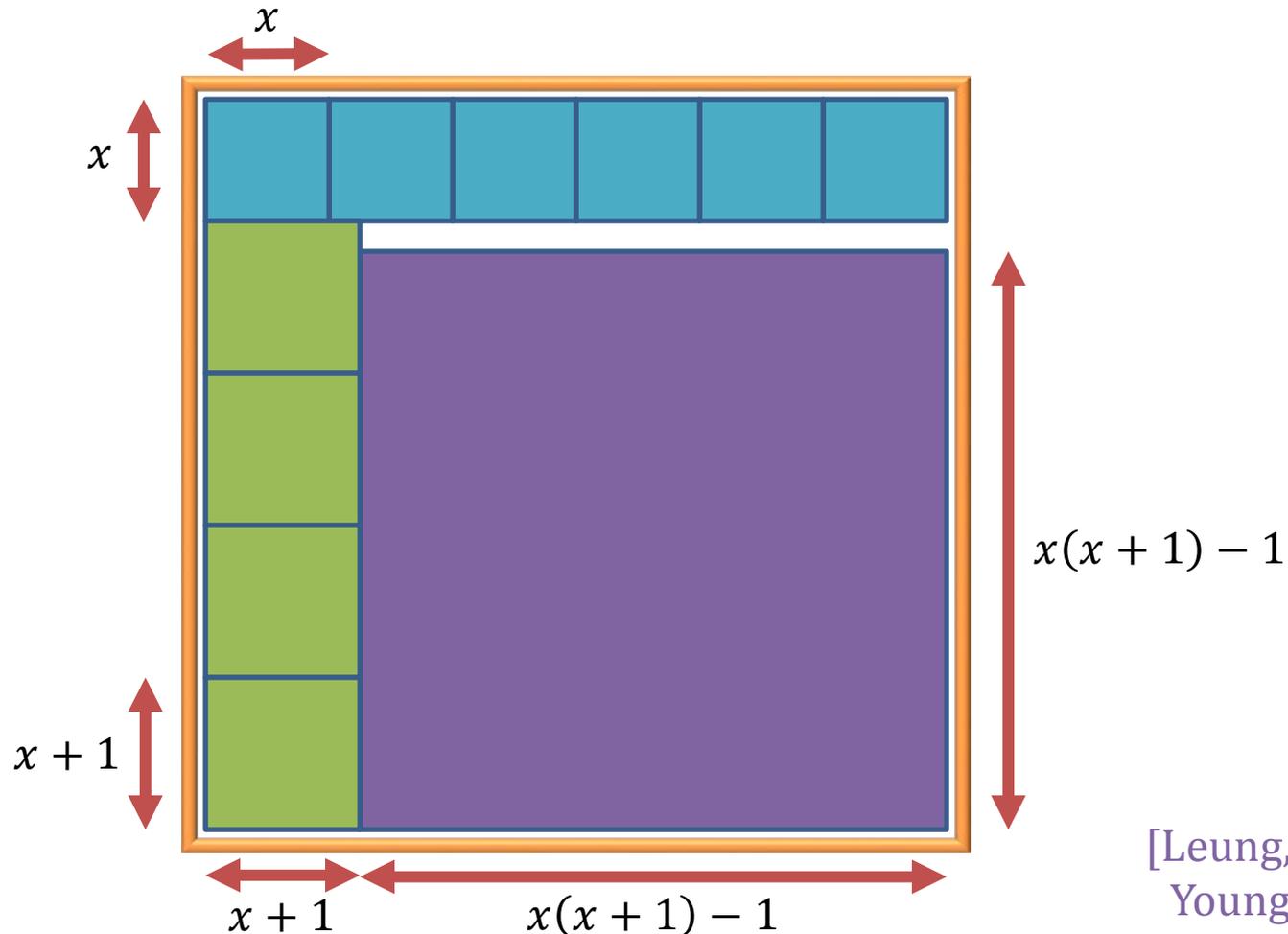
- Generalization: **Rectangular target**



[Leung, Tam, Wong, Young, Chin 1990]

Packing Squares into a Square is Strongly NP-complete

- **Rectangle gadget:** (infrastructure)



[Leung, Tam, Wong, Young, Chin 1990]