Can you formally define what a handle is?

Gudenrath Glassblowing: Handle — casting off
http://youtu.be/nACHHJwcFWM

http://en.wikipedia.org/wiki/Genus_(mathematics)

Images of genus examples removed due to copyright restrictions. Image of genus morph of cup is in the public domain.

Why do convex polyhedral unfoldings necessarily have no holes?

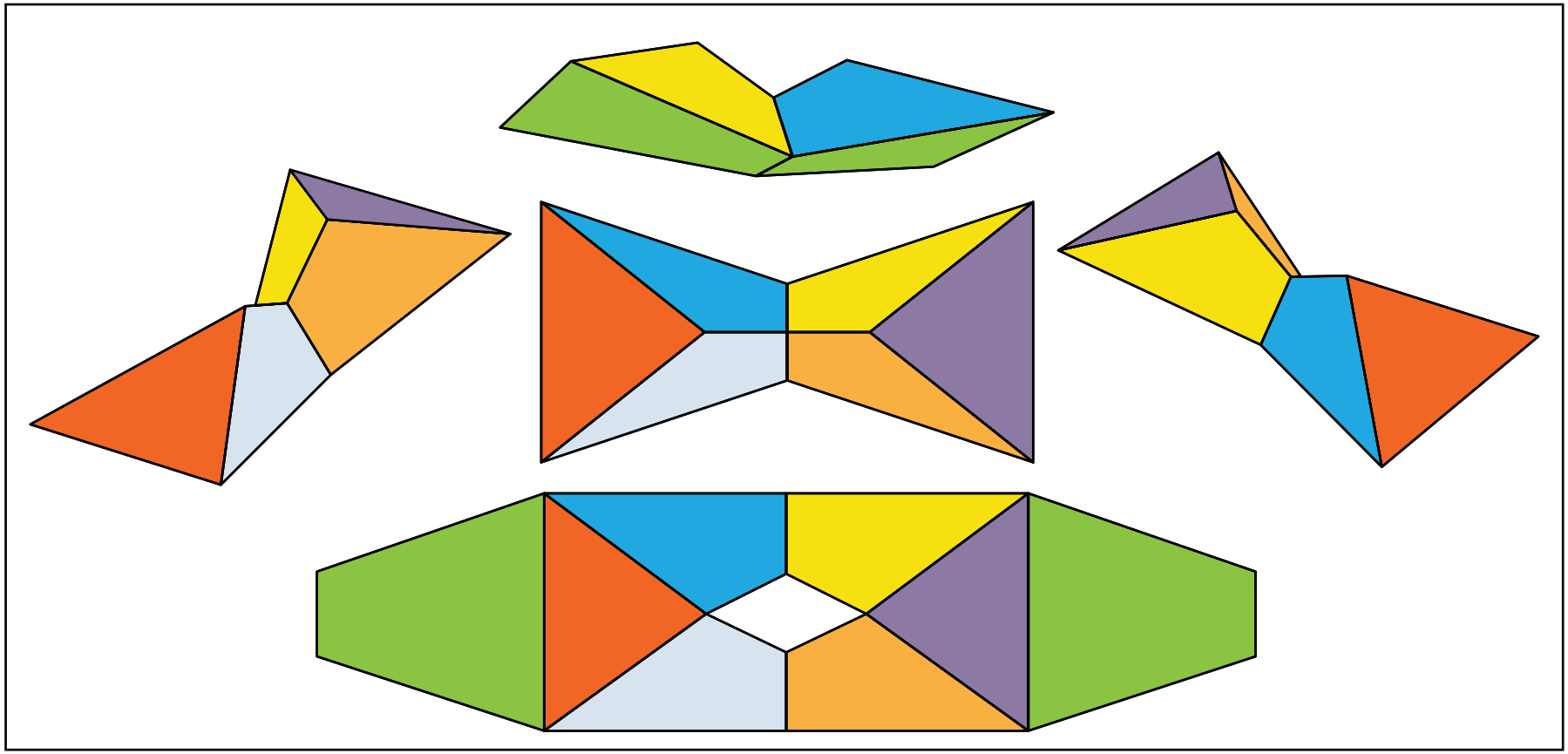
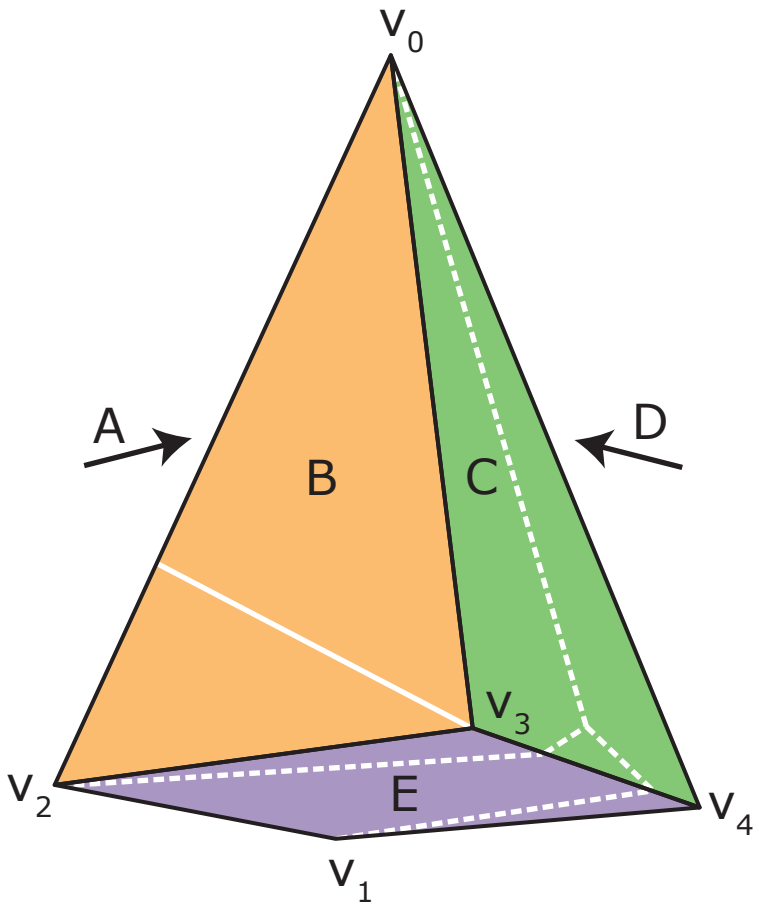


Image by MIT OpenCourseWare.
See also: http://erikdemaine.org/papers/Ununfoldable/.

[Bern, Demaine, Eppstein, Kuo, Mantler, Snoeyink 2003]

Can you explain the comment "leaves = the polyhedron vertices" on page 4? It looks like vertices usually have unique shortest paths to x."

Cut locus / ridge tree with respect to point x
= points with nonunique shortest paths from x
= Voronoi diagram of x
- spanning tree of polyhedron
- leaves = the polyhedron vertices



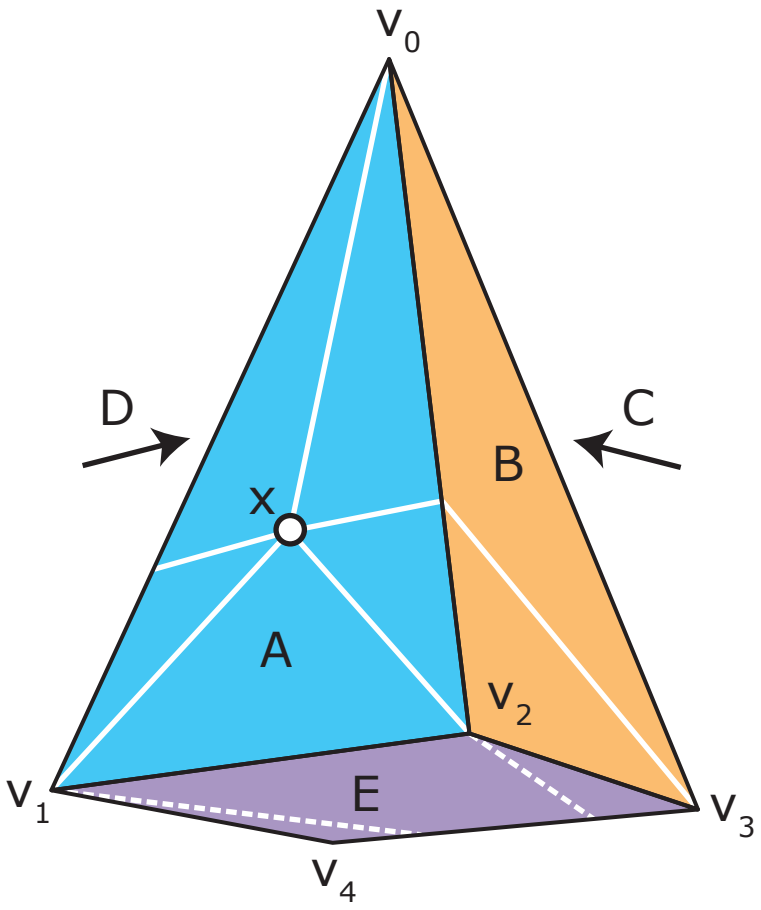


Image by MIT OpenCourseWare.

Any luck finding generalizations of star and source unfoldings?

Figures of unfoldings removed due to copyright restrictions.
Refer to: Fig. 1-4 from Demaine, E. D., and A. Lubiw. "A Generalization of the Source Unfolding of Convex Polyhedra." *Revised Papers from the 14th Spanish Meeting on Computational Geometry Lecture Notes in Computer Science* 7579 (2011): 185–99.

Figures of unfoldings removed due to copyright restrictions.
Refer to: Fig. 1-4 from Demaine, E. D., and A. Lubiw. "A Generalization of the Source Unfolding of Convex Polyhedra." *Revised Papers from the 14th Spanish Meeting on Computational Geometry Lecture Notes in Computer Science* 7579 (2011): 185–99.

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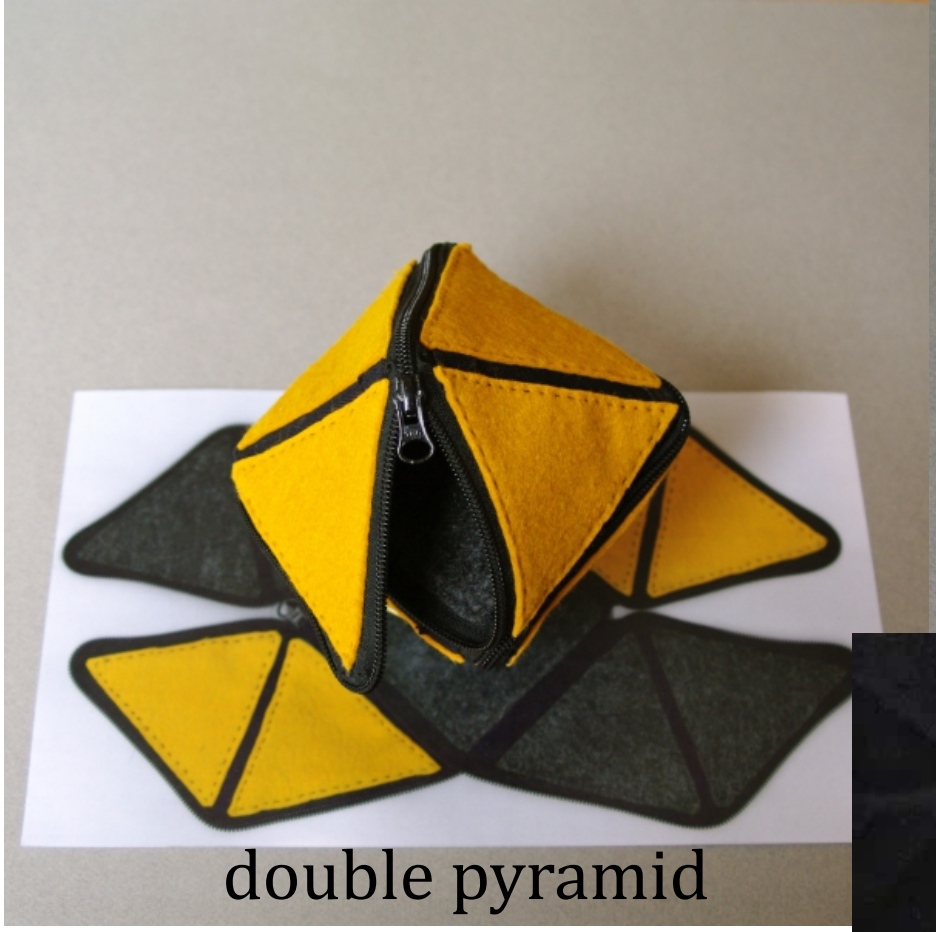
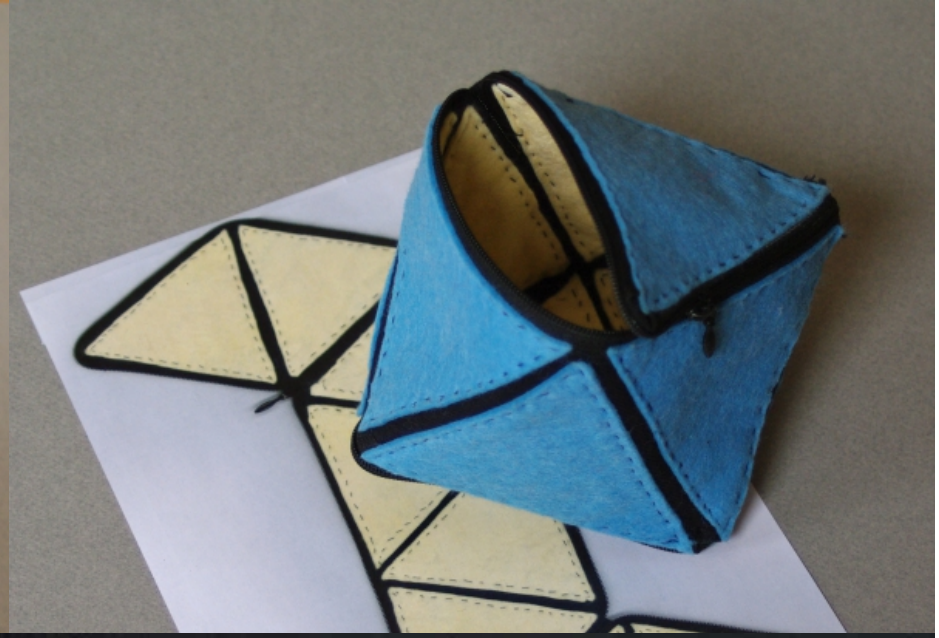
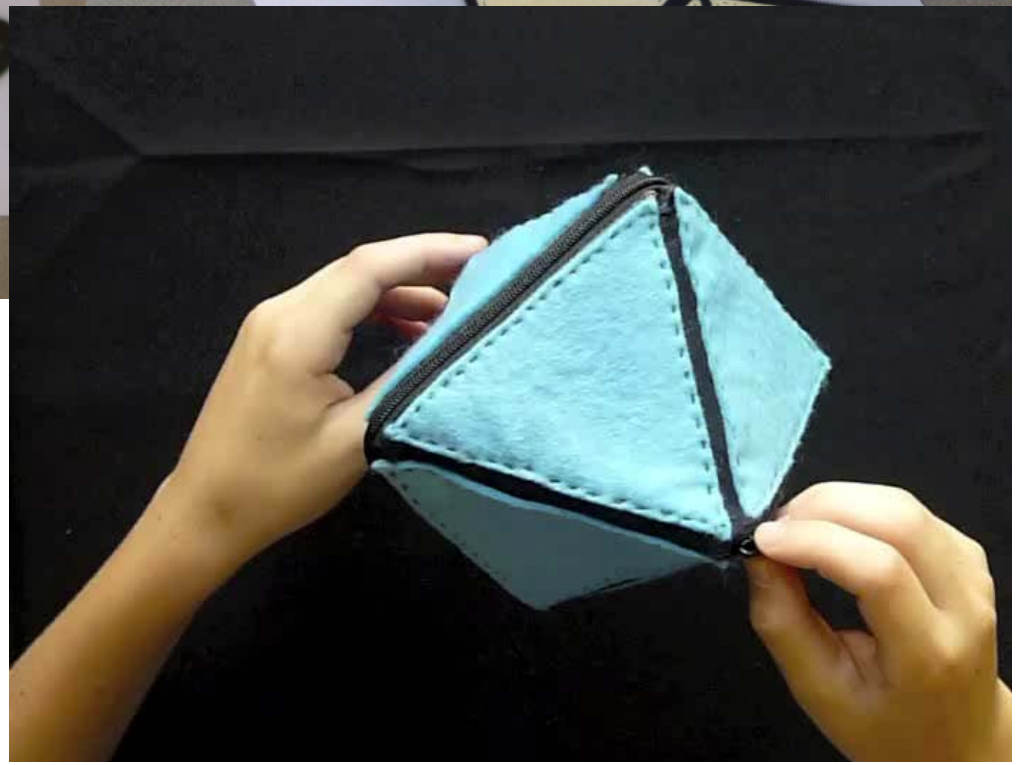
Refer to: Fig. 1-4 from Demaine, E. D., and A. Lubiw. "A Generalization of the Source Unfolding of Convex Polyhedra." *Revised Papers from the 14th Spanish Meeting on Computational Geometry Lecture Notes in Computer Science* 7579 (2011): 185–99.



double pyramid

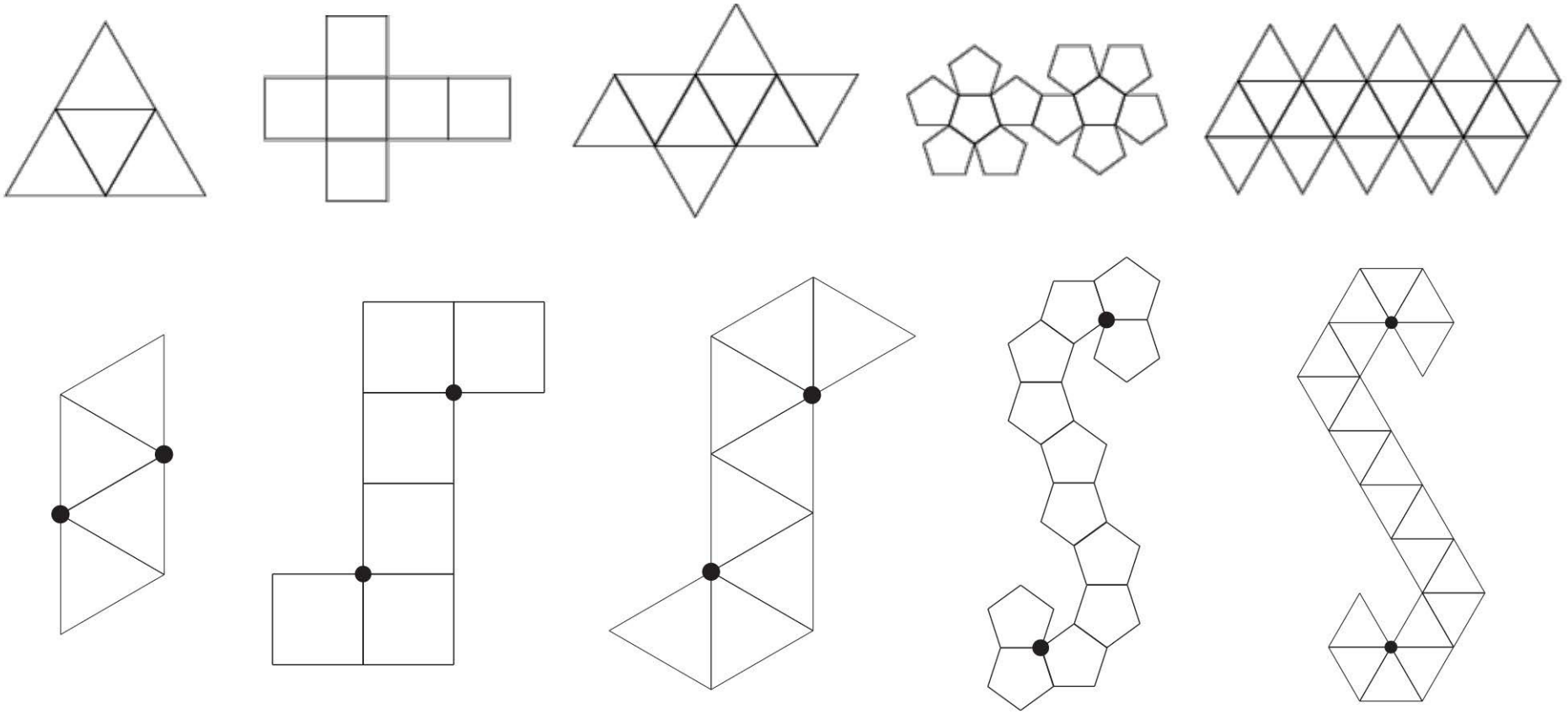




Bridges Exhibition of Mathematical Art
Portugal, July 2011

[Demaine, Demaine, Lubiw, Shallit, Shallit 2010–2011]

Platonic Solids



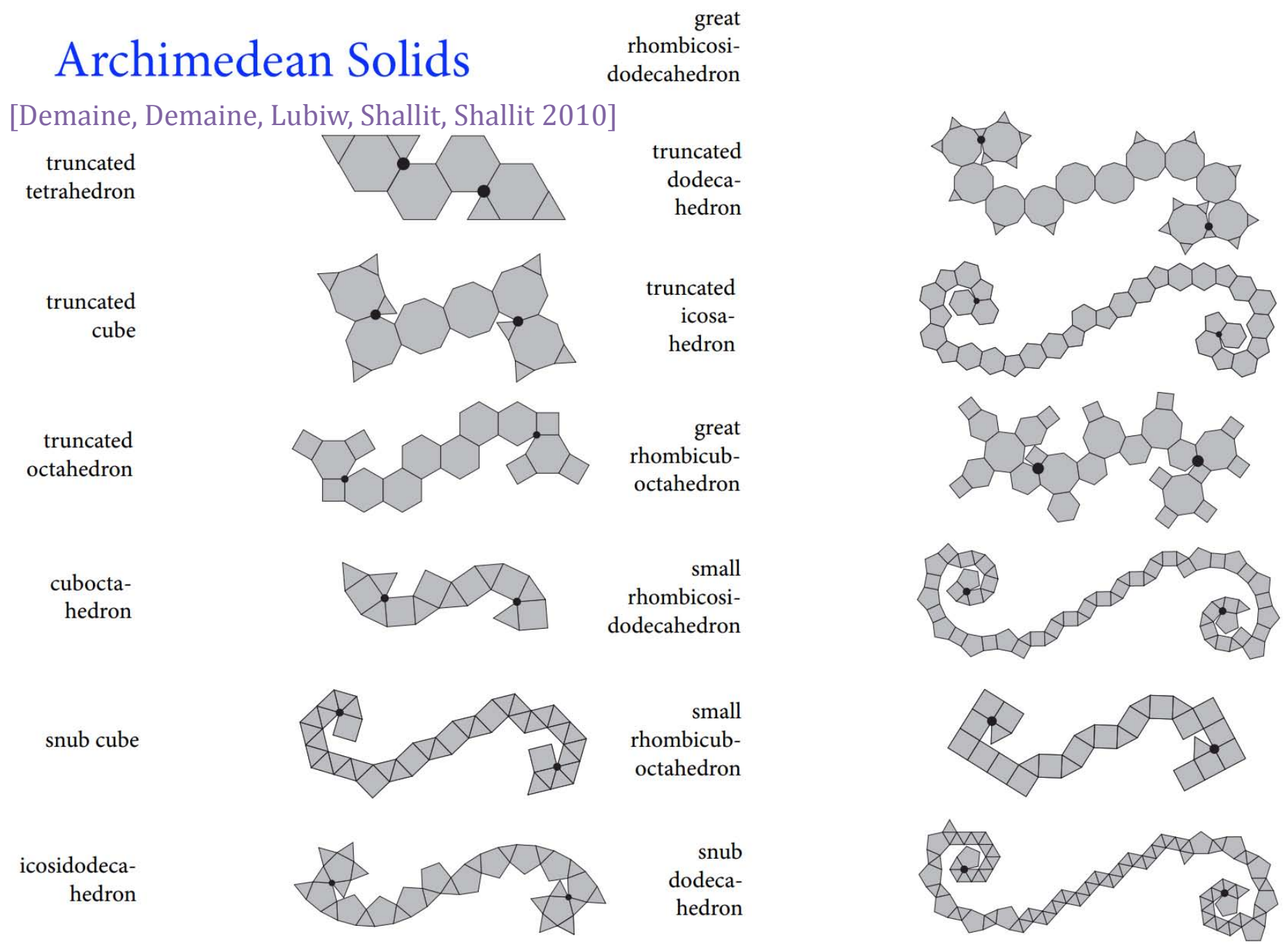
Courtesy of Erik D. Demaine, Martin L. Demaine, Anna Lubiw, Arlo Shallit, and Jonah Shallit. Used with permission.

[Demaine, Demaine, Lubiw, Shallit, Shallit 2010]

3D images of polyhedra removed due to copyright restrictions.

Archimedean Solids

[Demaine, Demaine, Lubiw, Shallit, Shallit 2010]



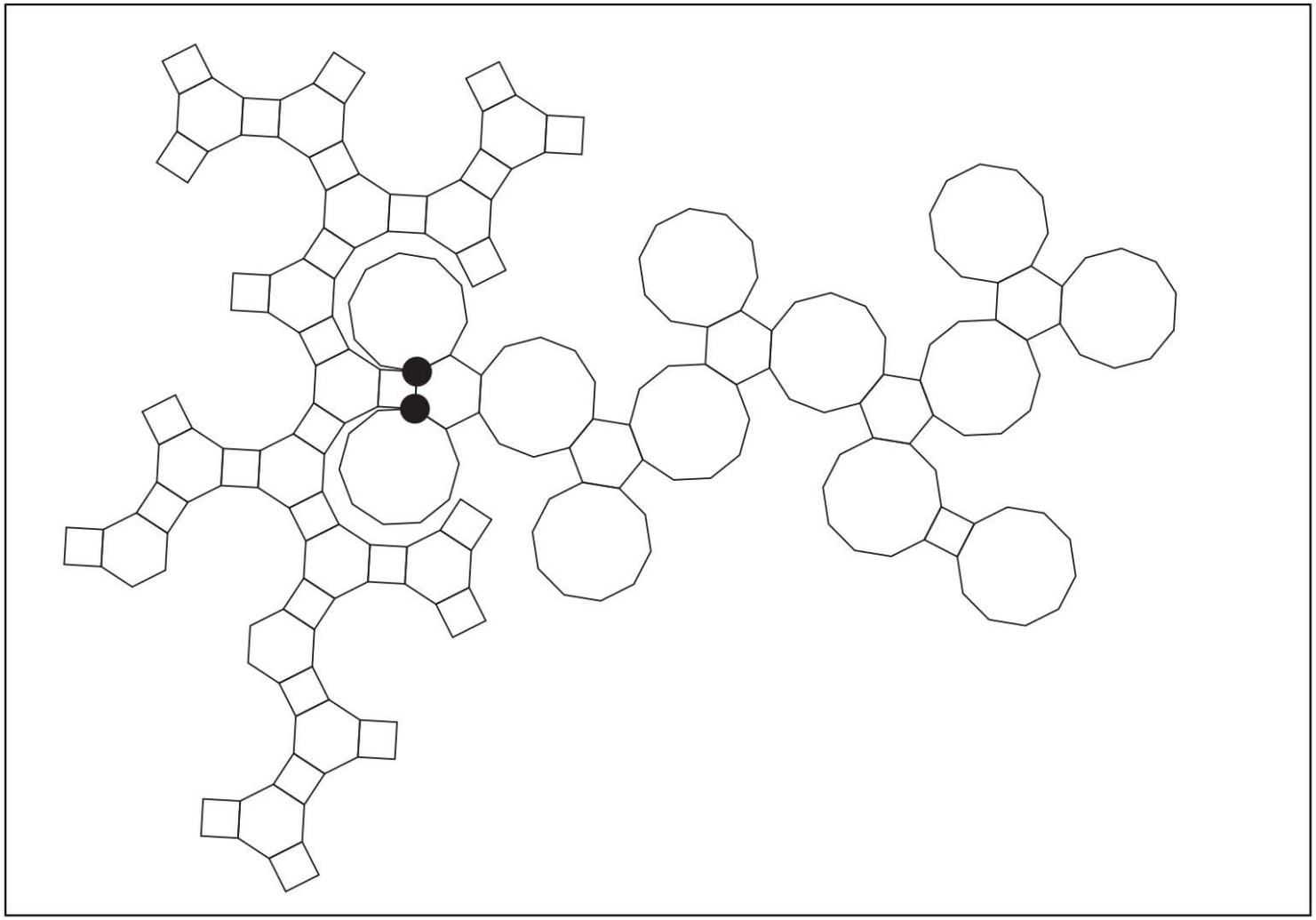
Courtesy of Erik D. Demaine, Martin L. Demaine, Anna Lubiw, Arlo Shallit, and Jonah Shallit. Used with permission.

3D images of polyhedra removed due to copyright restrictions.

Archimedean Solids

great
rhombicosi-
dodecahedron

[Demaine, Demaine, Lubiw, Shallit, Shallit 2010]



Courtesy of Erik D. Demaine, Martin L. Demaine, Anna Lubiw, Arlo Shallit, and Jonah Shallit. Used with permission.

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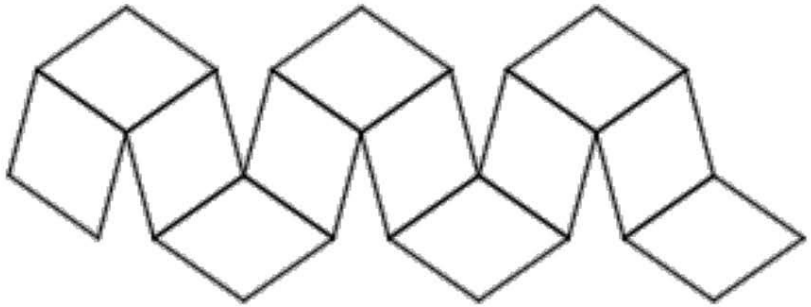
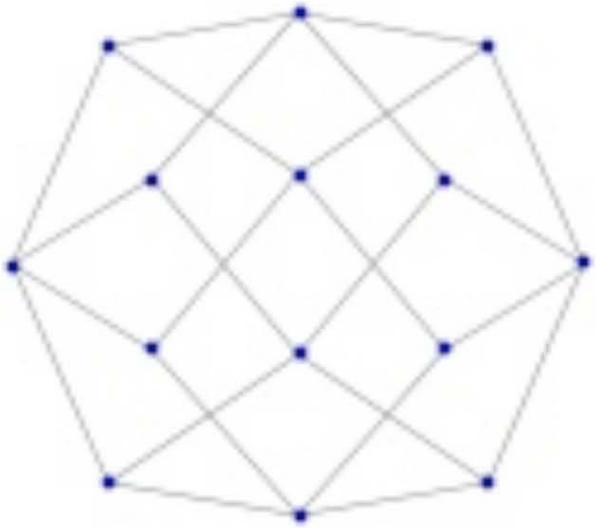
rhombic dodecahedron

net



its graph has no
Hamiltonian path



Courtesy of Erik D. Demaine, Martin L. Demaine, Anna Lubiw, Arlo Shallit, and Jonah Shallit. Used with permission.

[Demaine, Demaine, Lubiw, Shallit, Shallit 2010]

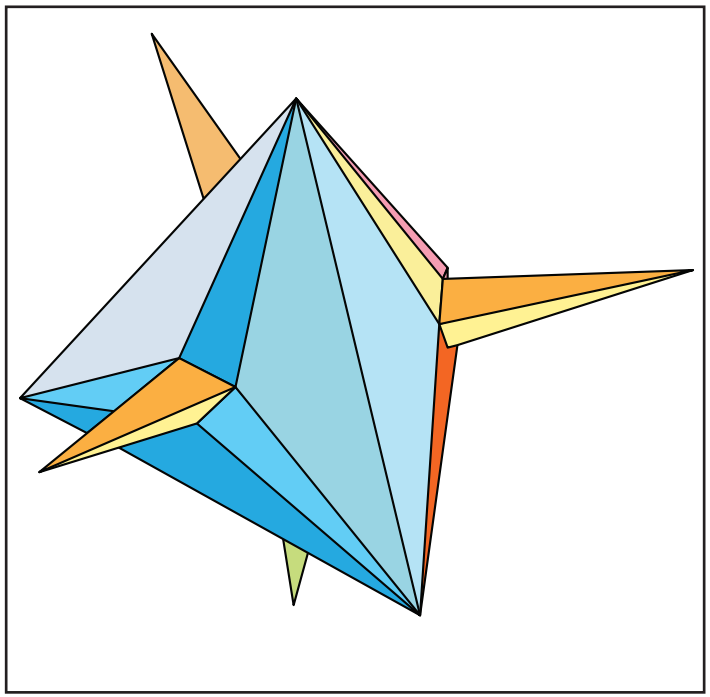
3D images of polyhedra removed due to copyright restrictions.

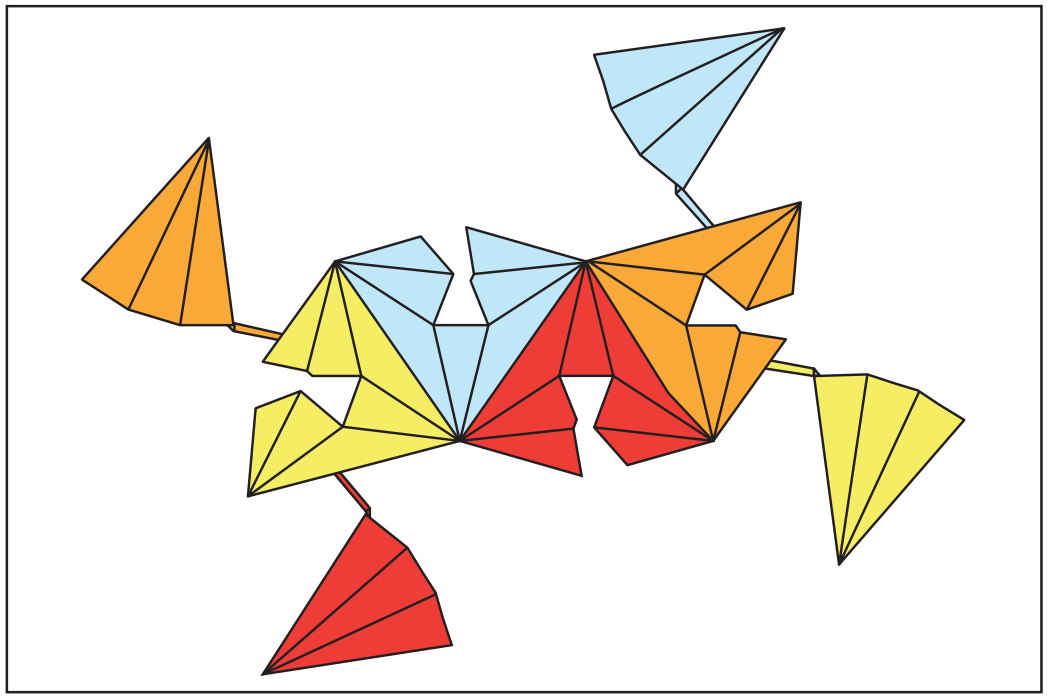
[Demaine, Demaine, Lubiw, Shallit, Shallit 2010]

Edge unfoldings seem super cool. […] before, they seemed pretty obviously doable but you have convinced me otherwise.

Ununfoldable Polyhedra with Convex Faces

Marshall Bern* Erik D. Demaine† David Eppstein‡
Eric Kuo§ Andrea Mantler¶ Jack Snoeyink¶ ‖

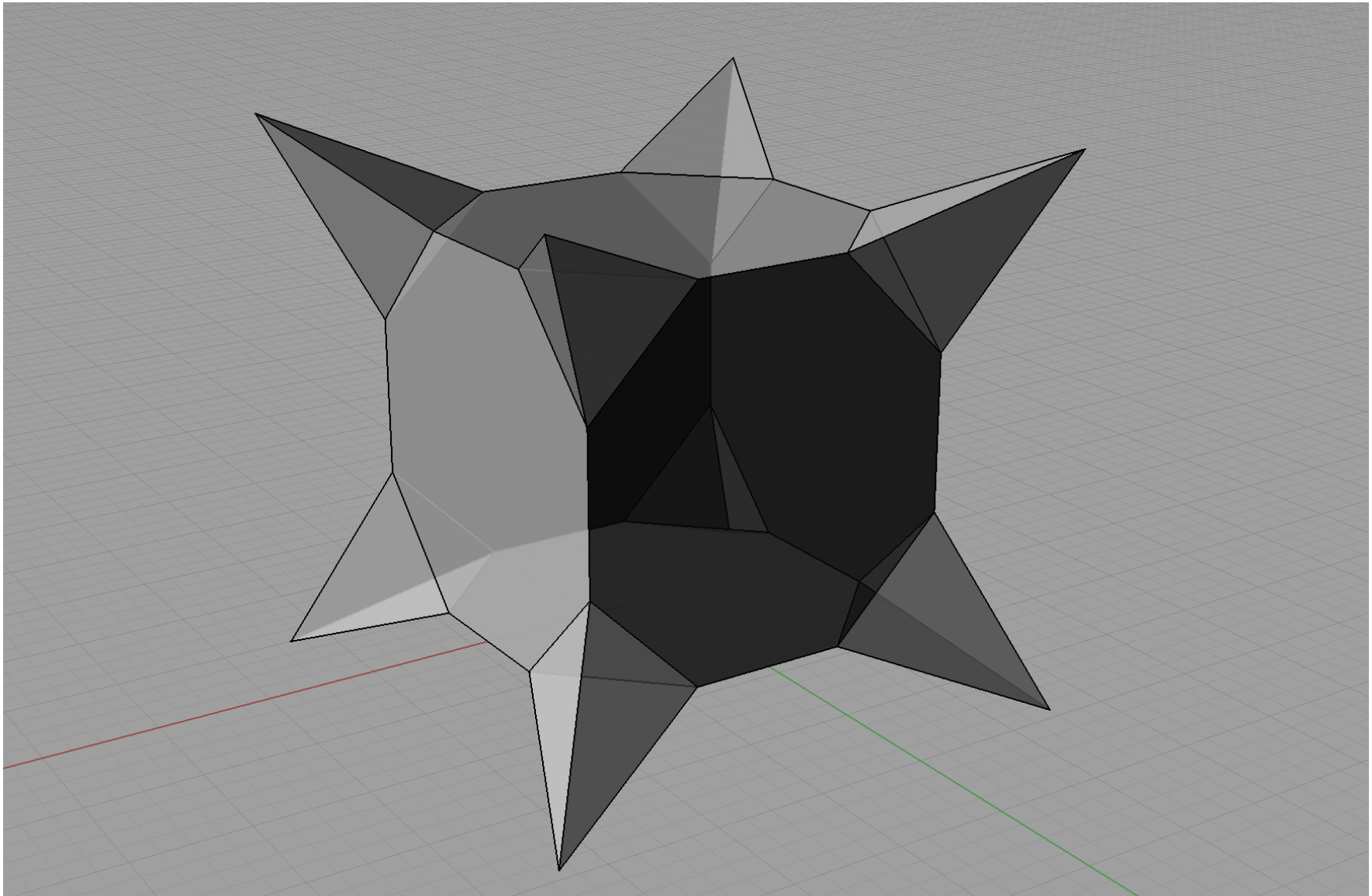




Images by MIT OpenCourseWare.
See also http://erikdemaine.org/papers/Ununfoldable/.

Polyhedra with no natural unfoldings

A. S. Tarasov



Drawings of no-net polyhedron (Fig. 1a) and star-shaped polyhedron (Fig. 2) removed due to copyright restrictions.
Refer to: Grünbaum, B. "No-Net Polyhedra." *Geombinatorics* 11 (2002): 111–14;
Grünbaum, B. "A Star-shaped Polyhedron with No Net." *Geombinatorics* 11 (2001): 43–48.

Packing Squares into a Square*

JOSEPH Y-T. LEUNG, TOMMY W. TAM, AND C. S. WONG

Computer Science Program, University of Texas at Dallas, Richardson, Texas 75083

GILBERT H. YOUNG

Department of Computer Science, Tulane University, New Orleans, Louisiana 70118

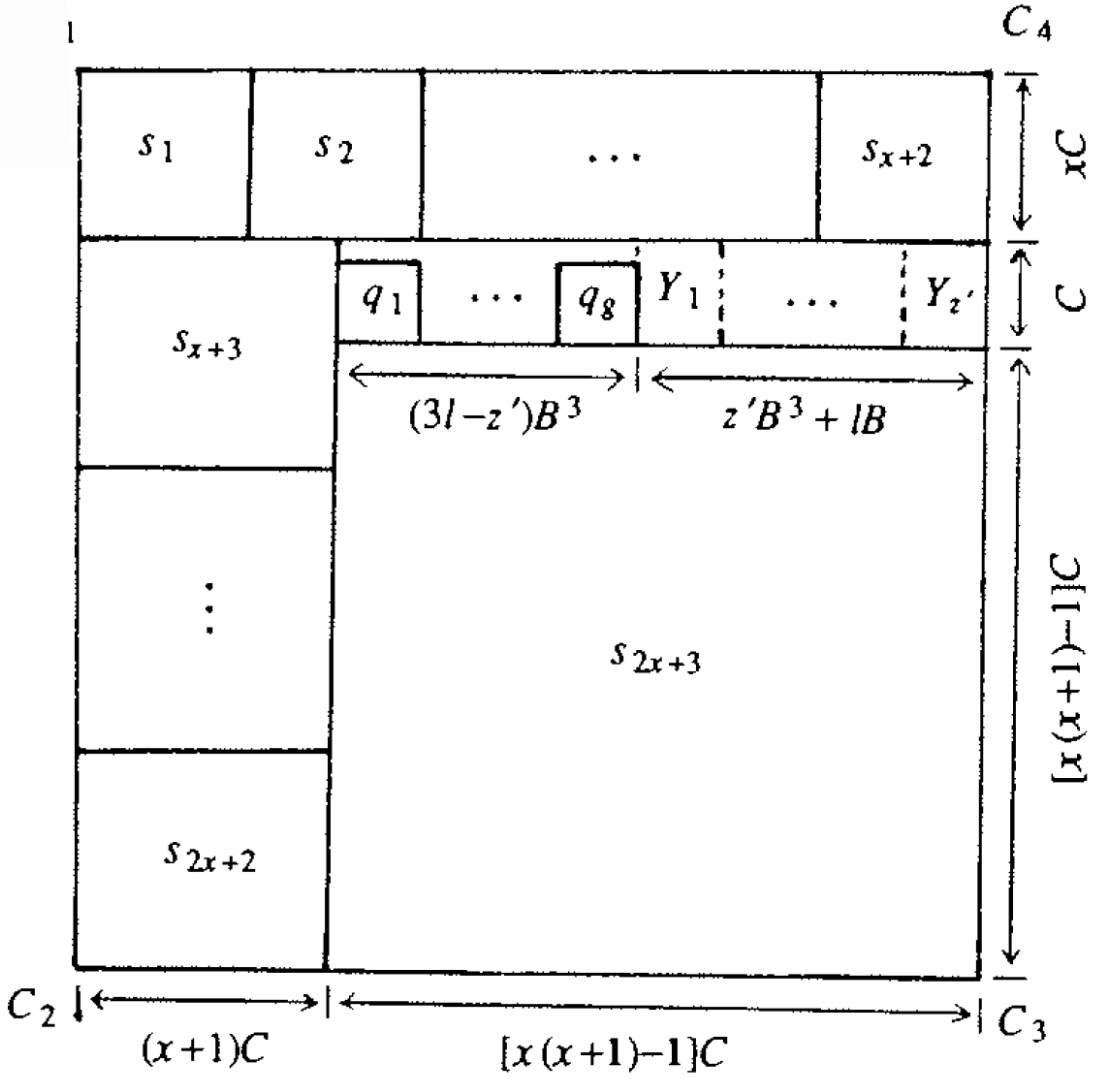
AND

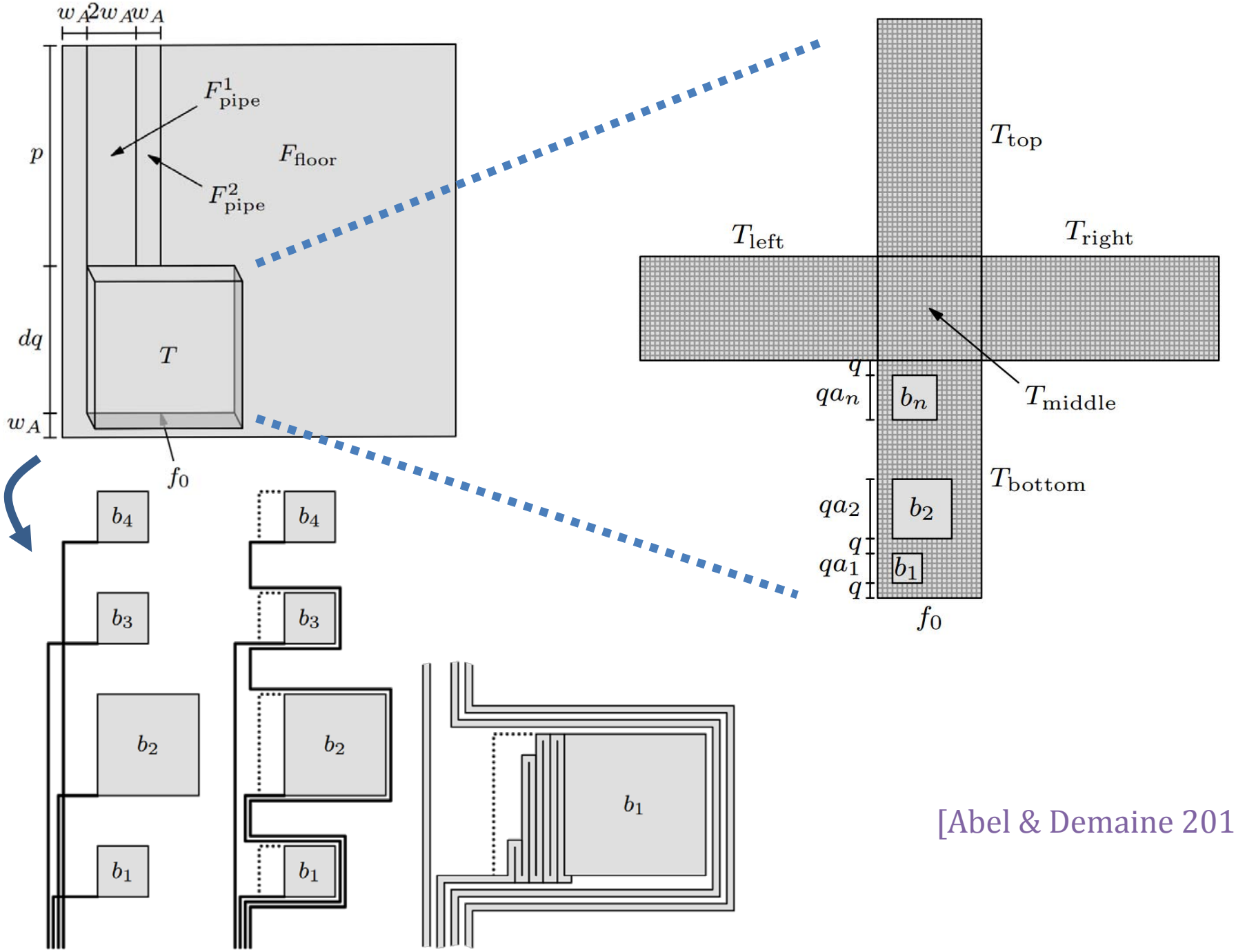
FRANCIS Y. L. CHIN

Department of Computer Science, University of Hong Kong, Hong Kong

$C = 3B^3 + B$

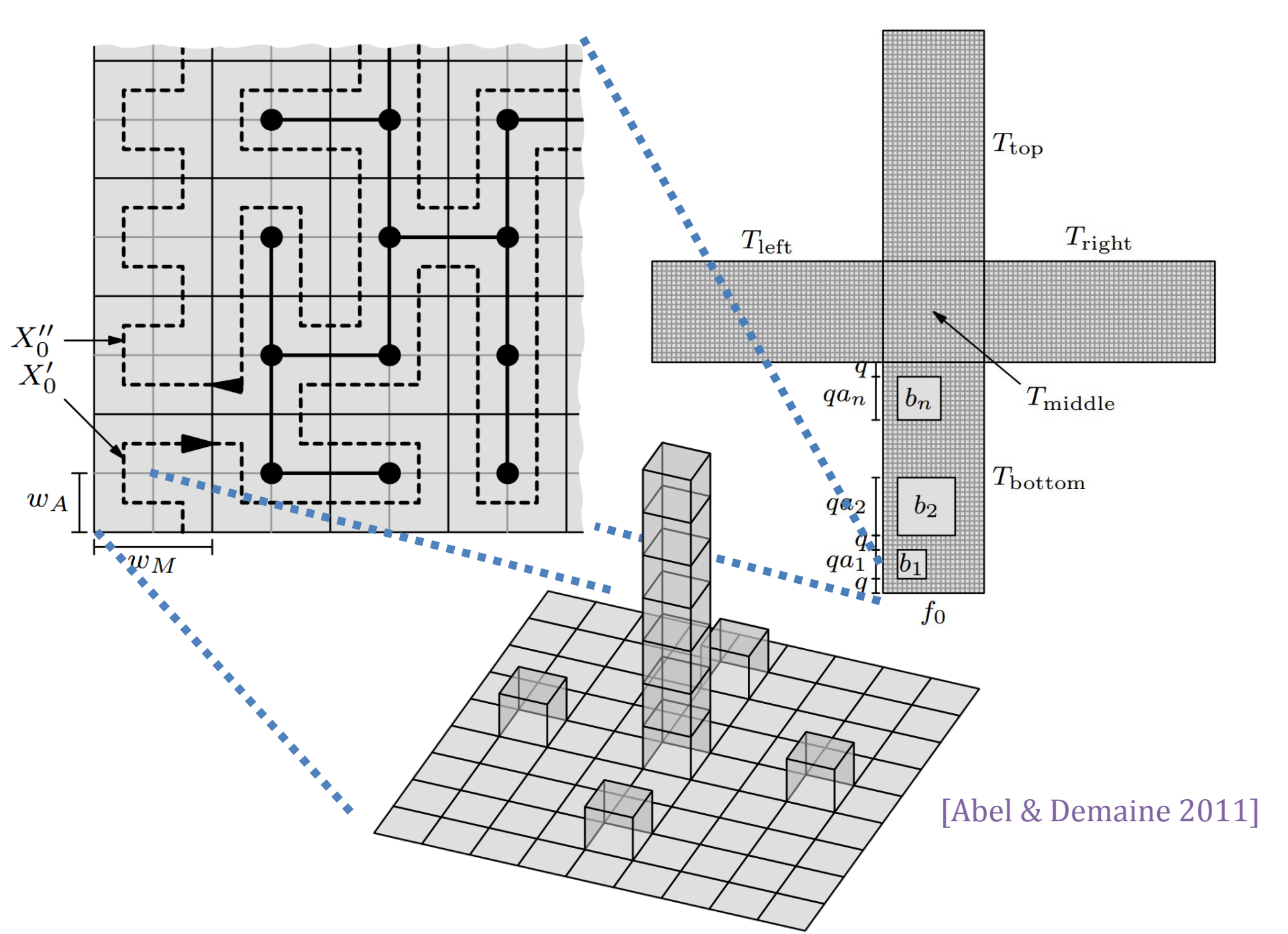
S :





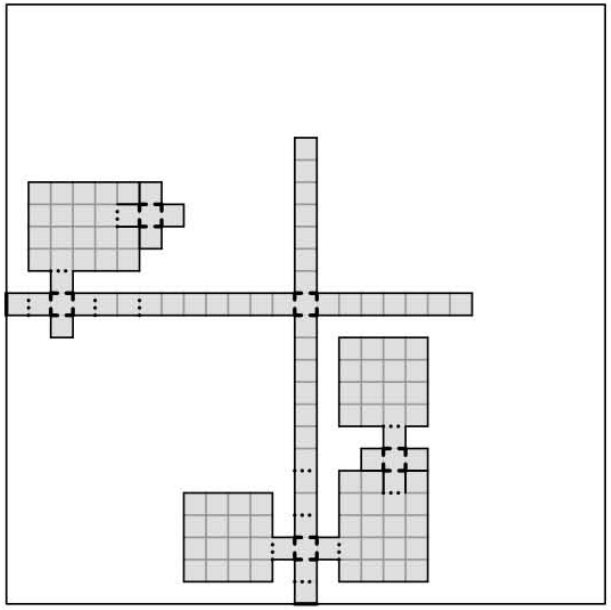
[Abel & Demaine 2011]

Courtesy of Zachary Abel and Erik D. Demaine. Used with permission.

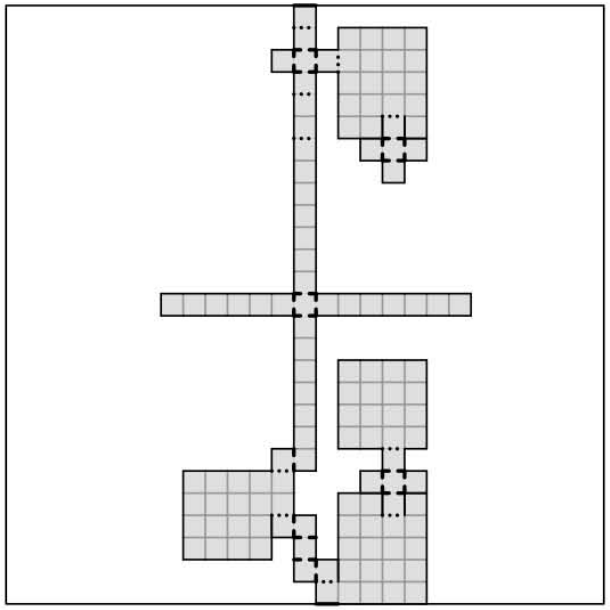


[Abel & Demaine 2011]

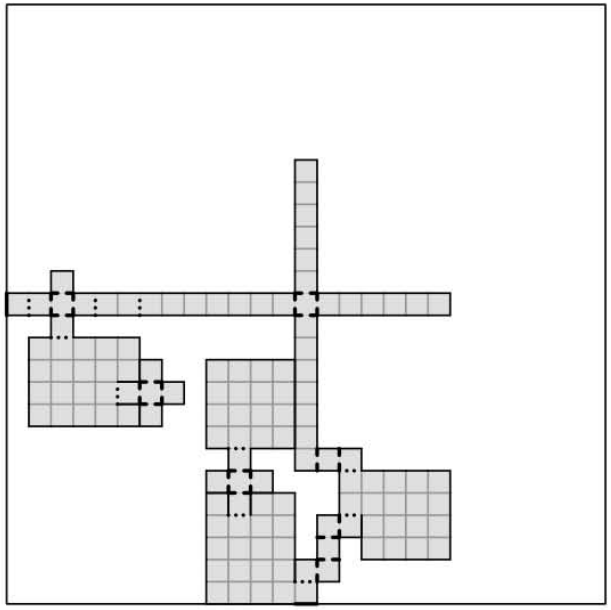
Courtesy of Zachary Abel and Erik D. Demaine. Used with permission.



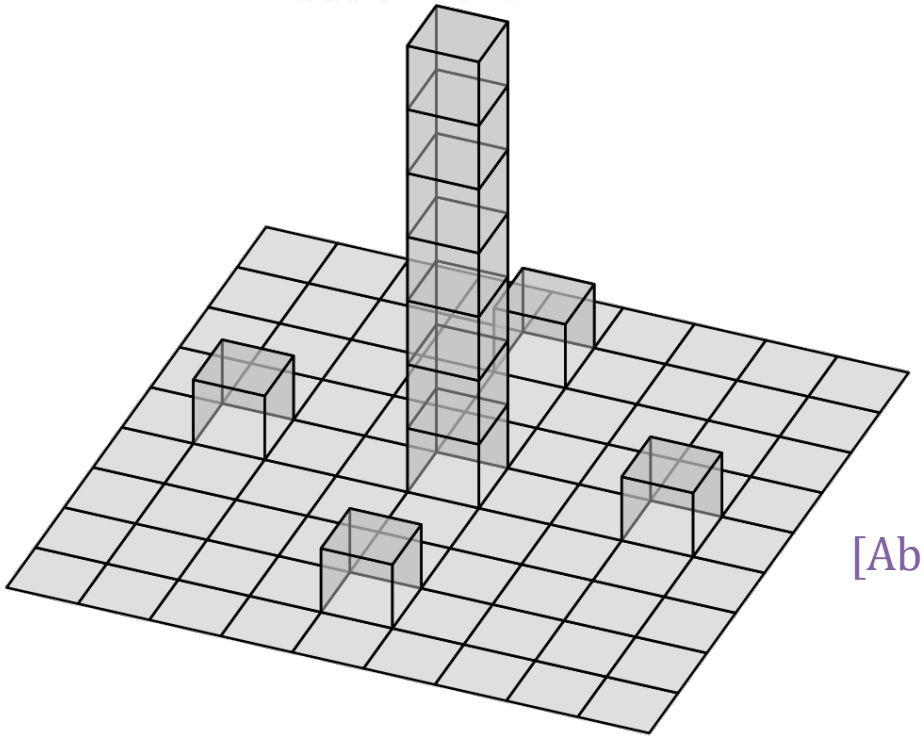
(a) [L, L, 13, 13].



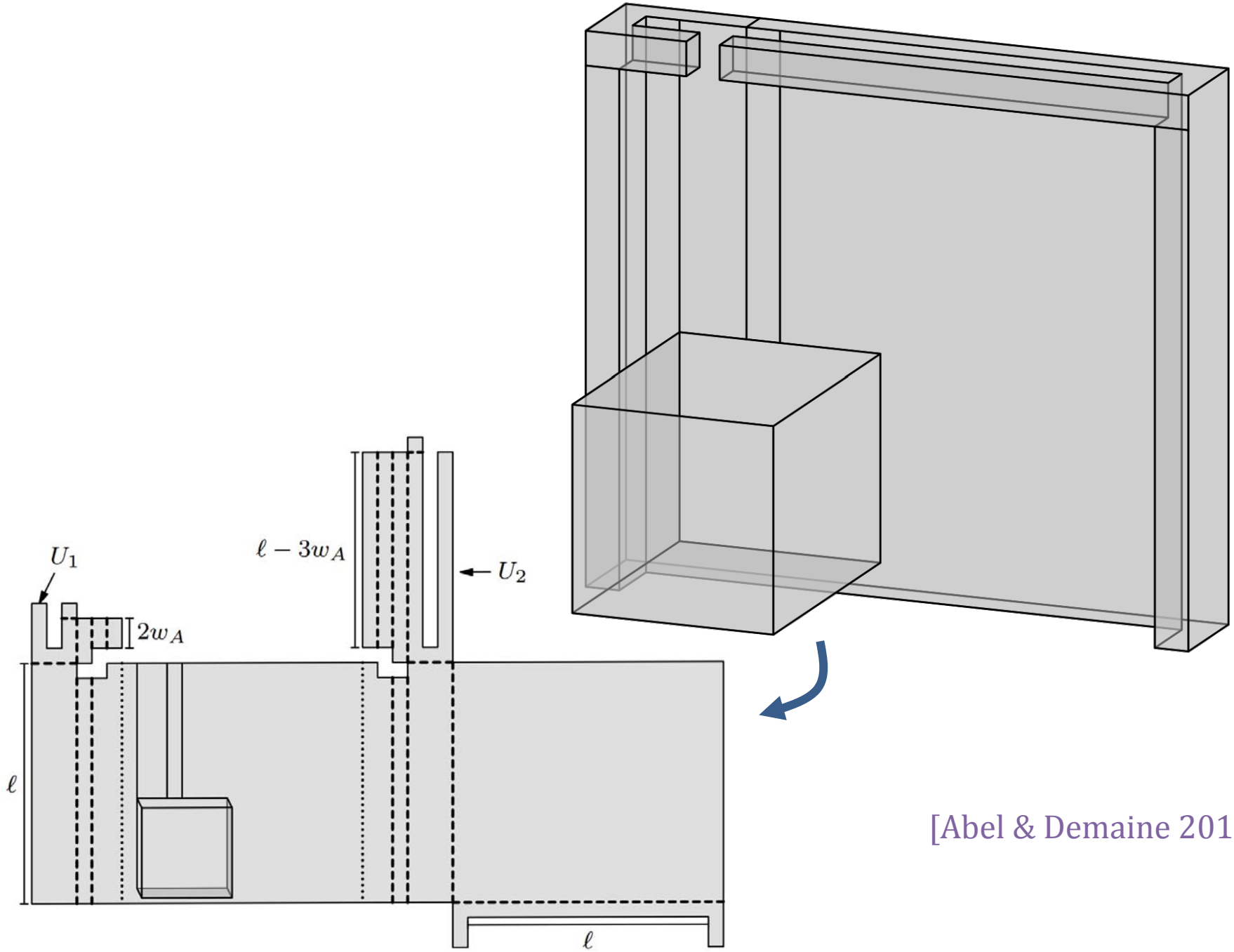
(b) [L, S, 14, 13].



(c) [R, L, 13, 13].



[Abel & Demaine 2011]



[Abel & Demaine 2011]

Images from Pepakura Designer 3 removed due to copyright restrictions.

Does a band unfolding work on a prismoid?

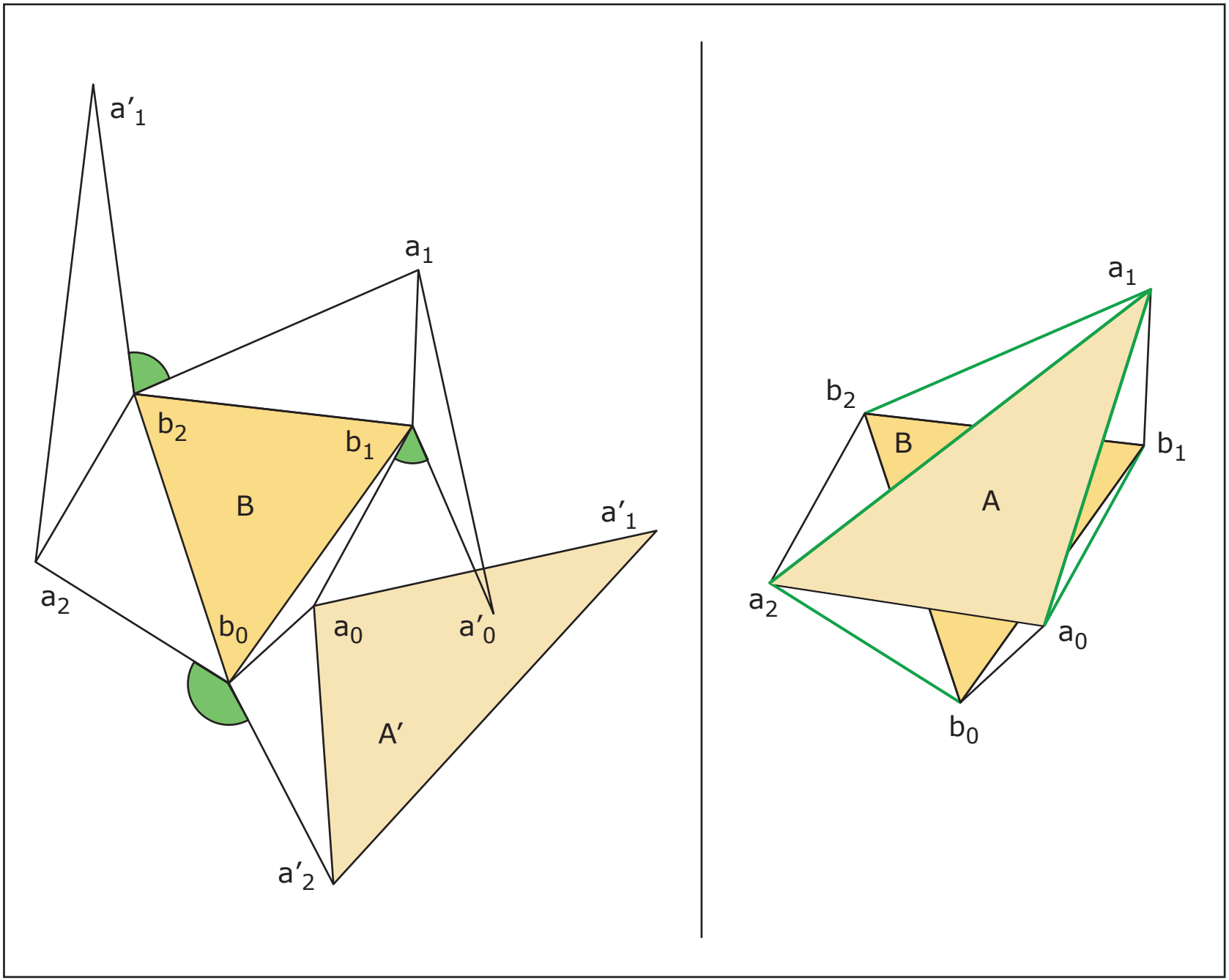
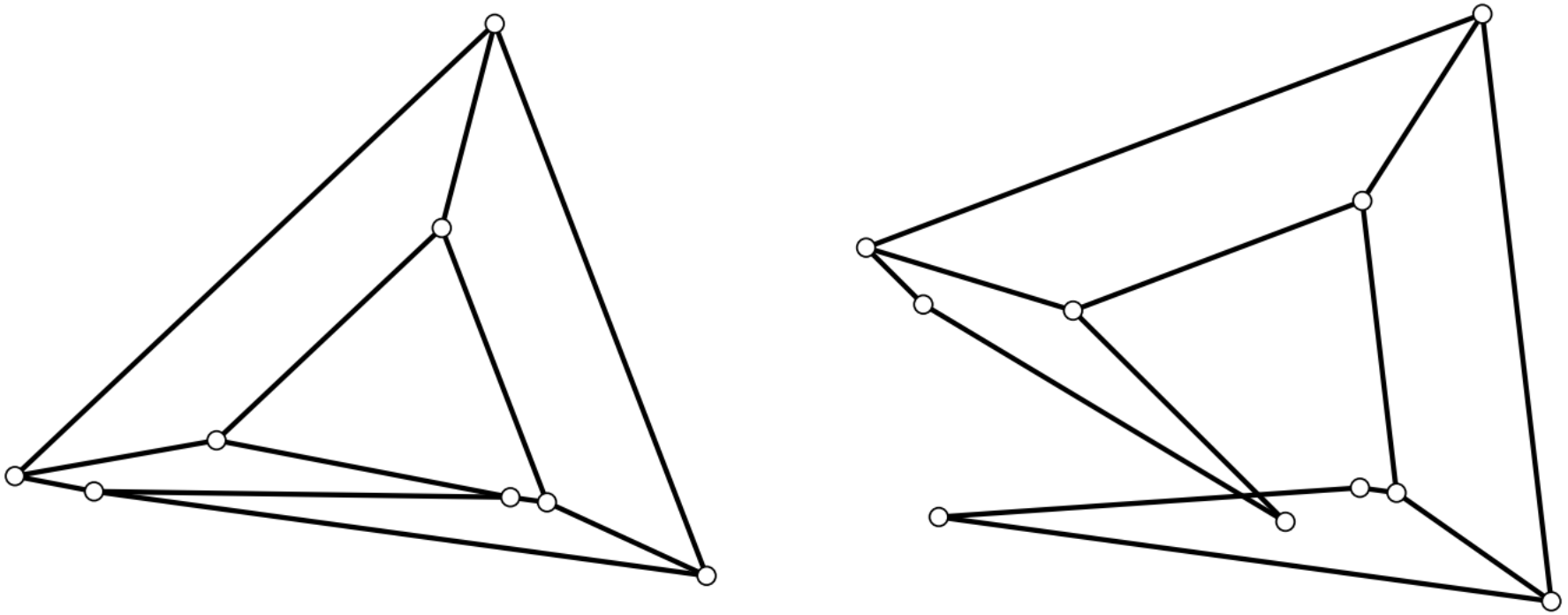
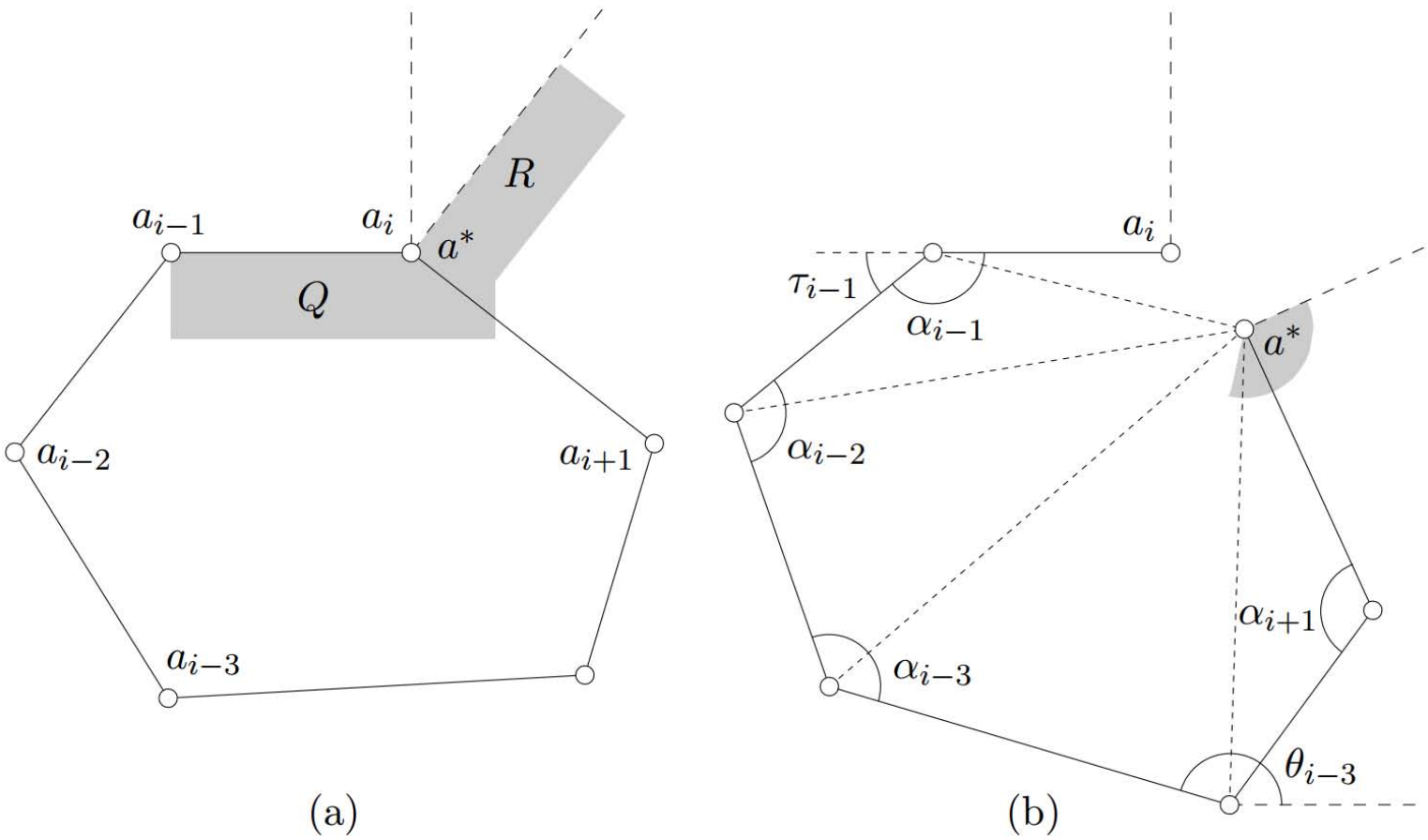


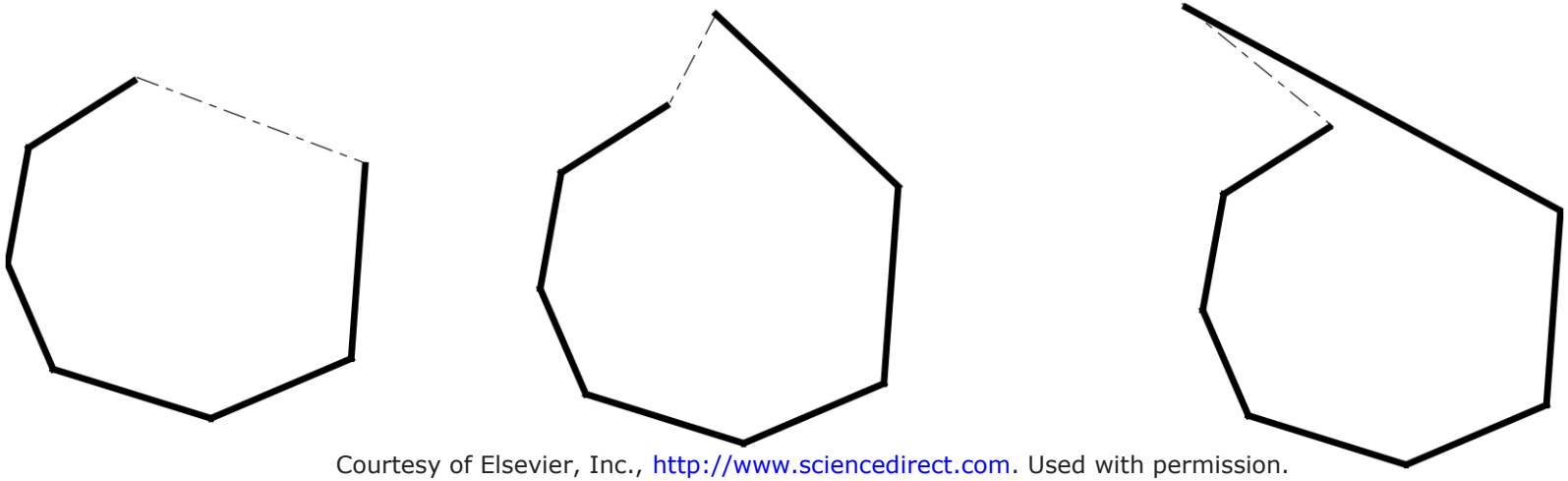
Image by MIT OpenCourseWare.



[Demaine, Demaine, Lubiw 1999]



Courtesy of Greg Aloupis. Used with permission.



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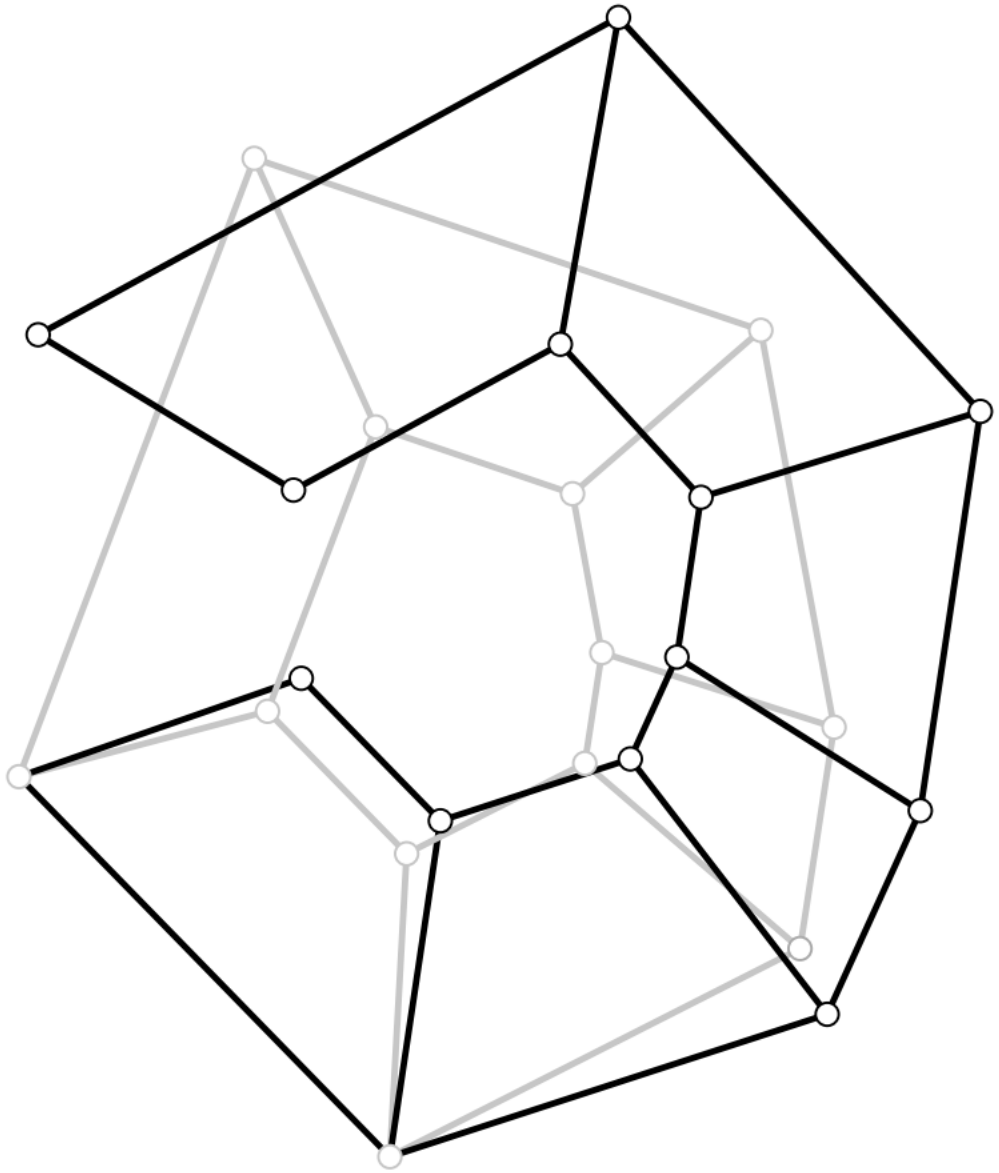


Can you describe in more detail what “continuous blooming” is?

Tell us more about continuous blooming.

Graphs and Combinatorics (2011) 27:363–376
DOI 10.1007/s00373-011-1024-3

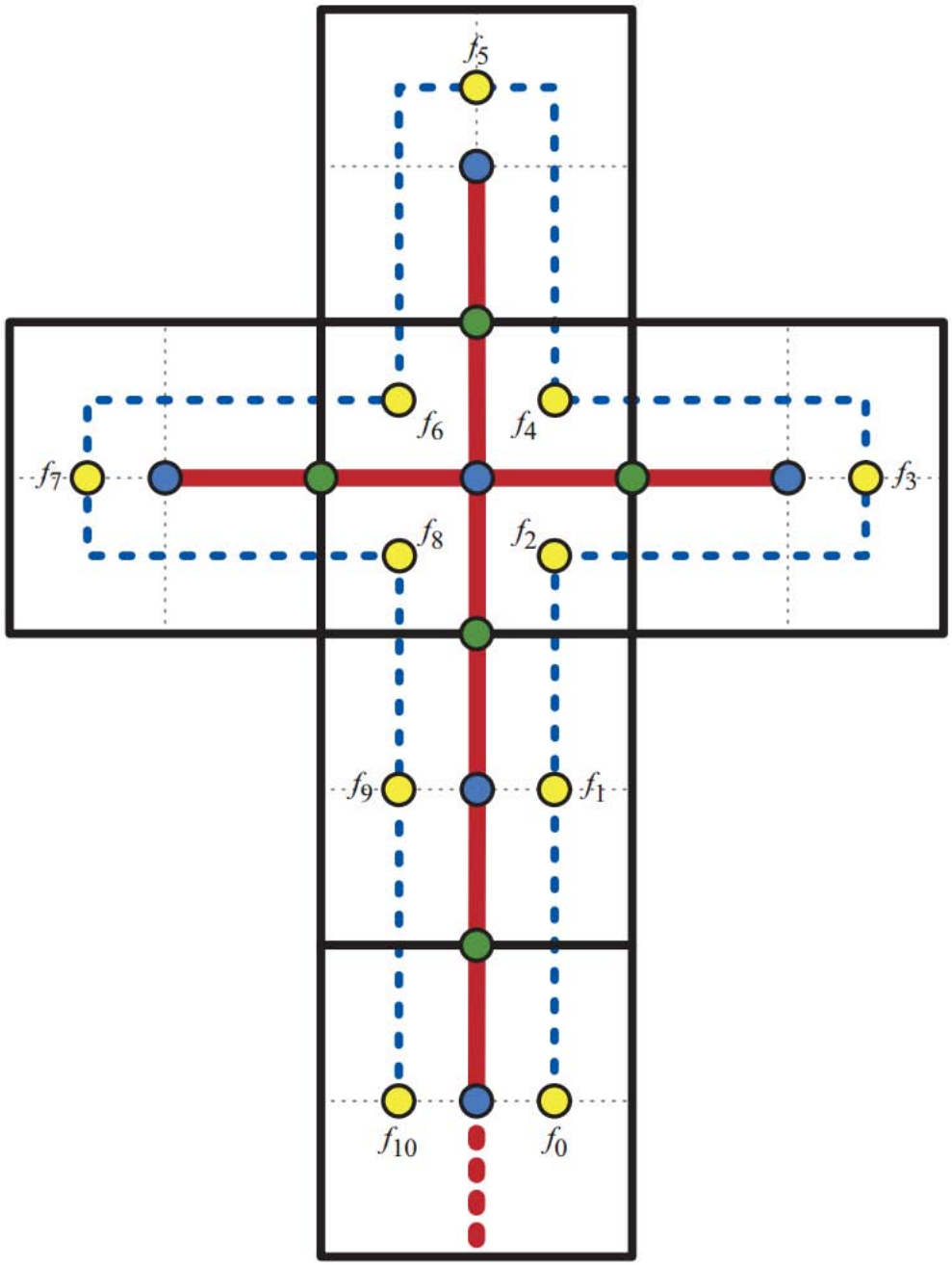
PROCEEDINGS PAPER

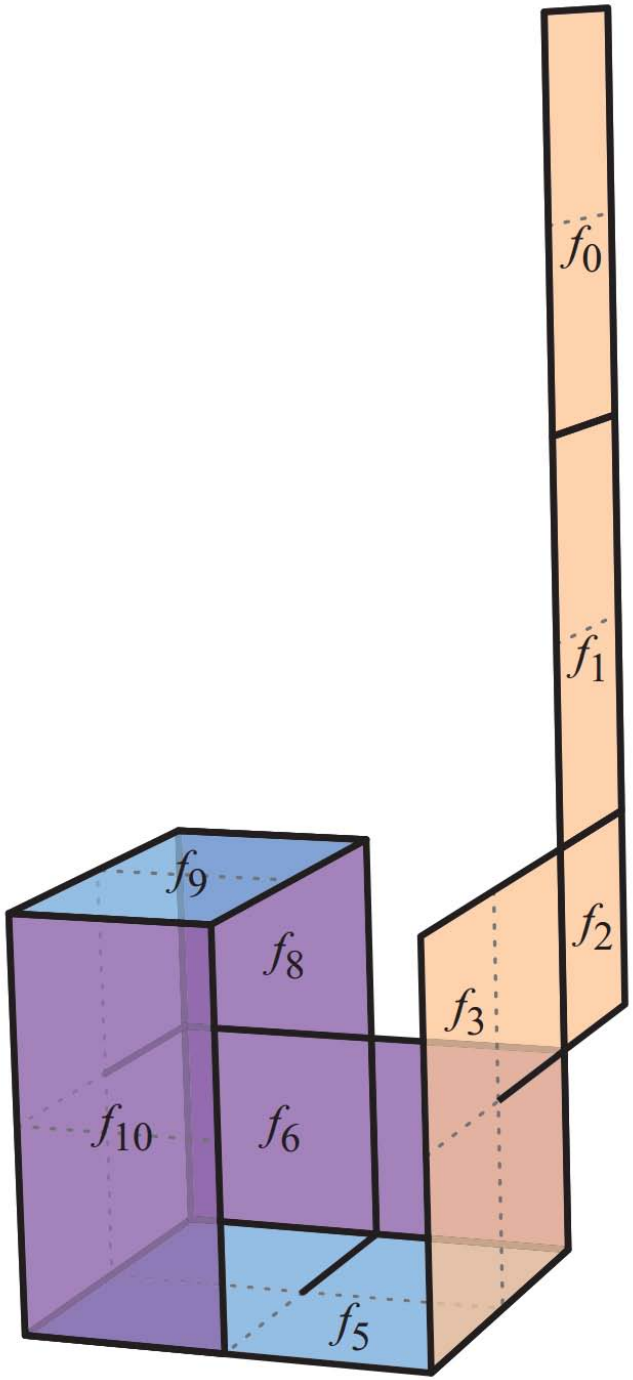
Continuous Blooming of Convex Polyhedra

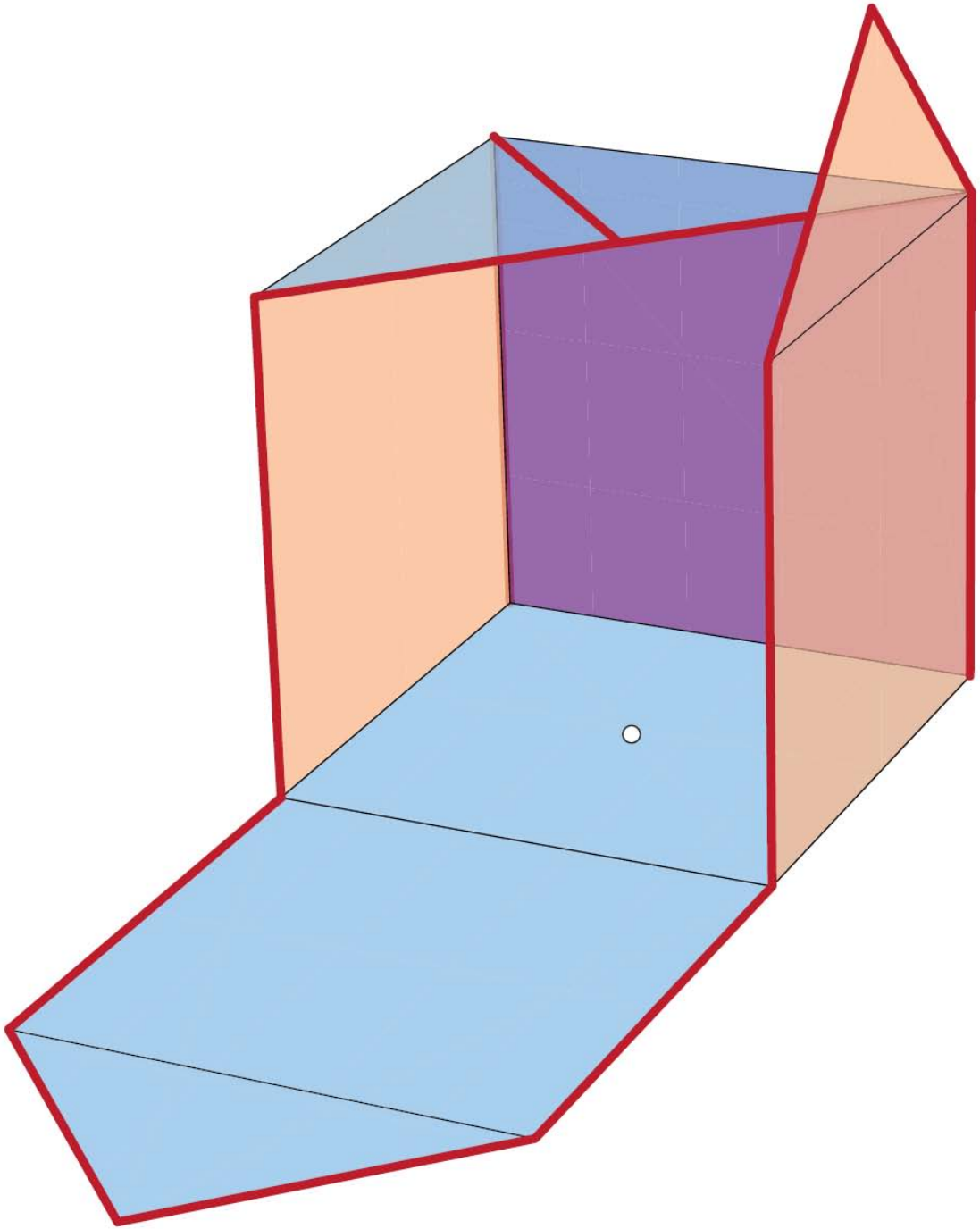
Erik D. Demaine · Martin L. Demaine · Vi Hart · John Iacono · Stefan Langerman · Joseph O'Rourke

Published online: 17 March 2011

Abstract We construct the first two continuous bloomings of all convex polyhedra. First, the source unfolding can be continuously bloomed. Second, any unfolding of a convex polyhedron can be refined (further cut, by a linear number of cuts) to have a continuous blooming.







6.849 Geometric Folding Algorithms: Linkages, Origami, Polyhedra
Fall 2012