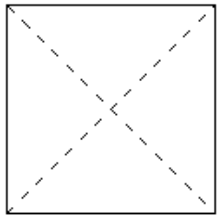
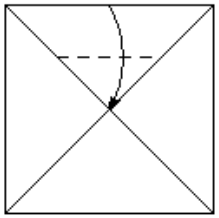
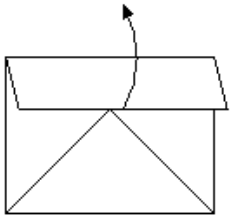


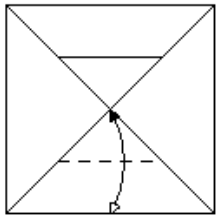
Crease the diagonals



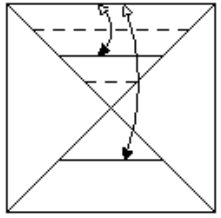
Fold the top edge to the center point, creasing only between the diagonals



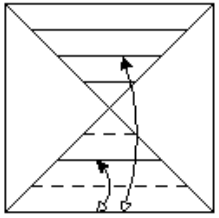
Unfold



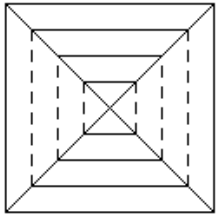
Repeat on the bottom (fold and unfold)



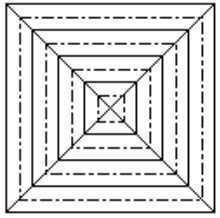
Fold and unfold on 1/4 and 3/4 marks



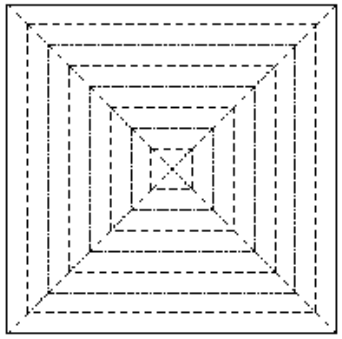
Repeat on the bottom



Repeat on left and right sides



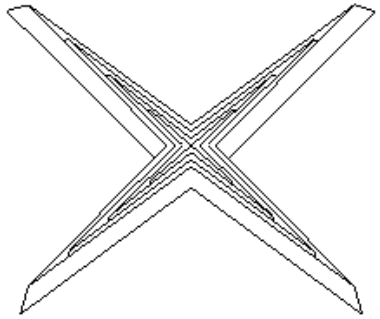
Turn over, and crease in between the squares in the opposite direction



Final crease pattern

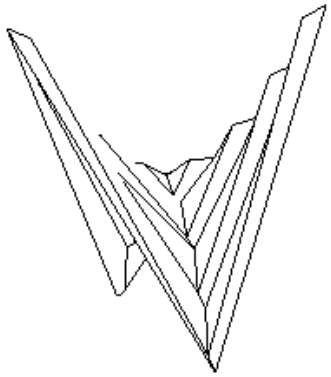
- - - Valley fold

-·-·- Mountain fold

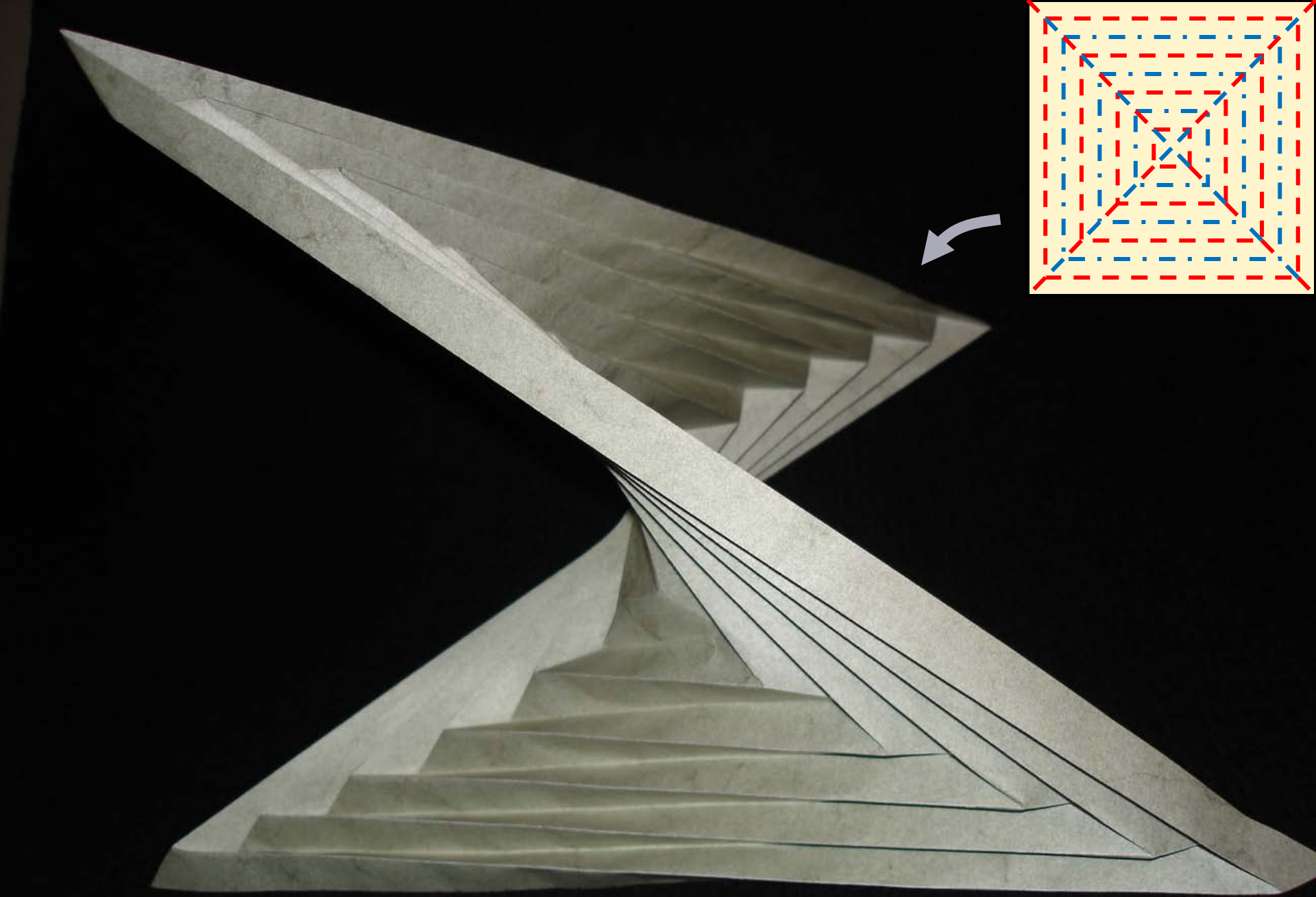


Folding the crease pattern completely forms an "X" shape

Partially opening it forms a hypar

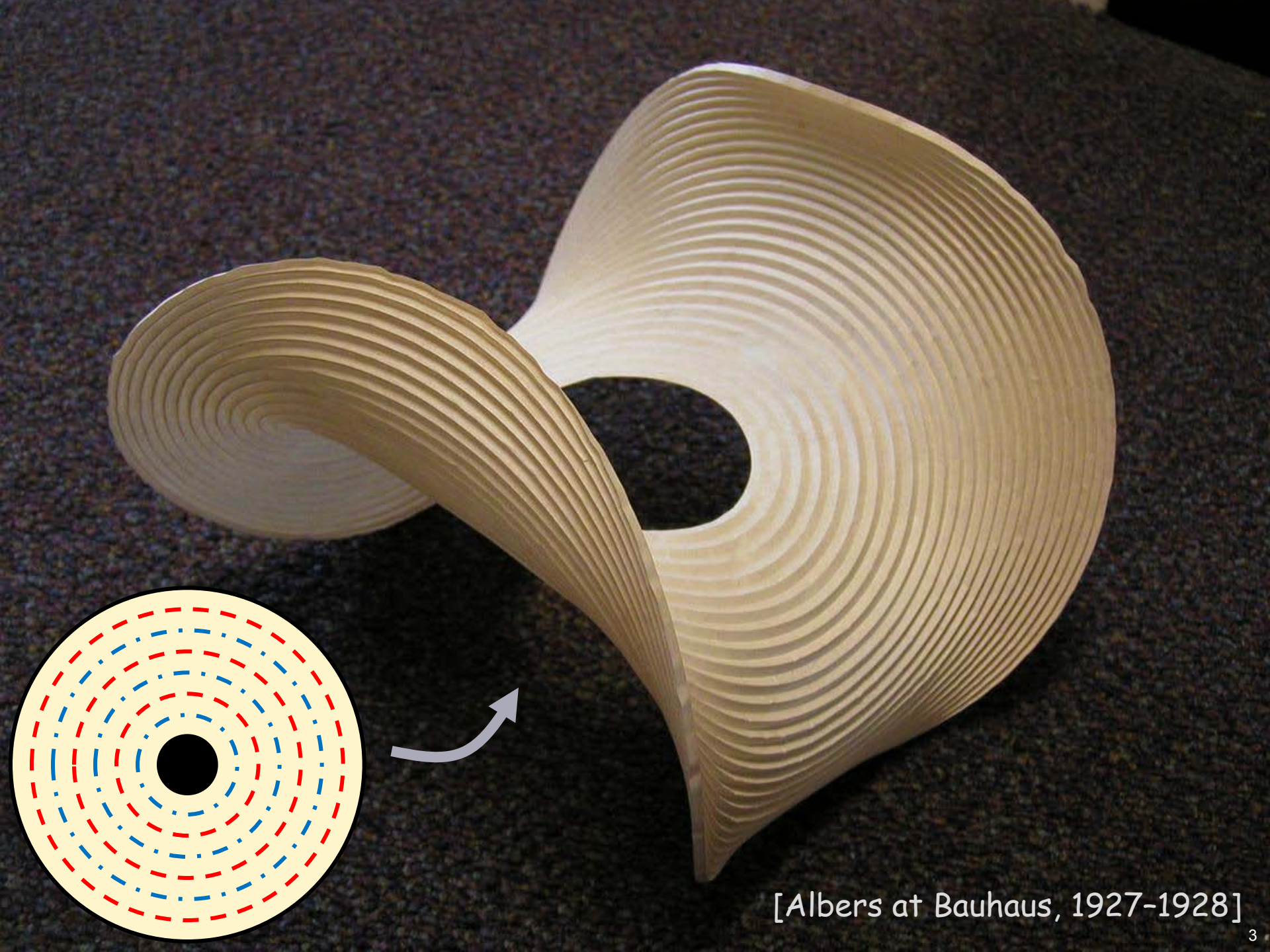


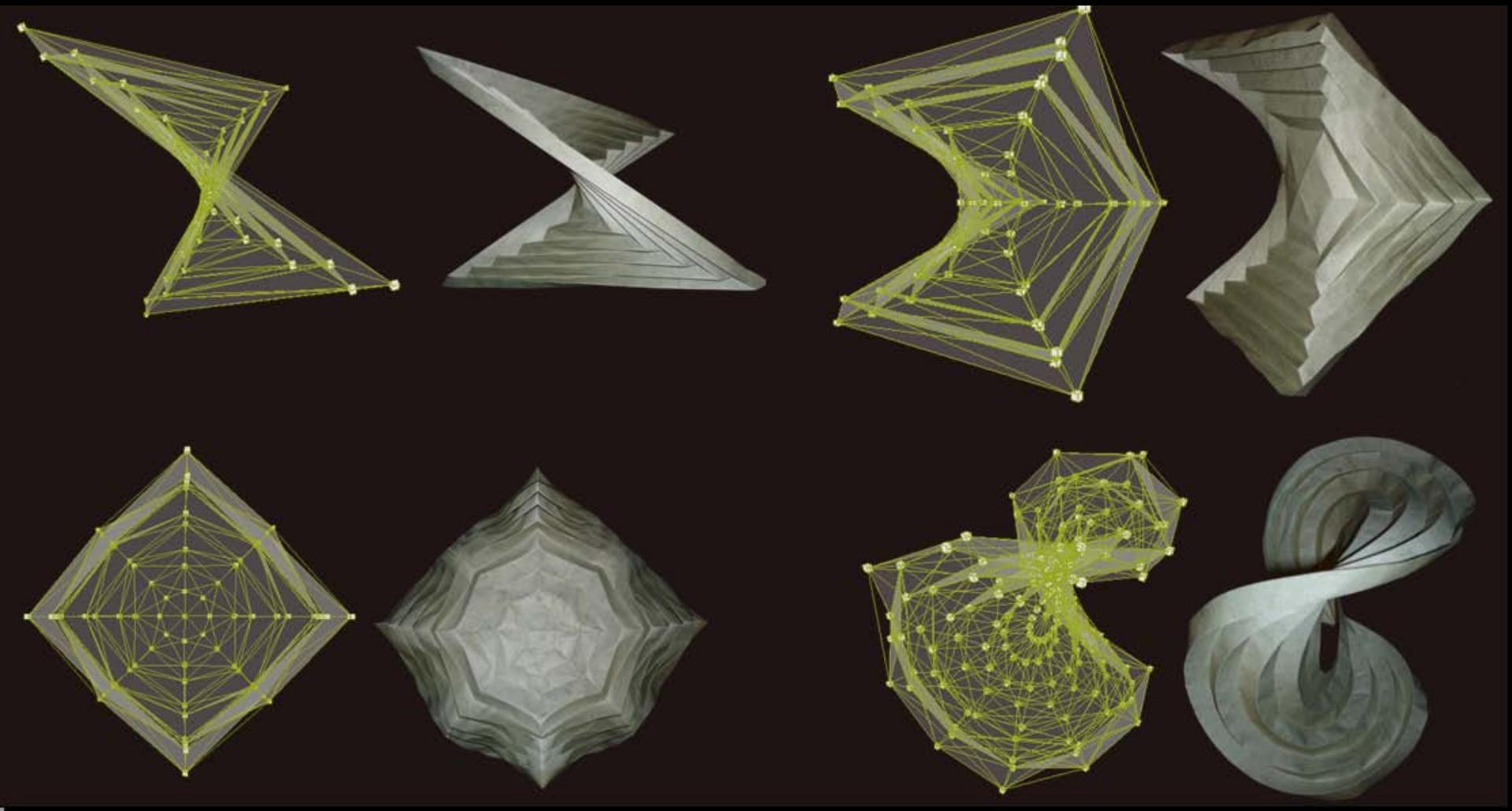
Demaine, Demaine, Lubiw 1999



Courtesy of Jenna Fizel. Used with permission.

[Albers at Bauhaus, 1927-1928]

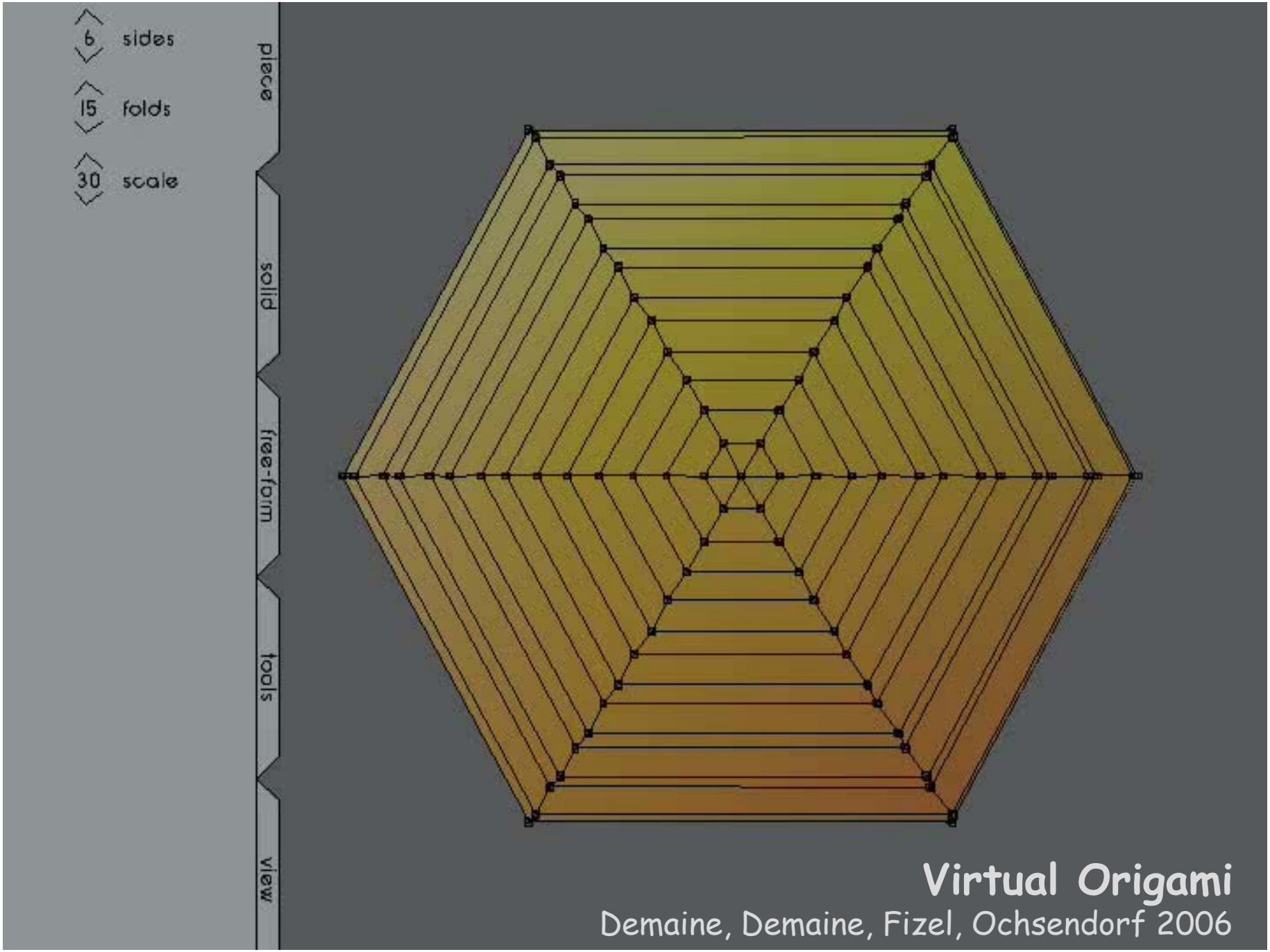

[Albers at Bauhaus, 1927-1928]



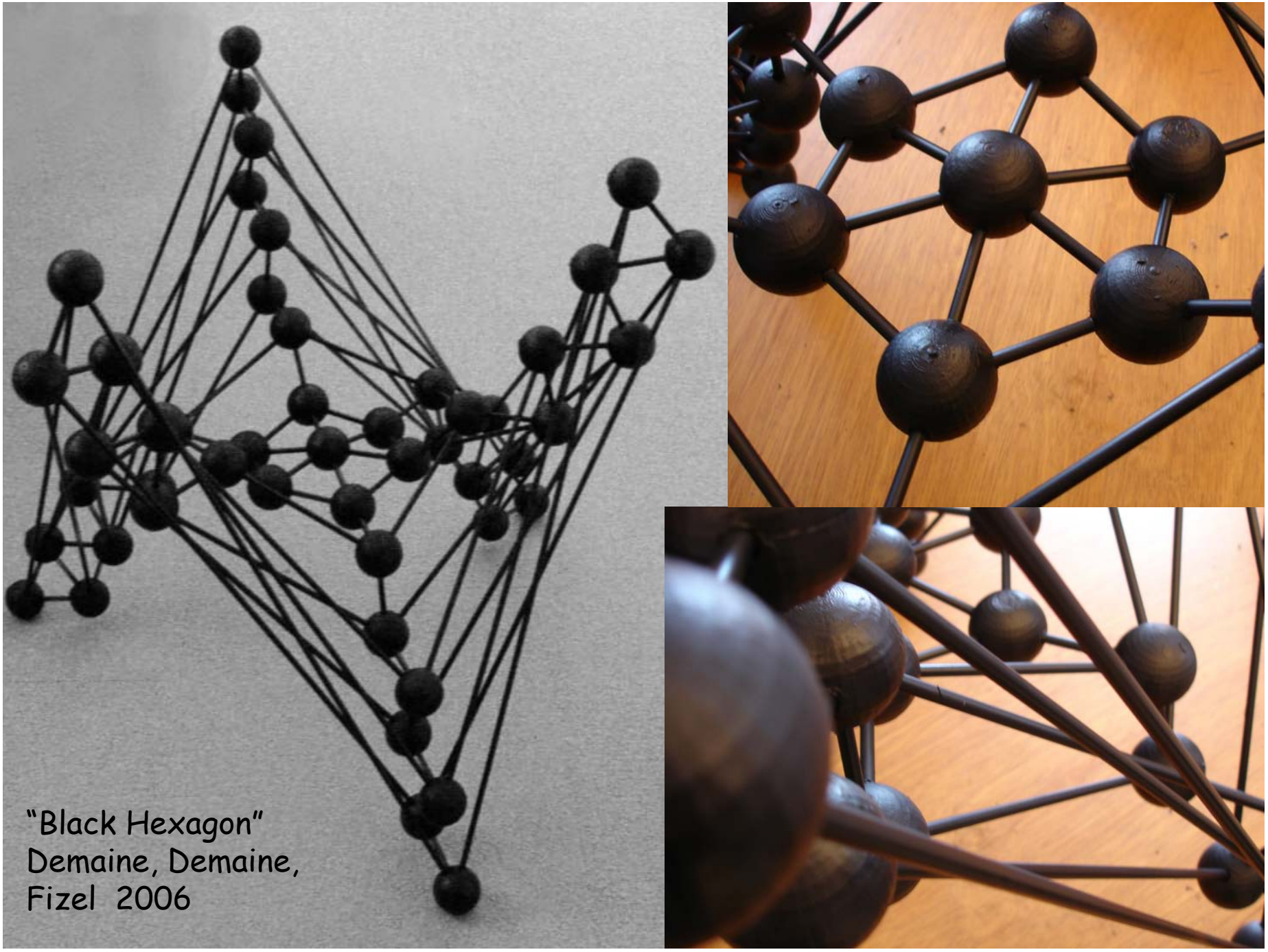
Courtesy of Erik Demaine, Martin Demaine, Jenna Fizel, and John Ochsendorf. Used with permission.

Virtual Origami

Demaine, Demaine, Fizel, Ochsendorf 2006



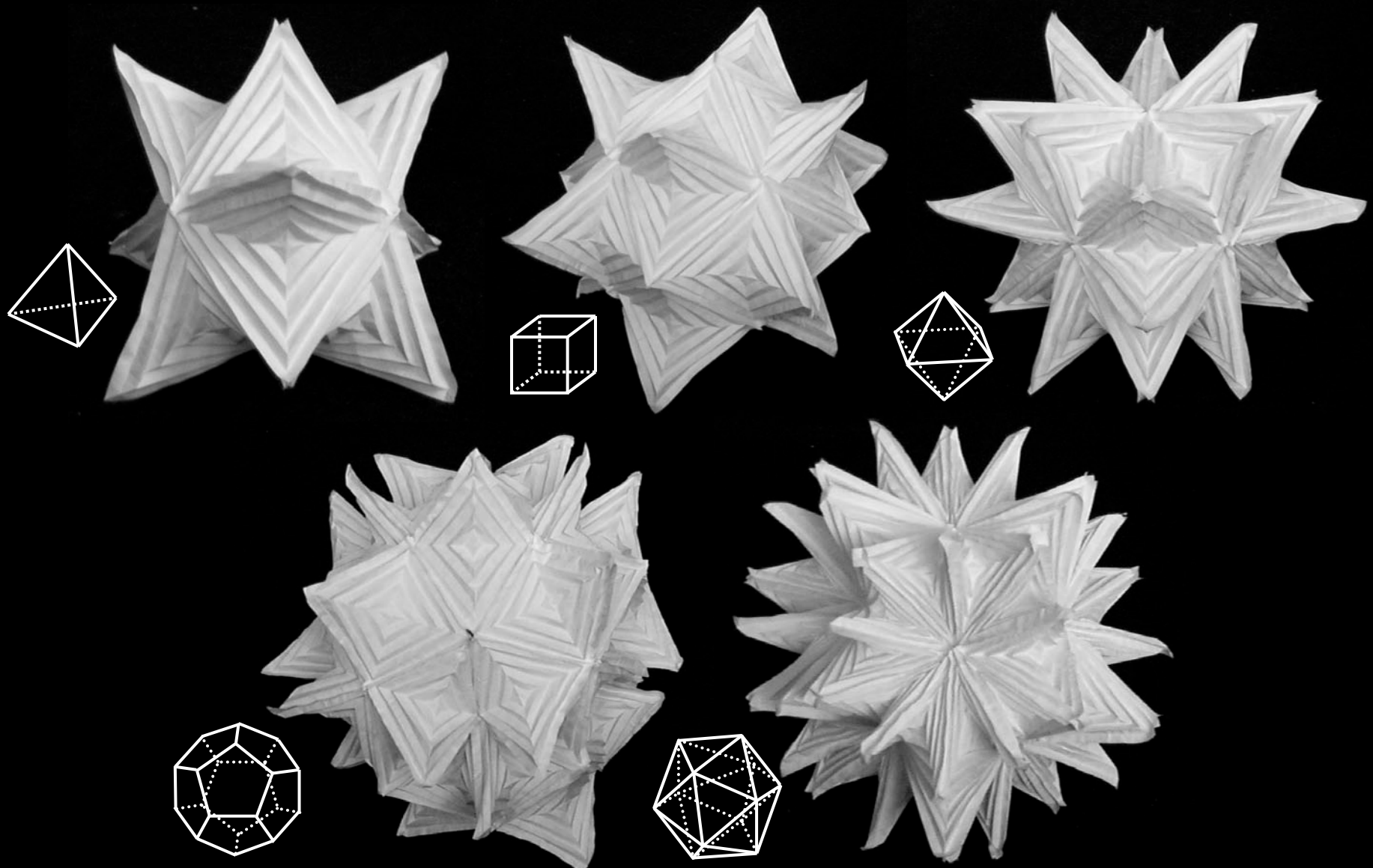
Courtesy of Erik Demaine, Martin Demaine, Jenna Fizel, and John Ochsendorf. Used with permission.

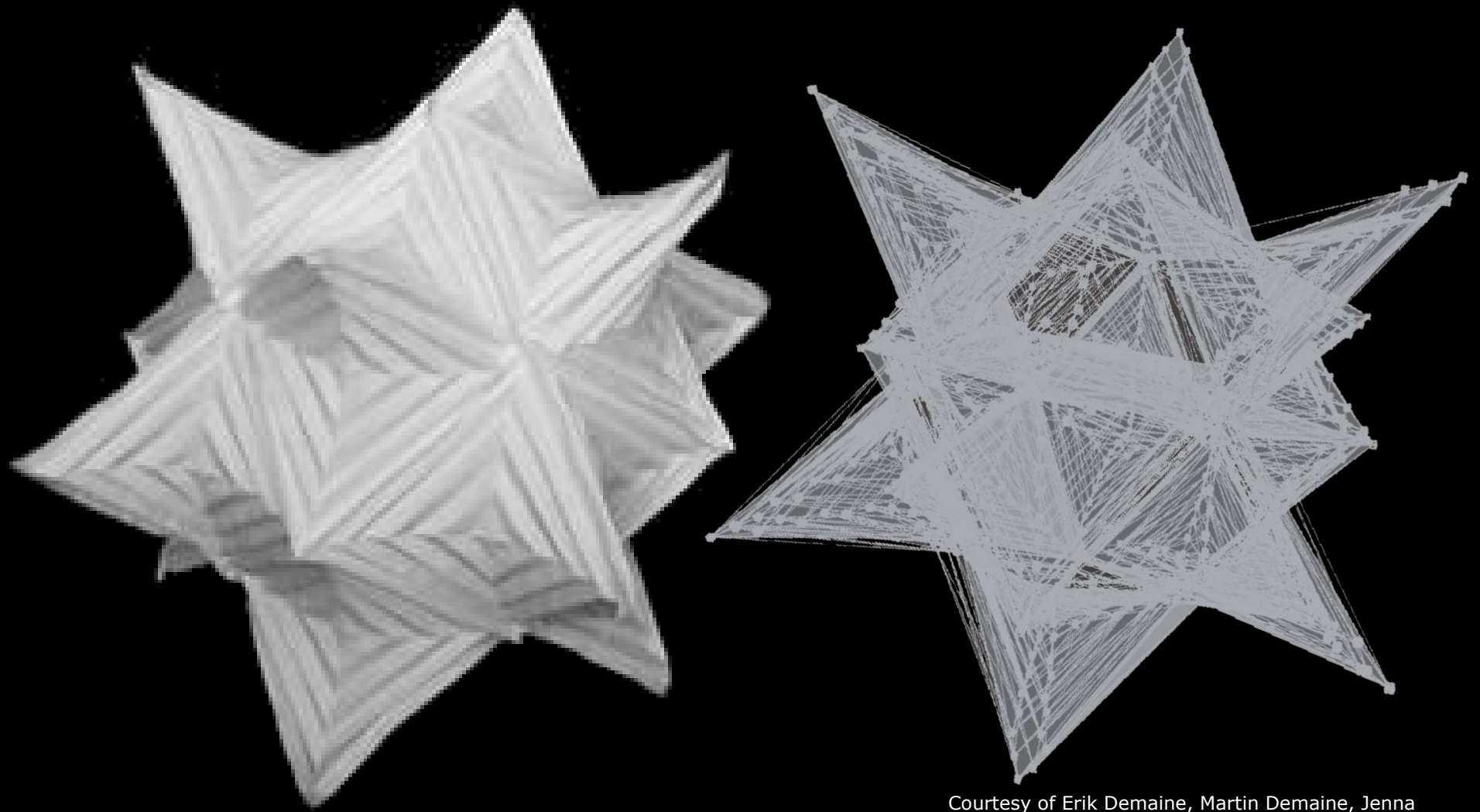


Courtesy of Erik Demaine, Martin Demaine, and Jenna Fizel. Used with permission.

Hyparhedra: Platonic Solids

[Demaine, Demaine, Lubiw 1999]





Courtesy of Erik Demaine, Martin Demaine, Jenna Fizel, and John Ochsendorf. Used with permission.

Virtual Origami

Demaine, Demaine, Fizel, Ochsendorf 2006

Peel Gallery, Houston

Nov. 2009

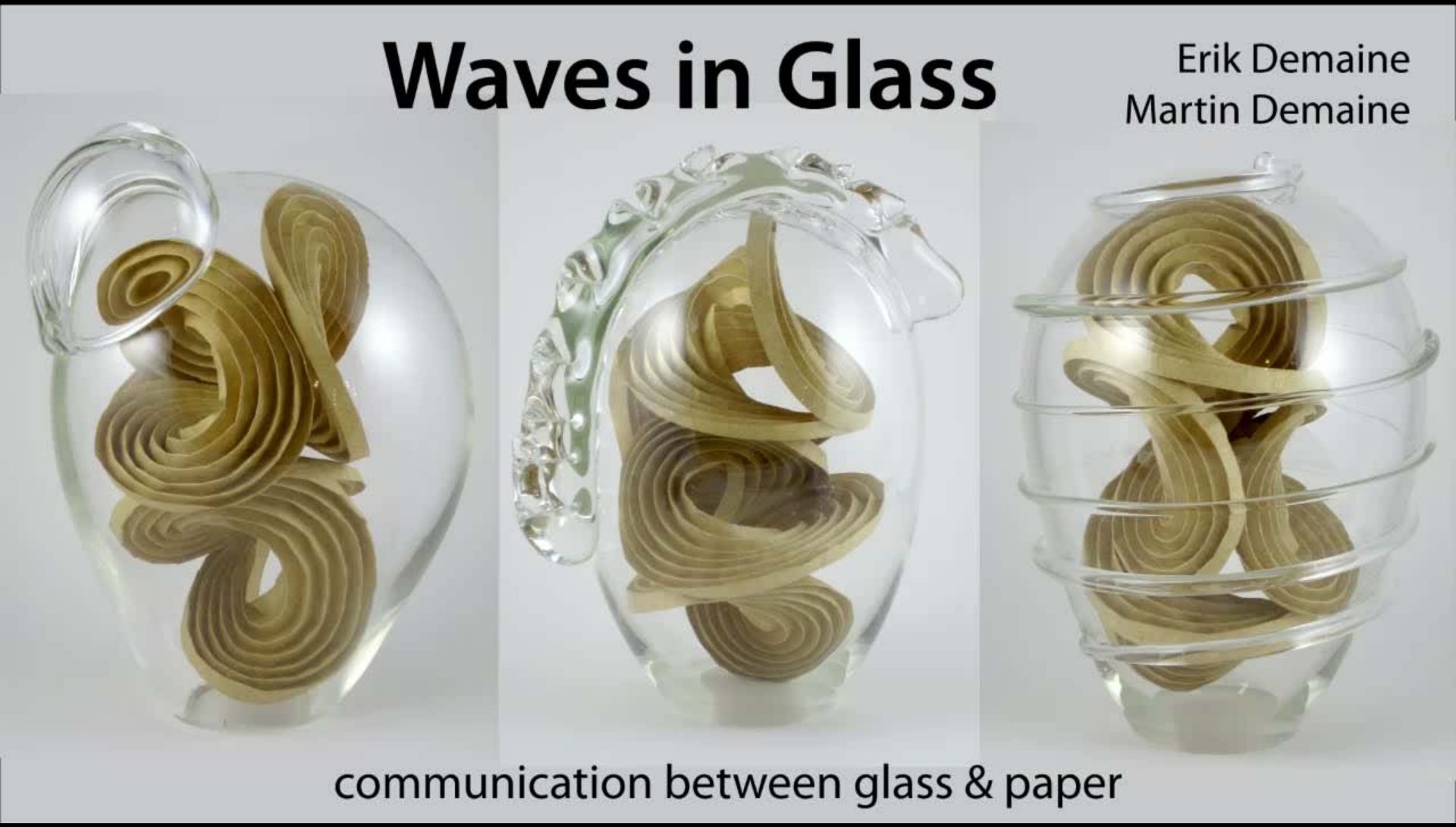
Demaine & Demaine 2009

Courtesy of Erik Demaine and Martin Demaine. Used with permission.
See also http://erikdemaine.org/curved/Limit/.

"Natural Cycles"
Erik & Martin Demaine

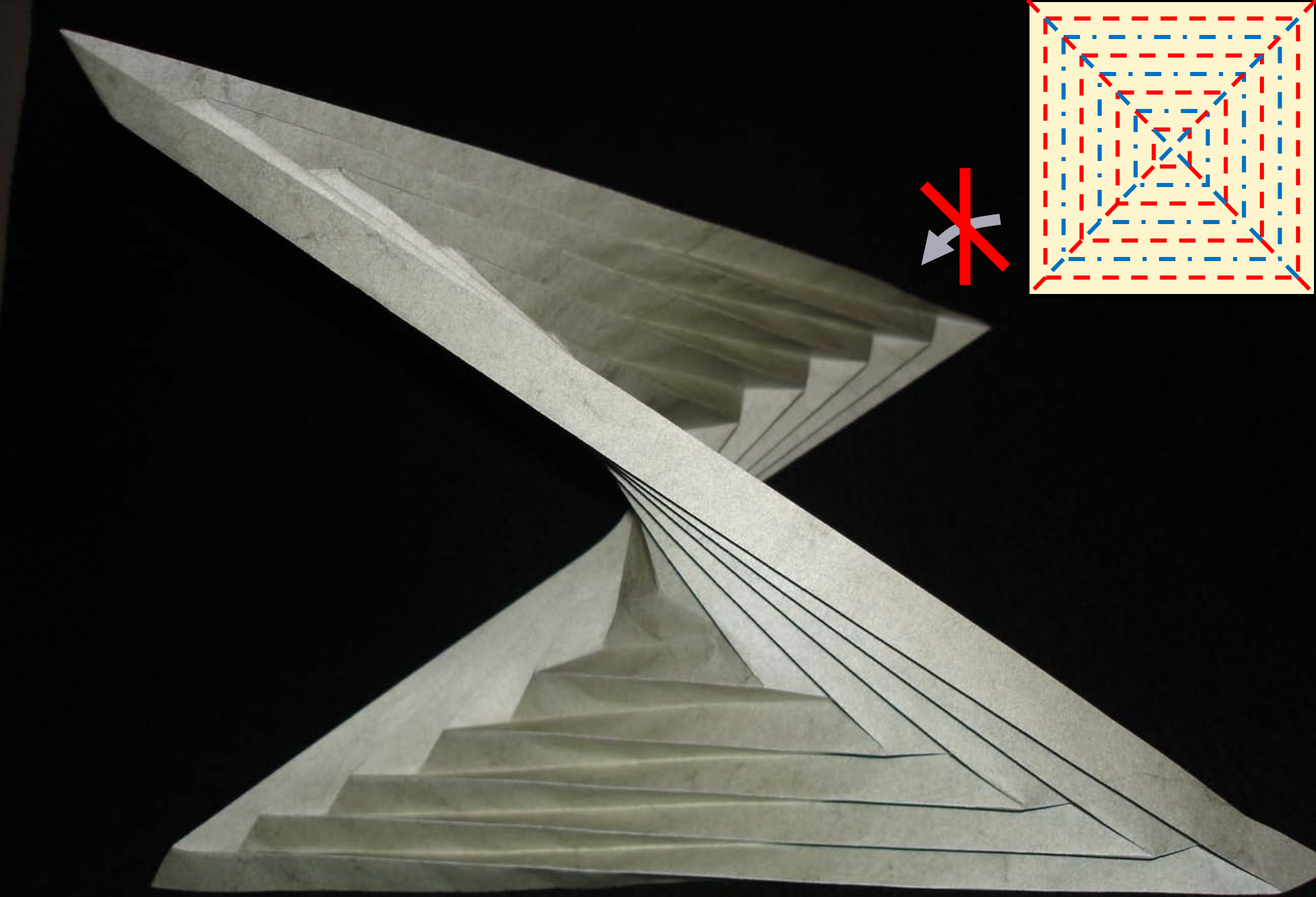
JMM Exhibition of Mathematical Art, San Francisco, 2010

See also http://erikdemaine.org/curved/NaturalCycles/.



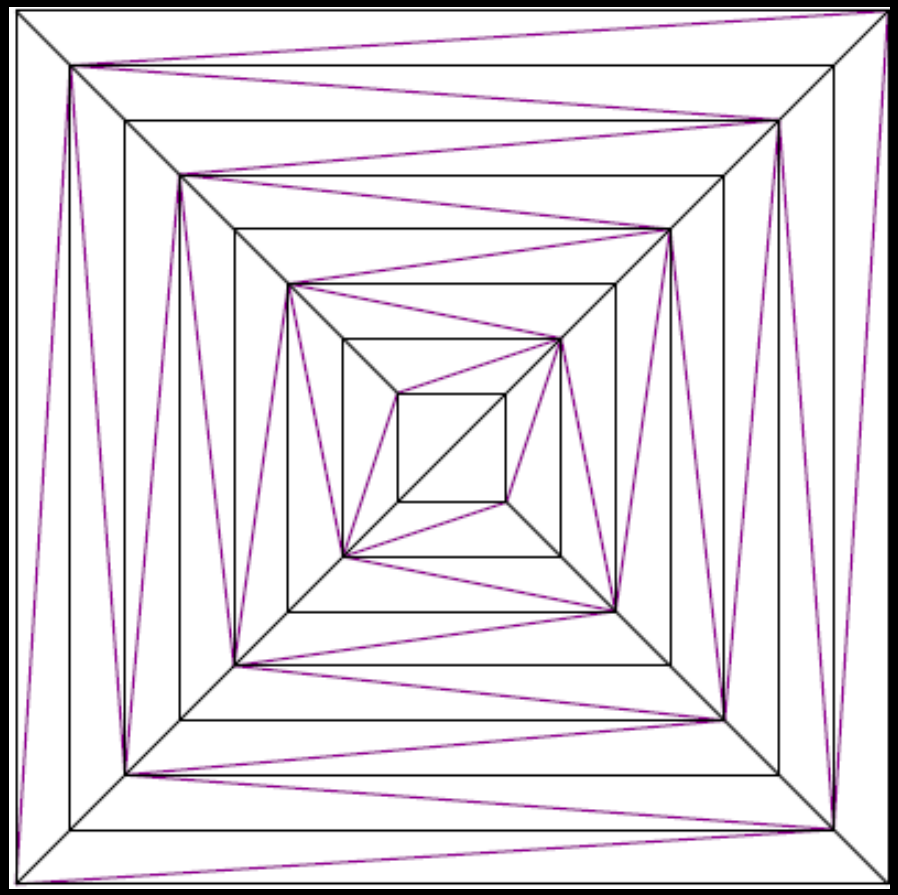
Courtesy of Erik Demaine and Martin Demaine. Used with permission.
See also http://erikdemaine.org/curved/BlindGlass/.

Demaine & Demaine 2010



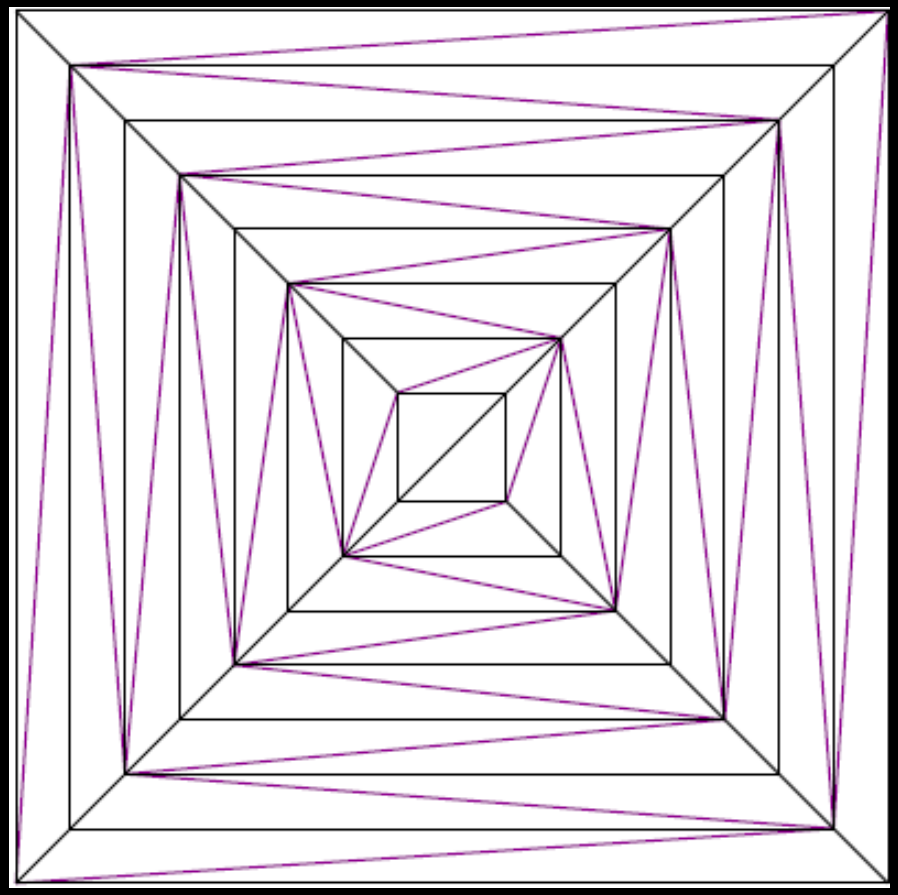
Courtesy of Jenna Fizel. Used with permission.

[Demaine, Demaine, Hart, Price, Tachi 2009/2010]



[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

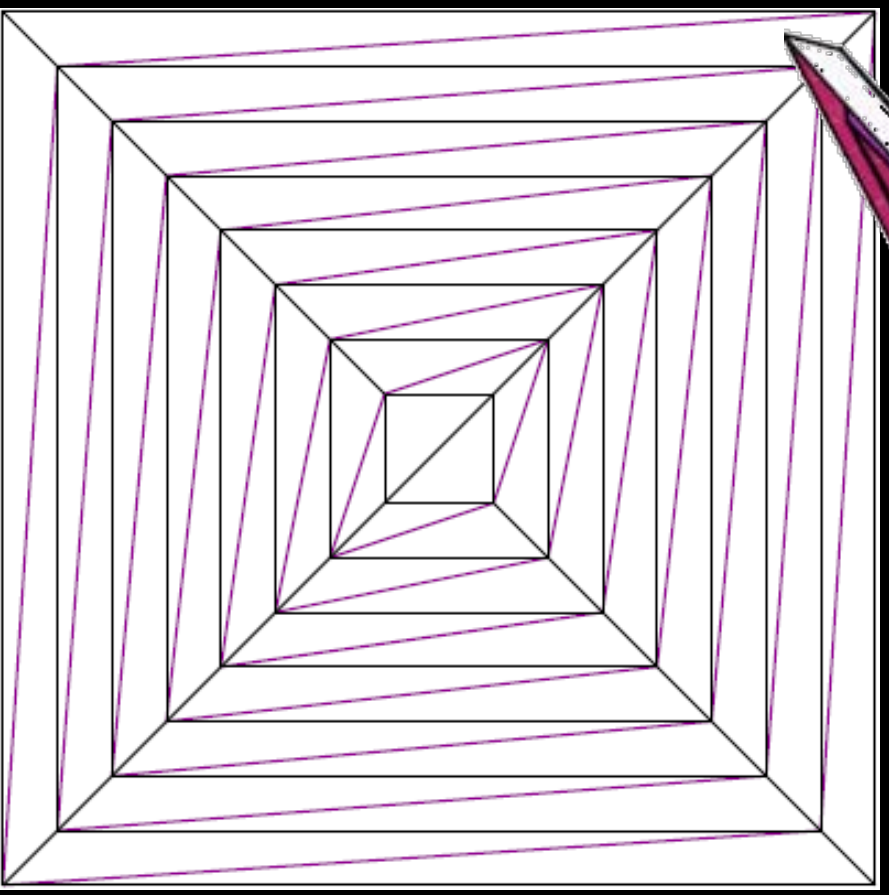
[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

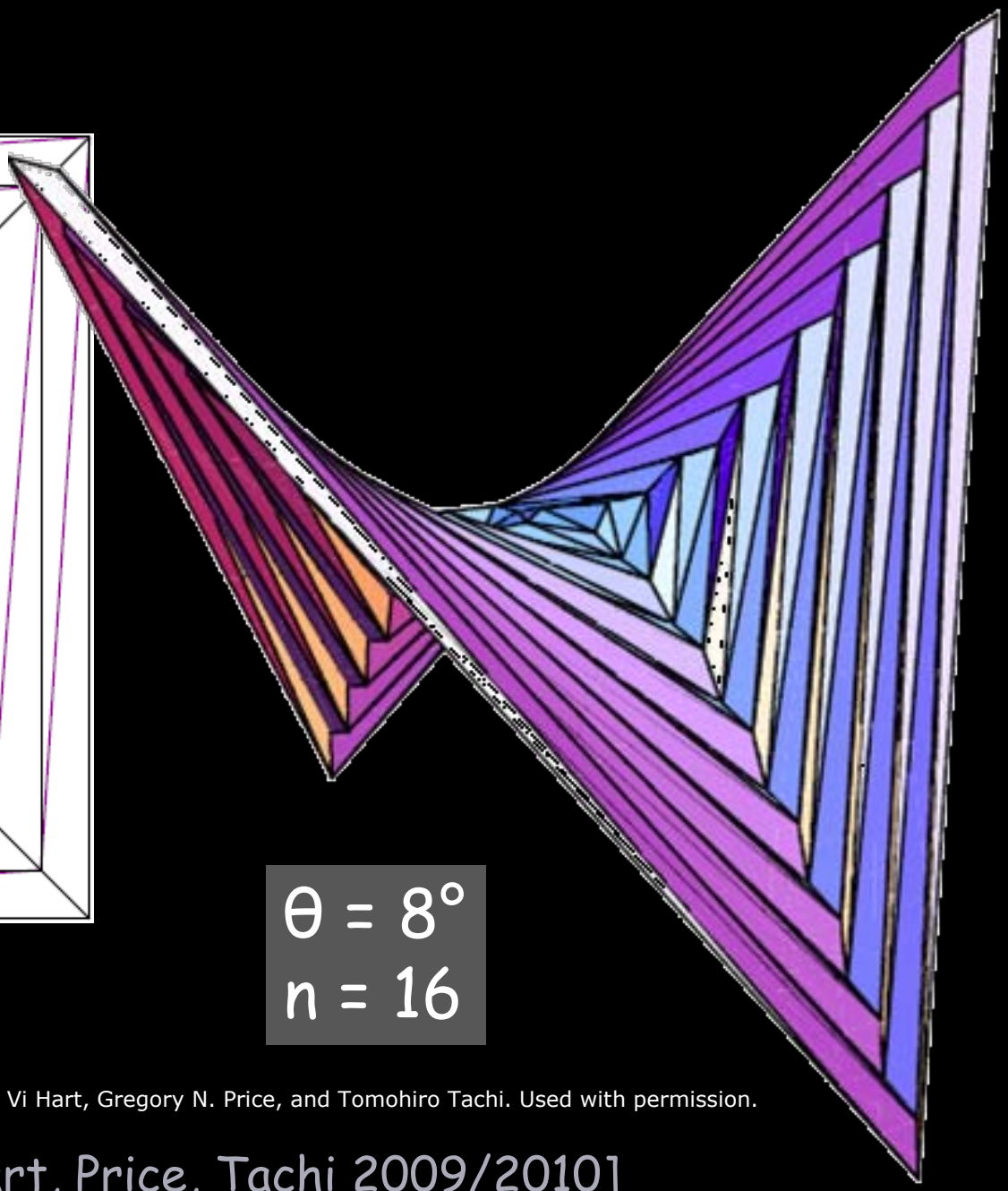


[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

Courtesy of Erik D. Demaine, Martin L. Demaine, Vi Hart, Gregory N. Price, and Tomohiro Tachi. Used with permission.

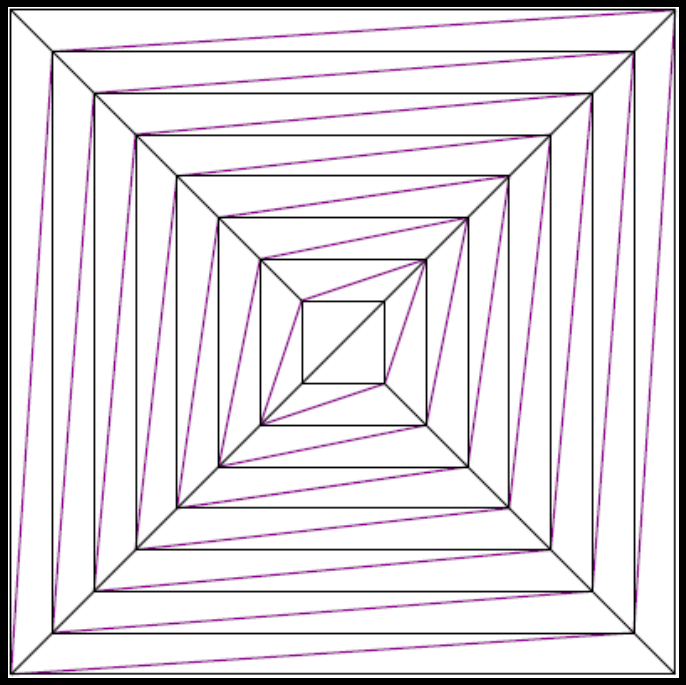
digits of precision	16	32	64	128	256	512	1024	2048
n for $\theta = 1°$ alt.	3	6	12	24	43	79	≥ 100	
n for $\theta = 45°$ alt.	3	5	10	18	32	58	≥ 100	
n for $\theta = 76°$ alt.	2	5	9	16	29	53	95	≥ 100





θ = 8°
n = 16

[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

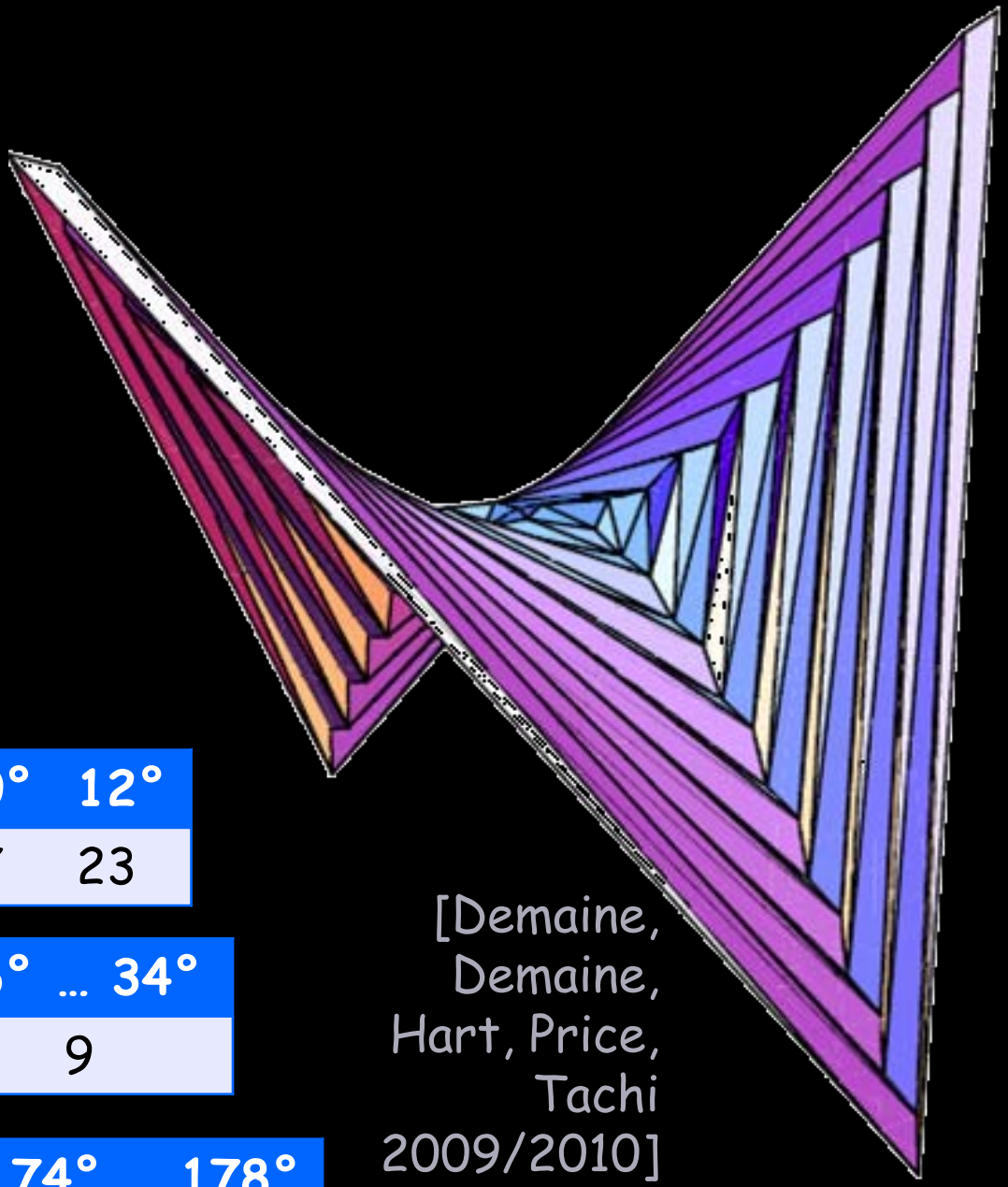


Courtesy of Erik D. Demaine, Martin L. Demaine, Vi Hart, Gregory N. Price, and Tomohiro Tachi. Used with permission.

$\theta =$	$2°$	$4°$	$6°$	$8°$	$10°$	$12°$
$n \leq$	133	67	45	33	27	23

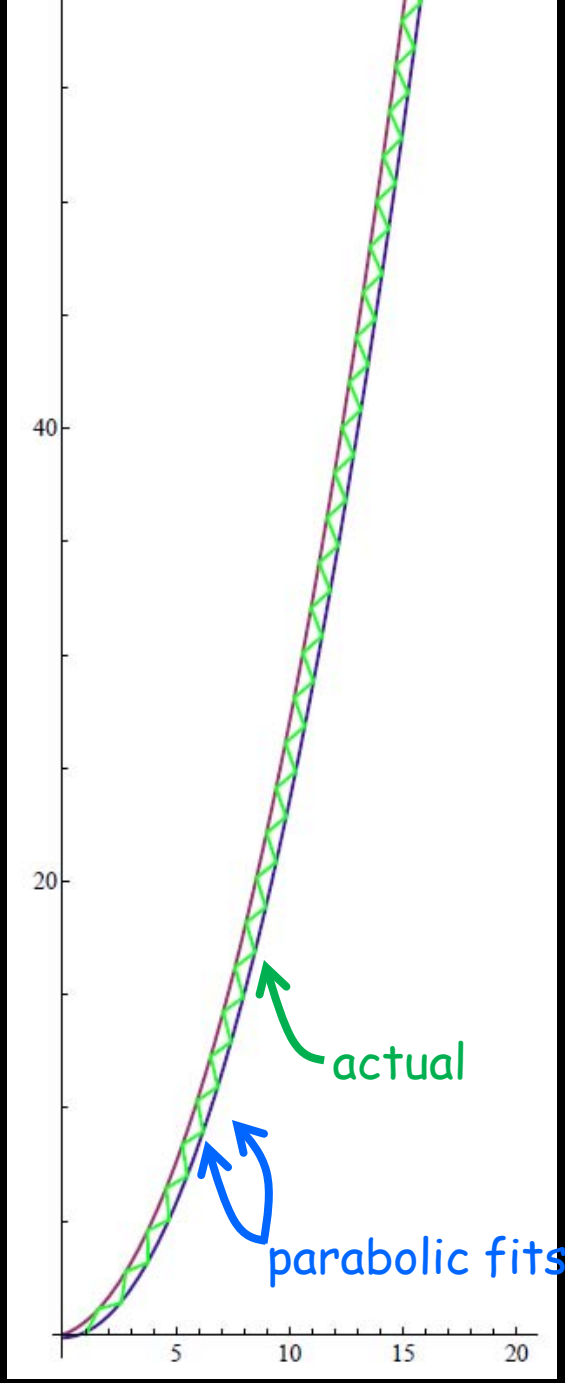
$\theta =$	$18°$	$20°$	$22°$	$24°$	$26°$	…	$34°$
$n \leq$	15	13	13	11		9	

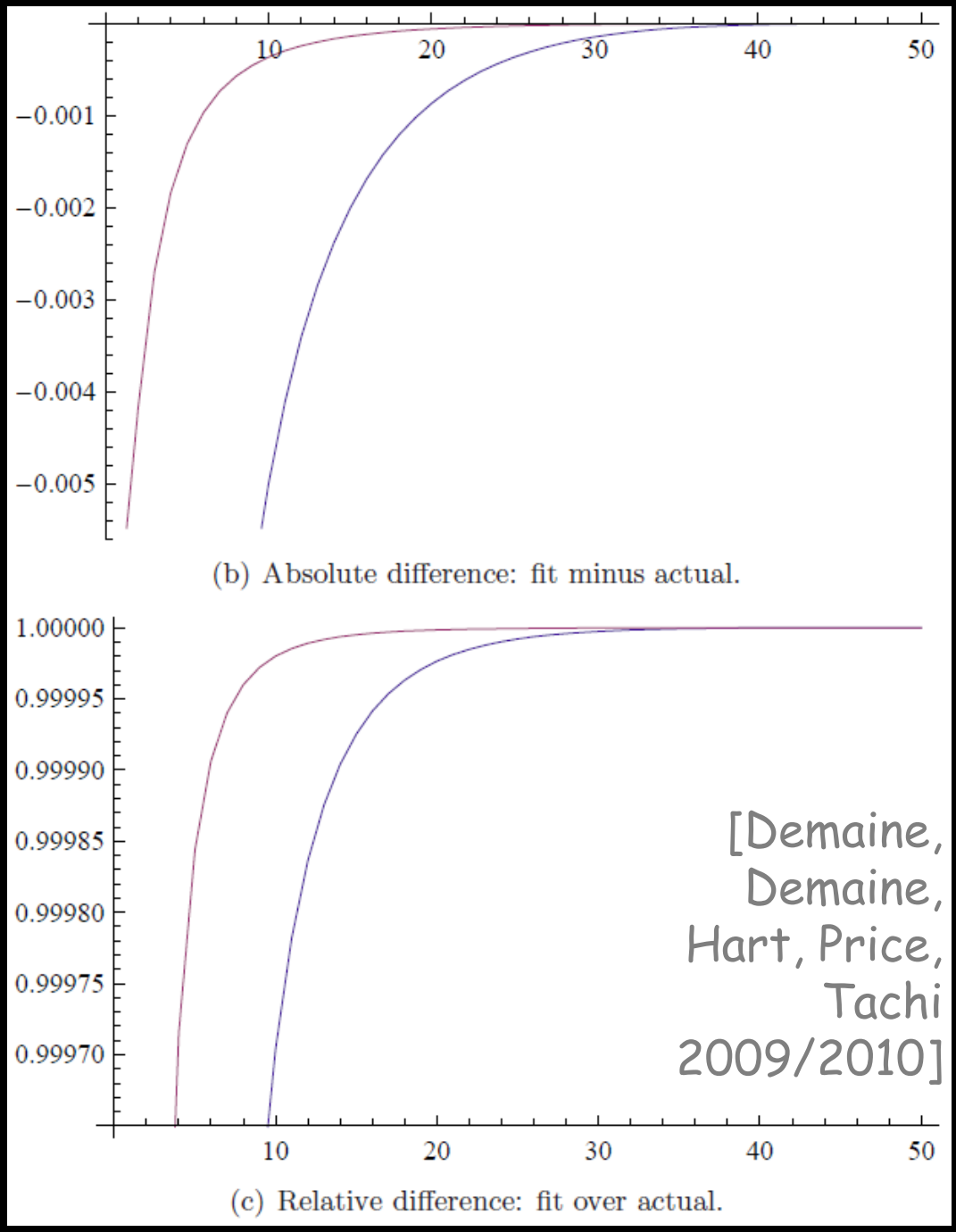
$\theta =$	$36°$	…	$46°$	$48°$	…	$72°$	$74°$	…	$178°$
$n \leq$	7	…	7	5	…	5	3	…	3



[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

Courtesy of Erik D. Demaine, Martin L. Demaine, Vi Hart, Gregory N. Price, and Tomohiro Tachi. Used with permission.

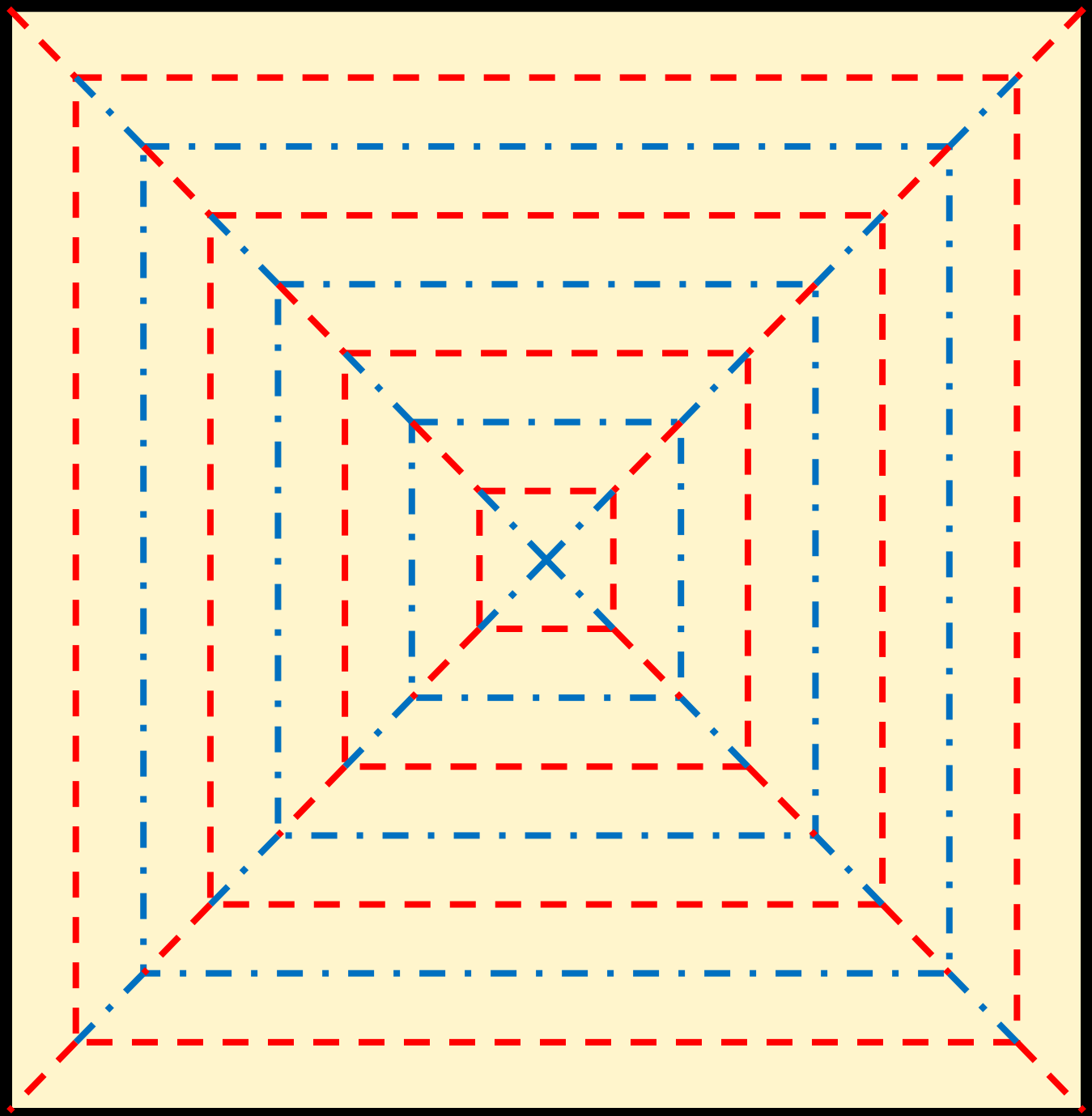




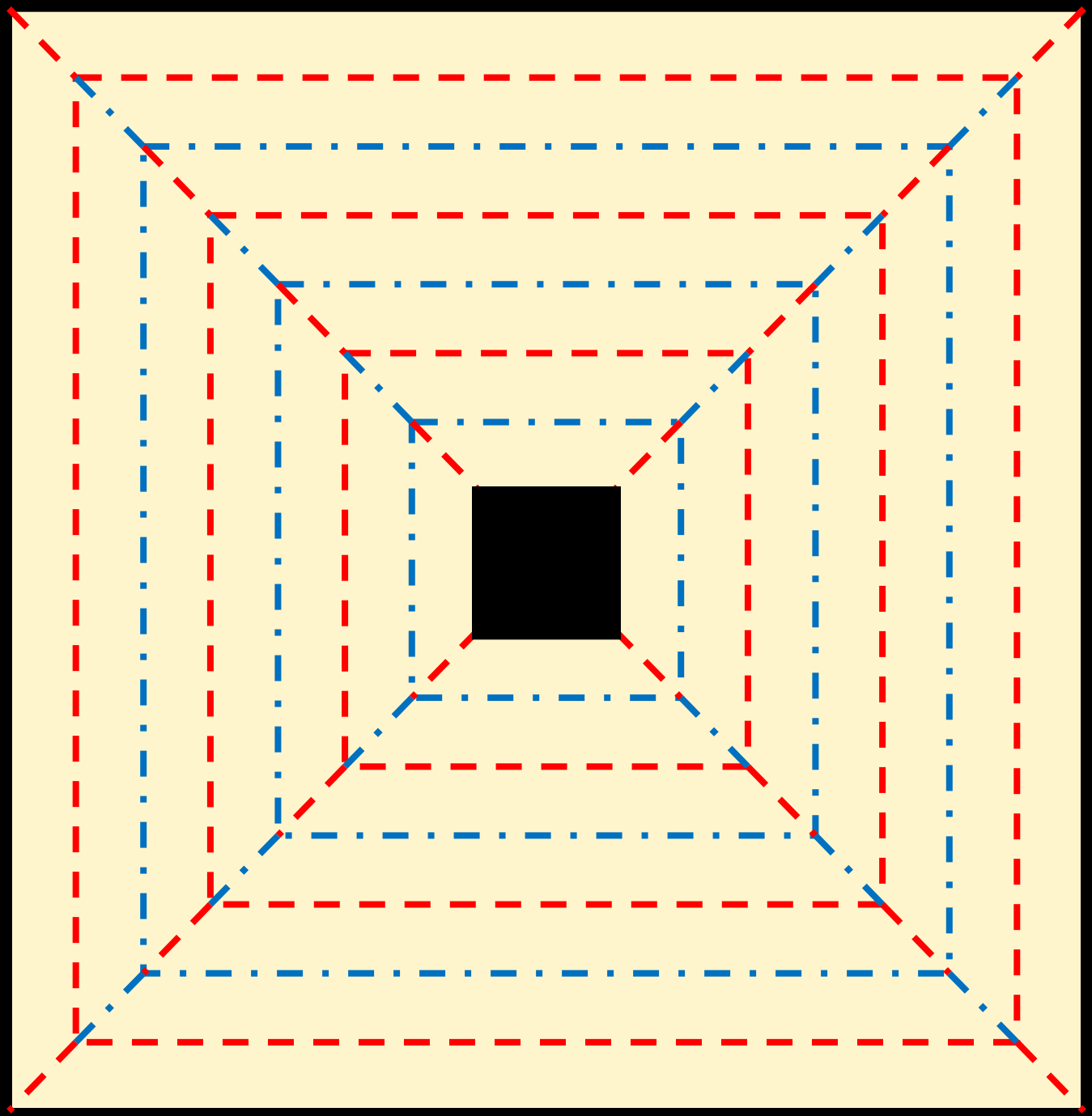
[Demaine, Demaine, Hart, Price, Tachi 2009/2010]


Image removed due to copyright restrictions.
Refer to: http://en.wikipedia.org/wiki/File:Minimal_surface_curvature_planes-en.svg

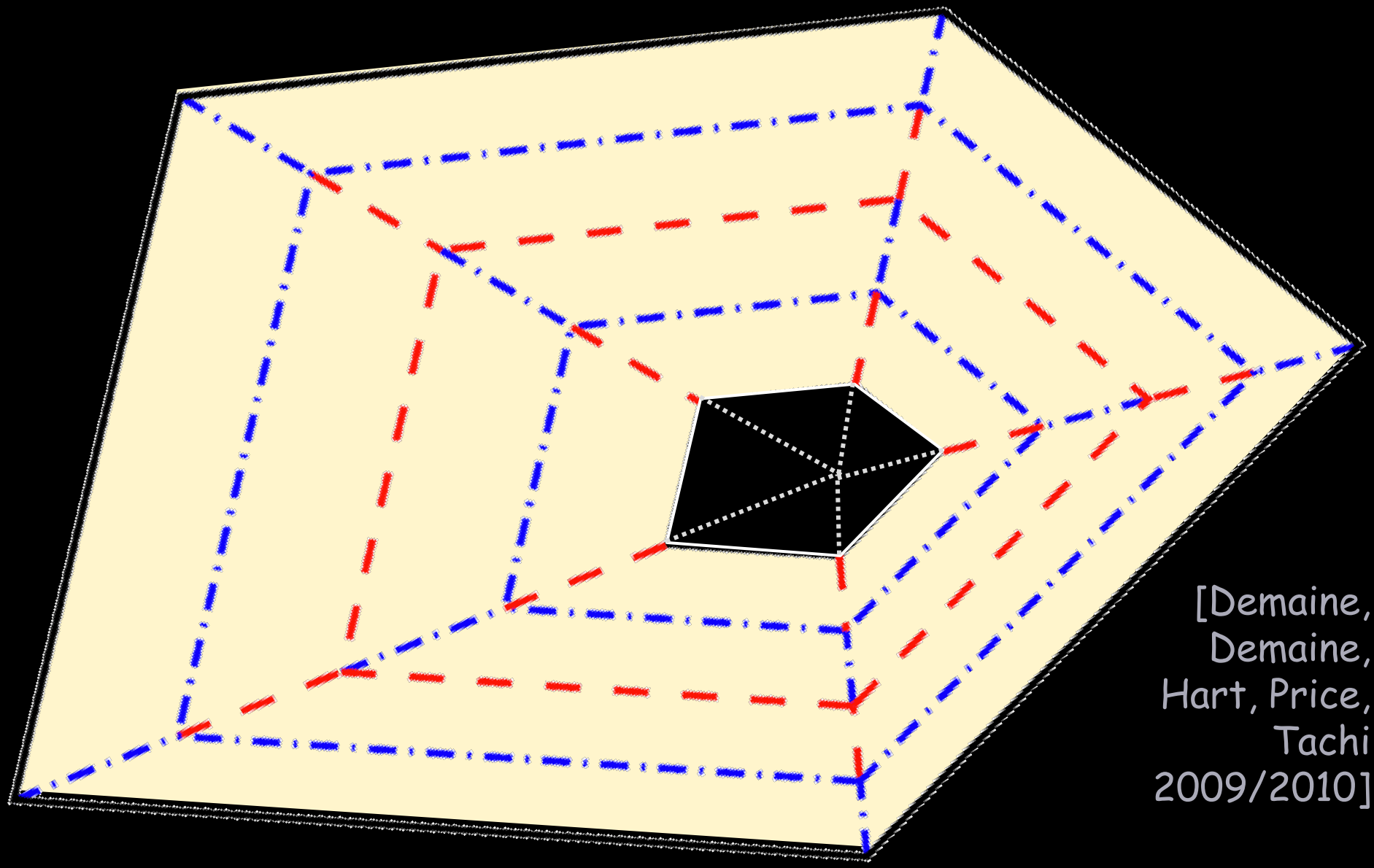
Image removed due to copyright restrictions. Refer to: http://en.wikipedia.org/wiki/File:Ruled_hyperboloid.jpg and http://en.wikipedia.org/wiki/File:Helixtgtdev.png.



[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

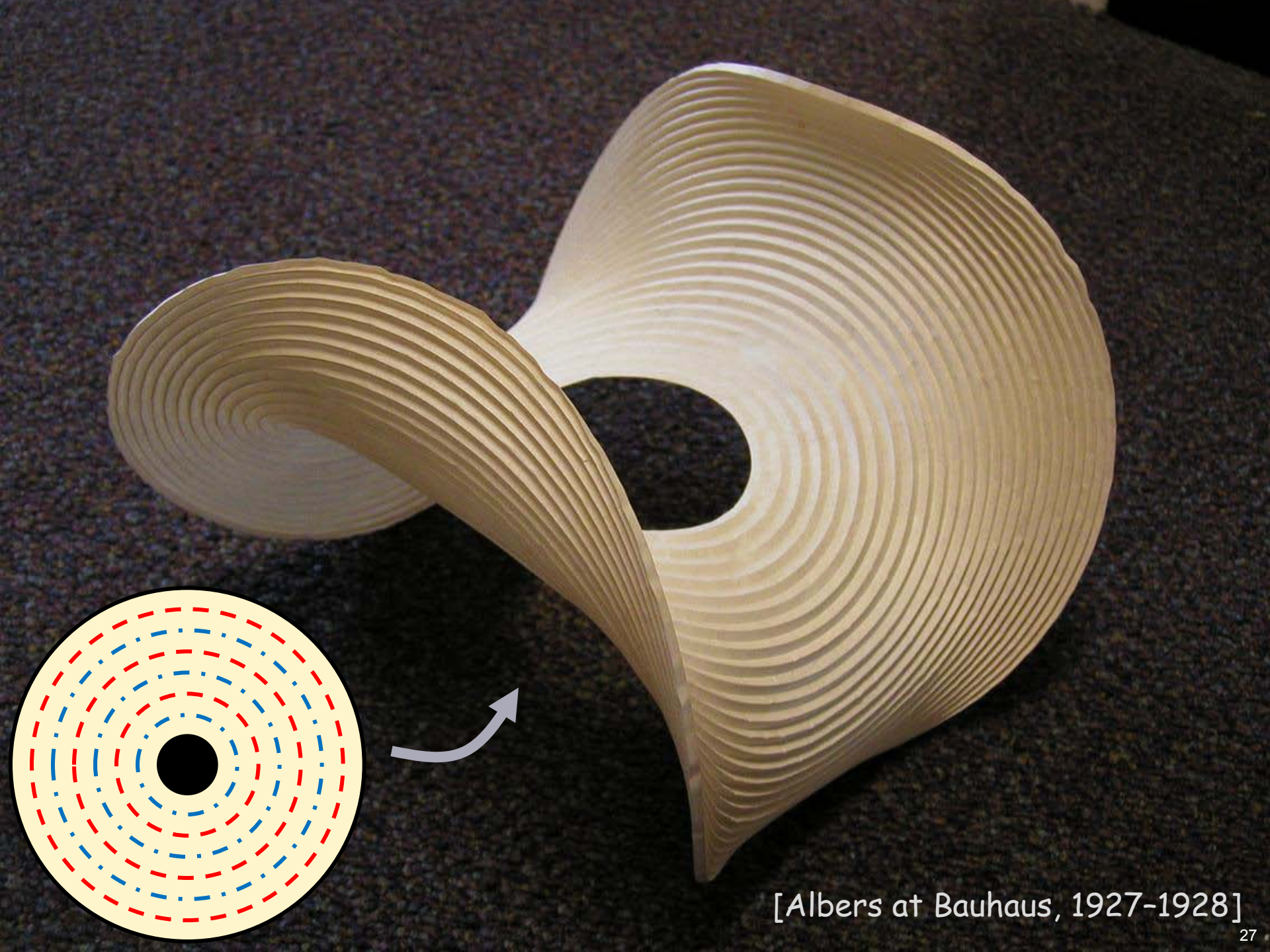


[Demaine, Demaine, Hart, Price, Tachi 2009/2010]



[Demaine, Demaine, Hart, Price, Tachi 2009/2010]

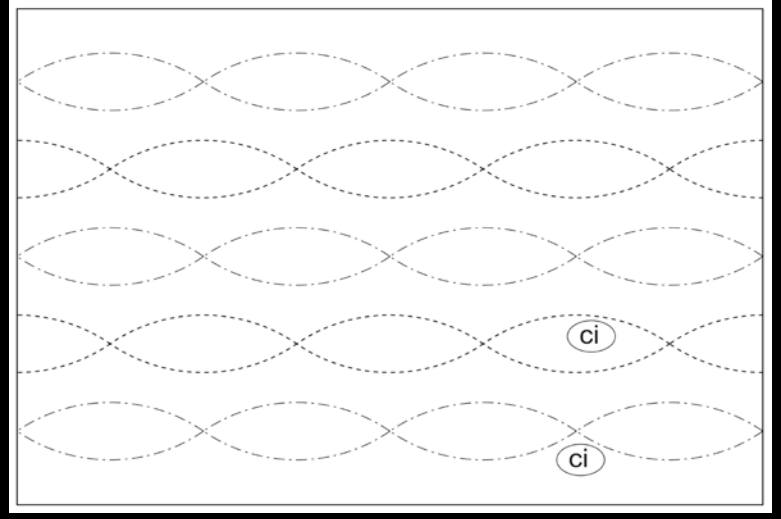
Photo courtesy of themacinator on Flickr. Used with permission. Under CC-BY.

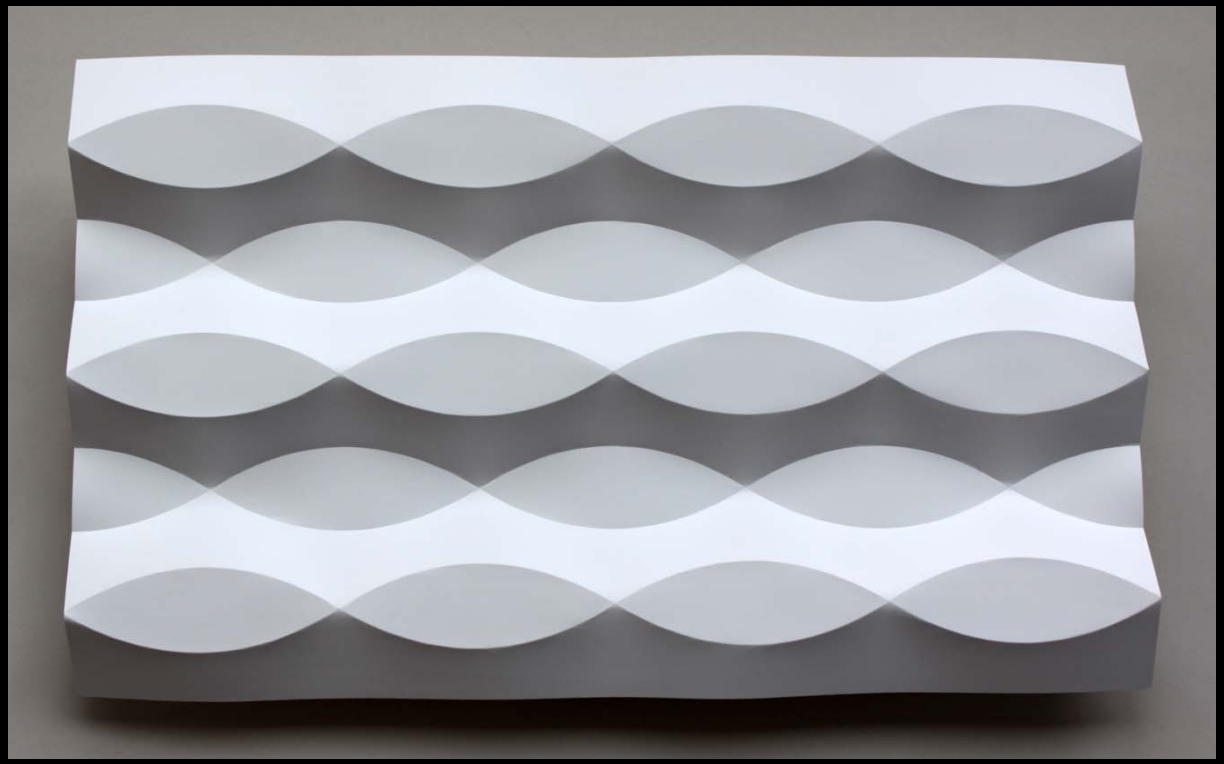

[Albers at Bauhaus, 1927-1928]

Huffman Family (May 2010)

Tessellations

circles



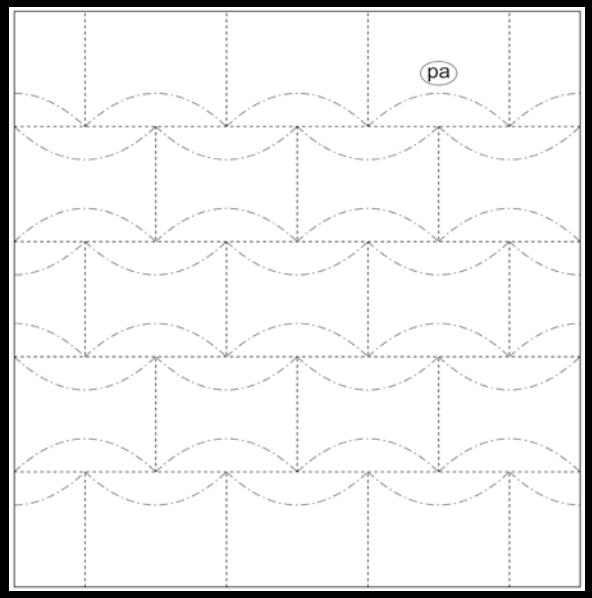


Courtesy of Erik D. Demaine, Martin L. Demaine, and Duks Koschitz. Used with permission.

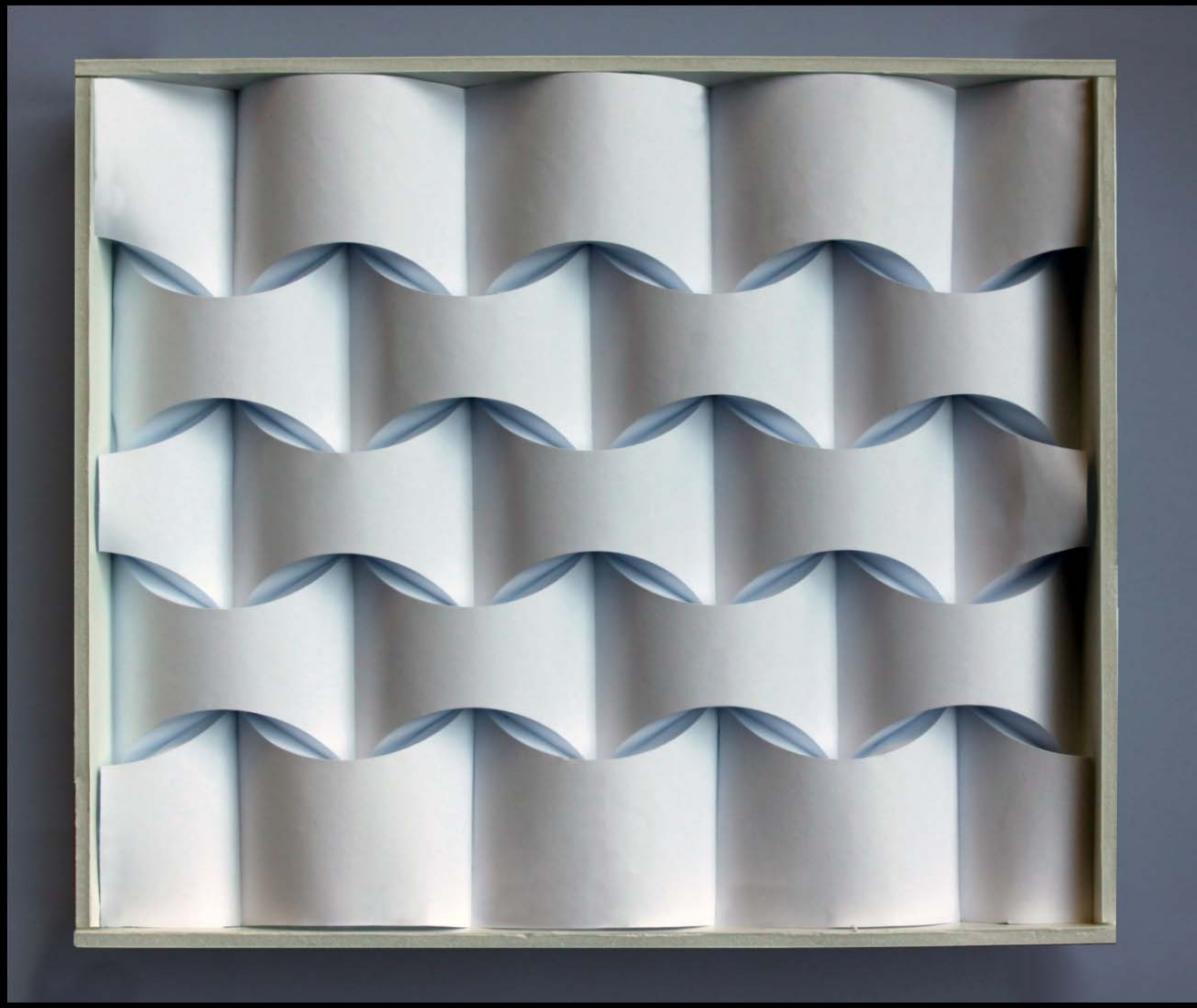
design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

Tessellations

"Arches"



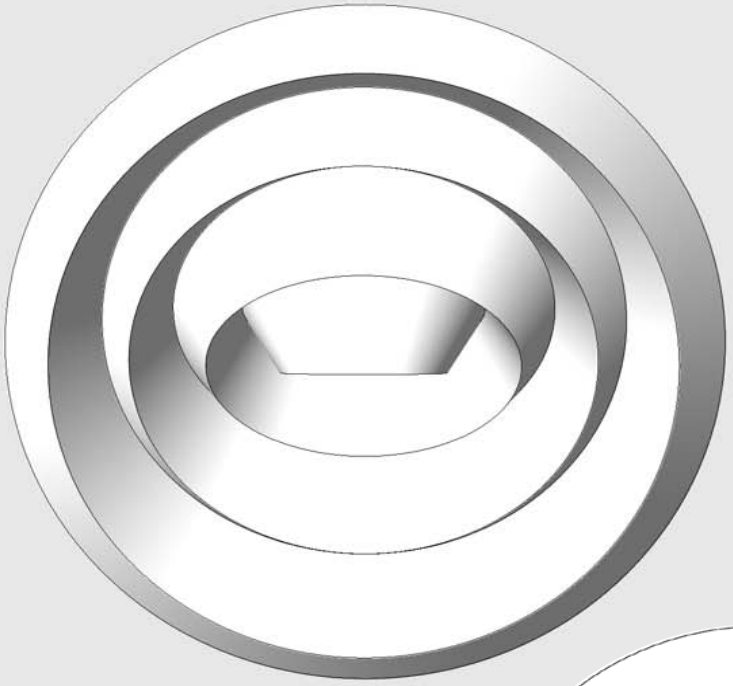
parabolas
& lines

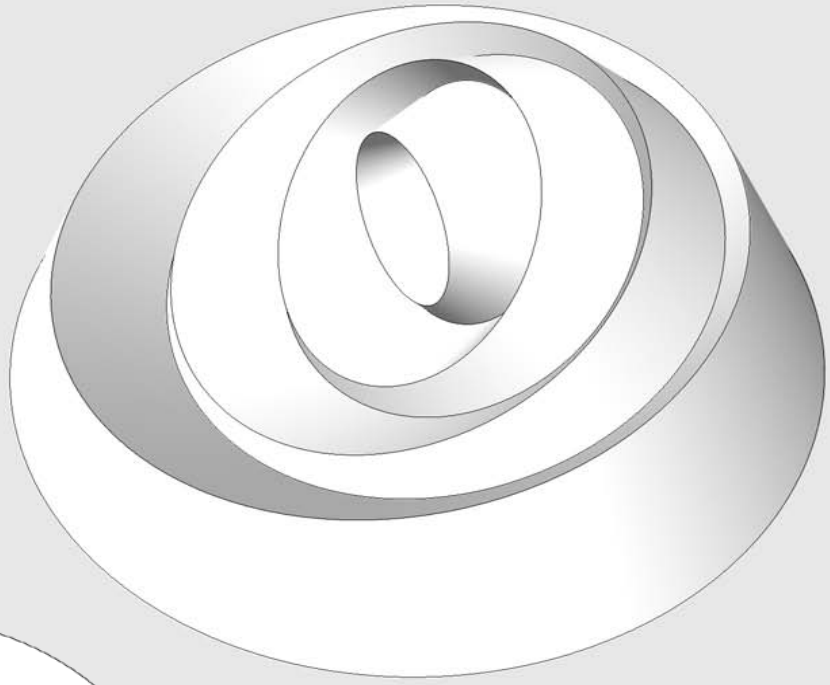


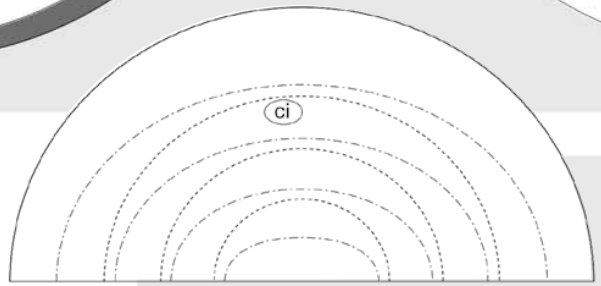
Courtesy of Erik D. Demaine, Martin L. Demaine, and Duks Koschitz. Used with permission.

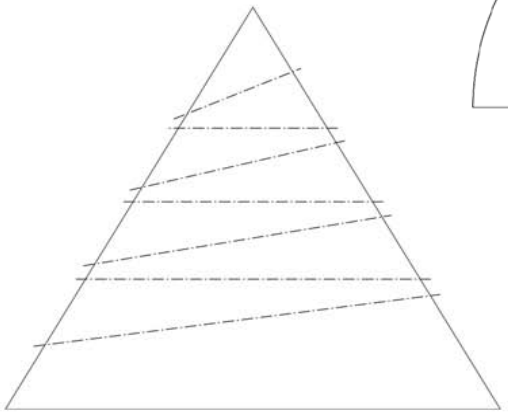
design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

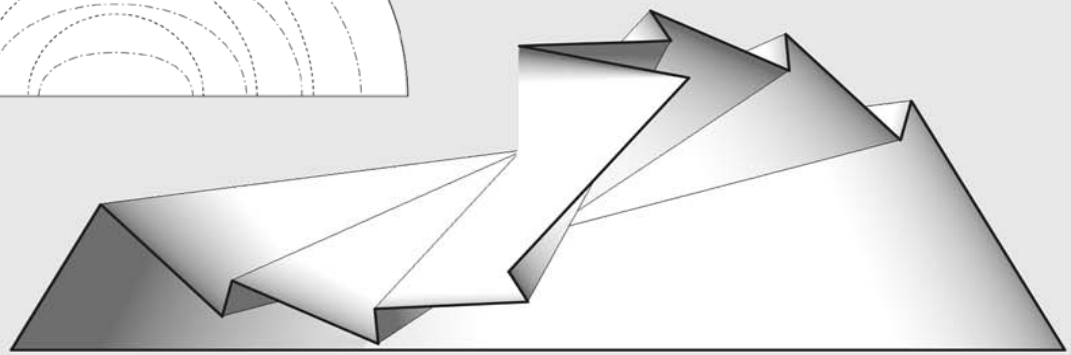
"Cone reflected 7 times"









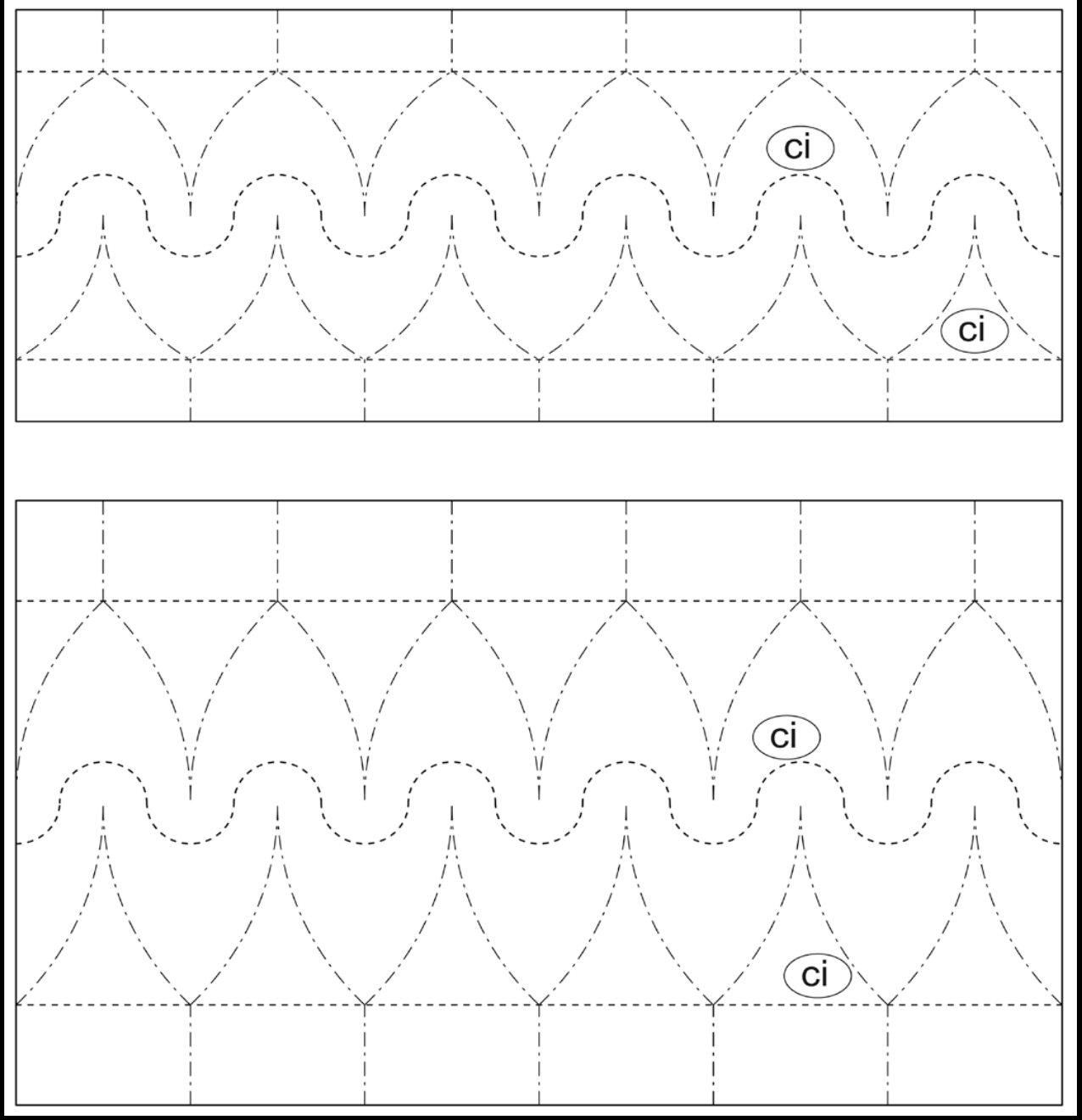


design by David Huffman; virtual model by Demaine, Demaine, Koschitz 2010

"Hexagonal column with cusps"

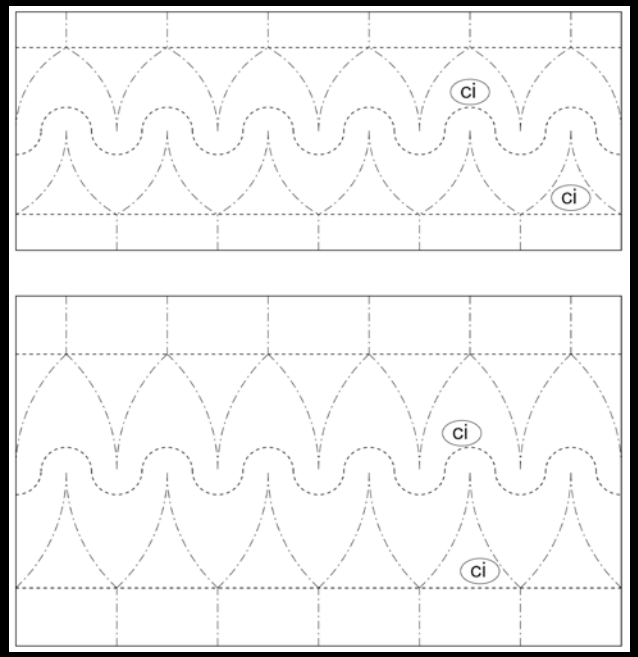
(two variations)

circles & lines



design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

"Hexagonal column with cusps"

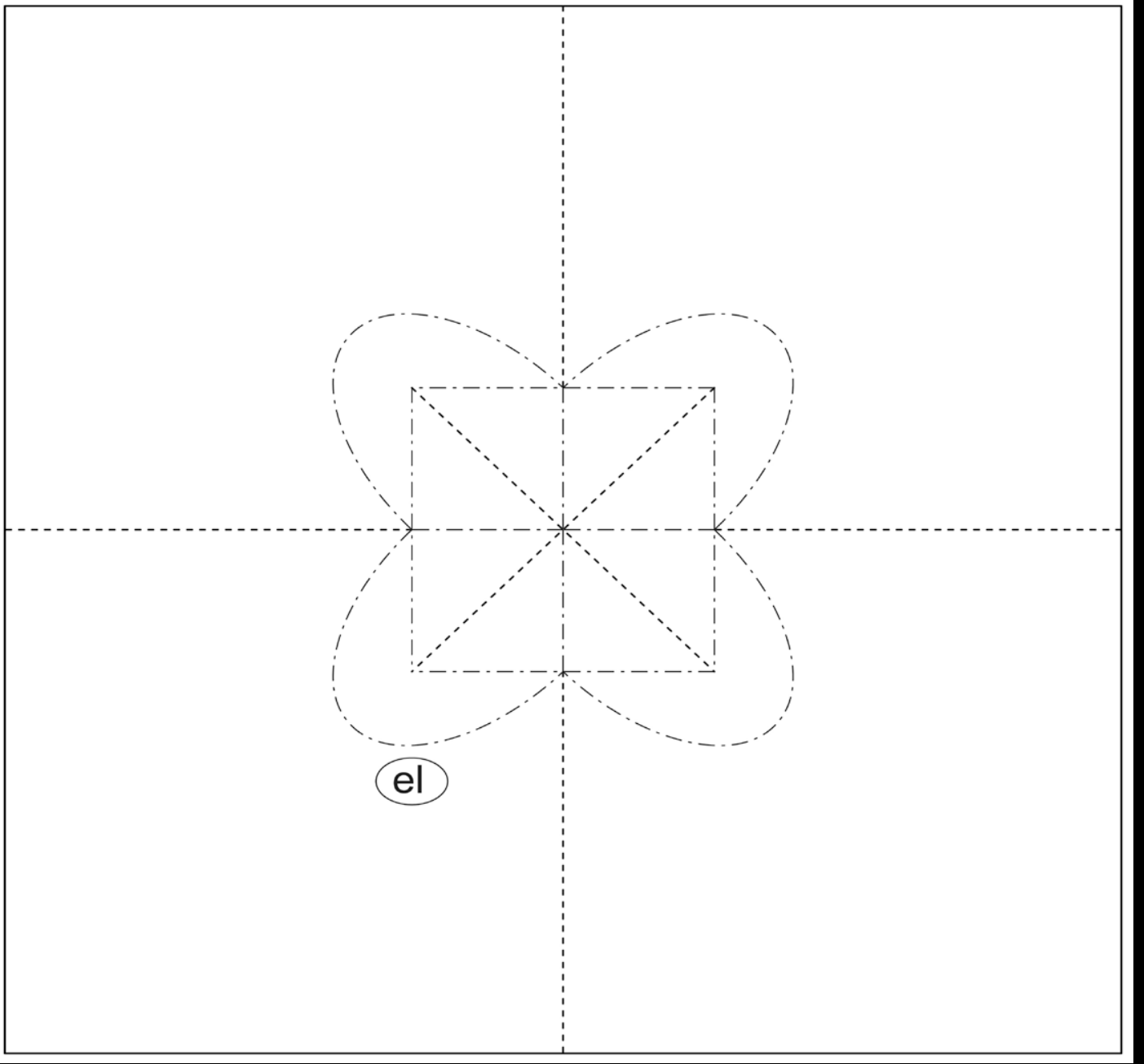


circles & lines

Courtesy of Erik D. Demaine, Martin L. Demaine, and Duks Koschitz. Used with permission.

design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

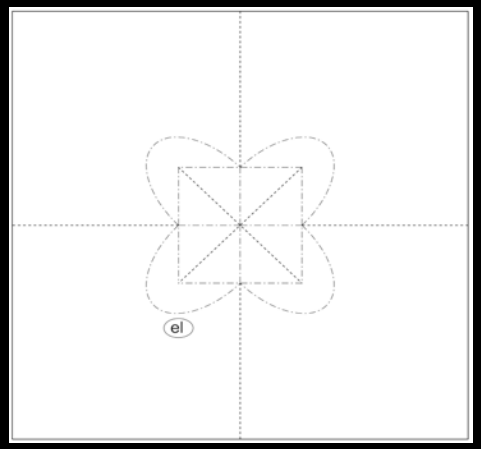
"4-lobed cloverleaf"



ellipses & lines

design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

"4-lobed cloverleaf"



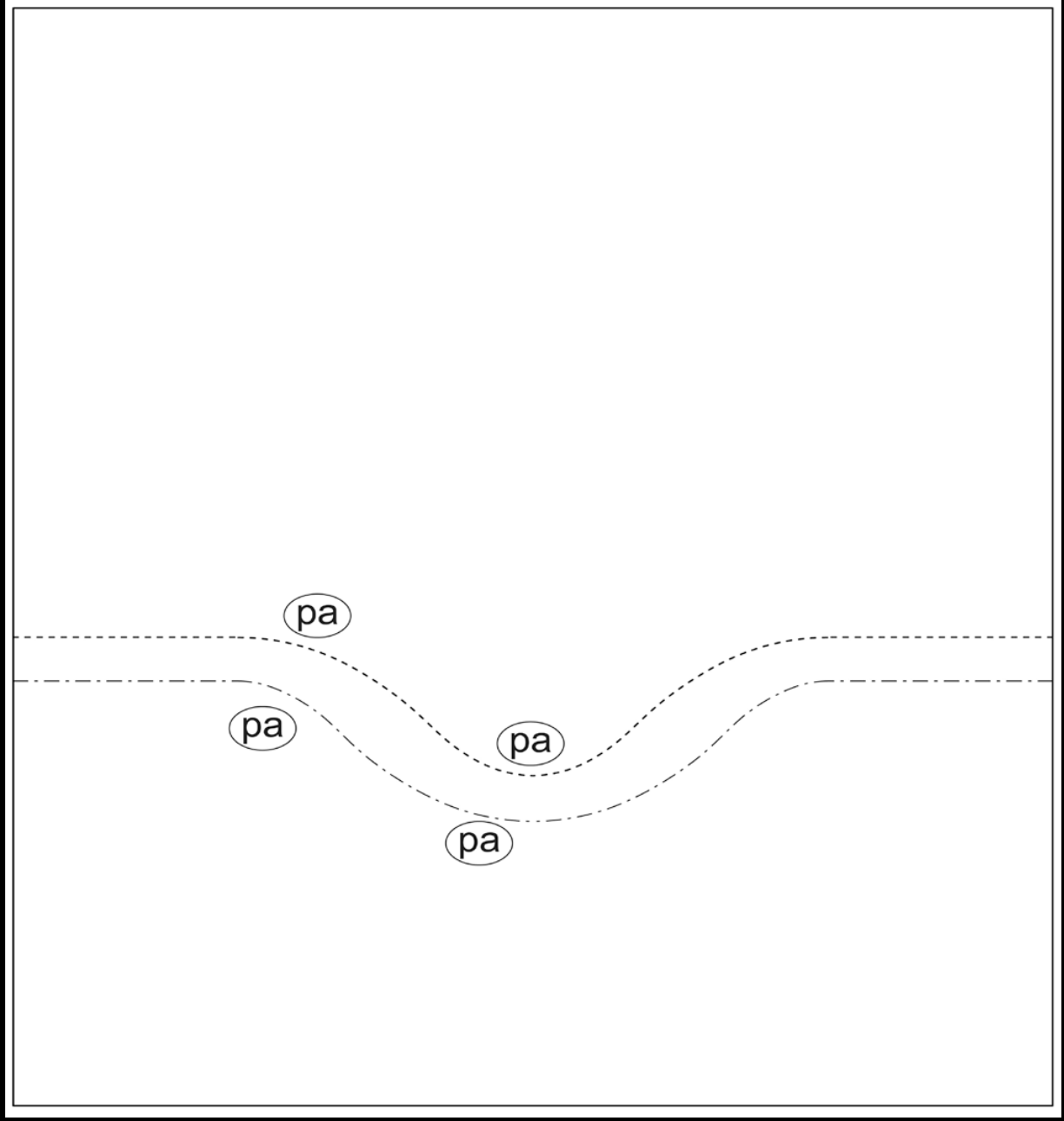
ellipses & lines

Courtesy of Erik D. Demaine, Martin L. Demaine, and Duks Koschitz. Used with permission.

design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

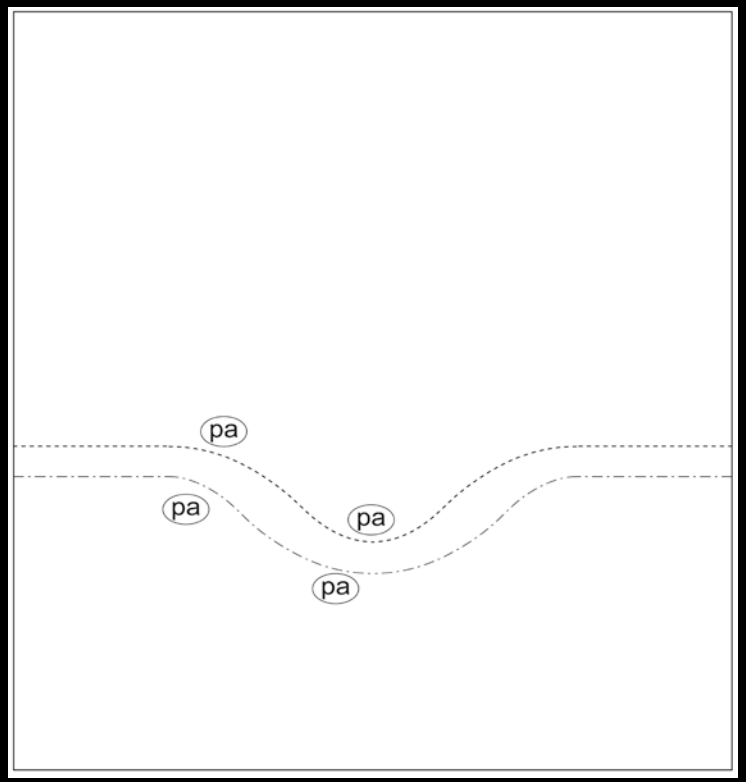
"One column"

parabolas
& lines

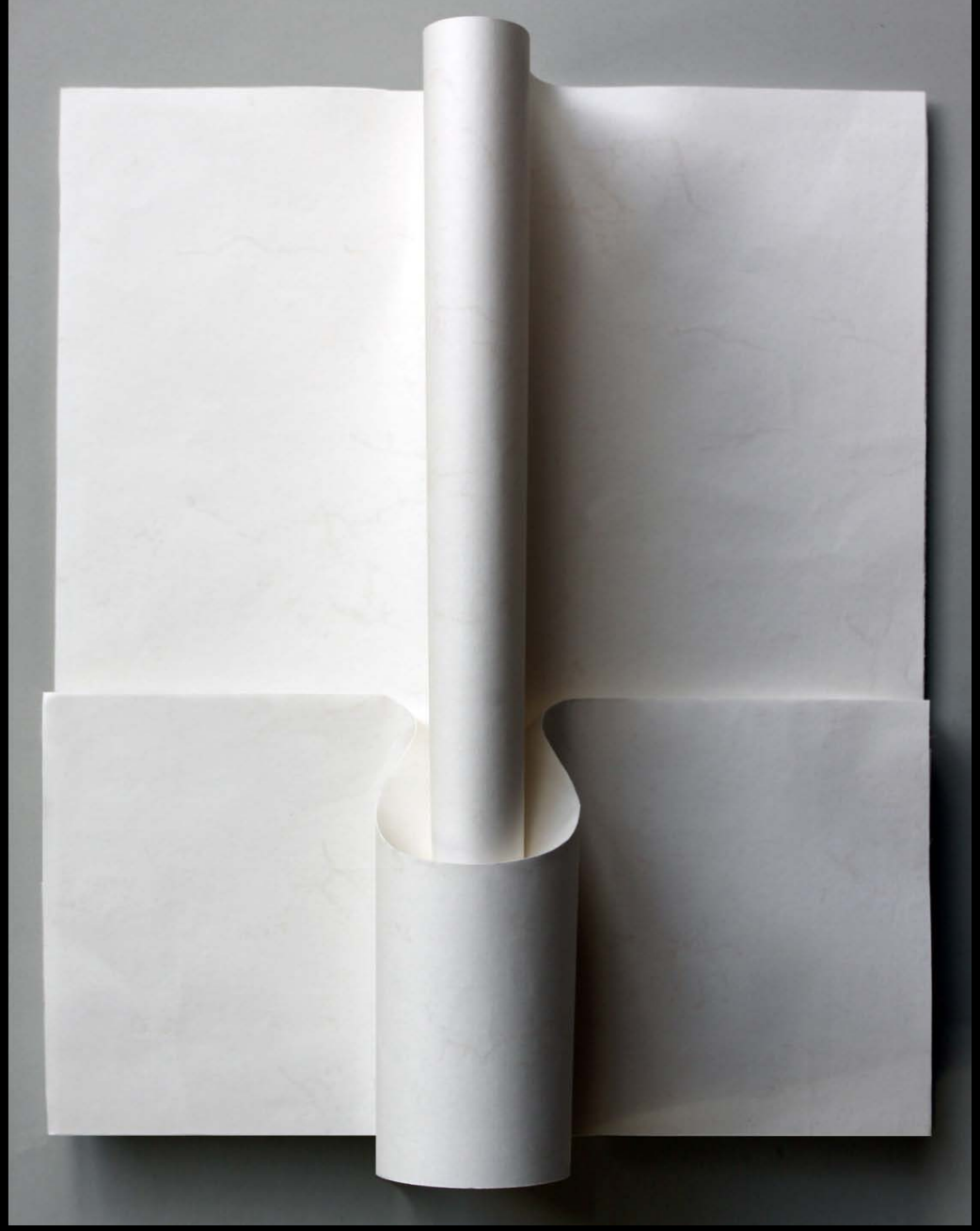


design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

"One column"



parabolas
& lines



Courtesy of Erik D. Demaine, Martin L. Demaine, and Duks Koschitz. Used with permission.

design by David Huffman; recreated folding by Demaine, Demaine, Koschitz 2010

Huffman Family (May 2010)

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