MATH 122
(Day 5)

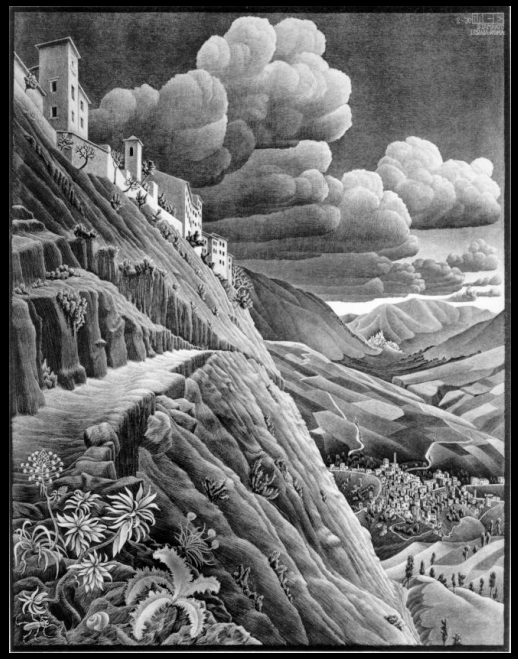
Escher's Tessellations

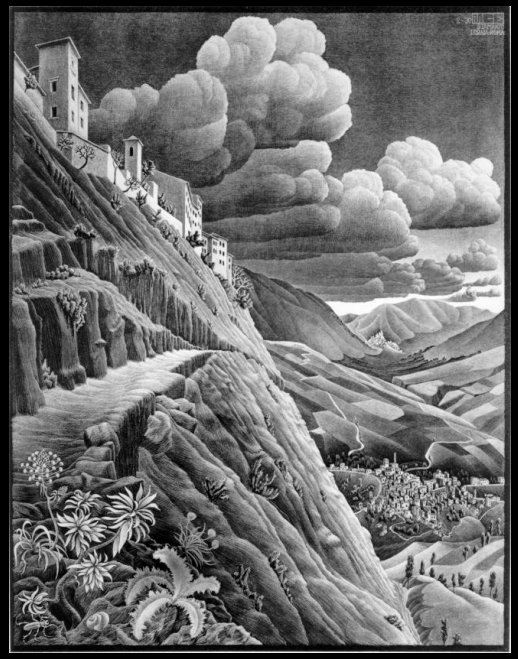
Richard Hammack

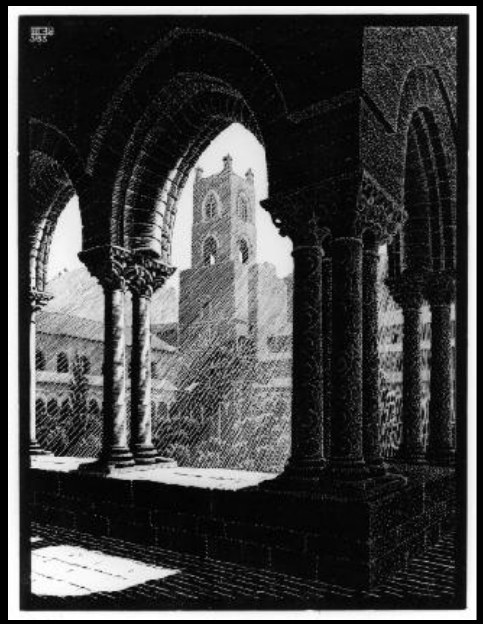
http://www.people.vcu.edu/∼rhammack/Math122/

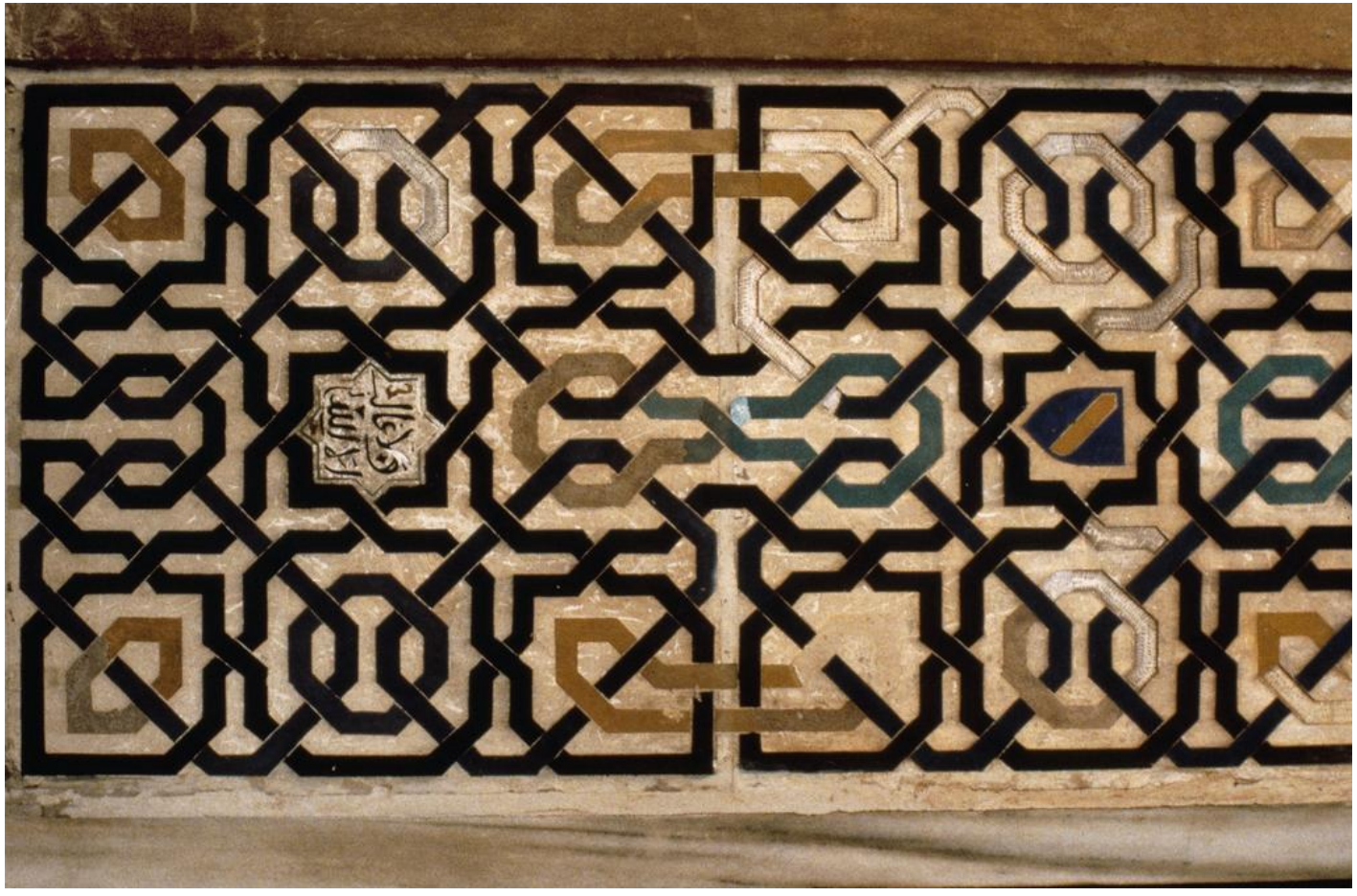
M.C.Escher (1898–1972)

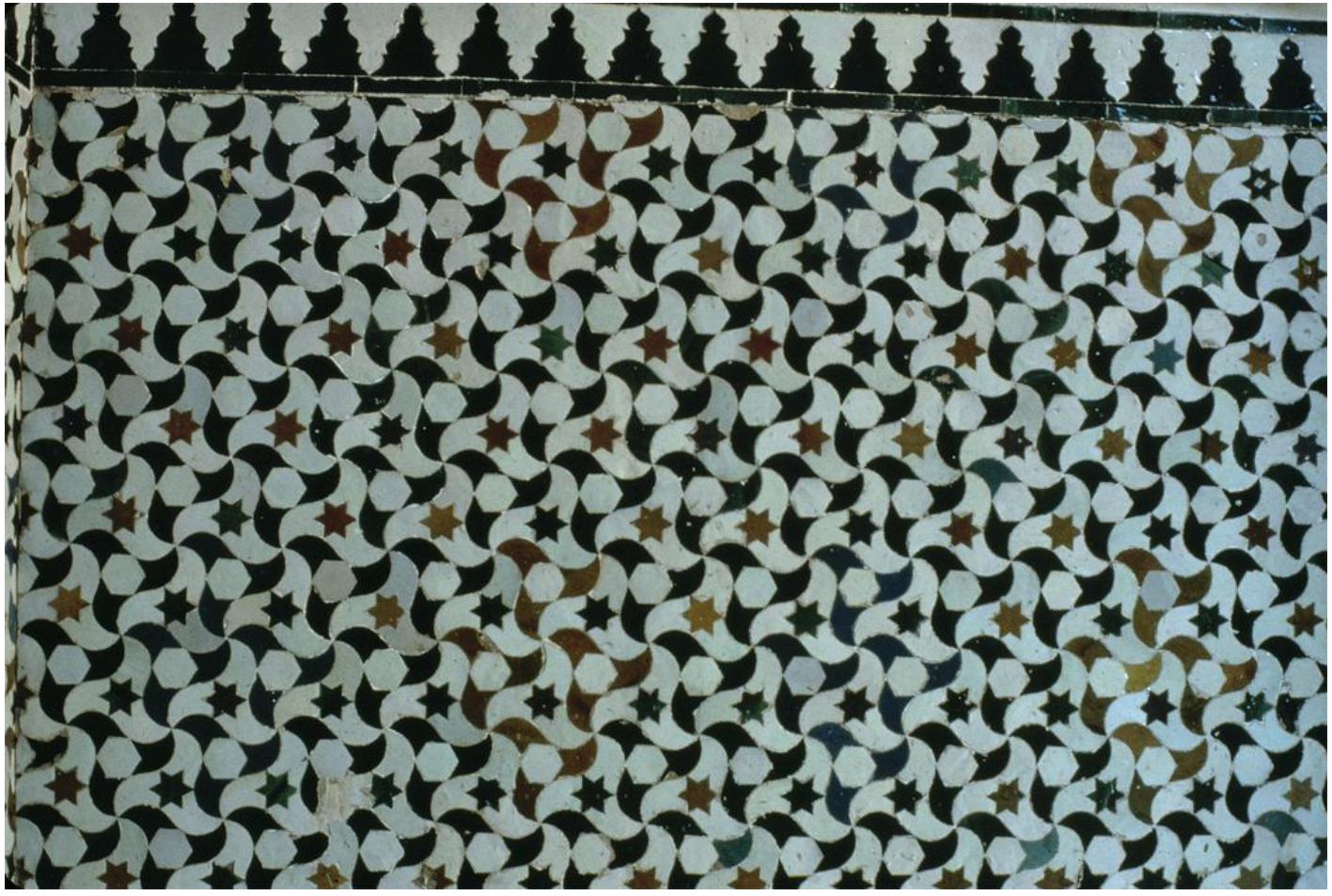
Hand With Reflecting Globe Lithograph, 1935

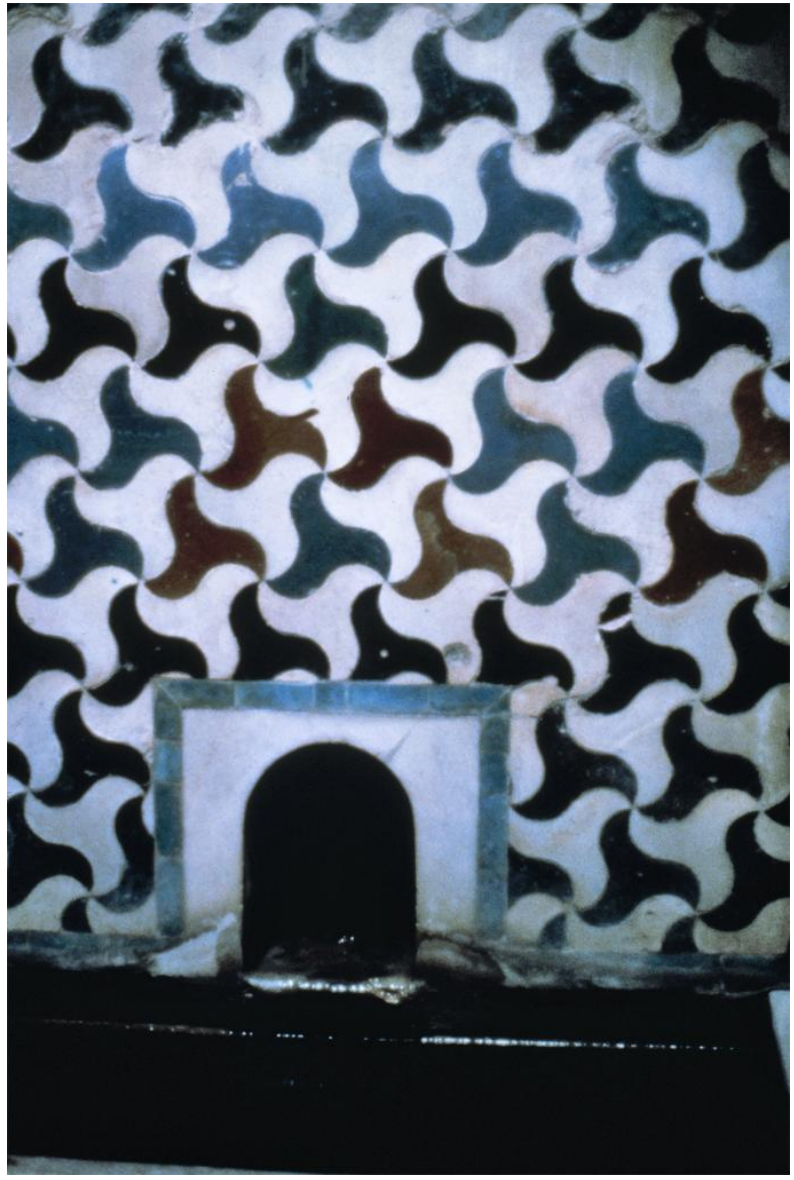


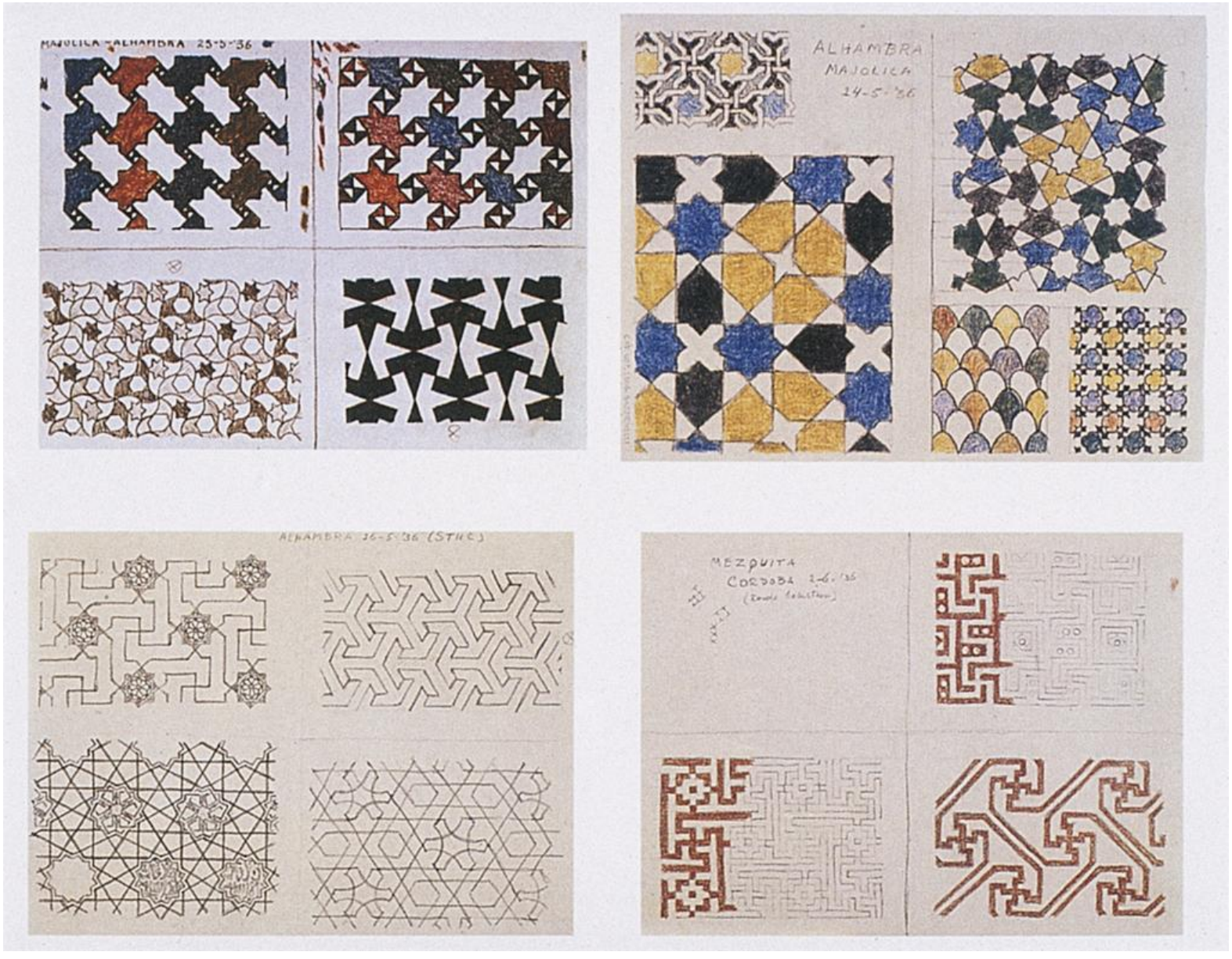




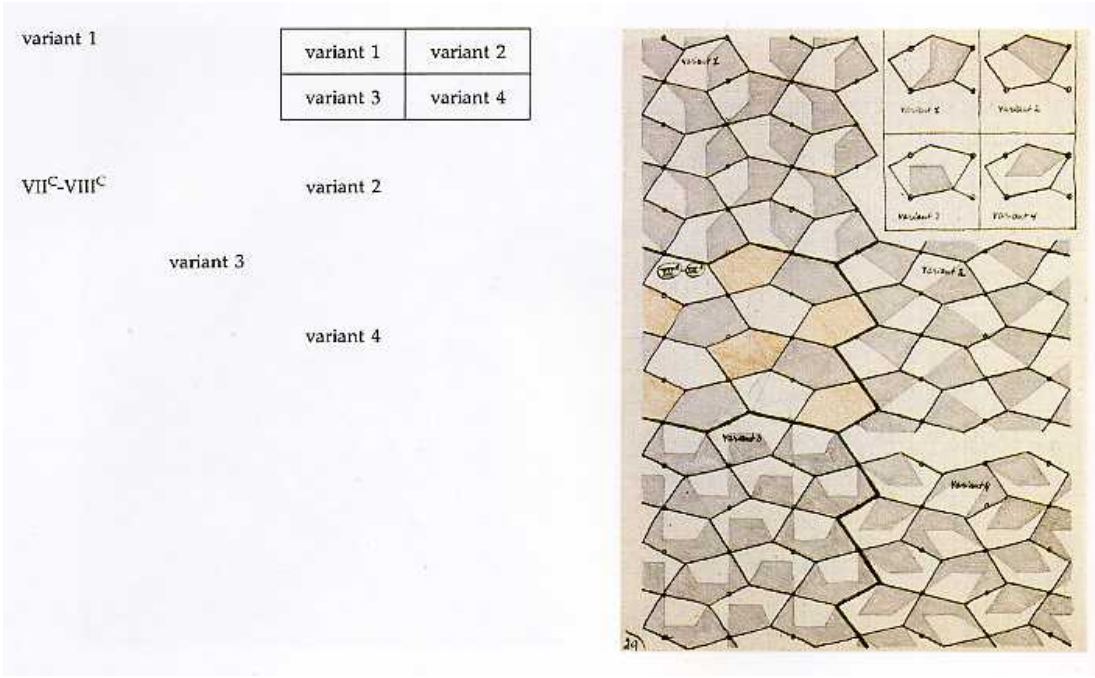




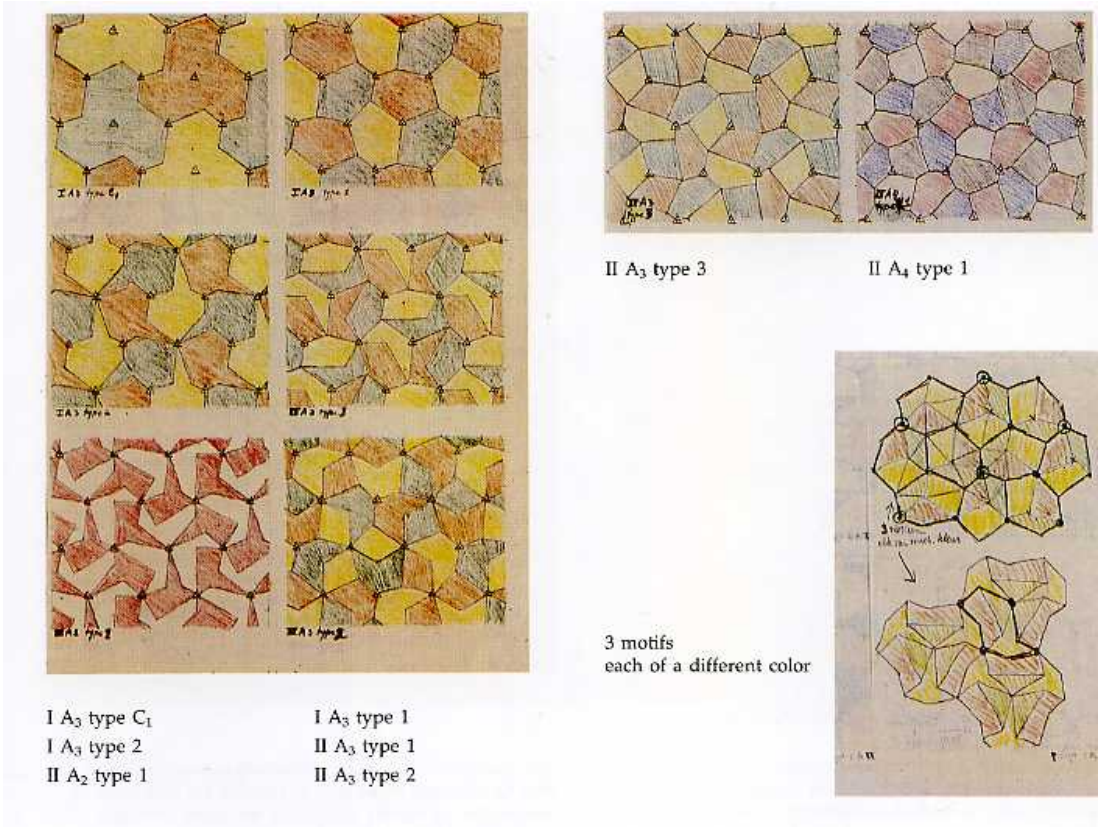




M.C. Escher, *Study of Moorish designs from Alhambra and La Mezquita*. 1936



Page from *M.C. Escher: Visions of Symmetry*, by Doris Schattschneider



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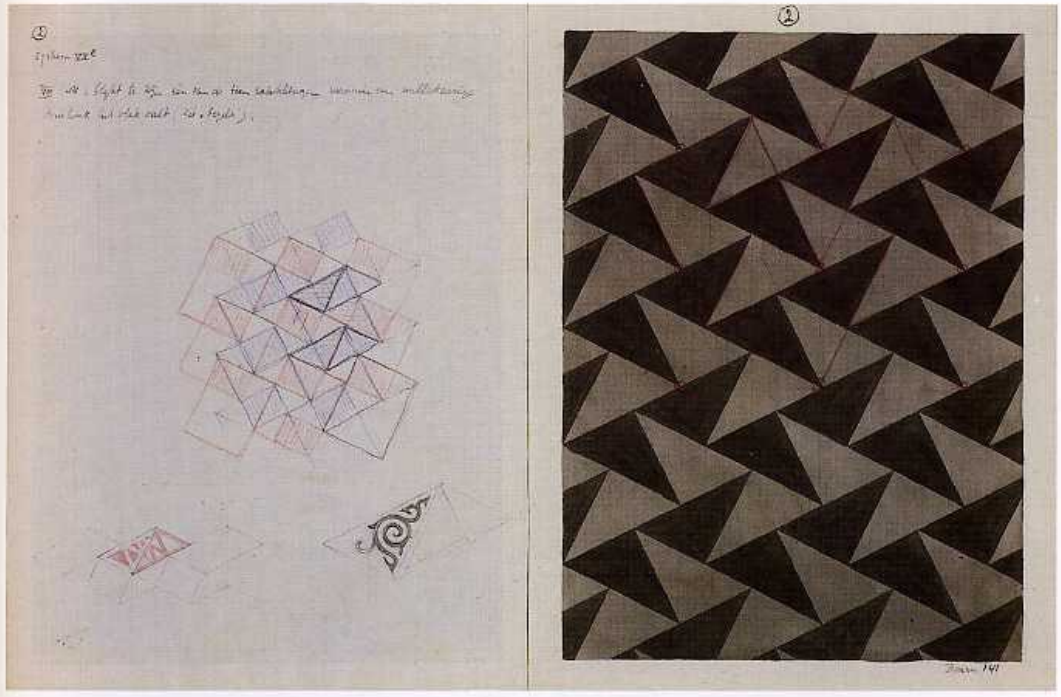
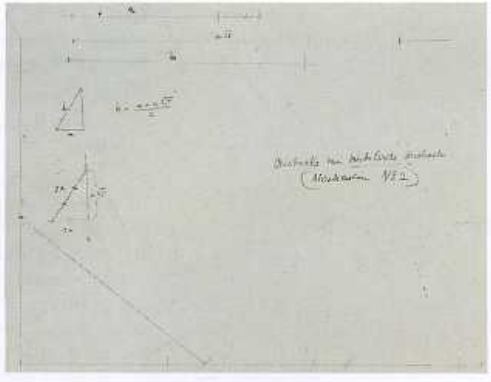


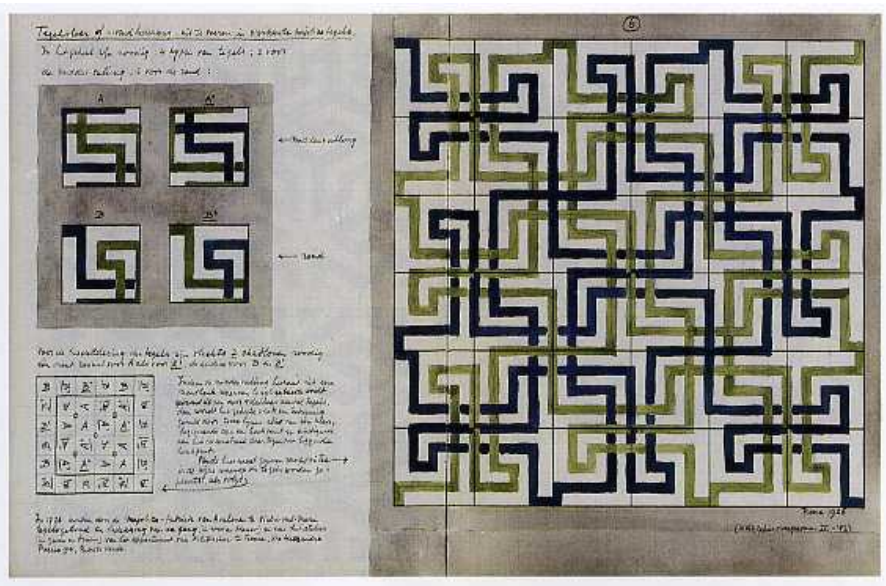
(2)
System VII^C
VIII '44: Appears to be one of the ten arrangements in which an arbitrary triangle fills the plane (see "tiles")

(2) Baarn '41



construction of *improved* triangle (Abstract motifs no. 2)

Page from *M.C. Escher: Visions of Symmetry*, by Doris Schattschneider



Tile floor or wall covering to be executed with square majolica tiles

(6)

Rome 1926
(copied in this notebook IV '42)

In total, 4 types of tiles are needed—2 for the center filling and two for the border:

A	A′	← center-filling
B	B′	← border

For the painting of the tiles, only 2 stencils are needed: one can serve for both A and A′, and the other for B and B′.

[diagram]

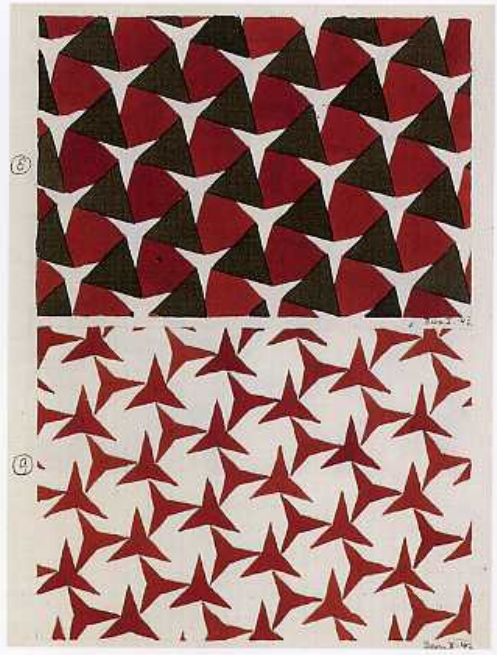
When the filled center portion is viewed as one rectangle whose length and width are each determined by a number of tiles which is divisible by 4, then the entire composition is filled by 2 lines, each of a single color, beginning in one corner and ending in the diagonally opposite corner.

For the composition shown facing here → the manner in which the tiles are to be placed is as follows ⮌

Page from *M.C. Escher: Visions of Symmetry*, by Doris Schattschneider

(7) Baarn X-'42

triangle system
2 motifs–3 colors



(8) Baarn X-'42

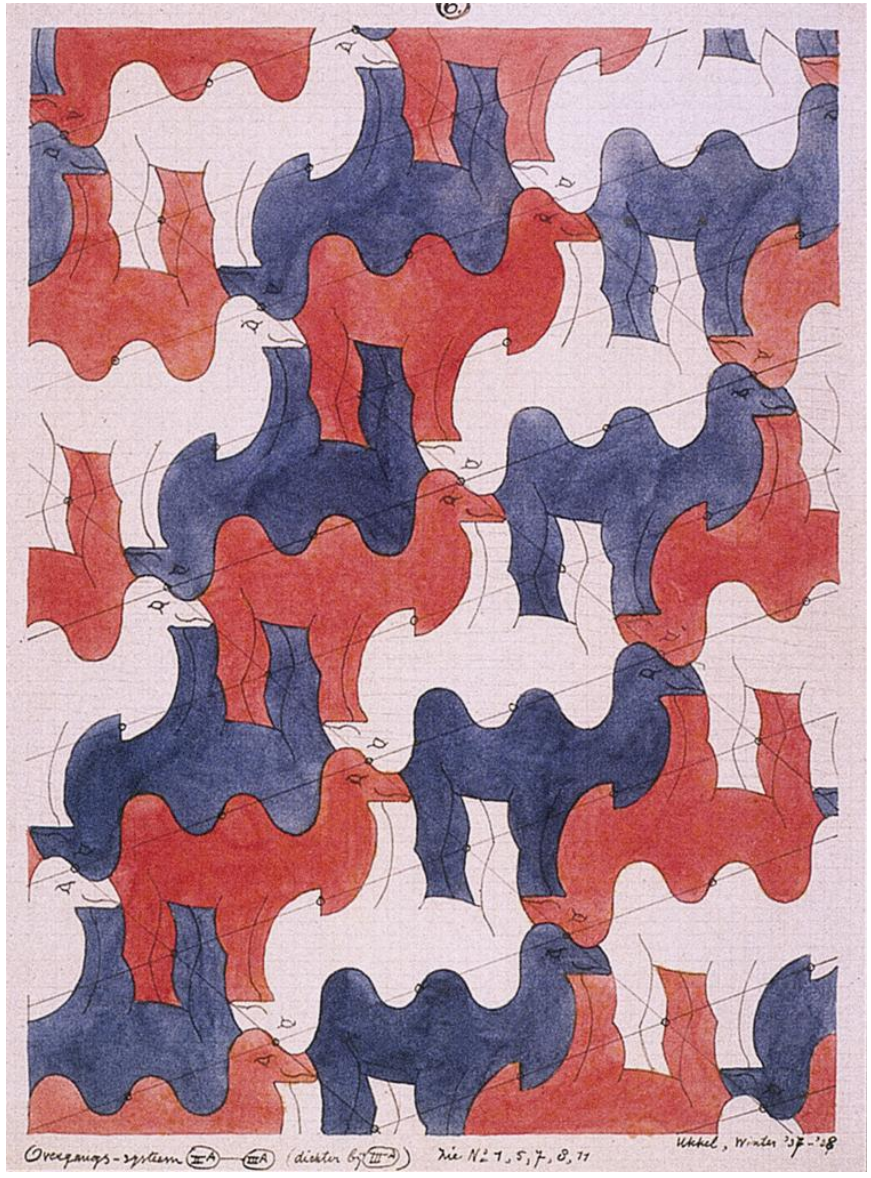
(9) Baarn X-'42

triangle system
3 motifs
3 colors

triangle system
3 motifs
2 colors

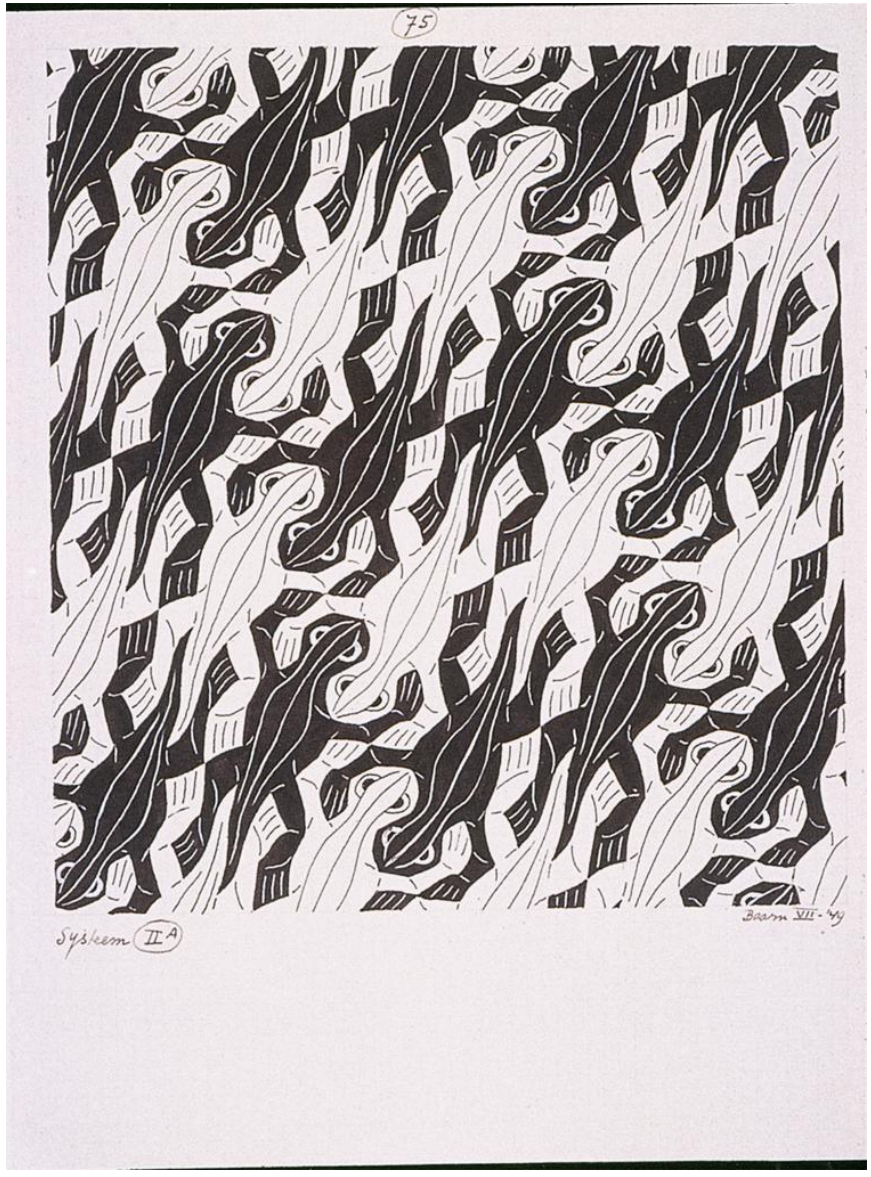
Page from *M.C. Escher: Visions of Symmetry*, by Doris Schattschneider

M.C. Escher, *Horse Design*. 1937



M.C. Escher, *Camel Design*. 1937

M.C. Escher, *Lizzard Design*. 1942



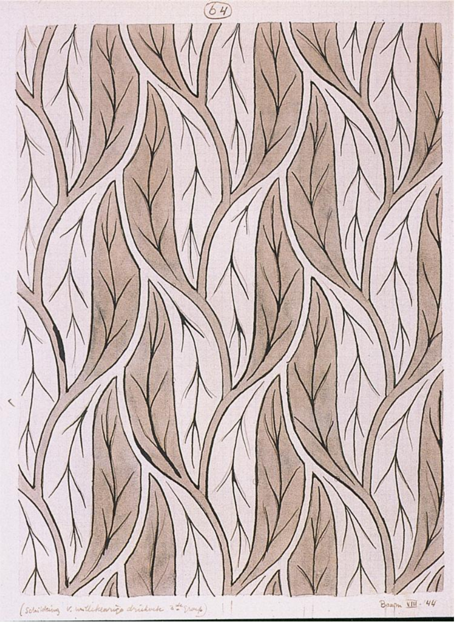
M.C. Escher, *Lizzard Design*. 1949

M.C. Escher, *Bulldog Design*. 1955

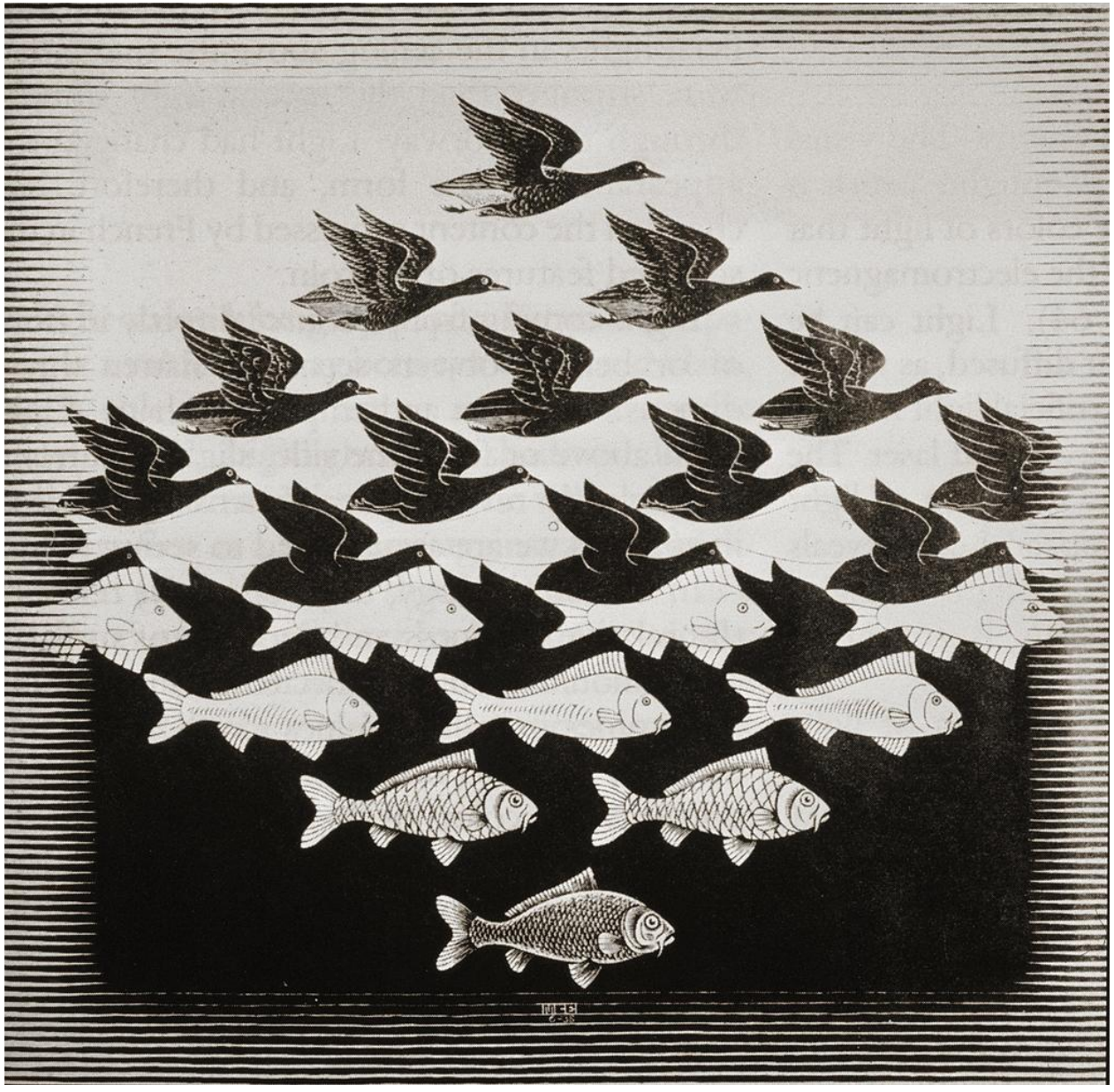
(54)

driehoek-systeem, 2 motieven, symmetrisch II A 2, type 1*

Baarn X-'42
verbeterd IV-'53


64
(schildering v. willekeurige driehoek 3de groep)
Baarn VIII - '44


26
Ukkel XI-'38
2 motieven systeem V C Zie No 24.



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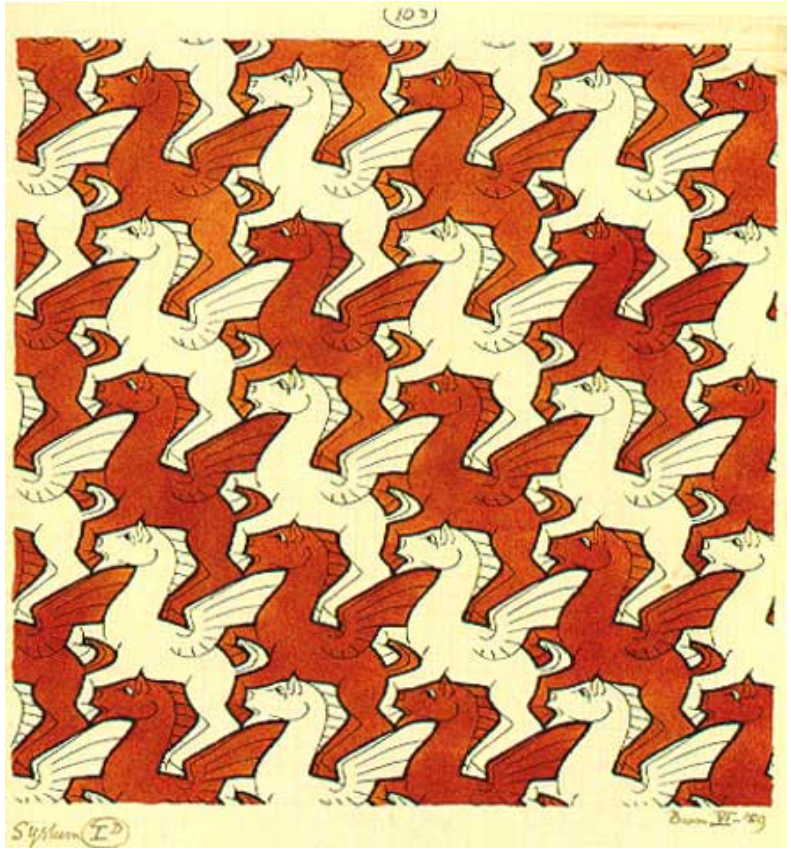

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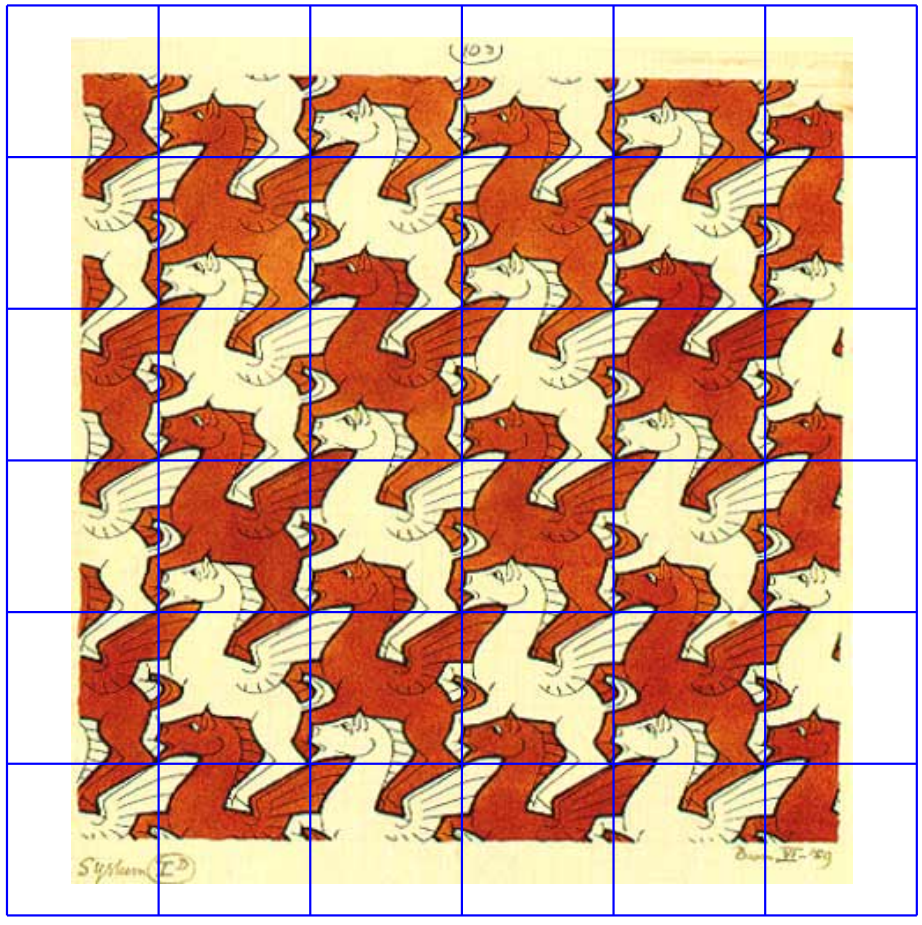

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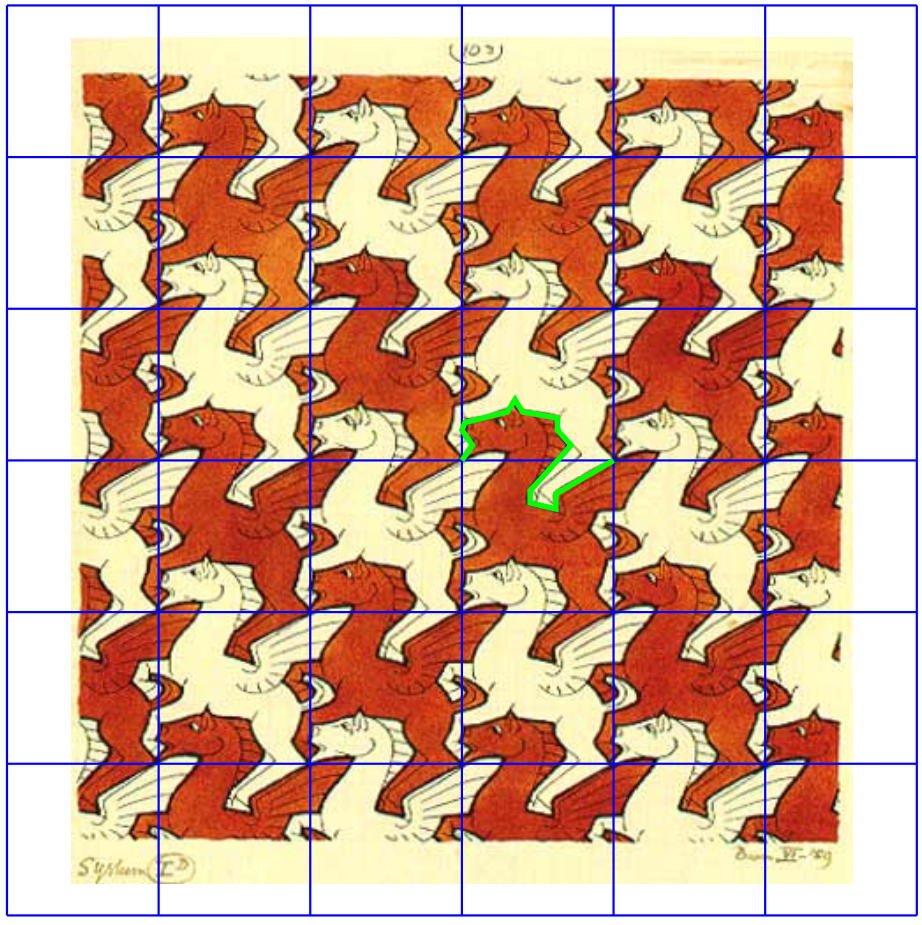

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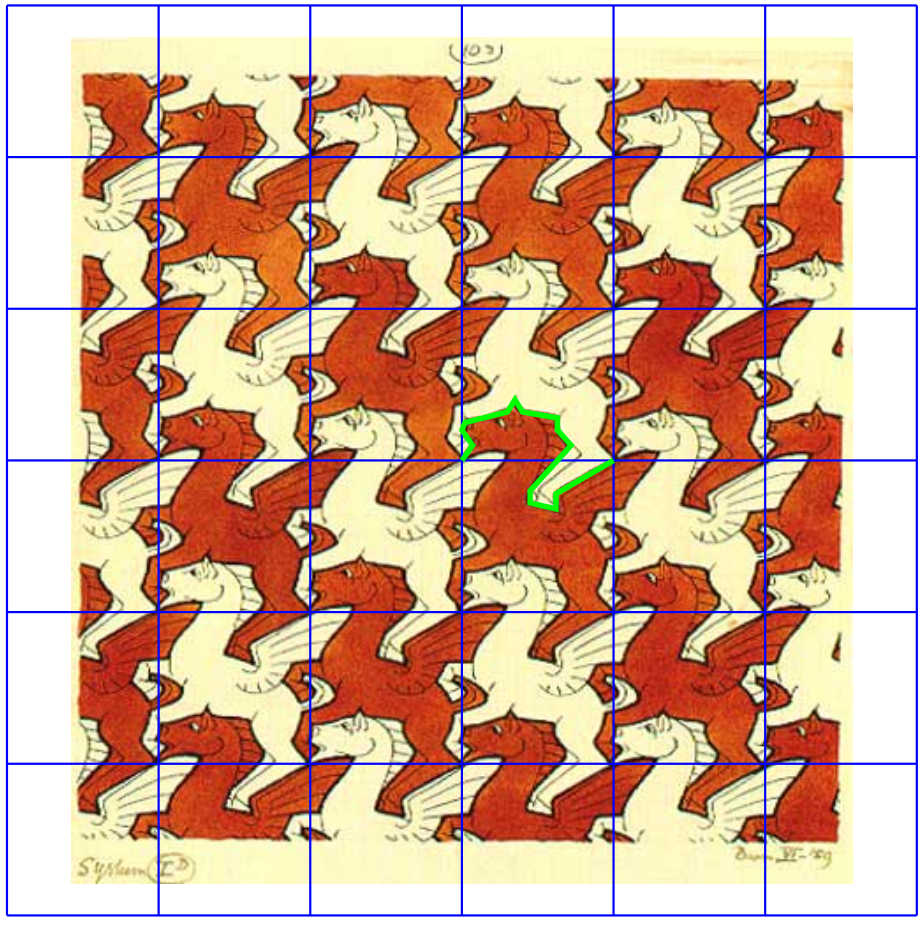

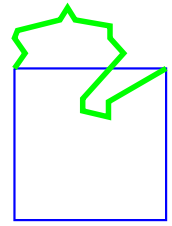

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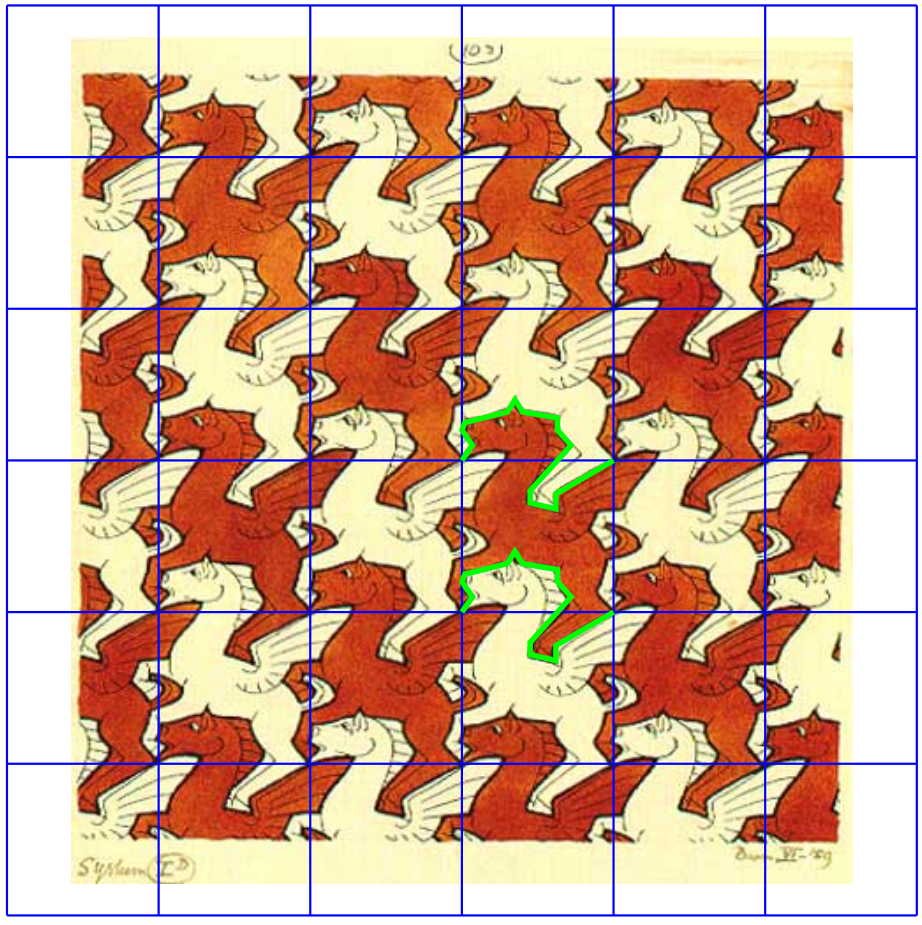

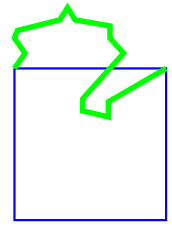

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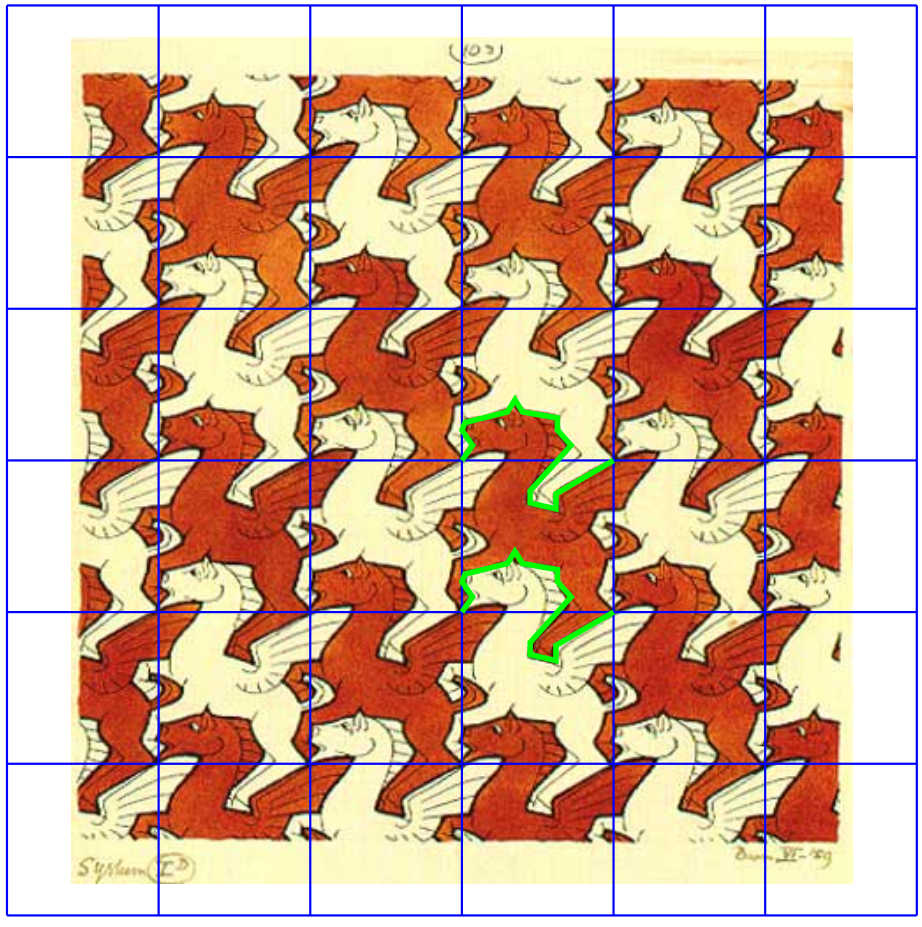

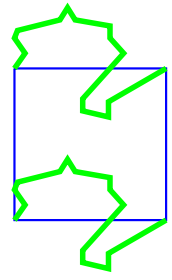

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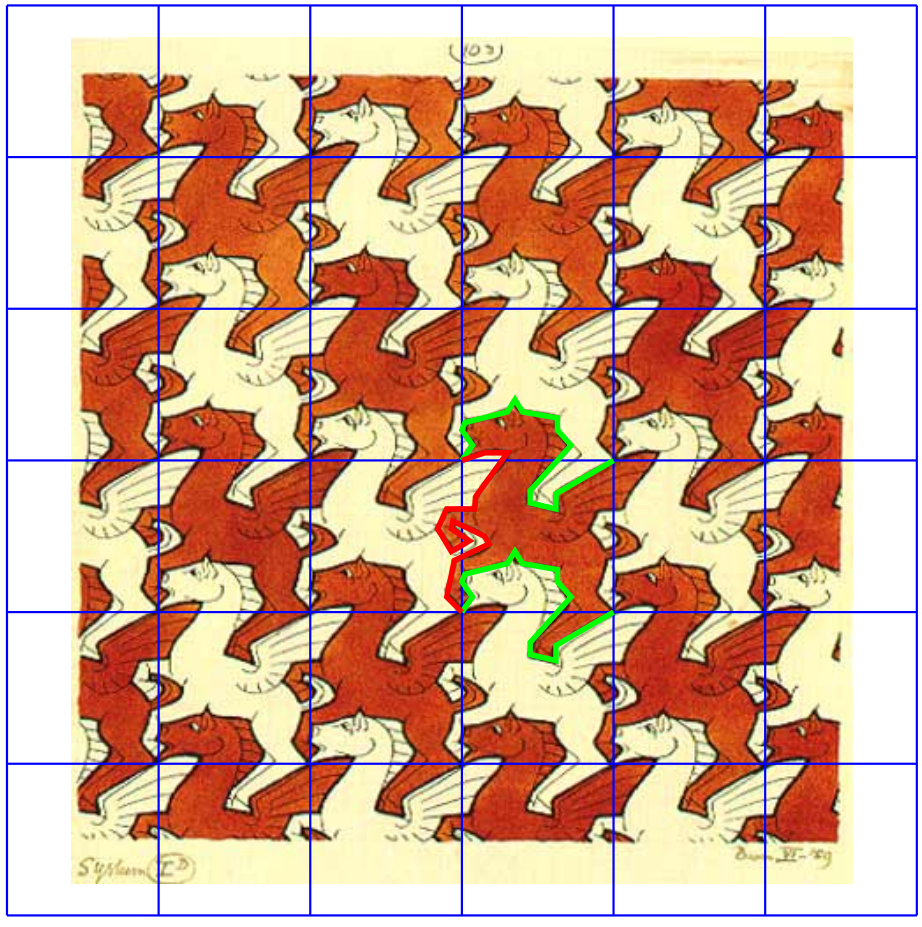

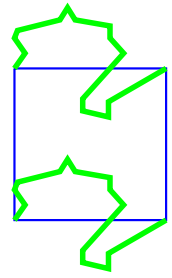

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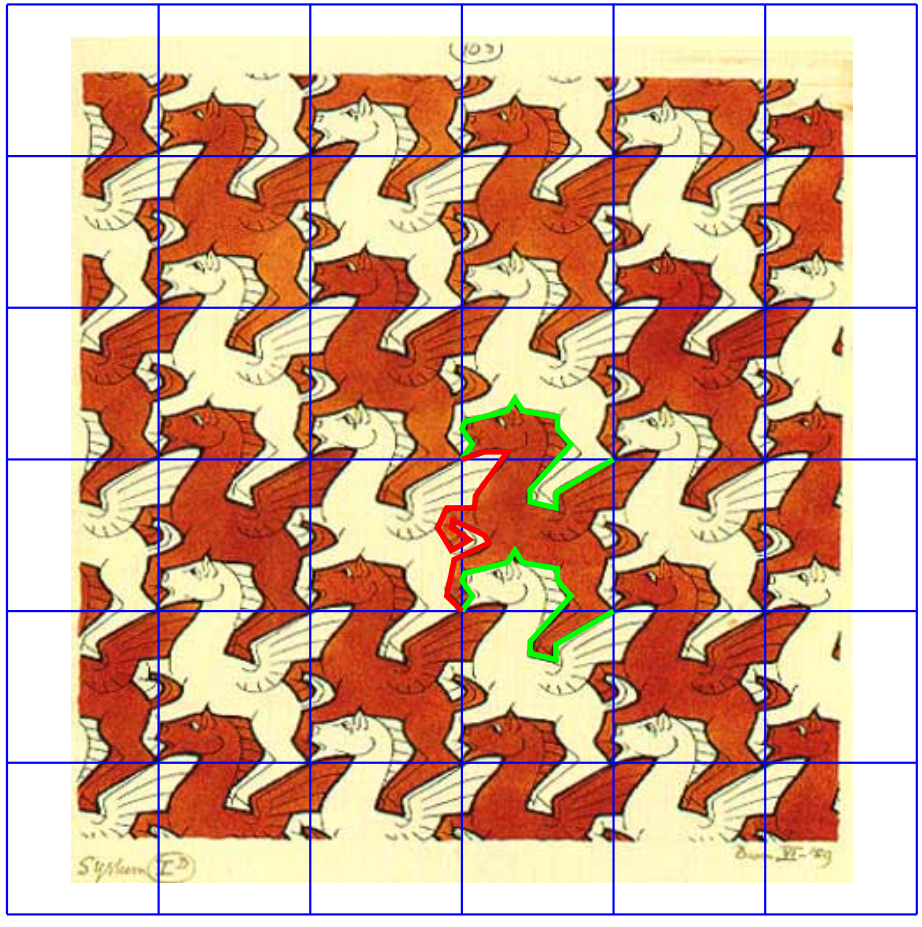

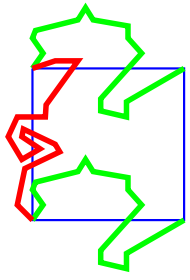

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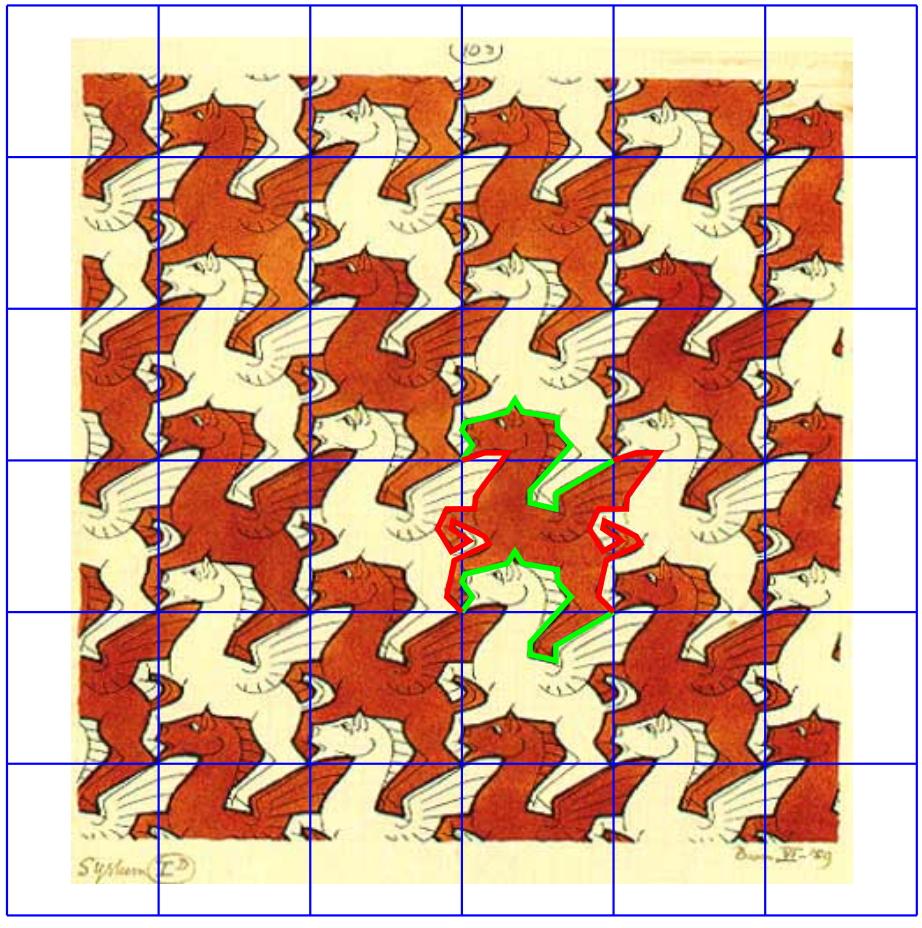

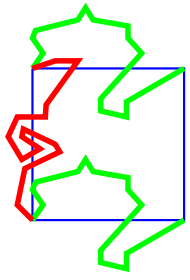

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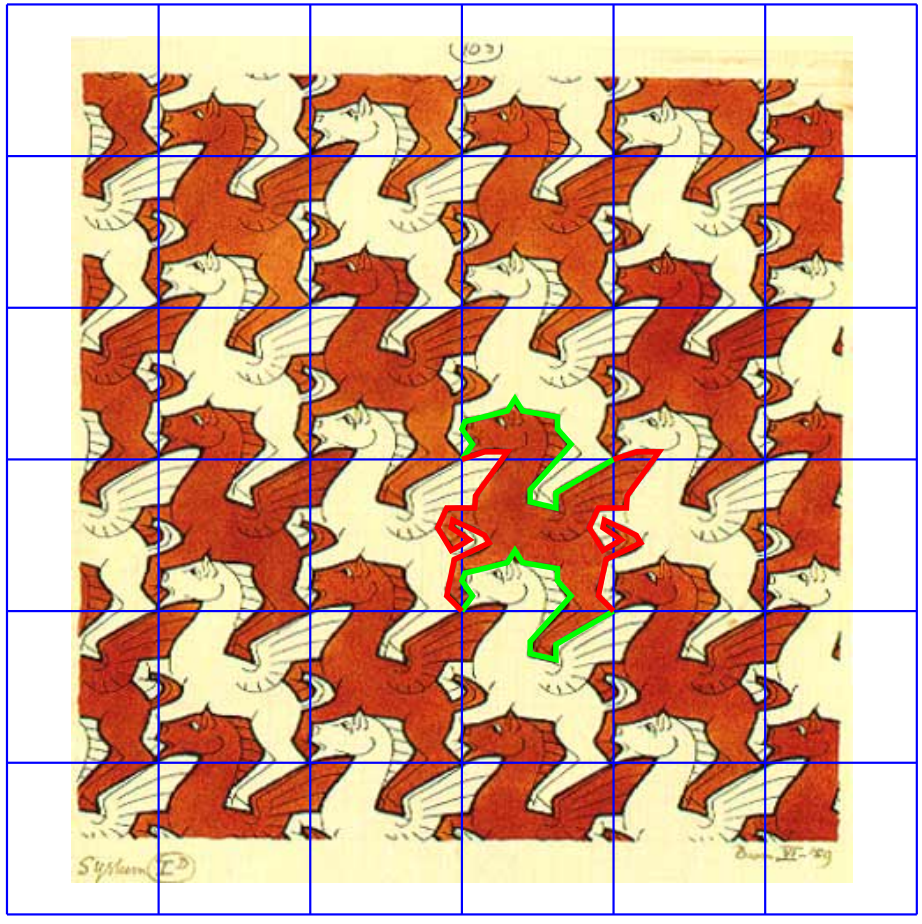

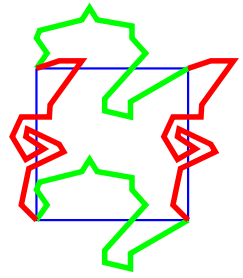

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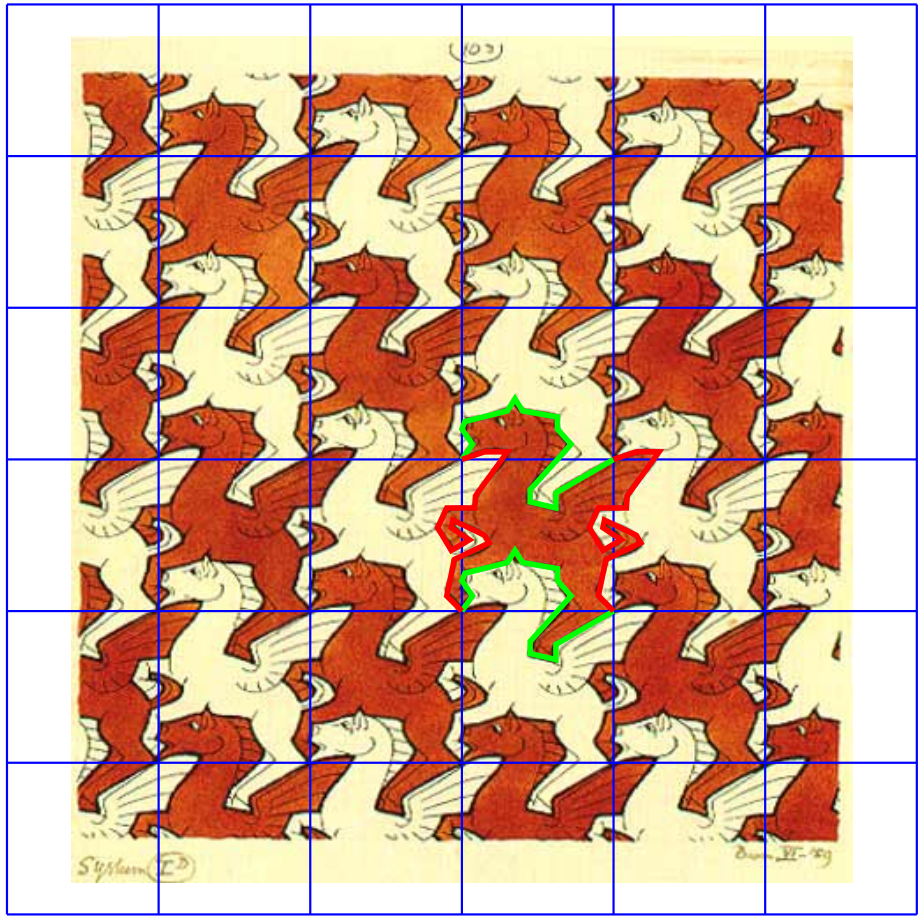

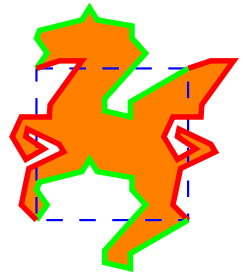

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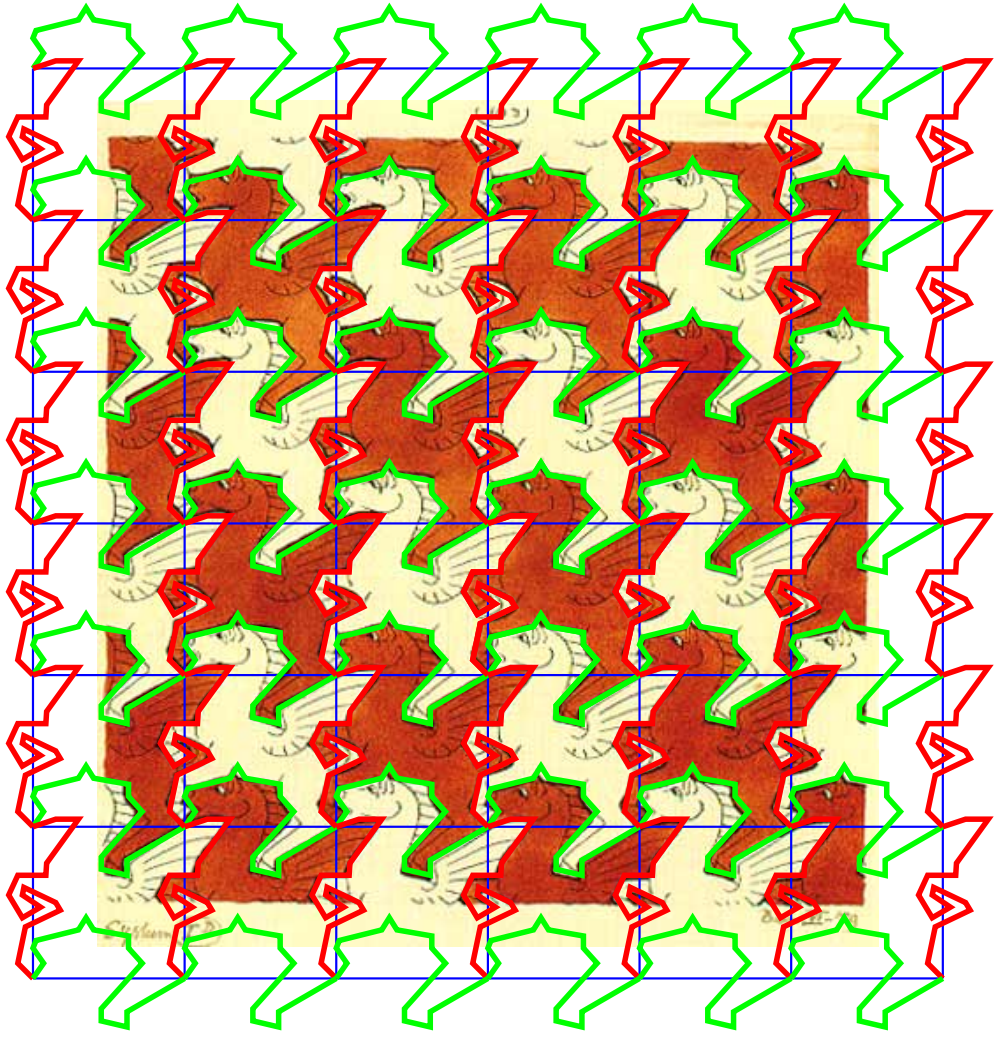

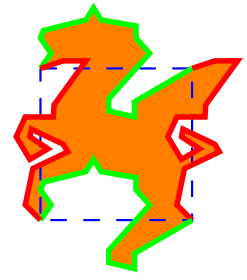

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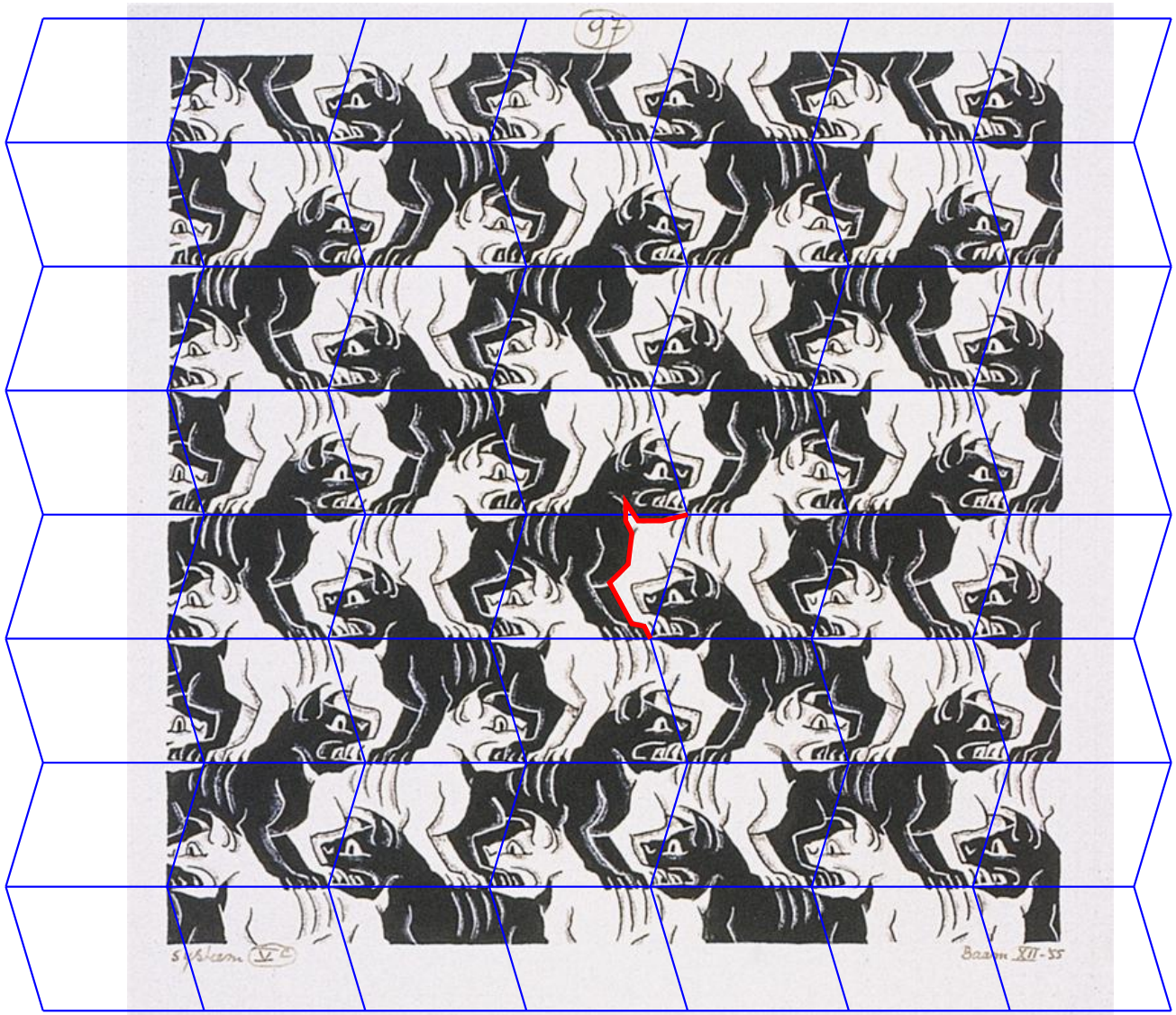

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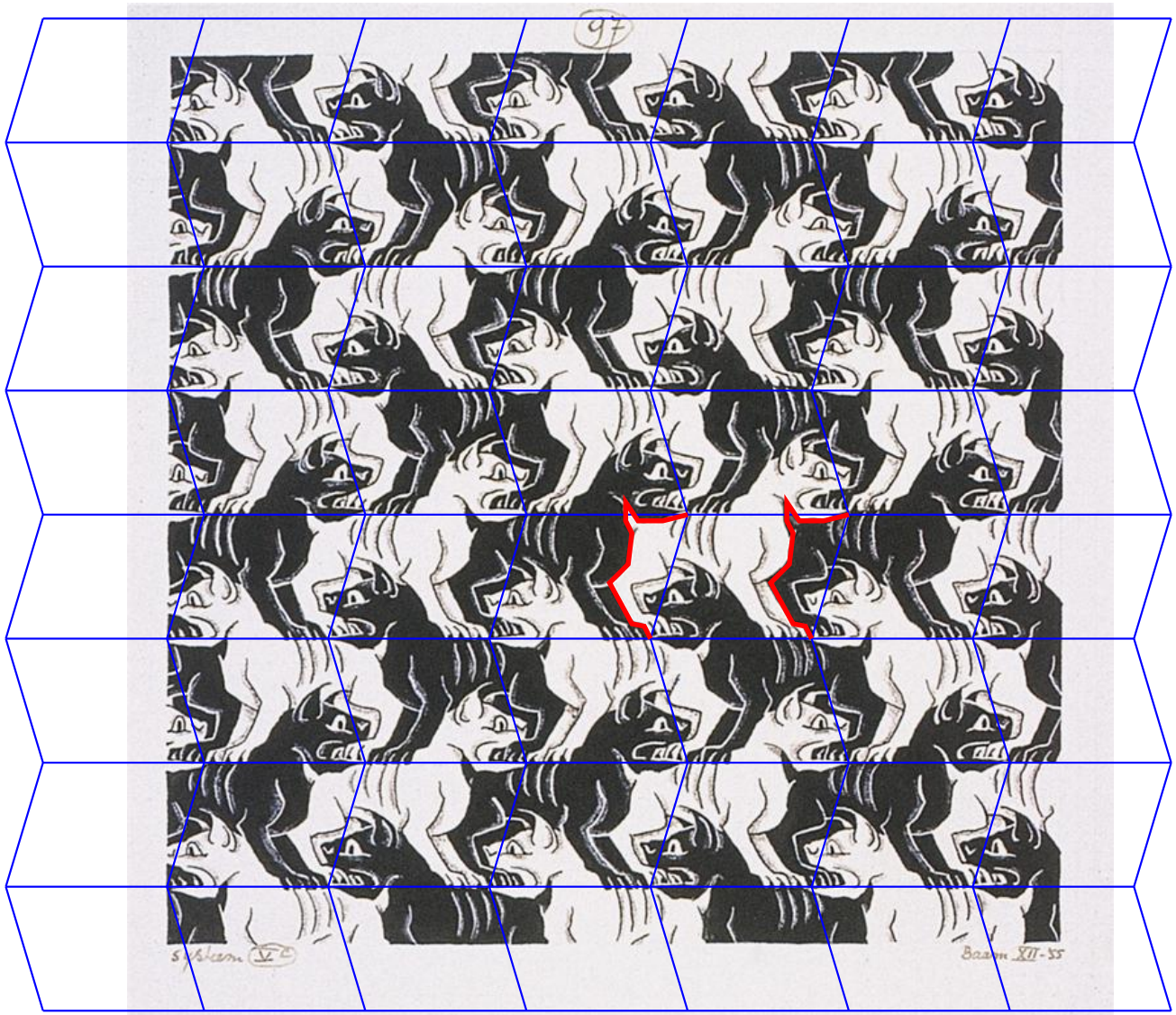

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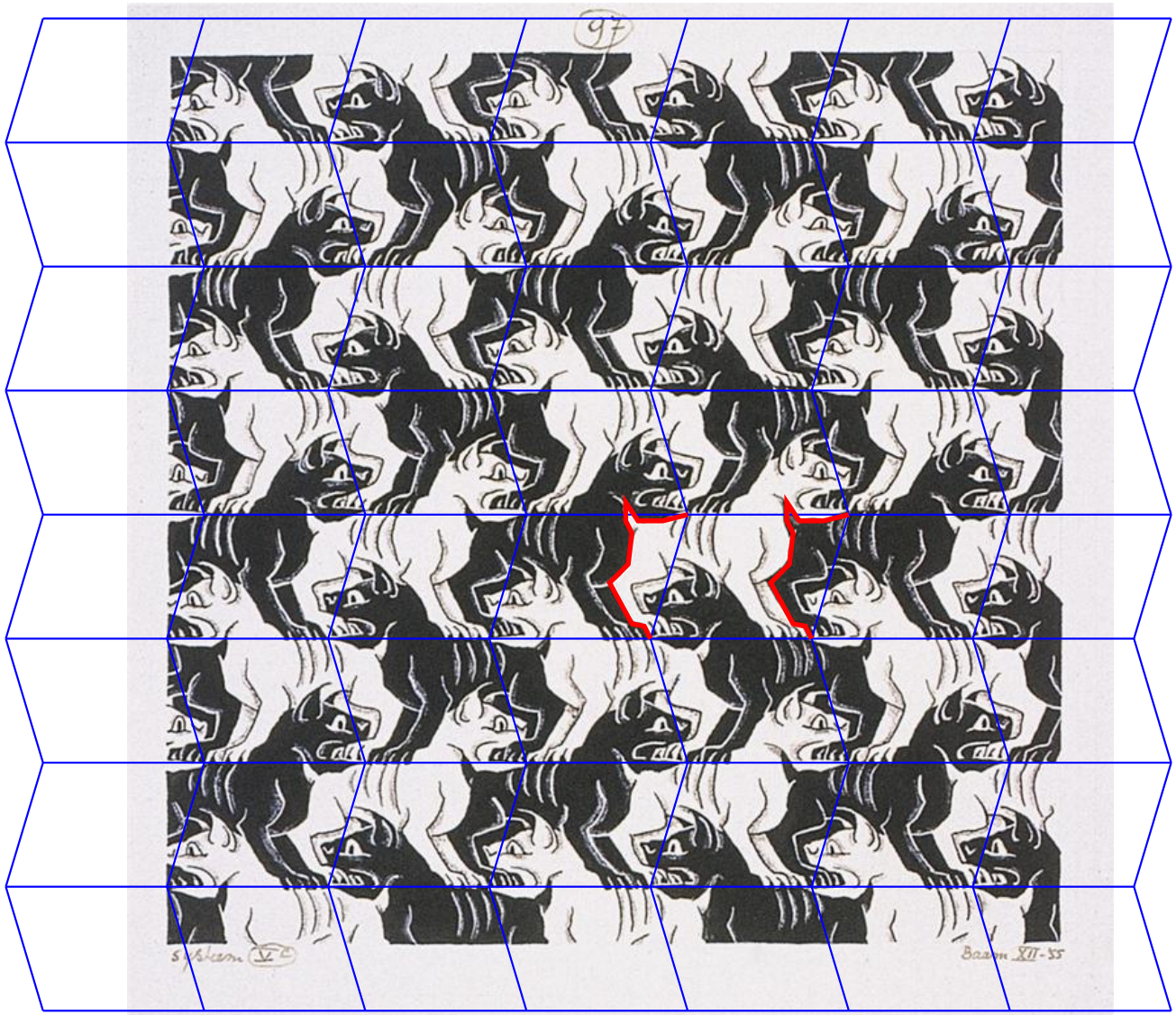

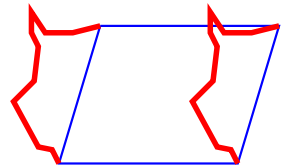

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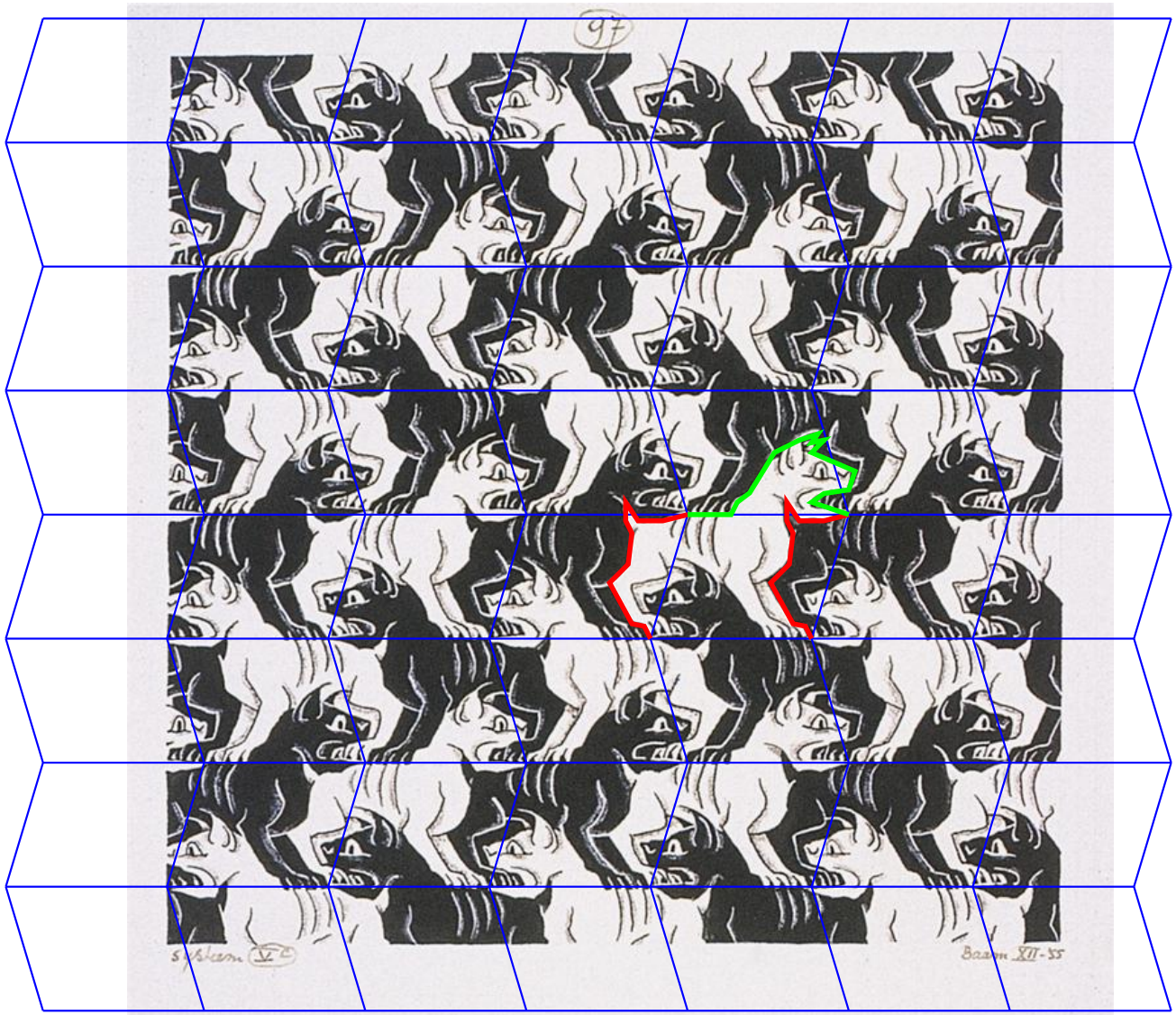

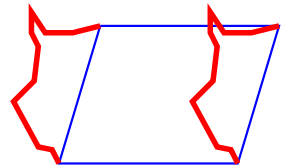

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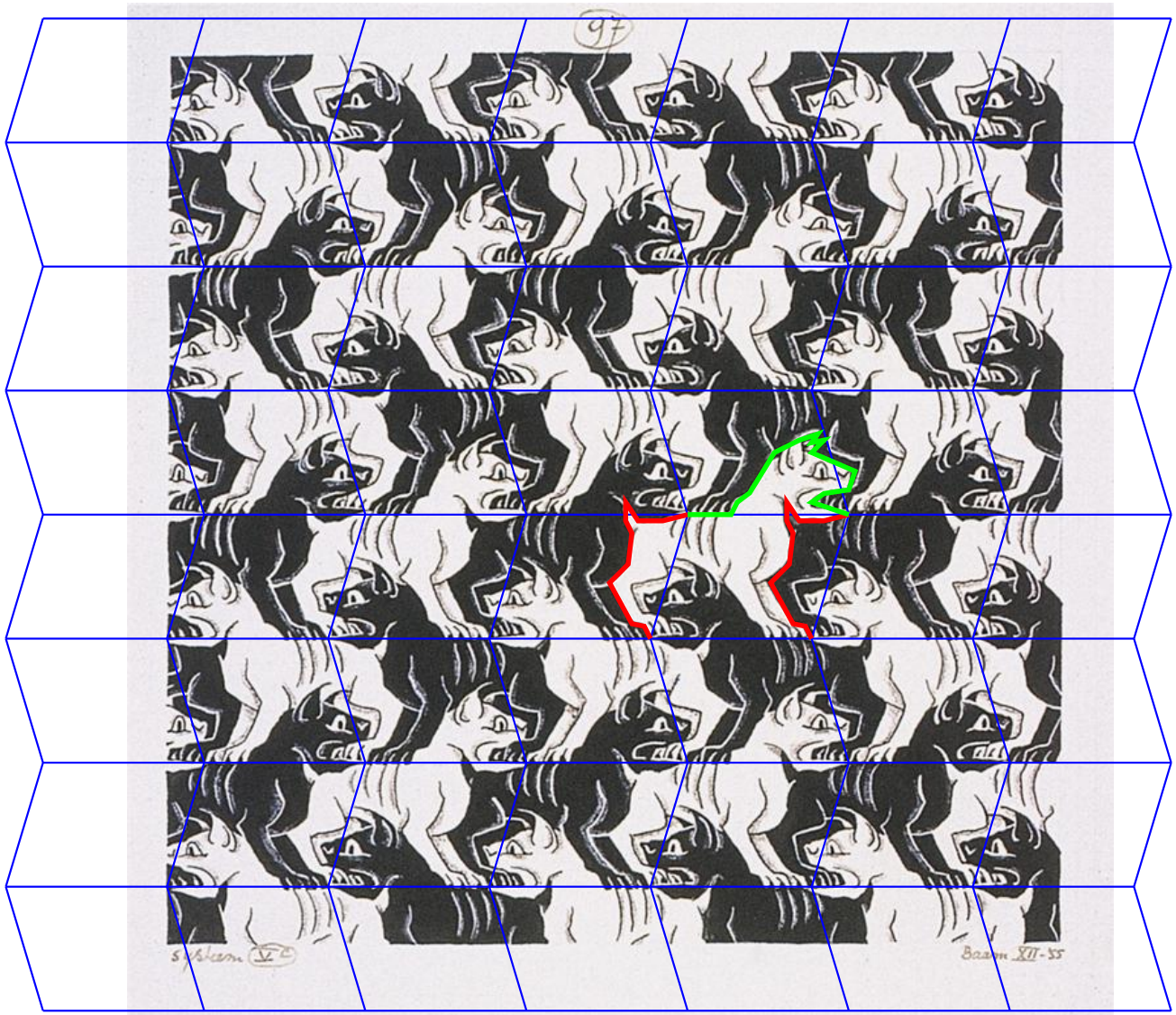

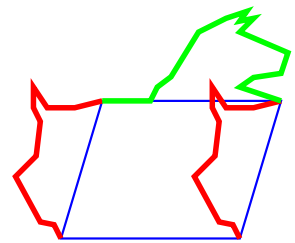

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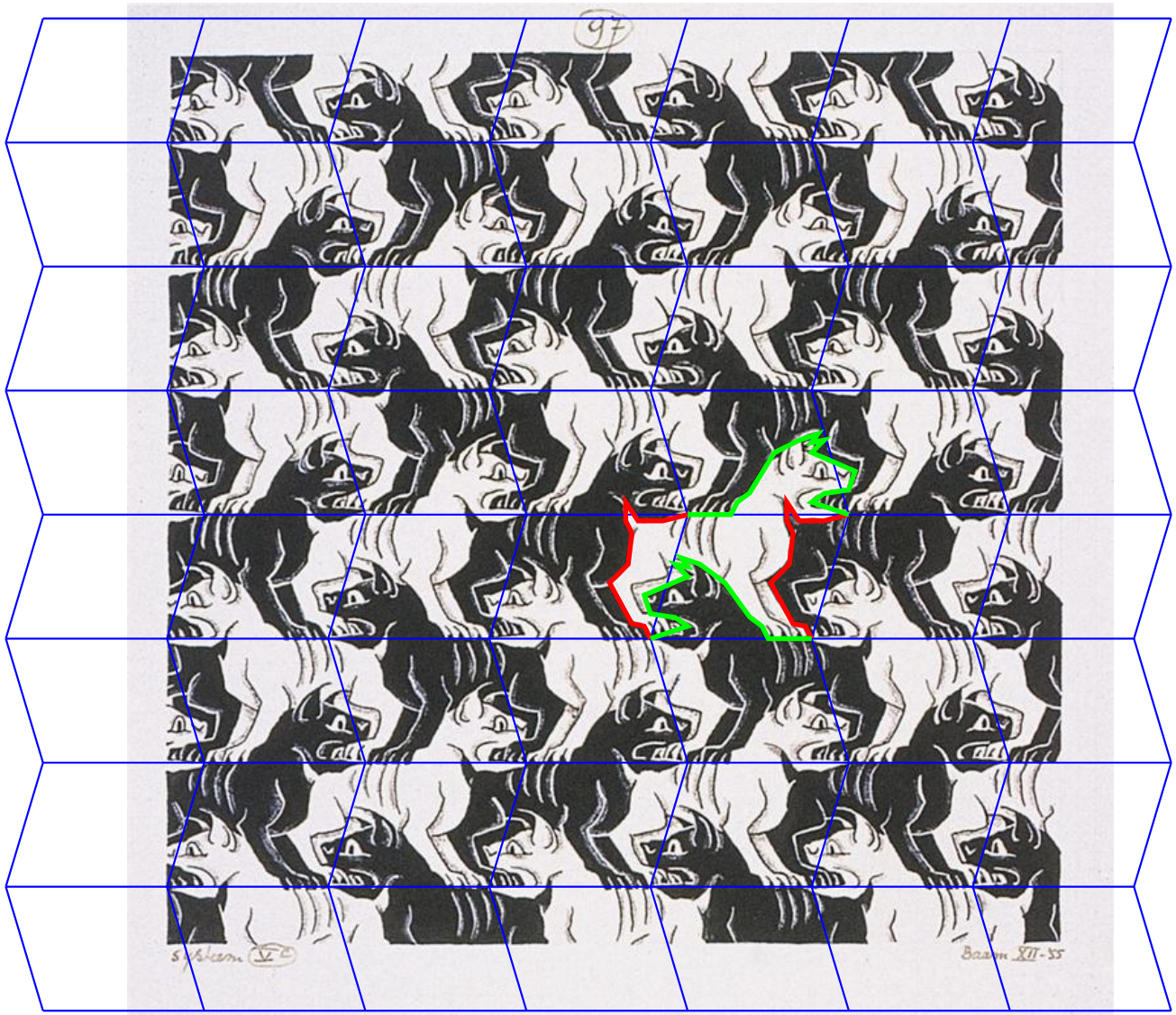

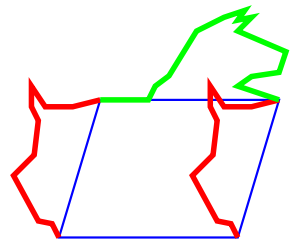

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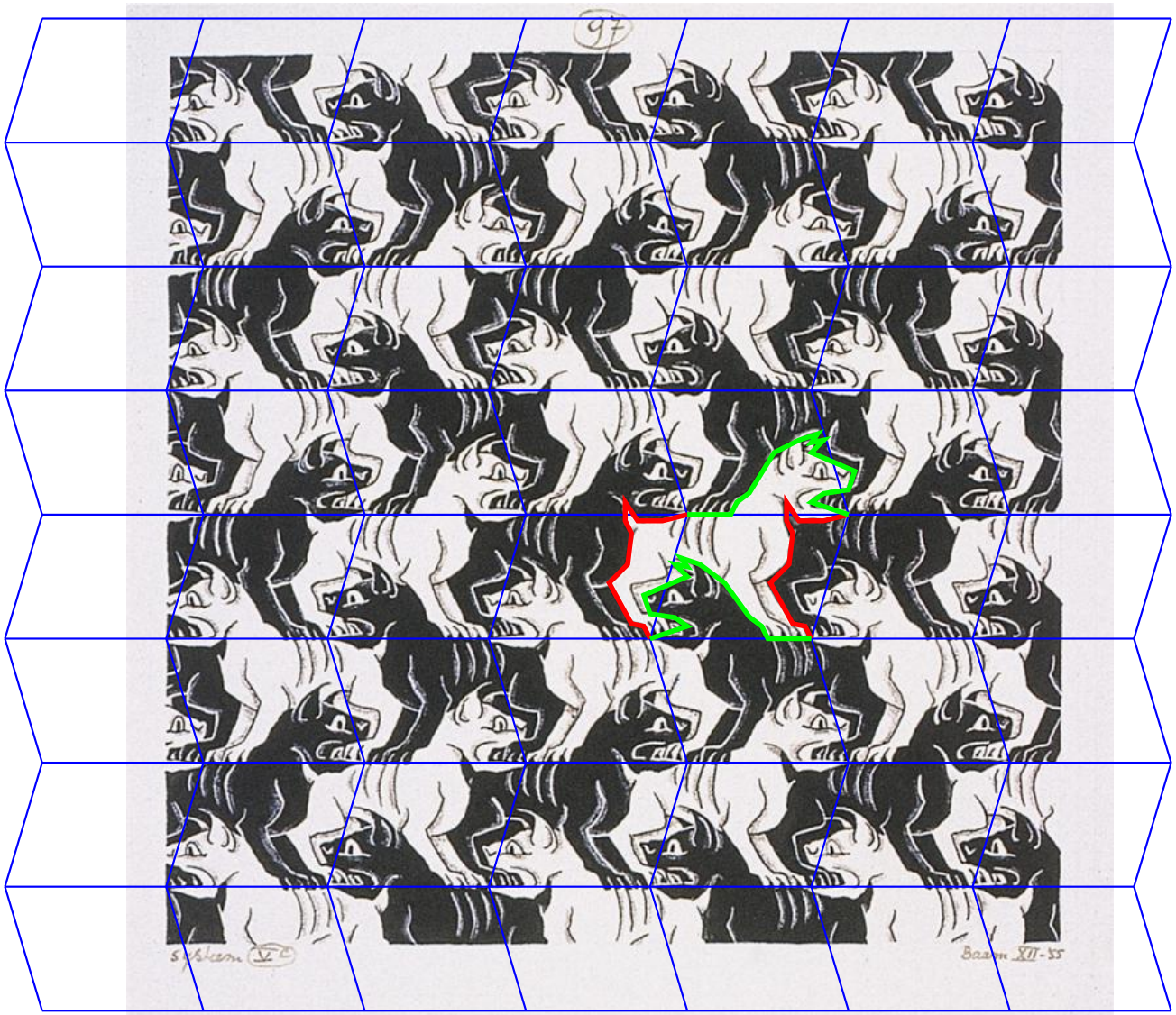

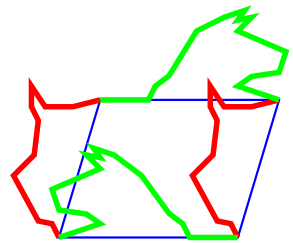

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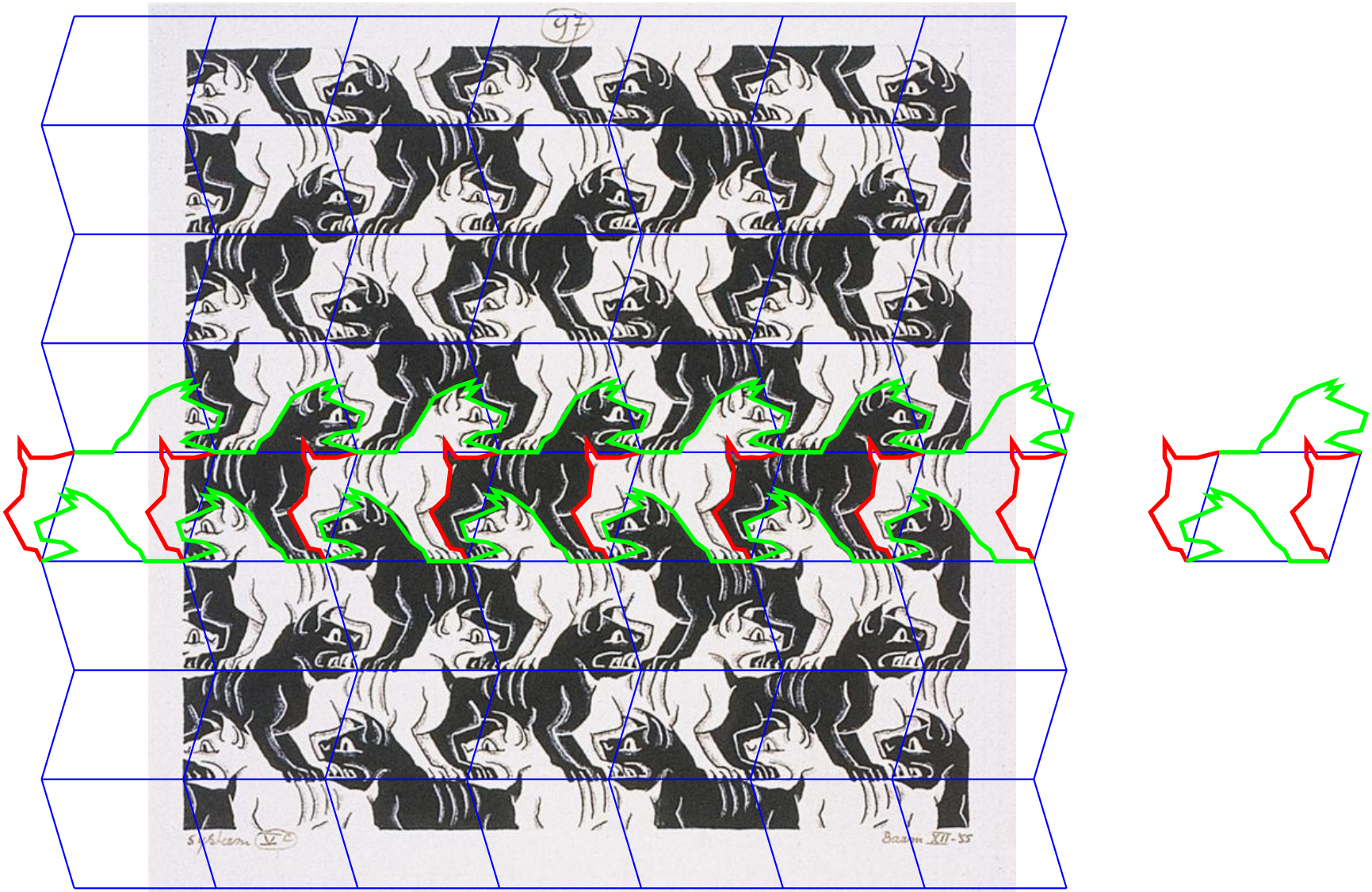

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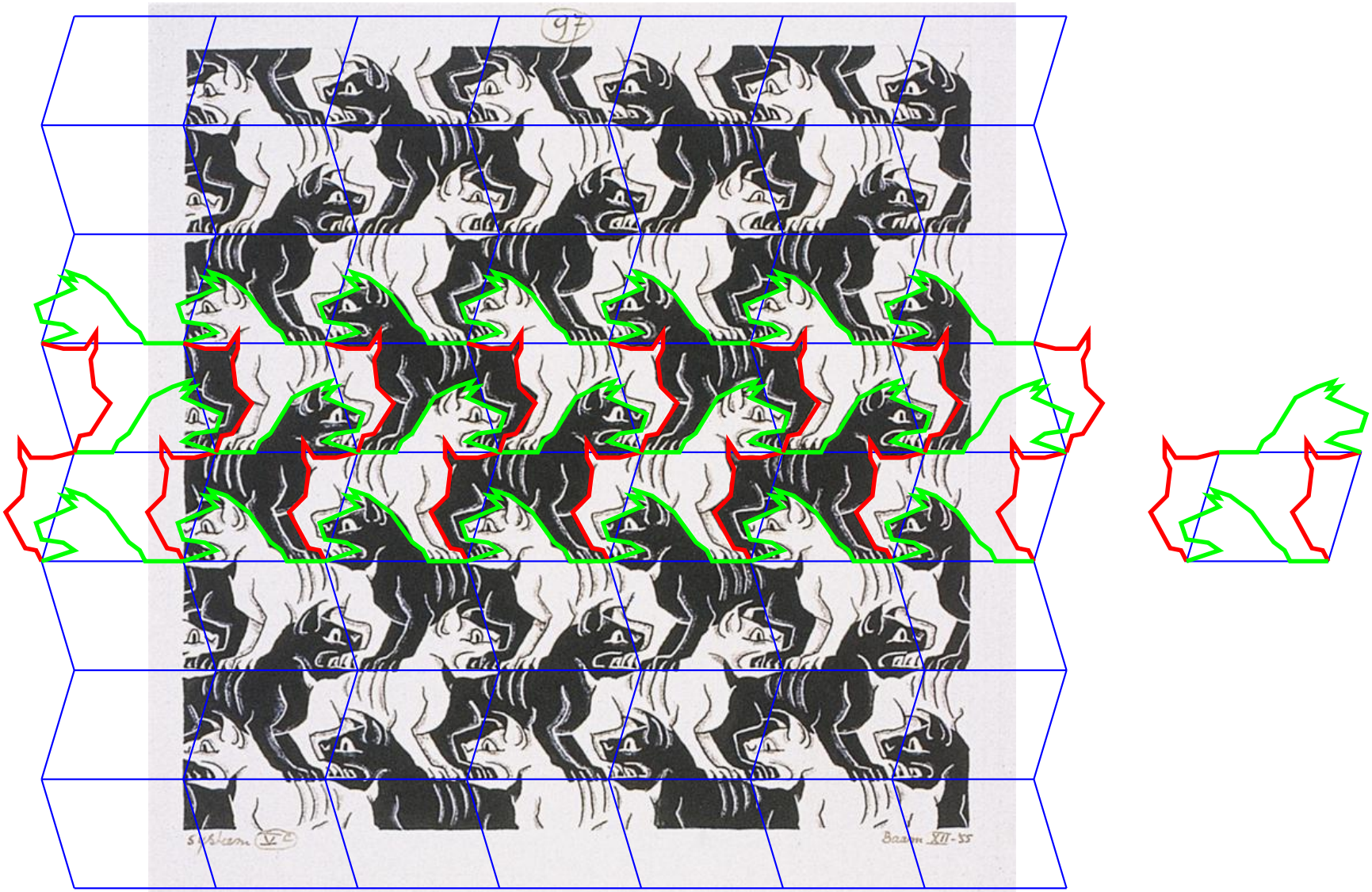

Analysis of a Tessellation (Example 3)

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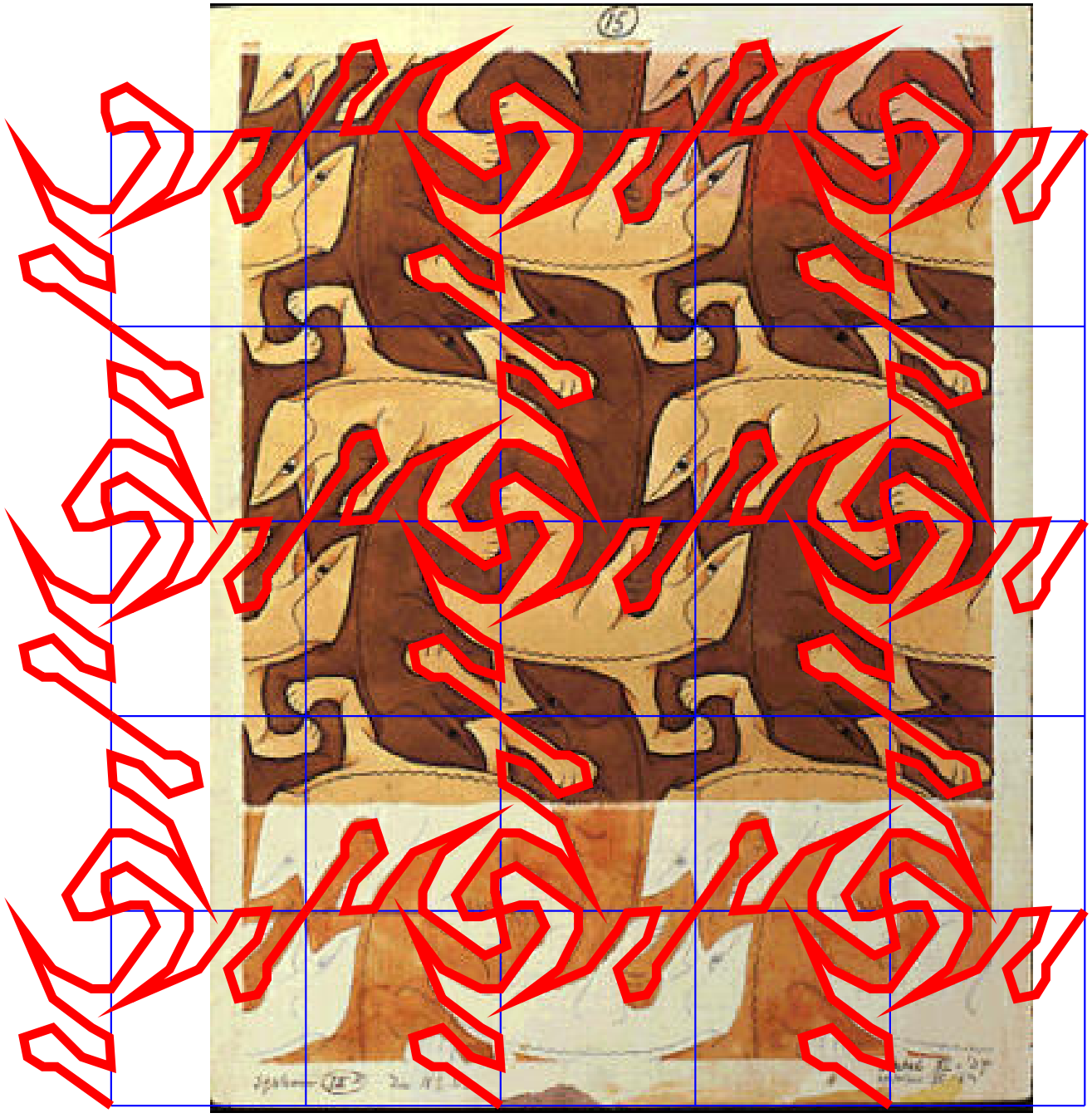

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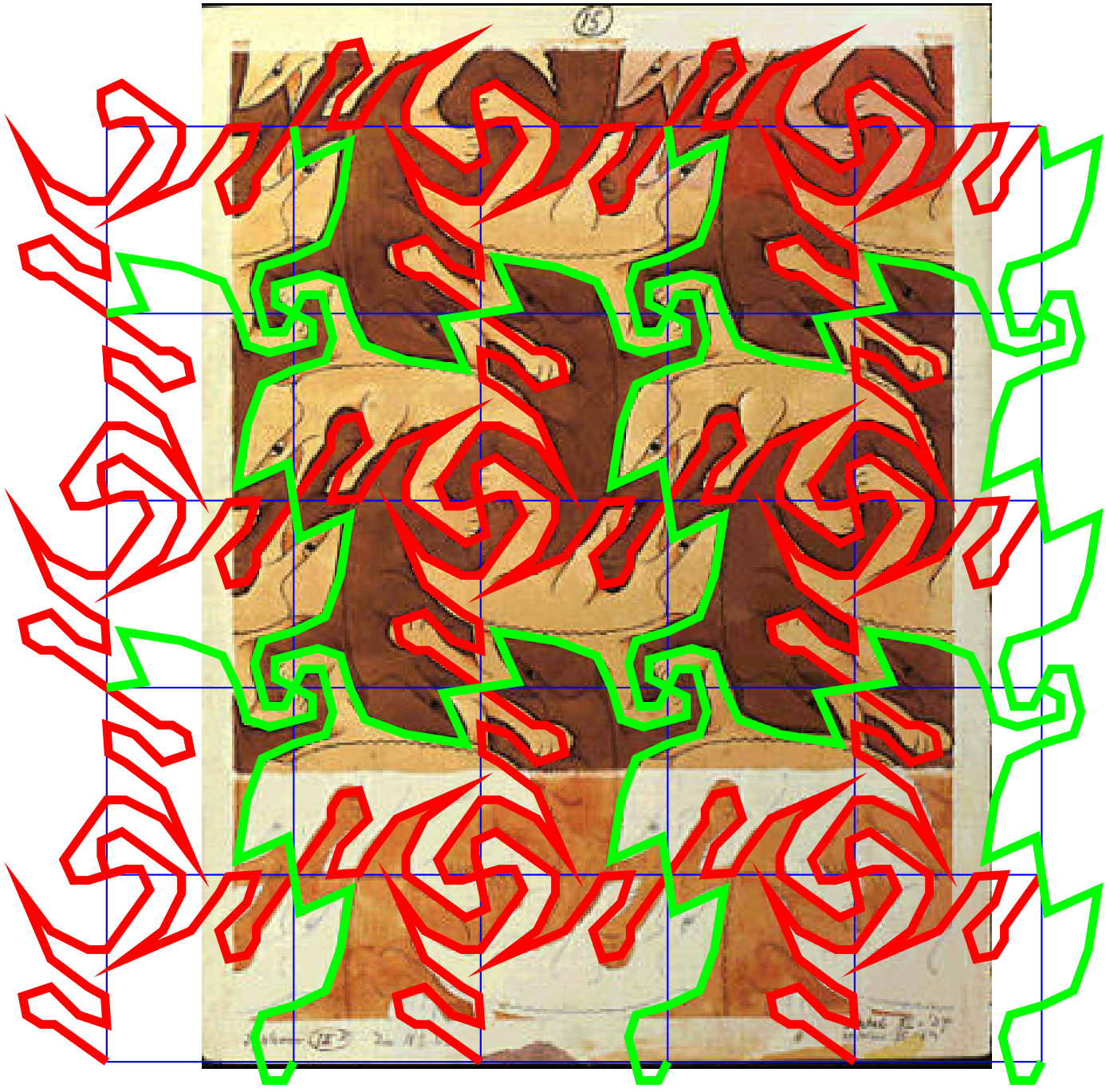

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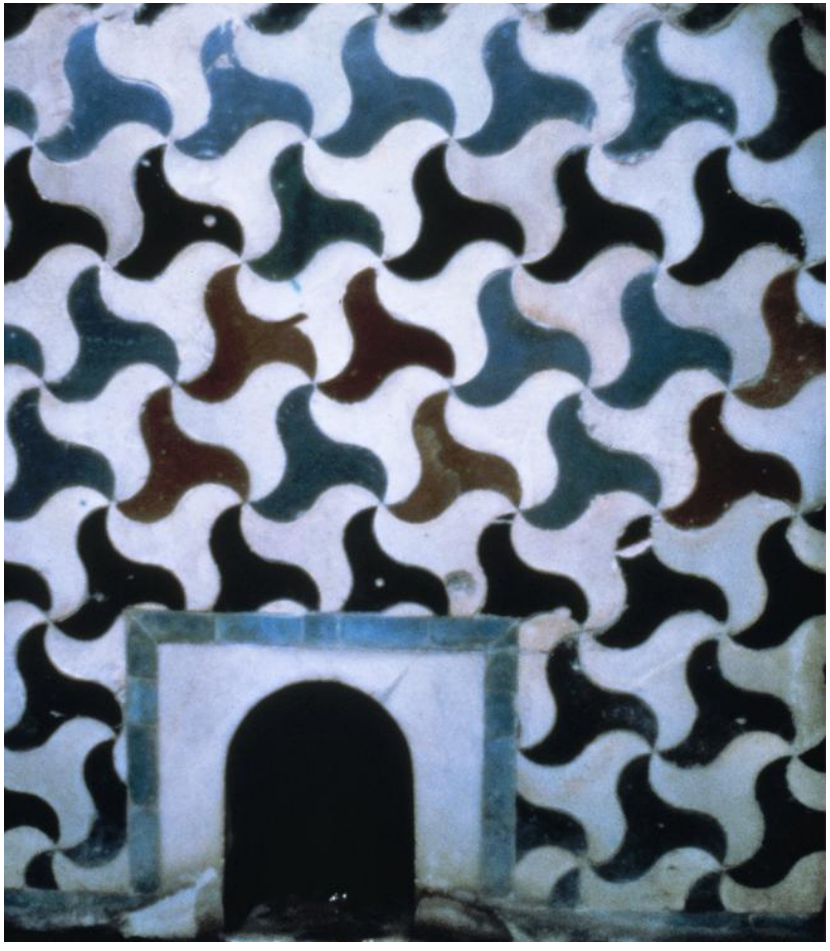
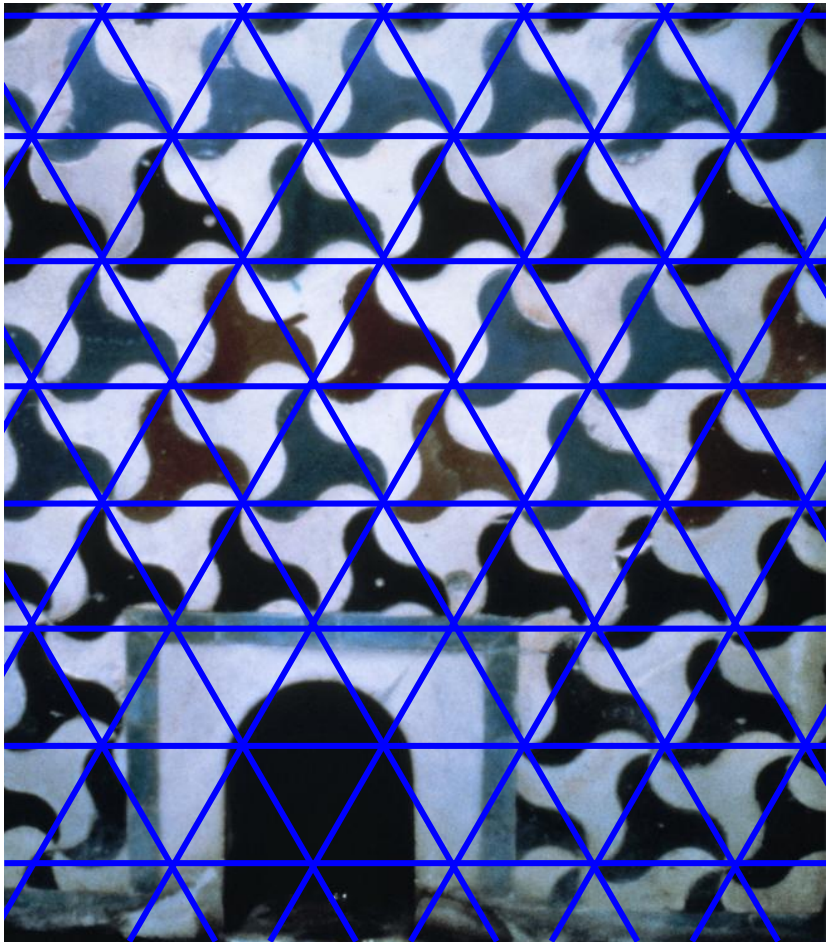
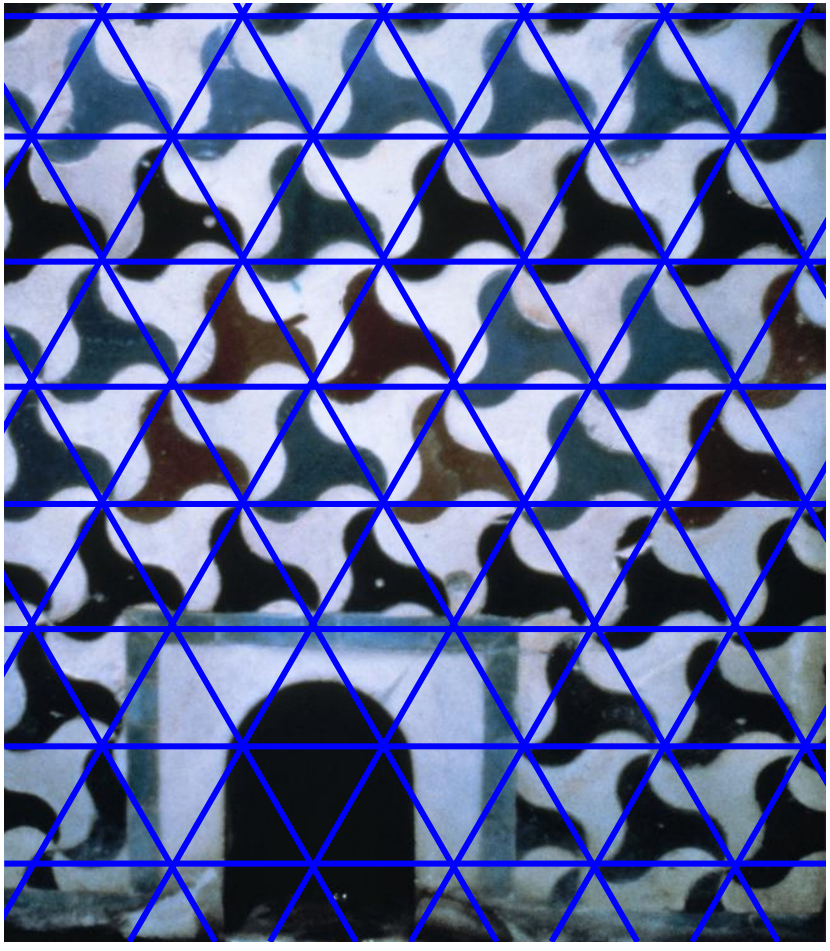


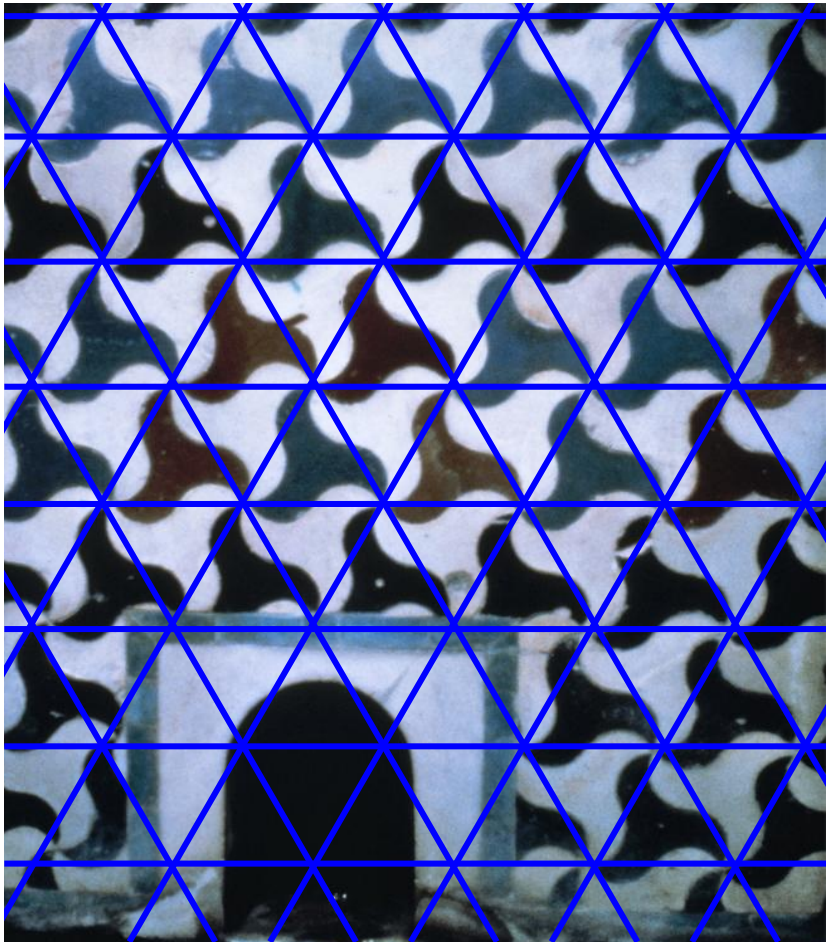
Analysis of a Tessellation (Example 4)

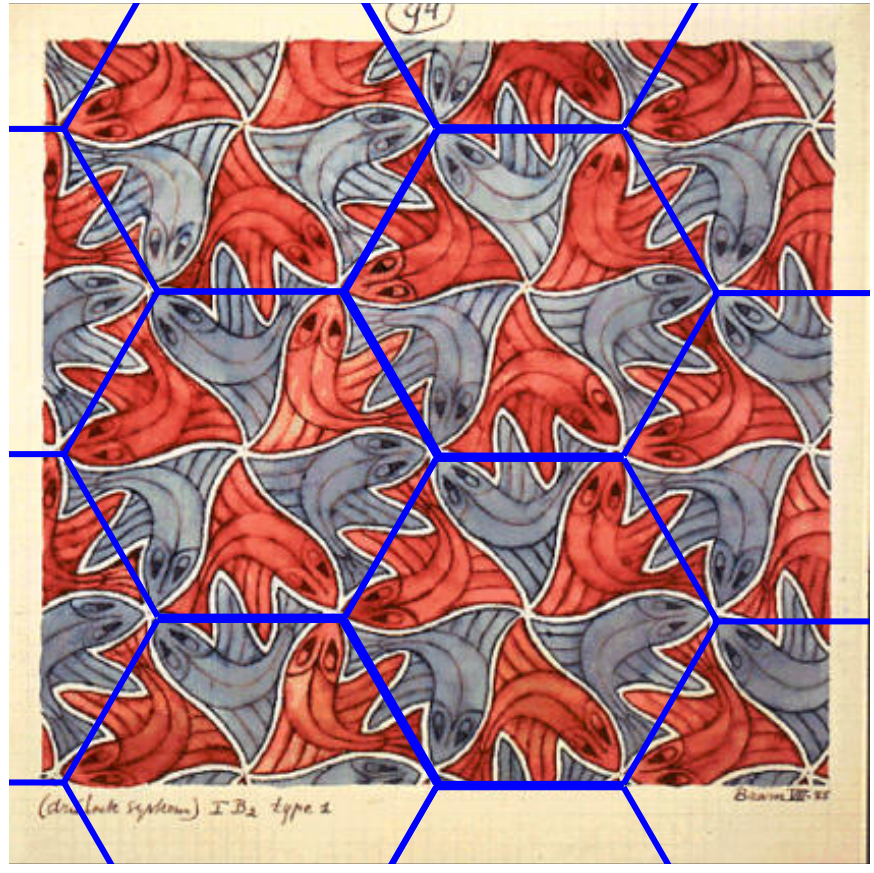


Analysis of a Tessellation (Example 4)

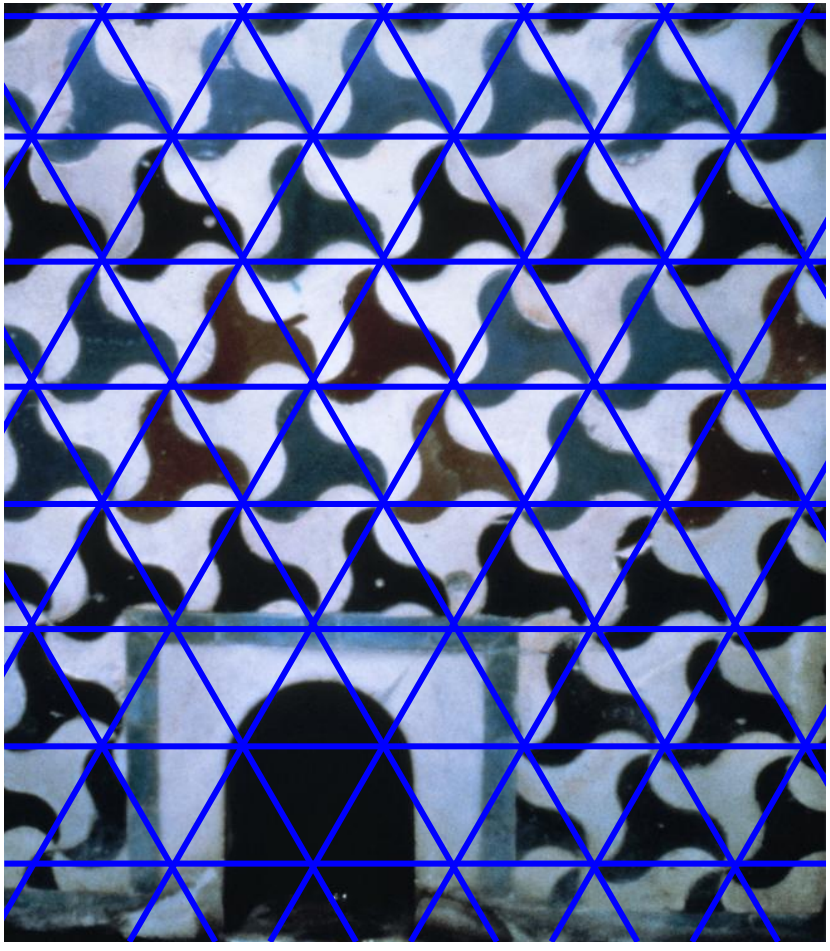


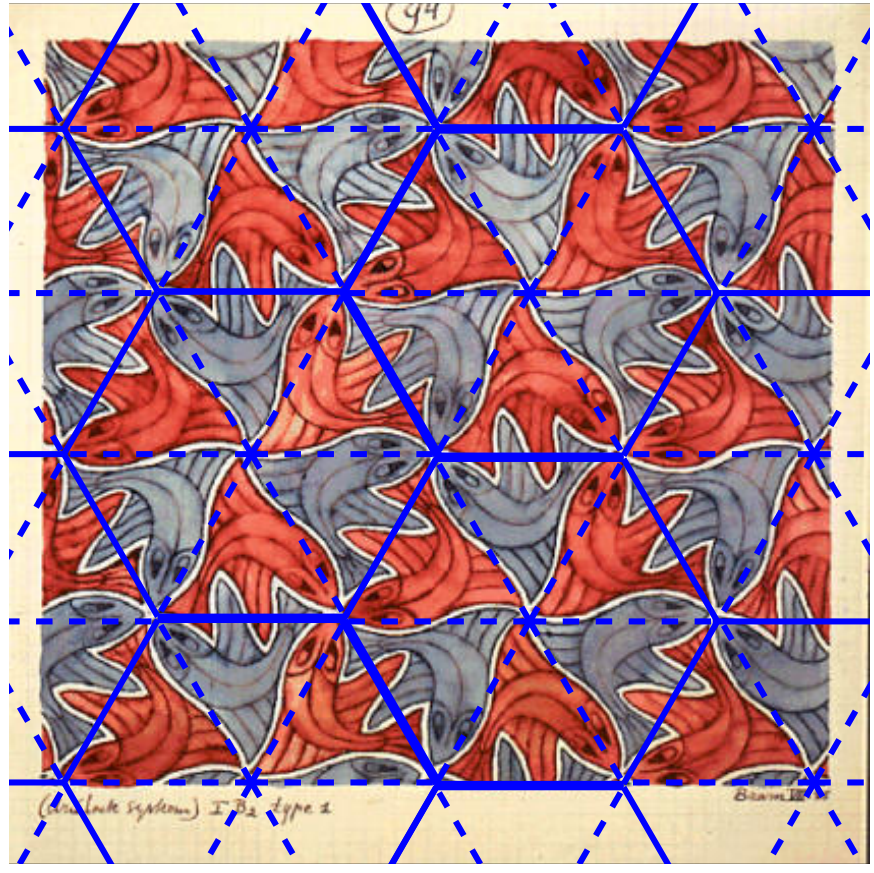
Analysis of a Tessellation (Example 4)



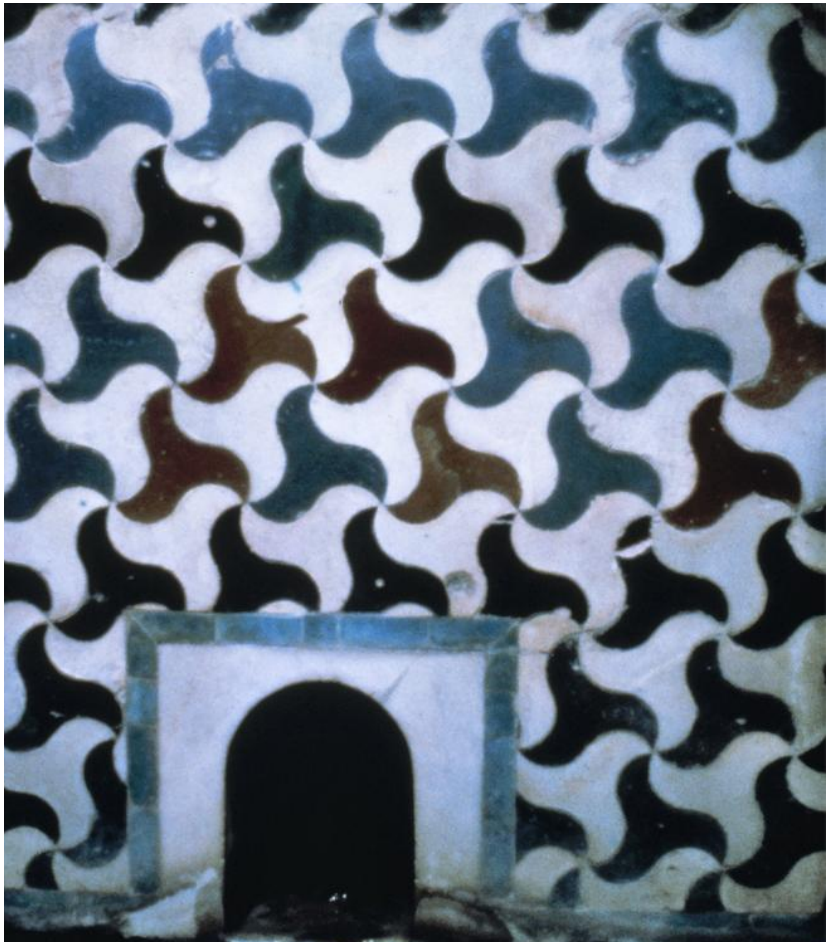


Analysis of a Tessellation (Example 4)





Analysis of a Tessellation (Example 4)



Tessellation Database: http://tessellation.info/

Assignment: http://www.people.vcu.edu/∼rhammack/Math122/