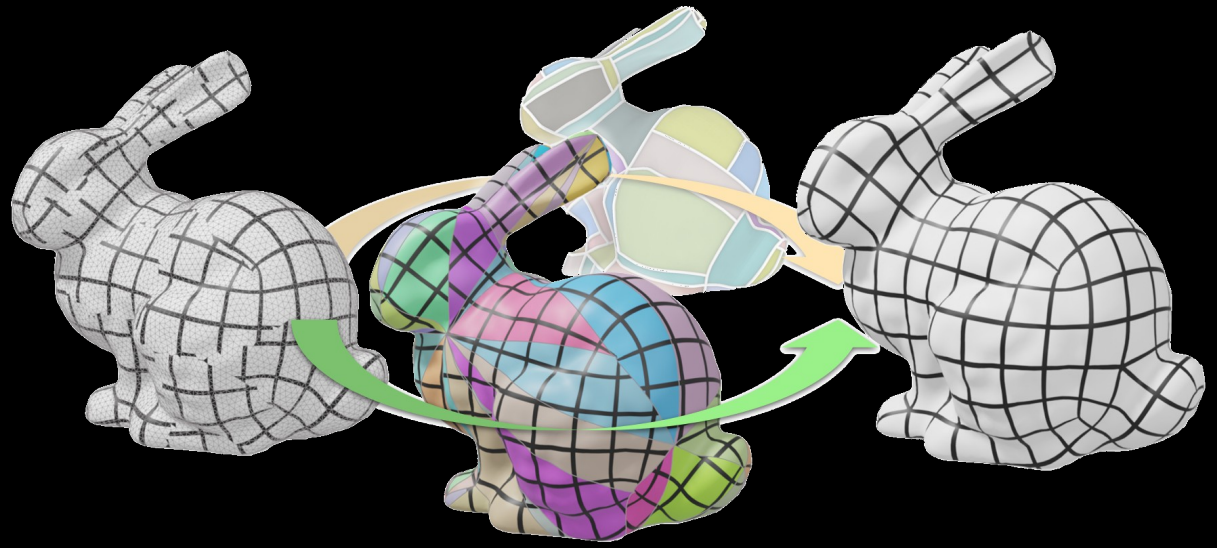


Quad Mesh Quantization Without a T-Mesh

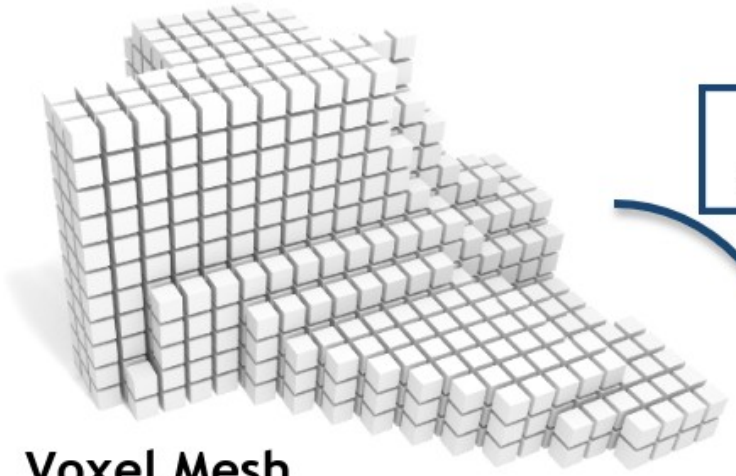
Yoann Coudert--Osmont[1], David Desobry[1], Martin Heistermann[2],
David Bommes[2], Nicolas Ray[1] and Dmitry Sokolov[1]

[1] Inria Nancy – Grand Est, LORIA, Villers-les-Nancy, France

[2] University of Bern, Bern, Switzerland

The 45th Annual Conference of the European Association for Computer Graphics is organized by CYENS Centre
of Excellence in collaboration with the University of Cyprus and the Cyprus University of Technology.

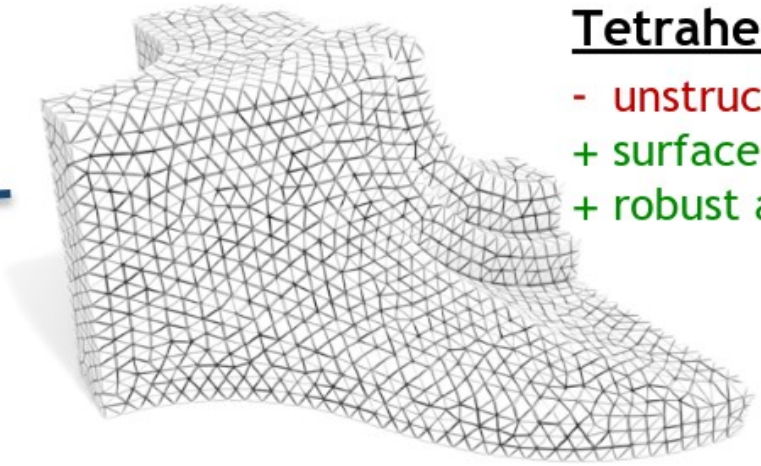
Context



Voxel Mesh

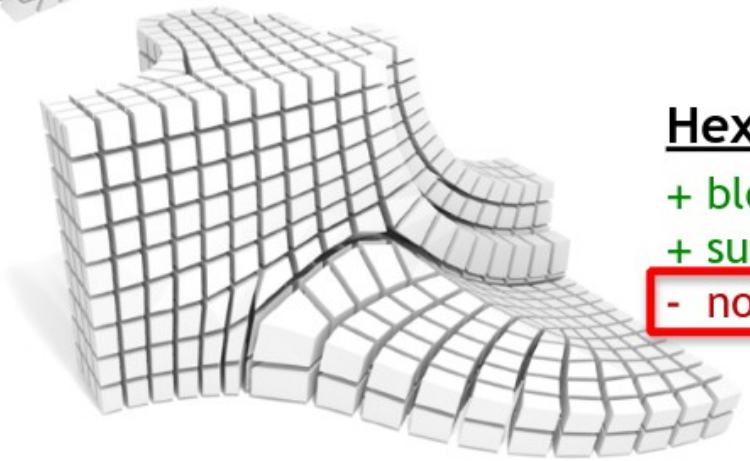
+ structured
- no surface alignment
+ trivial generation

combine strengths



Tetrahedral Mesh

- unstructured
+ surface alignment
+ robust algorithms

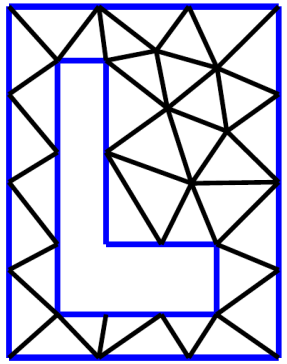


Hexahedral Mesh

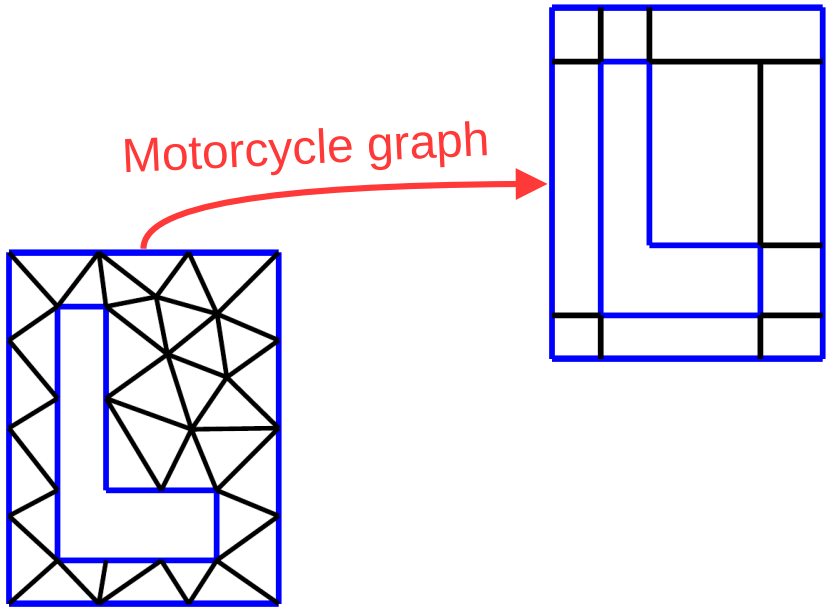
+ block-structured
+ surface alignment
- no automatic algorithms

Research goal!

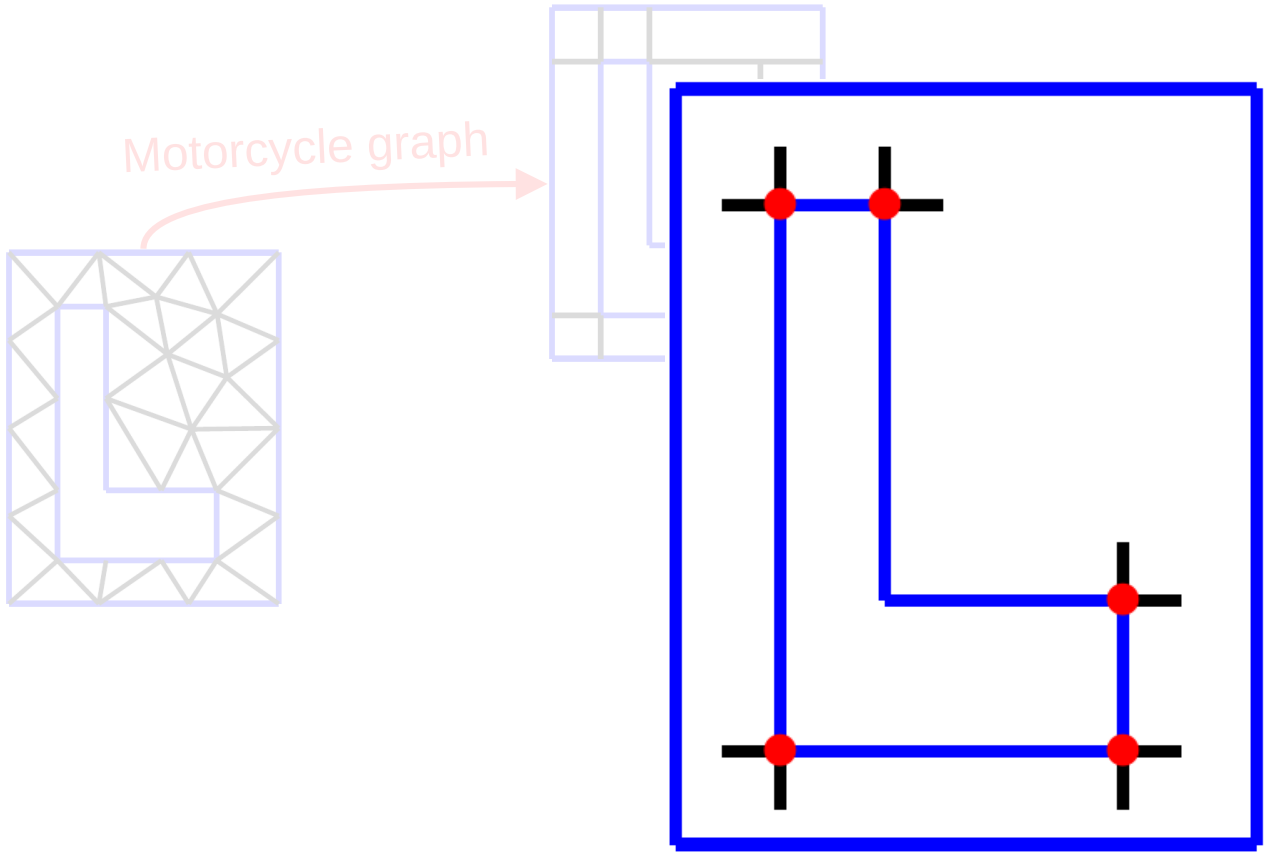
Input



Motorcycle Graph

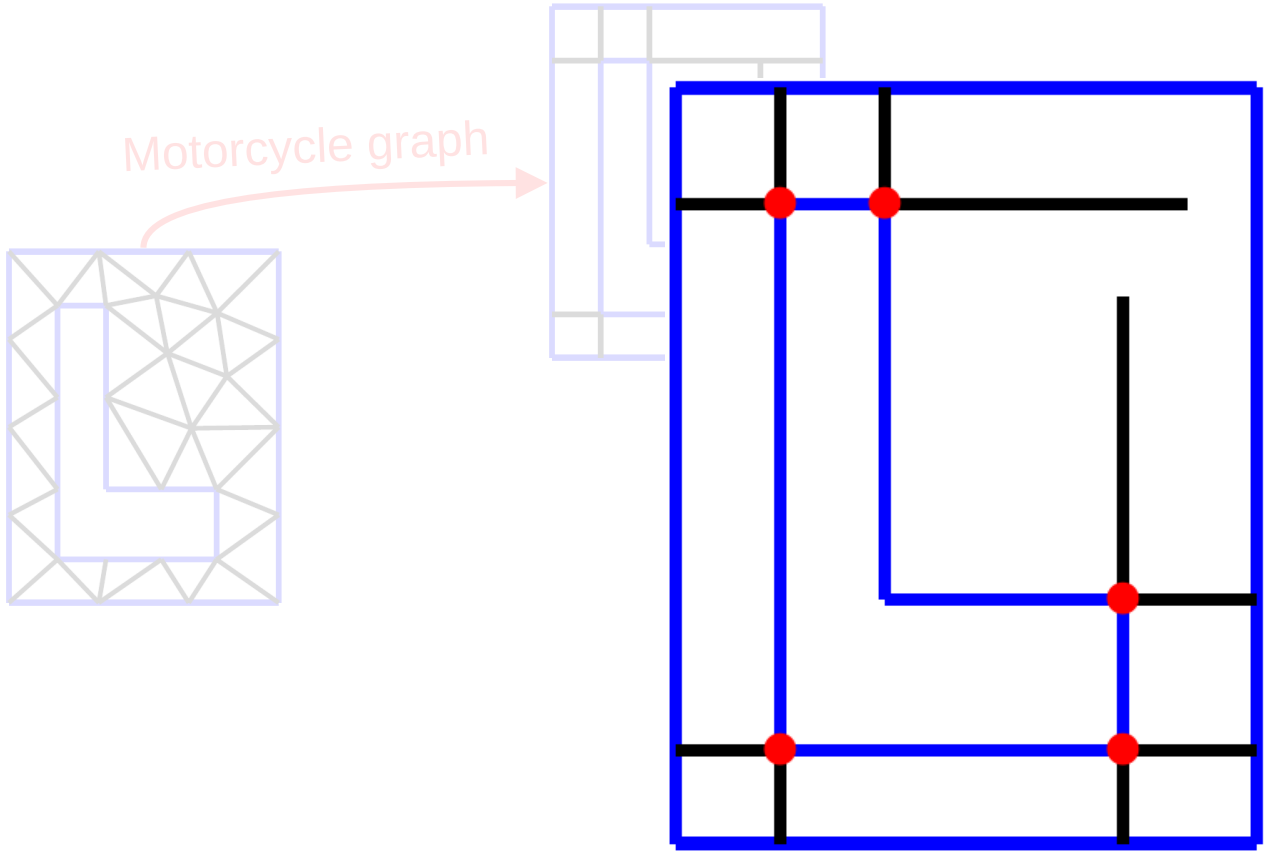


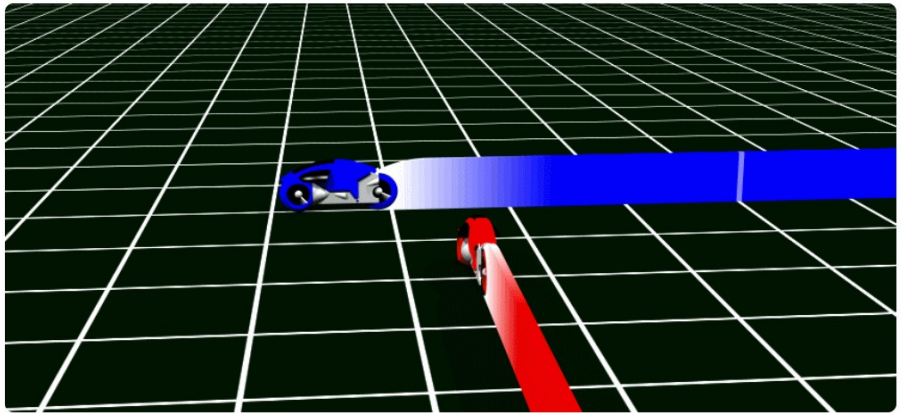
Motorcycle Graph



EPPSTEIN D. et al. 2008
Motorcycle Graphs: Canonical Quad Mesh Partitioning

Motorcycle Graph





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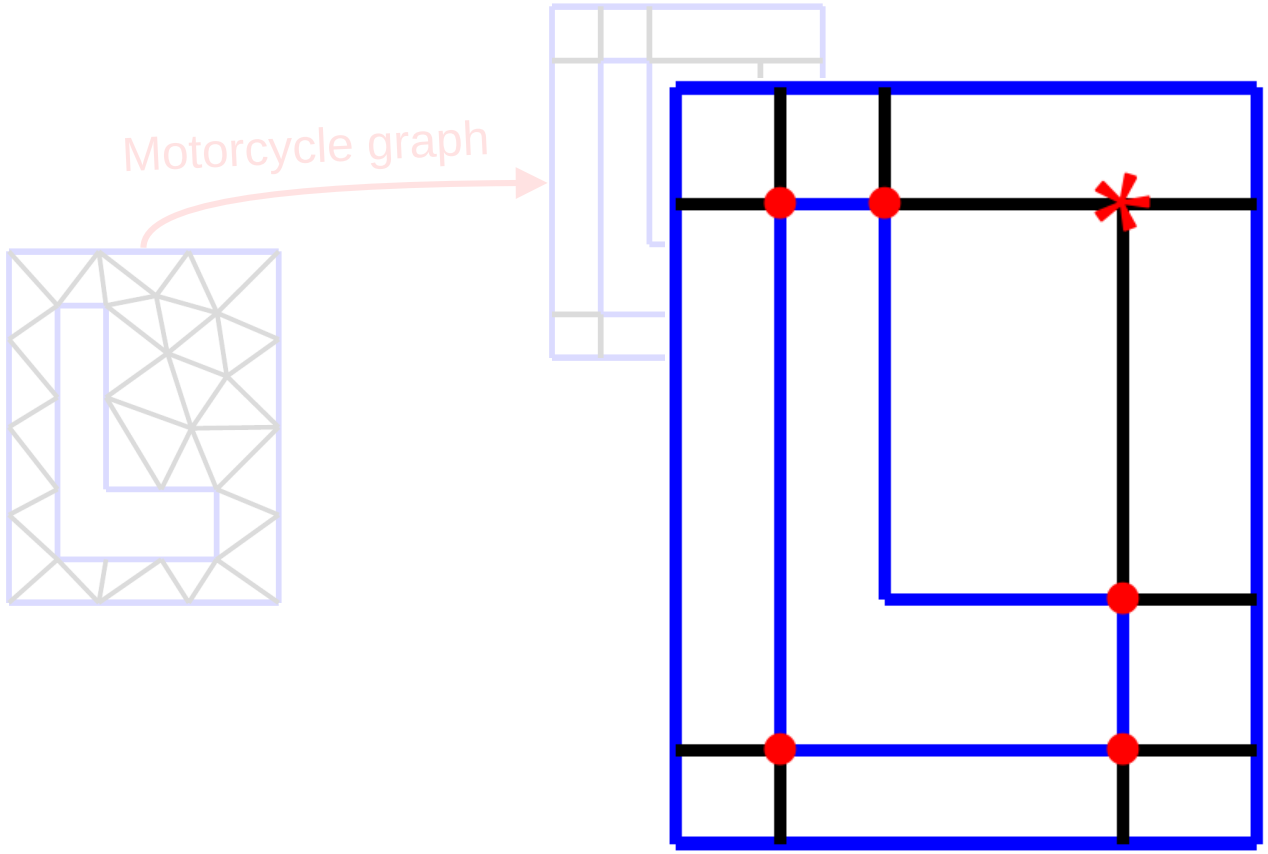
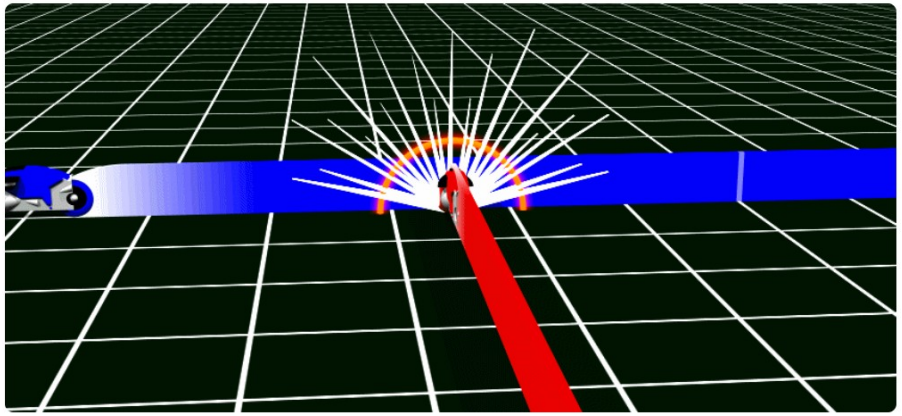
Motorcycle Graph





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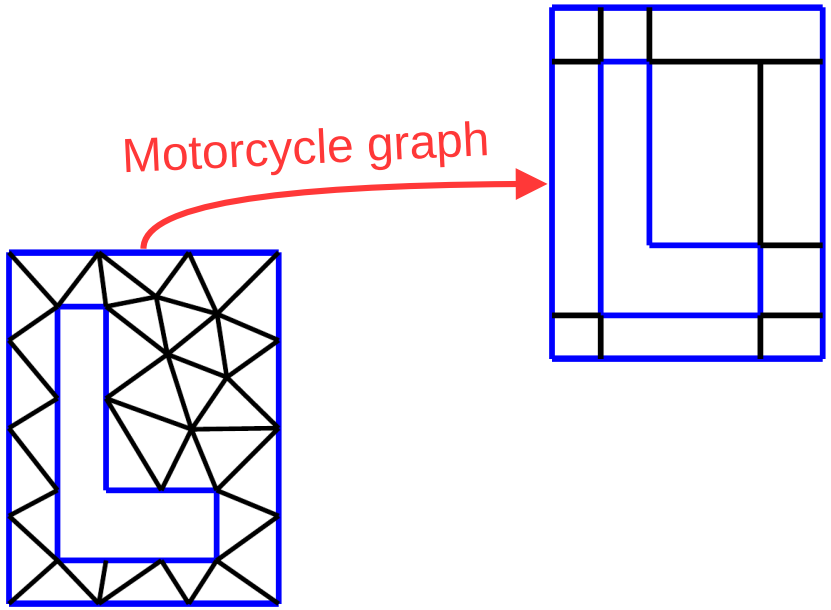
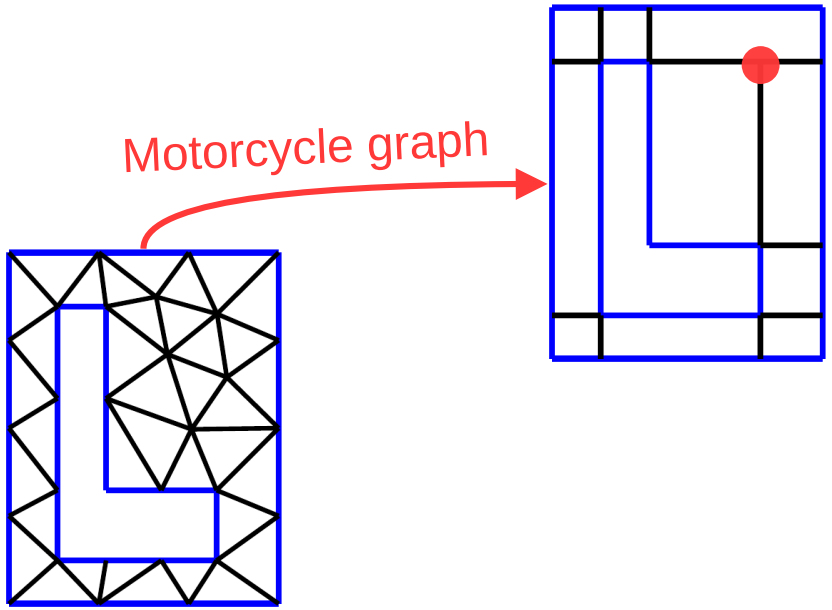
Motorcycle Graphs: Canonical Quad Mesh Partitioning

Motorcycle Graph

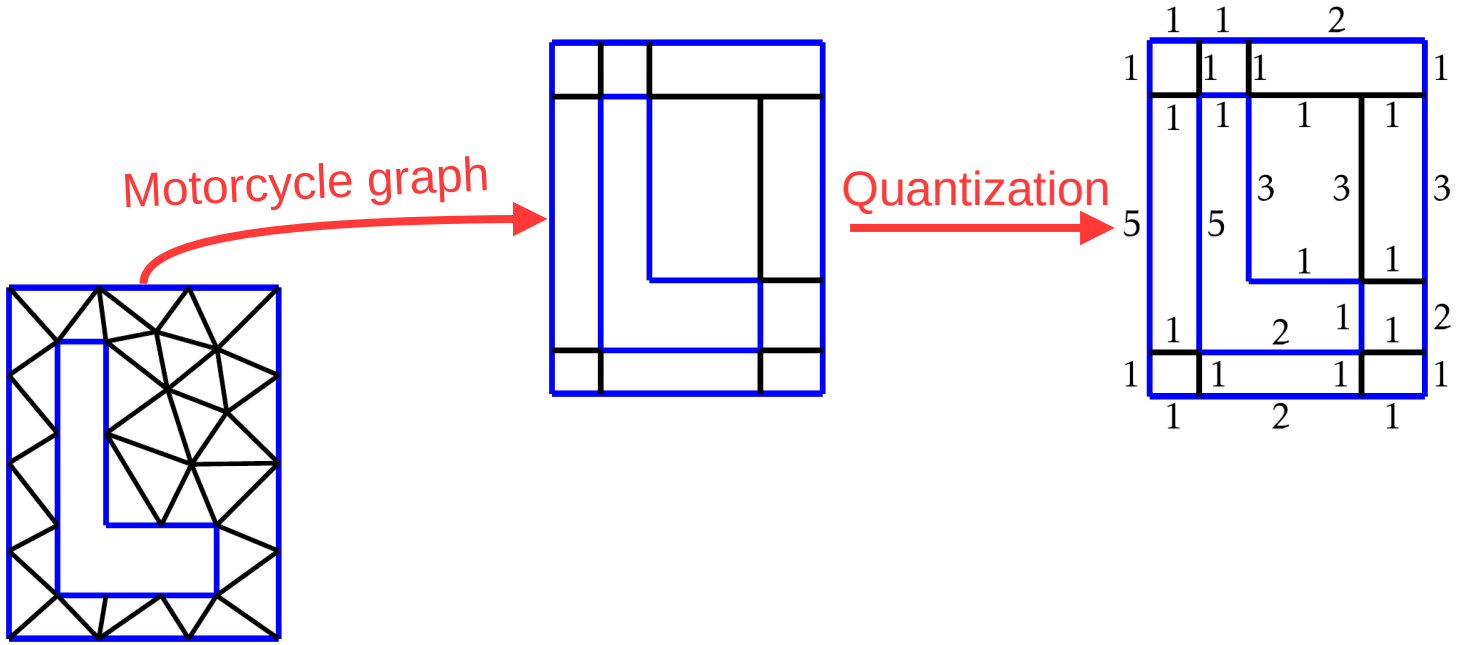


Motorcycle Graph

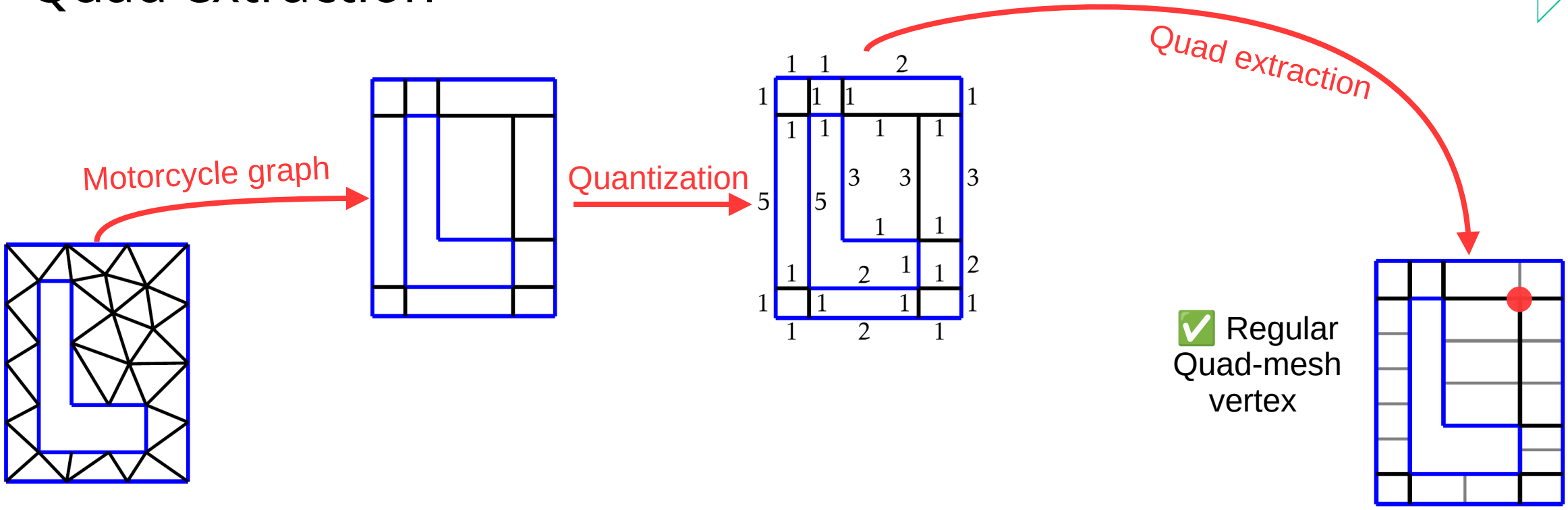


⚠️ T-junction

Quantization



Quad extraction



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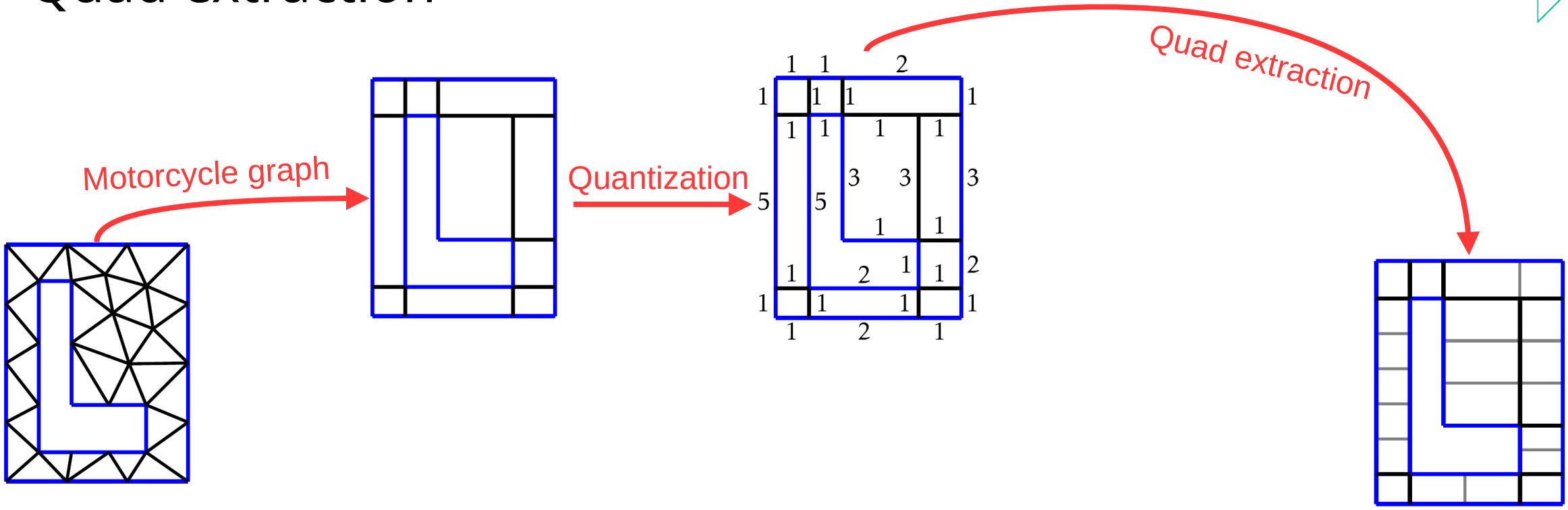
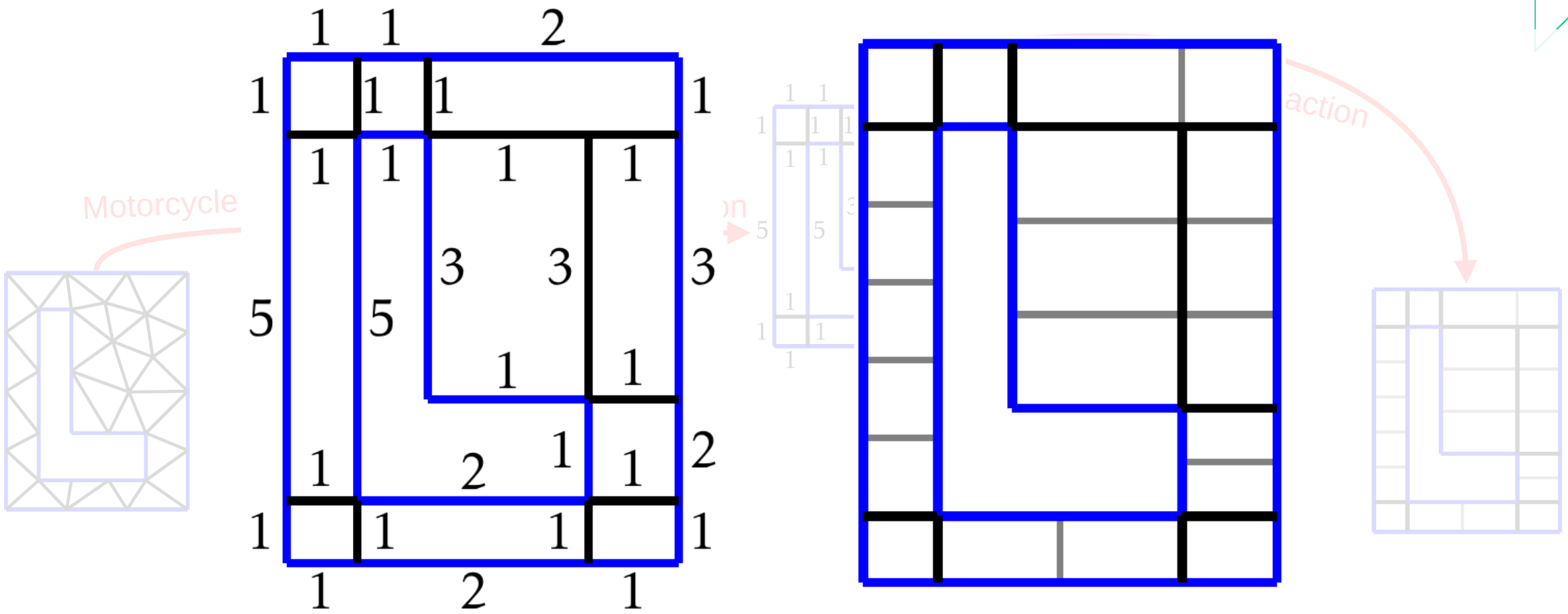
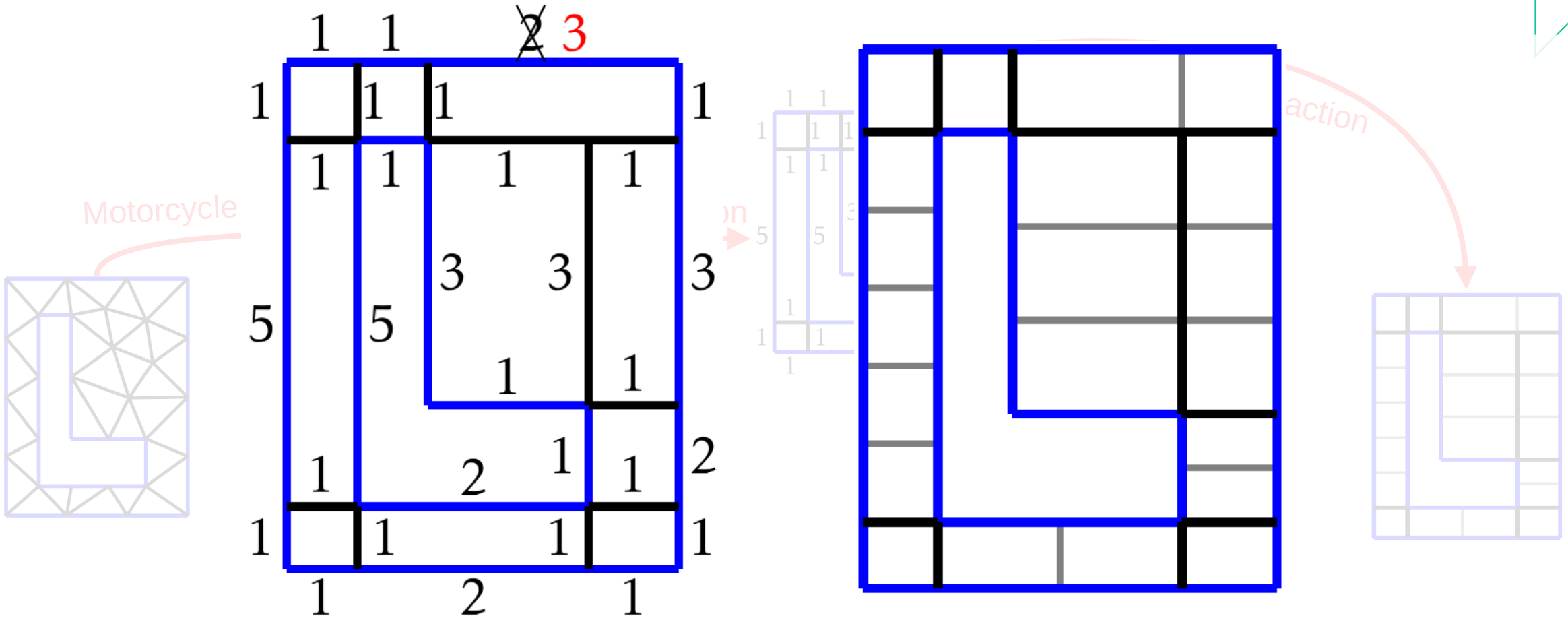


Quantization



CAMPEN M. et al. 2015
Quantized global parametrization

Quantization



CAMPEN M. et al. 2015
Quantized global parametrization

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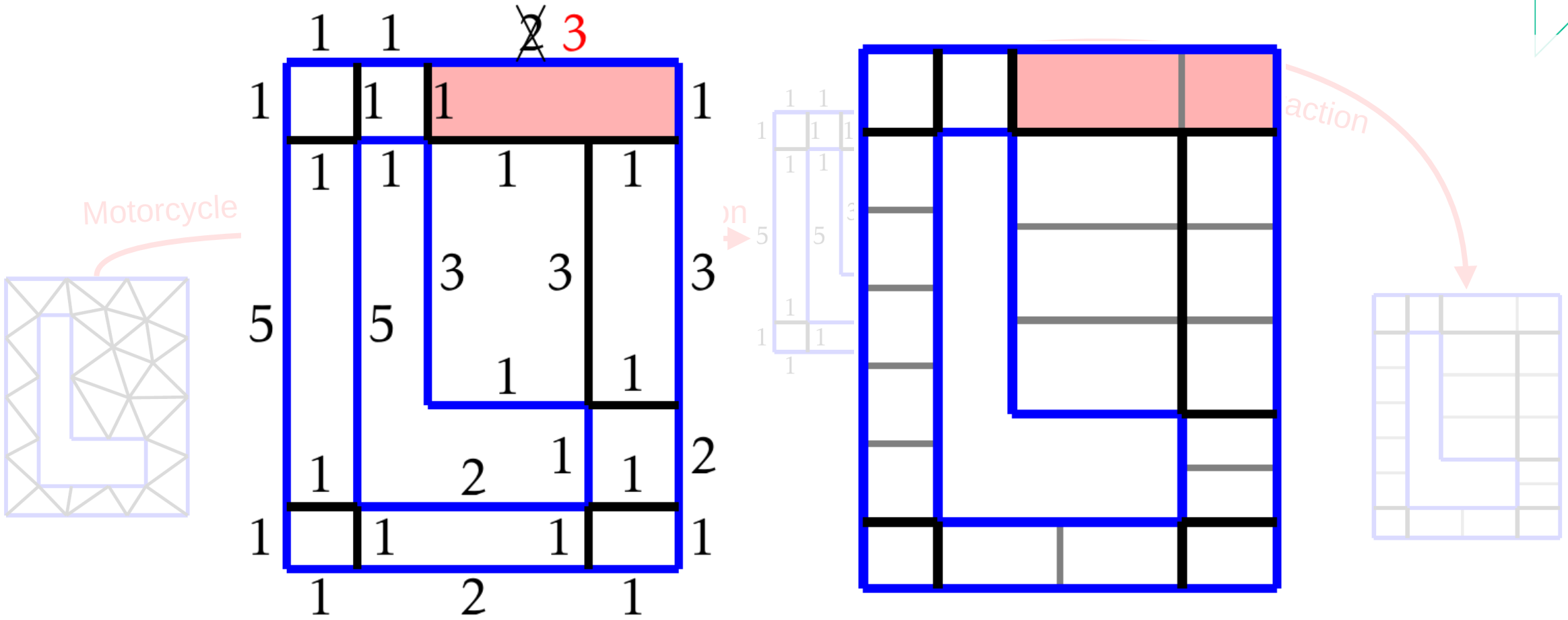
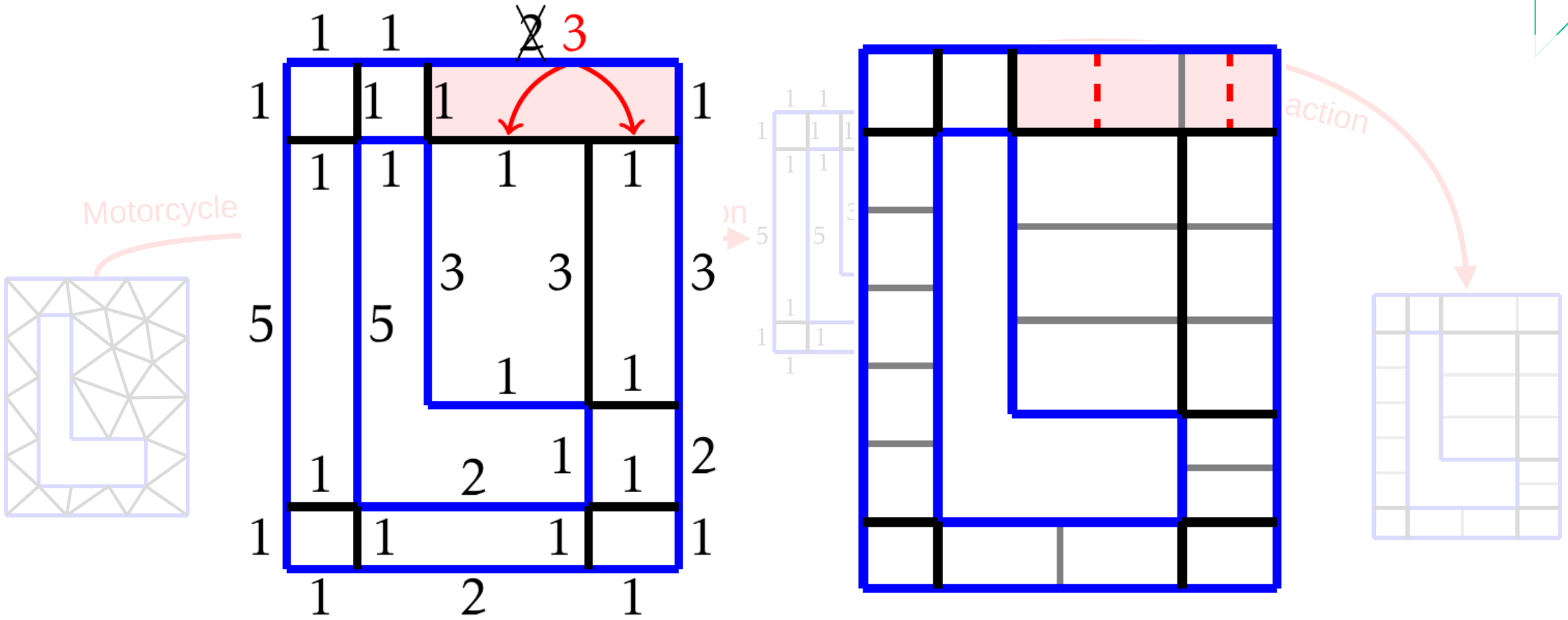


CAMPEN M. et al. 2015
Quantized global parametrization

Quantization



CAMPEN M. et al. 2015
Quantized global parametrization

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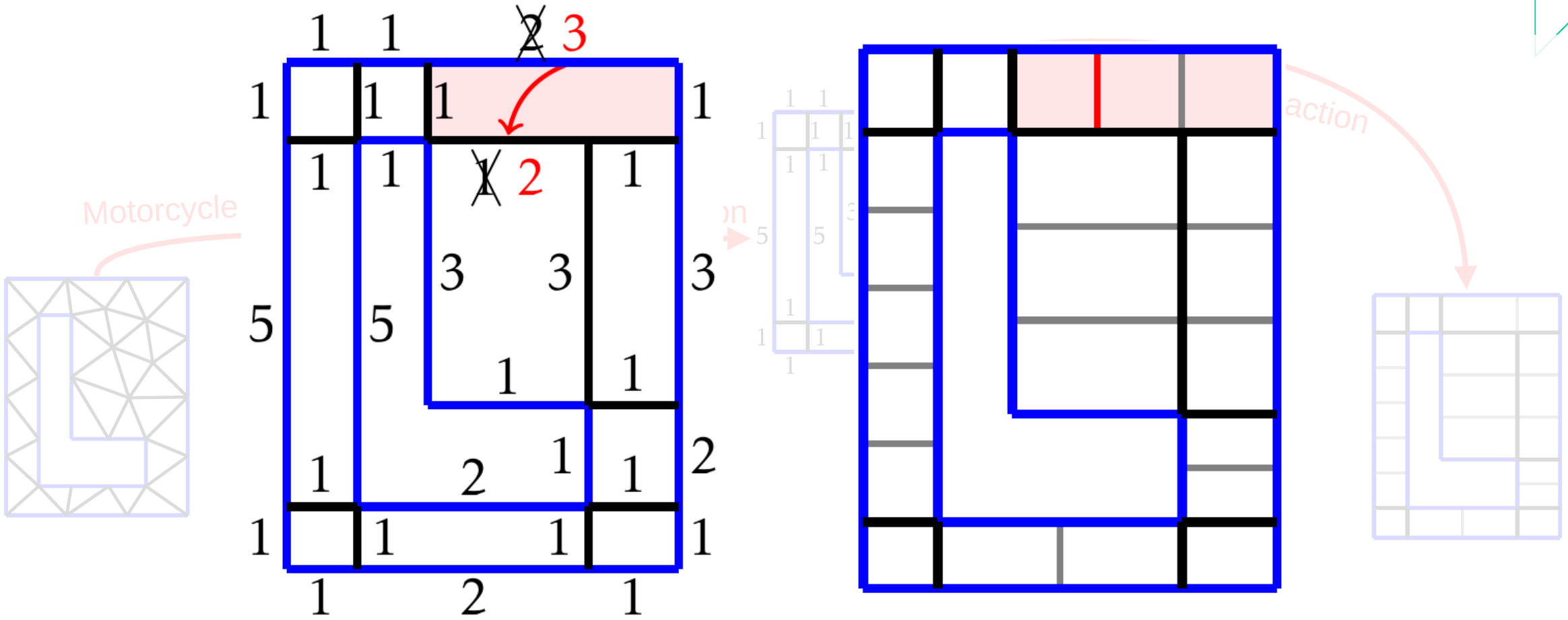

CAMPEN M. et al. 2015
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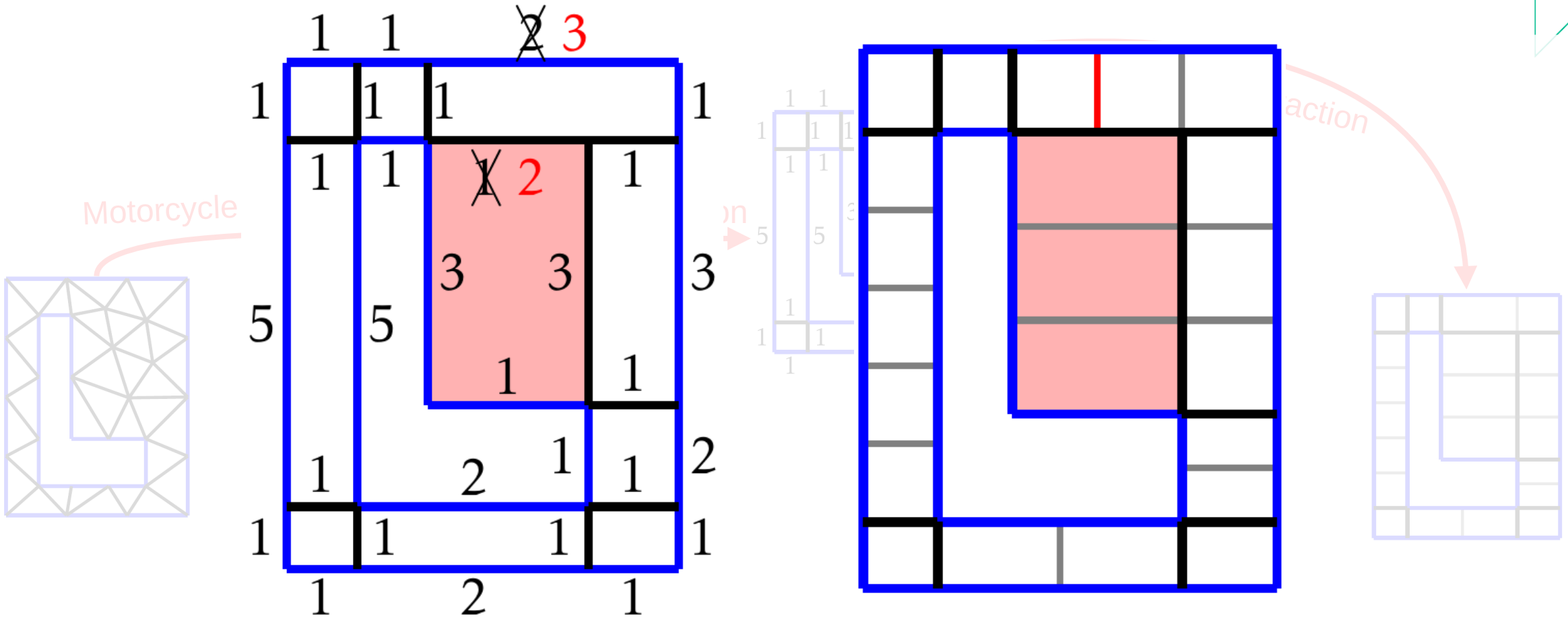

CAMPEN M. et al. 2015
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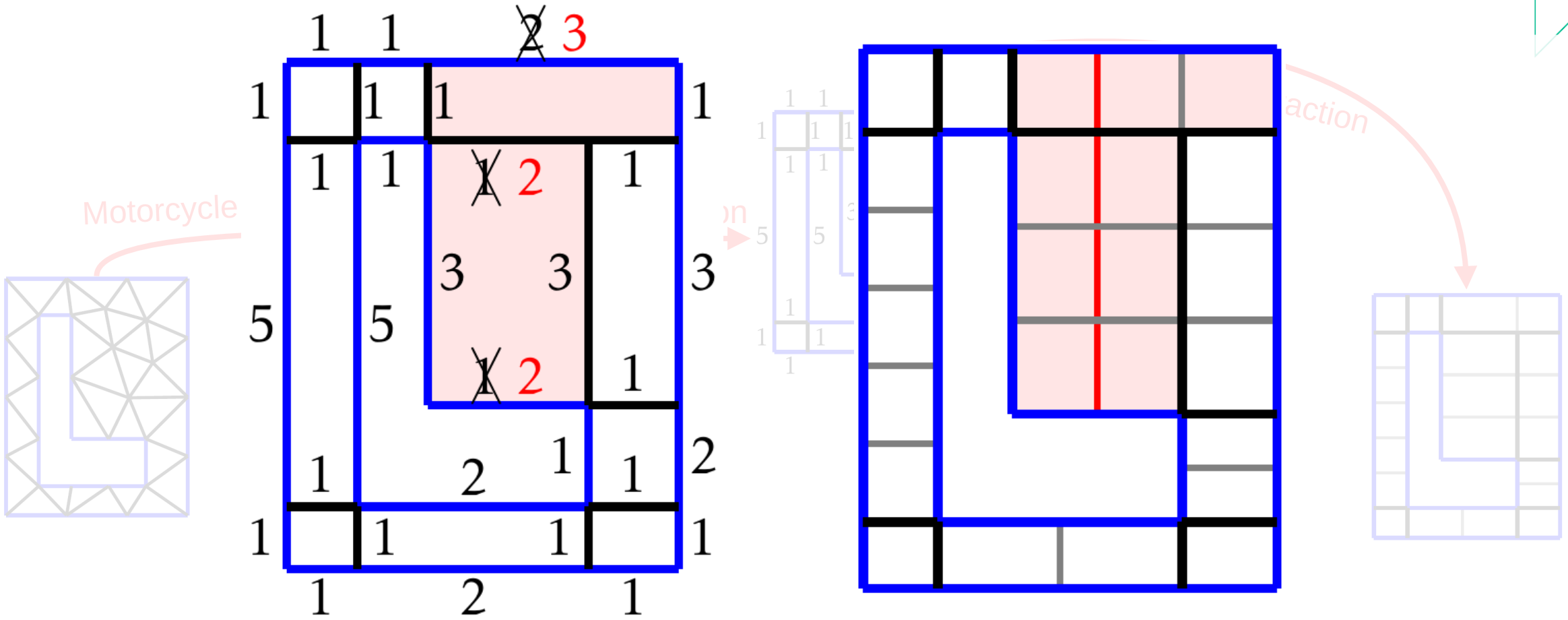
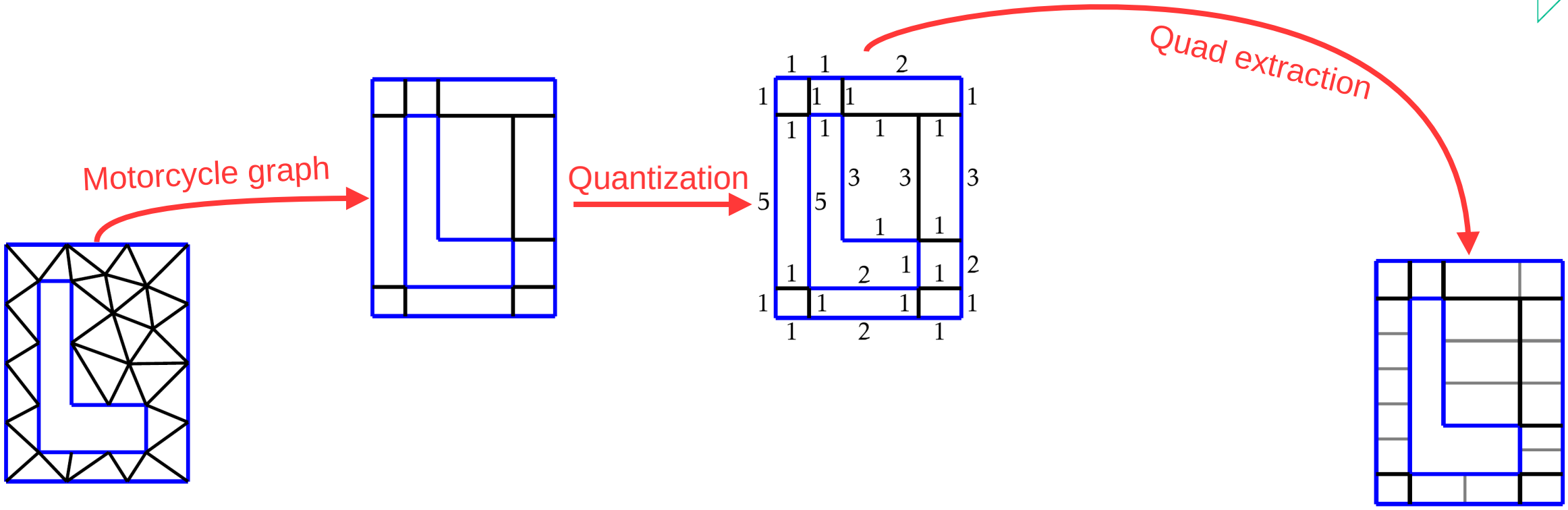
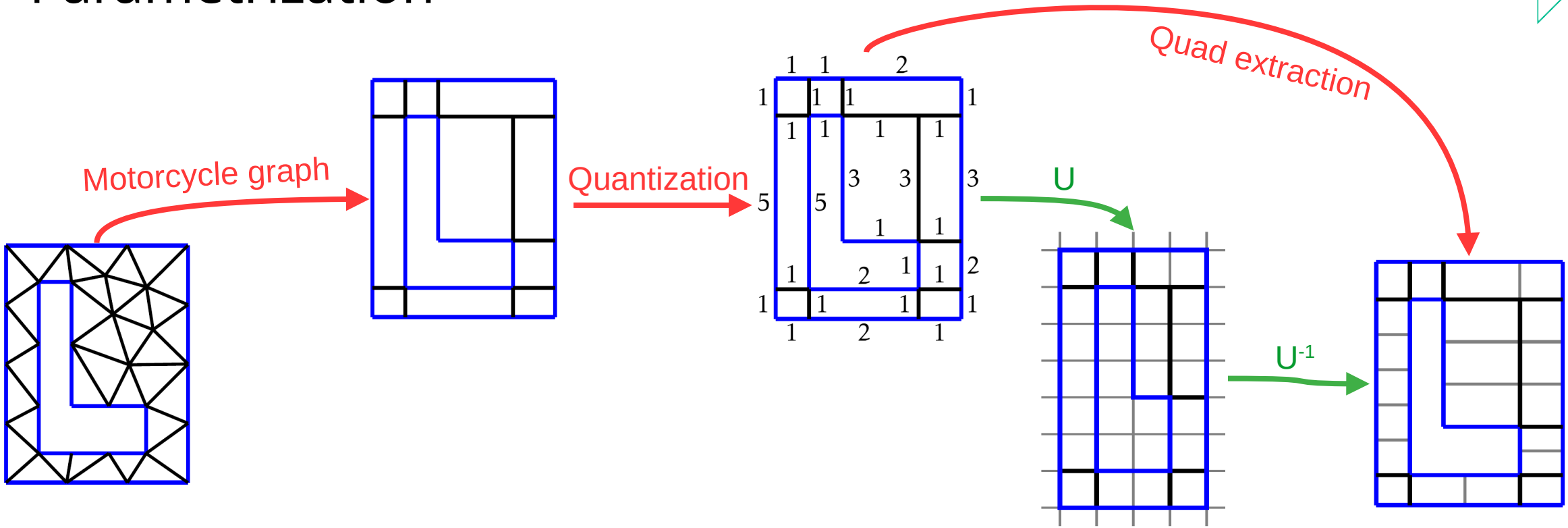


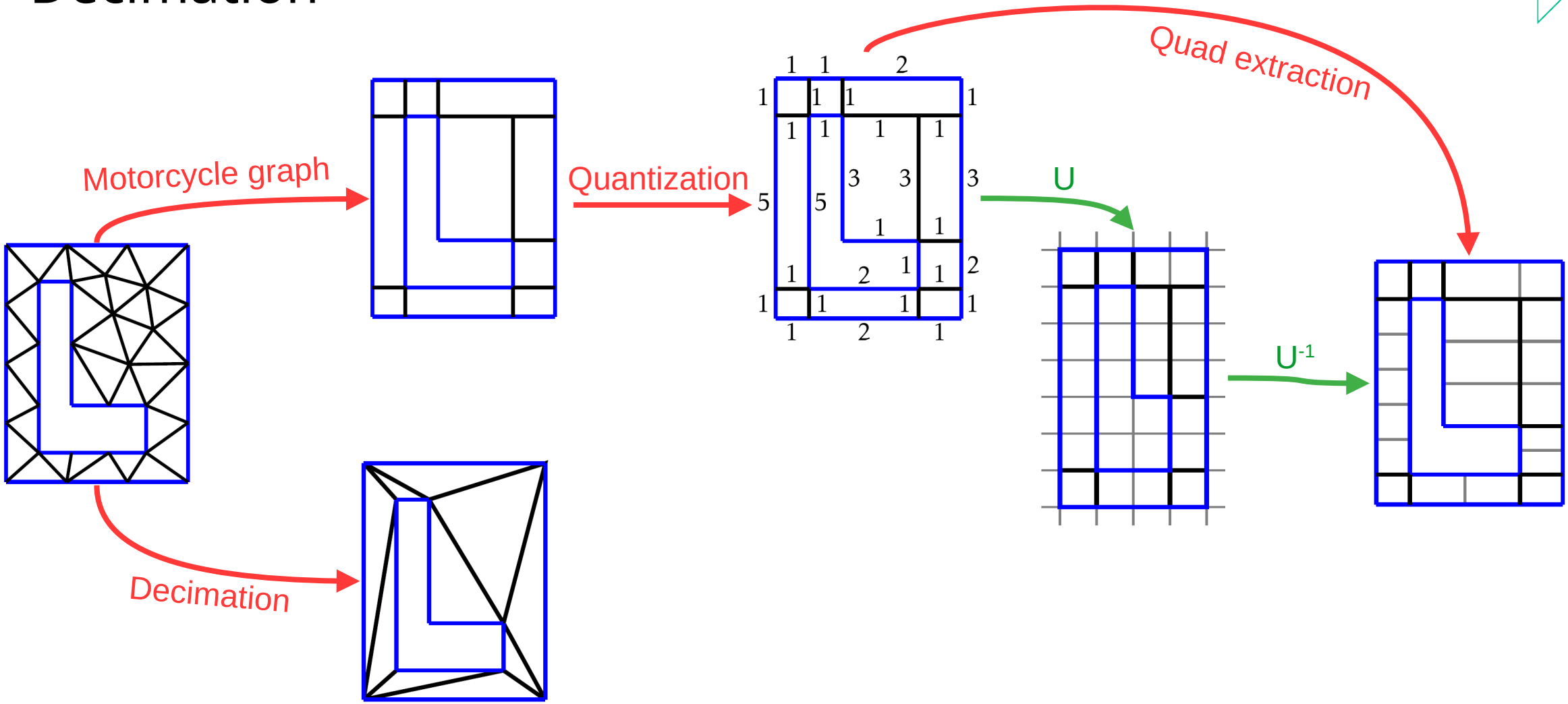
CAMPEN M. et al. 2015
Quantized global parametrization



Parametrization



Decimation



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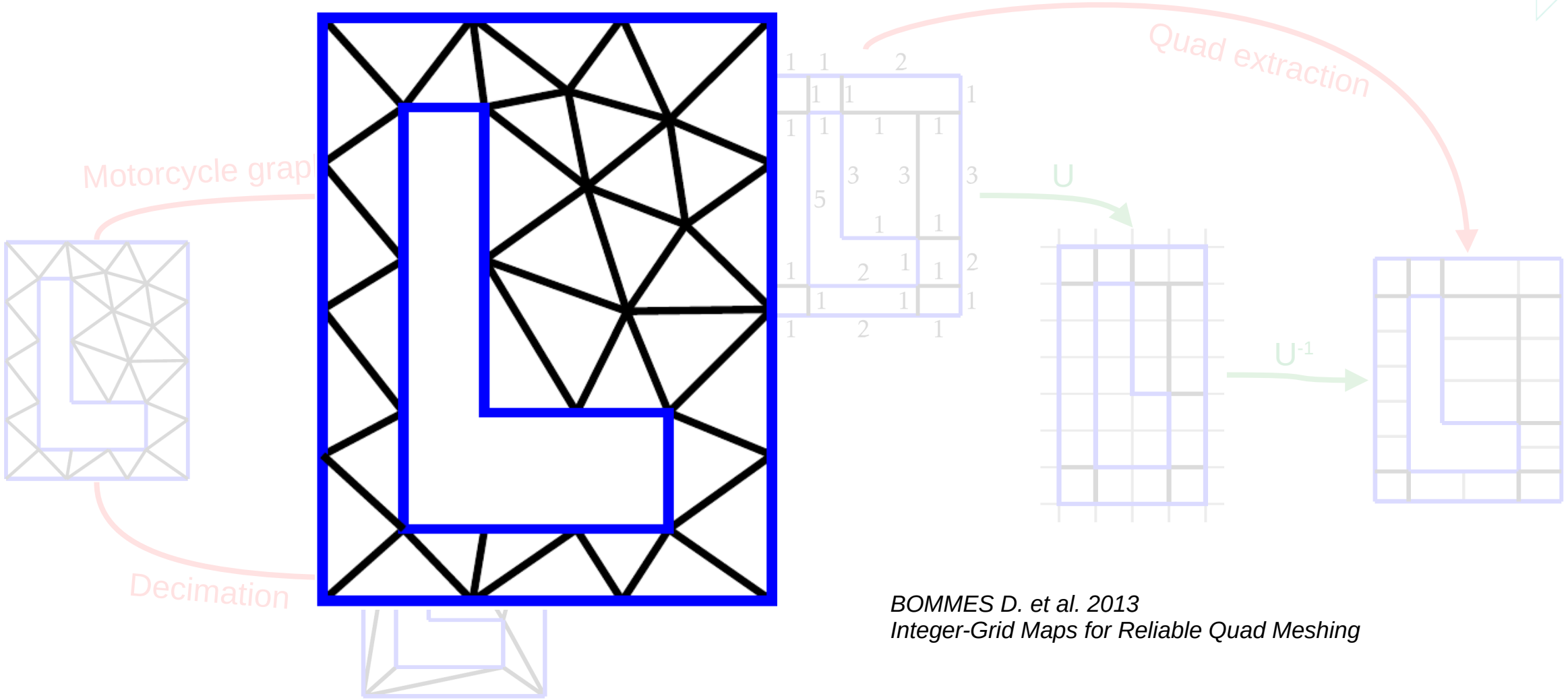
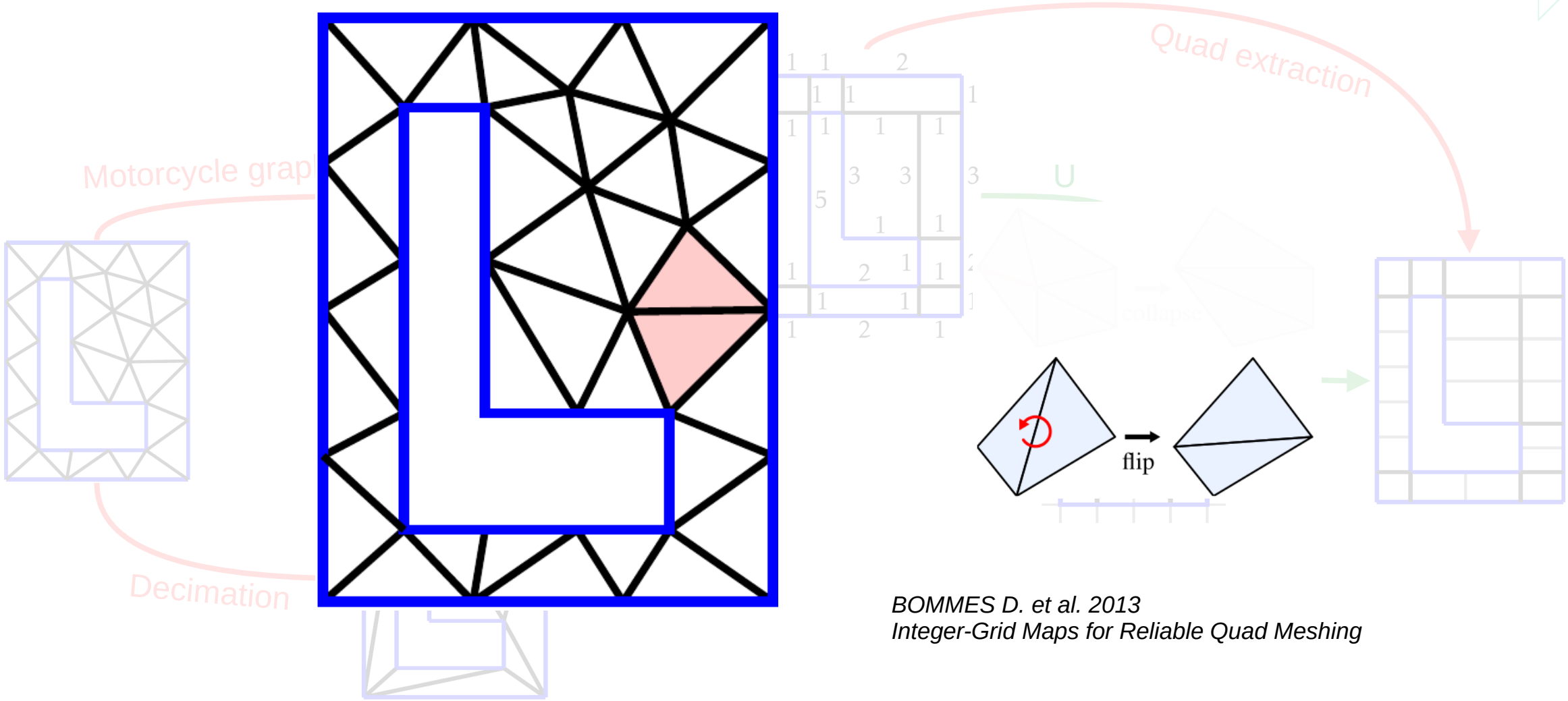


BOMMES D. et al. 2013
Integer-Grid Maps for Reliable Quad Meshing

Decimation



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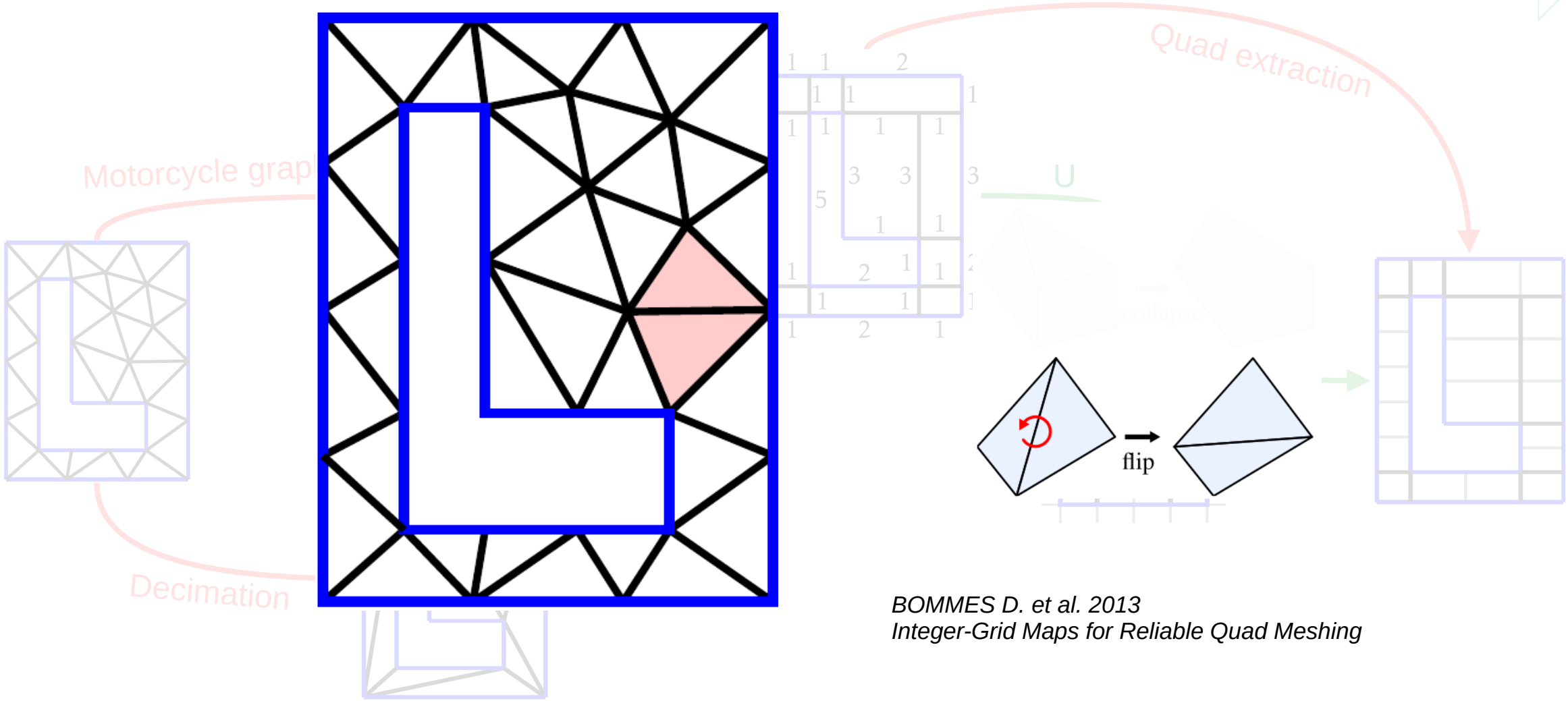

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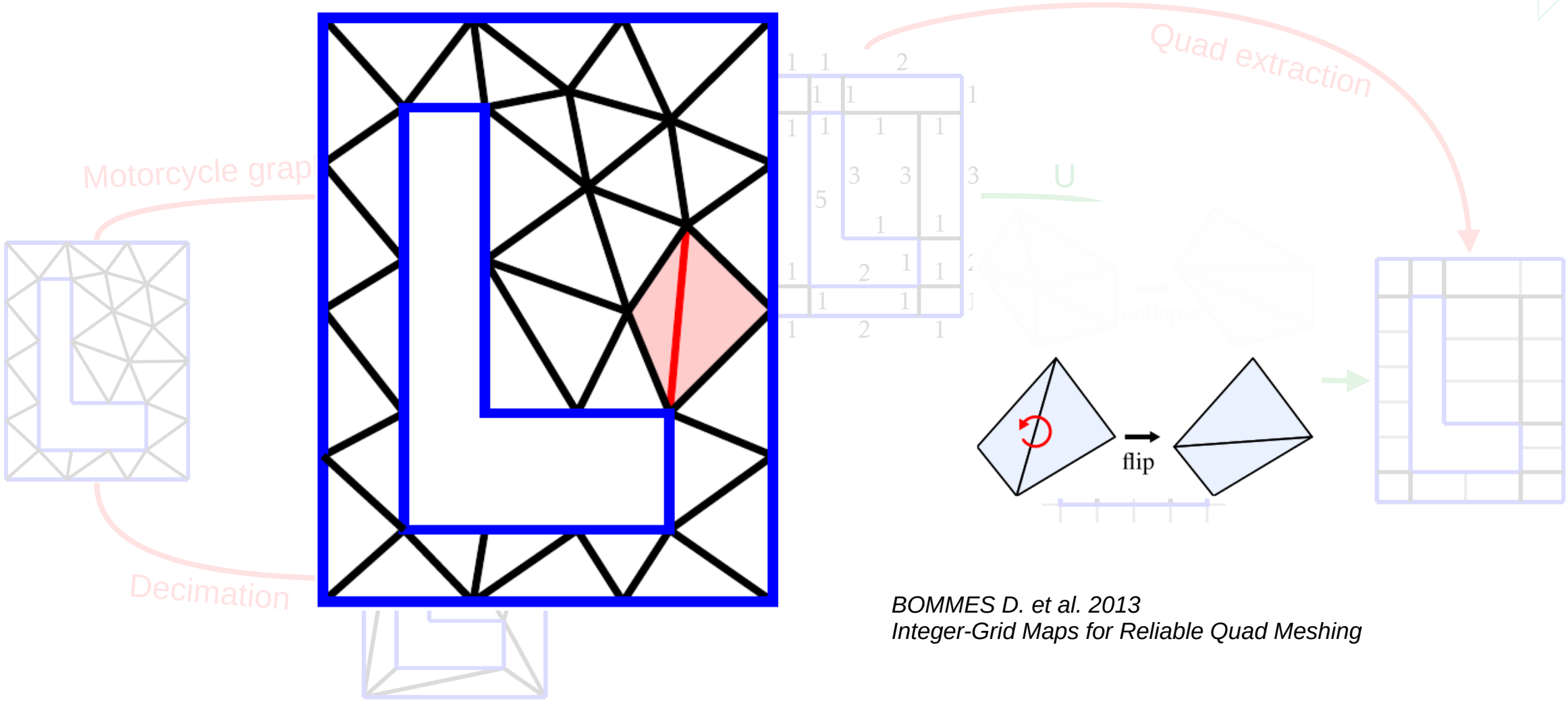

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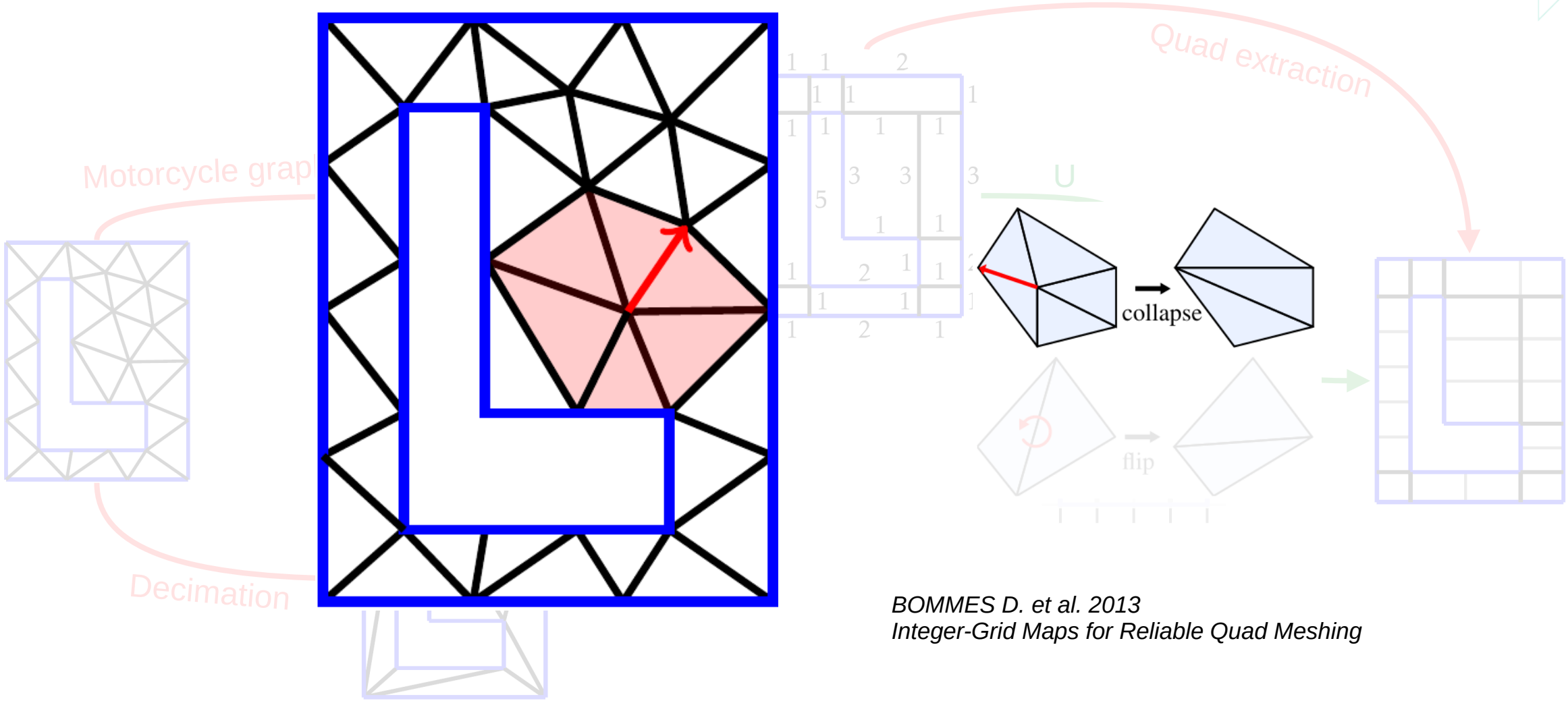

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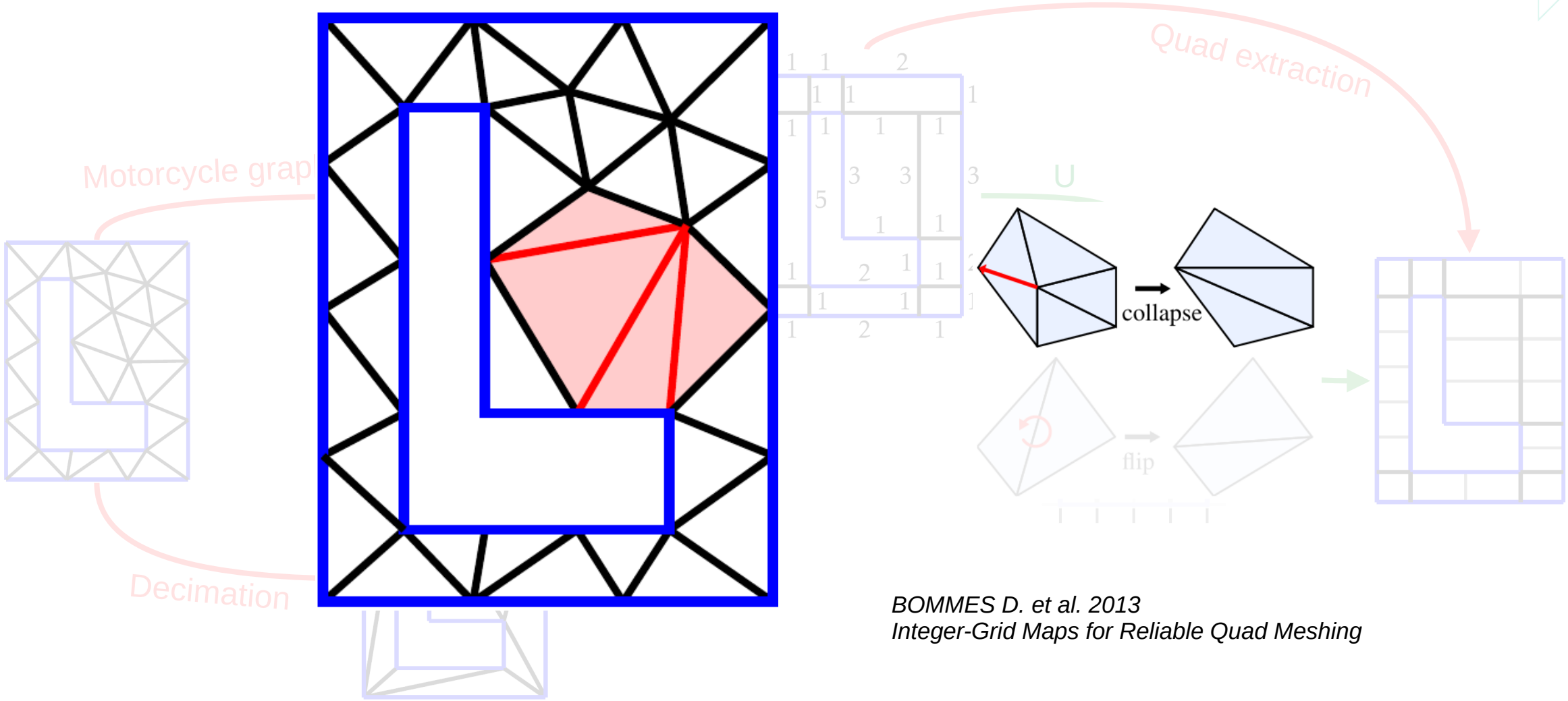

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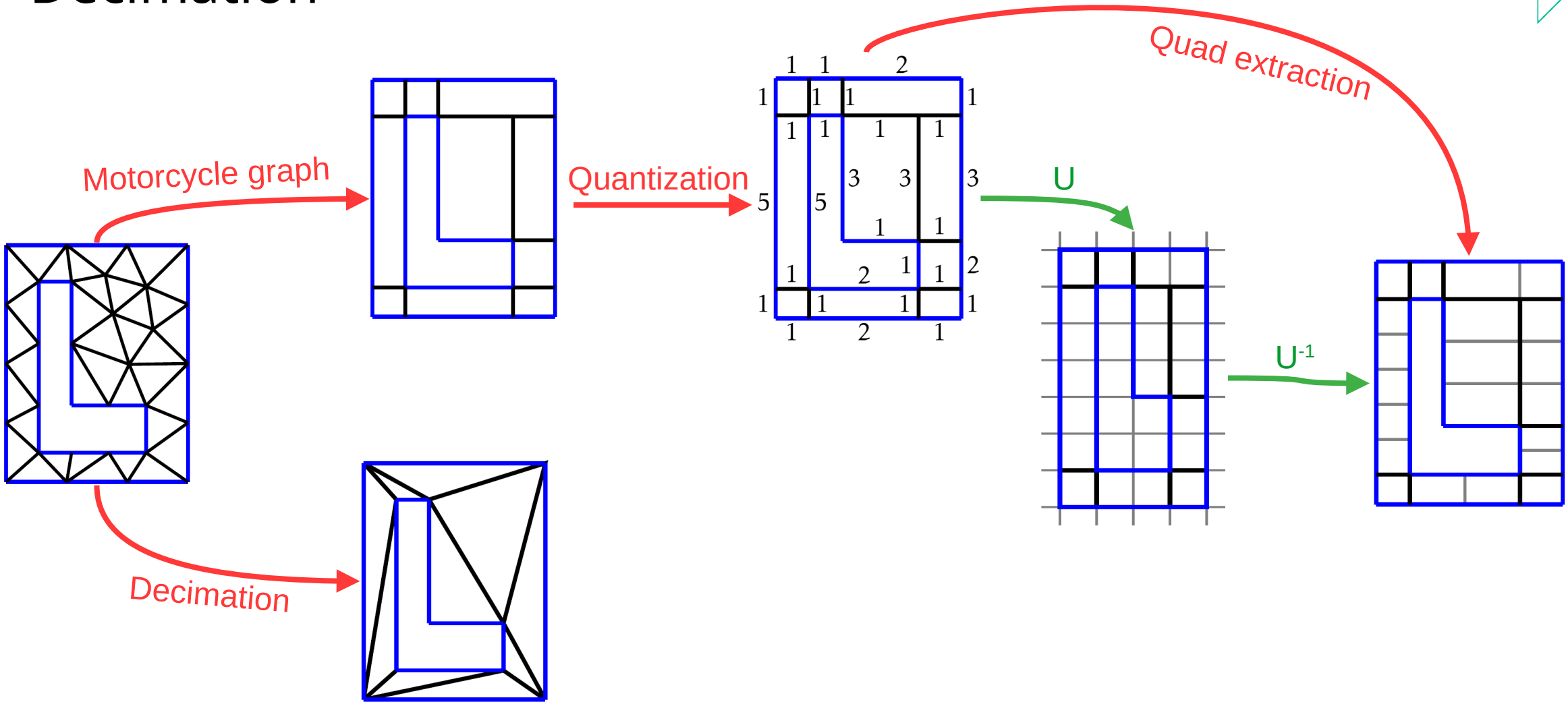

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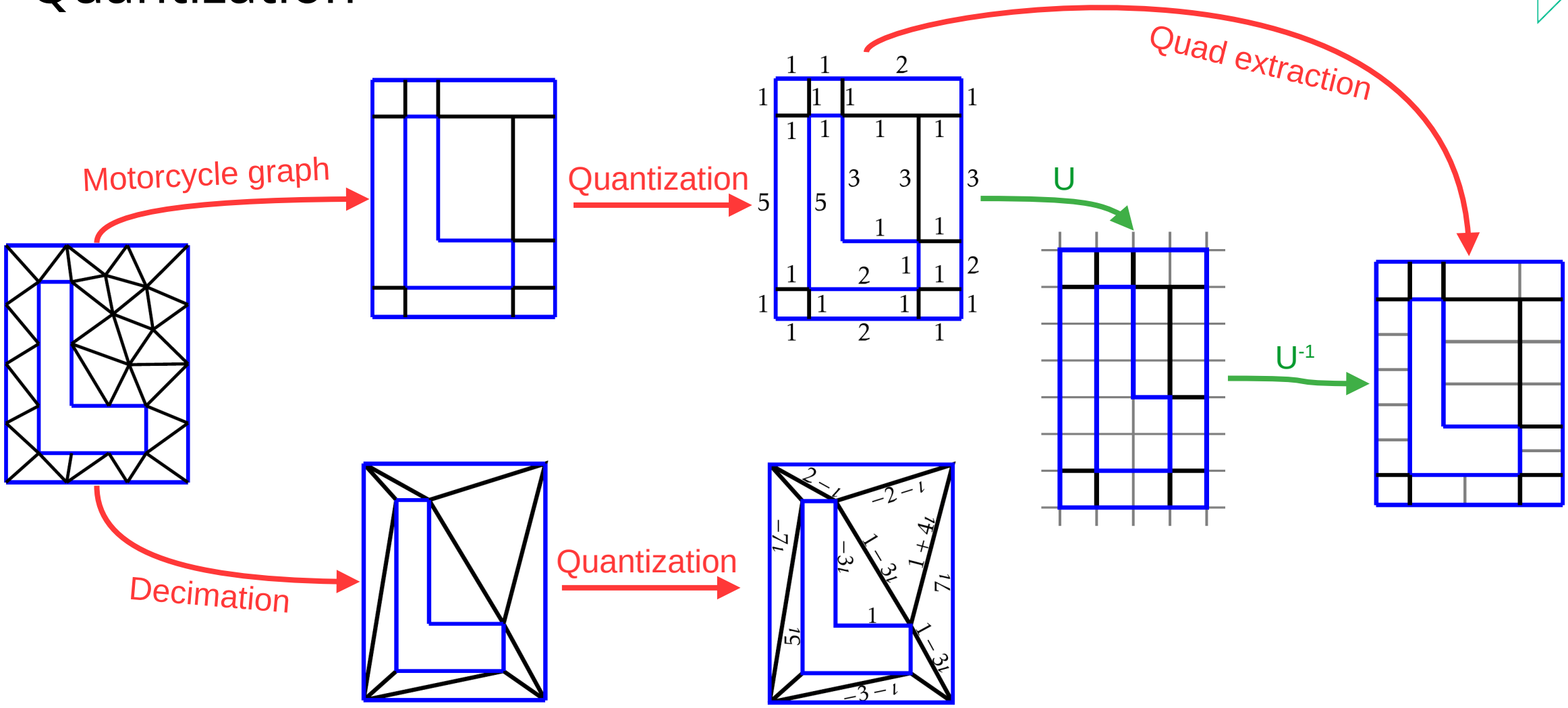
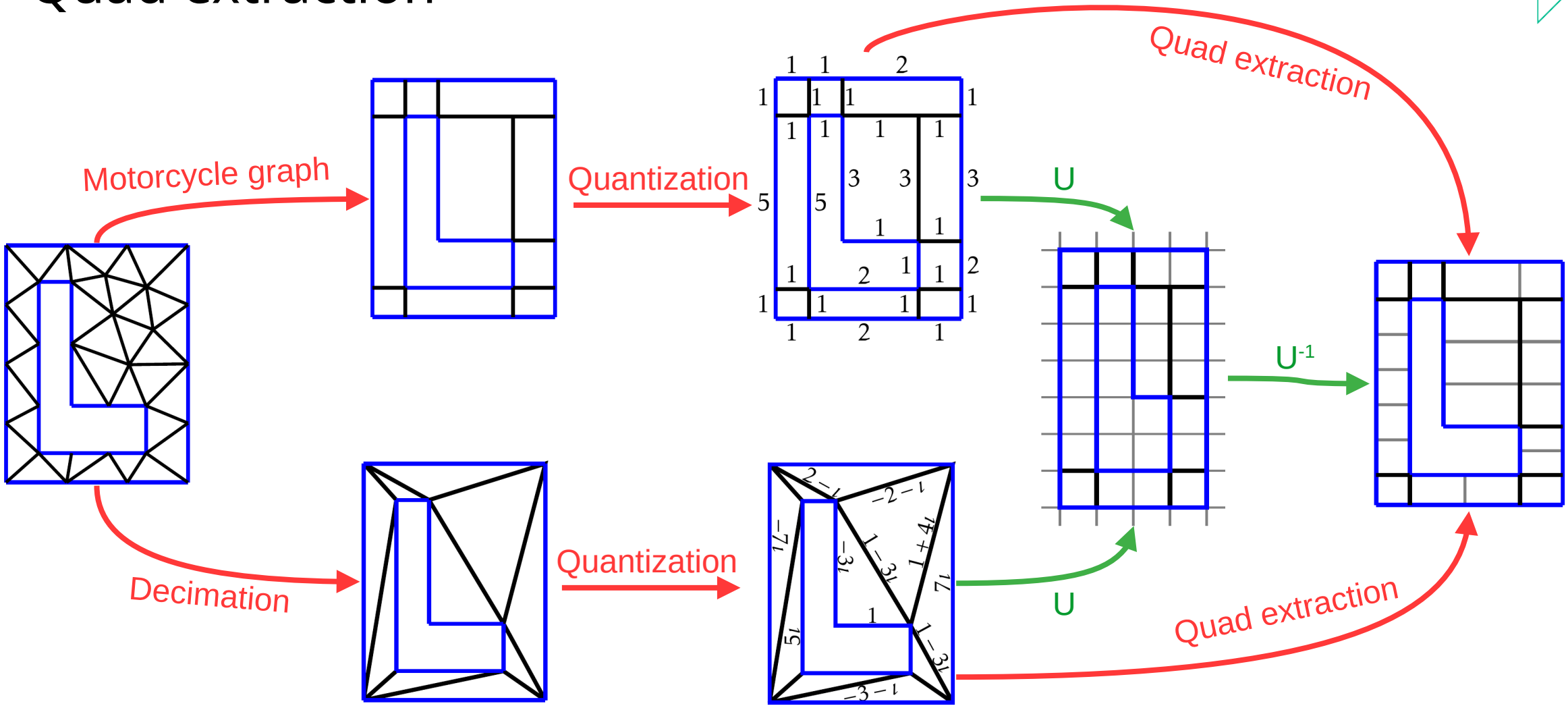


Quad extraction



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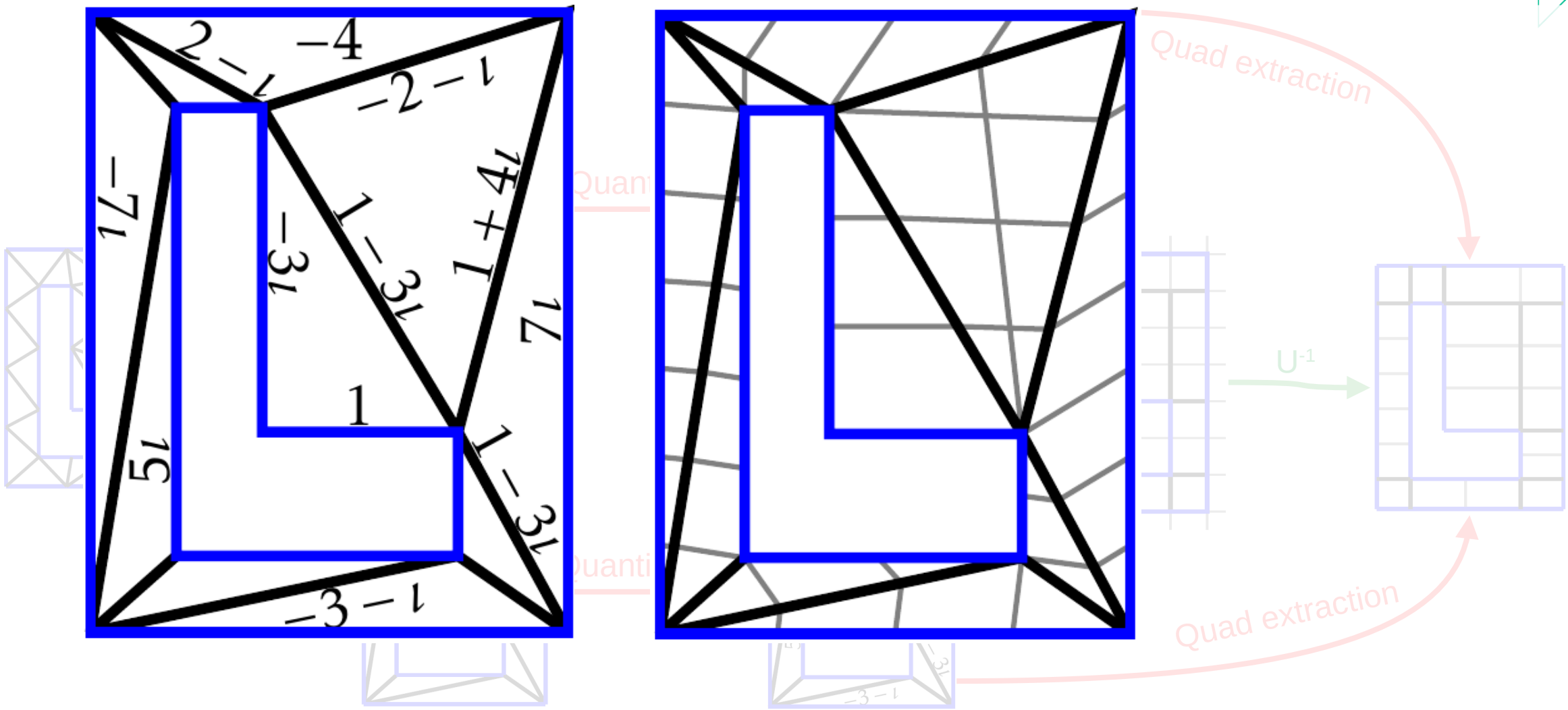

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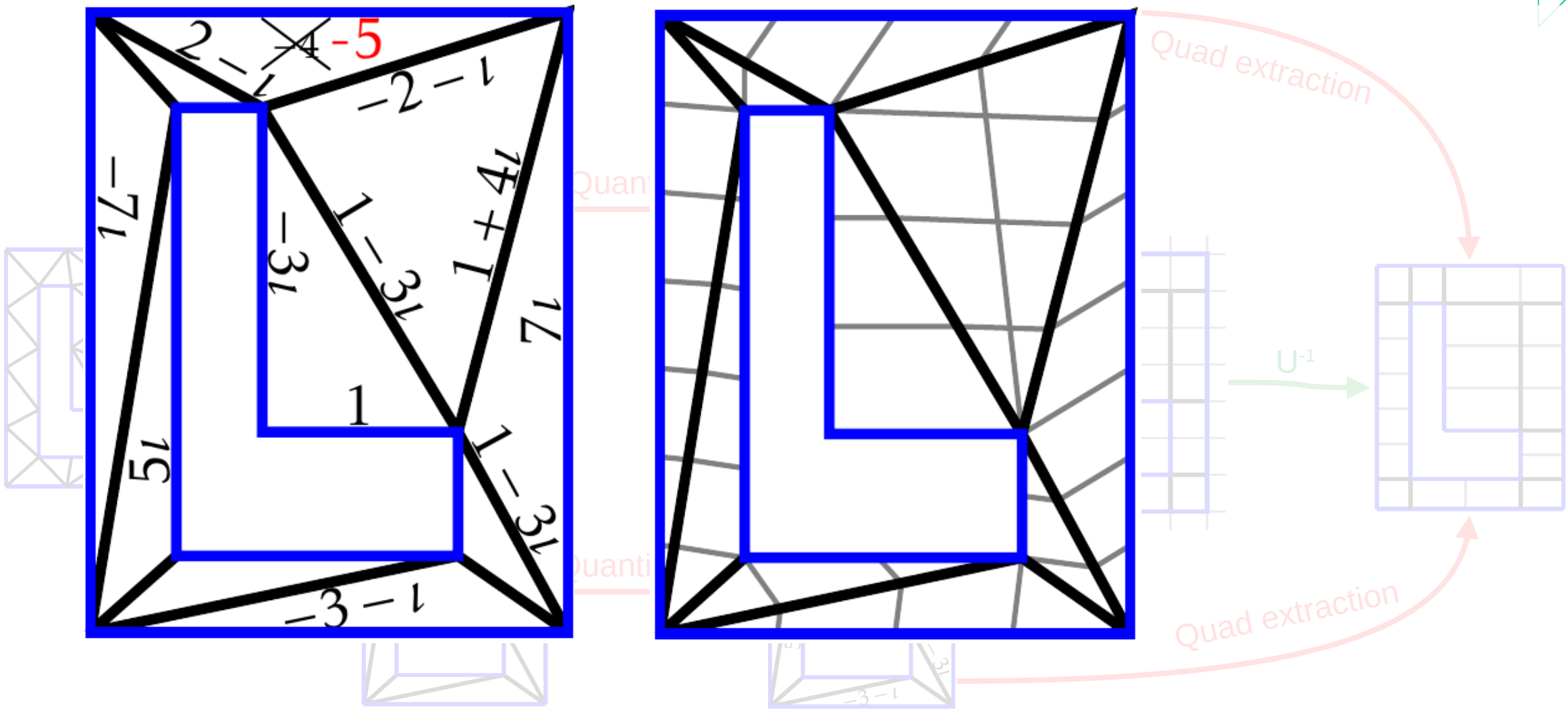

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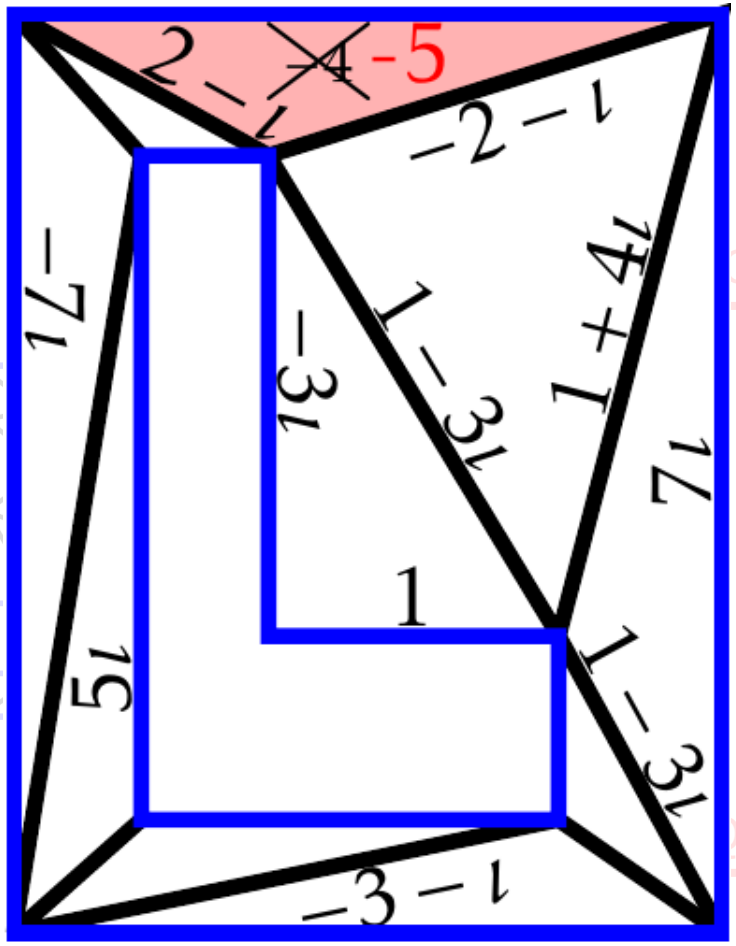

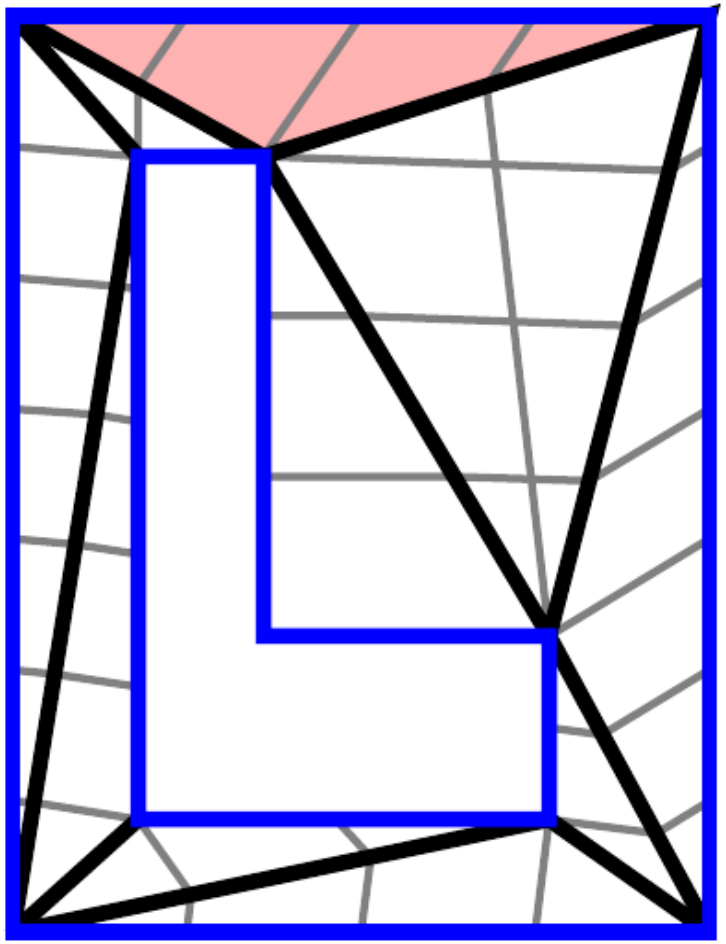

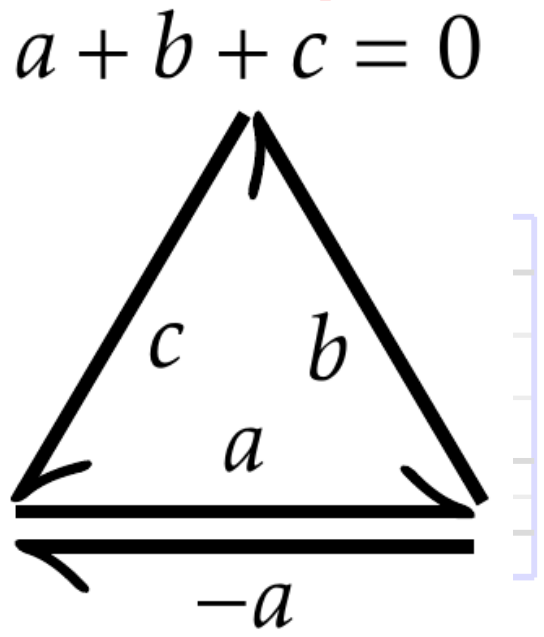

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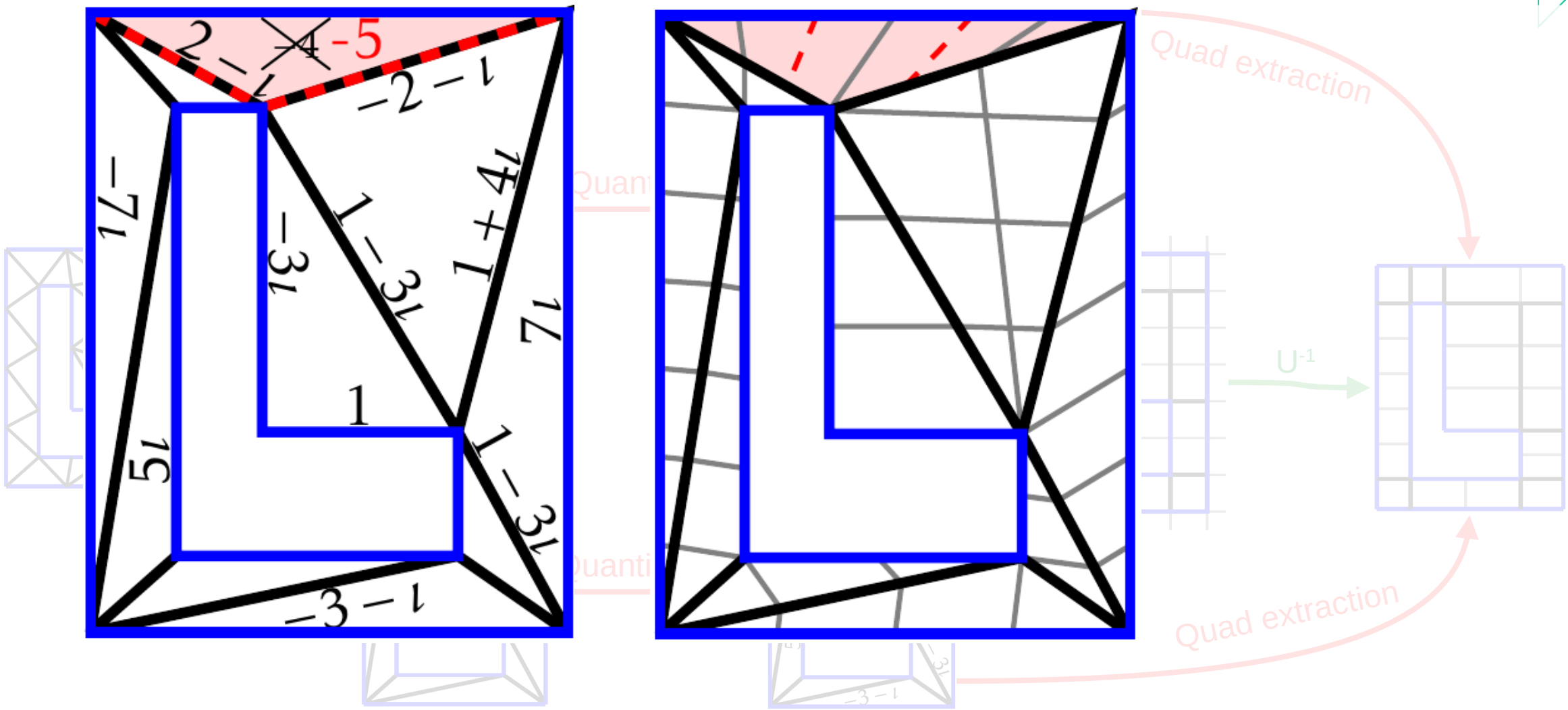

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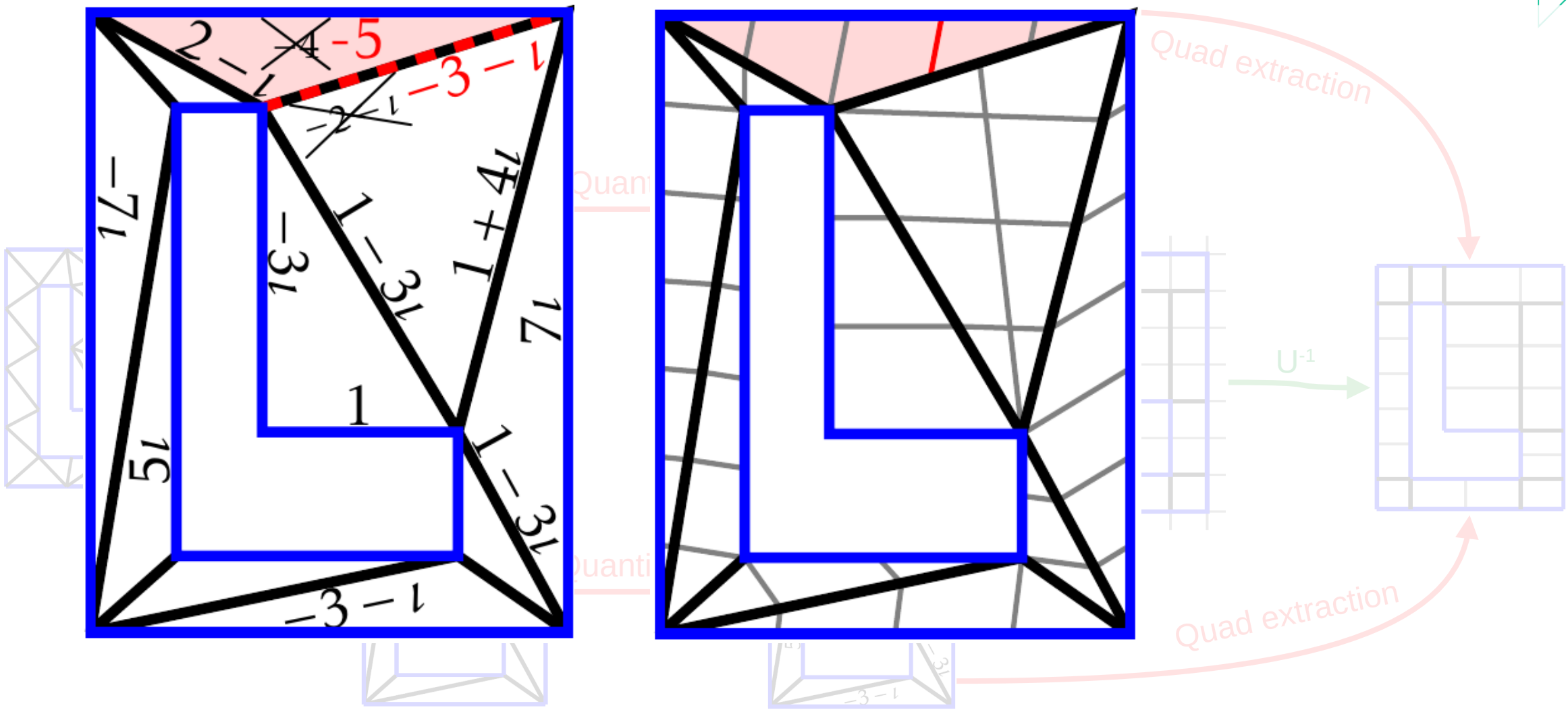

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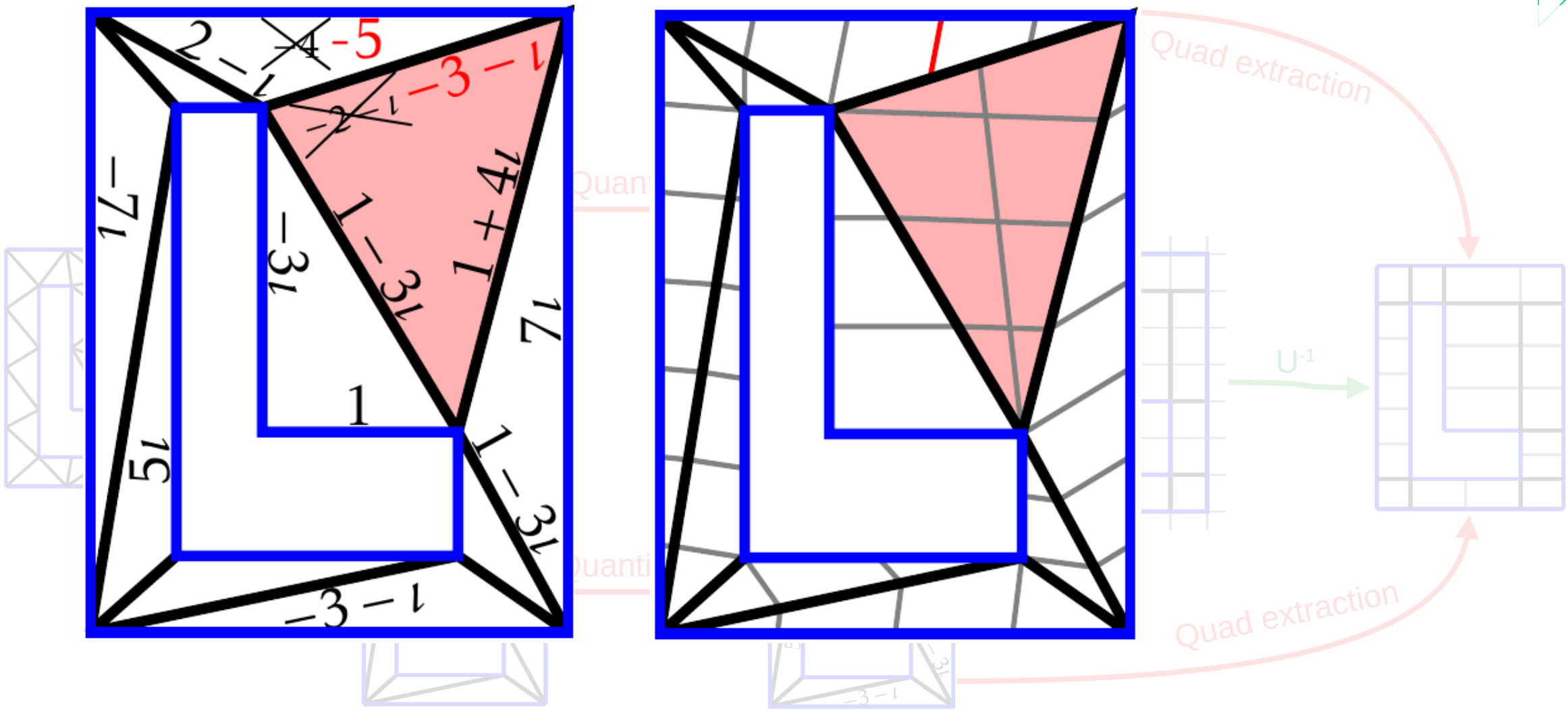

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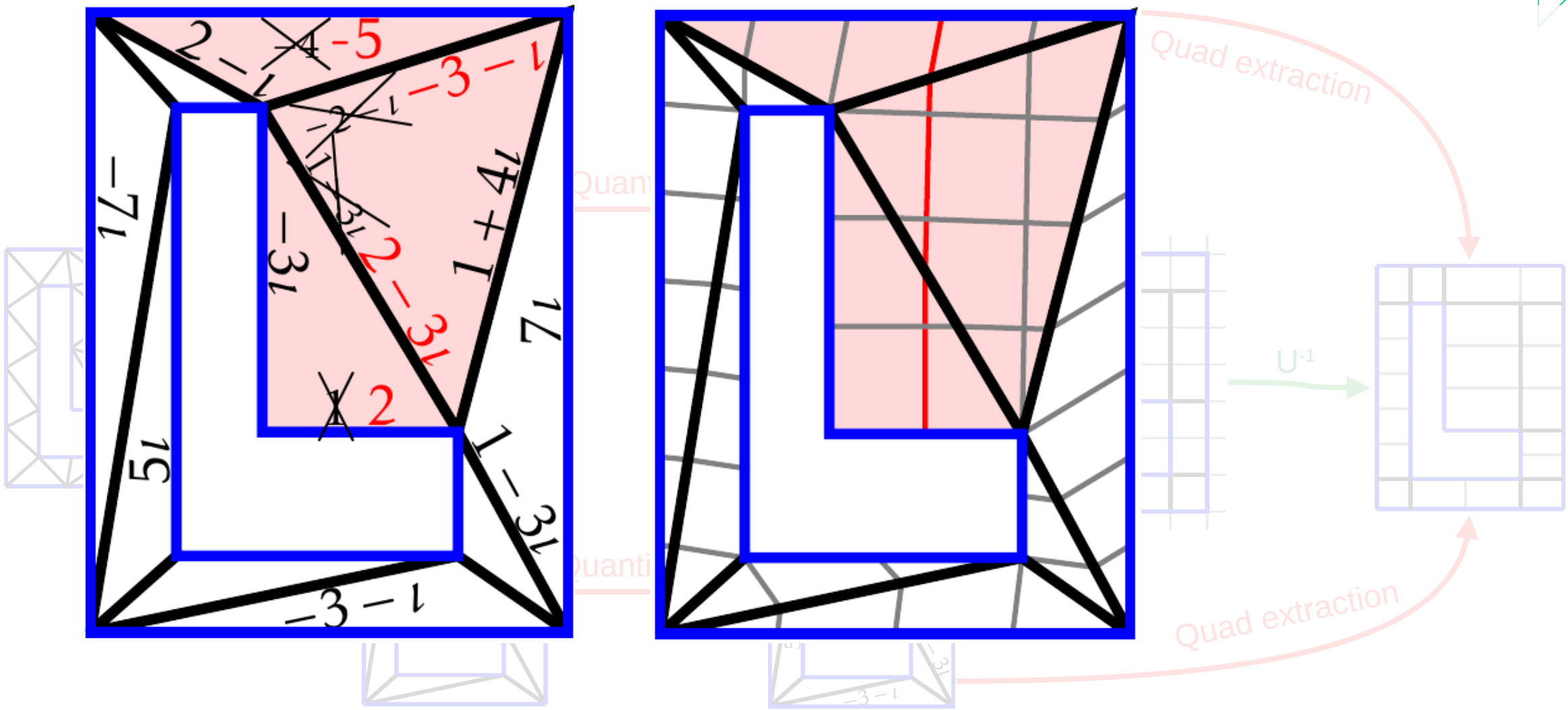
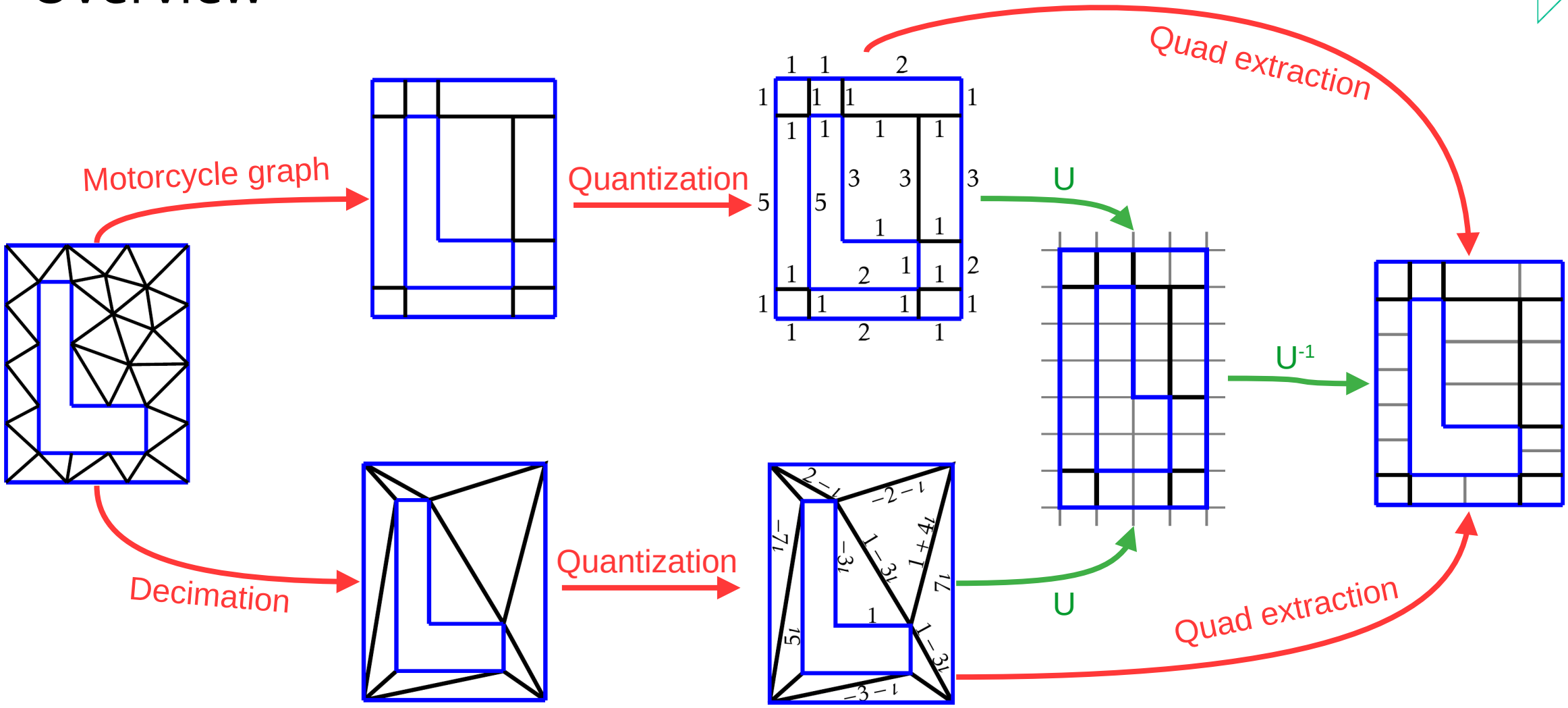
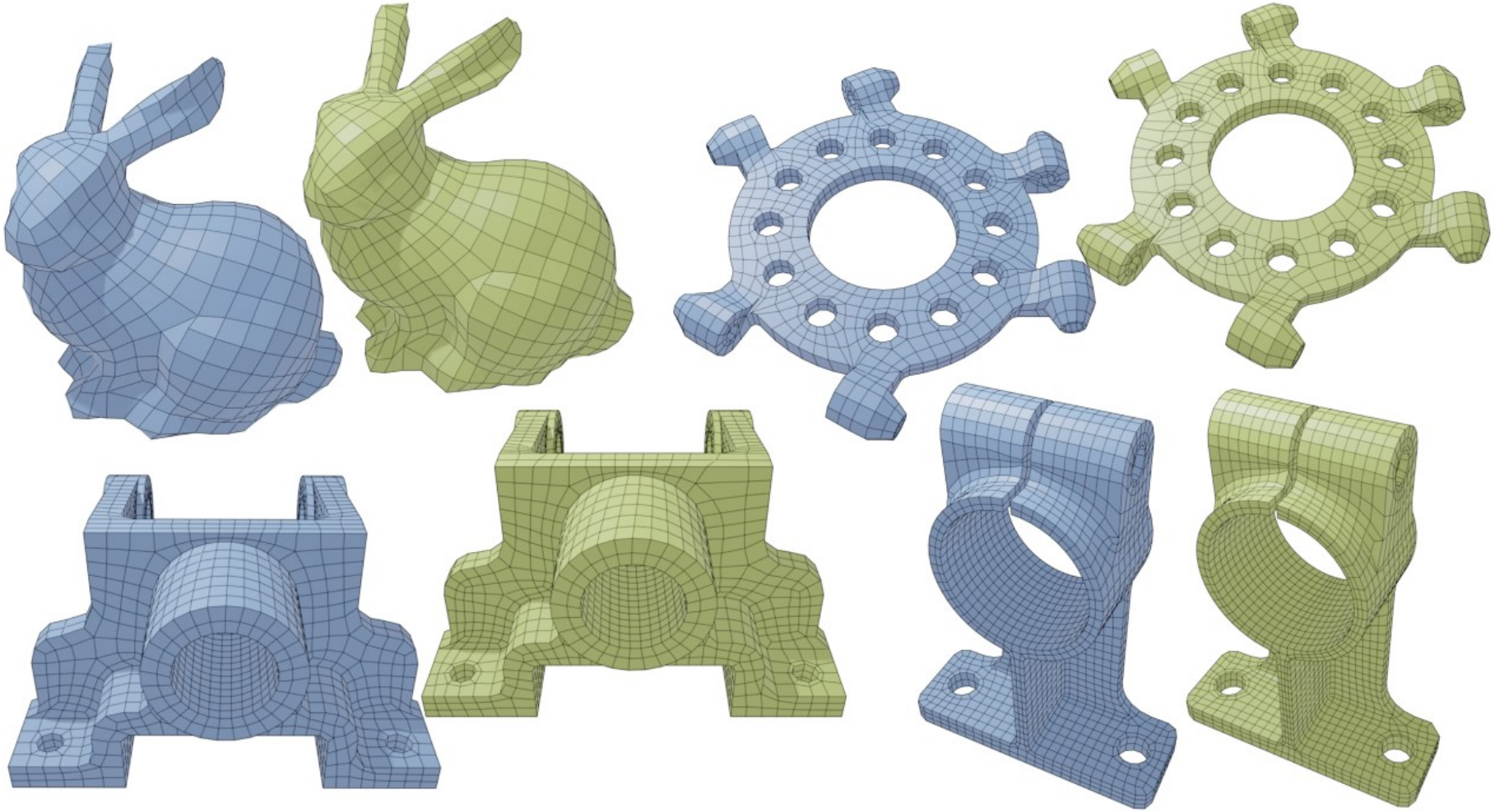


Overview

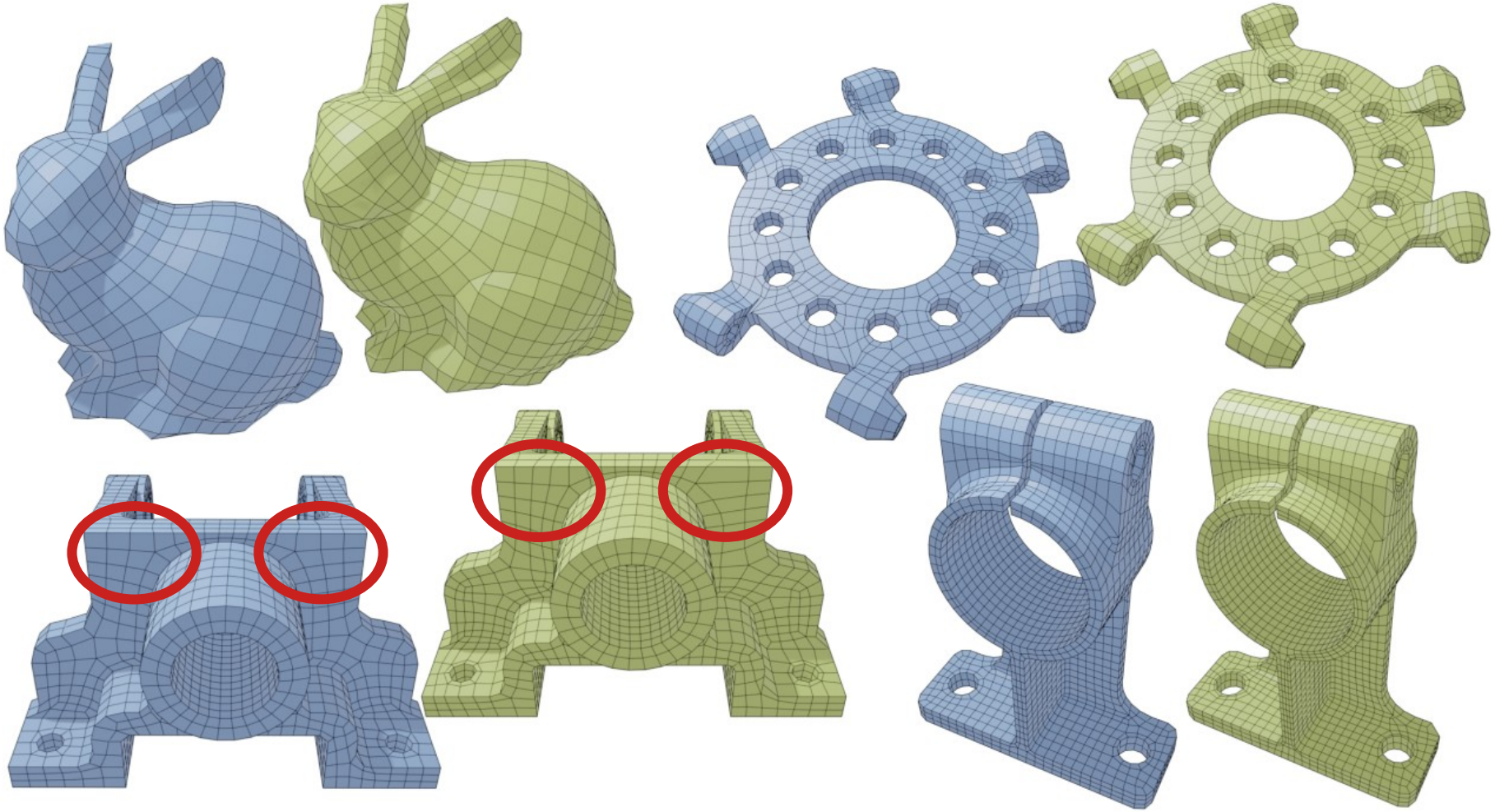


Results



Blue: Ours
Green: QGP

Results



Blue: Ours
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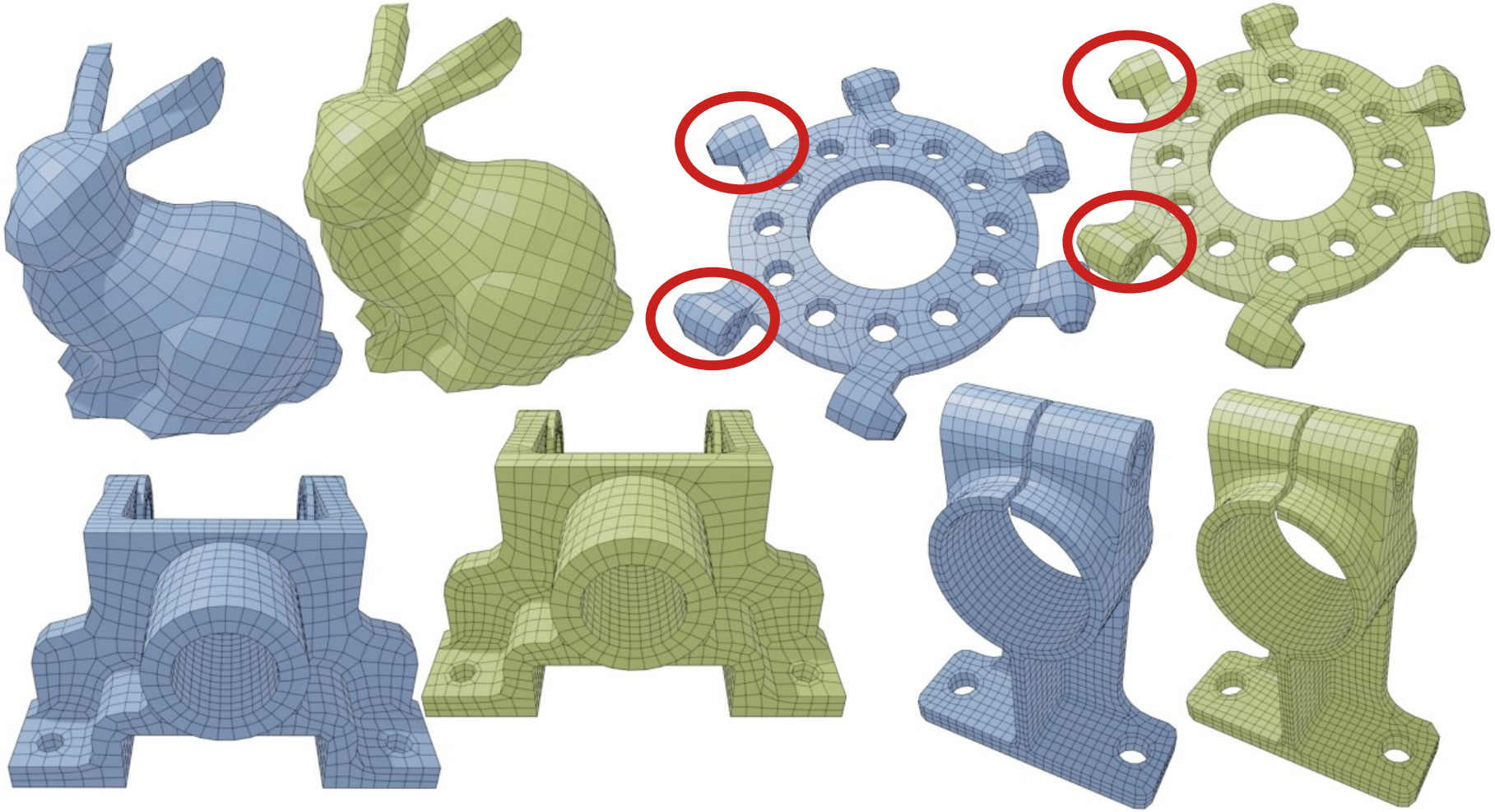
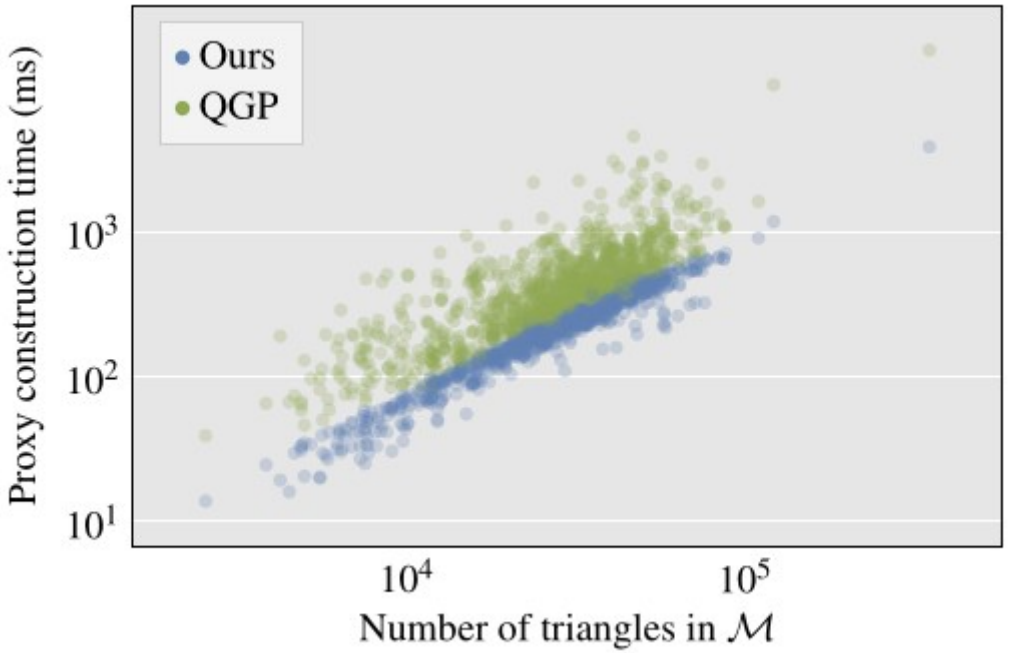
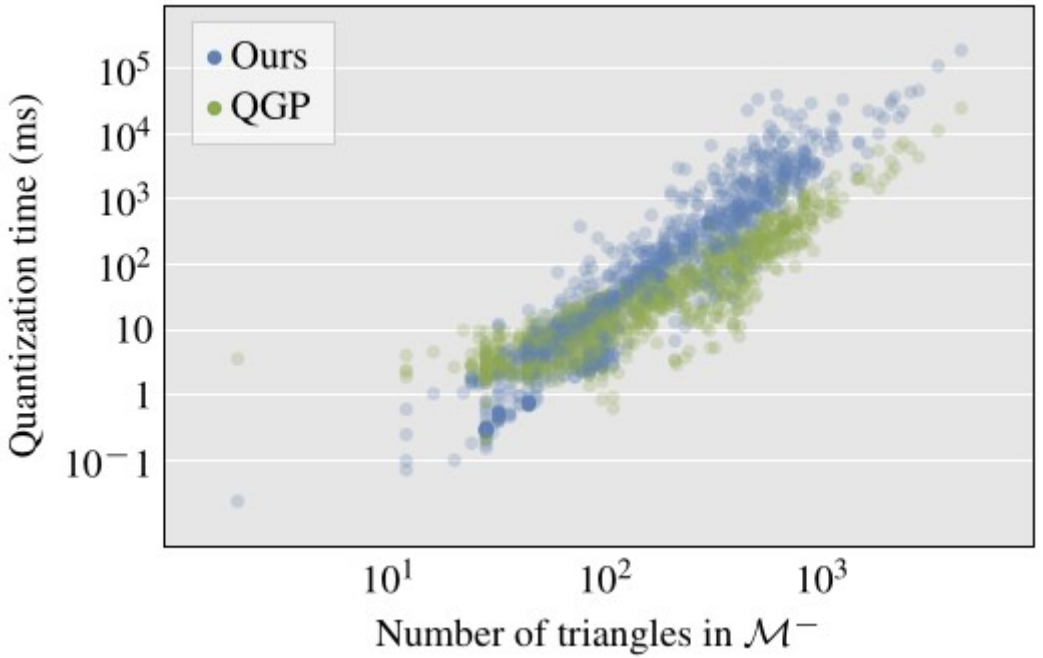
Results



Blue: Ours
Green: QGP

Timings

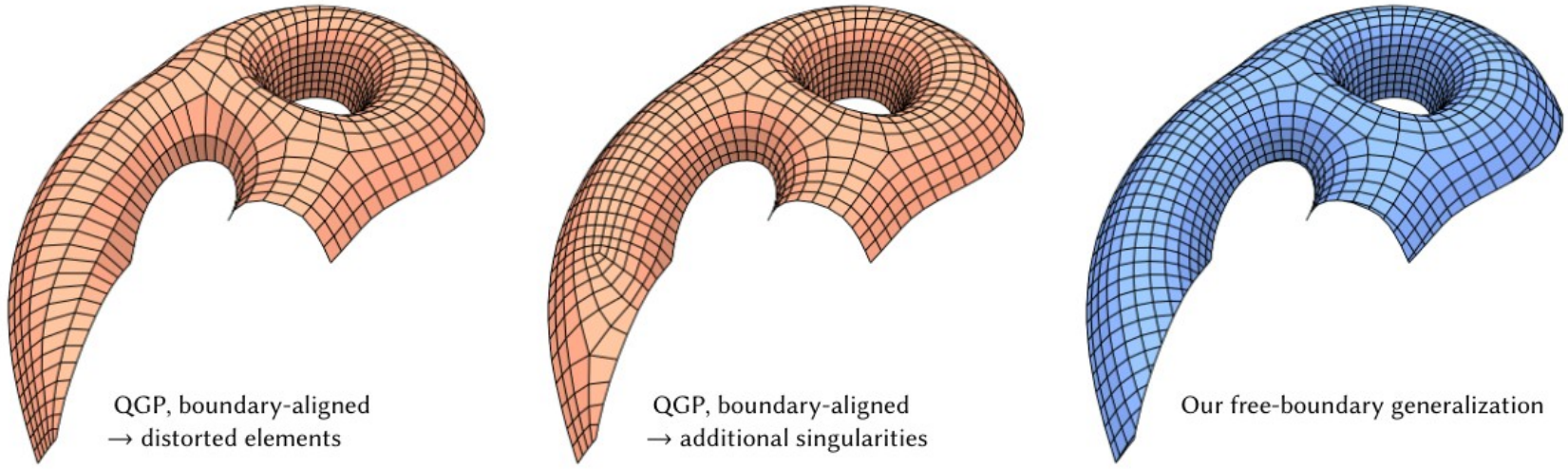




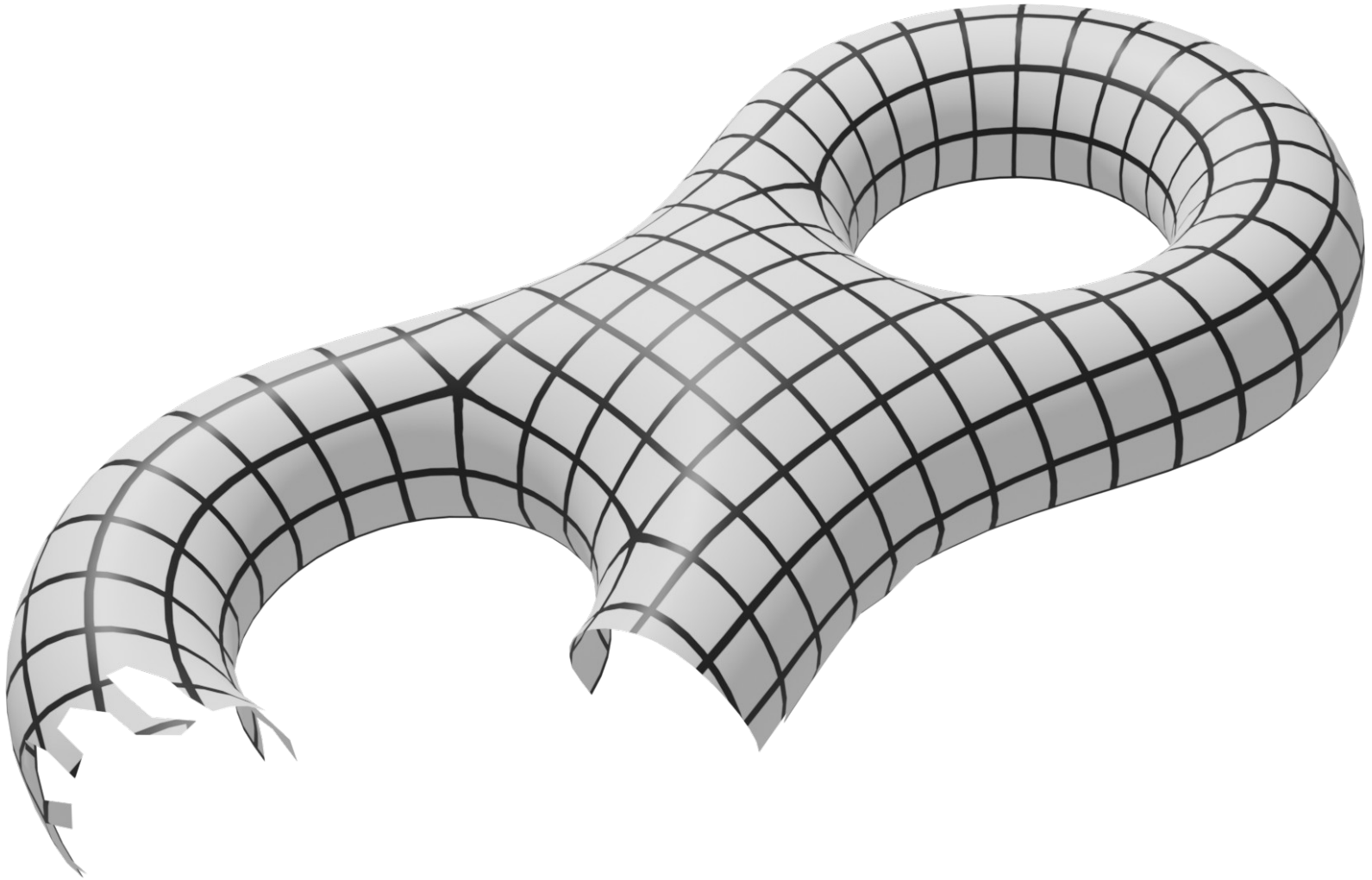
Free boundaries

Parametrization Quantization with Free Boundaries for Trimmed Quad Meshing

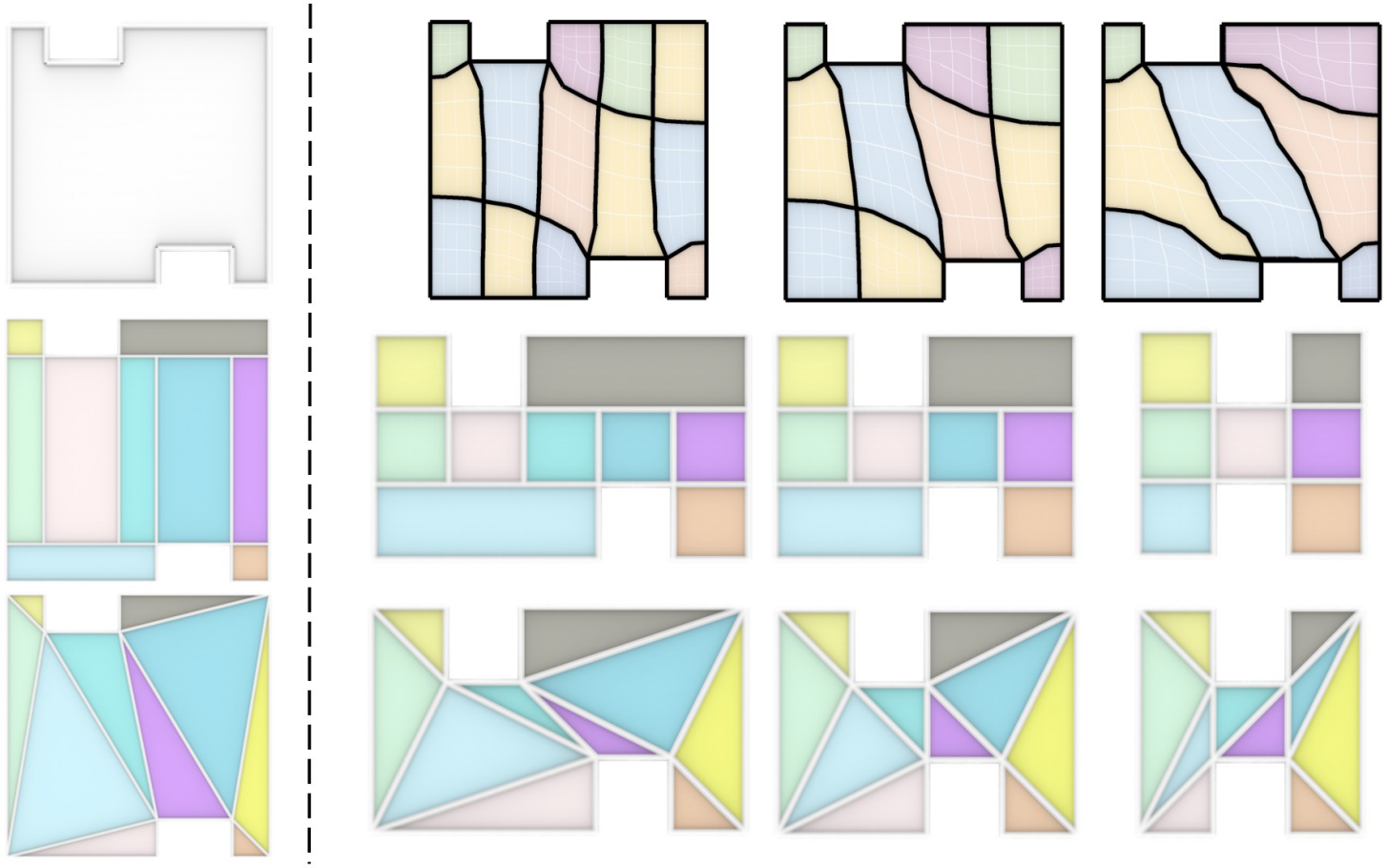
MAX LYON, RWTH Aachen University
MARCEL CAMPEN, Osnabrück University
DAVID BOMMES, University of Bern
LEIF KOBBELT, RWTH Aachen University



Free boundaries



Expressivity



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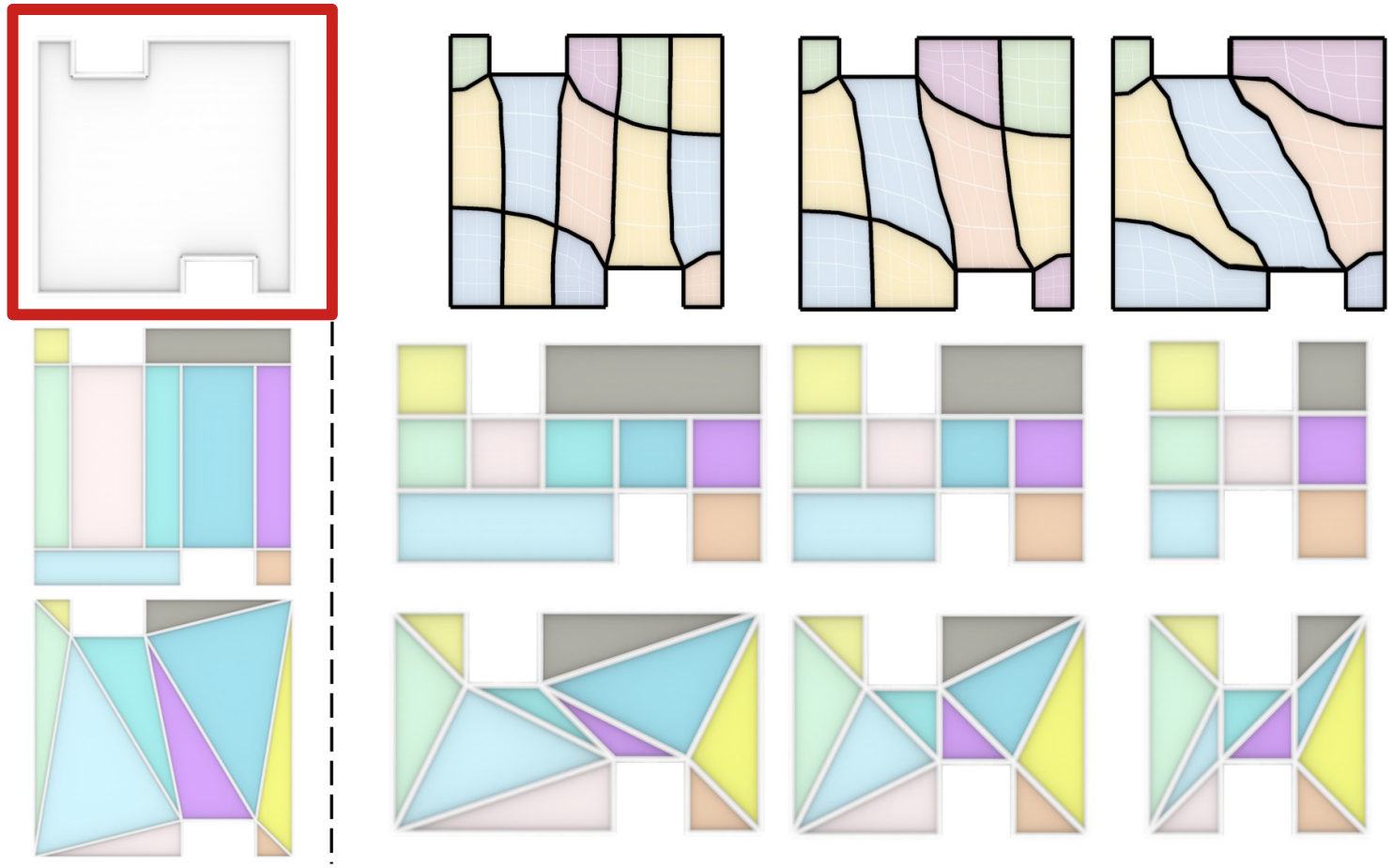

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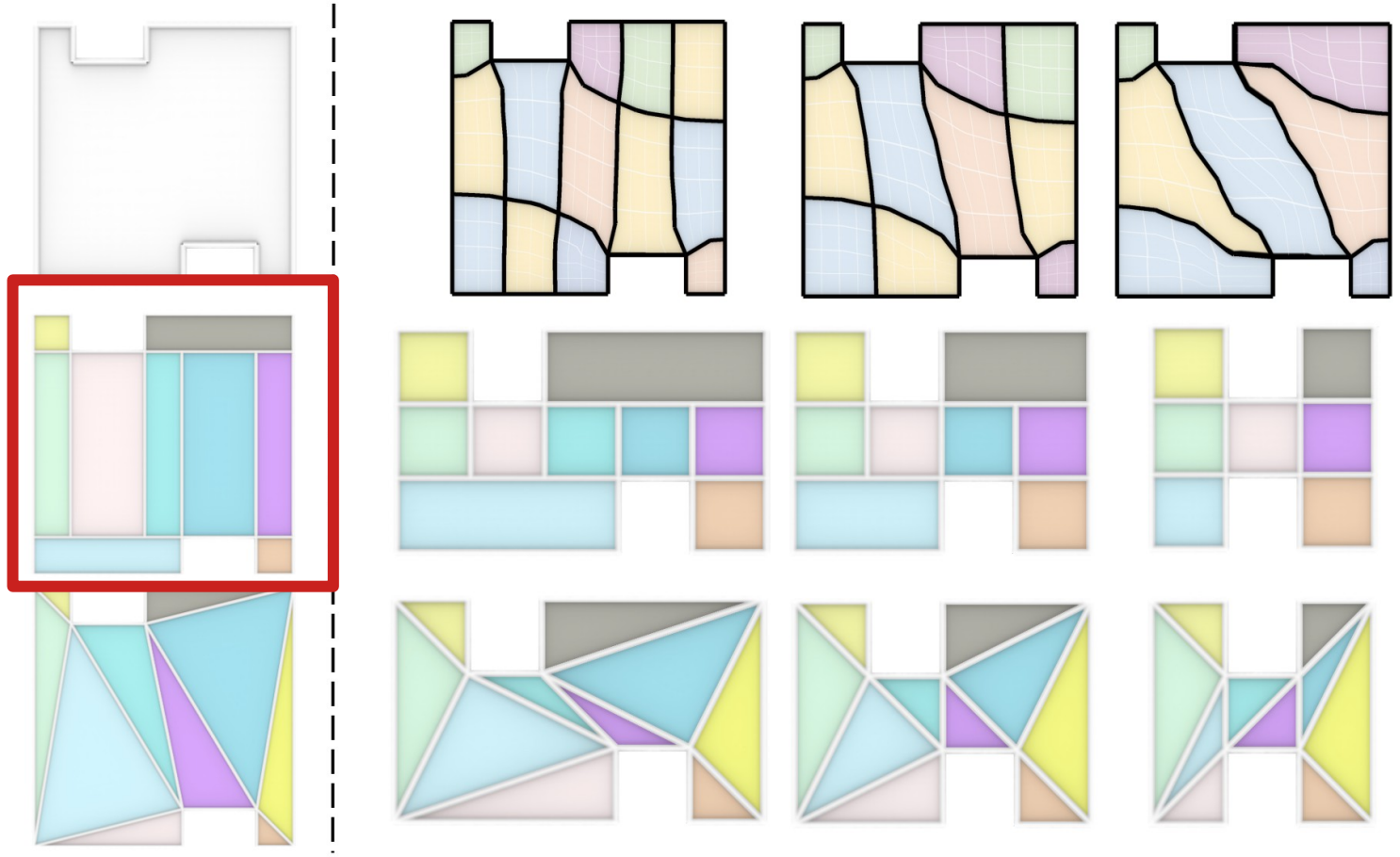
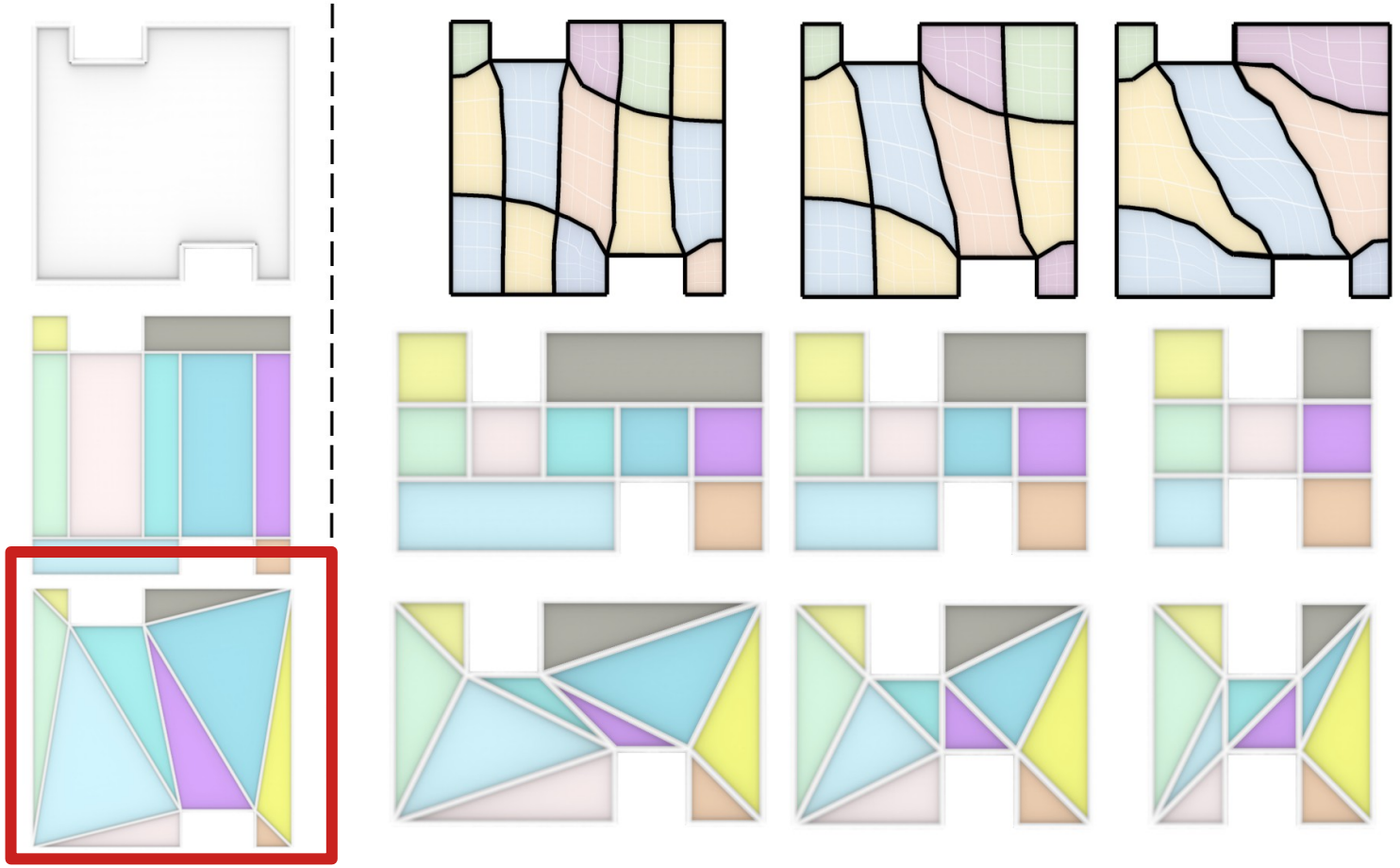
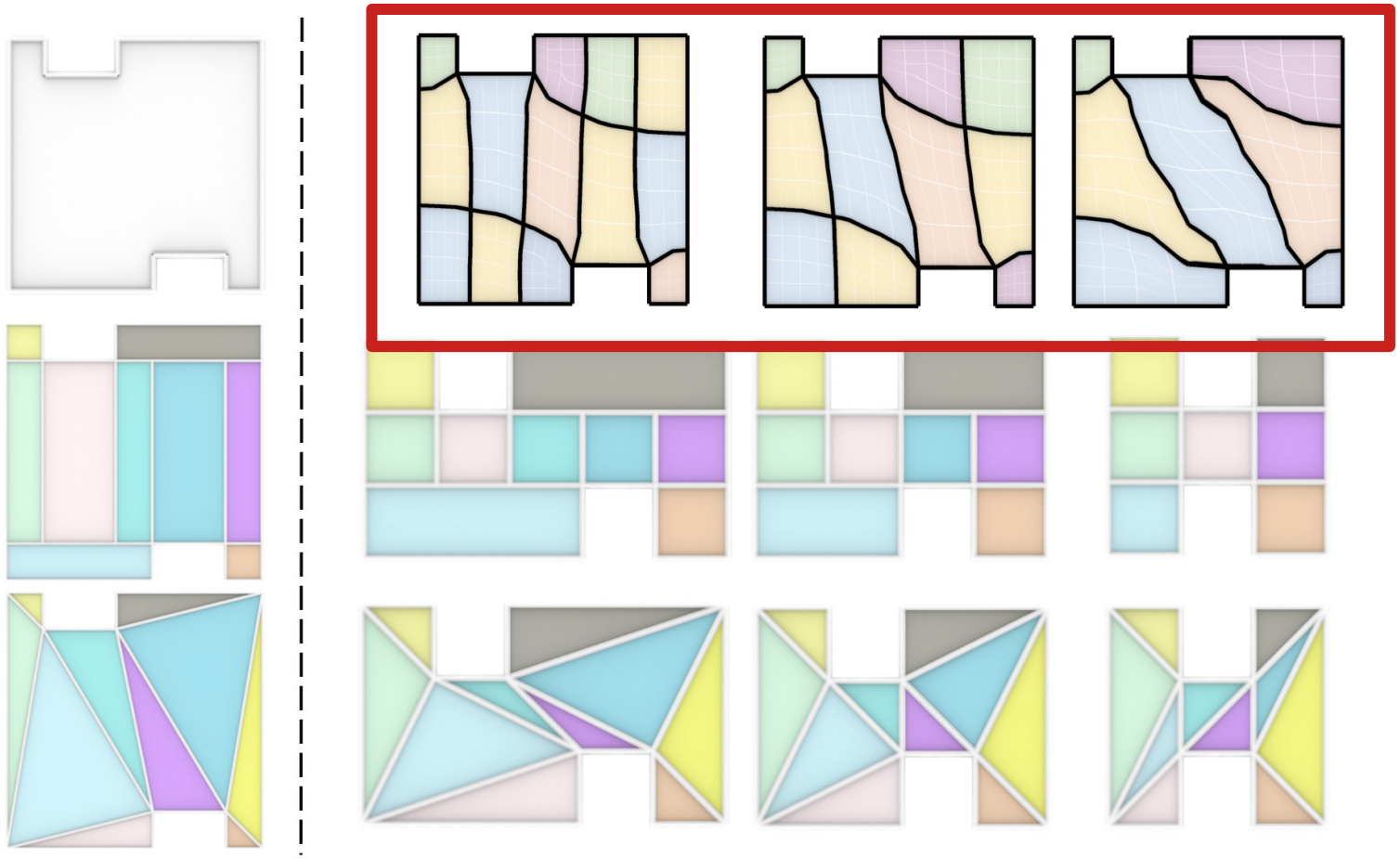


Expressivity



Expressivity



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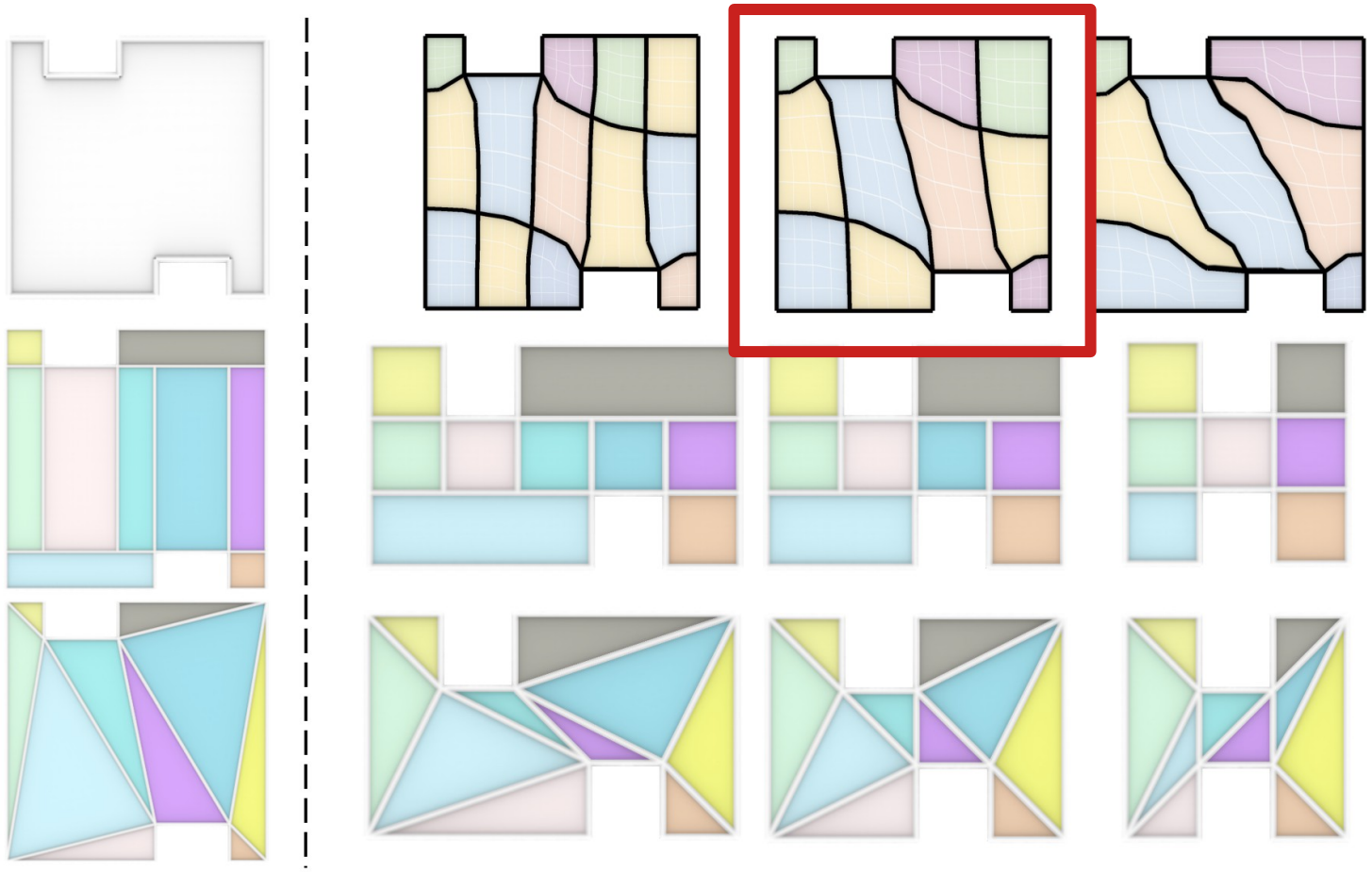

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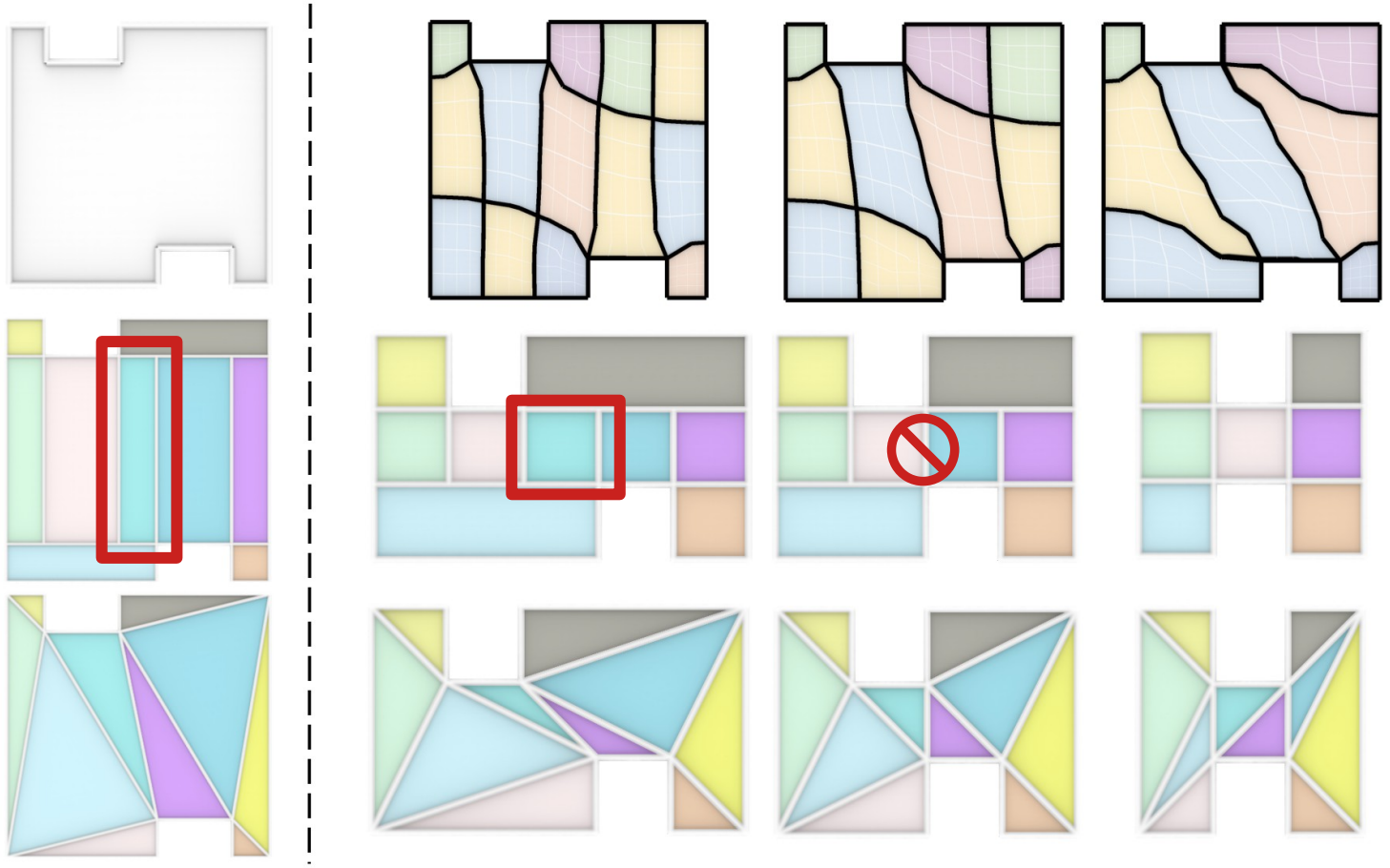

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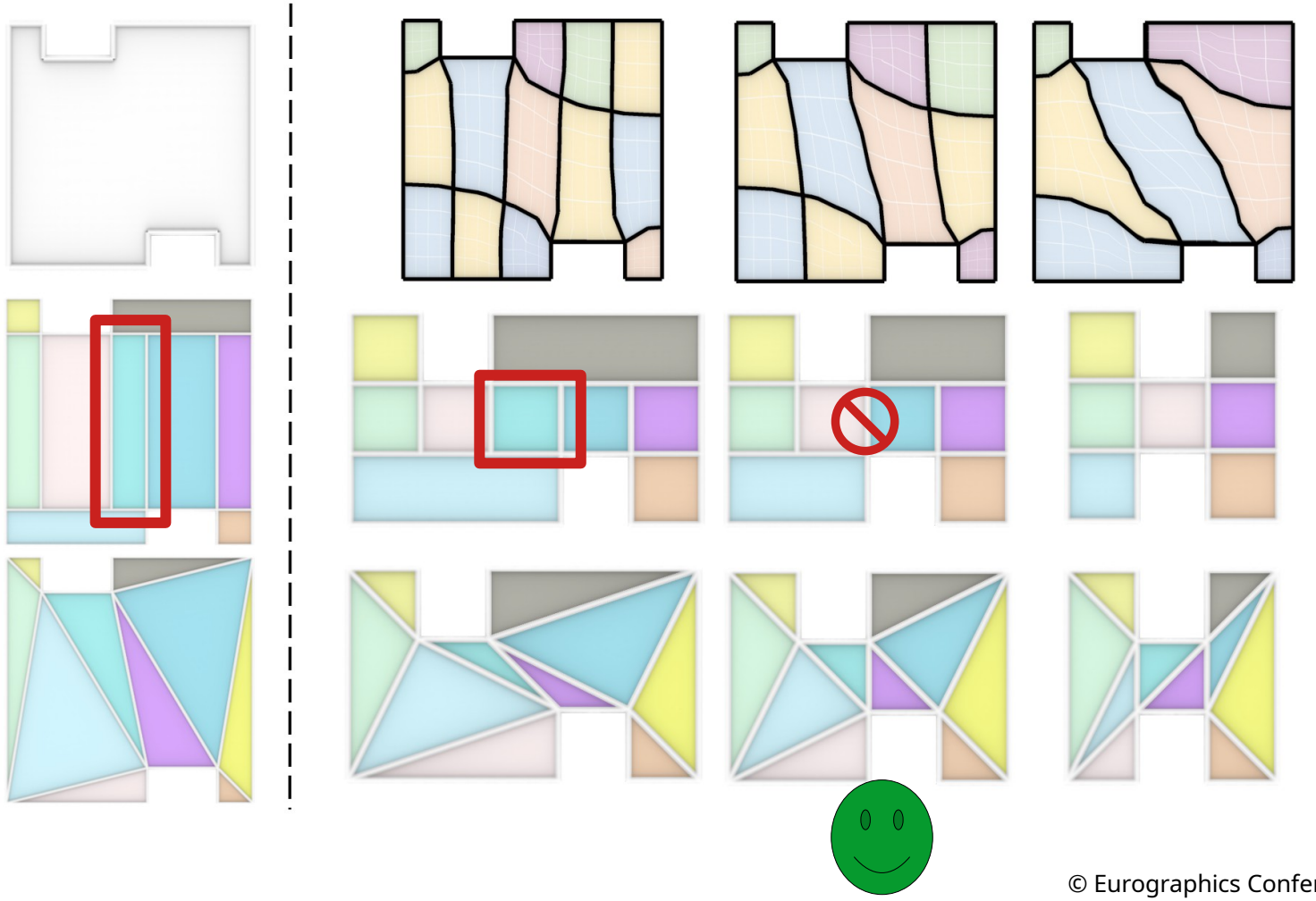

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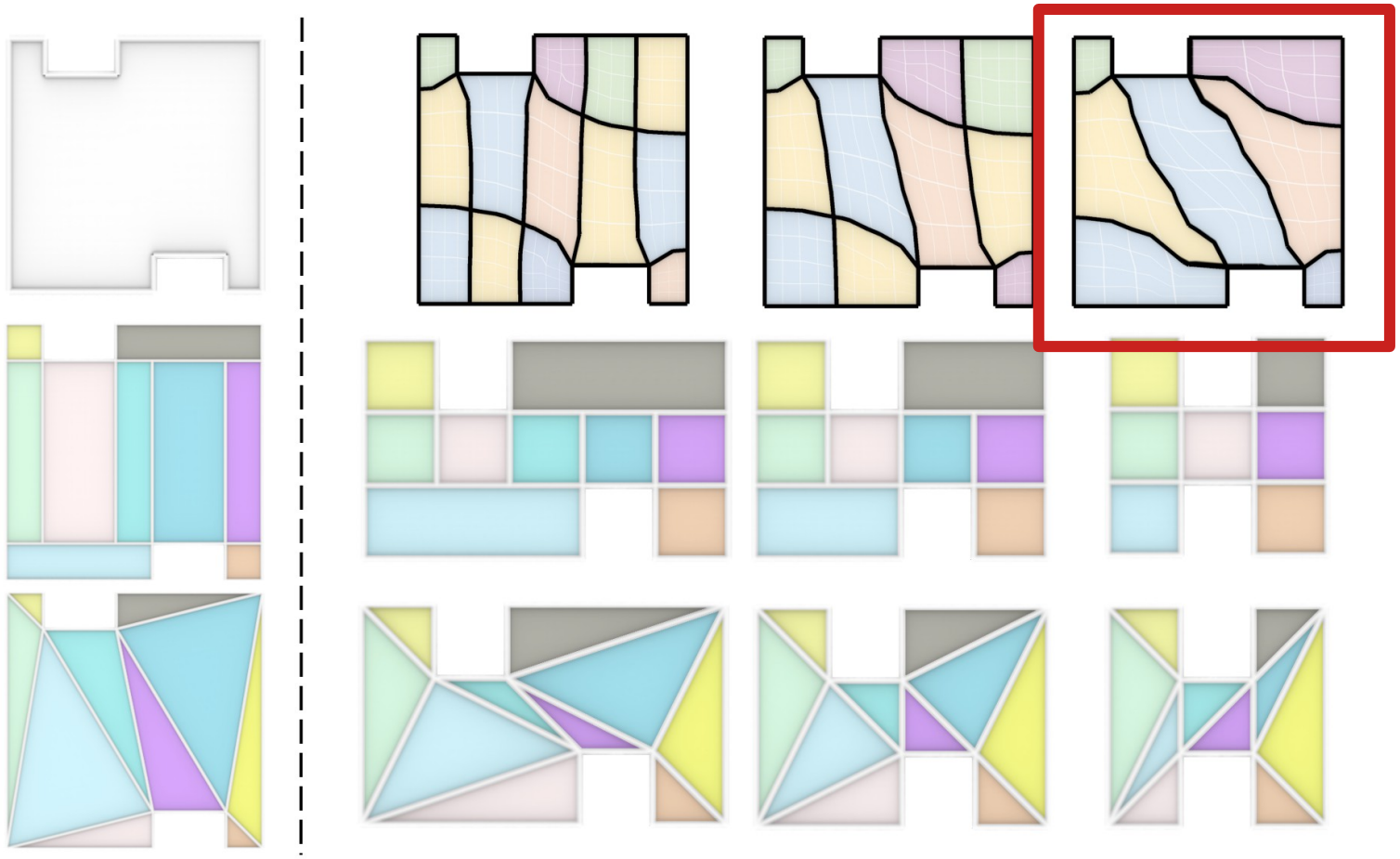

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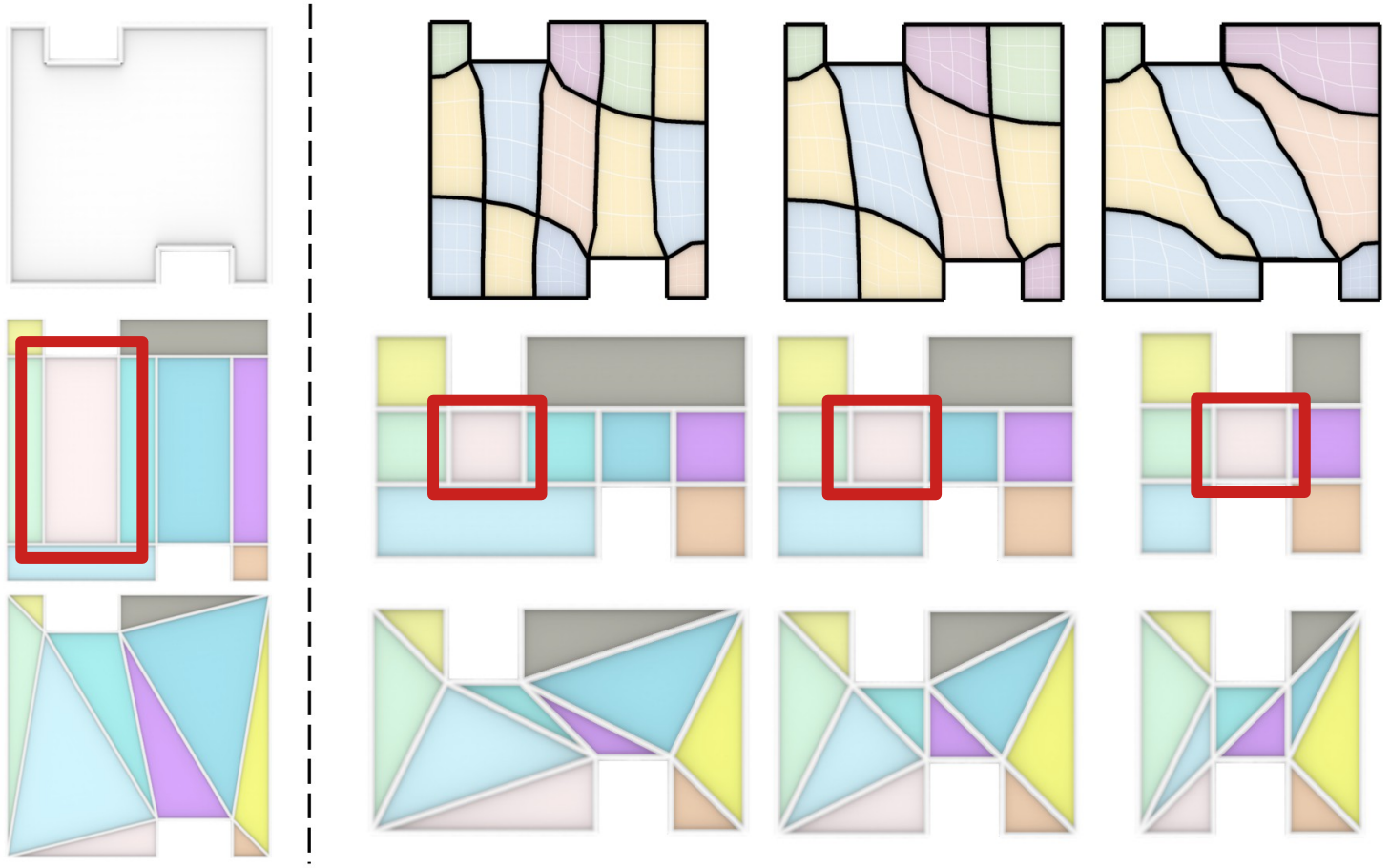

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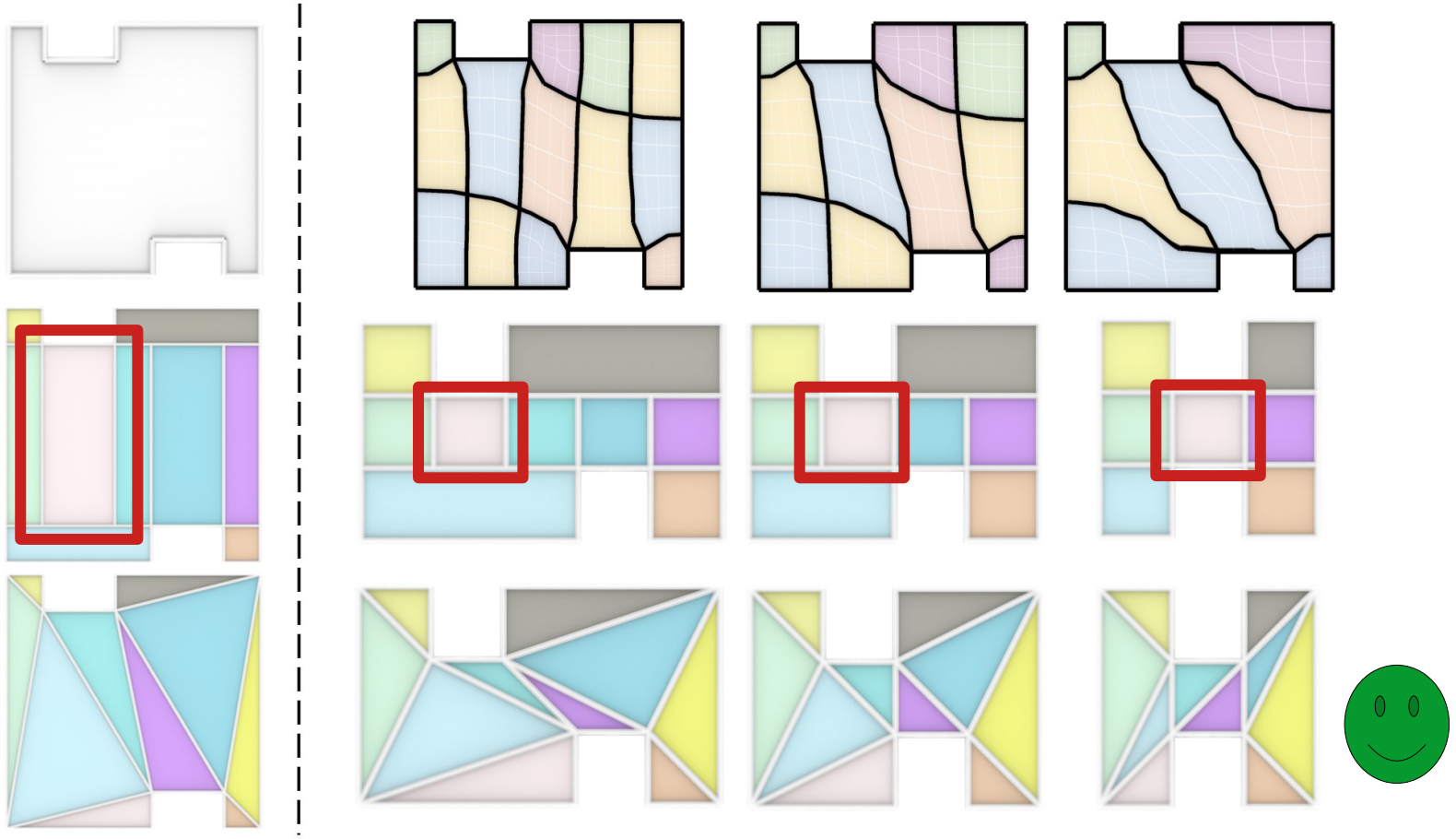

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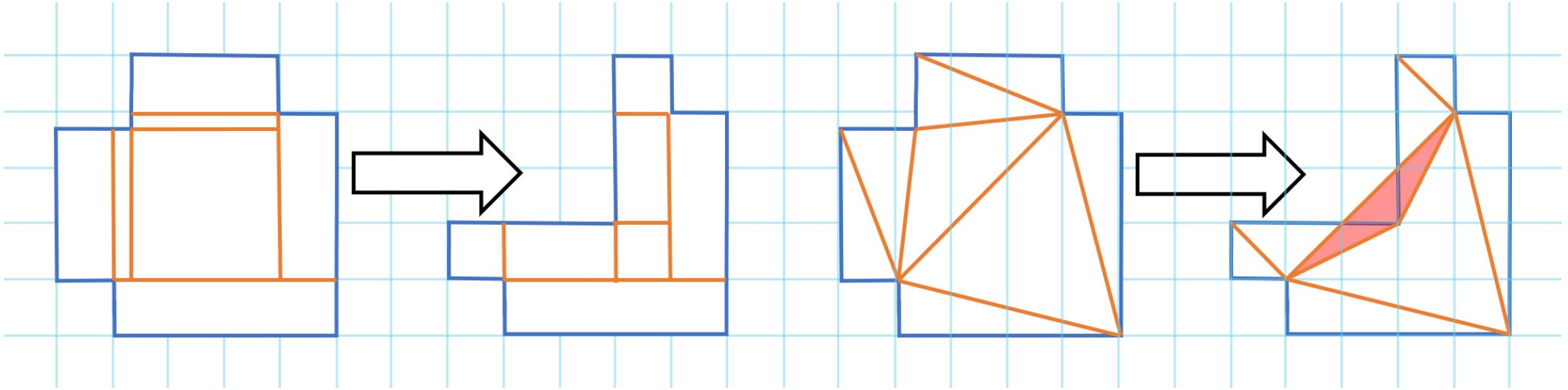

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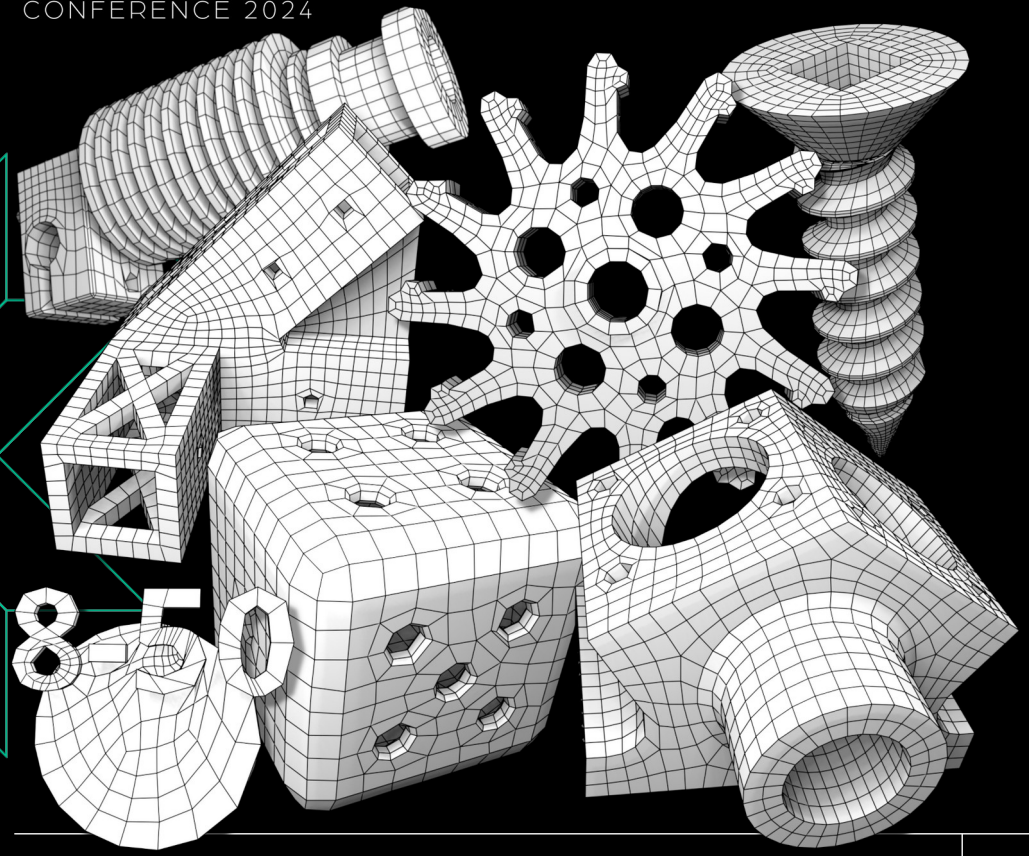

Thank you.

More Information:

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