



Depiction Tools Inspired by Traditional Artistic Practices

Elodie Fourquet[†]

Computer Graphics Lab, David R. Cheriton School of Computer Science, University of Waterloo, Canada



MOTIVATION

Composition

Image plane composition creates the picture atmosphere.



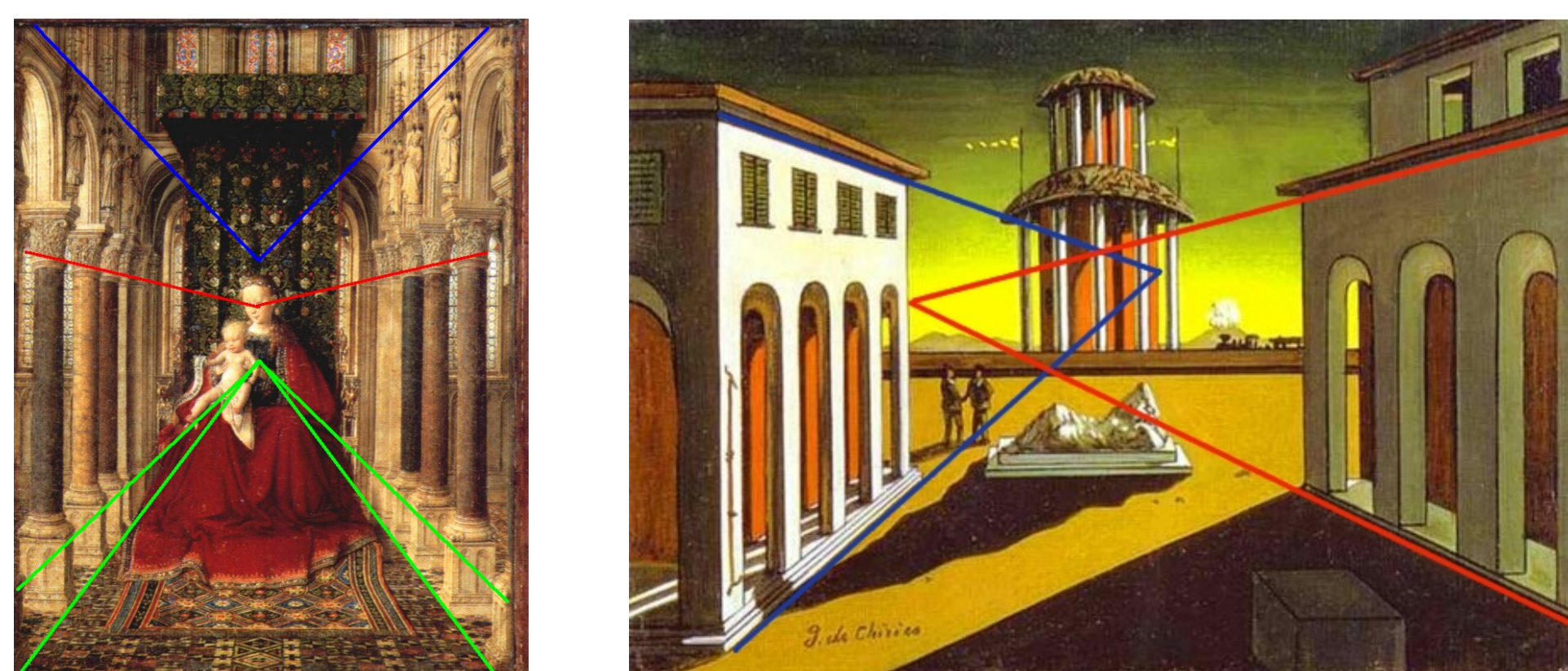
Renaissance Art

Renaissance paintings combined realistic depth depiction and image plane composition, using a pluralist approach to perspective realised through a collage of constructions.



Multiple Perspectives

Multiple perspectives in a realistic image come from deviations in local or global construction lines.



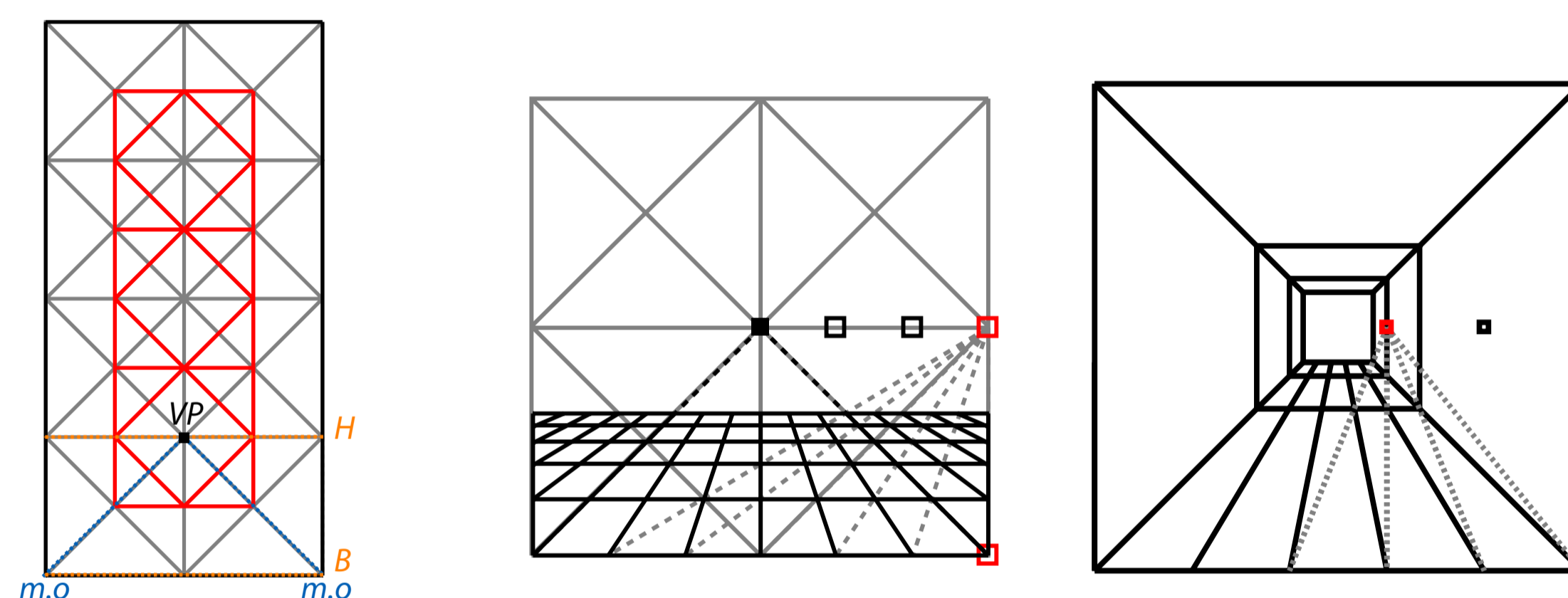
FRAMEWORK

Concepts

- Artists work in the image plane and in depth simultaneously.
- Artists manipulate construction lines.
- 3D is only simulated, not defined.

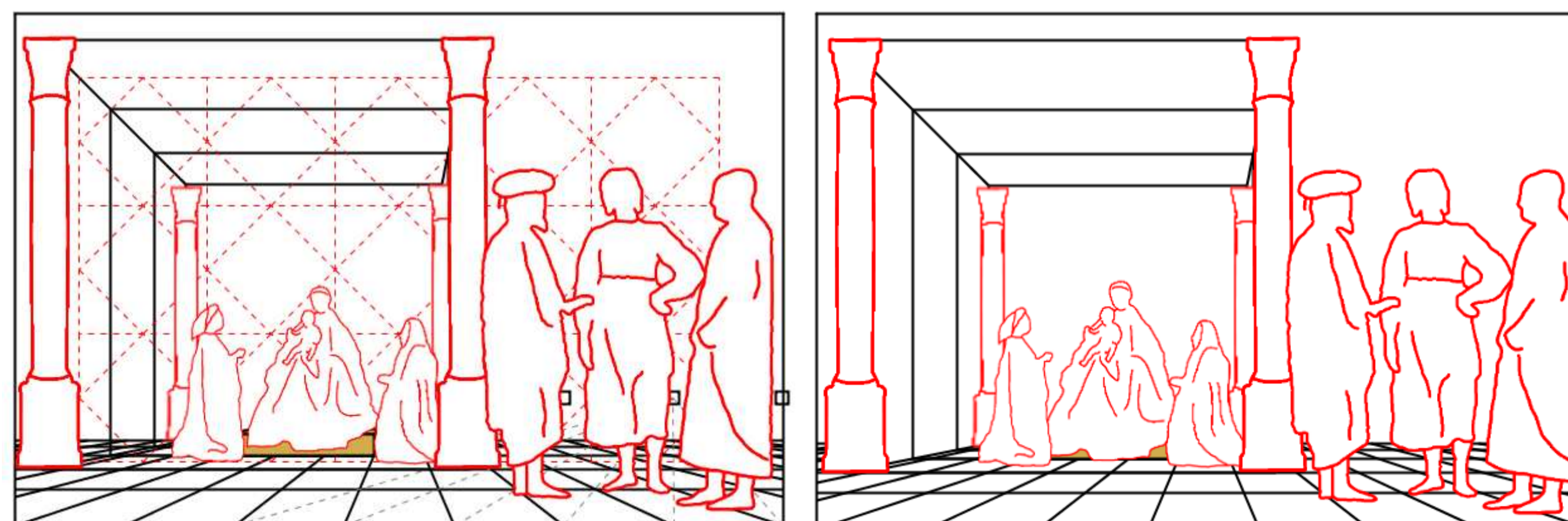
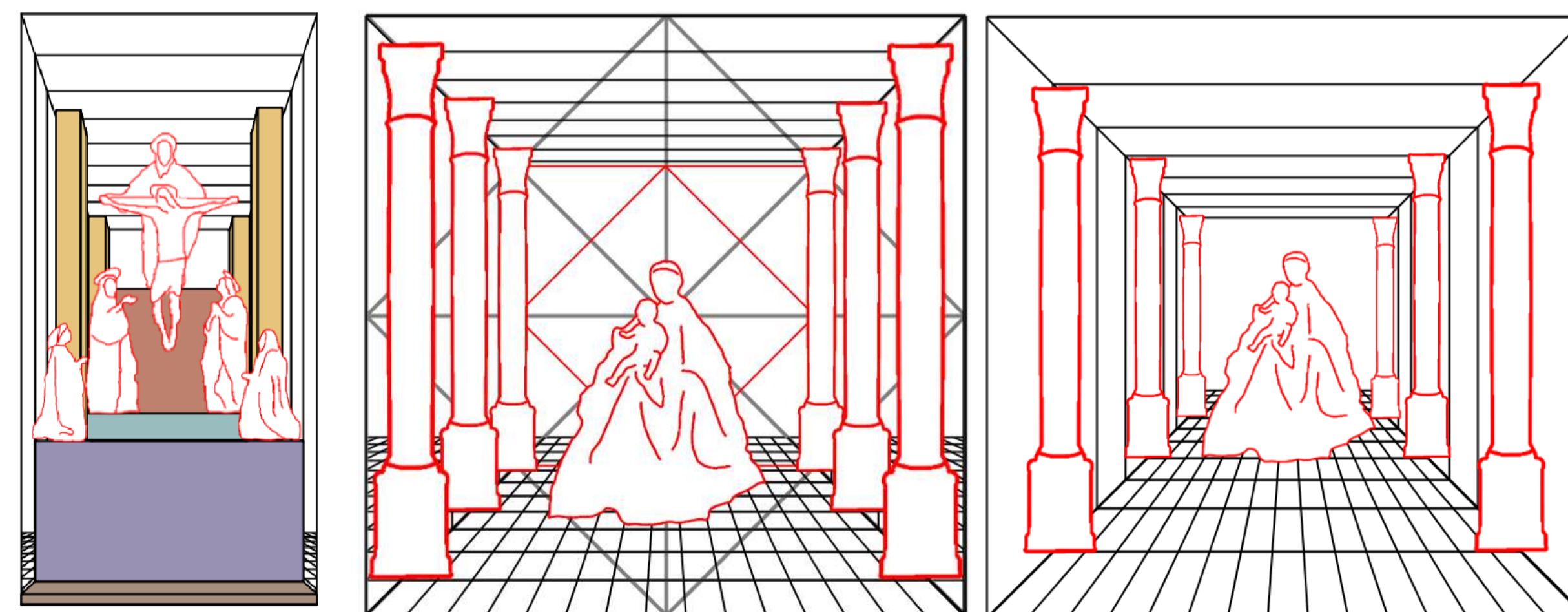
Composition and Depth

- Planar composition is achieved by a planar grid.
- Depth is set through a floor within the planar grid.
- View can be changed by changing floor constructions.



Results

- Grid pattern layout for image composition and floor set the perspective view.
- Architecture summarized by filling volumes with blocks.
- Individual panels placed on the image plane and in depth.



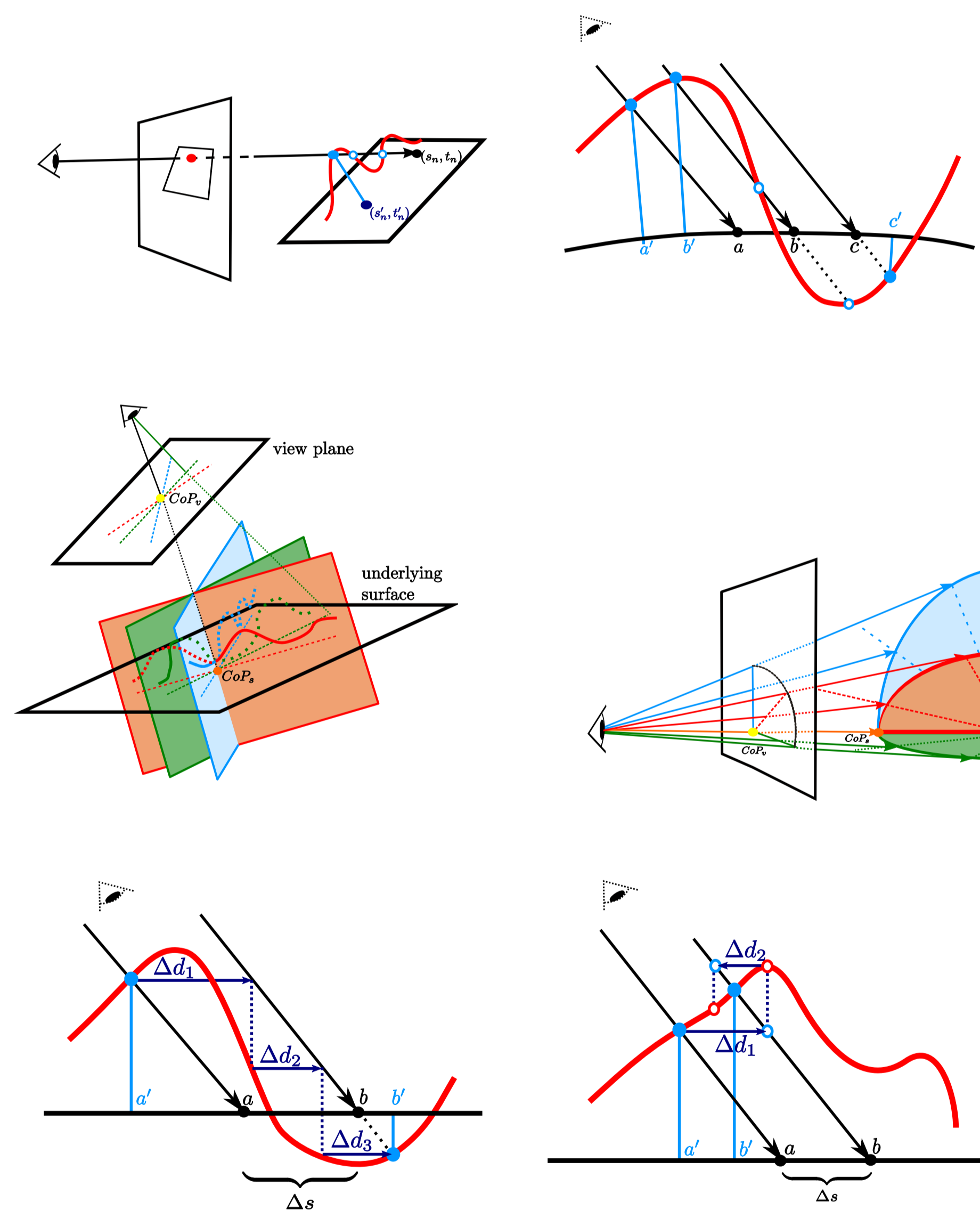
THEORITICAL EXTENSION

Displacement Map

- Add surface details to a simple 3D primitive with a 2D height texture.
- Make 3D modelling easier by planar gradient painting.

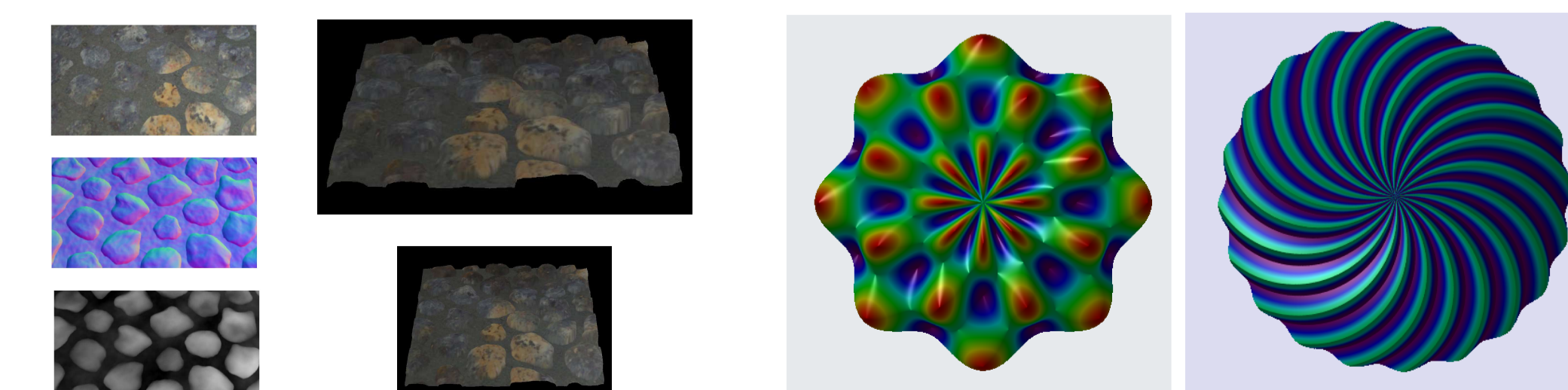
Stepping Algorithm

- Problem: given an eye ray, how to find the non-occluded offset solution with a height map.
- Geometry transforms the search into an ordered 2D problem.
- Then, given a known previous solution, easy to find next solution.



Results

Rock textures on a plane. Sinusoidal functions on a sphere.



[†]efourque@cgl.uwaterloo.ca