

## **Forced-symmetric liftings and parallel redrawings**

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Scene analysis is concerned with understanding the space of  $d$ -dimensional liftings of pictures in  $(d-1)$ -dimensional space; the aim is to understand the space of all polyhedral caps with a given vertical projection to  $(d-1)$ -dimensional space. The dual problem of analysing parallel redrawings of hyperplane arrangements involves finding the space of all hyperplane arrangements where each hyperplane has a given normal. Whiteley characterised which generic pictures have non-trivial liftings.

Here we impose symmetry constraints on the pictures and hyperplane arrangements. We establish a unified framework for analysing when a symmetric picture has a symmetric lifting, or a symmetric hyperplane arrangement has a symmetric parallel redrawing.

Based on joint work with Bernd Schulze and Klara Stokes.