How to draw up to five-dimensional manifolds

<u>Abstract</u>:

We usually think of 2-dimensional manifolds as surfaces embedded in Euclidean 3-space. Since humans cannot visualise Euclidean spaces of higher dimensions, it appears to be impossible to give pictorial representations of higher-dimensional manifolds. However, one can in fact draw 1-dimensional pictures truly representing the topology of surfaces. By analogy, one can draw 2-dimensional pictures of 3-manifolds (Heegaard diagrams), and 3-dimensional pictures of 4-manifolds (Kirby diagrams). With a little trick, one can even draw 2-dimensional (sic!) pictures of at least some 5-manifolds.

In this talk I shall explain how to draw such pictures and how to use them for answering topological and geometric questions. The work on 5-manifolds is joint with Fan Ding and Otto van Koert.

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