Visualizing the Fourth Dimension, and the Simplest Thing I Don't Know About It

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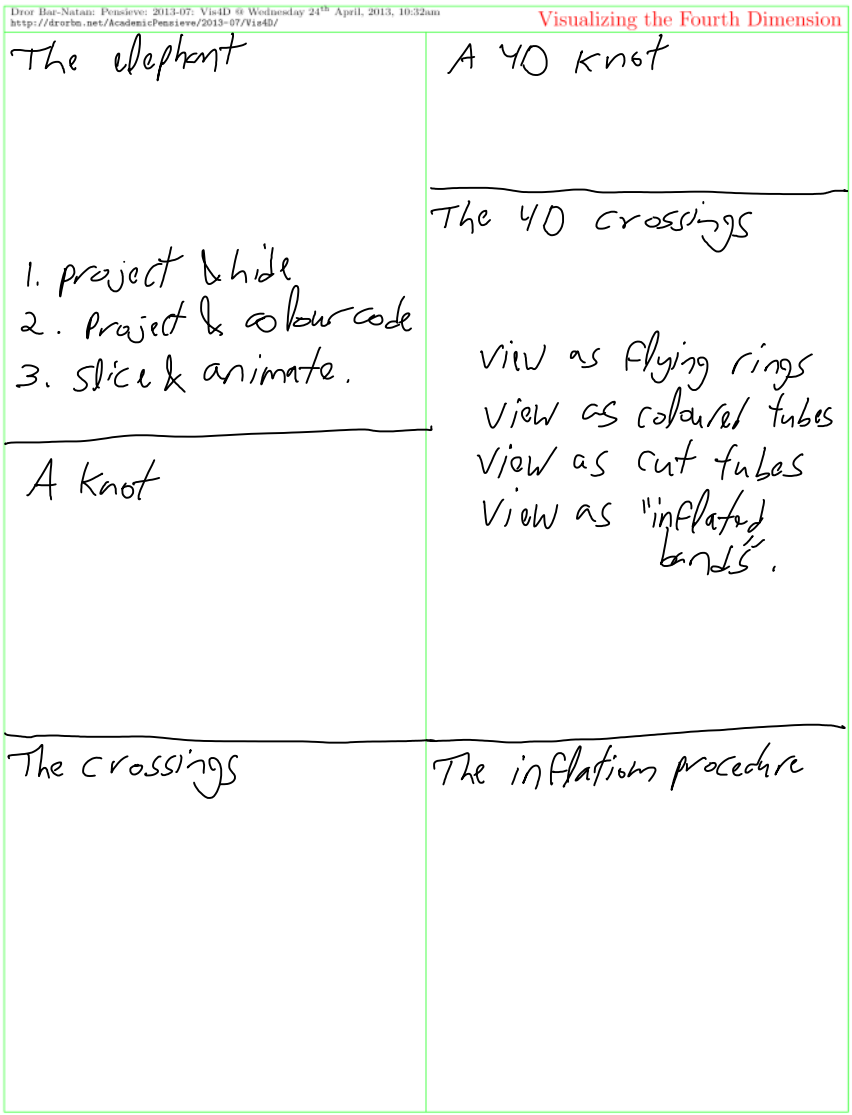
10:02 AM

For talk at CUMC, Montreal July 10-14, 2013?

Abstract. Much as we can understand 3-dimensional objects by staring at their pictures and x-ray images and slices in 2-dimensions, so can we understand 4-dimensional objects by staring at their pictures and x-ray images and slices in 3-dimensions, capitalizing on the fact that we understand 3-dimensions pretty well. So we will spend some time staring at and understanding various 2-dimensional views of a 3-dimensional elephant, and then even more simply, various 2-dimensional views of some 3-dimensional knots. This achieved, we'll take the leap and visualize some 4-dimensional knots by their various traces in 3-dimensional space, and this achieved, I will tell you about the simplest problem in 4-dimensional knot theory whose solution I don't know.



and the Simplest Thing I Don't Know About It

Satoh's conjecture.

Roseman moves

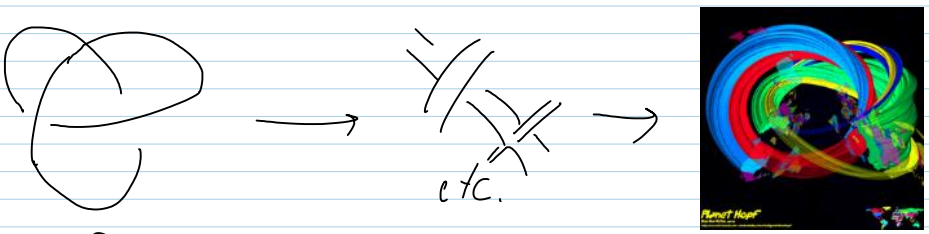
what's "the same"

Reid. moves & Thm.

movie moves

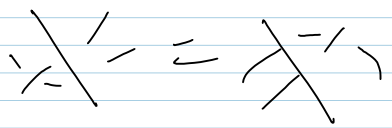
W-moves

Satoh's conjecture via double inflation,



2D 3D 4D

The W-calculus below is a complete description of ribbon 2-knots in 4D:



Then continue as above.