Given a matrix, we can define a family of functions called minors that are polynomials in the matrix entries. If all minors of a matrix are nonnegative, a matrix is called totally nonnegative. We investigate the relationship between totally nonnegative matrices and planar directed networks, including results of Lindstrom and Brenti. We then discuss Alex Postnikov's generalizations of these results and my own work building on this theory.

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