

**Crossing Numbers: From Art and Circuit Design to
Knots and Number Theory**

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In 1864, Sylvester asked what is the probability that four randomly chosen points in the plane form a convex quadrilateral. During World War II, Paul Turán asked about an optimal design of railroads connecting n factories with m warehouses. In 1950s, the British painter Anthony Hill asked how to draw a network of n interconnected nodes with fewest number of crossings. All these questions are still unresolved. The speaker will overview mathematical foundations of the common theme — the theory of crossing numbers of graphs — and will show some surprising relations with other branches of mathematics.