

Graphical methods have a long history in mathematics, dating back to Euclid's Elements. However, this tradition was abandoned in favour of Hilbert's program. More recently, research in topology and categorical algebra have driven a resurgence in the development of graphical techniques. Of particular interest are the two-dimensional string diagrams of categorical algebra, which share deep connections with quantum computation. This paper reviews some important categorical concepts in the theory of quantum circuit diagrams, and describes an ongoing effort to study controlled qudit operations through the lens of three-dimension sheet diagrams.