Aspects of higher connections and parallel transport in geometry

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I will survey several aspects of two- and higher-dimensional connections and parallel transports in the area of geometry. This will include objects called gerbes as a fundamental example. Gerbes are a categorification of $U(1)$-bundles, or line bundles, on manifolds and admit two-dimensional connections and parallel transports. They are also closely related to field theories, which can be viewed as transport along shapes more general than paths and their homotopies. If time permits, I will briefly survey a novel general approach to higher-dimensional connections on categorified bundles.