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We introduce the width complex for knots and 3-manifolds. In the case of a knot, this complex is designed to capture the various embeddings of a given knot in the three sphere, and the ways in which a given embedding of the knot is obtained from another. Similarly, in the case of a 3-manifold, this complex is designed to capture the various Morse functions of the 3-manifold and the ways in which the Morse functions are related. (Received August 16, 2007)