The notion of a current dates back to de Rham (1955) and a ground-breaking structure theory was developed by Federer and Fleming in the 1960s. Roughly speaking, currents form a dual space to the class of compactly-supported differential forms on Euclidean spaces.

In recent years, Ambrosio and Kirchheim (2000) and Lang (2007) developed theories of currents that are well-defined in the setting of metric spaces. In this talk we discuss the structure theory of such ”metric currents” in Euclidean spaces, address progress towards a few open problems, and if time permits, indicate the connections between this theory and the structure of Lebesgue null sets in Euclidean spaces. (Received January 19, 2011)