# The Micropolar Theory of Elasticity

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The Cosserat theory of elasticity, also known as micropolar elasticity, the micropolar theory of elasticity, or micropolar continuum mechanics, incorporates a local rotation of points as well as the translation assumed in classical elasticity; and a couple stress (a torque per unit area) as well as the force stress (force per unit area). The force stress is referred to simply as 'stress' in classical elasticity in which there is no other kind of stress. The idea of a couple stress can be traced to Voigt during the early development of the theory of elasticity. More recently, theories incorporating couple stresses were developed using the full capabilities of modern continuum mechanics. Early theoretical work was done by the Cosserat brothers, by Mindlin, and by Nowacki. Eringen incorporated micro-inertia (which allows incorporation of dynamic effects) and renamed Cosserat elasticity micropolar elasticity.