ABSTRACT: It is well-known that rods, plates and shells buckle under compression. Engineering theories describing these phenomena are specific for each particular shape and give little indication of the common mechanisms of buckling that are at work. These mechanisms become apparent when we consider buckling from the general perspective of three-dimensional nonlinear elasticity. The application of such general theory to buckling of cylindrical shells under axial compression has led to a new perspective on the well-documented but still poorly understood phenomenon of extreme sensitivity of the buckling load to imperfections.