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Abstract for an Invited Paper
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The shape, stability and dynamics of elastic surfaces

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Bending a thin sheet is easier than stretching it, an observation which has its roots in geometry. We will use this fact to explain some unusual problems in biology, physics and geology. At the everyday scale, I will discuss the morphology of avascular algal blades, the dynamics of defects in an elastic ribbon, and the dynamics of prey capture by certain carnivorous plants. At the geological scale, I will try to explain the shape of island arcs on our planet. Finally, time permitting, I will discuss how we might extend these ideas to the macromolecular scale, to derive a mechanical model for the dynamic instability of a growing microtubule.