What are the fundamental principles of robotic manipulation? Perhaps by studying a variety of systems we can identify some common underlying issues, mechanisms, and even principles. This talk focuses on a comparison of two systems: a human juggler and an automated factory. The human and the factory have some interesting common elements. In particular, both systems exhibit a type of "minimalism"—they obtain advantages from employing fewer motors and sensors. Along the way we will briefly visit several other manipulation systems: an automated planning system for robotic manipulation, a robotic juggler, chimpanzees, and ancient hominids.

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