Abstract: A recently developed theoretical framework, due largely to S. Alesker, A. Bernig and the speaker, reduces many problems of classical integral geometry to algebra. In some cases the algebraic problems are then easy to solve, and in others they are not. I will describe the reduction in general terms and illustrate how it gives concrete information in a few examples. I will also state a mysterious conjecture that is completely algebraic in nature but represents the key to understanding the integral geometry of complex projective space and complex hyperbolic space.