form, one that opens the way for globalization. Other standard applications of computations based on the Koszul complex include Hilbert's syzygy and Noether's "AF + BG" theorems.

Next, in the same section, coherent sheaves are introduced. In essentially the only violation of our principle of always proving the "hard" theorems used in the book, we discuss but do not prove the two main facts – Oka's lemma and the finite dimensionality of cohomology. In fact, these are not used in our study of any specific questions, but we felt it would be misleading in a book on algebraic geometry to leave such an important topic unmentioned.

As hinted above, in Section 4 we reap one dividend of the intrinsic understanding of residues when we arrive at a global duality theorem in functorial form. We only prove a special case of the most general duality statement – one that is at the opposite extreme form the Kodaira – Serre duality previously encountered and that suffices for our applications. The methods used will adapt to a more general context.

Our first application is a recent theorem of Carrell and Liebermann concerning vector fields with isolated zeros on compact Kähler manifolds. Following this we derive two "reciprocity formulas" which give methods for calculating the superabundance – or equivalently the measure of the failure to impose ind-