In this talk I will present recent results from joint work with Claus Michael Ringel (Bielefeld) on nilpotent linear operators and their invariant subspaces.

Let $k$ be a field. We consider triples $(V, U, T)$ where $V$ is a finite dimensional $k$-space, $U$ a subspace of $V$ and $T: V \to V$ a linear operator with $T^n = 0$ for some $n$, and such that $T(U) \subseteq U$. Thus, $T$ is a nilpotent linear operator on $V$ and $U$ is an invariant subspace with respect to $T$.

If $v = \dim V$ and $u = \dim U$ then $(v, u)$ is the dimension pair of the triple $(V, U, T)$. It turns out that whenever the nilpotency index $n$ is at most 6, then interesting properties about an indecomposable triple $(V, U, T)$ can be read off from the dimension pair.