We investigate operators on Banach spaces of analytic functions on the unit disk D in the complex plane. The operator T_g, with symbol $g(z)$ an analytic function on the disk, is defined by $T_g f(z) = \int_0^z f(w)g'(w)\,dw \quad (z \in D)$. T_g and its companion operator $S_g f(z) = \int_0^z f'(w)g(w)\,dw$ are related to the multiplication operator $M_g f(z) = g(z)f(z)$, since integration by parts gives $M_g f = f(0)g(0) + T_g f + S_g f$.

Characterizing boundedness of T_g and S_g on the Dirichlet space, Bloch space, and $BMOA$ illuminates well known results on the multipliers (i.e., symbols g for which M_g is bounded) of these spaces. The multipliers must satisfy two conditions, which depend on the space. The operators T_g and S_g split the two conditions on the multipliers. M_g is bounded only if both S_g and T_g are bounded, yet one of S_g or T_g may be bounded when M_g is unbounded. We note a similar phenomenon on the Hardy spaces $H^p\,(1 \leq p < \infty)$ and Bergman spaces $A^p\,(1 \leq p < \infty)$. An open problem is to distinguish the g for which S_g and T_g are bounded or compact on H^∞, the space of bounded analytic functions. We give partial results toward solving this problem, including an example of a function $g \in H^\infty$ such that T_g is not bounded on H^∞.

Finally, we study the symbols for which T_g and S_g have closed range on H^2, A^p, Bloch, and $BMOA$. Our main result regarding closed range operators is a characterization of g for which S_g has closed range on the Bloch space. We point out analogous results for H^2 and the Bergman spaces. We also show T_g is never bounded below on H^2, Bloch, nor $BMOA$, but may be bounded below on A^p.