I will first introduce new Hermite-style and Bernstein-style geometric decompositions of the cubic order serendipity finite element spaces $S_3(I^2)$ and $S_3(I^3)$, as defined in the recent work of Arnold and Awanou [Found. Comput. Math. 11 (2011), 337–344]. The cubic serendipity spaces are substantially smaller in dimension than the more commonly used tensor product spaces - 12 instead of 20 for the square and 32 instead of 64 for the cube - yet are still guaranteed to obtain cubic order a priori error estimates when used in finite element methods. The basis functions in these new decompositions have a number of nice properties, including canonical relationships to the finite element degrees of freedom and to the geometry of their graphs. I will conclude by showing how this approach for cubics can be extended to construct decompositions for both higher polynomial order and higher form order serendipity spaces. (Received September 24, 2012)