Given $f$, a normalized ($f(0) = 0$, $f'(0) = 1$) locally univalent function defined on the open unit disk of $\mathbb{C}$, we consider the extension of $f$ to the open unit ball of $\mathbb{C}^n$ given by $F(z) = (f(z_1) + G(\sqrt{f'(z_1)} \hat{z}), \sqrt{f'(z_1)} \hat{z})$, $\hat{z} = (z_2, \ldots, z_n) \in \mathbb{C}^{n-1}$. Here $G$ is a complex-valued holomorphic function defined on a ball in $\mathbb{C}^{n-1}$ of possibly infinite radius centered at 0 such that $G(0) = 0$ and $DG(0) = 0$. It is known that, if $f$ is convex or starlike (univalent), then $F$ inherits the same property when $G$ is a homogeneous polynomial of degree 2 of sufficiently small norm. We consider what additional conditions on $f$ will allow for $G$ to have terms of degree greater than 2 in its expansion about 0 and have $F$ still possess the relevant geometric property. (Received September 21, 2010)