Several applications of skew-morphisms of groups

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A skew morphism of a finite group G is a permutation φ of G fixing the identity element and for which there is an integer-valued function π on G such that $\varphi(gh) = \varphi(g)\varphi^{\pi(g)}(h)$ for all $g, h \in G$. For any complementary product $\Gamma = GC$ of a group G and a cyclic group C, one can get a skew-morphism of G by a commutting rule. So skew-morphisms of a group G can be applied to classification of a complementary product of a group and a cyclic group, classifications of regular Cayley maps on a group G, classifications of regular Cayley hypermaps on a group G and so on. In this talk, we will consider the classification of regular Cayley hypermaps on dihedral groups and other applications of skew-morphisms.