Weak mixing for finite measure-preserving transformations has many interesting equivalent characterizations, among which is that $T \times T$ is ergodic. This in particular implies that $T \times T^{-1}$ must be ergodic. It has been known for some time that many of these characterizations do not remain equivalent in the infinite measure-preserving case. In this talk we will construct infinite measure-preserving rank one transformations such that $T \times T$ is ergodic but $T \times T^{-1}$ is not ergodic, and other related examples. This partially answers a question of Bergelson. The methods are combinatorial and probabilistic and use the notion of descendants in the constructions of the transformations. (Received September 16, 2014)