The substrate scope of the MnCl$_2$-catalyzed cross-coupling between aryl halides and Grignard reagents has been extended to several methyl-substituted aryl iodides by performing the reaction at elevated temperature in a microwave oven. A radical clock experiment revealed the presence of an aryl radical as an intermediate leading to the proposal of an $S_{RN1}$ pathway for the coupling. The mechanistic information gave rise to suspicion about two previously published cross-coupling reactions catalyzed by manganese(II) salts. As a result, the coupling between aryl halides and organostannanes as well as between aryl halides and amines were revisited. Both reactions were found impossible to reproduce without the addition of small amounts of palladium or copper and are therefore not believed to be catalyzed by manganese.