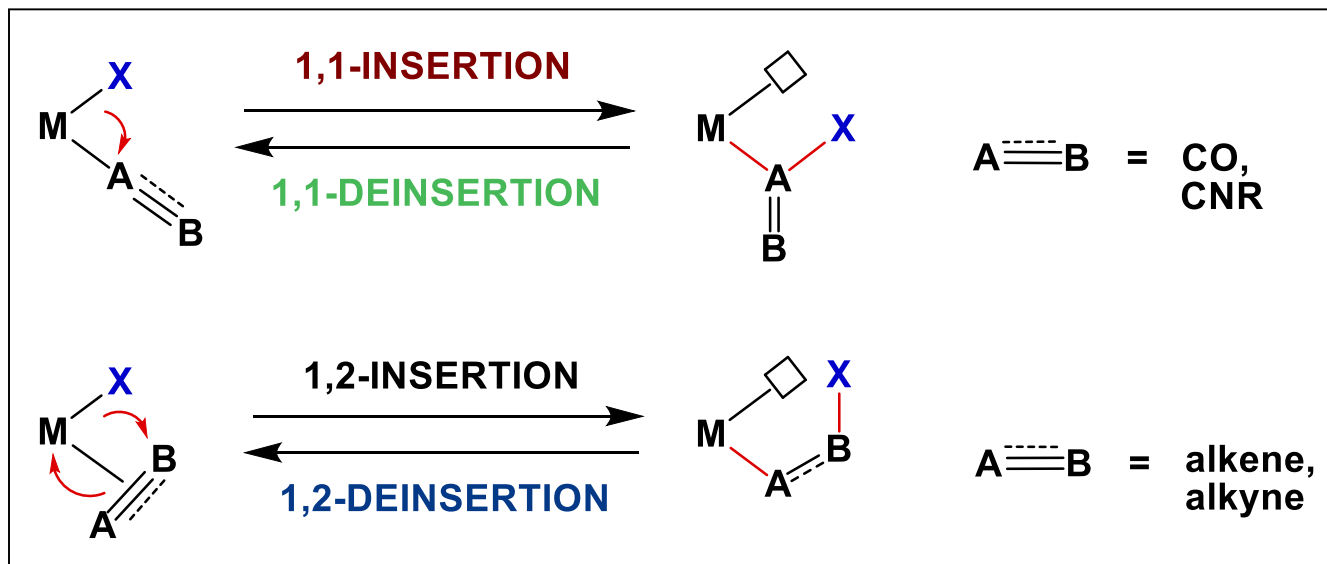


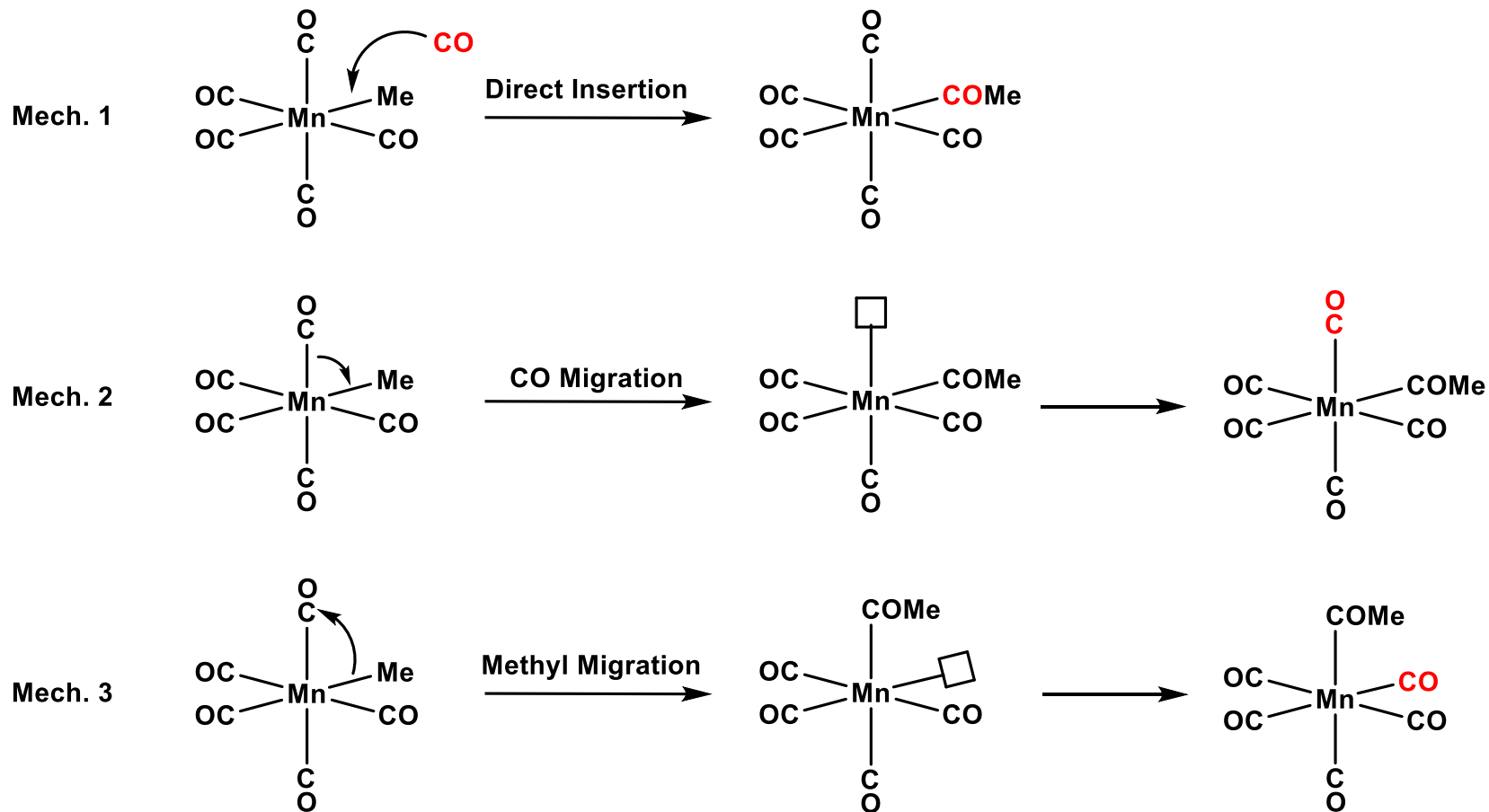
Insertion and Deinsertion Reactions

2 TYPES OF MIGRATORY INSERTION: 1,1- and 1,2-:



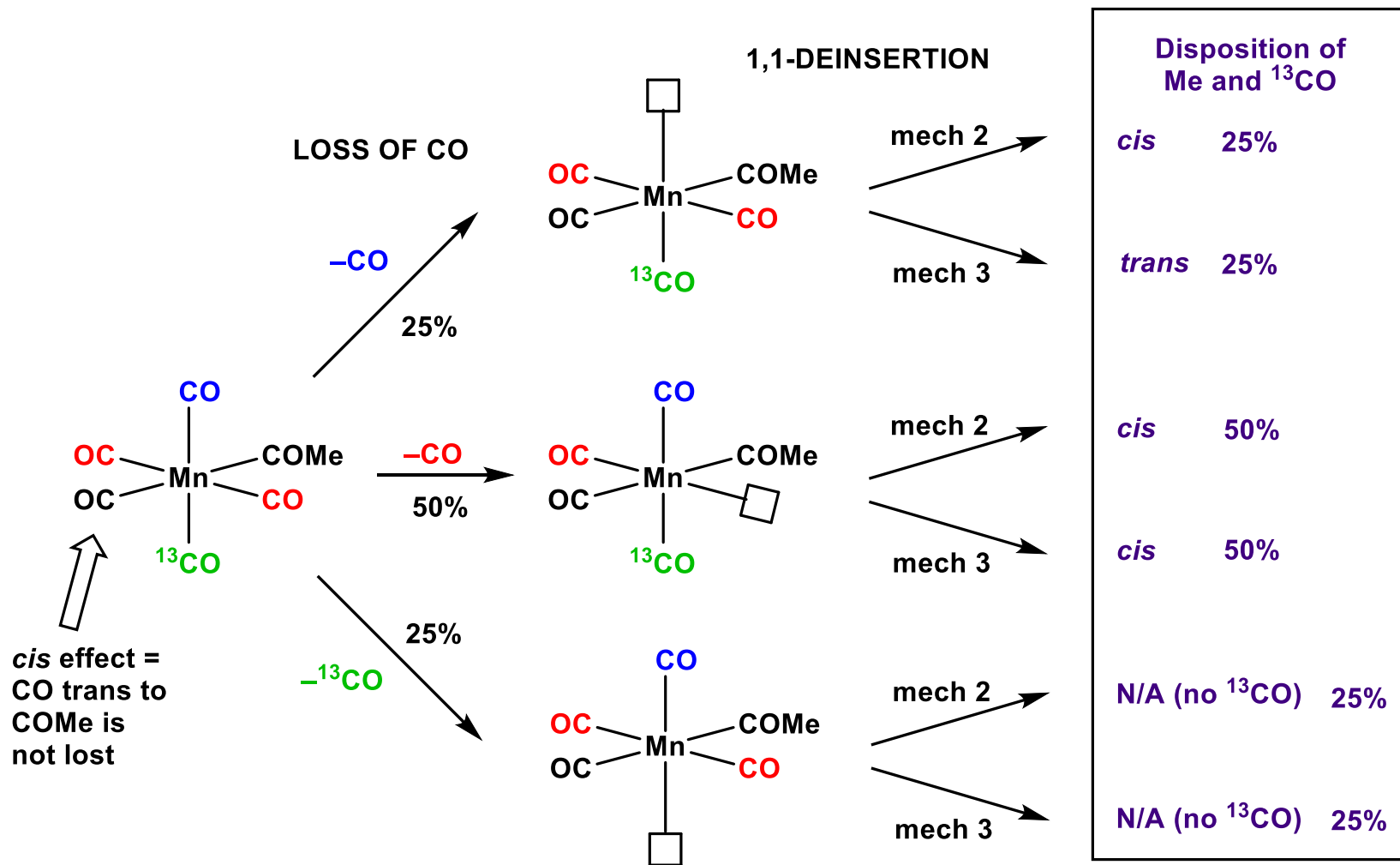
- Metal oxidation state is unchanged.
- Ligands must be *cis* for insertion to occur.
- Vacant site generated by insertion / required for de-insertion.
- 1,2-Insertion occurs *via* a 4-centered transition state, M–X addition across an alkene or alkyne occurs in a *syn*-fashion, and 1,2-insertion occurs with retention of configuration at X (e.g. for CHDPh)
- β-Hydride elimination is the most common type of 1,2-deinsertion.

1,1-Insertion: Possible Mechanisms



- Under an atmosphere of ^{13}CO \rightarrow only one ^{13}CO in the product, which is *cis* to the COMe group \rightarrow rules out Mechanism 1.

1,1-Insertion: Mechanism 2 or 3?



Mechanism 2 (CO migration) = 75% *cis* + 25% no ^{13}CO

Mechanism 3 (Me migration) = 50% *cis* + 25% *trans* + 25% no ^{13}CO = observed