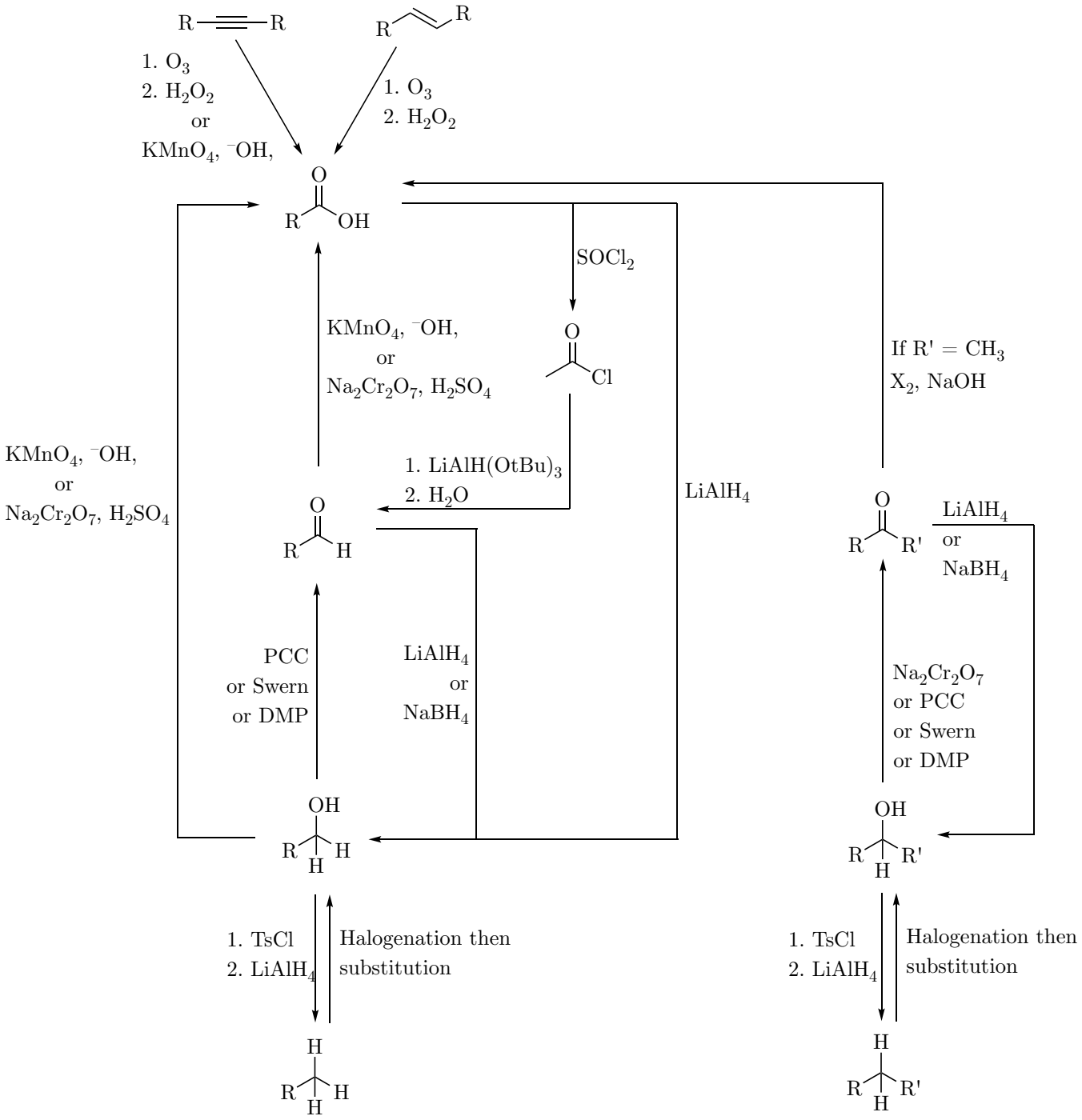
R—≡—R
1. O3
2. H2O2
or
KMnO4, ⁻OH,
R
R
1. O3
2. H2O2
O
R OH
SOCl2
O
Cl
KMnO4, ⁻OH,
or
Na2Cr2O7, H2SO4
If R' = CH3
X2, NaOH
KMnO4, ⁻OH,
or
Na2Cr2O7, H2SO4
1. LiAlH(OtBu)3
2. H2O
LiAlH4
O
R H
O
R R'
LiAlH4
or
NaBH4
PCC
or Swern
or DMP
LiAlH4
or
NaBH4
Na2Cr2O7
or PCC
or Swern
or DMP
OH
R H
H
OH
R R'
H
1. TsCl
2. LiAlH4
Halogenation then
substitution
1. TsCl
2. LiAlH4
Halogenation then
substitution
H
R H
H
H
R R'
H