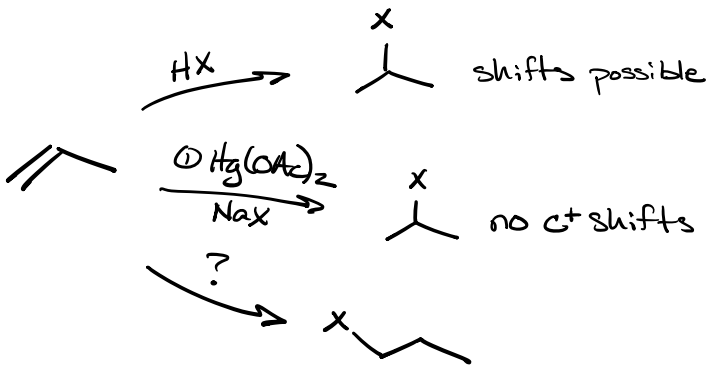
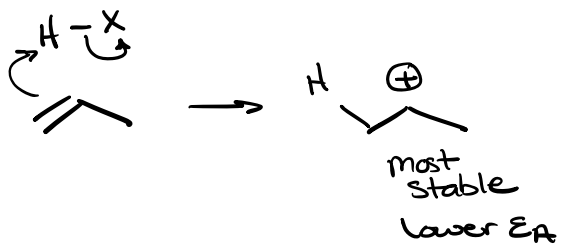
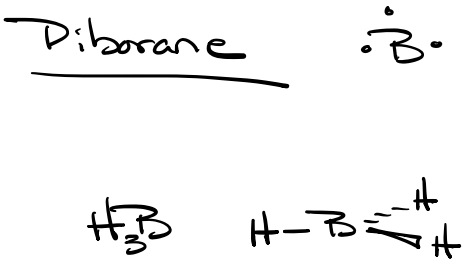
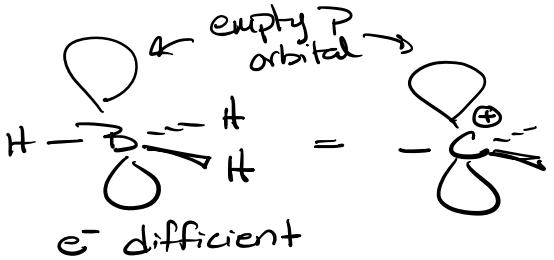


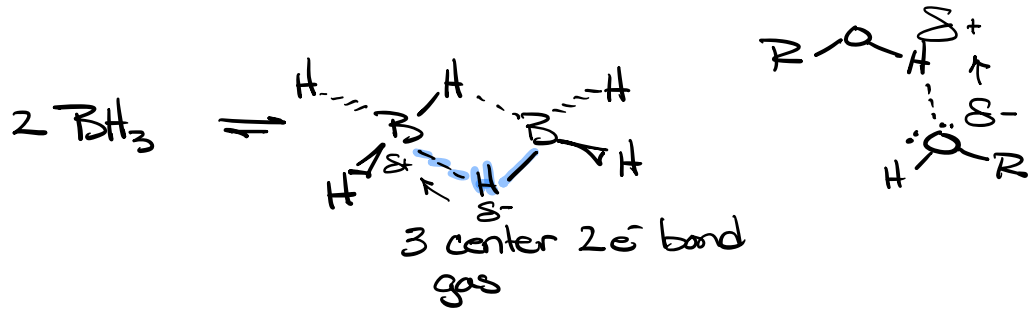


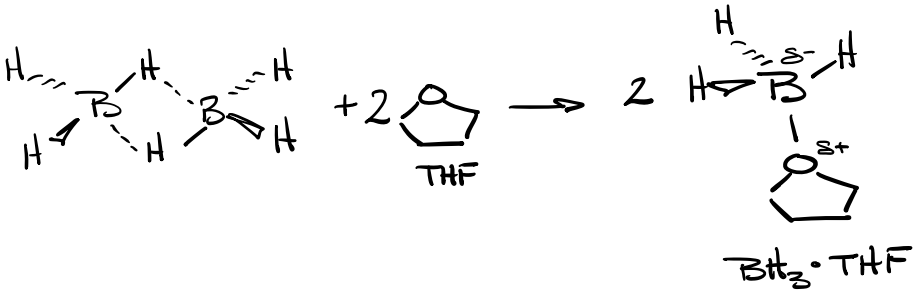
Diborane



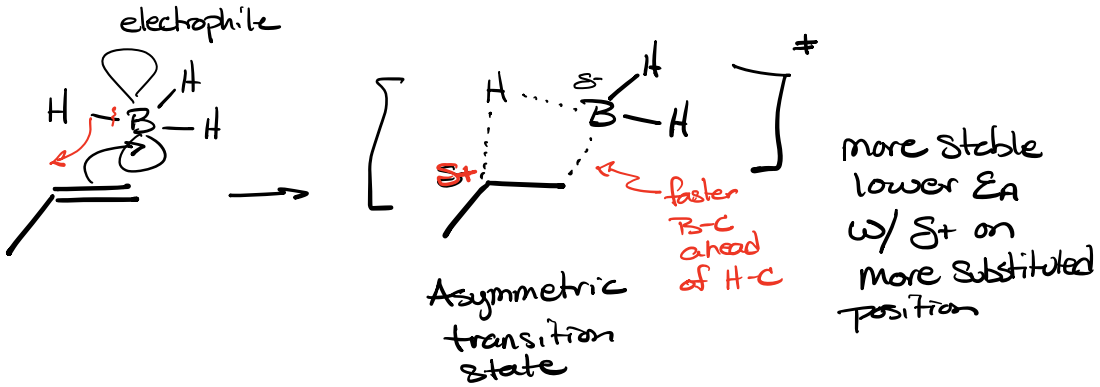


	B	C	H
EN	2.0	2.5	2.2

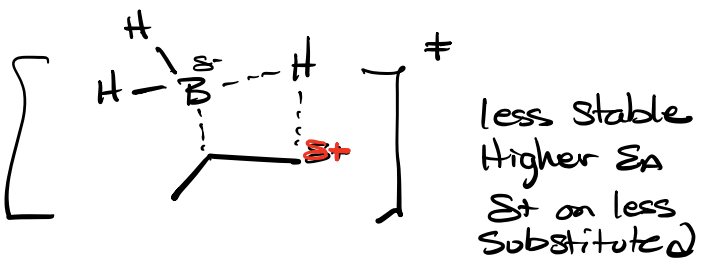


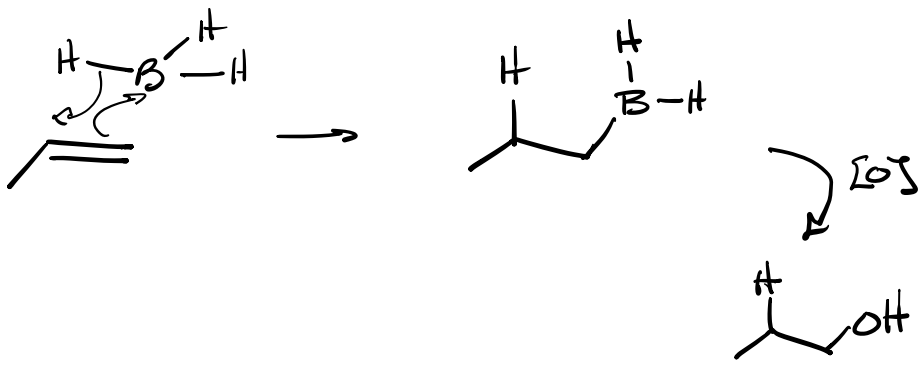


Hydroboration

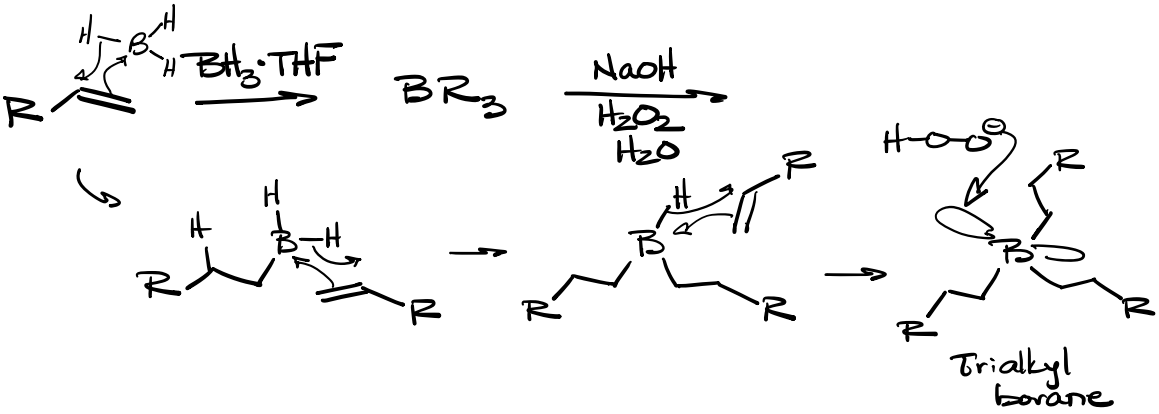


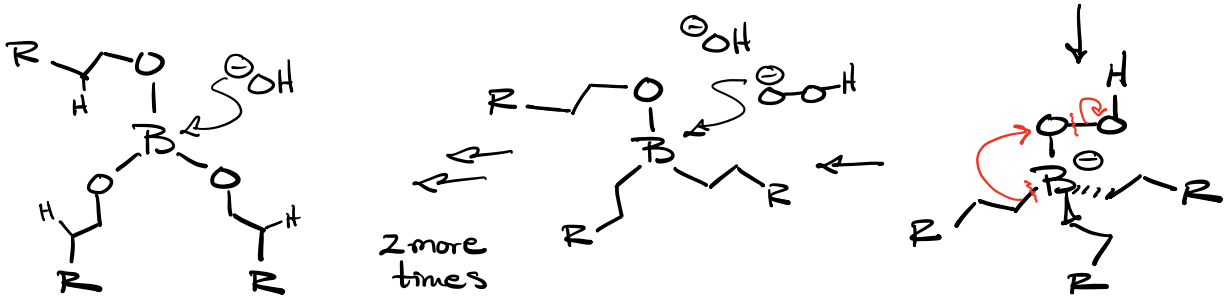
Alternative

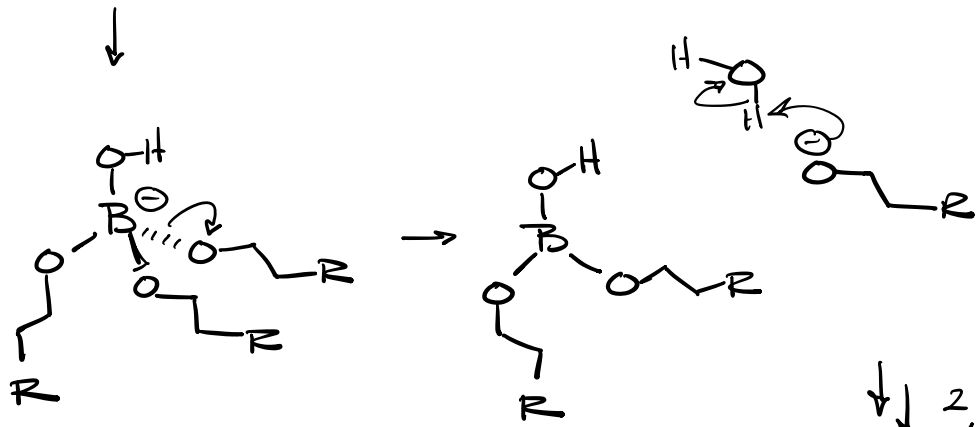




Mechanism Hydroboration/Oxidation

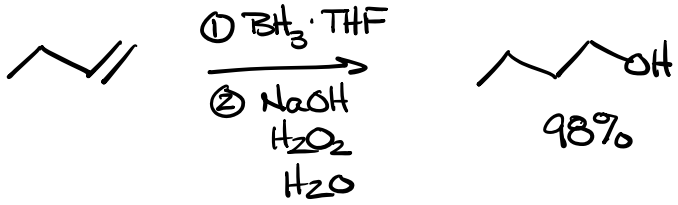


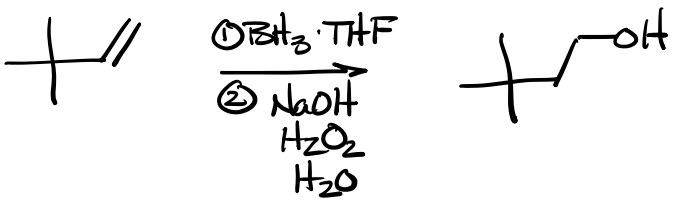


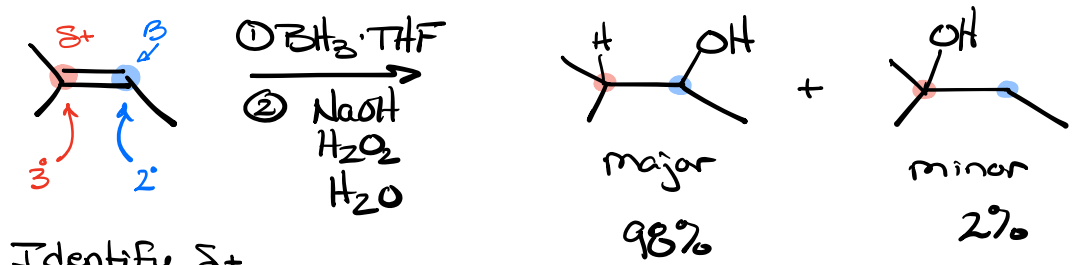


$B(OH)_3$ + 3eq

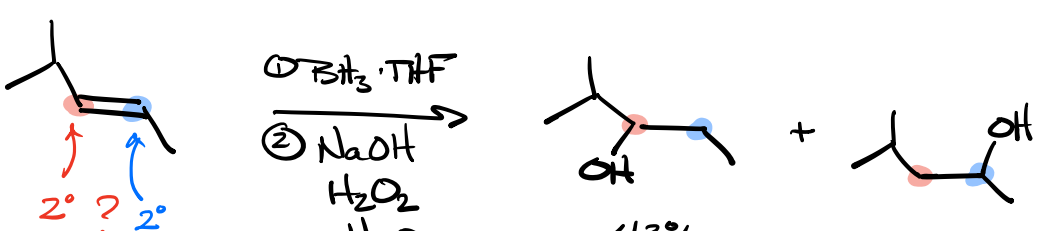
Boric acid
non-toxic



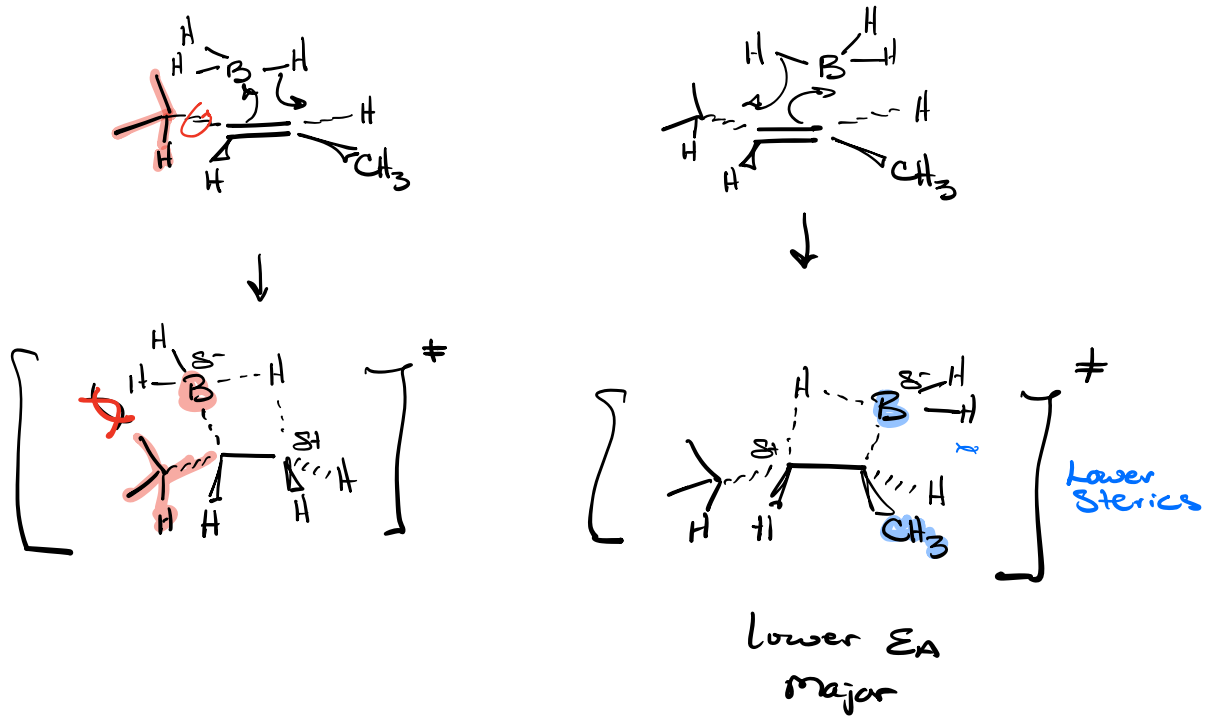




Identify δ+
and boron (hydroxyl)
goes other side



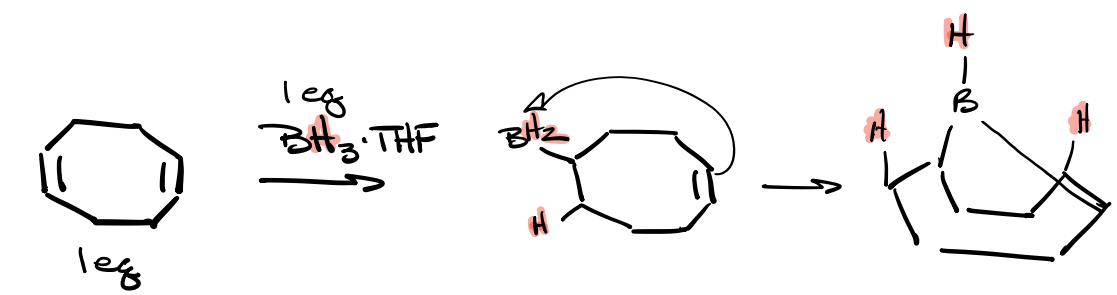
Why not 50/50?

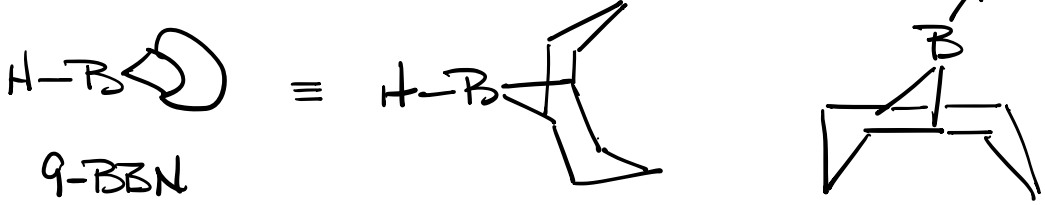


lower E_A

Major

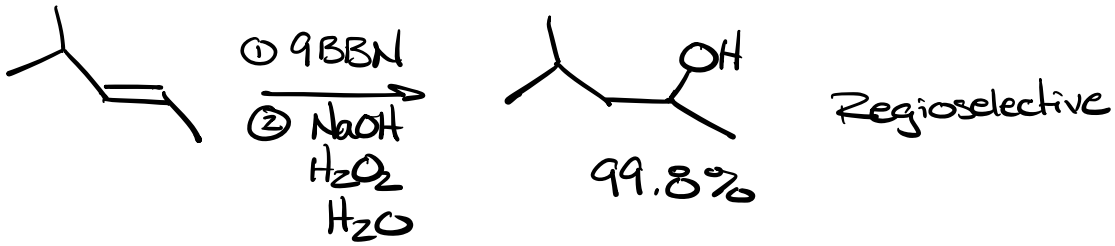
I need to increase sterics, How do I do that?



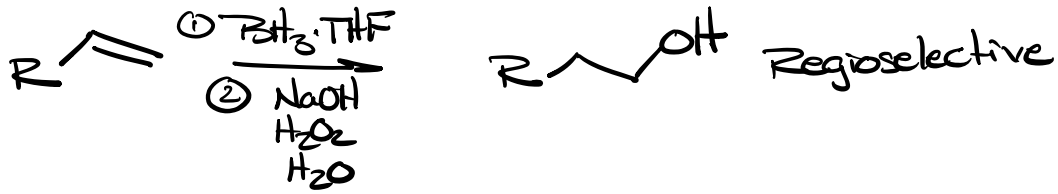


9-Borobicyclo[3.3.1]nonane

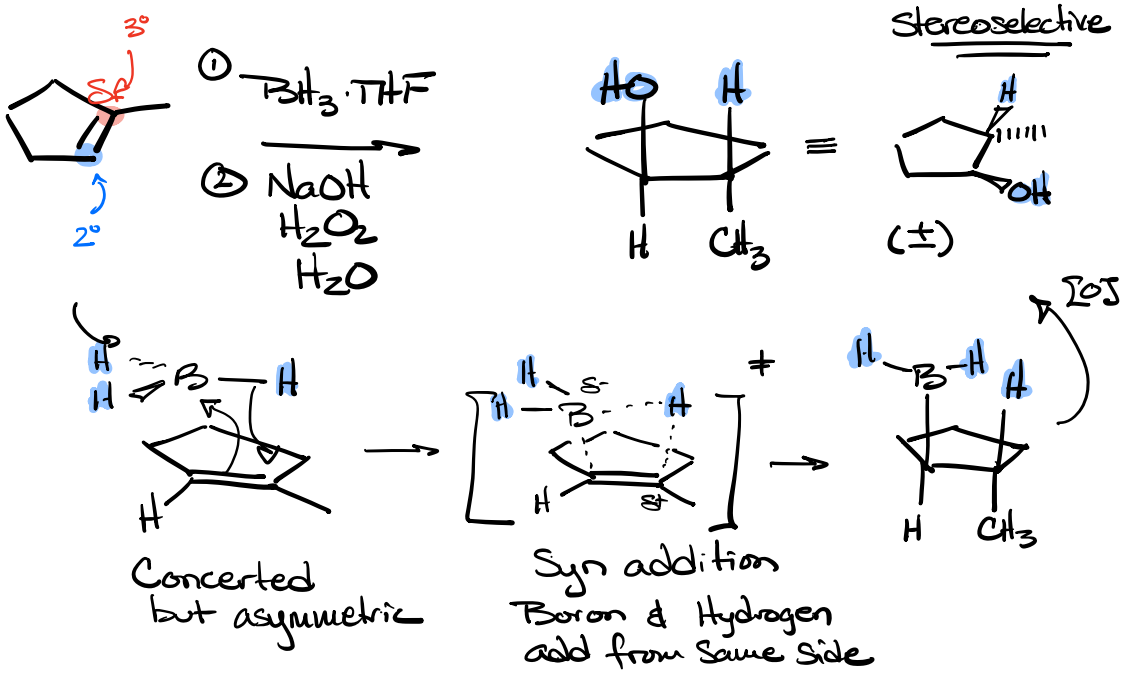
9-BBN



Regioselectivity – Reaction is selective for a position in the molecule



Stereoselectivity – Reaction is selective for one stereoisomer over another (Diastereomers)



Hydroboration / Oxidation

Both Regioselective & Stereoselective

① $BH_3 \cdot THF$

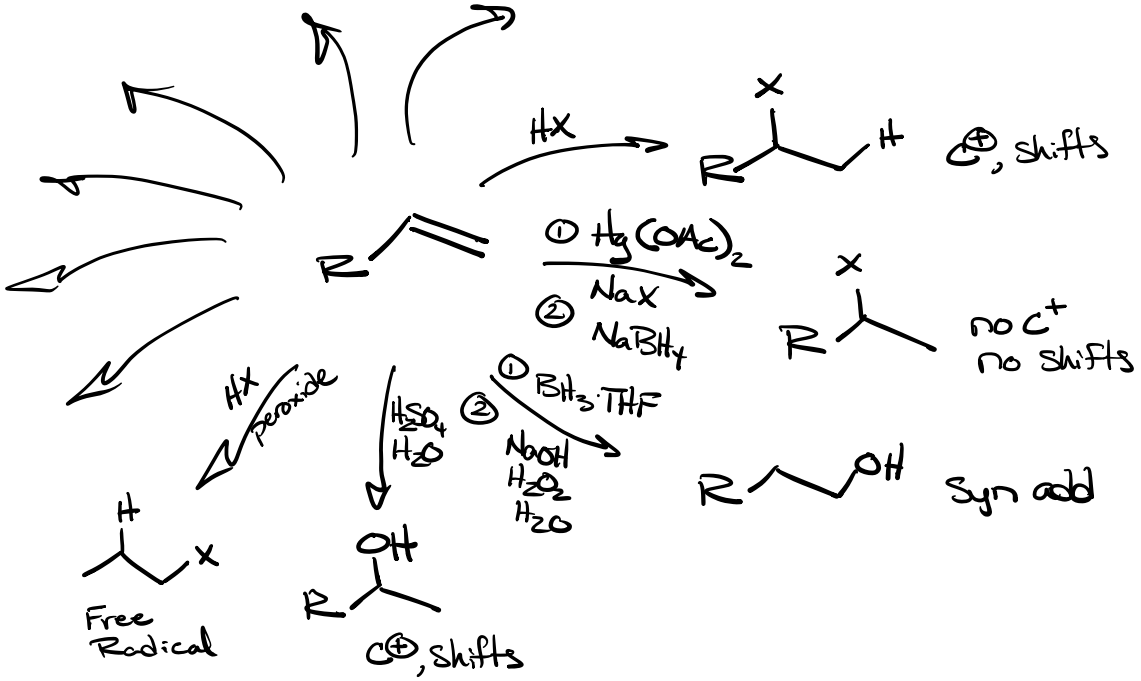
② NaOH, H_2O_2, H_2O

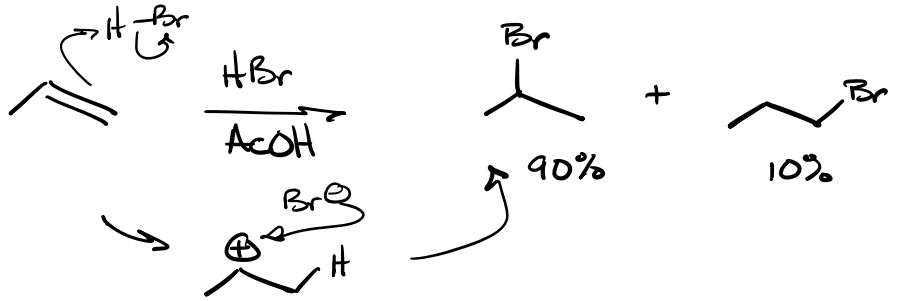
Guided by electronics w/ Boron goes on less Substituted Carbon

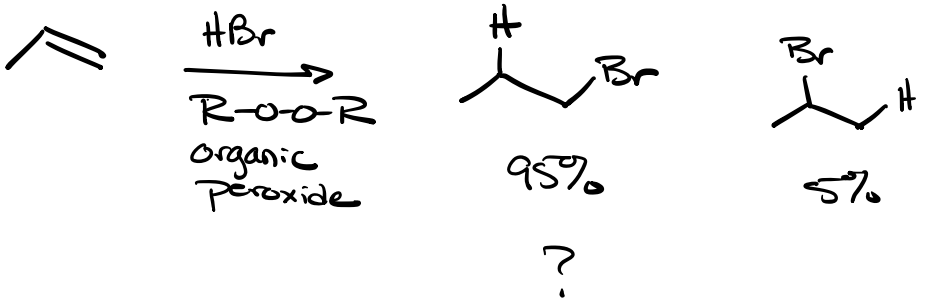
① 9-BBN

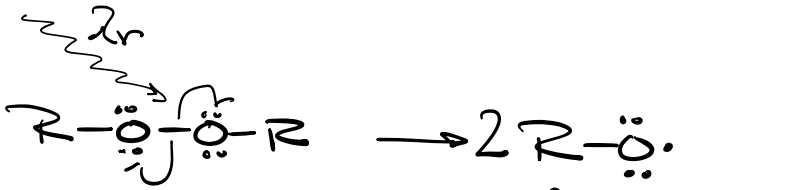
② NaOH, H_2O_2, H_2O

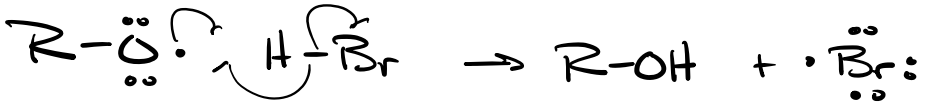
Guided by Sterics w/ boron goes to less sterically hindered Side

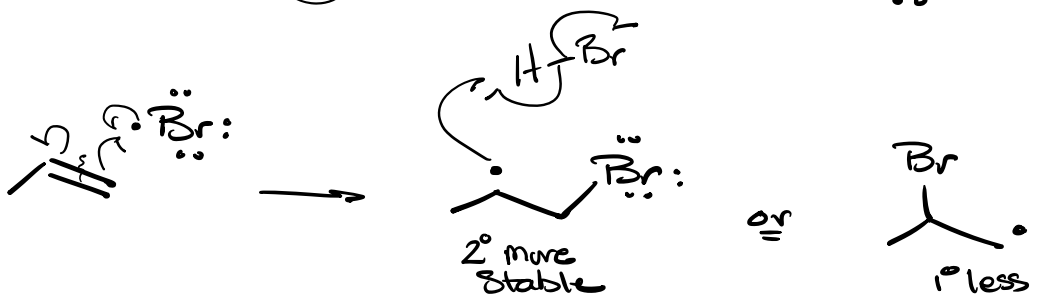


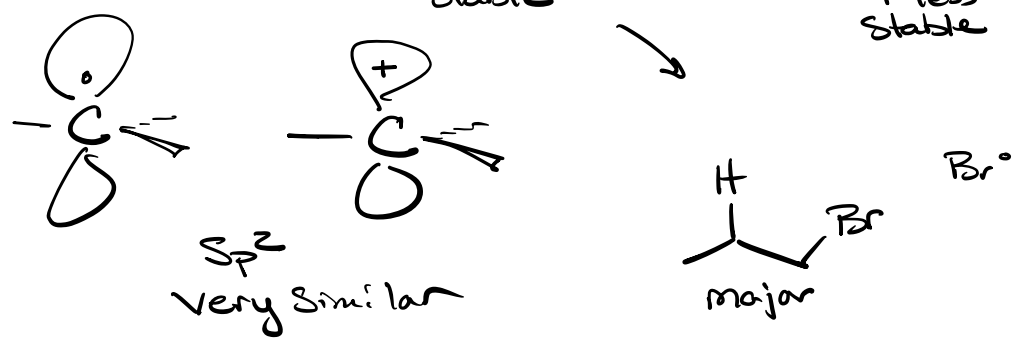

HBr
AcOH
90%
10%


HBr
R-O-O-R
organic peroxide
95%
5%
?


hν
2 R-O·
free Radical


R-OH


2° more Stable
or
1° less Stable


sp²
very similar
major