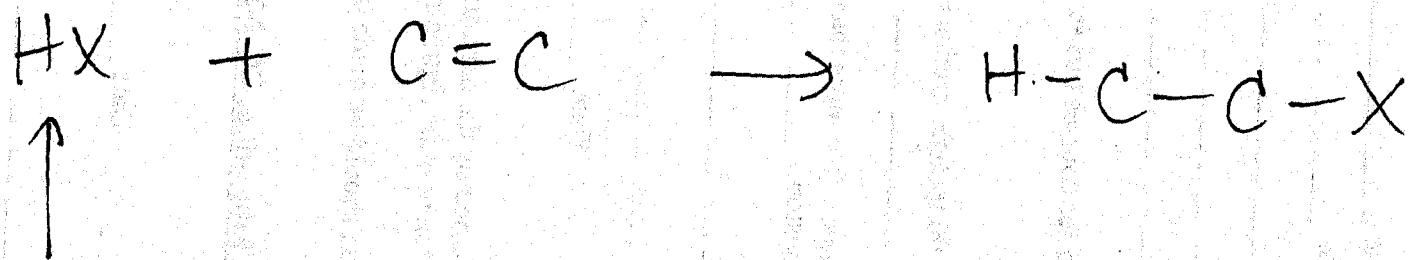


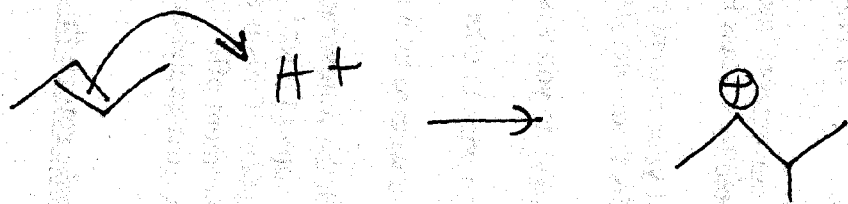
# Chapter 8 - Addition Rxns.

## Electrophilic Addition of HX.

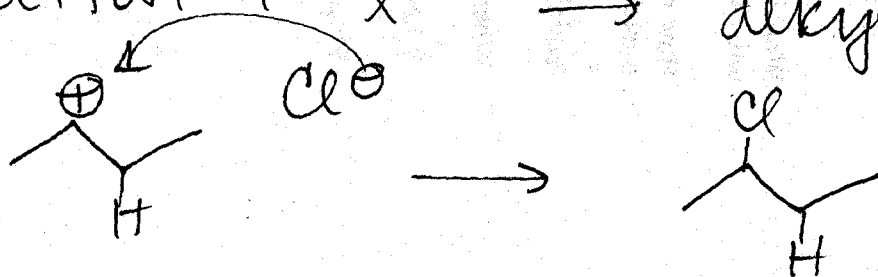
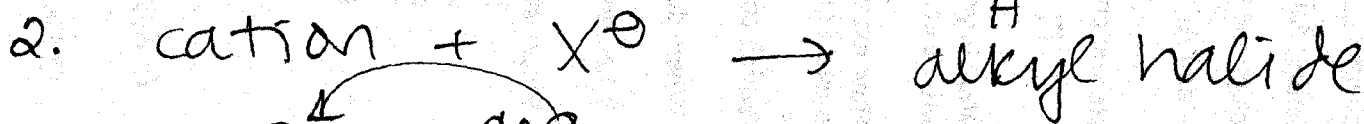


reactivities parallel acidities (ability to donate  $\text{H}^+$ )  
 $\text{HF} \ll \text{HCl} < \text{HBr} < \text{HI}$  (most acidic)

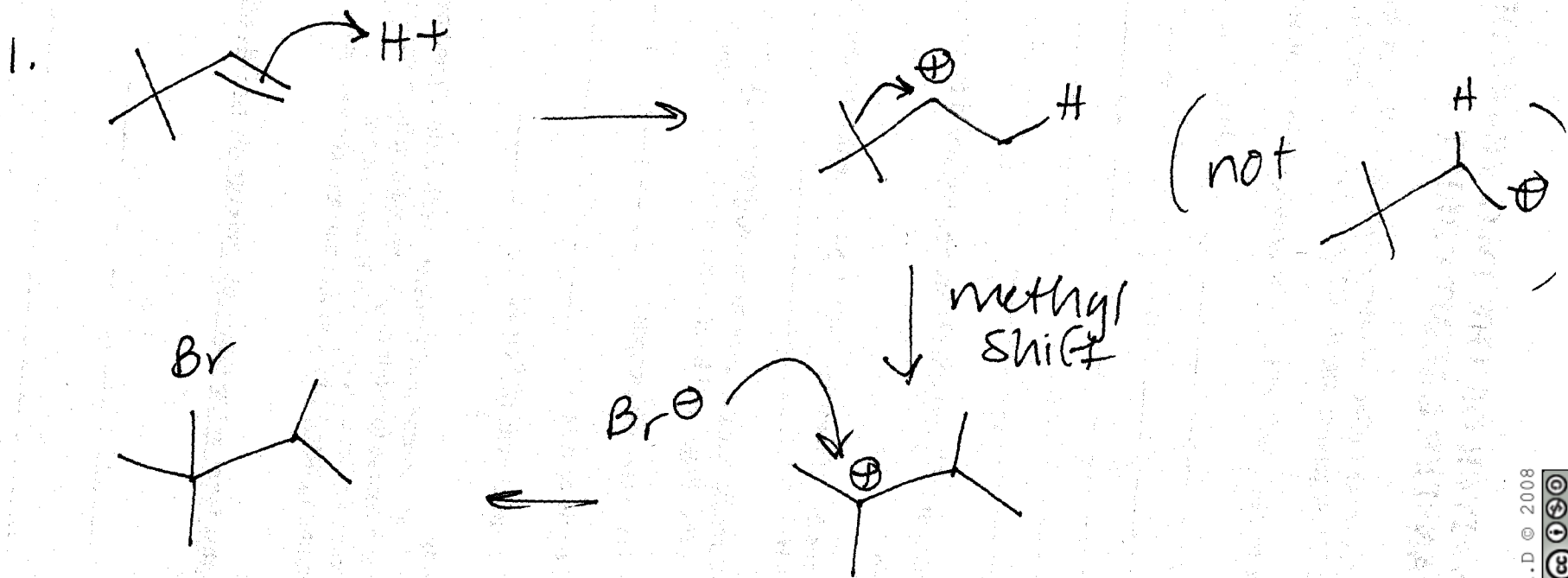
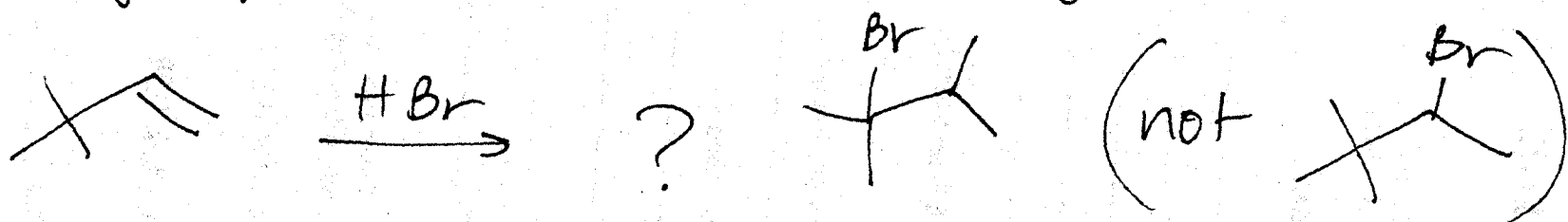
mechanism: reverse of  $\text{E1}$



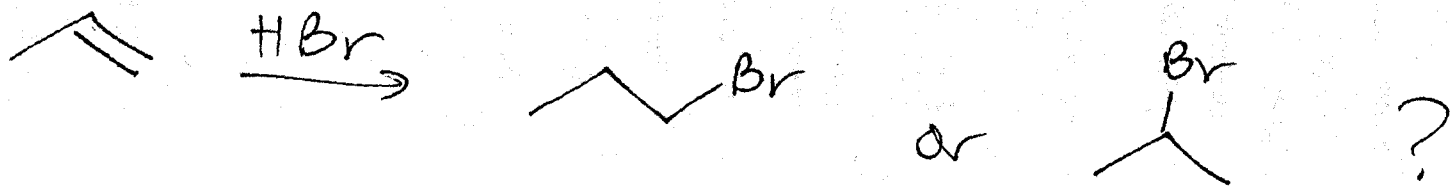
← electrophilic attack of  $\text{H}^+$  on the alkene

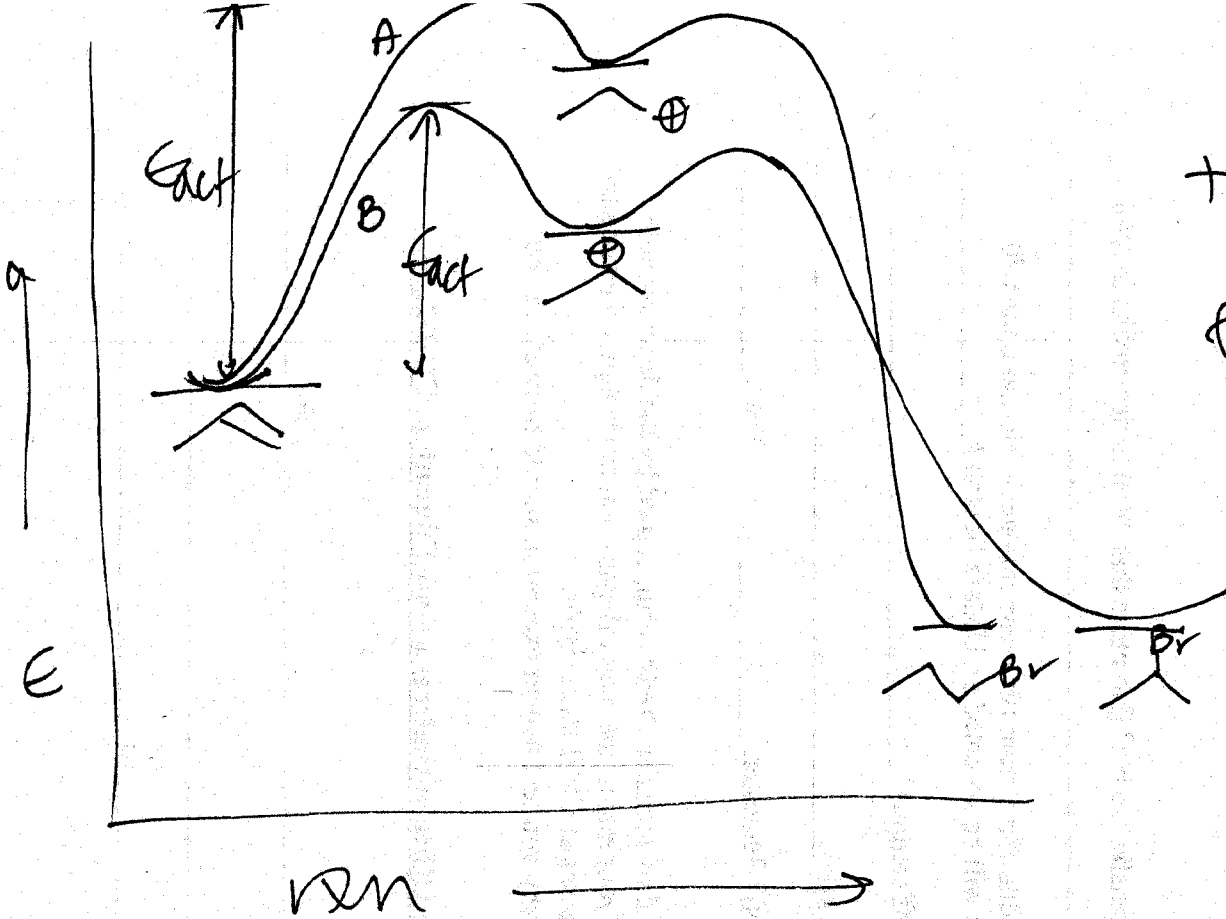


\* cation intermediate always possible.  $\Rightarrow$  rearrangement is



This is a regioselective rxn.



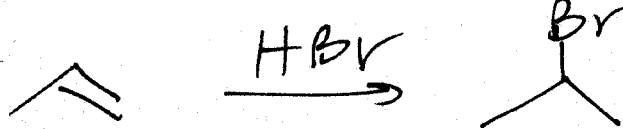


NOTE:  
 transition state +  
 cation intermed.  
 for pathway A are  
 higher energy  
 than those for  
 pathway B

Also  $E_{act}(A) > E_{act}(B)$

~~Markovnikov's Rule~~

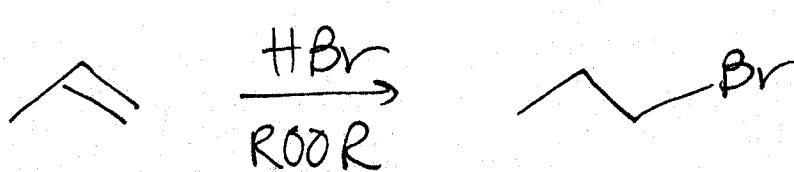
Markovnikov's Rule: when adding an  
 unsymmetrical reagent to an alkene (unsymm.)  
 add the  $\oplus$  piece of the reagent so as to  
 get the more stable cation.



markovnikov  
addition

cation intermediate

works w/  
HBr, HCl, HI



↑  
peroxides

"anti-markovnikov"

radical mechanism  
(Ch. 10)

only works w/ HBr

Regiospecific - more than const. isomers possible  
but only one observed as major prod.

\* these are not stereospecific.

- alkene is planar so  $H^+$  comes in from  
either side

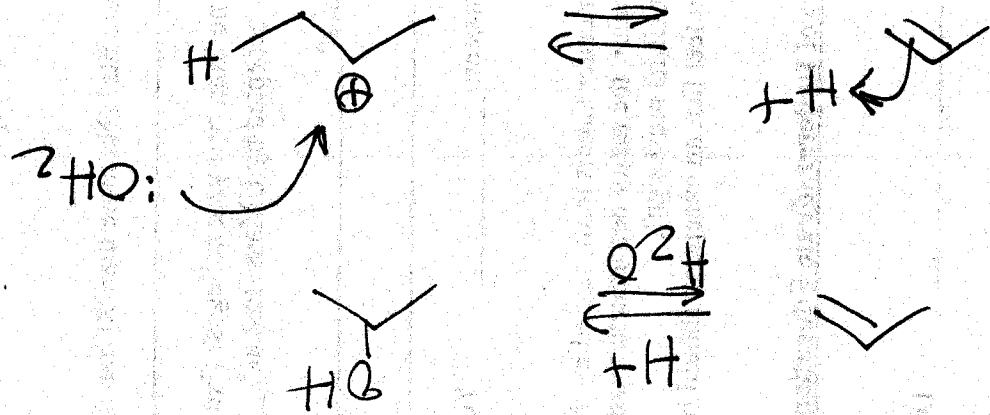
- cation is also planar so  $X^-$  comes in  
from either side

\* SKIP 8.4 - add'n of H<sub>2</sub>SO<sub>4</sub> to alkenes \*

conversion of alkenes to alcohols

1. acid-cat. hydration - reverse of dehydration

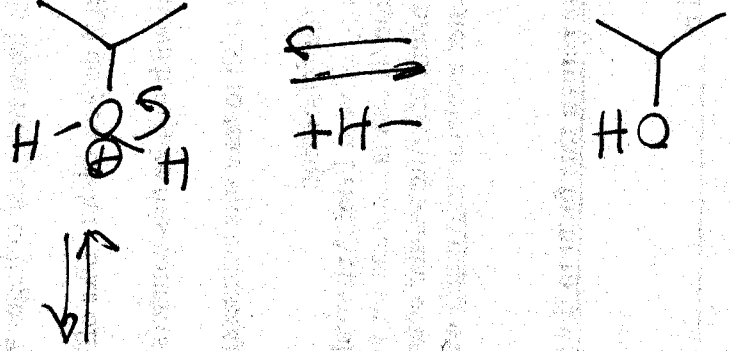
\* Markovnikov addition



\* cation intermediate

=> rearr. possible

\* not stereospecific (planar intermediate)



Think  
 Technatiers  
 Principle:

