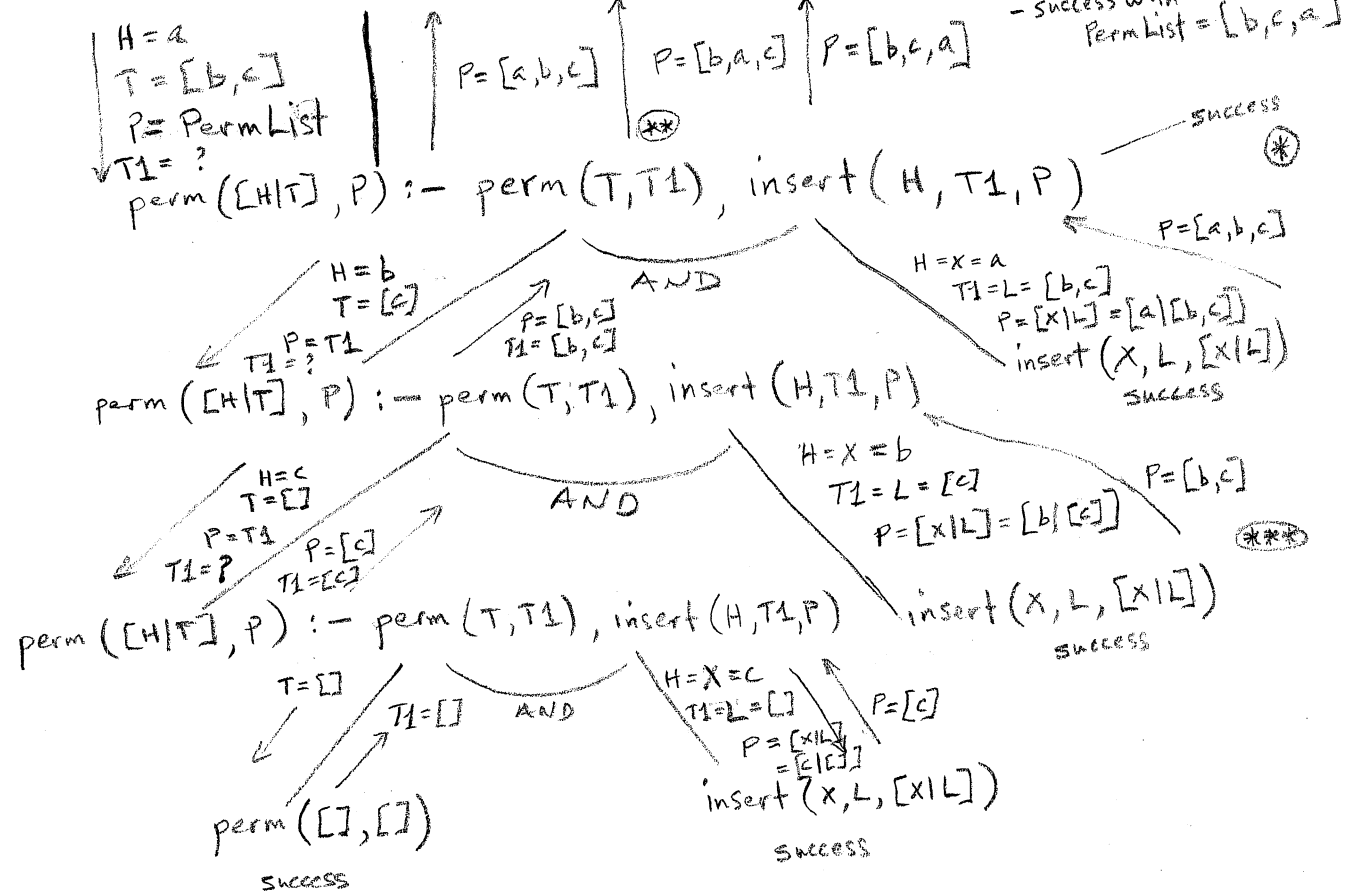
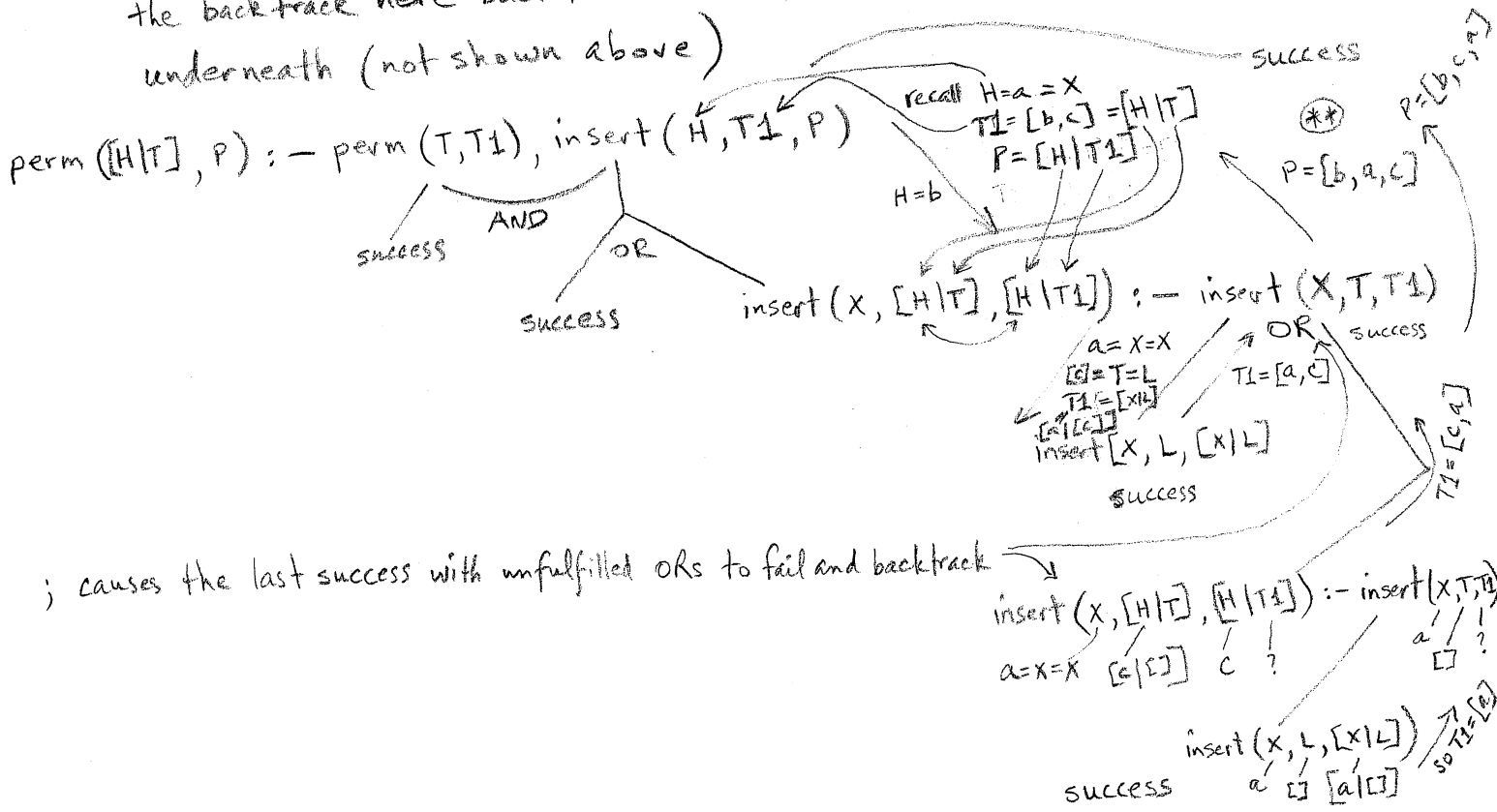


perm([a,b,c], PermList) — success with PermList = [a,b,c]
 — success with PermList = [b,a,c]
 — success with PermList = [b,c,a]



with unfulfilled ORs,
 ; causes the last success to fail and backtrack
 the backtrack here backtracks to * since the insert has an OR
 underneath (not shown above)



I am copying the last rule invocation from the previous page.

$\text{insert}(X, [H|T], [X|T1]) :- \text{insert}(H, T, T1)$
 $a = X = X$ $[c | []]$ c $?$

Success
(see previous page)

OR

$\text{insert}(X, [H|T], [H|T1]) :- \text{insert}(X, T, T1)$

fails because
 $[H|T]$ and $[]$ cannot be unified

this now fails back to the last OR that has unfulfilled choices ***
 I will copy this rule below

$\text{perm}([H|T], P) :- \text{perm}(T, T1), \text{insert}(H, T1, P)$
 Success AND Success OR

$P = [c, b]$
 $\text{insert}(X, [H|T], [H|T1]) :- \text{insert}(X, T, T1)$
 b $[c | []]$ $[c]$ b $[]$

$\text{insert}(X, L, [X|L])$
 $[b | []]$ $T1 = [b]$
 success

→ this now sends the value of $P = [c, b]$
 back to the rule invocation that
 called this rule; it has an AND
 with an insert which has a new $T1 = P = [c, b]$

$\text{insert}(H, T1, P)$
 a $[c, b]$

} this succeeds in the same
 fashion as before to give
 the following:

- PermList = $[a, c, b]$
- PermList = $[c, a, b]$
- PermList = $[c, b, a]$

the last ; takes us to the last unfulfilled OR
which fails because $\text{insert}(x, [H|T], [H|T1]) :- \text{insert}[x, T, T1]$
/ cannot unify with $[]$