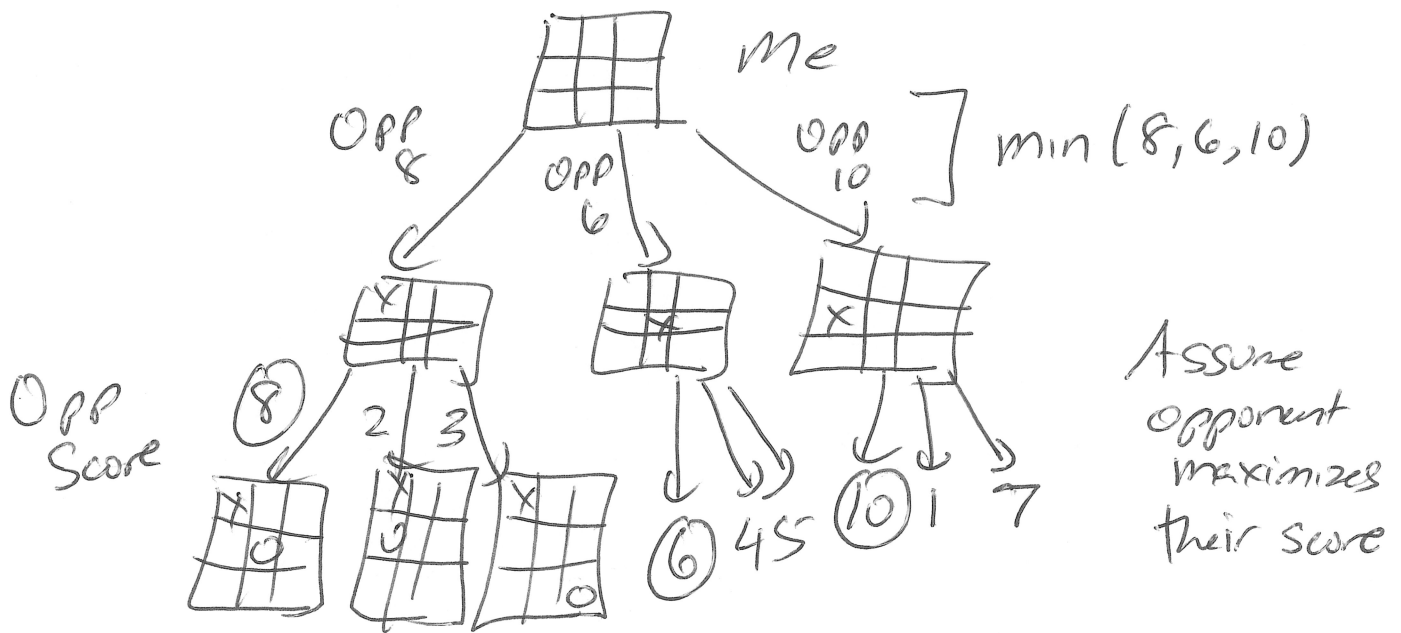
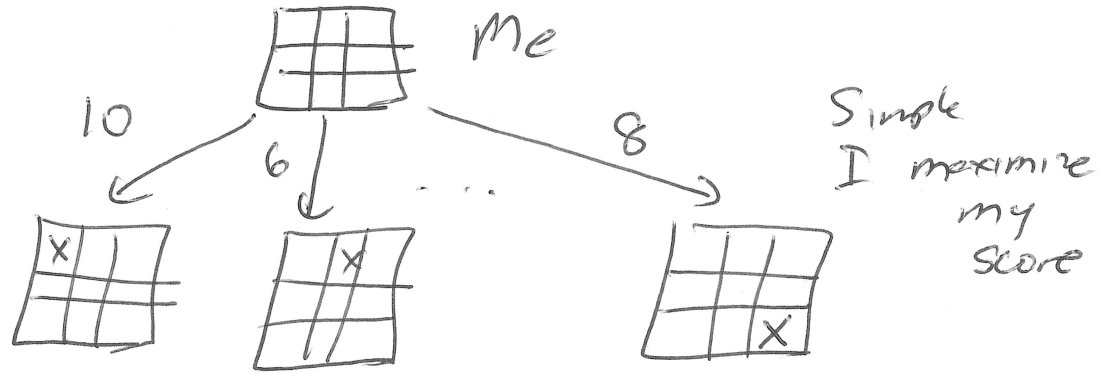


# Min-Max Trees

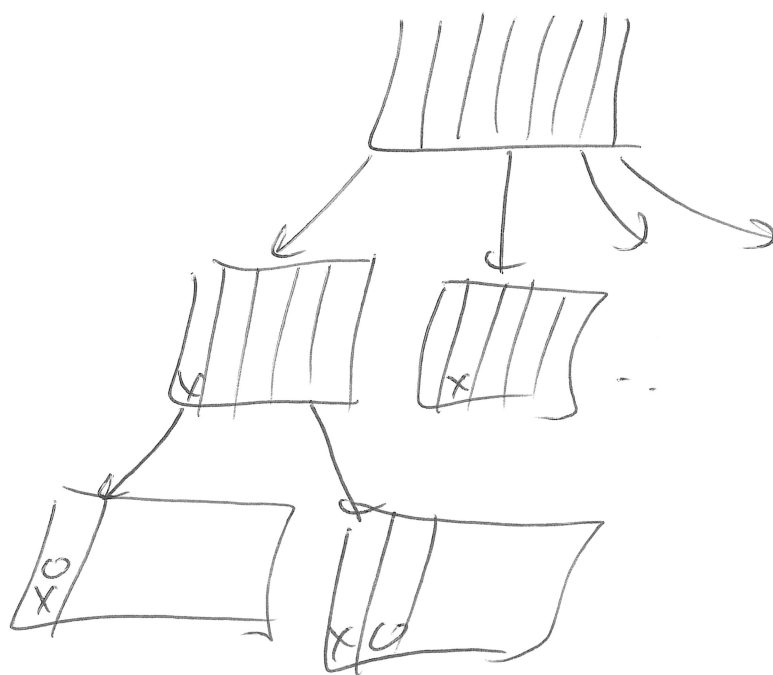
Game 2-player moves



Most Difficult Issue is the scoring function  
How do I "score" an incomplete board???

What about harder games than tic-tac-toe?

- ① Can't expand board to the end of game: too many options.
- ② Need a heuristic scoring function for an incomplete board.
- ③ you decide how many levels deep to extend search based on time constraints.



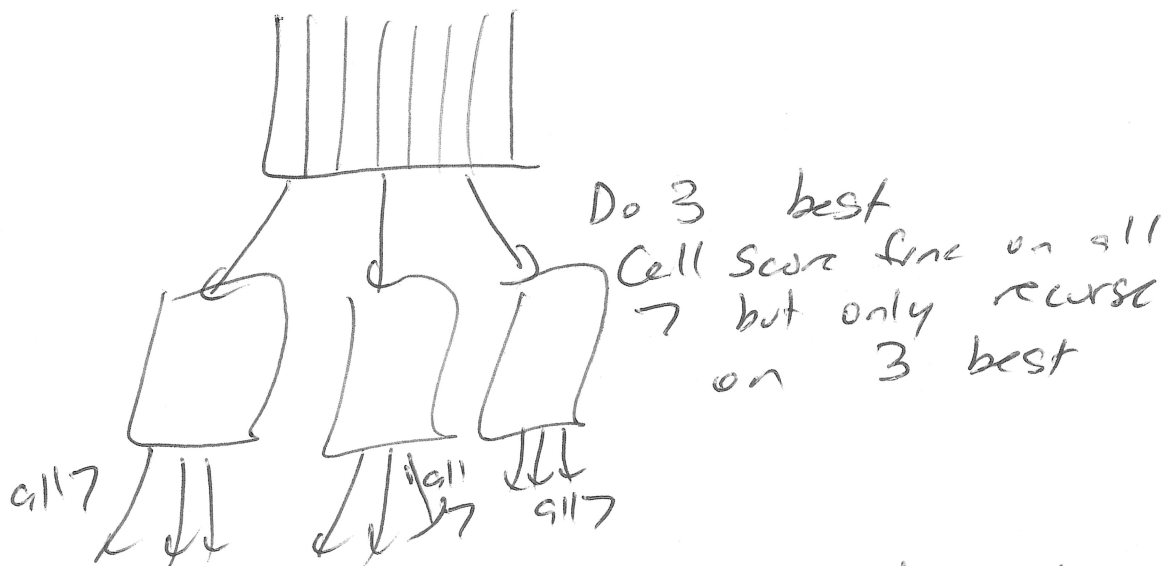
o	o			
x	o			
x	x	o	x	

Score probably the hardest thing!

# Trade off

further down completion tree  $\Rightarrow$  scoring easier  
not as far down  $\Rightarrow$  scoring more complicated +  
critical to how good the  
player is.

## Alpha-Beta Pruning



Instead trying all possible moves, at each level only try the  $X$  best possible moves.  $X$  can change depending on what level you're on.

trade off = more reliance score function early, but deeper tree for the same computation time.