Terminal Games
A Simple Game

1: A > B > C
2: B > C > A
3: C > A > C
Backwards Induction

1: A>B>C
2: B>C>A
3: C>A>C
Backwards Induction

1: A>B>C
2: B>C>A
3: C>A>C
This doesn’t work so well if we have a cycle.
Cyclical Game
3’s Turn: 3 prefers a4
7’s Turn: 7 prefers a1
And so on... After 14 moves we return to our original state.
However, an equilibrium does exist.
General Idea

• By choosing the optimum shortest path through a strongly connected component and directing all other nodes inwards we can extend backwards induction through the cycles.
The ‘Optimum Path’

• The Optimum Path is such that the player controlling final node in the cycle chooses its preferred destination.
• This player has no incentive to alter the path – maintaining Nash Equilibrium.
• We will use limited backwards induction to find the Optimum Path.
The ‘Shortest Path’

• The Shortest Path ensures that no player controls enough nodes to change the route through the component.

• Any change by a member of the path will loop back to the path, creating a cycle.

• No player on the path will change, resulting in Nash Equilibrium.
End