## Drafts

### NBA draft

- Greg Oden is a center from Ohio State.
- Today June 28, 2007 is the day of the NBA draft.
- There will be two rounds of 30 players selected.
- Portland Trail Blazers have the No. 1 pick.
- They are expected to pick Oden.

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# What is a draft?

In grade school, the sadistic gym teacher chooses two captains. They then choose teams according to who is good, popular and friends. They alternate turns until no one is left.

**Example: Draft**

**Captain A:** Arnold $\succ$ Bill $\succ$ Chris $\succ$ David $\succ$ Jeff $\succ$ Todd
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**Sincere choice** is when teams choose according to their preferences:
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## Item-by-Item Pareto Optimality

An allocation $A$ is **item-by-item Pareto optimal** if there is no different allocation $A'$ such that every team that receives a different allocation in $A'$:

1. can match a new player it gets in $A'$ to a different old player it gets in $A$ and
2. for each such match, weakly prefers the new player in $A'$ and
3. there is at least one team that strictly prefers the new palyer in $A'$ for at least one match.

- Brams & King [2001] shows that all sincere choices are item-by-item Pareto optimal.
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# Problems with Drafts

Sophisticated result is not necessarily item-by-item Pareto Optimal.

**Example: Brams and Straffin [1979] (sequence: ABCABC)**

A: $1 \succ 2 \succ 3 \succ 4 \succ 5 \succ 6$
B: $5 \succ 6 \succ 2 \succ 1 \succ 4 \succ 3$
C: $3 \succ 6 \succ 5 \succ 4 \succ 1 \succ 2$

Sophisticated yields (31,25,64)
Notice that (12,56,34) makes EVERYONE better off.

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# Another Problem with Drafts

Sophisticated choices may not be monotonic in position.
Non-Monotonicity: When somebody moves up in order it may hurt them or when they move down in order it may help them.

# Does ex-post trading help?

What about simple ex-post trading?

**Example (sequence: ABAB)**

A: 1 2 3 4
B: 2 3 4 1

- Sincere play is $A1$, $B2$, $A3$, $B4$ yielding (13,24)
- Sophisticated play is $A2$, $B3$, $A1$, $B4$ yielding (12,34)
- If A chooses 2, then
  1. If B doesn't choose 1, A will get 1.
  2. If B chooses 1, A chooses 3.
- If A has bargaining power, he can trade 3 for 1 instead of 2 for 1.
- Thus, we won't get sincere outcomes.

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## Implementing the Sincere Outcome

Take any example of two teams.
Rules:

1. Each team can choose an object still available.
2. At the time of selection, they can make an offer to swap this object for another object already chosen.
3. This offer is placed on hold until all objects are selected.
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- If A instead begins with $A2$, then we follow with $B1 \rightarrow 2$, $A3$, $B4$
    - Note if instead of $A3$, A chooses $A3 \rightarrow 1$, it would be refused.

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## Intuition of Strategy

Either player can guarantee himself an outcome at least as good as the sincere outcome.

- Is there an object free that the other player prefers to what he has chosen? If no, choose your most preferred object.
- If yes, let $x$ be the other player's most preferred object free. Let $y$ be your most preferred that the other player has and prefers $x$ to it.
- If you prefer a free object to $y$, then chose the free object.
- If you prefer $y$ to any free object, choose $x- > y$. (choose $x$ and offer to trade it for $y$).

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- Rules are simple.
- (simplest) Equilibrium is just like draft.
- Only complications are off simplest equilibrium.
- One only needs to know their ordinal ranking of players to play the on equilibrium strategy.
- Allocation reflects selection order: fair.
- Any item-by-item Pareto Optimal allocation is a sincere outcome of some order of play and vice versa.
- Trading draft positions or trading players after the draft (both occur in sports) will arrive at bundle Pareto Optimality where each team is at least as well off as sincere.

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Three team procedure.

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