

Sep 2

# Stable matching/marriage problem

n men

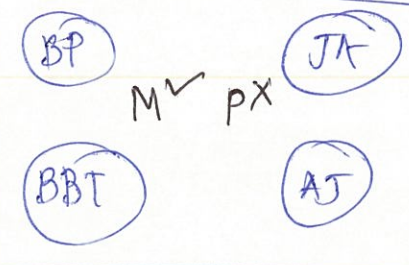
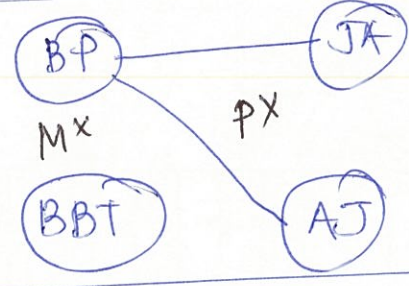
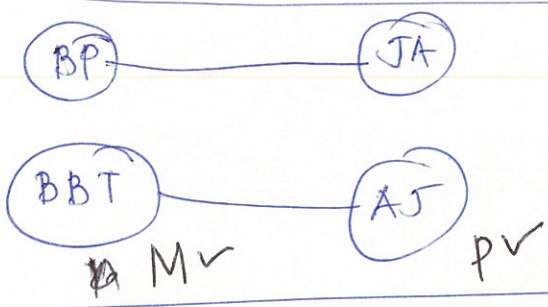
$$M = \{m_1, \dots, m_n\}$$

n women

$$W = \{w_1, \dots, w_n\}$$

$n=2$   
 $W = \{JA, AJ\}$

$$M = \{BP, BBT\}$$



Def (matching) A subset  $S \subseteq M \times W = \{(m,w) \mid m \in M, w \in W\}$

is a matching if

- (i)  $\forall w \in W, \exists$  at most one  $m \in M$  s.t.  $(m,w) \in S$
- (ii)  $\forall m \in M, \exists$  at most one  $w \in W$ , s.t.  $(m,w) \in S$

Def (perfect matching)

Matchings vs pairs (matches)

$$\{(BP, JA), (BBT, AJ)\}$$

$\uparrow$  1 perfect matching with 2 pairs