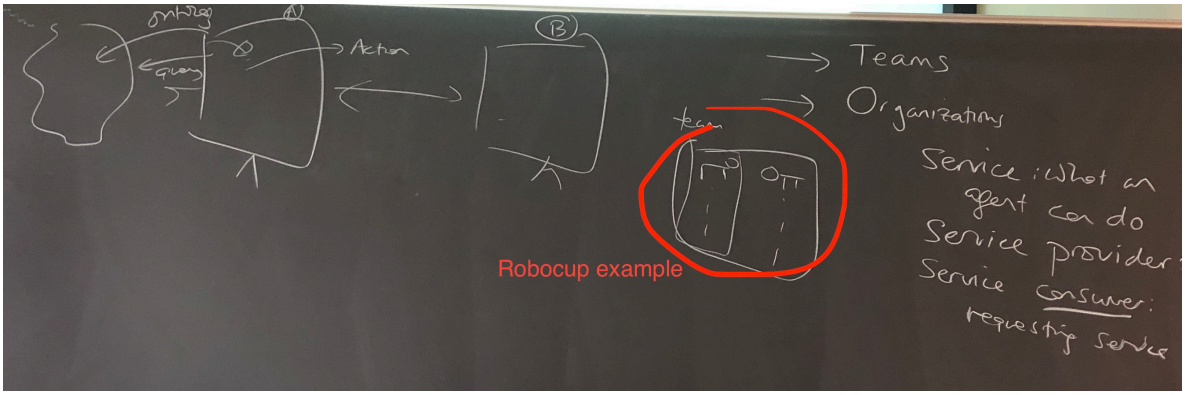
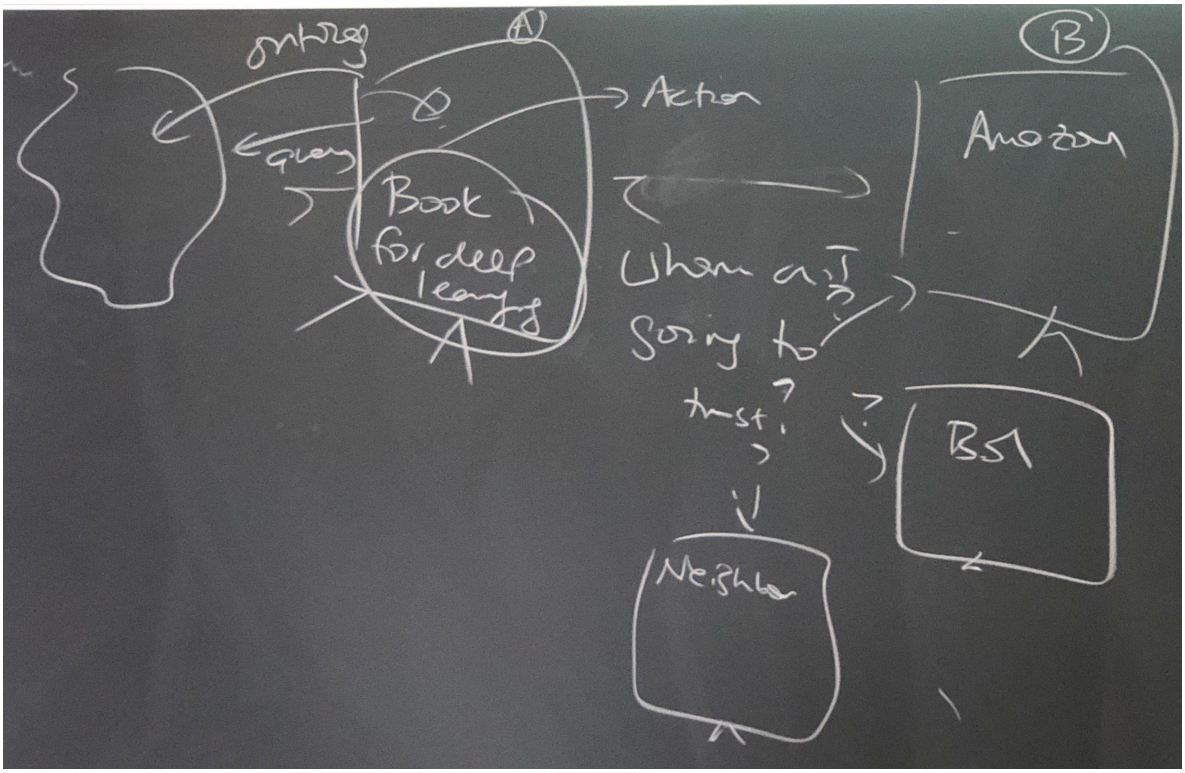
L6 Trust in Multiagent Systems

- both are interested in A and B

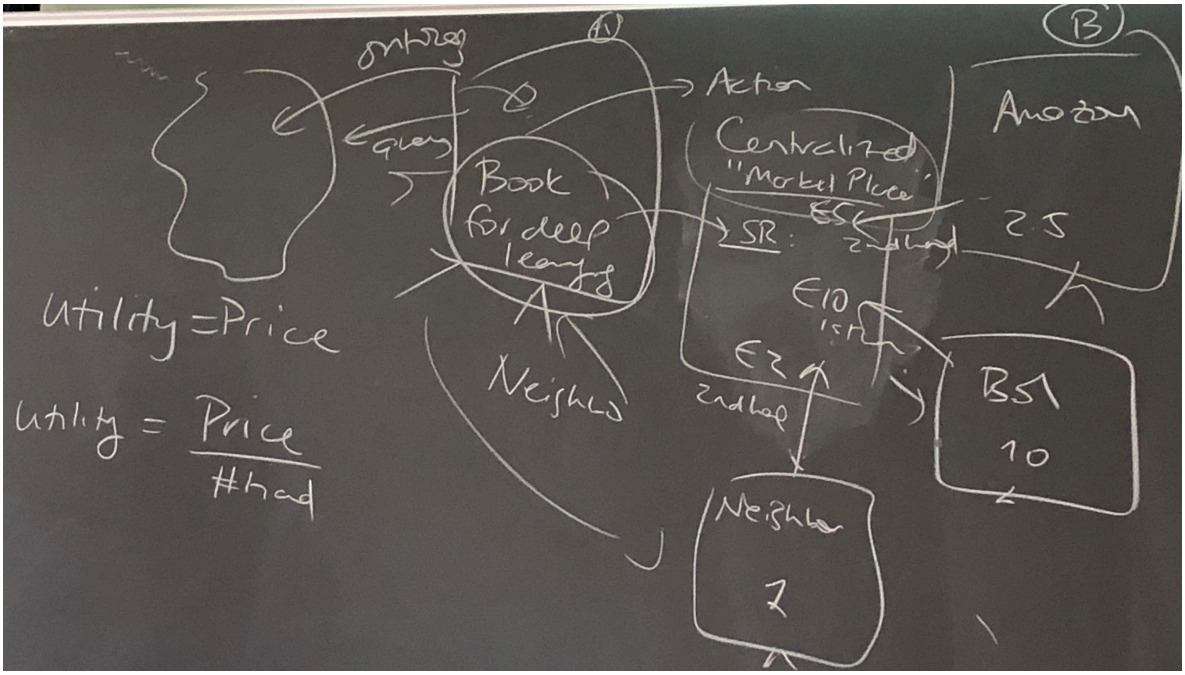


- Amazon example:

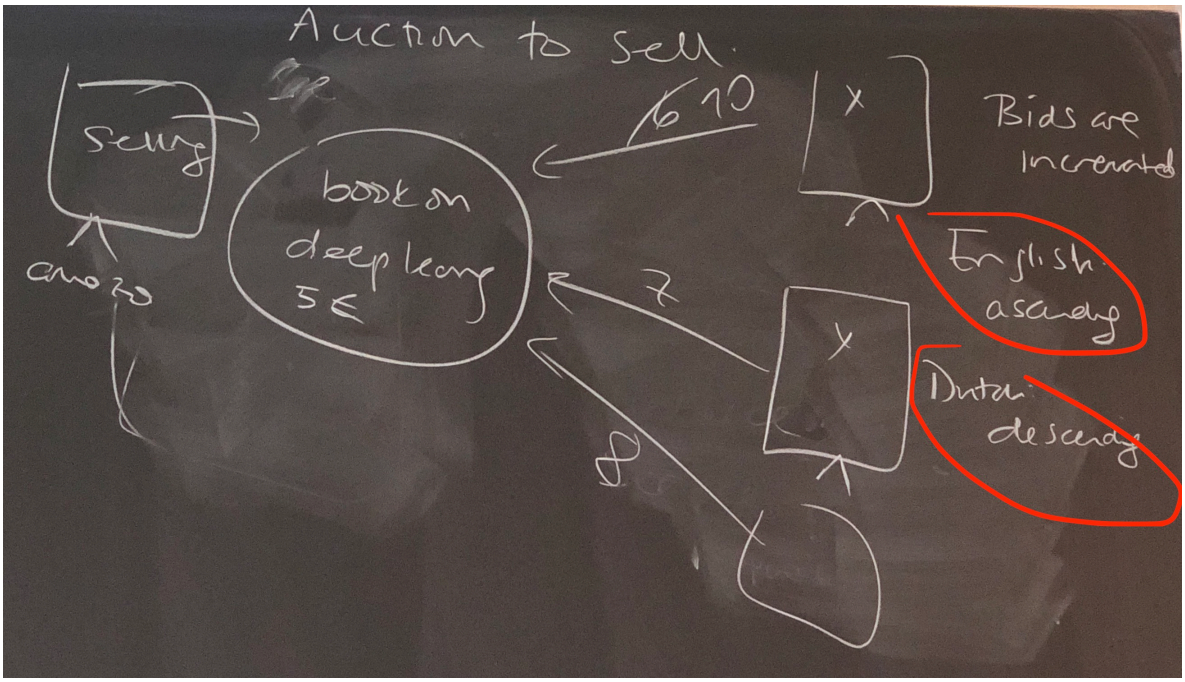


Working together

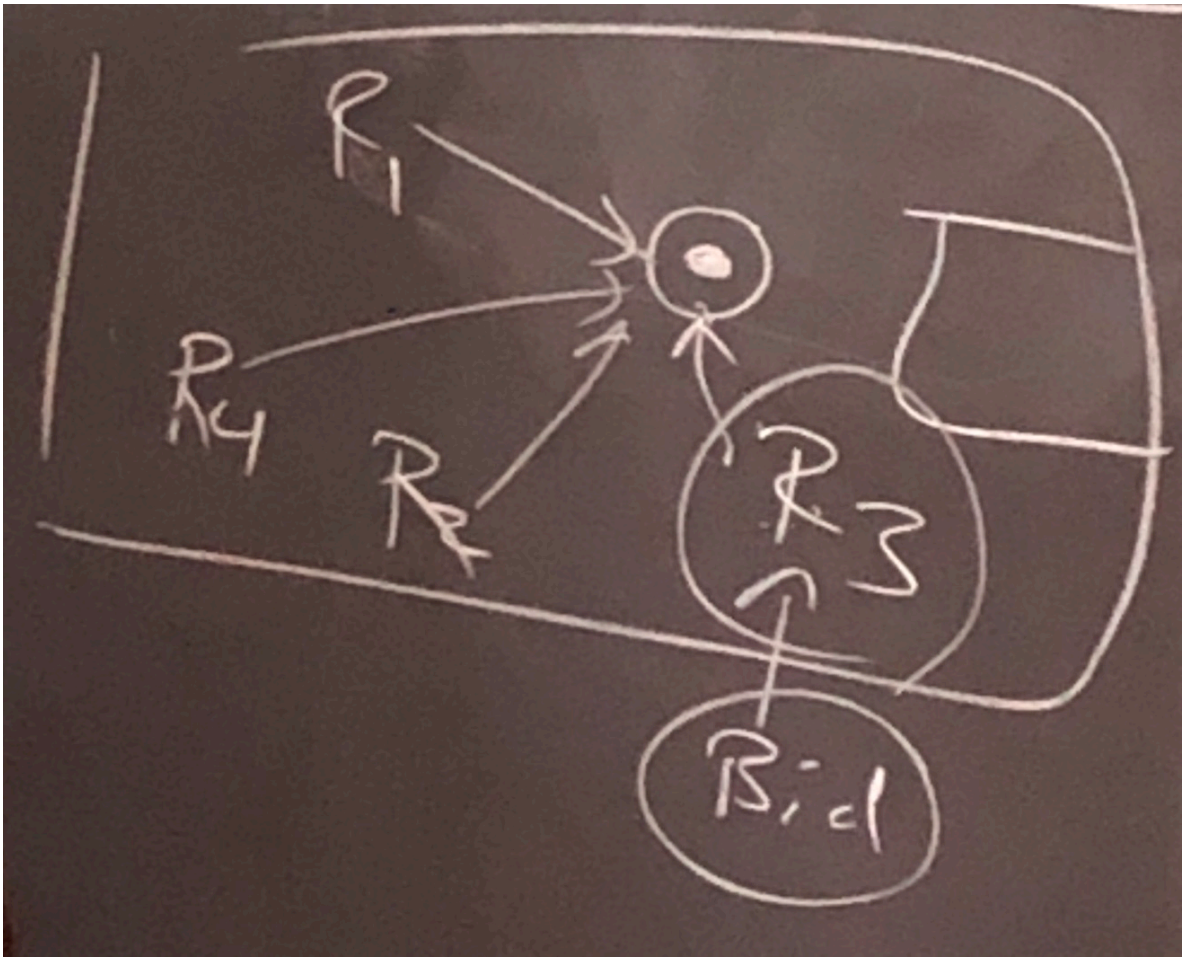
Economic service selection (;utility comes into play)



Auctions

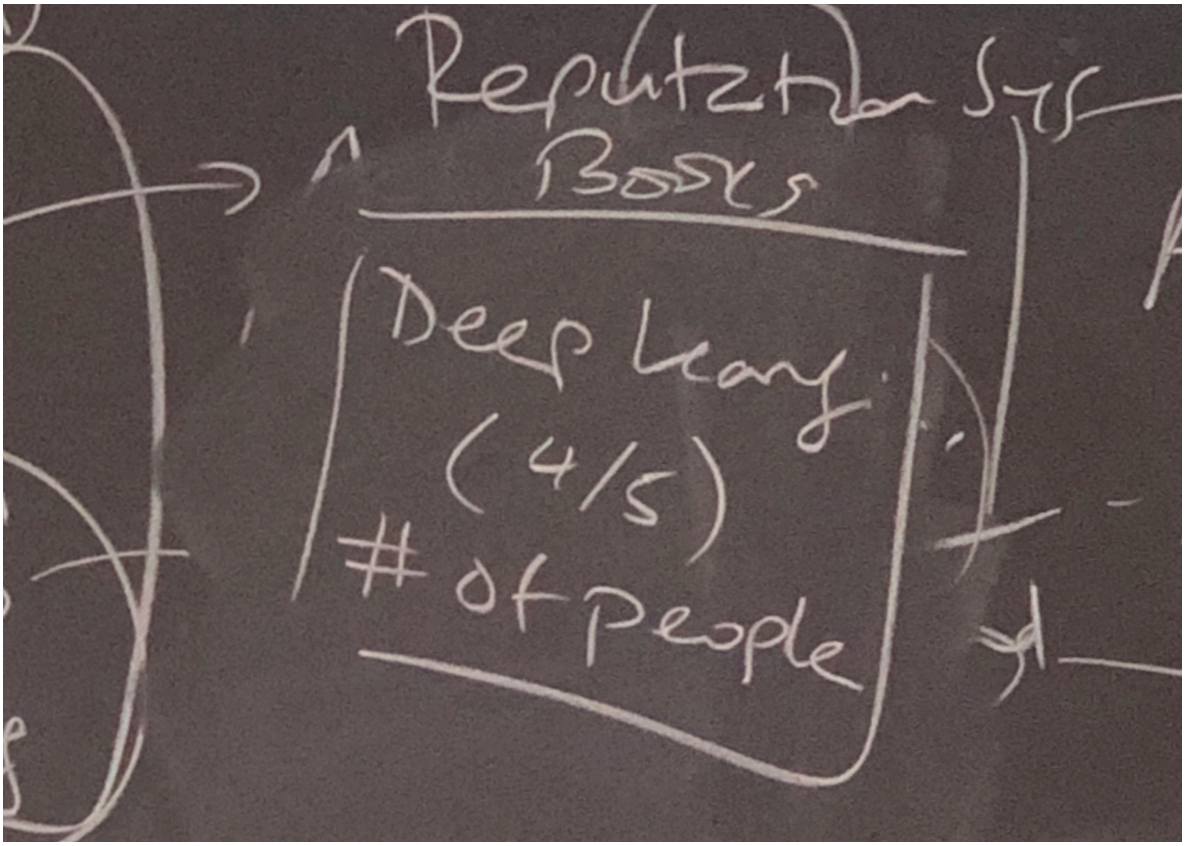


also, decision making in the “market place” (Robocup: who is closest to the ball):

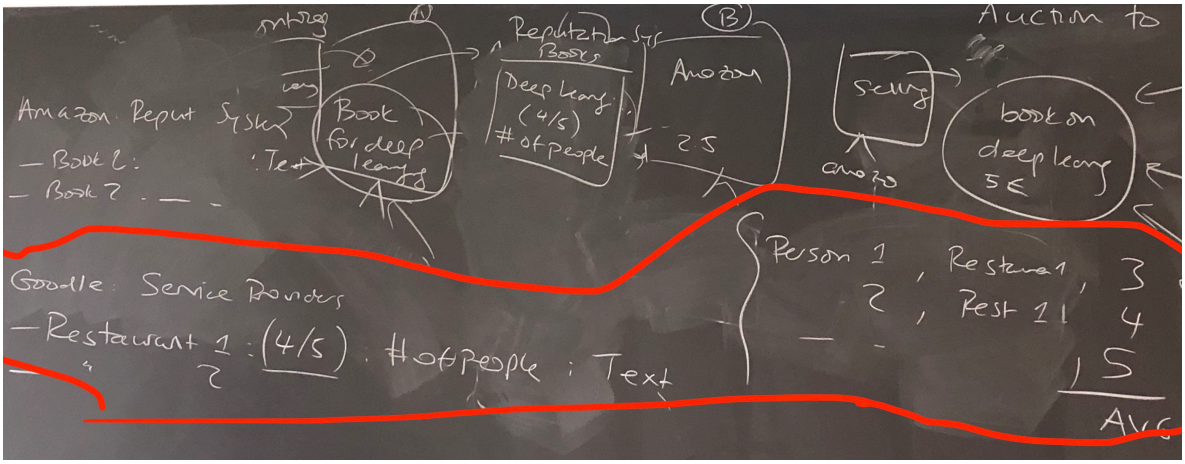


Reputation

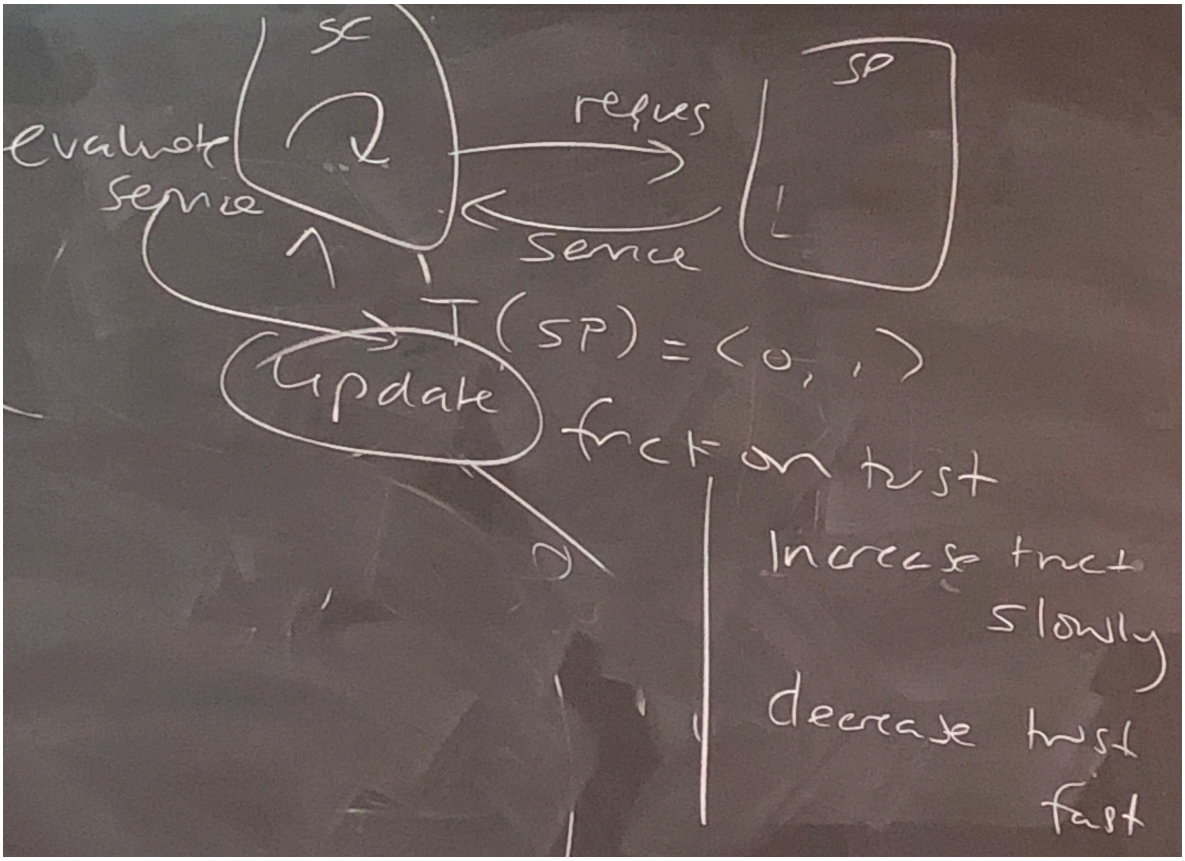
Amazon:



Google:



Computational trust

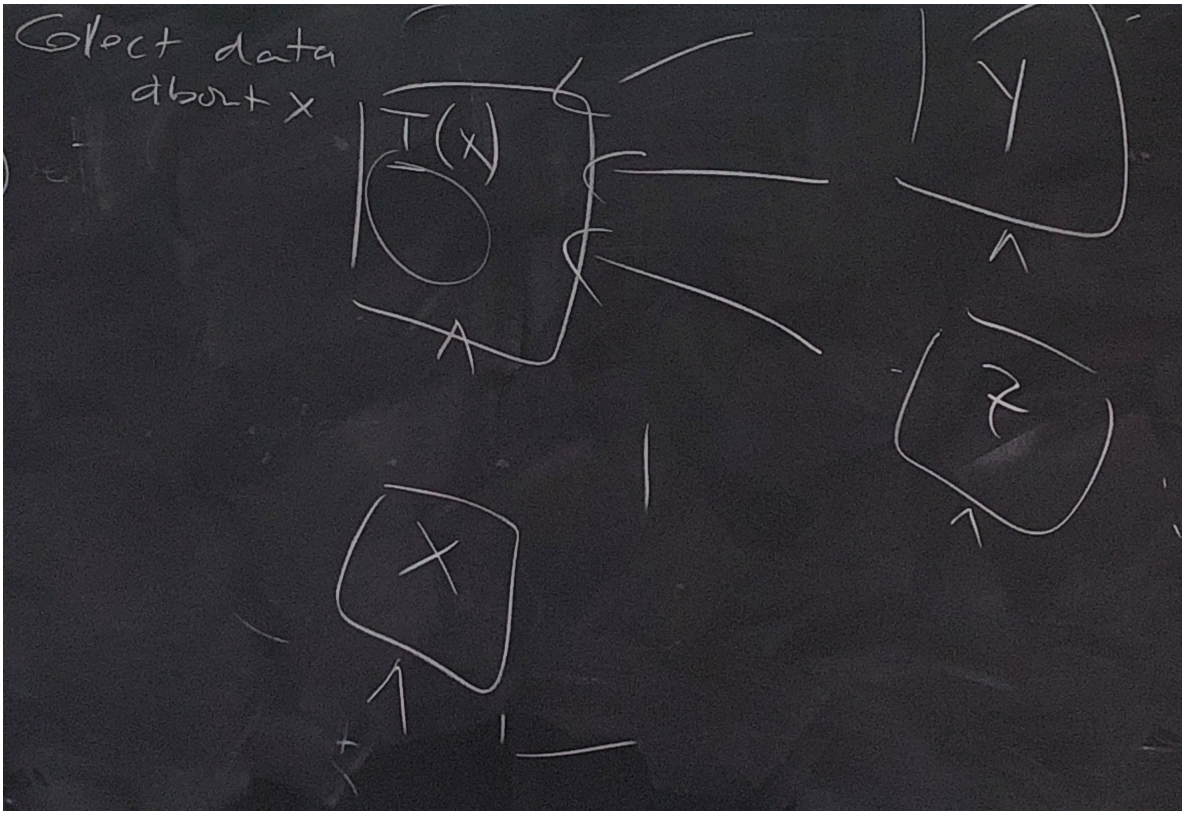


Local trust
You acquire trust through personal experience

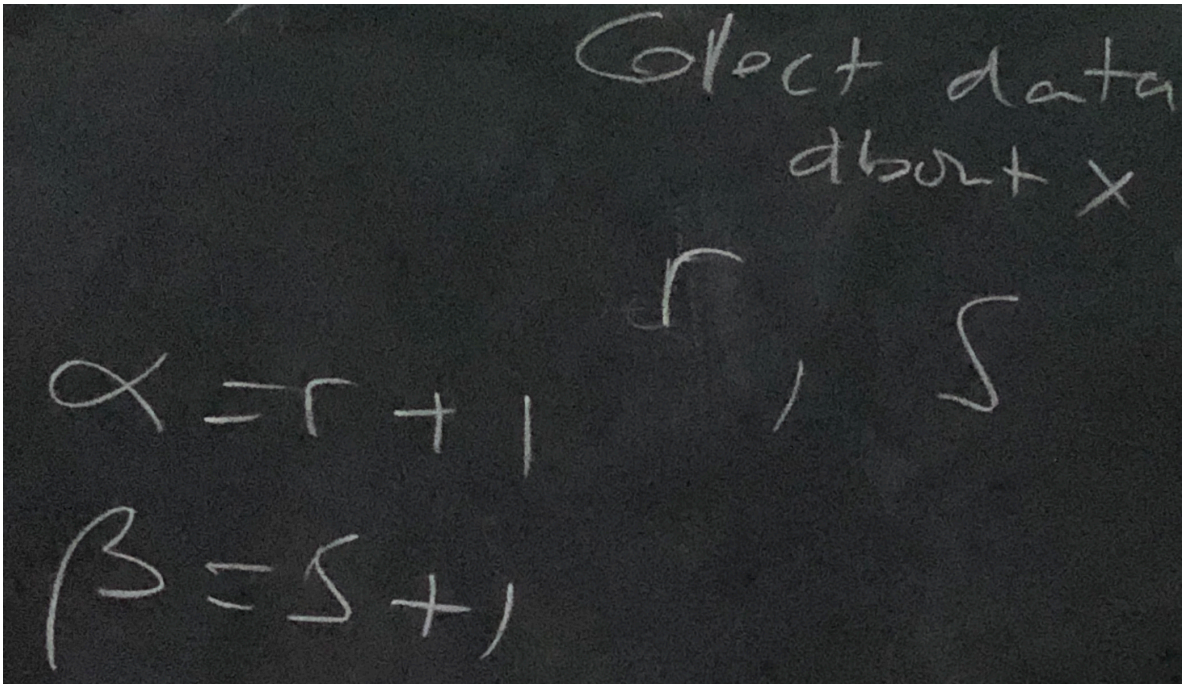
Institutional trust
You acquire trust through an institution / through an endorsement

Social trust
You acquire trust through evidence from others but not from a centralised location

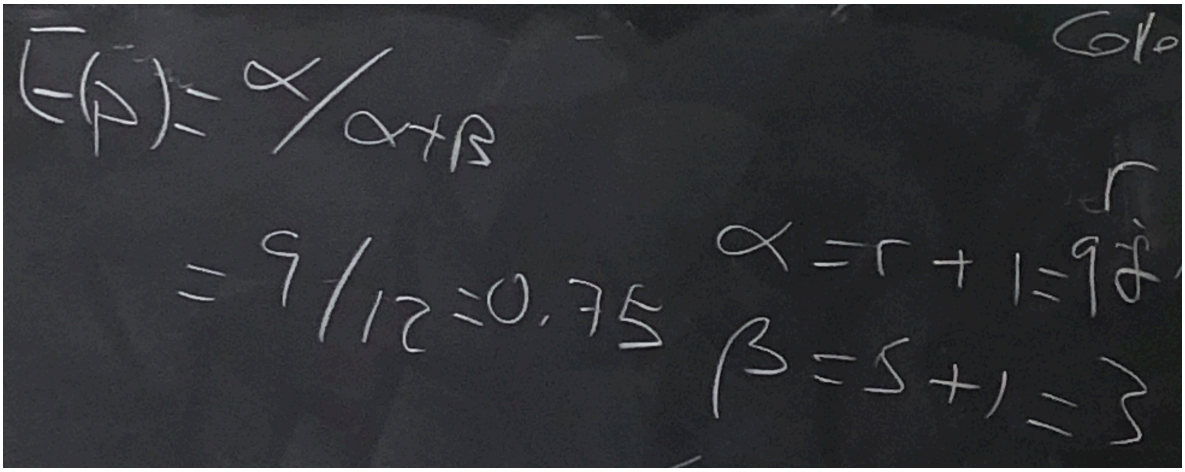
Beta-Reputation System



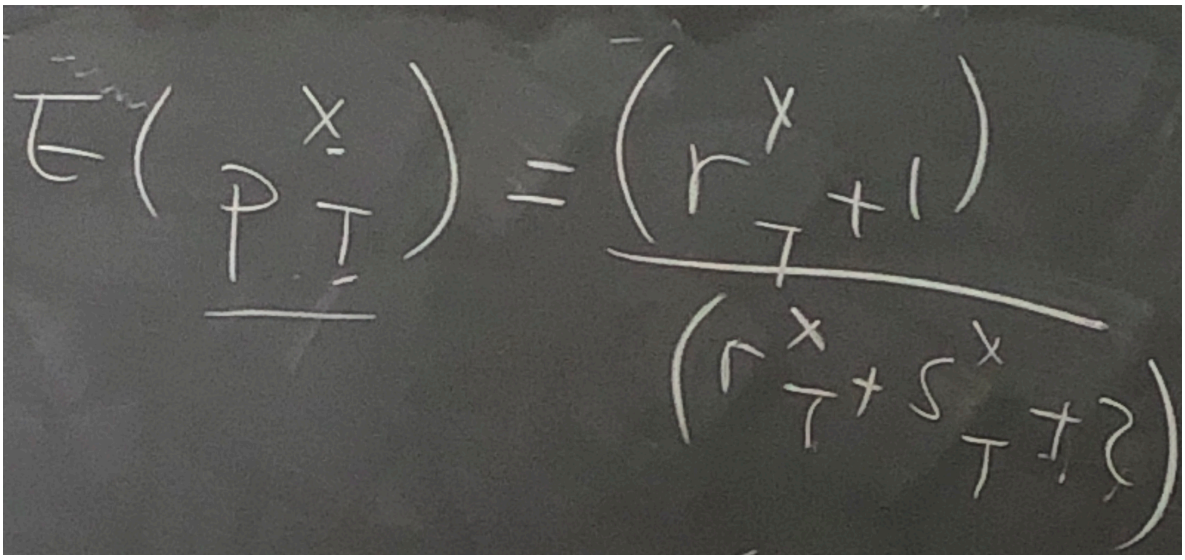
Data is collected, now prediction is made



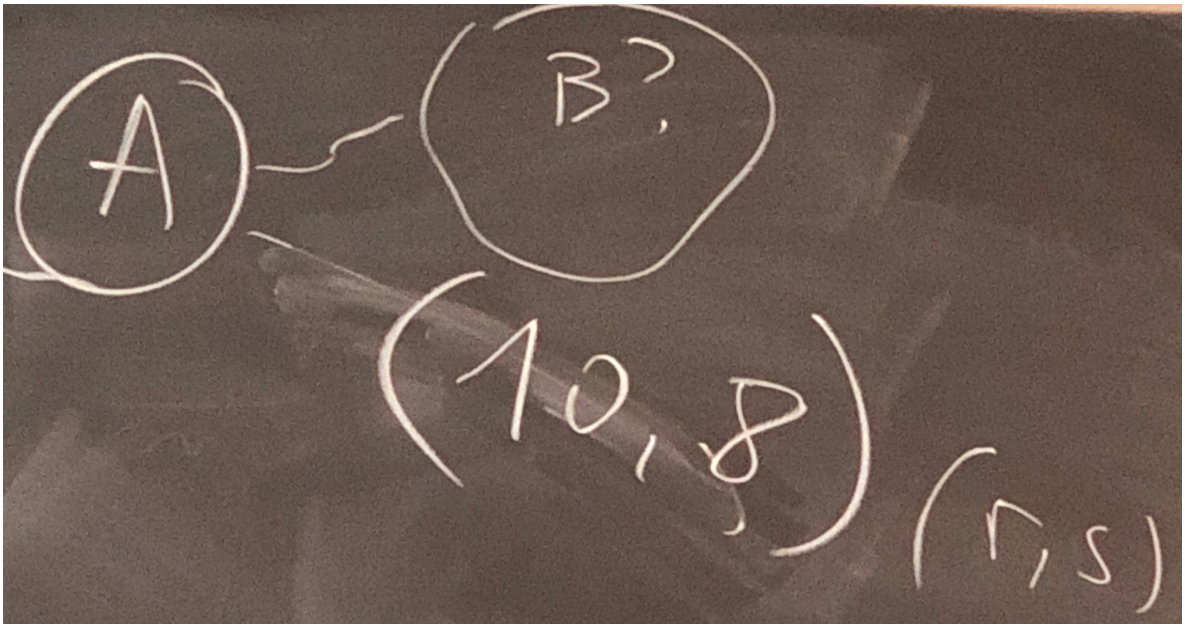
Example (we are calculating that it’s more likely that more good things happen - 9 vs 3):



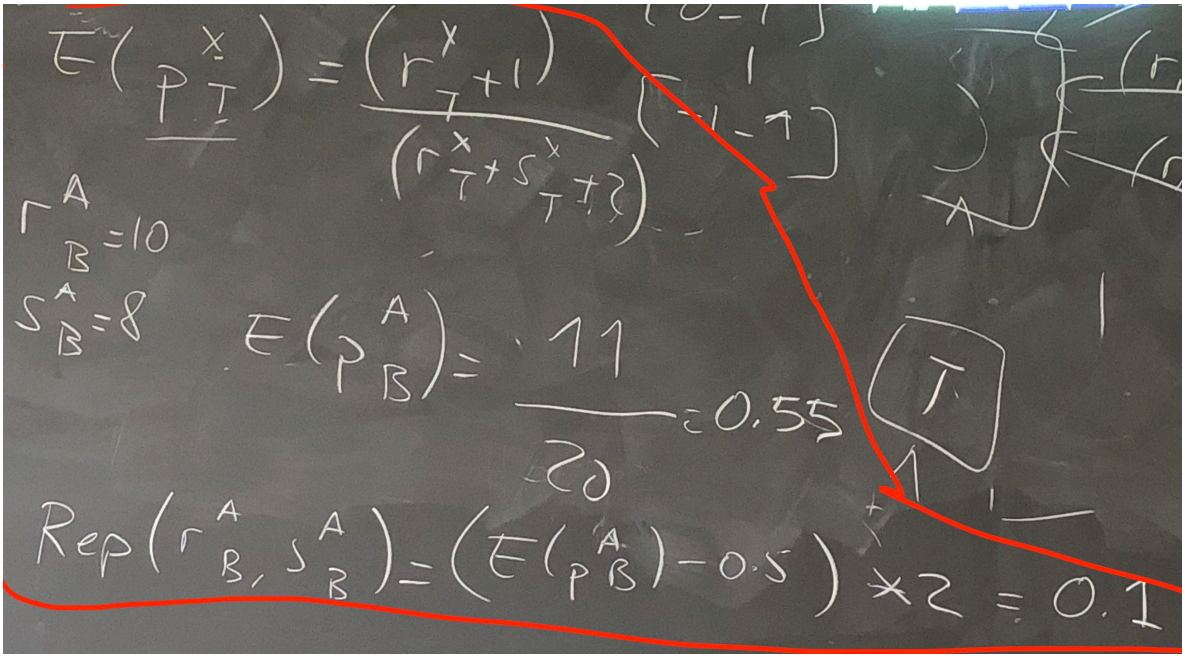
Example 2 (Calculate T's reputation function by agent X...):
(what is the probability of X trusting T)



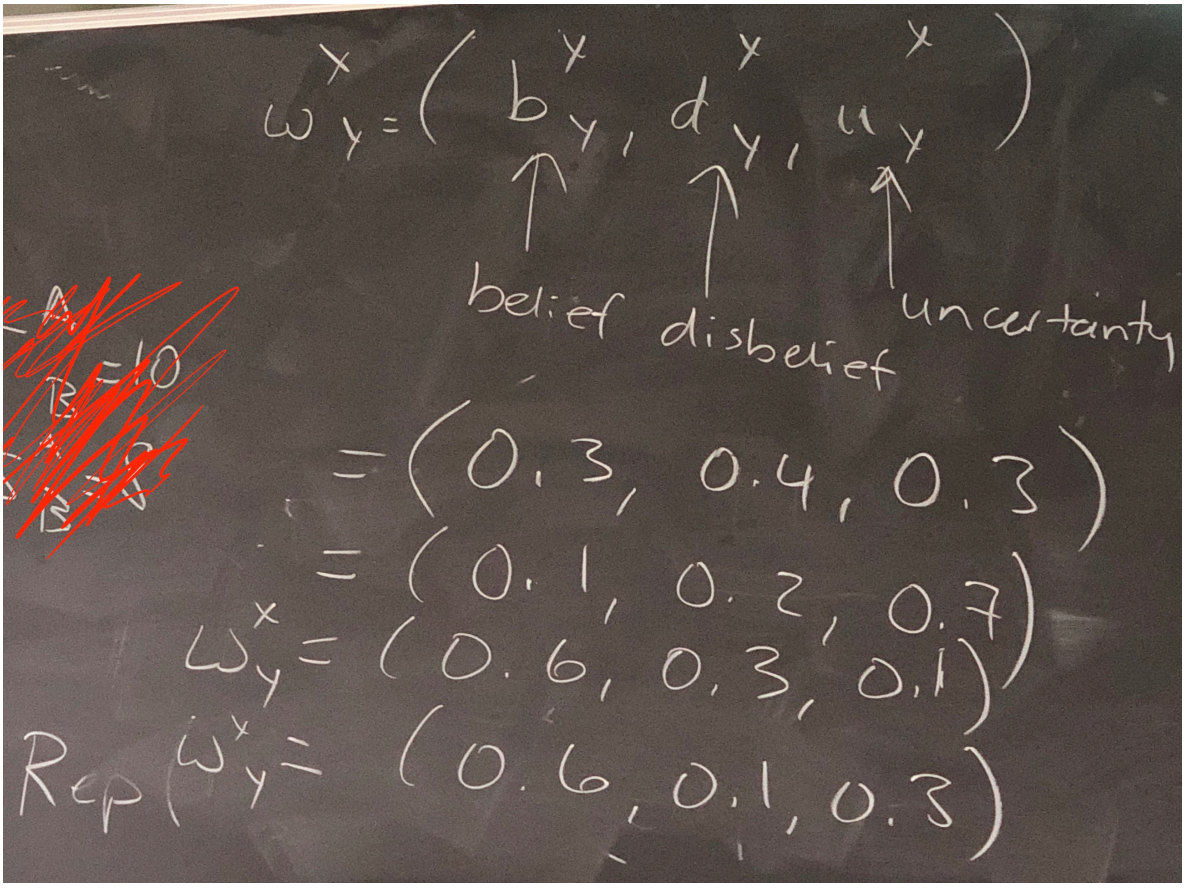
B is gathering evidence (r,s) about A



B is assigning a reputation to A (and eventually Represents it on the scale between -1;1):



Combining feedback
Representation of an opinion w:


$\omega_y^x = (b_y^x, d_y^x, u_y^x)$
belief
disbelief
uncertainty
$= (0.3, 0.4, 0.3)$
$= (0.1, 0.2, 0.7)$
$\omega_y^x = (0.6, 0.3, 0.1)$
Rep $(\omega_y^x = (0.6, 0.1, 0.3)$