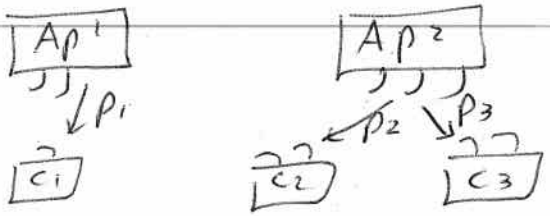
*Interference Management

1) 3 packets:

- Ap2 nulls p_2 and p_3 to c_1
- aligns p_2 with p_1 at c_3
- aligns p_3 with p_1 at c_2



2) 5 packets:

Mega Mimo: 5-antenna Ap $\Rightarrow$ 5 packets

*RF-Based Localization

1) yes, He is right.

$\lambda = \frac{c}{f} \approx 11m$. Since the channel is $\sim e^{-j\frac{2\pi d}{\lambda}}$, this implies ambiguity of 11 meters (i.e. channel rotates by 2π every λ). However, $[-\varepsilon, +\varepsilon]$ is 4 meters wide which is smaller than 11 meters.

2) Antenna array provides only the direction. Hence, a single antenna array will not help in localization

3) At each receive antenna, we obtain two distance measurments. Two receive antennas implies four possible locations.

*Full-Duplex

a. T

b. T

c. T

★ packet pair

1. packets are spaced out by the bottleneck link of 1pkt/sec

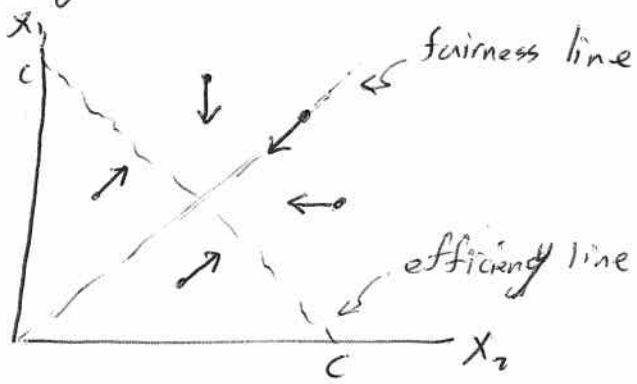
Therefore, $Q = 1$

2. bottleneck link is shared among 10 flows. Therefore, $Q = \frac{1}{10}$

3. He is wrong because the memory is finite and shared between all flows. ⟹ might have starvation

★ Congestion Control.

1.



2. increase fairness in each region, same fairness along fairness line

3. yes, it converges. because increases fairness in each case.