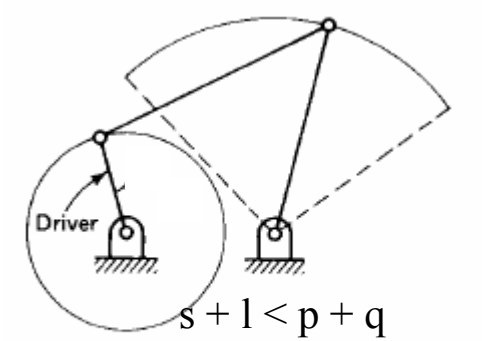
Dynamics of Machinery

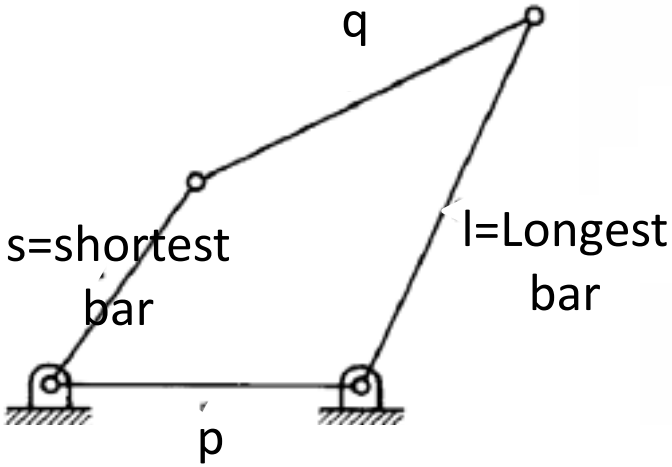
Credits: 3

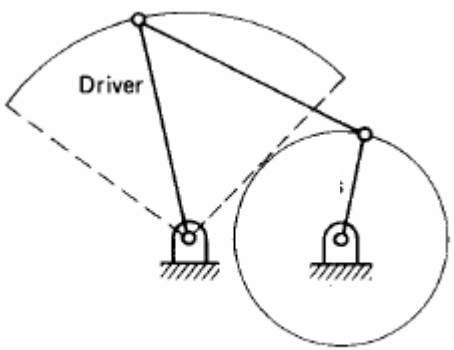
Lecturer: Abbasi

Four-link bar

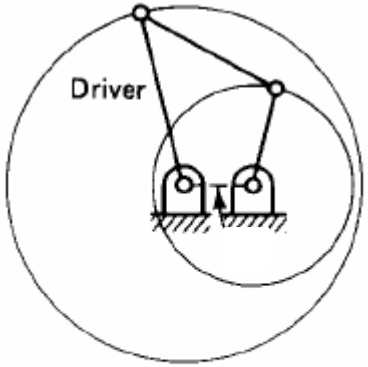


s + l < p + q
Shortest bar: s
Crank - Rocker

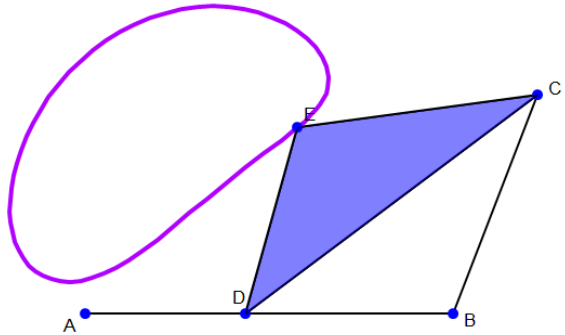


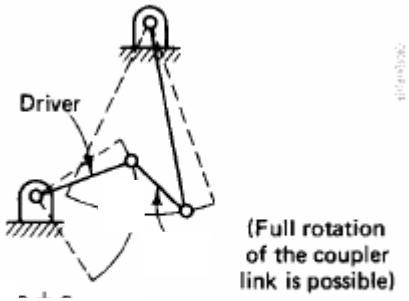


s + l < p + q
Shortest bar: l
Rocker - Crank



s + l < p + q
Shortest bar : p
Crank - Crank

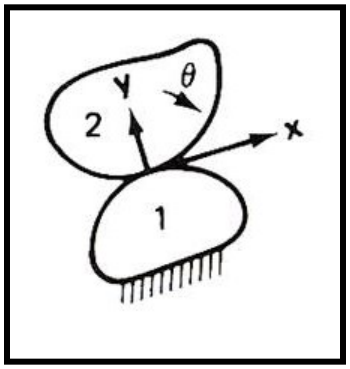


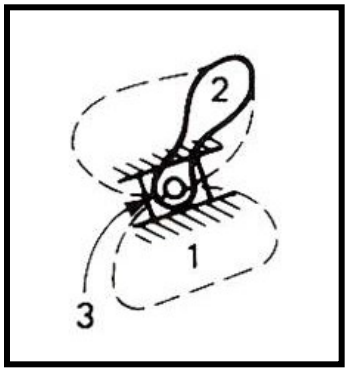


s + l > p + q
Shortest bar : q
Rocker - Rocker

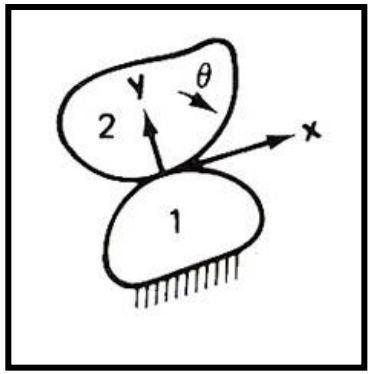
Degrees of Freedom (DOF) – Type of Joints, Higher Pairs

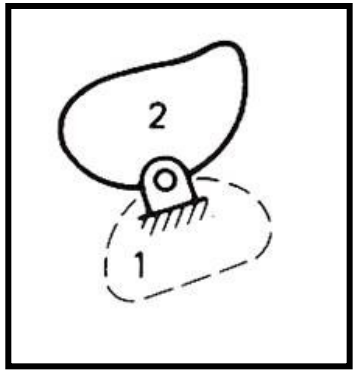
Roll-slide contact, 2 DOF



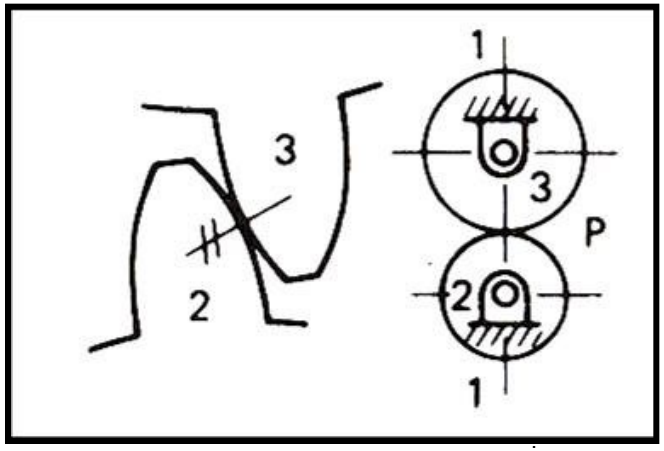


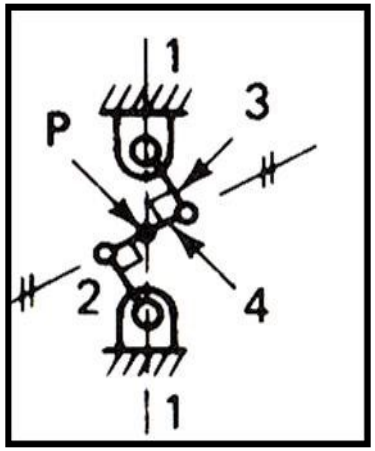
Rolling contact (no sliding), 1 DOF





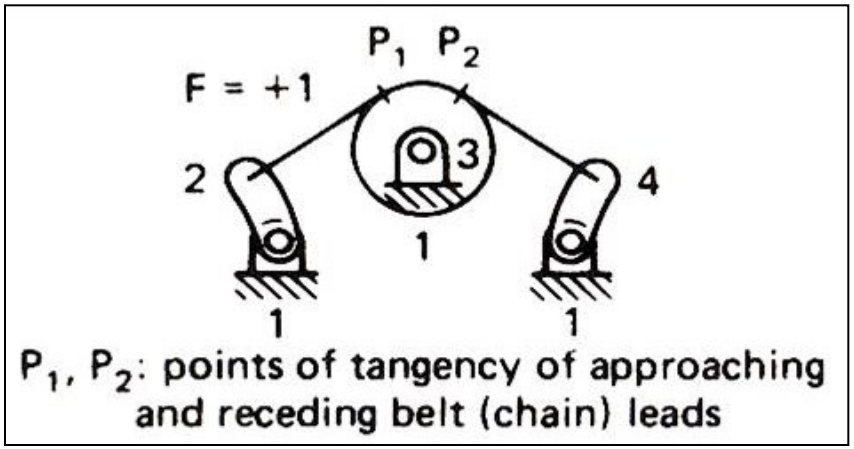
Gears – sliding and rotation motion between two teeth, 2 DOF

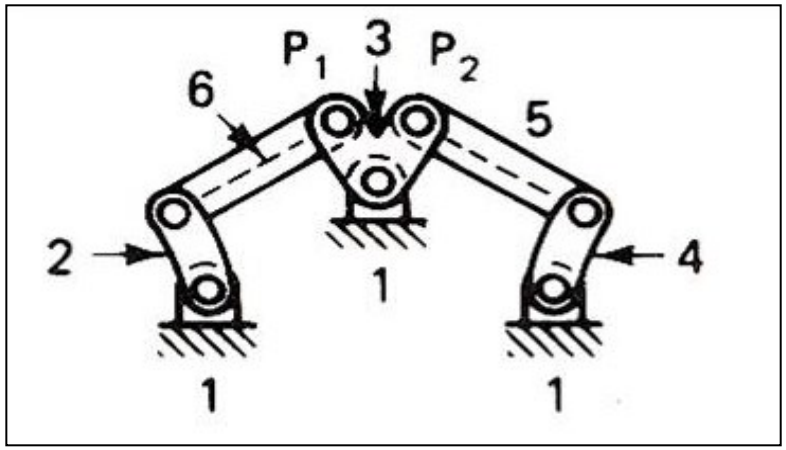




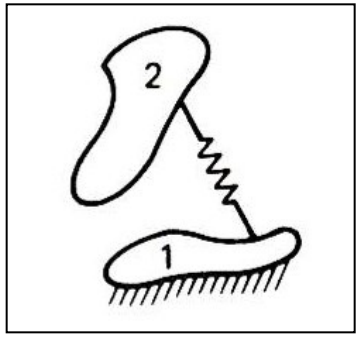
Degrees of Freedom (DOF) – Type of Joints, Higher Pairs

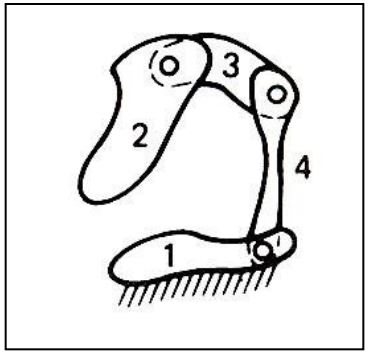
Belt and pulley (no sliding) or chain and sprocket – 1 DOF





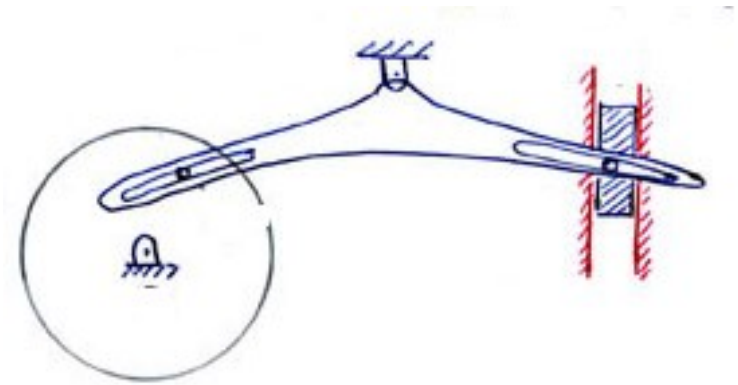
Spring – no effect on mechanism DOF



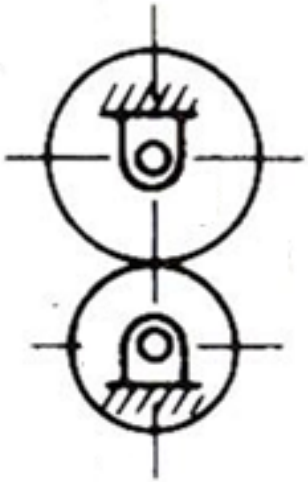


Quiz
What is DOF in (a) and (b) ?

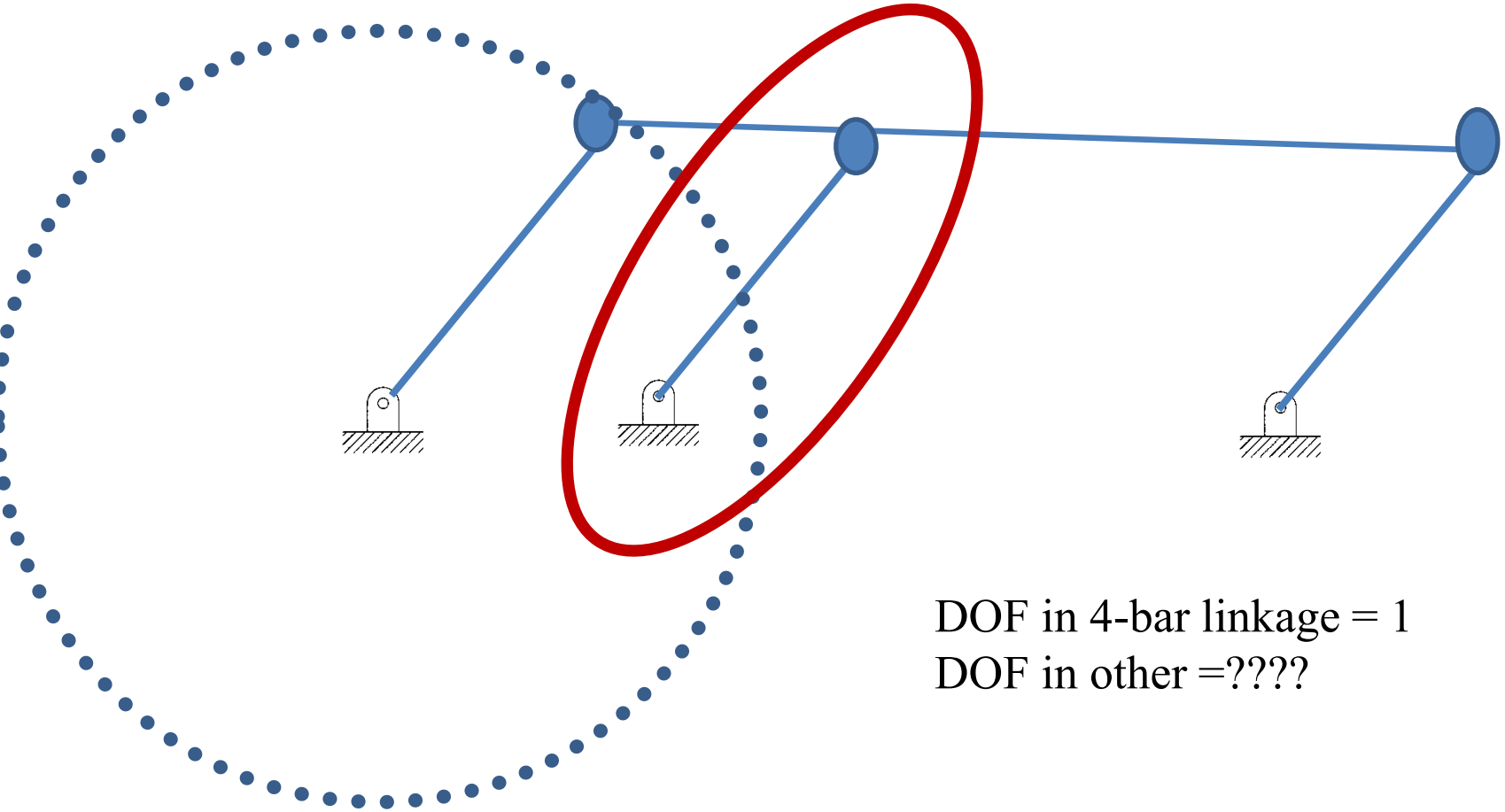
(a)

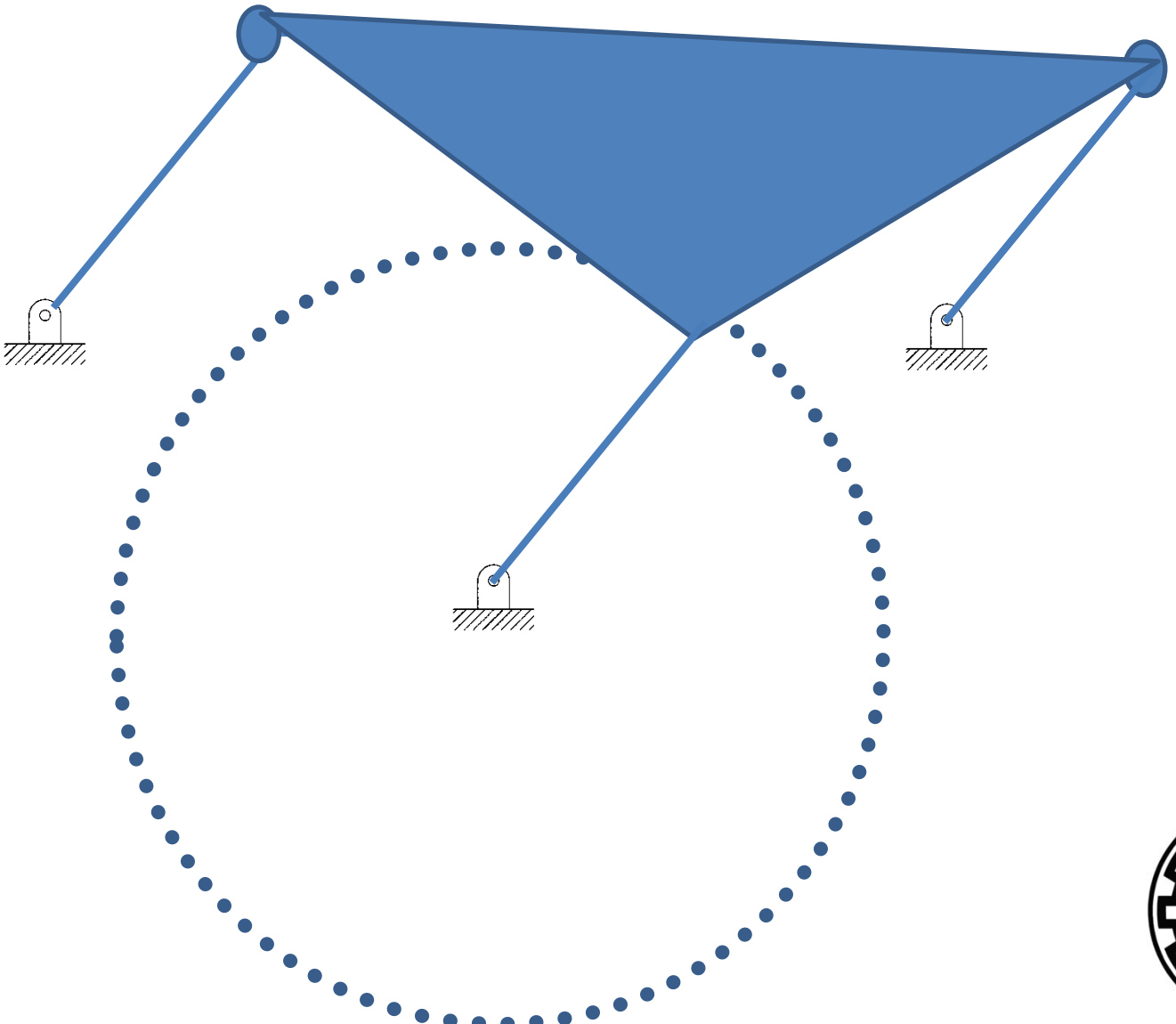


(b)



Paradox



DOF in 4-bar linkage = 1
DOF in other =????

Paradox