



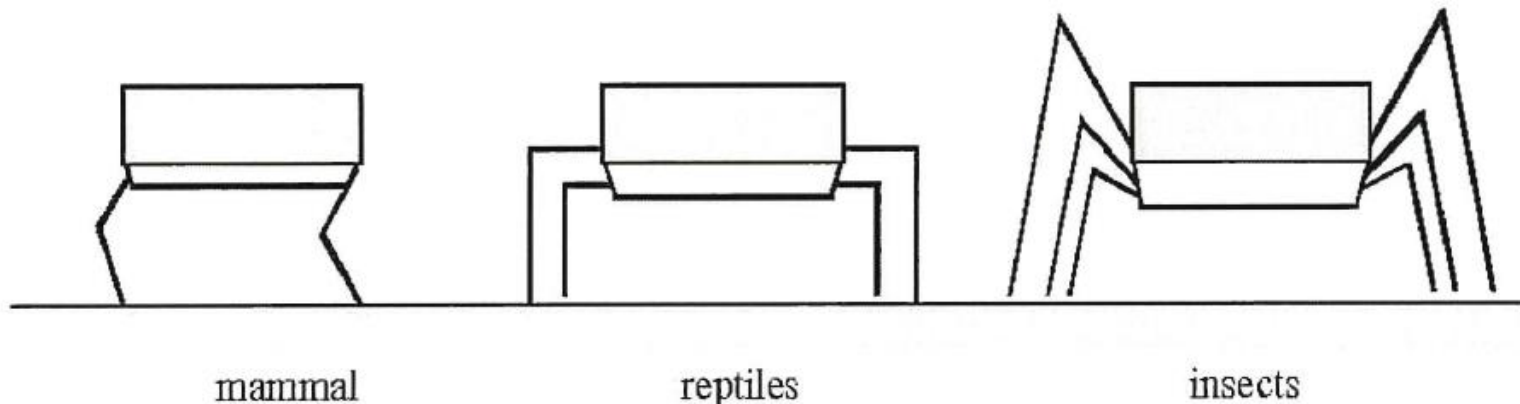
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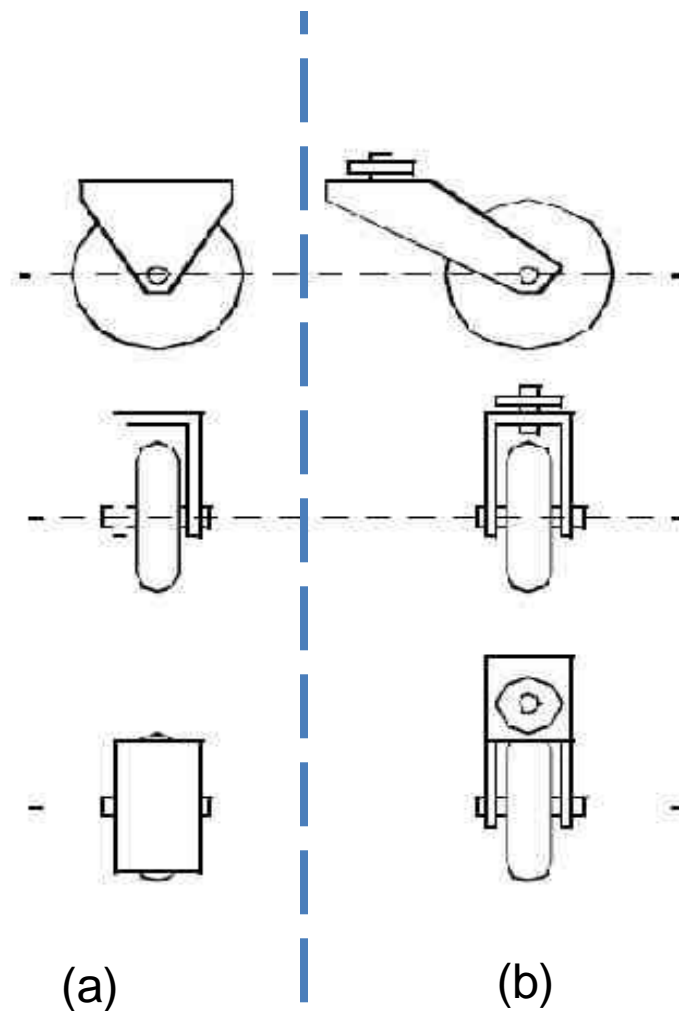
WHEELED LOCOMOTION

Emanuele Menegatti
Intelligent Robotics Course

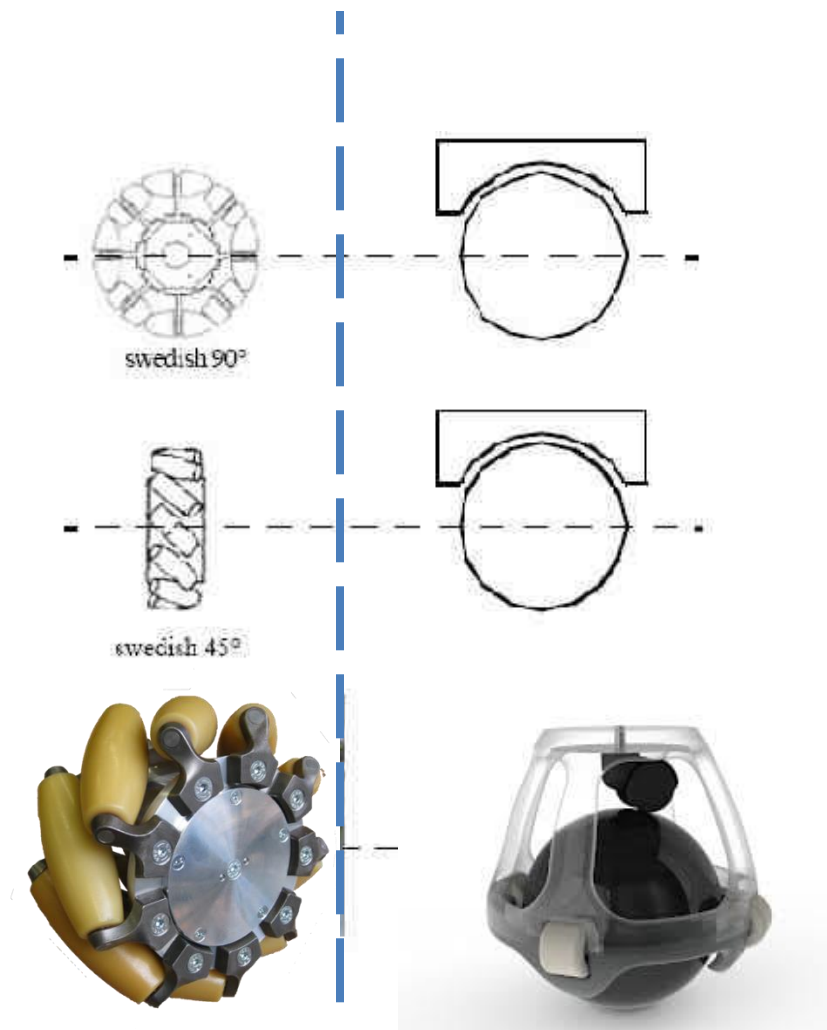


- The fewer legs the more complicated becomes locomotion
 - *stability, at least three legs are required for static stability*
- During walking some legs are lifted
 - *thus losing stability?*
- For static walking at least 6 legs are required
 - *babies have to learn for quite a while until they are able to stand or even walk on there two legs*





Adapted from R. Sigward



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- Holonomic robots do exist, but need many motors or unusual designs and are often impractical
- Ground-based holonomic robots can be made using omnidirectional wheels (VIDEO)





A robot can be fitted with wheels to control three issues:

- Stability



- Maneuverability
- Controllability

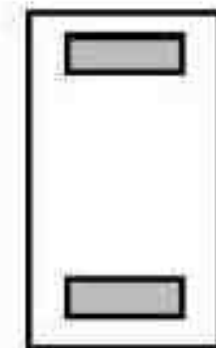
2 wheels arrangements:

a)



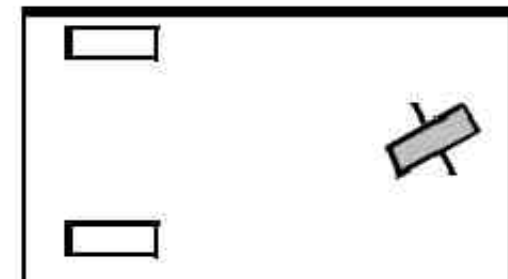
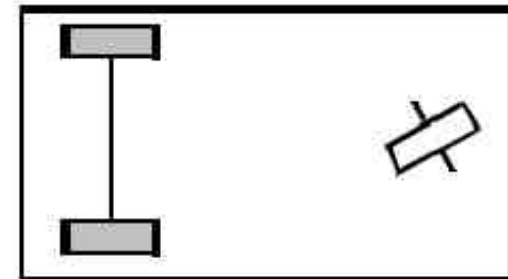
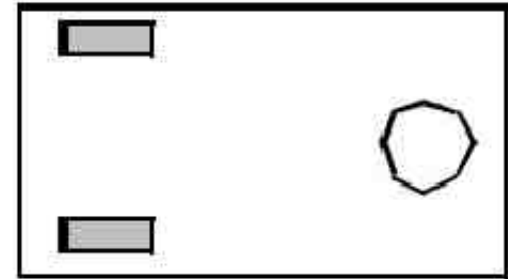
(Combining actuation and steering on one wheel increases complexity and adds positioning errors)

b)



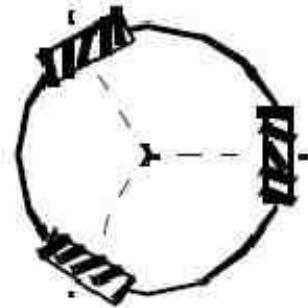
3 wheels arrangements:

- c) Differential drive with third point of contact
- d) Two connected traction wheels plus one steered
- e) Two free wheels plus one steered traction wheel

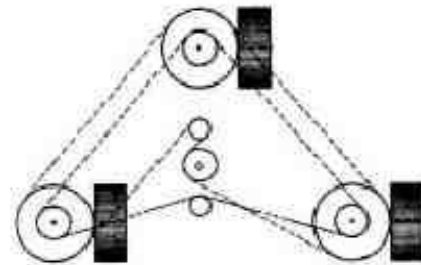


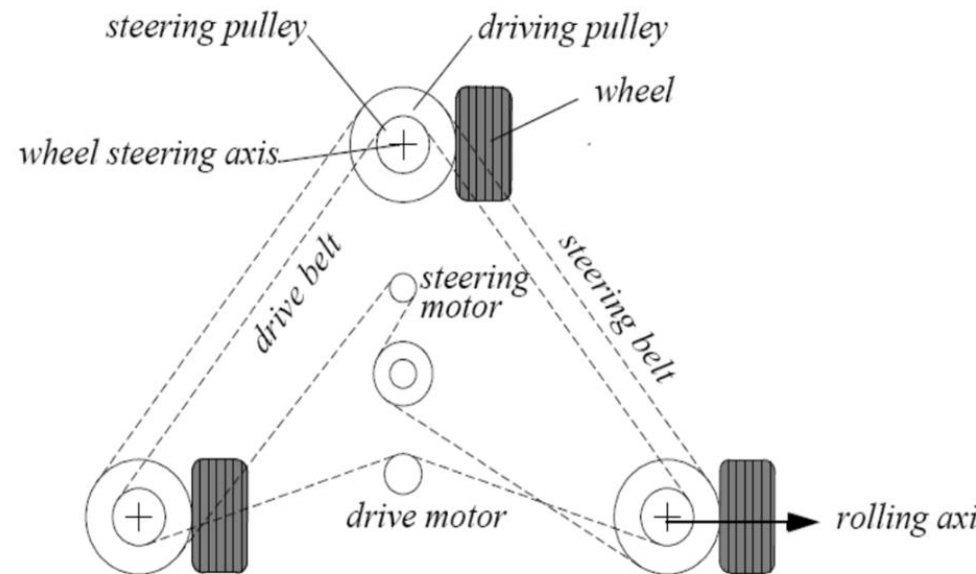
3 wheels arrangements:

f)



g)





Adapted

