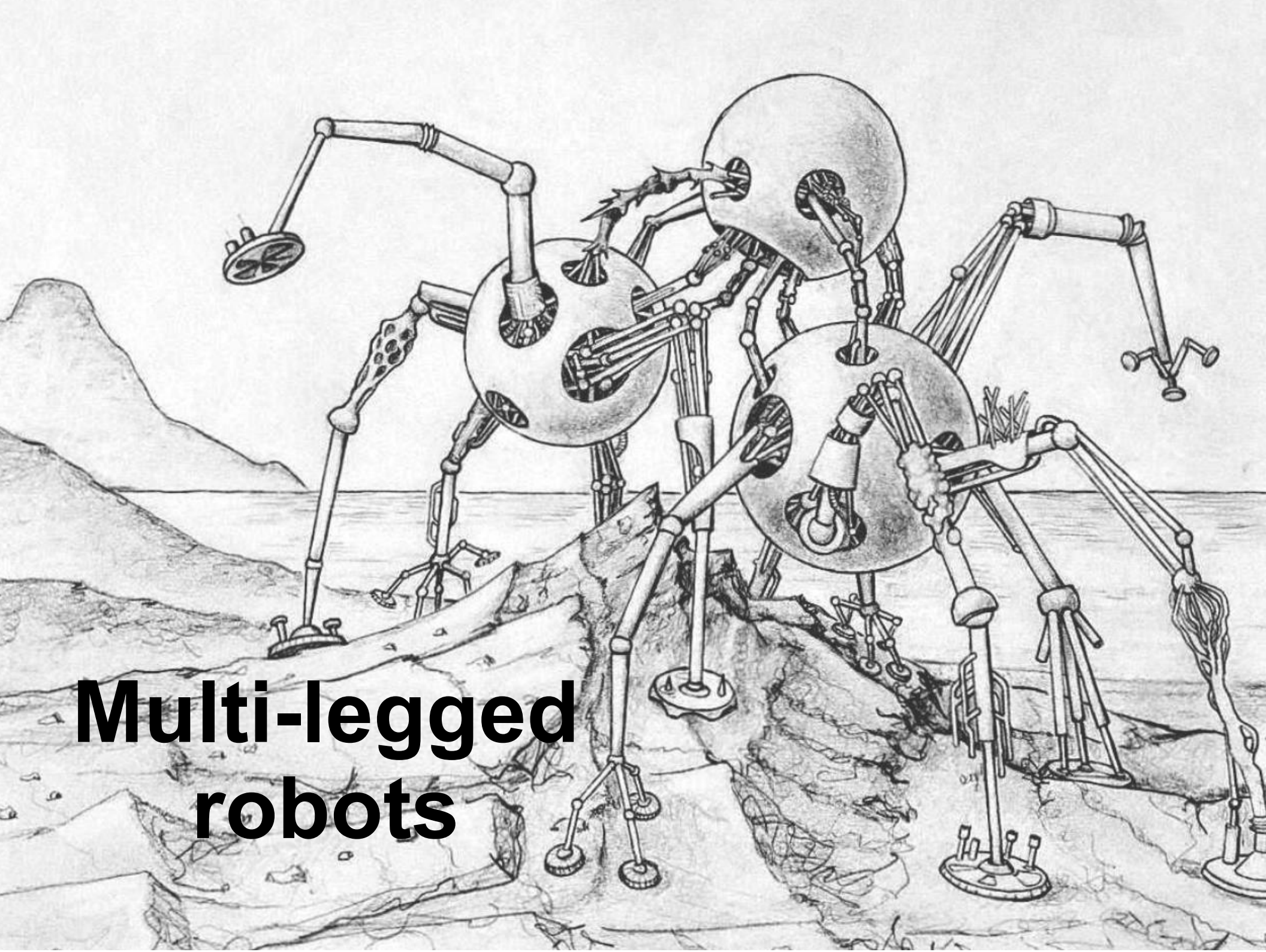

Multi-legged robots

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Multi-legged robots

- Walking robots
- Very flexible
- Can travel where wheels or tracks would fail
- Climbing is possible

Different types of multi-legged robots

- Hexapods (six legs)
  - Most common type of legged robot
  - Simple in design and control
- Tetrapods (four legs)
  - Dynamic motion should be used because of fewer legs
- Bipeds (two legs)
  - Mostly humanoid robots

Different gaits

- Hexapods
  - Wave gait (one leg at a time)
  - Ripple gait
  - Tetrapod gait
- Tetrapods
  - One leg at a time
  - Dynamic walking (BigDog)
- Tripods
  - Actuated passive dynamic locomotion (STriDER)

Wave gait

- Only one leg moved at once
- Robot always stands stable on five legs
- Slowest but most stable gait

Wave gait

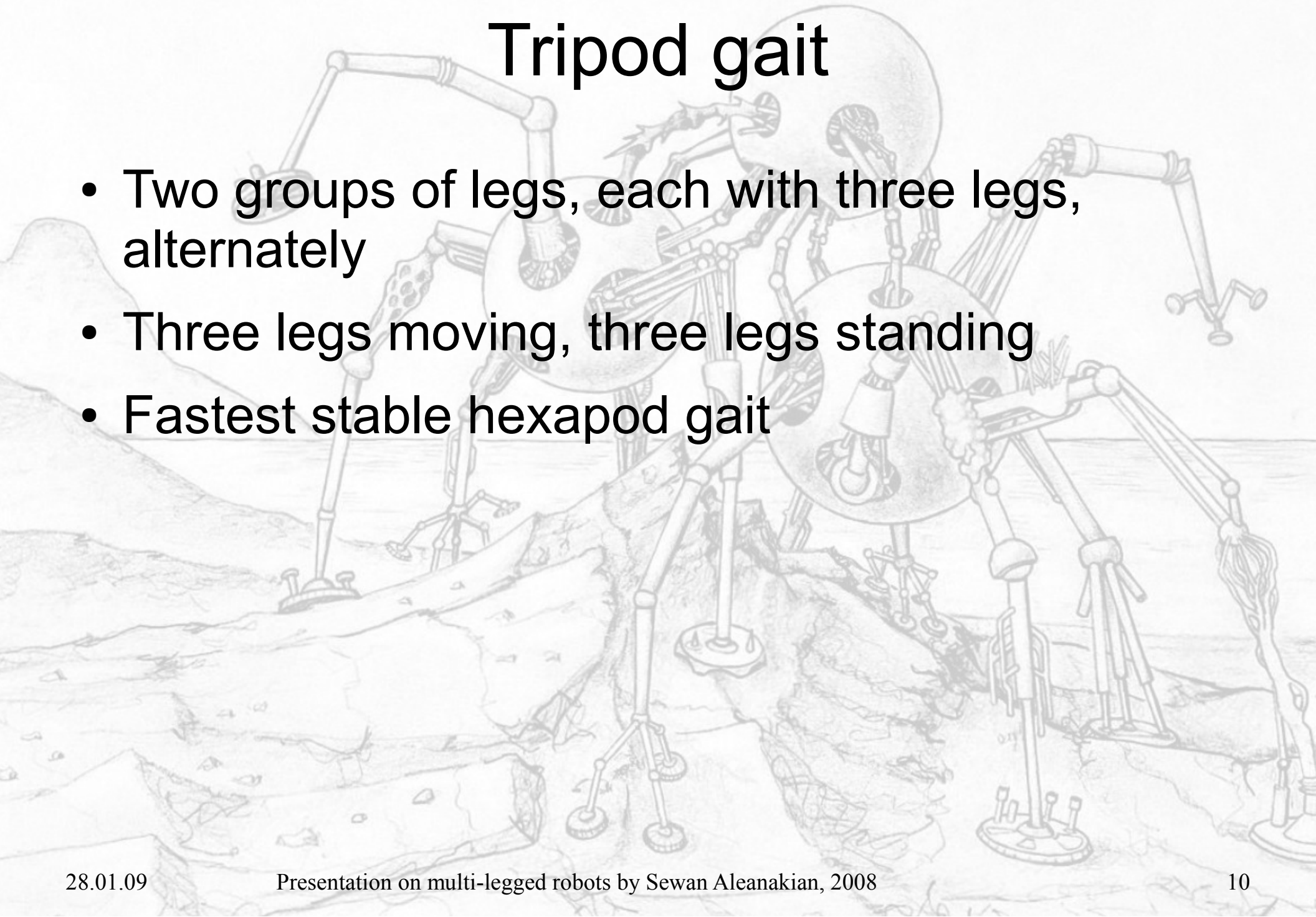
Ripple Gait

- Two legs are moved at once (or shortly after each other)
- Four standing legs
- Faster than wave gait but still very stable

Ripple Gait

Tripod gait

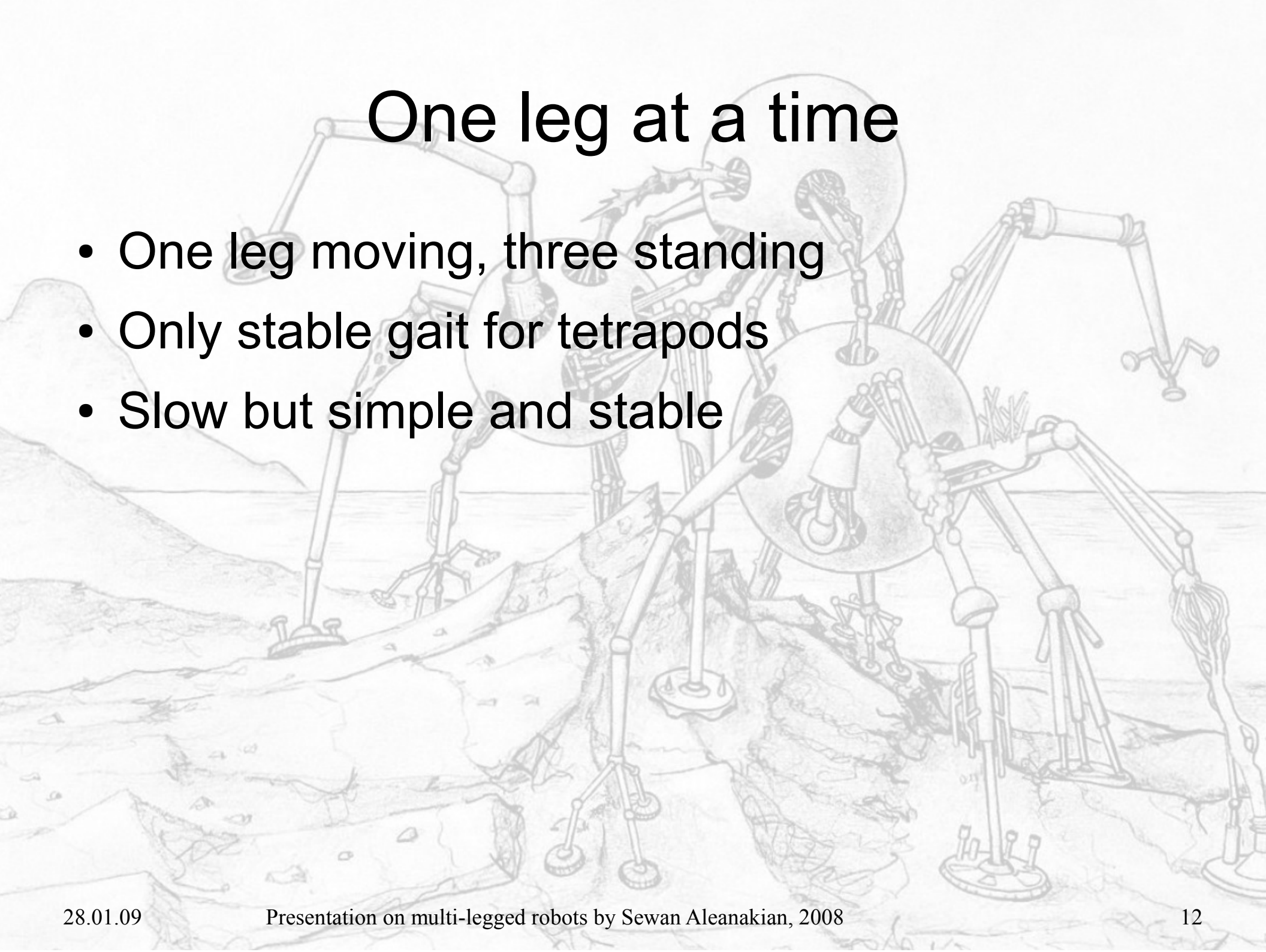
- Two groups of legs, each with three legs, alternately
- Three legs moving, three legs standing
- Fastest stable hexapod gait



Tripod gait

One leg at a time

- One leg moving, three standing
- Only stable gait for tetrapods
- Slow but simple and stable



One leg at a time

BigDog

BigDog

- Most advanced tetrapod robot
- Height: 0,7 m
- Can carry up to 150 kg
- Hydraulics powered by gasoline engine
- Very fast through dynamic motion
- Can recover from stumbling

BigDog

STriDER

STriDER

- Self-excited Tripedal Dynamic Experimental Robot
- Height: 0,9 m (Version 2) / 1,8 m (Version 1)
- Very energy efficient through actuated passive dynamic motion
- Tall (good for sensors)
- Simple concept

STriDER

Thanks for your attention

Any questions left?