

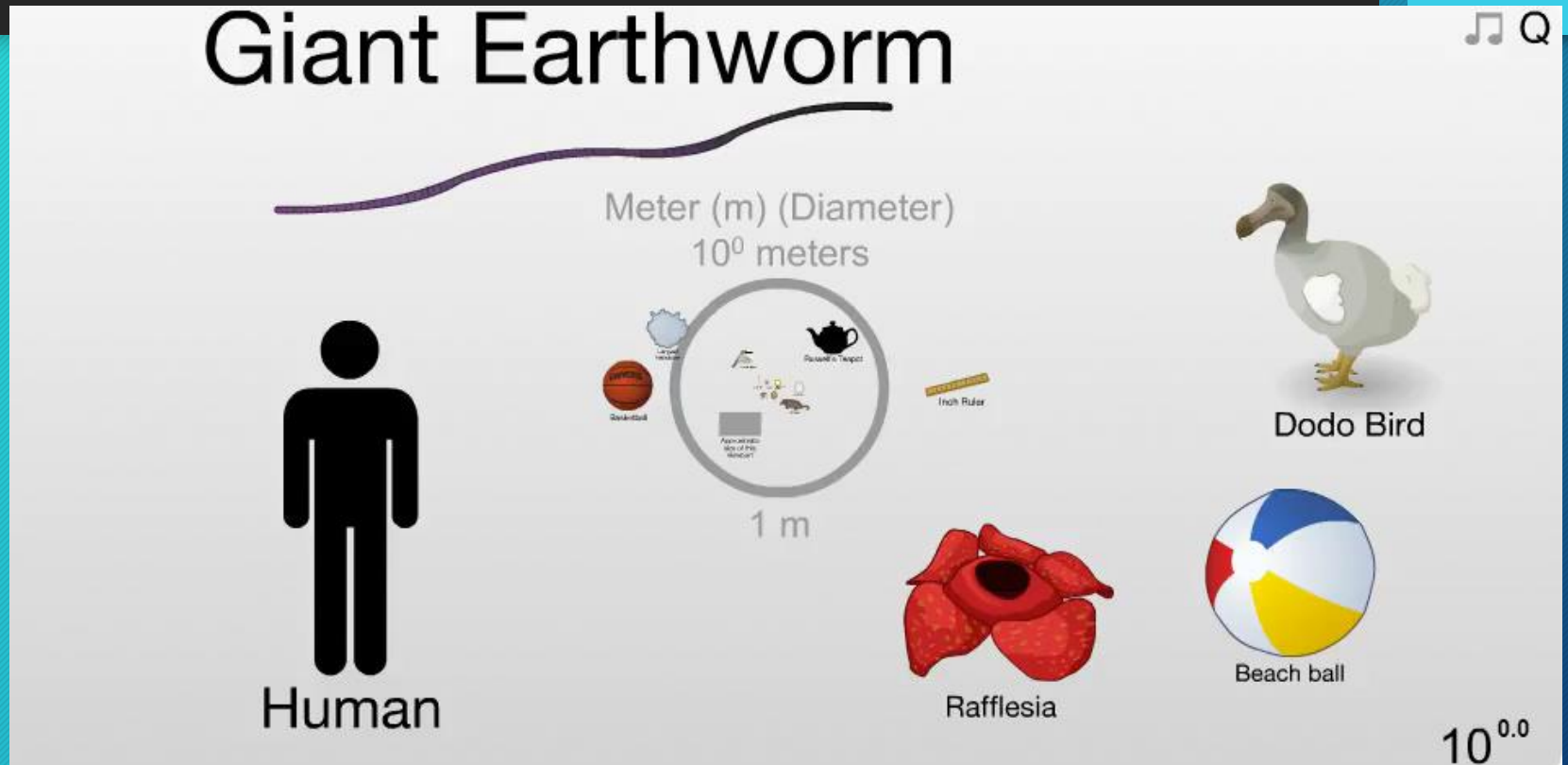
Regulation of the Use of New Laser Technology in Armed Conflict

Kobi Leins, www.premt.net

Governance of Emerging Technologies: Law, Policy and Ethics

Tempe, 24-26 May 2016

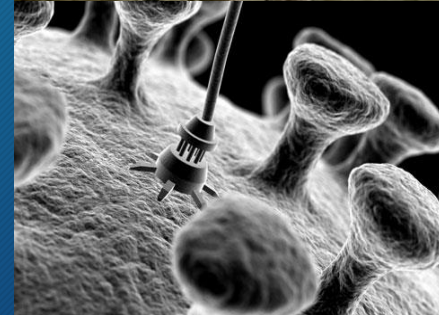
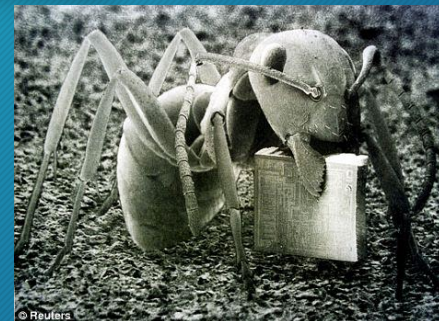
What size is nanoscale?



C Huang & M Huang, 'The Scale of the Universe 2' (2012), <http://htwins.net/scale2/>

Nanotechnology

- More efficient energy storage
- Advanced photovoltaics (the method of conversion of solar energy into electricity)
- Improved military protective equipment
- Improved materials, such as gas filters, masks and materials for tanks and protective clothing for soldiers
- Biomedical applications



Lasers



‘US navy demonstrates ship-based laser weapon - video’
(11 December 2014), The Guardian, <http://www.theguardian.com/us-news/video/2014/dec/10/us-navy-laser-weapon-video>

Nanolasers

- Metamaterials
- Photonics
- Optogenetics

Optogenetics



- Insertion of a virus
- Nanolaser
- Opsins
- Modifies neural responses and reactions

Legal Framework: Treaties

- 1925 Geneva Protocol
- 1972 Biological Weapons Convention
- 1993 Chemical Weapons Convention
- Protocol on Blinding Laser Weapons (Protocol IV of CCW)
- Article 36 of 1949 Geneva Conventions (Additional Protocol I)

General legal Principles, Human Rights Law & Environmental Law

- Military Necessity vs Humanity
- Proportionality
- Distinction
- Prohibition on Indiscriminate Attack
- Precautions in Attack
- Prohibitions on unnecessary suffering

Conclusion

- No one-size fits all regulatory system, even for one type of nanotechnology
- Military research begs question re timing of legal review
- Dual purpose?

Questions?