Research infrastructure in palaeoanthropology and cultural heritage: an Australian perspective

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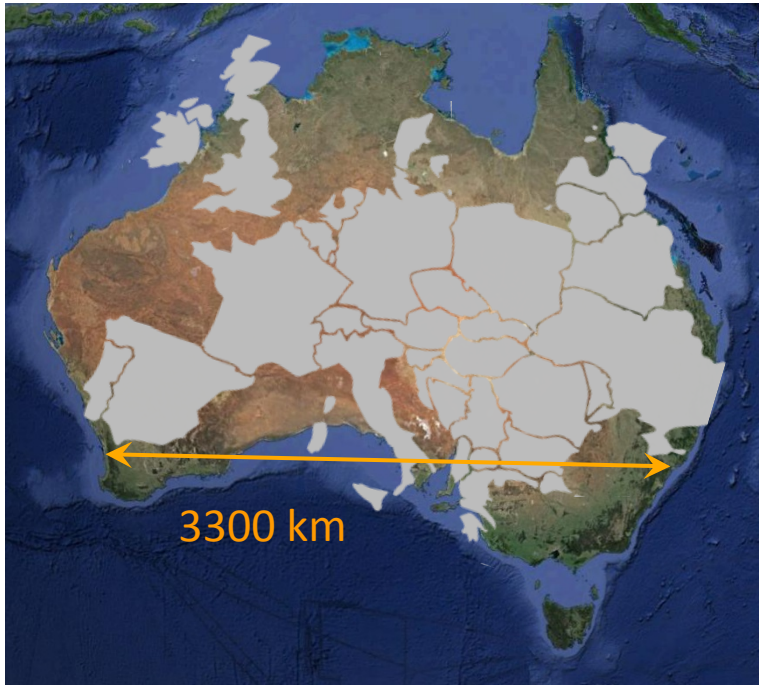
❖ **Tyranny of distance** from Europe and N America

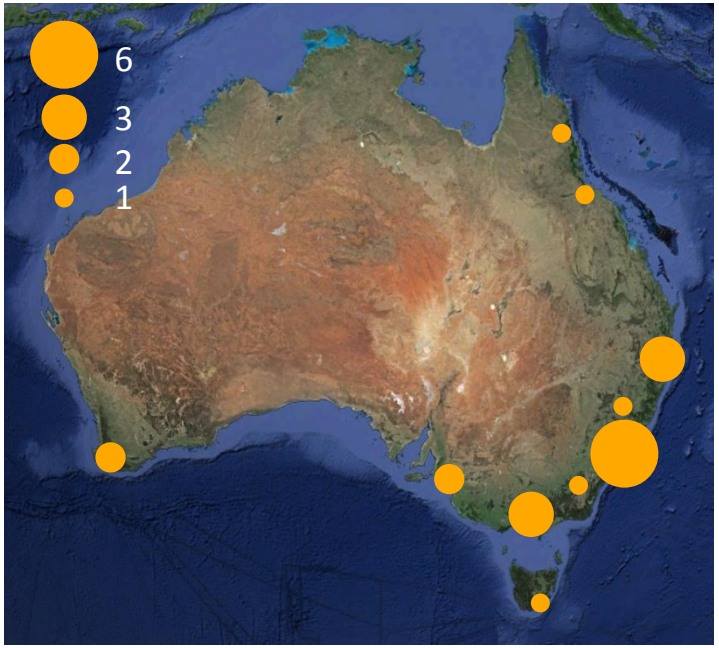


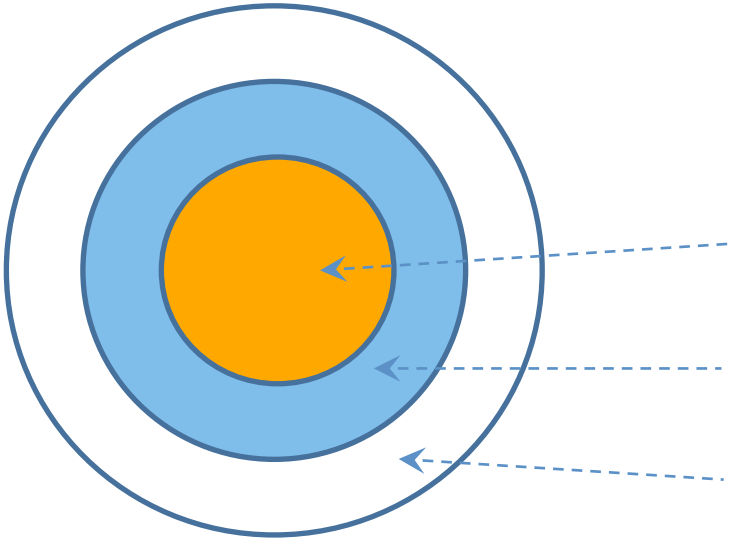
❖ **Small & scattered population** within Australia

- logistical advantage → single nation

❖ Australian Research Cluster in Archaeological Science (ARCAS)

- new national initiative, backed by ARC
- 20+ institutions around Australia
- university, government & industry (archaeological consultants)
- blend of sciences (physical, chemical, biological, geological, information & social) & humanities





core archaeological science groups ($n \approx 6$): fund research facilities & long-term technical support

other science-savvy researchers: collaborative projects & data generated by such facilities

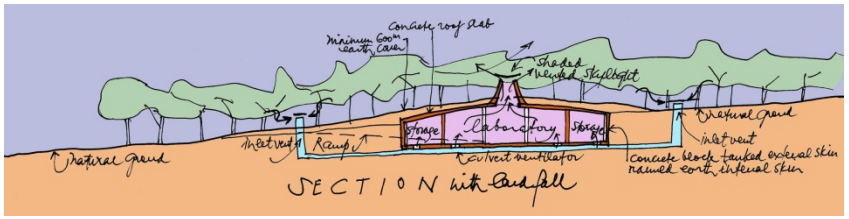
extended network: educational workshops, training courses, exchange programs & outreach

❖ **Palaeoanthropology & CH:** ‘Small Science’ with diverse demands

- **Field:**
  - new discoveries require field work & associated research infrastructure
  - ethics of indigenous consultation, consent, involvement & repatriation of remains
  - veto on transport of human fossils & some artefacts from country of origin

- **Lab:** multi-, inter- and trans-disciplinary investigations, using equipment as simple as a set of calipers to as sophisticated as a synchrotron
  1. geological aspects of site formation, modification & preservation
  2. materials analysis of artefact technology & microscopic traces of use
  3. biological studies of animal & plant remains
  4. chemical analyses of isotopes, biomarkers & other molecules
  5. dating of artefacts, fossils & other cultural heritage items
  6. informatics: statistics, computer modelling, spatial analysis & data visualisation

- **Legacy:**
  - digital reference collections & data archives, open-access with meta-data
  - standardised reporting protocols
  - conservation of perishable objects
  - ‘keeping places’ for ancient indigenous remains, e.g. Mungo:



❖ Three key messages

- **Archaeological science in Australia:**
  - need to overcome 'tyranny of distance' at continental & global scales, and its negative effect on integrated, pan-disciplinary research

- **Creation of ARCAS:**
  - target resources strategically to build & sustain capacity in facilities continent-wide
  - establish formal links with leading international partners, e.g.

  a. Denmark: Centre for GeoGenetics, University of Copenhagen
  b. Germany: Max Planck Institute for Evolutionary Anthropology (MPI-EVA), Leipzig
  c. Spain: National Research Centre on Human Evolution (CENIEH), Burgos
  d. UK: Research Lab for Archaeology & the History of Art (RLAHA), Oxford University
  e. S Africa: Evolutionary Studies Institute (ESI), University of the Witwatersrand
  f. USA: Institute of Human Origins (IHO), Arizona State University

- **Frontier technologies & applications:**
  - advances in microanalysis & molecular techniques in the Australian context
  - extend reach to SE Asian & Pacific island nations
  - portable facilities to analyse & digitally record collections in developing countries