- collecting archaeological data
  - reconnaissance & survey
  - excavation
  - complimentary or alternative?
- reconnaissance
  - locate and identify
    - known, but misunderstood; known, but lost; unknown
  - accidental v systematic
  - documentary sources
    - histories/epics; religious; maps; place names (oral histories)
  - ground-based =
    - recon at the ground surface (pedestrian recon/survey)
    - prominent features \(\rightarrow\) site-biased
    - “Off-site” \(\rightarrow\) “landscapes”
  - systematic reconnaissance
    - grid system; transects; spots
  - remote sensing =
    - recon at a distance
    - areal photography
    - earthworks; soil-marks; crop-marks; landscape patterns
    - satellite imagery
      - photography, multispectral, radar
    - image distortion; scale; resolution
    - “ground truthing”
  - survey
    - data recording at surface
    - ground-based
      - mapping (features) \(\rightarrow\) control provenience
      - surface collection (artifacts/ecofacts)
  - comparability
  - surface/subsurface relationship
    - what makes sites visible at surface?
    - representativeness

- reconnaissance
  - methods used to locate and identify archaeological sites both at the surface and subsurface
- survey
  - methods used to record information about archaeological materials found at the surface
- excavation
  - methods used to record information about archaeological materials found below the surface

- complementary or alternatives?
  - reconnaissance and survey focused at the surface
  - excavation focused on the subsurface

- complementary:
  - surface and sub-surface archaeological materials can tell you very different things
    - e.g., perspective on time is very different
      - excavation great time depth; survey/recon limited time depth
    - e.g., perspective on space is very different
      - survey/recon large spatial extent; excavation limited spatial extent
- AND alternative:
  - excavation is expensive and time consuming
  - recon/survey is cheap(er) and fast(er)

- Reconnaissance = location & identification
  - location =
    - assigning spatial (map) coordinates to archaeological finds, usually with respect to geographic regions
      - e.g., latitude/longitude; UTM; USGS Quads…
    - important for relocating and “managing” the archaeological record
      - e.g., Africa: FxJj 50 (Continental Grid); California: CA-MNT-77 (Smithsonian “trinomial system”)
  - identification =
    - provide general description of archaeological find, usually with respect to age, cultural affiliation and/or site function
      - e.g., Classic Hohokam (AD 1100-1450) hunting blind
    - important for relocating and “managing” archaeological record AND is a first step in archaeological reconstruction
Reconnaissance: locating sites

- some sites never lost to history
  - e.g., Roman Coliseum; pyramids at Giza; Great Wall of China; Teotihuacan

Interpretations may have changed through time…

Druidic Cults

Archaeoastronomy

Prof B. recommends Spinal Tap’s version

Some sites known, but lost to time…

- Phoenician colony of Carthage (modern Tunisia)
- “lost” cities of Maya Lowlands (e.g., Copan)
- trading nexus of ‘Ubar, Oman, vanished beneath the sands

Satellite TM images of Oman used to identify ‘Ubar

unknown sites…

- accidental discovery
  - MOST sites are exposed at the surface by processes that have little to do with archaeology
    - e.g., sedimentary erosion, building construction
  - MOST sites are found by non-archaeologists as part of other activities (e.g., digging a well)
    - e.g., Lascaux, Qin Shi Huang Di’s tomb, Templo Mayor

systematic reconnaissance

- organized, intentional attempts to identify unknown archaeological sites using a variety of methods
- following the documentary evidence
  - classical literature/epics
    - Henrich Schliemann used the Iliad to pinpoint location of Troy (Hisarlik)
    - Helge & Anne Ingstad used Viking sagas to help identify first European settlements in New World, at L’Anse Aux Meadows, Newfoundland, ca. 900-1000 AD.
- Biblical archaeology
  - using Biblical writings to locate and identify sites

L'Anse aux Meadows, Newfoundland

- finding sites: following documentary evidence
  - Maps
    - maps of various times frequently record locations of archaeological materials
  - Oral Histories
    - oral histories are sometimes a guide for finding sites; but time depth is an issue

Xa:ytem (also known as Hatzic Rock) is an ancestor stone of the Sto:lo People of British Columbia’s Fraser Valley.

- finding sites
  - ground-based studies =
    - reconnaissance at the ground surface
    - usually pedestrian survey/reconnaissance
  - focus on location of prominent features
    - “site-based” reconnaissance

Searching for prominent features works well for prominent sites. What about the rest?

- finding sites
  - “Off-site” reconnaissance
    - many “sites” are not defined by prominent features and many have “diffuse” boundaries
    - off-site = looking for scatters between the sites
      - “landscapes” the scale at which people interact with their environment → “landscape archaeology”

Low density lithic finds at Boxgrove, England
finding sites
- systematic reconnaissance
- two related meanings...
  - using an organized “system” to help find and identify sites
    - grid systems
    - transect systems
    - spot system

- coordination of surveyors
  - spaced pedestrian survey

grid systems “over” entire data universe
- sample chosen from among grid units

SQUARE GRID
- easy to label and to lay out

HEXAGONAL GRID
- better for calculating certain statistics

transect system
- samples taken from locations along transect at regular, random, or continuous intervals

Transect organized perpendicular to direction of geological belts.

Transects used frequently when trying to study the distribution of a phenomenon with respect to a known environmental gradient (e.g., temperature)

spot system
- usually done at a small scale by an individual and involves 100% coverage within the “spot”
- comparing grid, transect and spot systems
  - useful in different contexts
  - all are “arbitrary” with respect to the data universe to some degree
  - if using multiple systems need to consider how to compare across sample units
    - e.g., two grid squares cover equal area (length x width), but how to compare with hexagonal grids, spots or transects that have different geometries?

- remote sensing
  - site location and identification from a distance
  - useful if large areas need to be covered
  - or if sites/features to be examined are too large to be investigated on the ground (think Monet…)

- remote = observations at a distance…
  - necessary to detect large or subtle features

observation at a greater distance…form and pattern begin to emerge
observation at an even greater distance
significance creeps into your frontal lobe

form and pattern take on full significance

remote sensing
- aerial photography
  - earthworks, soil marks, crop marks, landscape patterns

earthworks, soil marks, crop marks, landscape patterns

earthworks made visible using large scale and low-angle sunlight
crop circles represent locations where sub-surface remains help/hinder vegetation growth; differences not visible from ground

Satellite Remote Sensing (a selection of image types)
visible light photo from the Space Shuttle
multispectral image from the Landsat 7 satellite
radar image from the RadarSat satellite
issues in remote sensing
- image distortion
  - oblique coverage vs. vertical coverage

scale = the ratio between the size of something in the real world and a representation of it
- e.g., 1:10,000 → 1 cm on map corresponds to 10,000 cm on Earth surface

large vs. small scale
- one ratio is large relative to another, but the AREA COVERED is smaller!
  - e.g., 1:10,000 is larger scale than 1:100,000. But area covered by 1:10,000 map is smaller than that covered by 1:100,000

when scanning a map if you do not have a scale bar representation of a map unit, then there is no way to reconstruct true distances!

issues in remote sensing
- resolution = the minimum unit of measurement at which two objects can be distinguished (e.g., grid squares, radiocarbon dates, pixel size)
  - low-resolution = the minimum unit is large (100 km pixel)
  - high-resolution = the minimum unit is small (10 m pixel)

image resolution generally decreases the farther you are from the objects being observed
- observation at a great distance means fine details are lost
- observation close-up (e.g., on the ground) gives a view of fine details, but coarse patterns are lost

survey vs. reconnaissance
- survey = recording archaeological data observable at the surface
  - Note: reconnaissance and survey are often conducted together, so many do not really distinguish methodologically between them
  - Note: many of the systematic methods used in reconnaissance (e.g., grids, transects, spots, remote sensing) are also used in survey

more than simply site location & identification
- establishing precise PROVENIENCE of and ASSOCIATIONS between materials found at the surface

view of Owens Valley, CA
survey for

- artifacts / ecofacts
- mapped for provenience
- collection based on
  - "diagnostics" = artifacts that have particular relevance to the research question being addressed; selective collection
- a set sampling strategy = attempt to establish statistical representativeness of collected materials
- 100% coverage

Features =
- requires mapping (i.e., creating a graphical representation of the locations of non-portable objects)
  - sketch maps = impressionistic representations
  - scale maps = representations using mapping instruments to control scale

Readings

- TODAY:
  - A&S Chapters 5, 6

- Thursday:
  - A&S Chapters 7, 9