

Fieldwork in Archaeoastronomy

A How To Guide (part 1)

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Introduction to Fieldwork in Archaeoastronomy

1. Preparation

2. Survey

3. Post-fieldwork processing

1. Preparation

- 1) Get acquainted with the site(s)
- 2) Decide which orientations to survey and how to do it to best accuracy (i.e. fieldwork methodology)
- 3) Choose the equipment to survey with
- 4) Consider clothing and footwear to take
- 5) Ask for permission (if required)

1. Preparation

Getting to know the site(s):

- Literature review
- Archaeological reports
- Plans
- Tour of the site(s) and surrounding landscape(s)

1. Preparation

What to measure?

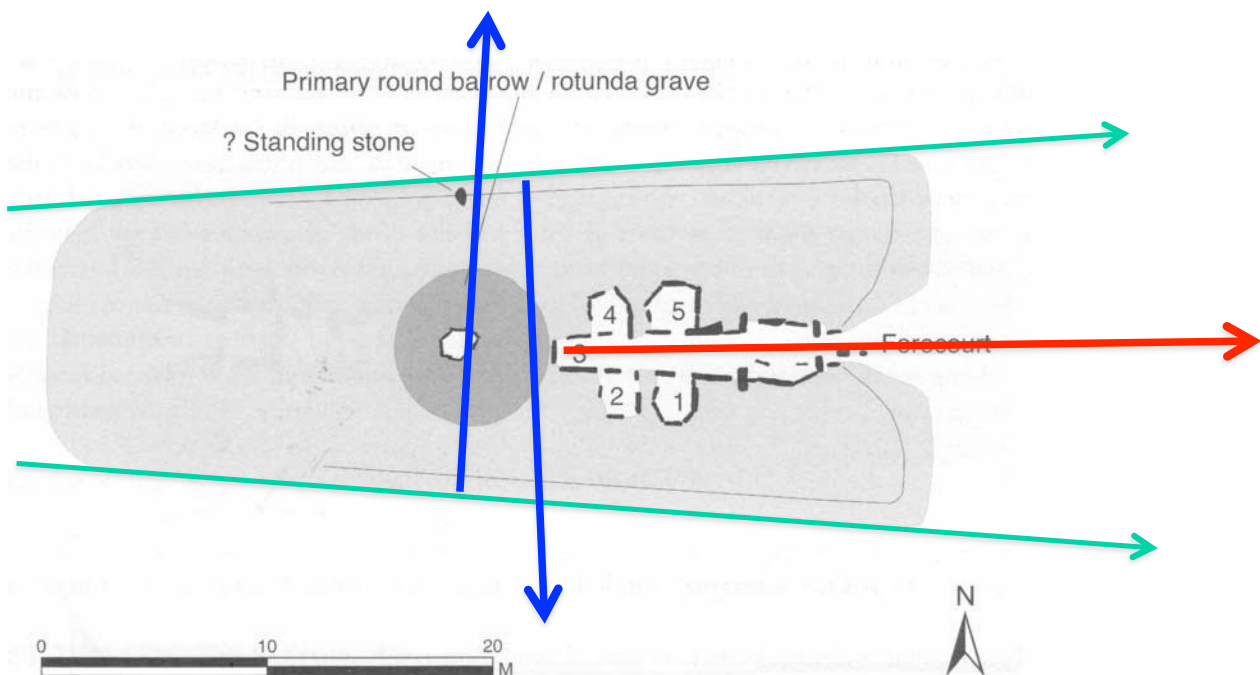
Decide which *orientations* might be *alignments*.
Which orientations would have had meaning?

Think both inside and outside of the box (emic vs etic).

It's important to do this early on but equally important to leave your options open when in the field (compare to semi-structured interview in RCC module).

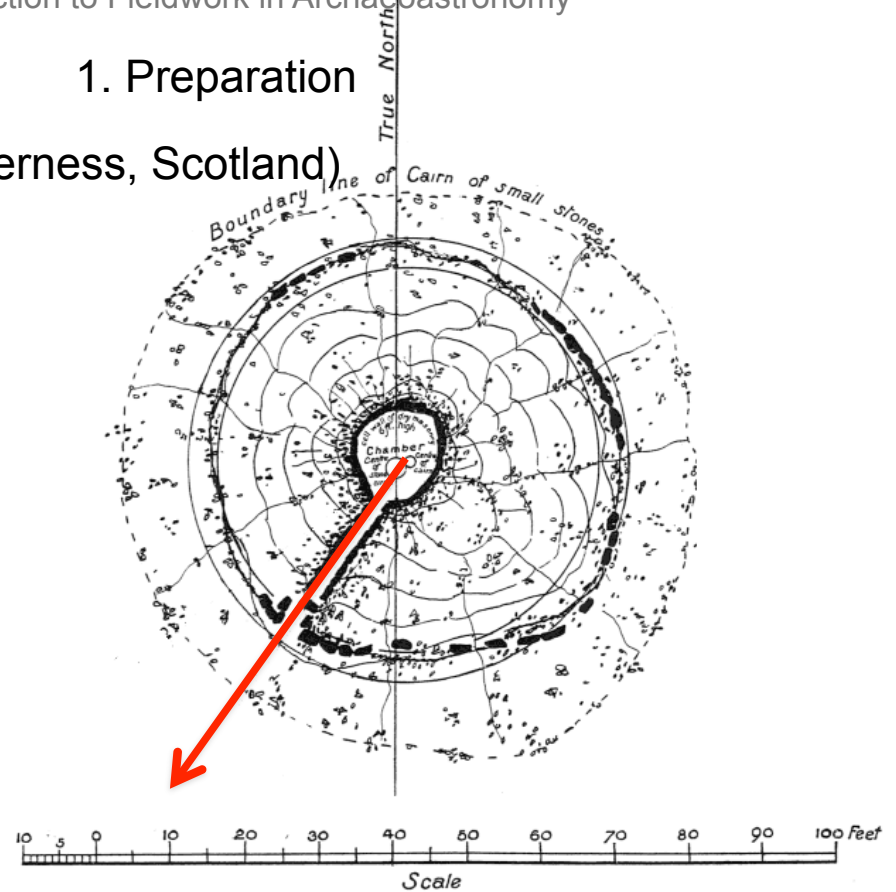
1. Preparation

Long Barrow (Cotswold-Severn, England)



1. Preparation

Round Dolmen (Inverness, Scotland)



1. Preparation

What to measure?

Write down what you want to measure, and make fieldwork forms, to fill in when surveying, so you won't forget a thing!

Site Name:	Anta da Cerqueira	Date:	17/04/2010
Site Reference Number:	11	Time:	15:35
Site Description:	Dolmen w/ corridor		

GPS:		Compass/ Clinometer:		
Latitude	N 40° 46' 48.1"	Azimuth 1	73.5°	254°
Longitude	W 8° 18' 35.0"	Hor. Altitude 1	0°	
Elevation	529 m	Azimuth 2	94.5°	270°
Error	5 m	Hor. Altitude 2	3°	

1. Preparation

Survey Equipment

- Measure location coordinates

Handheld GPS Unit

e.g. Garmin 12XL (cheap on ebay)

Garmin eTrex 30 (increased precision)

- Measure an orientation:

a) azimuth

Compass (e.g. Suunto KB14)

Theodolite

b) horizon altitude

Clinometer (e.g. Suunto PM-5)

Theodolite

Depends on site!

1. Preparation

Survey Equipment

- Writing tools

e.g. notepad, pencil, pen, iPad

- Other equipment

e.g. steel tape

cord or string

surveyor's rods

tent pegs

etc.

Depends on methodology!

1. Preparation

Clothing and Footwear

Check the weather forecast and prepare for the worst!!

Take extra clothes with you, just in case the forecast was wrong.

Take appropriate footwear.

1. Preparation

Ask for Permission

If the site(s) is protected you'll need permission from the national heritage agency and/or local authorities.

If the site(s) is currently being excavated you'll need permission from the lead excavator.

It's generally a good idea to, at least, warn your local authorities and heritage agency(ies).

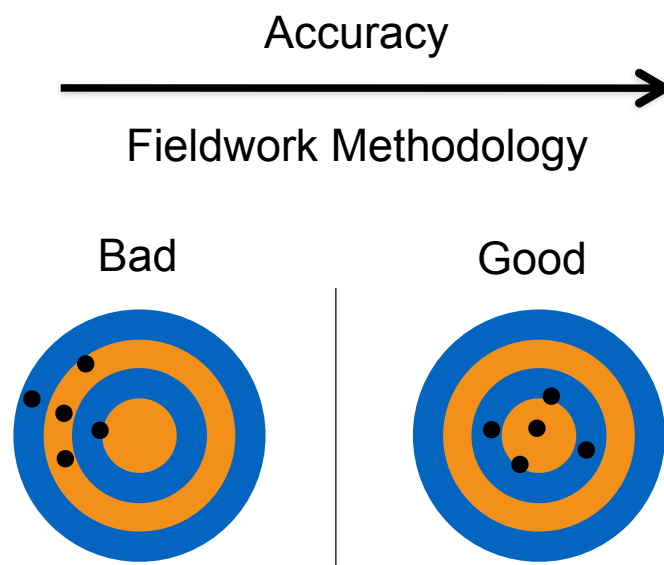
In some countries you might be able to get a researcher's pass to allow you free access to the site(s) and/or free entry.

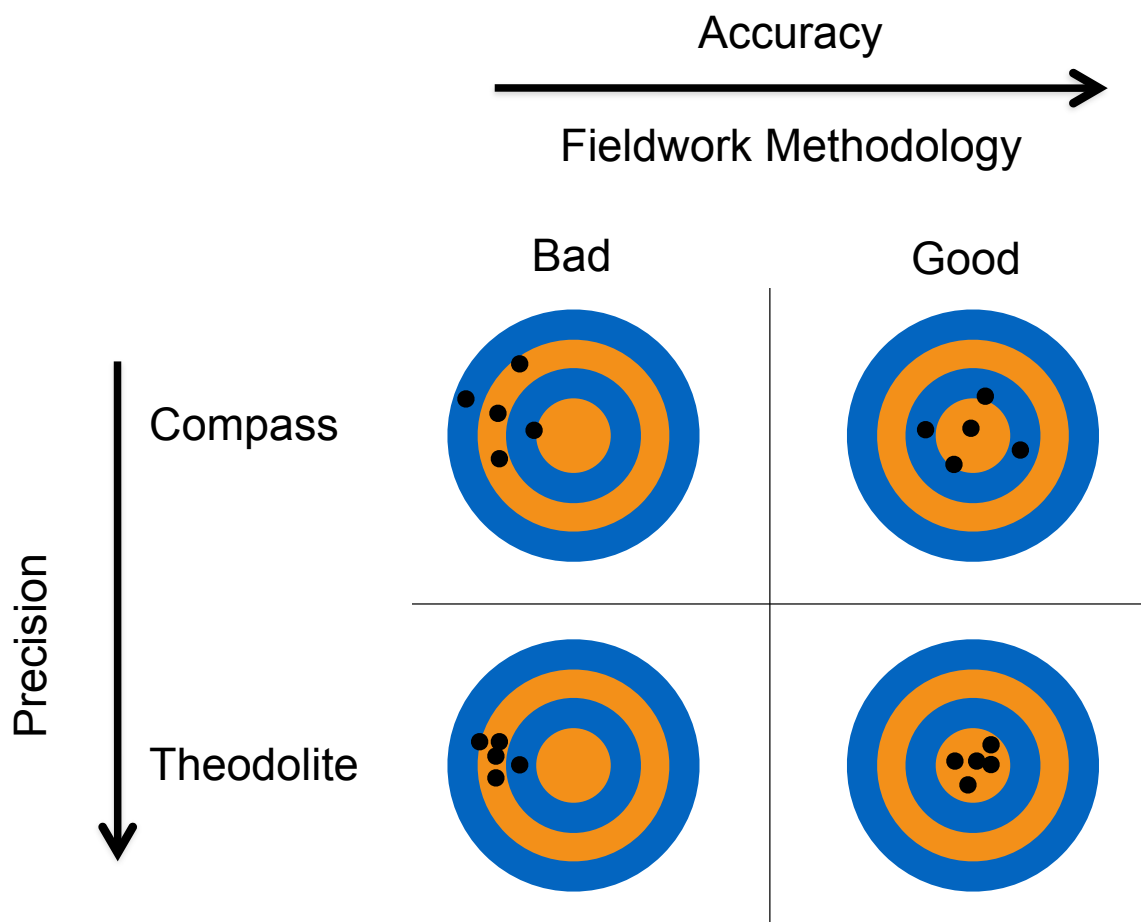
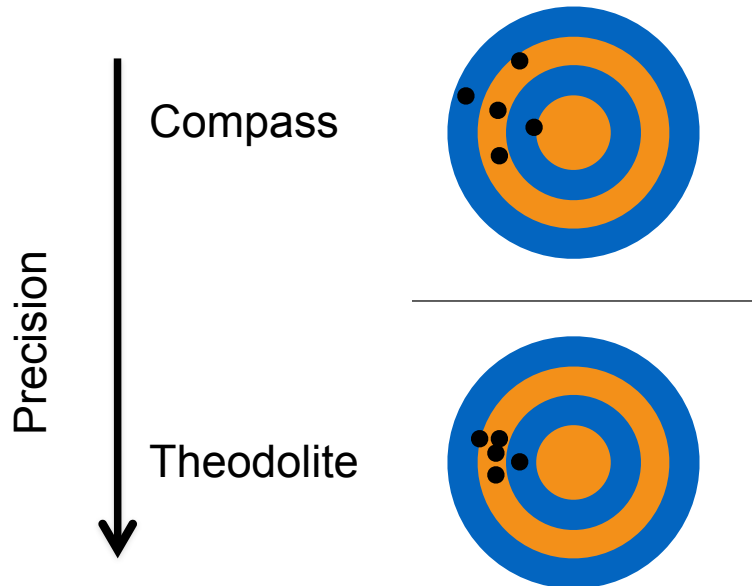
2. Survey

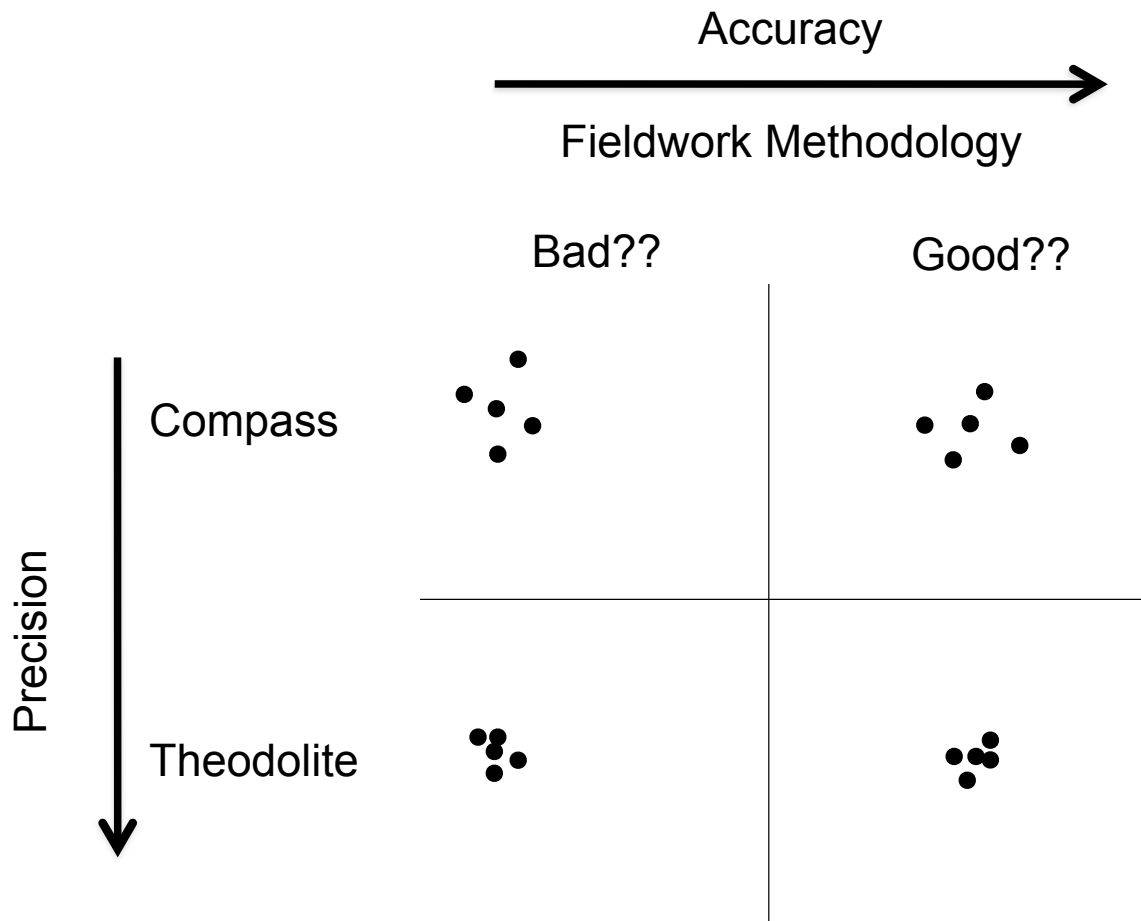
How to measure?

Depends on the site and the orientation you want to measure!

It defines what extra equipment you'll need, so you need to think this through ahead of fieldwork.







Introduction to Fieldwork in Archaeoastronomy

2. Survey

Instrumentation = Precision

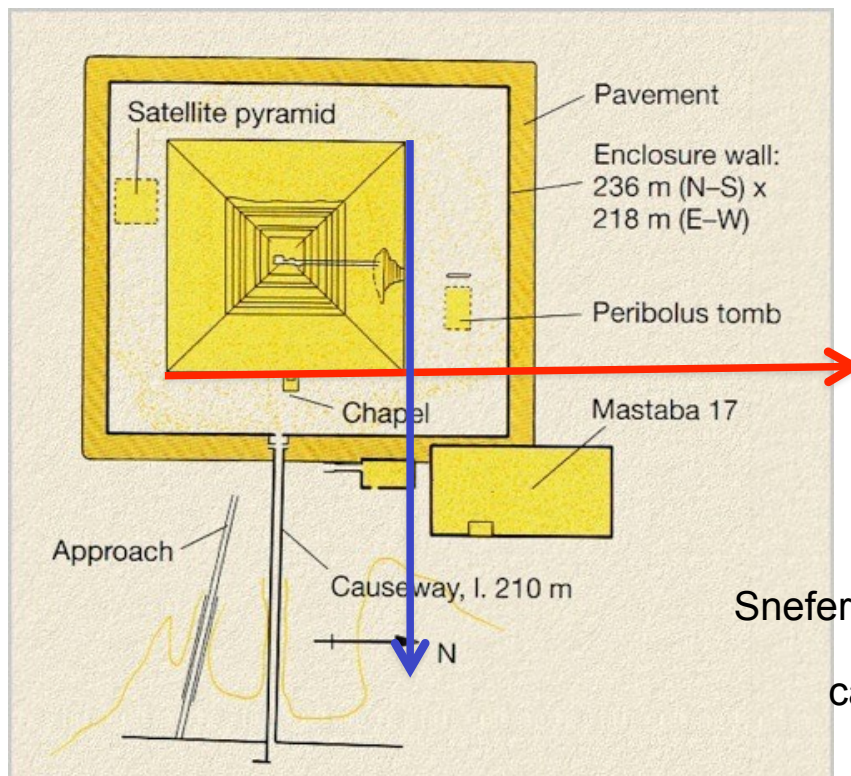
Fieldwork Methodology = Accuracy

Precision: are you doing a good job at measuring the orientation you've laid out?

Accuracy: is the orientation you have laid out the orientation you intend to measure?

2. Survey

Choice of instrument depends on site

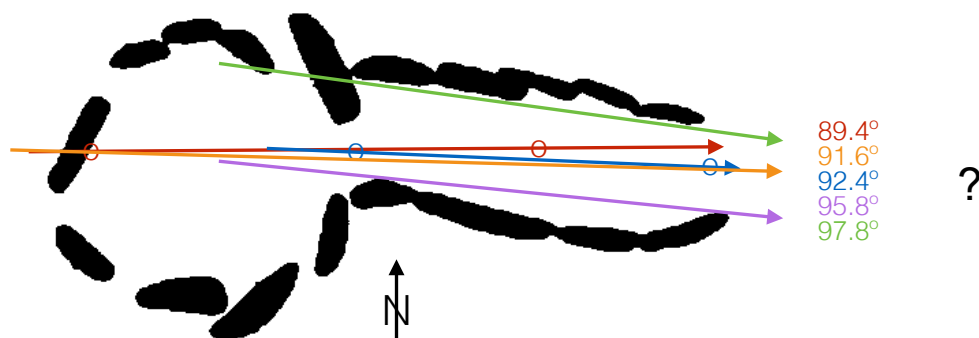


Sneferu Pyramid (Egypt)

can use theodolite

2. Survey

Choice of instrument depends on site

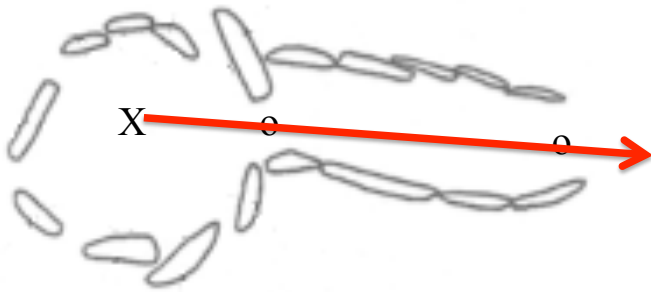


Megalithic Dolmen (Portugal)

use compass

2. Survey

How to measure?



Align your compass/theodolite with the back- and foresight and take a reading.



This will be covered in full next week

3. Post-Fieldwork Processing

- 1) Check if you forgot to measure something
- 2) If you were using a compass:
 - adjust for true north (magnetic declination)
 - correct for local magnetic anomalies

If you were using a theodolite with sunlight:

 - calculate the azimuths
- 3) Convert survey data into declination

This is the prelude to the archaeoastronomical interpretation

Useful Fieldwork References

Fieldwork in Archaeoastronomy Notes (Moodle)

Clive Ruggles, 1999. *Astronomy in Prehistoric Britain and Ireland*, Appendix

Andrew Munro and Kim Malville, 2010. *Archaeoastronomy in the Field: Methodologies Applied in Chaco Canyon*, JoC, 9. Available online at: <http://journalofcosmology.com/AncientAstronomy115.html>

Prendergast, Frank, "Techniques of Field Survey." In Ruggles, Clive (ed), *Handbook of Archaeoastronomy and Ethnoastronomy*, New York: Springer, pp. 389-409.

Check the Archaeoastronomical literature for survey methodology of similar sites, but be critical.

Fieldwork II (next week)

Some of the things that will be covered:

- how to use a GPS to get site coordinates;
- how to use a compass and clinometer to take azimuths and horizon altitudes;
- what magnetic anomalies are and how to detect them;
- what the difference between True and Magnetic North is;
- how to convert your survey measurements to declination;

Final Remarks

Archaeological sites do not look the same as they did when they were built and/or being used!!!

Always consider the site as it would have stood back then!

Do not trust reconstructed sites whole-heartedly, even when this was done by professional archaeologists!