



## Land, Sea and Sky Scapes Skyscapes

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### Assessments 2014-15

Coursework 100%

Assignment 1 (2000 words (50% of the module marks), Deadline 1pm 15th March)

Assignment 2 (2000 words (50% of the module marks), Deadline 1pm 1st May)

Essay 1: Answer the following question (2000 words, 50% of the module)

Describe, using examples, the main techniques and methods that archaeologists use when studying landscapes, seascapes and skiescapes.

Essay 2: Choose one of the following (2000 words, 50% of the module)

- Using the observations and data from the landscapes fieldtrip, construct a narrative on the historic upland landscape of your study area.
- Using the observations and data from the seascapes fieldtrip, construct a narrative on the maritime cultural landscape of the locale visited.
- Using the observations and data from the skiescapes fieldtrip describe how cosmology can explain archaeological landscapes.

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✚ Essay guidance

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✚ Upload your 1st essay here

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✚ Upload your 2nd essay here

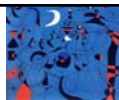
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✚ Add an activity or note

## This lecture



- 1. Skyscapes – the concept and the experience
- 2. The Visual Sky: How would the monks of Strata Florida have seen the sky.
- 3. The Medieval Sky: How would the monks of Strata Florida have imagined the sky.
- The notion of 'skyscapes' as a third component of a triple study including 'landscapes' and 'seascapes' is one we are pioneering in the School of AHA, here at Lampeter.



- **"sky-scape"**
- 1 : a part of the sky with outlined terrestrial objects that can be comprehended in a single view [...]
- 2 : a picture that includes an extensive view of the sky"
- The Merriam-Webster dictionary
- 3 (Quentin Drew): a view of the earth from the sky.
- And not just sight, but *experience*

## What do we see when we see the sky?



## A few important words



- Sky
- Astronomy
- Astrology
- Archaeoastronomy
- Cultural Astronomy
- Ethnoastronomy
- We should remember that all words are labels with shifting and contested meanings, as they move from one time period to another and one culture to another.

## Defining astronomy



- 'A modern definition of astronomy is as close as any standard dictionary. *The Random House Dictionary of the English Language*, for example, omits those references to unchanging, eternal and divine but informs us that astronomy is **"the science that deals with the material universe beyond the earth's atmosphere."**

• Krupp, E.C., 'Astronomy', in *History of Astronomy: An Encyclopaedia*, ed. John Lankford, New York and London, Garland Publishing, 1997, pp. 66-72 (p. 67).

## Defining Astrology

- 'Astrology is the practice of **relating the heavenly bodies to lives and events on earth**, and the tradition that has thus been generated'.
- Patrick Curry, Patrick, 'Astrology', in Boyd, Kelly (ed.) *The Encyclopaedia of Historians and Historical Writing*, 2 Vols. London: Fitzroy Dearborn 1999, Vol. 1, pp 55-7 (p. 55)



- 'The most fundamental connection between objects and events in the sky and those on earth that we might term *astrological* relates to the here and now. **Belief in the direct interconnectedness of things is evident among modern indigenous communities and surely extended far back into prehistory.** Modern examples include the Barasana of the Colombian Amazon, who understand that the celestial caterpillar causes the proliferation of earthly caterpillars; the Mursi of Ethiopia, for who, the flooding of the river they call *waar* can be determined, without going down to the banks, by the behaviour of the star of the same name; and those modern Hawaiians who still carry on the ancient practice of planting taro and other crops according to the day of the month in the traditional calendar (i.e., the phase of the moon).'
- Ruggles, Clive, *Ancient Astronomy: An Encyclopaedia of Cosmologies and Myth*, Santa Barbara: ABC CLIO, 2005, p. 27



## Archaeoastronomy

- *Archaeoastronomy is the study of beliefs and practices relating to the sky in the past, especially in prehistory, and the uses to which people's knowledge of the skies was put.*
- Clive Ruggles, <http://www.cliveruggles.net/>, accessed 8 December 2009.

• Archaeoastronomy is a field concerned with:

'every conceivable form of data that might provide insights into thoughts and practices relating to astronomy in the past.'

— Clive Ruggles (2011) 'Pushing back the frontiers or still running around the same circles? Interpretative archaeoastronomy thirty years on,' *Proceedings IAU Symposium 278*, p.1



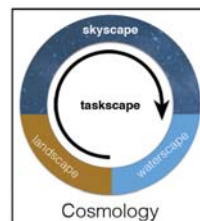
## Cultural astronomy



- 'What astronomy is not an astronomy in a culture?'
- Michael Hoskin, review of *Astronomies and Cultures*, ed. Clive L. N. Ruggles and Nicholas J. Saunders (University of Colorado Press, Niwot, Col., 1993), in *Archaeoastronomy: supplement to the Journal for the History of Astronomy*, 1996 vol. 27, number 21, p 885-7.
- 'Cultural astronomy: the use of astronomical knowledge, beliefs or theories to inspire, inform or influence social forms and ideologies, or any aspect of human behaviour. *Cultural astronomy also includes the modern disciplines of ethnoastronomy and archaeoastronomy.*'
- Campion, Nicholas, 'Editorial', in *Culture and Cosmos*, Spring/Summer 1997, Vol. 1, no 1, p. 2.

## Archaeologists v Astronomers

- 'No evidence exists for the use of stone circles as mathematical computers or for any other scientific purposes. Rather, the evidence can be economically explained as relating to the construction of simple calendars to aid the timing of rituals and the regularisation of the seasons'
- (Timothy Darvill, *Prehistoric Britain*, London and New York, Routledge, 1987, p. 97).



The sky is half of the cosmos of any culture, yet it is rarely mentioned in archaeology.

Archaeoastronomers have surveyed thousands of structures for celestial alignments, and statistical analyses do suggest intentionality in some cases...

...but only very rarely have these been successfully interpreted and integrated into the archaeological narrative.

This is more of a problem for prehistory than it is for historic periods where the evidence from archaeoastronomy is supplemented by the historical or ethnographic record.

**The challenge here is to take the skyscape into account.**

## Land, Sea and Sky Scapes Part 1

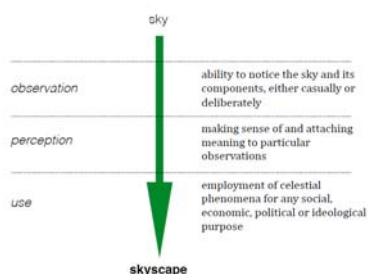
Experiencing the sky

The land is 'a natural phenomenon that is turned into a cultural landscape through human agency.'

— Vicky Cummings (2001) *Landscapes in Transition? Exploring the origins of monumentality in south-west Wales and south-west Scotland*. PhD Dissertation, Cardiff: University of Wales, p.82



The sky is a natural phenomenon that is turned into a cultural **skyscape** through human agency.



— C Ruggles and N Saunders (1993) 'The Study of Cultural Astronomy'  
In: C. L. N. Ruggles and N. J. Saunders (eds) *Astronomics and Cultures*. Niwot: University Press of Colorado, 1-31.

Landscape, seascape, waterscape, taskscape, cityscape ... skyscape

Each of these terms refers to an **ensemble of interlocked components**, each **taking its meaning from its position within the ensemble**, which can be **comprehended in a single view**.

— Tim Ingold (1993) 'The Temporality of the Landscape' *World Archaeology* 25(2), p.158

| Landscape                                                                                                | Skyscape                                                                                                |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| - the land is a natural phenomenon that is turned into a cultural landscape through human agency         | - the sky is a natural phenomenon that is turned into a cultural skyscape through human agency          |
| - the landscape plays an active role, structuring and structured by human agency                         | - the skyscape plays an active role, structuring and structured by human agency                         |
| - an ideal canvas for the application of metaphors                                                       | - an ideal canvas for the application of metaphors                                                      |
| - myths may shape and be shaped by the landscape                                                         | - myths may shape and be shaped by the sky                                                              |
| - people's ideologies form and are formed by the landscape                                               | - people's ideologies form and are formed by the skyscape                                               |
| - landscapes are open to control and thus become tied to political strategy and structures of inequality | - skyscapes are open to control and thus become tied to political strategy and structures of inequality |
| - the landscape structures time and time structures the way we experience it                             | - the skyscape structures time and time structures the way we experience it                             |



**Skyscape**

The horizon as mediator between Earth and Heaven, between landscape and skyscape.

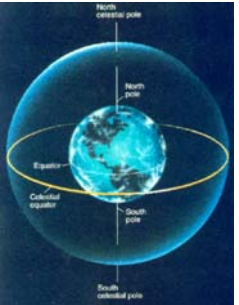
**Horizon**

Mediation, and liminality, highlighted by several cultures around the world.

Is this why there are so many strong cases for alignments to the horizon?

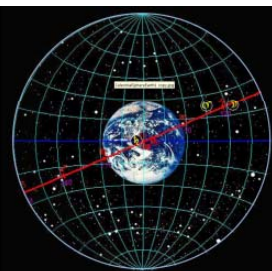
**Landscape**

### The Earth and the sky: an astronomical model



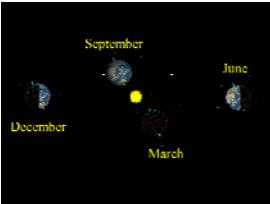
### Irregularity in the sky

The blue line represents the equator, the red line the sun's apparent path around the earth



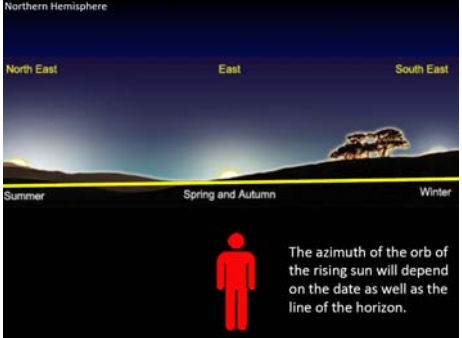
- The earth rotates on what we describe as it's north-south axis.
- However, it is tilted in relation to the sun by 23 ½ degrees.
- This leads to complexities in measuring astronomical motions and creating calendars, but also gives us.....

### .....the seasons



- Astronomically the earth then moves around the sun creating variations in light and heat which then create, or contribute to, weather and climate patterns. We label the whole process a 'year' and create subdivisions we call in English 'seasons'.

The annual movement of the sun on the horizon (thanks to Bernadette Brady). On the left sunrise at the summer solstice (21 June). In the middle sunrise at the spring and autumn equinoxes (21 March, 23 September). On the right sun rise at the winter solstice (21 December)



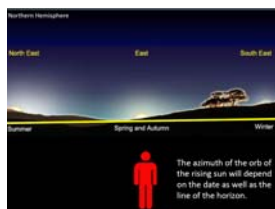
**Northern Hemisphere**

North East      East      South East

Summer      Spring and Autumn      Winter

The azimuth of the orb of the rising sun will depend on the date as well as the line of the horizon.

## Experientially



- Left: summer solstice. In northern hemisphere, days at their longest, nights shortest; the warmest part of the year approaches; time for celebration, but also insecurity in the knowledge that cold and dark are bound to approach.
- Middle: the equinoxes. Light and dark are balanced. The day and night are of equal lengths. Emotionally, religiously, a moment of harmony? In farming cultures, in the spring, planting; in the autumn harvest.
- Right: winter solstice. Dark is at its height. The coldest part of the year approaches. Food is scarce, apart from what has been stored, and will get more scarce over the coming months. Emotionally, a moment of deep fear and insecurity? Religiously, the winter solstice becomes a time for celebration because soon light will increase, warmth will return, the days will begin to get longer, growth returns and spring and summer are in the way.

## Key terms

- Solstice – literally the sun stands still.
- Equinox – equal nights.
- This gives us the following calendar (the days below can vary and the pattern is reversed in the southern hemisphere)
- Winter solstice: 21 December: shortest day and longest night
- Spring equinox: 21 March: days and nights of equal length
- Summer solstice: 21 June: longest day and shortest night
- Autumn equinox: 21 September: days and nights of equal length



## Experientially: sun rise



- We tend to emphasise sunrise as something we see – it may be beautiful, perhaps part of a beautiful view.
- But do we feel an emotional sensation? Joy? Relief? Contentment?
- And is that emotional sensation accompanied by a physical experience: a quickening of the heart?
- But we may also have a physical experience which precedes the emotional – our skin becomes hotter.

And the world becomes lighter : we can see. We cannot see the landscape without the skyline. In practice, the landscape as a visual experience does not exist without the sky. It is extremely difficult to work agriculturally at night.



## The Moon

- The moon has a number of cycles.
- The shortest is the 'synodic' cycle from new moon to full moon: 29.53 days.
- Synod means 'meeting' (as in Church of England synod).
- At the new moon, the moon passes the sun, as seen from the earth, and so cannot be seen. For around two nights it disappears.
- At the full moon, the moon is on the opposite side of the sky. It is very bright and the same size as the sun.
- In pre-modern societies both moments are of immense religious significance, and became the basis of religious calendars.



Except when there is high, bright full moon in a clear sky, we can hunt, travel (in open land) and hold public meetings. The full moon then becomes an important cultural marker



- 'The August full moon has many names, in Colonial America it's the Dog Day's Moon, in China it's the Harvest Moon, Native American Indian's (Cherokee) called it the Fruit Moon (Choctaw) called it Women's Moon and (Dakota Sioux) said it was the 'Moon When All Things Ripen'. The English Celtic name is the Dispute Moon, whereas Medieval England named it the Corn Moon, but Neo Pagan named it the best for me the Lightning Moon'.
- 'The August Full Moon, Milliners Blog, 3 August 2012.
- <http://milnersblog.com/2012/08/03/the-august-full-moon/>

The Full Moon becomes a metaphor for madness, for existence in a liminal state, like vampires, the 'undead', existing in an imagined boundary zone between life and death



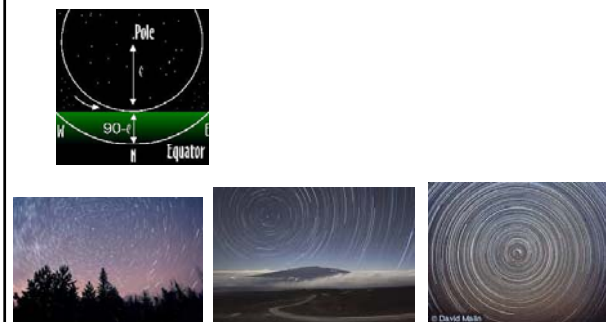
The new moon becomes a vital calendar marker: the Islamic calendar



The Jewish calendar and the new moon

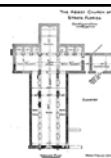


Looking north



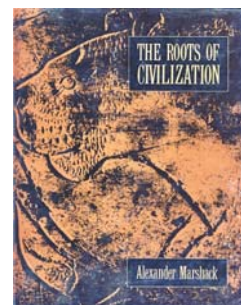
## Land, Sea and Sky Scapes Part 2

Depicting the sky

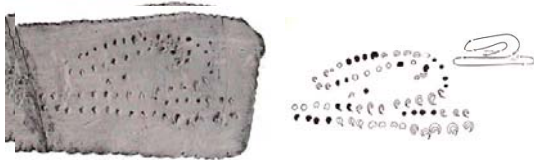


## Alexander Marshak

- Archaeologist, Harvard
- Began work in 1970 evaluating notched bones and stones



Lunar Counters: Abri Blanchard Bone (Dordogne, France)  
Aurignacian (c. 32,000-26,000 BCE).  
(Marshak pp. 45-8)



Lunar Counters: Abri Blanchard Bone (Dordogne, France) Aurignacian (c. 32,000-26,000 BCE).  
(Marshak pp. 45-8)

- Is the notation on the bone a lunar calendar?
- The marks Marshak has transcribed as dark would represent the moon's invisibility around the new moon, when it is too close to the sun to be seen.



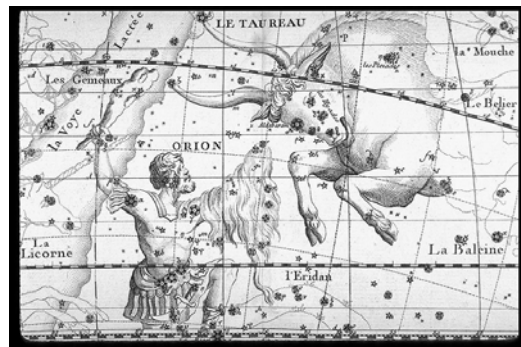
Cave at Lascaux c. 17,000 BP: Taurus the Bull?



The Pleiades: NASA



Taurus: Flamsteed



## Lascaux Taurus



- In 15000 BC the Pleiades would have been setting when the sun rose in the spring and rising at dawn in the autumn. The sun's proximity to them therefore heralded both the lush times of summer and the harsh ones of winter.

## Pleiades in Australia

- Australian bark painting, Arnhem Land, showing 13 Pleiades (above) with Orion's Belt and Sword. The Belt stars are the women's husbands, 3 fishermen in a canoe. The fishermen broke the sun's law and caught kingfish they were forbidden to eat. Their punishment was to be sucked into the sky. He stars in the Sword are their camp fire and contraband fish.
- (Krupp, *Beyond the Blue Horizon*, p. 247)



## The Pleiades in Australia

- There the sky contains seasonal messages, but also stories with social messages. One story which is performed in some areas for a girl's first menstruation, concerns the pursuit and rape of one of the seven sisters (the Pleiades) by Njiru (Orion), and may contain warnings about such abuse (Njiru's penis is bitten off by a dog, although it then comes to life and continues the chase) or expressions of sexual fear or fantasy.<sup>[1]</sup> But there is variety in a central theme: in some areas the three stars of Orion's belt are fishermen and the Pleiades are their happily married wives.
- 

## Venus of Laussel

- This most famous of the many female 'goddess' figurines which survive from the palaeolithic, discovered in the Dordogne in France
- Upper Perigordian period, perhaps around 20,000 BCE.
- About 43 cm (17 inches) high.
- Standing with one hand covering her belly: pregnancy? Fertility?
- Crescent shaped object incised with thirteen clear notches.
- Red ochre may be indicative of menstruation but might also point plausibly to solar imagery and it has been suggested that the figure's head is either the sun or full moon.
- Sky goddess who ruled over, or represented, both the sun and the moon.
- Great mother who presided over heaven and earth?

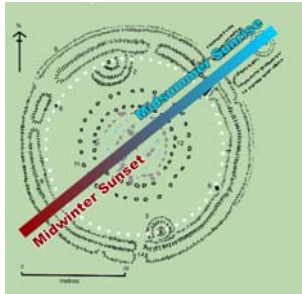


## Megalithic Culture

- (from the Greek great, *mega*, stone, *lith*)
- Neolithic.
- In British Isles from 3<sup>rd</sup> millennium to Bronze Age, c 1500 BCE



### Stonehenge. Main period of use and construction c 3200 – 1500 BCE



### New Grange c 3200 BCE winter solstice sunrise (shortest day of the year)

winter solstice sunrise shines through the light box above the main passage, to illuminate the central chamber.

winter solstice is the shortest day of the year, when light is least and darkness at is maximum.

Sun rise therefore represents the beginning of the move back to light (which also means heat, planet growth, fertility and survival: if there was a perpetual winter we would all die). It therefore represents life. It brings life.

Problem: do we have any sense of what this technology meant to the builders?



### Megalithic Culture

Goszek, Saxony c 4900 BCE

left: winter sun rise (on the right, east) and set (on the left, west)  
right: wooden palisades with walkway



### Nebra Disc

- C 1600 BCE
- Saxony
- 30 cm diameter
- The Sun and Moon seem obviously represented.
- It is reasonable to assume that the cluster of 7 dots is the Pleiades.
- Is the shape at the bottom a sun-boat on the Egyptian model?
- Arc on right = midwinter sunrise-set?
- Divination (Nanshe's 'tablet of stars'?)



### Stonehenge and culture

- By the late 1960s we have two Stonehenges
- 1. The alternative Westminster Abbey
- (1a conservative Druids, 1b radical pagans, 1c New Age, 1d extraterrestrial theorists etc)
- 2. An ancient scientific observatory
- And that's before we consider it as a tourist site, an archaeological site etc.

### Egypt: Giza, Abu Simbel



## Gold conical hats

- 4 examples
- Up to 88 cm high
- C 1000-800 BCE
- Germany-Switzerland
- Symbols analysed as Metonic cycle (19 tropical years is almost exactly equal to 235 synodic months).



## Ethnographic Evidence

- *"Moon makes baby come" ... When the moon is full the woman knows her time is near... [1]*

[1] Goodale, Jane, *Tiwi Wives: A study of the women of Melville Island*, Seattle and London, University of Washington Press, 1971, p 146, see Knight, p 358.



## The Onondaga Indians (upstate New York), prob 18<sup>th</sup> c

- The Pleiades setting after dusk in late October, early November:
- 'To the Indians, the cluster not only signalled, but also ordained, the period when frost threatens neither newly planted seed nor nearly ripe crops... [They] appeared to run the farm... Only a fool would fail to consult them when contemplating when to plant and when to harvest'
- (Krupp, *Beyond the Blue Horizon*, p. 253)



## Pleiades in Australia

- Australian bark painting, Arnhem Land, showing 13 Pleiades (above) with Orion's Belt and Sword. The Belt stars are the women's husbands, 3 fishermen in a canoe. The fishermen broke the sun's law and caught kingfish they were forbidden to eat. Their punishment was to be sucked into the sky. He stars in the Sword are their camp fire and contraband fish.
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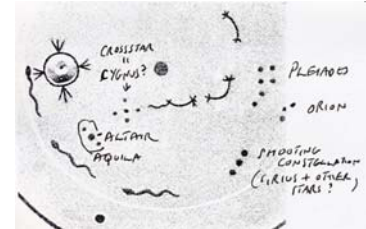
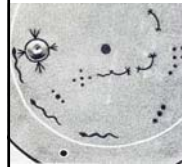
## Mary Dixon Nungarrayi 'Milky Way Dreaming' c 2000



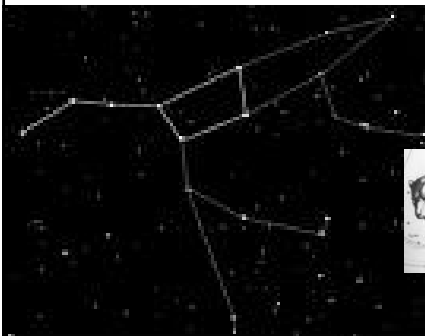
## Global Contexts: North America

- ... the medicine (or spirit) wheels, called *oxemeo*, allowed the shaman to call down the spirits. ... Only certain stars, because of their colours, can portray the spirits. Red Wolf or Wolf Man is represented by the red star Aldebaran... White Wolf or Old Woman is represented by the white star Sirius. The Kit-Fox or Yellow-Haired Woman is represented by the blue star Rigel... The ceremonial season begins in June... commences with the rising of Aldebaran and ends 56 days later in mid-August with the rising of Sirius. The Massaum ceremony ends in July with the rising of Rigel.
- Barbara Silverman, "The History of Astronomy: Medicine Wheels," *Journal of the Royal Astronomical Society of Canada* 93 (1999): p. 283-6.

## Ipai (southern Californian) Indian ground drawing for boys' initiation 2



## The Bear



## The Bear

The Micmac Indians of Canada's Maritime Provinces tell a story in which the stars' seasonal passage across the sky is an analogy for the bear's hibernation in winter and waking in spring.

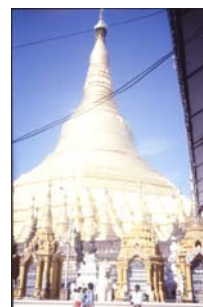


## Global Contexts: China

- From the *Shi Ji*, 1<sup>st</sup> c CE we find the following political reading of a conjunction of Mercury and Venus, rising just before the sun:
- 
- When Mercury appears in company with Venus to the east, and when they are both red and shoot forth rays, then foreign kingdoms will be vanquished and the soldiers of China will be victorious.
- Cited in Shigeru Nakayama, 'Characteristics of Chinese Astrology, *Isis*, vol. 57, no. 4, (Winter 1966), p. 442.
- 



## Global Contexts: Burma: the Shwedagon Pagoda, Rangoon, Moon shrine



## Fundamental Premises 1. The Reflective Cosmos

- 'The universe was conceived not as an object independent of man, but as a counterpart of and mirror of human society'
- native North American cosmology, talked of a 'patterned mirroring' between sky and earth'
- Trudy Griffin-Pierce, *Earth Is My Mother, Sky Is My Father: Space, Time and Astronomy in Navajo Sandpainting*, (Albuquerque: University of New Mexico Press, 1995), p. 63.
- Xiaochun Sun, 'Crossing the Boundaries between Heaven and Man: Astronomy in Ancient China', in Helaine Selin (ed.), *Astronomy Across Cultures: the History of Non-Western Astronomy*, (Dordrecht: Kluwer Academic Publishers, 2000), p. 425.

## Fundamental Premise 3 Divinity speaks through the stars

- Celestial patterns were the 'writing' of the gods and goddesses (*šir šamē* – the 'writing of heaven').
- Right: enuma anu enlil, 8<sup>th</sup> c BCE
- Then this writing must be read.
- The crucial concept in Chinese astrology, *tian wen* (celestial patterns) was *xiang*, translated as **image, or symbol**. Celestial phenomena were therefore *tian xiang*, celestial images. A star or planet might constitute a *xiang*, an image, symbol or analogue of some phenomenon on earth, and the astrologer was therefore required to act as an interpreter, reading the heavenly signs.
- Schäfer, Edward H., *Pacing the Void: Tang Approaches to the Stars*, Berkeley: University of California Press, 1977, p. 55.



## Fundamental Premise 4: The sky can be read like a text – as warnings (Omens)

- the 'signs on earth, just as those in the sky, give us signals. Sky and earth both produce portents though appearing separately, they are not separate (because) sky and earth are related'. [1]
- *The 'Diviners Manual'*  
'As Above, so Below'  
[1] Oppenheim, A.Leo., 'A Babylonian Diviner's Manual', *Journal of Near Eastern Studies*, Vol. 33, January-October 1974, p. 204.



## Omens

- The appearance of a bird whose head was a mirror in which the stars could be seen was a bad omen which was later linked to the Spanish conquest of the Aztecs.



## Fundamental Premise 5 Divine intervention

- Right: Quetzalcoatl (Aztec Venus, regulated war) and Innana (Sumerian Venus, Queen of Heaven)
- Yahweh
- "'And on that day," says the Lord God, "I will make the sun go down at noon, and darken the earth in broad daylight'.
- Amos 8.9.



The Built Environment: Religious Space and Power: the Pantheon, Rome, St Peter's Rome, St. Paul's, London: solar symbolism, easterly alignments, celestial domes.

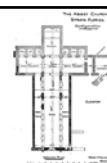


The Built Environment: Political Space and Power: Machu Pichu;  
Congress, Washington DC, Congress Buenos Aires)



## Land, Sea and Sky Scapes Part 3

The sky at Strata Florida  
1. Scriptural sources



- Strata Florida Abbey. Founded 1164.
- There were two main sources of literary authority for knowledge of the sky:
  1. Holy Scripture, elucidated in
  - 1A. Theological commentary
  2. Classical Greek and Latin texts, mostly available only in fragments, but supplemented from the late 12<sup>th</sup> c onwards by
  - 2A. Texts translated from Arabic and drawing on Greek, Latin, Syriac, Persian and Indian originals.



Scriptural texts: God creates the world, including the sun and moon, and key moments in the worship of God are precisely timed by the sun and moon

- 'And God said "Let there be lights in the firmament of the heavens to separate the day from the night; and let them be for signs and for seasons and for days and years'.
- **Genesis 1.14.**
- **Leviticus 23**
- New International Version (NIV)
- <http://www.biblegateway.com/passage/?search=Leviticus+23>
- **23** The Lord said to Moses, <sup>2</sup> "Speak to the Israelites and say to them: 'These are my appointed festivals, the appointed festivals of the Lord, which you are to proclaim as sacred assemblies.
- **The Sabbath**
- <sup>3</sup> "There are six days when you may work, but the seventh day is a day of sabbath rest, a day of sacred assembly. You are not to do any work; wherever you live, it is a sabbath to the Lord.
- **The Passover and the Festival of Unleavened Bread**
- <sup>4</sup> "These are the Lord's appointed festivals, the sacred assemblies you are to proclaim at their appointed times: <sup>5</sup> The Lord's Passover begins at twilight on the fourteenth day of the first month. <sup>6</sup> On the fifteenth day of that month the Lord's Festival of Unleavened Bread begins; for seven days you must eat bread made without yeast. <sup>7</sup> On the first day hold a sacred assembly and do no regular work. <sup>8</sup> For seven days present a food offering to the Lord. And on the seventh day hold a sacred assembly and do no regular work."



## The sky is a visible demonstration of God's creation

- 'The heavens are telling the glory of God, and the firmament proclaims his handiwork'.
- *Psalms 19.1*
- 'Praise him, Sun and Moon, praise him every stars that shines.
- Praise him, you highest heavens, you waters beyond the heavens.
- Let all these praise the Lord; it was his command that created them.
- He has set them there unaging for ever; given them a law which cannot be altered'.
- *Psalms 148:3-6*

## Divination from the stars by the enemies of the Jews is condemned

**Isaiah 47.13-14:**

'You are wearied with your many counsels;  
let them stand forth and save you,  
those who divide the heavens,  
who gaze at the stars,  
who at the new moons predict  
what shall befall you.  
Behold, they are like stubble,  
the fire consumes them;  
they cannot deliver themselves  
from the power of the flame'.

**Jeremiah 10.2-3:**

'Thus saith the Lord,  
"Learn not the way of the nations,  
nor be dismayed at the signs of the heavens  
because the nations are dismayed at them,  
for the customs of the peoples are false".'

## God sends a star to herald the birth of Christ

- The Star of Bethlehem
- Matthew 2.1-2.
- The Revised Standard Version
- 2.1. Now when Jesus was born in Bethlehem of Judea in the days of Herod the king, behold, wise men came from the East to Jerusalem, saying,
- 2.2. Where is he who has been born king of the Jews? For we have seen his star in the East, and have come to worship him'.
- 2.9 ...the star which they had seen in the East went before them, till it came to rest over the place where the child was'



- Matthew 27.51: 'Now from the sixth hour there was darkness all over the land until the ninth hour'.
- Luke 23 44-45: 'It was now about the sixth hour and there was darkness over the whole land until the ninth hour, while the sun's light failed...'
- The key to the dating is that the Passover took place on a Friday - Luke 24.56 tells us that the following day was the Sabbath, i.e., Saturday.



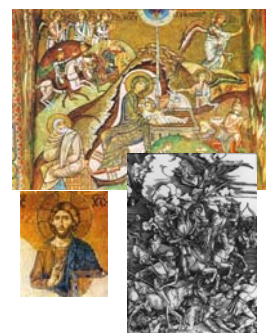
## God uses the stars to warn of the second coming of Christ

- Mark 13.
- 24 But in those days, after that tribulation, the sun will be darkened, and the moon will not give its light,
- 25 and the stars will be falling from heaven, and the powers in the heavens will be shaken.
- 26 And then they will see the Son of man, coming in clouds with great power and glory.
- 27 And then he will send out the angels, and gather his elect from the four winds, from the ends of the earth to the ends of heaven.
- Right: Four Horsemen of the Apocalypse, Durer, 16<sup>th</sup> c



## Christianity and the Sky

- The sun and moon represent an absolute order which must be the basis of the ecclesiastical and liturgical calendar. Key moments for prayer, worship and hence salvation are determined by the sun and moon.
- To avoid this order is therefore to risk eternal damnation.
- The calculation of the correct date for Easter (Easter Sunday, Christ's resurrection, is the first Sunday after the first full moon after the spring equinox) becomes the most important problem in early medieval astronomy.
- Eventually the need to time the daily prayer schedule results in the invention of the mechanical clock.
- God sends messages through the stars but the use of the stars for prediction by humans is forbidden.



## Augustine 354-430

- Perhaps the most important of all Christian theologians.
- Condemned astrology on three grounds: theological: it works because of demonic intervention.
- Theoretical: he drew on classical theories of time which allowed for chance events, suggesting that apparently accurate astrological predictions were based on coincidence.
- Evidential: from classical scepticism he drew on such arguments as the 'twins argument': if astrological theory dictates that babies born at the same time must have similar destinies, why do twins have different lives?



## But: Augustine on Celestial Influence

- 'Now it could be maintained, without utter absurdity, that some influences from the stars have an effect on variations confined to the physical realm. We observe that the variation of the seasons depends on the approach and withdrawal of the sun, and the waxing and waning of the moon produces growth and diminution in certain species, such as sea-urchins and shell-fish, and also the marvellous variation of the tides'.<sup>[1]</sup>

<sup>[1]</sup> Augustine, *City of God*, Book V, 6.



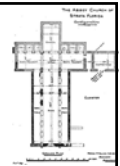
## Therefore when a monk at Strata Florida sees the sun rise



- It doesn't just mean the beginning of day.
- It is a reminder of God's order, grace and law, and Christ's birth, death and sacrifice.
- If this is ignored there is a risk of Hell.

## Land, Sea and Sky Scapes Part 3

The sky at Strata Florida  
2. Scriptural sources



## Physical Influences from classical sources

- Saturn is cold and frozen, Jupiter is warm
- Mars very hot,
- Venus is 'the cause of the birth of all things upon earth' and 'scatters a general dew' at its rising which stimulates the sexual organs.
- The sun is hot
- The moon is moist.
- Pliny, *Natural History*, II.iv.12, vi.32-40, see also xvi,19.
- 



Plato: Time as Universal Order: events in earth correlate with those in the sky

- "Wherefore, as a consequence of this reasoning and design on the part of God, with a view to the generation of Time, the sun and moon and five other stars, which bear the appellation of 'planets' [i.e., 'wanderers'], came into existence for the determining and preserving of the numbers of Time." (Timaeus 38C).



## Plato: causes

- The physical cosmos, i.e., the revolutions of the Same and Other, the planets and stars, are 'auxiliary' (or 'secondary') causes which 'God employs as his ministers in perfecting, so far as possible, the Form of the Most Good'.



## The cosmos is an interdependent whole

- The Stoic philosophers Chrysippus, *On Providence*, and Posidonius:
- The cosmos 'is a living being, rational, animate and intelligent'
- It is alive in the sense of an animate substance endowed with sensation.
- DL VII.142
- DL VII.142

## The 'Twelfth Century Renaissance' Aristotle: causes and influences

- *Metaphysics* 995b-996a and *Physics* 194b-195a.
- **Four causes:**
- Material; Formal; Efficient; Final.
- **Influence**
- celestial motion; celestial light (*lumen*);
- *Influentia*.
- **The soul**
- Is largely coincident with the body rather than separate to it.
- (Aristotle, *On the Soul*, trans. W.S.Hett, Cambridge Mass., London: Harvard University Press, 1936, II.1 (412a).

- **Problem:**
- Natural causes replace God
- The soul is subject to physical pressures – i.e., temptation.



Claudius Ptolemy (2<sup>nd</sup> c CE) applies the causal model.  
Aristotle left, Ptolemy right

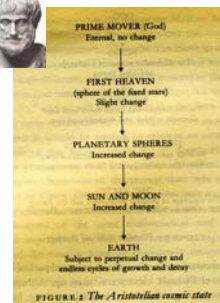


FIGURE 2 The Aristotelian cosmic state

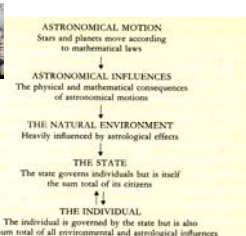


FIGURE 3 Political causation in Claudius Ptolemy's Tetrabiblos

## Claudius Ptolemy on the Soul

- ▶ Ptolemy, 2<sup>nd</sup> c CE, *Tetrabiblos*, defined astrology (actually, astronomy) as the study of the 'effects' of the stars and rationalised it according to natural influences.
- ▶ In the Stoic conception, which was undoubtedly an influence on Ptolemy, animals were compelled to action by a movement in the soul/psyche called the *hormé* – an impulse or drive.
- ▶ There is a kind of celestial mechanics at work here, but one which can only be understood within a theory of extended consciousness, in which the movement of a planet is connected to a disturbance in the individual soul, and with a consequent tendency to action.
- ▶ The planet's psychic or psychological, and physical functions are related to the essential nature of the cosmos, as well as to humanity, in which person and planet, mind and body, are absolutely interrelated.
- ▶ When Mars dominated the soul, Ptolemy argued, the individual would display the planet's qualities, whether negative or positive, either blind aggression or great courage.
- ▶ When Venus was dominant, the soul had the characteristic of that planet, whether pleasant affectionate and charming or 'careless, erotic, effeminate, womanish, timid...depraved and meriting reproach'.
- ▶ See the discussion in Sandbach, F.H., *The Stoics*, Bristol: The Bristol Press 1975, esp. p. 60-1.
- ▶ Ptolemy, *Tetrabiblos*, III.13.
- ▶ **Problem:** the stars can be a source of unavoidable, immoral behaviour. The stars, through their natural influences lead people to sin



## The crisis of the twelfth century

- Augustine had stated that the stars and planets influenced the body. This assumption was universally accepted, as gravity is now.
- The translations of the twelfth-thirteenth centuries, all framed within the context of a single creator, and hence implicitly acceptable in a Christian context, presented a naturalistic challenge to God's authority and individuals' ability to make moral choices and choose salvation.
- The Cistercians, founders of Strata Florida, influenced by Bernard of Clairvaux, were resistant to the intellectual revolution of the 12<sup>th</sup> c.
- But it provided the wider context to the Abbey's life until dissolution.

## The Solution. Thomas Aquinas 1224/7-1274

- Dominican
- *Summa Contra Gentiles* (= *Against the Errors of the Infidels*): A response to the translations of Arabic astrological texts, written in an Aristotelian and Ptolemaic context, which presented astrology in a naturalistic framework and suggested that the soul was subject to natural influence.



## The Problem

- SGC.III.85.14.
- Quotes Augustine City of God V.6: 'it is not utterly absurd to say that certain influences of the stars are able to produce differences in body only'.



## Aquinas agrees that astrology can analyse character

- 'So, the celestial bodies work indirectly on the good condition of understanding. Thus, just as physicians may judge the goodness of an intellect from the condition of its body, as from a proximate disposition, so also may an astronomer judge from the celestial motions as the remote cause of such dispositions. In this way, then, it is possible that there is some truth in what Ptolemy says in his Centiloquium: 'When, at the time of a man's birth, Mercury is in conjunction with Saturn and is itself in a strong condition, it gives inwardly to things the goodness of understanding'.
- III.84.14
- Centiloquium 38.



- The stars influence the body
- But not the soul (= Aristotle's Active Intellect)
- However, the body influences the soul.
- Therefore the stars influence the soul indirectly.
- Therefore prayer and virtue are necessary to resist temptation aroused by astrological influences.



## Therefore when a monk at Strata Florida sees the sun rise



- It doesn't just mean the beginning of day.
- It is a reminder of God's order, grace and law, and Christ's birth, death and sacrifice.
- If this is ignored there is a risk of Hell.
- When he sees the planets he sees the threat of temptation.
- When he experiences temptation he knows the planets may be responsible.
- The sky is therefore a moral arena.

## Field Trip and Assessment

### Assessments 2014-15

#### Coursework 100%

Assignment 1: 2000 words (50% of the module marks). Deadline: 5pm 10th March

Assignment 2: 2000 words (50% of the module marks). Deadline: 3pm 1st May

#### Essay 1. Answer the following question (2000 words, 50% of the module):

Describe, using examples, the main techniques and methods that archaeologists use when studying landscapes, seascapes and skiescapes.

#### Essay 2. Choose one of the following (2000 words, 50% of the module):

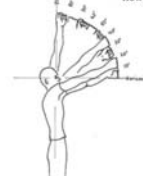
- Using the observations and data from the landscapes fieldtrip, construct a narrative on the historic upland landscape of your study area.
- Using the observations and data from the seascapes fieldtrip, construct a narrative on the maritime cultural landscape of the locale visited.
- Using the observations and data from the skiescapes fieldtrip describe how cosmology can explain archaeological landscapes.

## Guidelines

- 'This essay is to give you the opportunity to choose to write about either the archaeology of the sea, the sky (cosmology) or landscape. Some of these themes overlap obviously but try to focus on a main direction. You should pick an area that you were particularly engaged with and that you collected information and or reading for.'
- You will be expected to read and cite a wide range of sources and authors to support your answer. You will use examples or case studies to illustrate your answer. You may also use relevant and well-cited graphics and illustrations. I want to see lucid, intelligent and well-researched answers that demonstrate an understanding of the issues of landscape archaeology'.

## Astronomical measurement can be very simple

### How high is the moon?



You can calibrate your 'hand' by measuring how many fists do you need to take you from a line horizontal to your eyes to the zenith (i.e. looking straight up).

The distance between the two (in degrees) is 90°  
e.g. I need 4 and a half fists. My closed fist is then equal to 90 / 4.5 = 20.0 degrees.



## Introduction to Fieldwork in Archaeoastronomy

## 1. Preparation

## 2. Survey

## 3. Post-fieldwork processing

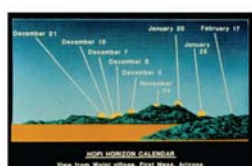
## Introduction to Fieldwork in Archaeoastronomy

## 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)

## Equipment

GPS measures location, compass measures direction, clinometer measures horizon altitude. We have three of each, kept by Rod Bale in the Lab. Look after them!



Learn the movements of the Sun, Moon and Stars

How to use a compass to tell where a celestial object will rise or set on a given date



## Suggestions for your assignment

- Measure the orientation of a church to the rising or setting sun, taking the horizon into account.
- The older the church, the better.
- Work out the date: is there any significance? Perhaps to a saint's day?
- You can conduct skylines research as part of a landscapes project. For example, is there a church in the region you are studying?
- Are there any Neolithic or Bronze Age sites nearby? These are more difficult to measure as there may not be a clear axis.
- Reflect on your findings using the reading allocated for skylines in the module.

## Astronomical measurement can be very simple



How high is the moon?

You can calibrate your 'hand' by measuring how many fists do you need to take you from a line horizontal to your eyes to the zenith (i.e. looking straight up).  
The distance between the two (in degrees) is 90°  
e.g. I need 8 and a half fists. My closed fist is then equal to  $90 / 8.5 = 10.5$  degrees.

