CAS Newsletter - Septmeber 2005

Old News

Canberra Archaeological Society Newsletter
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2005 Public Lecture Series

Wednesday the 21st of Septmber 2005

7.30pm Manning Clark Theatre 6 ANU

The Ebb and Flow of Tradition in an Island World

Shell Beads In Island Southeast Asia

Katherine Szabó

Department of Archaeology and Natural History, ANU

Although never at the forefront of major archaeological hypotheses and orthodoxies centred on Island Southeast Asian prehistory, shell beads have frequently been accorded the status of cultural and/or chronological markers. Despite the implications attached to their presence or absence in archaeological sites, they have rarely been the focus of a comparative study extending over both time and space. In this talk, I will discuss the many and distinct forms of shell beads recovered from archaeological sites in Island Southeast Asia and their relationships both to each other, and to other classes of material culture.

All welcome, entry is by gold coin donation at the door.
Please join us afterwards for light supper and a chat – find out how 'down to earth' archaeologists really are.

Big Questions, Little Heads.

Debbie Argue

TD6-69 – it simply took my breath away! This little fossil Homo – 800,000 years old - once a youngster of six years old… so human-like. Could it really be an ancestor of both the Neanderthals and us?

This is just one of the fossils I traveled overseas to study for my PhD, which focuses on the period when Homo radiated from Africa, from about 1.8 million years ago. This is a period not well understood because, until recently, only the fossils from Ceprano, Italy, Ternifine in Algeria and several from East Africa were known from Africa and Europe. Within the last 8 years, more specimens from this era have been reported: from Gran Dolina and Atapuerca, Spain (780,000 years old), from Buia, Eritrea (one million years old), four crania from Dmanisi, Georgia (1.7mya) and a fossil cranium from Daka, Ethiopia (800,000 years old).

Two models have been developed to explain the variation observed between specimens from this (and later) periods. One model contends that they all represent one species, Homo erectus , from which H. sapiens evolved. The alternative view is that the variability in the fossil specimens is too great to represent merely one species and there might be two or more species represented eg Homo erectus, Homo ergaster, Homo cepranensis, Homo antecessor, Homo georgicus. It is important to sort this issue out so that we can understand the processes that ultimately led to the origin of H. sapiens.
Some of you might be familiar with the names, or place names, of the fossils: Gran Dolina, Atapuerca, Ceprano, Koobi Fora, Trinil, Sterkfontein, Kabwe, Bodo, Sangiran. So yes, I blush to admit my PhD took me to museums and universities in London, Paris, Frankfurt, Rome, Zurich, Madrid, Leiden, then off to Addis Ababa, Nairobi and Pretoria.

But how am I going to find out what the variation means, you ask. Well, I took 160 observations about specific aspects of each cranium based upon a list of traits useful to identify H. erectus and other known species; many measurements; and screeds of only-just-intelligible notes about each fossil. To solve the problem, I will soon be immersed in statistical and cladistic analyses – something new for me – and something Indiana Jones could only dream of.

An Introduction to... Tree Rings

By understanding how tree rings form and what processes can alter them it is possible to reconstruct the past environments that shaped them. The yearly rings from trees can accurately date past events, but more so than this they can tell us what climatic variables have been at work. In some instances they can show when individual events have happened such as flooding or fire. Human-environment interactions can be highlighted in some cases, but the interpretation is not always clear cut.

During winter, when conditions are at their worst for tree growth, deciduous plants stop growing. When conditions improve during spring, they start to grow again. This growth pattern leaves a distinctive mark of light and dark areas on tree trunks in the form of rings. Each ring represents a years worth of growing. Light areas consist of large, thin-walled cells that represent healthy growing – these form early in the growing season (i.e. Spring and Summer) so this region of light coloured wood is called earlywood. Towards the end of the growing season (i.e. as Autumn starts) the conditions are not as good and the plant growth slows down. This results in an area of darker wood made from smaller, thicker-walled cells – this area is known as latewood. After the latewood forms the tree stops growing until the following season when new earlywood starts where the last years latewood stopped. This process is what creates tree-rings.

Tree-ring studies can be used to form chronologies that can cover several thousand years. Tree-rings are collected from living and fossilised trees, as well as archaeological timber, by extracting core samples or cutting a cross-section of the wood. This is done for several trees within a site and for several sites across a region. The theory is simple: find a series of tree-rings where the different thickness lines can match up to each other in overlap (see Fig. 1), but the reality is slightly more complicated. Different trees grow at slightly different rates and their ring thicknesses vary individually due to size, age, individual growing conditions, and so on. What the researcher has to do is standardise the different tree-rings so that widths become proportionate to each other, then they can be matched up together. If any of these tree rings can be dated to an exact point,

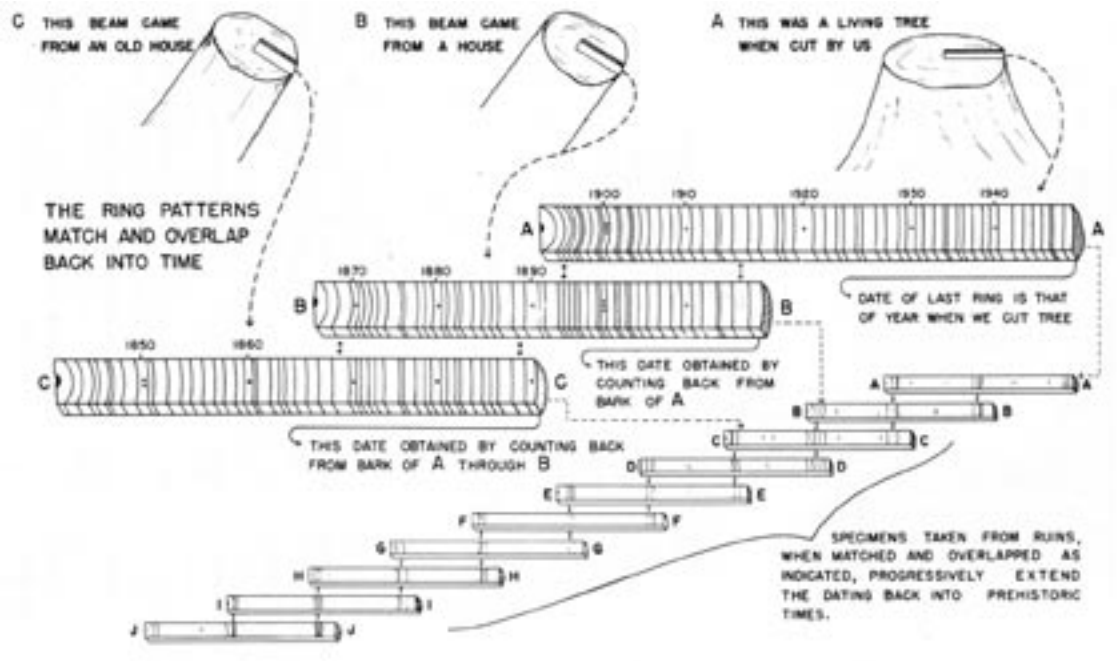


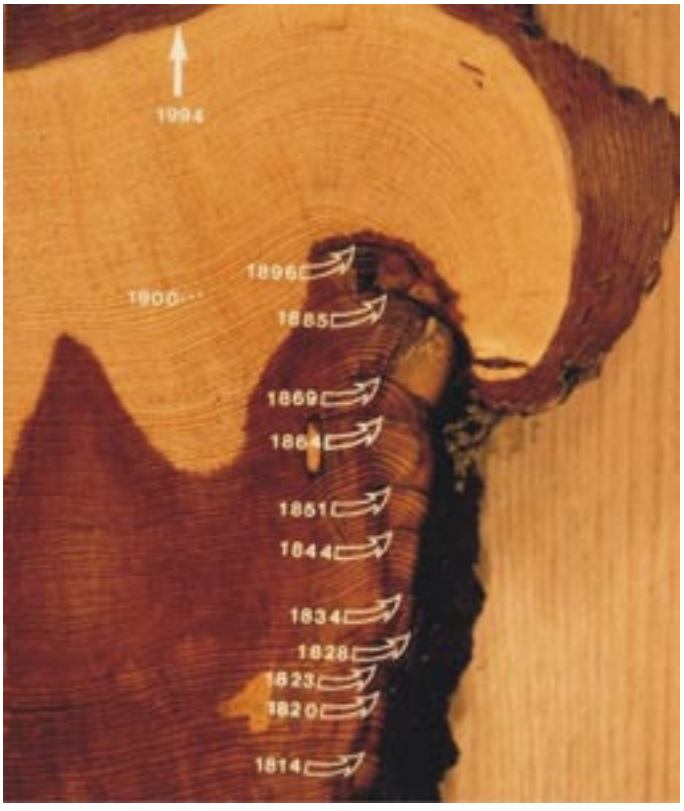
FIG. 1.1. A diagram illustrating crossdating and the extension of a dated ring-width chronology backward in time. (After Stallings, 1949)

usually by overlapping with current tree rings, then the researcher can count back one year per ring to find out when events happened. If the ring chronology can not be anchored to a certain point in time it becomes a 'floating' chronology where there is a known sequence, but no certain dates.

These cores were extracted from white oak trees (Quercus alba) growing in Iowa (photo © T.J. Blasing). They clearly show the effects on tree growth by two major drought events, one in 1894 and the other in 1934.

The widths of tree-rings indicate how good, or bad, past growing conditions were. As mentioned earlier, the widths of tree-rings vary over time. If climatic conditions are favourable, then the tree will grow to its full potential, with large bands of growth. However, if conditions are unfavourable then the tree will not grow as much and the tree-rings will be thinner, or missing altogether. This very basic notion of past climate – if conditions were favourable or unfavourable for tree growth – is the surest level of detail that can be hoped for. There are several other methods that will produce finer detail, but none are as robust. Nevertheless, tree-ring studies always strive for a greater precision of information that can tell us what climatic variables are involved and from what time of year.

Harold C Fritts' analysis of tree-ring studies showed just how complex this relationship really is. The thickness of a tree-ring depends on the length of the growing season, the rate of cell division and enlargement - all of which are limited by the balance of water uptake in roots and evaporation from leaves, light and temperature and moisture affecting photosynthesis, energy balance and respiration process, and growth regulating substances. The whole process is affected by the previous years conditions and what time in the growing season different variables are most prominent. To make it even more complex, how this all links together changes depending on the area and species of tree. So, each species in each area must be looked at to see how it is affected by climate. The only way to do this is to compare as much of the ring chronology with modern climate records as possible to see which climatic variables dominate ring growth.



An amazing set of fire scars shown in a section taken from a sugar pine (Pinus lambertiana) growing in California (photo © A.C. Caprio)

With the appropriate conditions and timing, it is possible for tree-rings to show specific events such as hail, fires, or flooding. If these frequently reoccur they can show changing weather patterns, drought or fire regimes, or even human impact upon the landscape. Roman Hohl and team have been able to recognise hail damage to trees (usually localised on the windward side of the trunk and higher up) and by closer examination of early- and late-wood were even able to date, with 95% accuracy, occurrences to within a month. The effects of flooding can be seen in the mean vessel area in

earlywood. Conductive vessels in earlywood are usually larger than latewood vessels and occur in multiple rows, but when inundated with water early in the growing season (i.e. before the vessel have fully formed) they become more similar to latewood.

Tree-ring studies can make a significant advancement in our understanding of human-environment interactions. Fire scars could be used to tell if fire regimes are natural or anthropogenic. If fires are occurring naturally then you would expect ring widths to decrease as rates of fires increase as they are caused by poor climatic conditions (low precipitation and high temperature). Whereas anthropogenic fires would increase ring width by eliminating competition among plant species (as long as there are no environmental changes to limit growth), possibly with later ring reductions as erosion becomes a problem. The main sign of anthropogenic fires, however, would be recurrent fire scars from low intensity fires (i.e. that don't cause as much damage), while natural fires tend to be larger and more intense and would result in many trees dying as a result.

Harold C Fritts along with Jeffrey Dean have used tree-ring climate data to rule out a human induced climate change in the Chaco Canyon area, south-western United States. They found that a severe and protracted drought between AD1130-1160 would have disrupted the social organisation of the area to such a degree that it could easily have collapsed. An interesting case of human-environment interaction was near Lake Vatten in Ostegotland, Sweden. Several species of trees spread out into a new area at the same time, then around 70 years later humans came into the area and began successively clearing the forest. Selective felling was ruled out as the trees did not respond with wider rings as would be expected if competition was cleared out. The environmental change towards more favourable conditions in the area allowed trees to expand into it, but also attracted human settlers who then cleared them out again.

A final word of caution from J Hillam: tree-ring studies can tell us what formed tree-rings and possibly when a tree died, anything more than this and confidence in our analysis becomes weaker and based more on theory. One must be careful that our inferences are causally linked to the tree-rings under study and not just spurious relations based on conjecture or theory.

Henri D. Grissino-Mayer had the opportunity to investigate the tree rings on the "Messiah" violin and took this mosaic (photo © H.D. Grissino-Mayer). The wood used by Antonio Stradivari and all Cremonese violin makers for the violin top was Norway spruce (Picea abies).

Most of the images used in this article have been shamelesly ripped from the Ultimate Tree-Ring Pages! by Henri D. Grissino-Mayer

http://web.utk.edu/~grissino/default.html

Further Reading

Douglass. A. E. (1971) Climatic Cycles and Tree-growth. Lehre, J. Cramer.

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Hillam, J. (1979) Tree-rings and archaeology: some problems explained. Jounral of Archaeological Science 6:271-278.

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CANBERRA ARCHAEOLOGICAL SOCIETY 2005-6 MEMBERSHIP APPLICATION FORM

The Canberra Archaeological Society was formed in 1963 to cater for the needs of all people interested in archaeology. The Society holds monthly meetings on the third Wednesday of each month (Feb to Nov). Meetings are held in Lecture Theatre 6 of the Manning Clark Theatres at 7.30pm.

NAME(S):_____

ADDRESS:_____

PHONE:_____

EMAIL:_____

MEMBERSHIP TYPE

Family $40 Single $30 Concession $20

Please return membership form with payment to:

The Treasurer, Canberra Archaeological Society
LPO Box A86
Australian National University
Canberra ACT 2601

Cheques should be made payable to: CANBERRA ARCHAEOLOGICAL SOCIETY INC.

The monthly newsletter, Old News, is sent out by email by default. Please indicate if you would rather have it mailed, or you can access it via our webpage: www.cas.asn.au

NEW MEMBERS

New members can join up for next year and get the rest of this year thrown into the bargain!

This offer is only open to new members, so tell your friends.

2005 Lecture Series

7.30pm in Manning Clark Theatre 6 (unless specified)

Date	Speaker	Title
16 March	Mal Booth	Fire Support Patrol Base Coral: Using Material Culture to Reveal What Happened One Night in May, 1968.
20 April	Mike Austin	Environmental catastrophes: new lessons from history?
18May	Dr Josephine Flood	The Aboriginal Story in the ACT from deep past to moth hunting
15 June	Kim Owens	Farmers, Fishers and Whalemen: The settlement landscape of Lord Howe Island
20 July	Peter White	Axes and Are: stone tools of the Duna and their implications
17 August	Richard Hekimian	Edlington's Cottage: The CAS dig at the Duntroon Dairy
21 September	**Kath Szabo**	**The Ebb and flow of tradition in an island world: Shell beads in island Southeast Asia**
19 October	Mike Morwood	Little Women: discovery of a new human species in Indonesia and the consequences.
16 November	Peter Dowling	Archaeology and the ANZACs

2005 CAS COMMITTEE CONTACT DETAILS		
President	Sylvia Schaffarczyk	sylvia.schaffarczyk@anu.edu.au C/- School of Archaeology and Anthropology, ANU ACT 0200
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Members	Graham Connah	Bob Legge
CAS E-mail	contact@cas.asn.au	
CAS Web page	www.cas.asn.au	

committee members 2006

Want to become more active in what goes on in the society?

Got some good ideas about what we should be doing?

Want to get more contacts or work on your networking within the field?

If you are a student, just remember that this is exactly what future employers are looking for...and it only takes one day a month!

The President organises events and speakers as well as overseeing the general running of the society.
Vice-President helps out the president (and occasionally fills in for them).
Treasurer is just what you would imagine it to be: you look after the money.
Newspaper Editor is dead simple - just cut and paste things into the template and send it out, easy!
Publicity Officer organises posters as well as announcements on community notice boards.
Secretary takes minutes at meetings and does other amazing things.
Members hang around and look cool (and other assorted duties as they arise).

Nominations to these positions will take place at the last meeting of the year (16th November). Ask any of the current members if you are interested and we will tell you all you need to know...and some things you may not want to know!

Call for contributions

We've had a few articles written by CAS members for Old News...have you got something archaeologically interesting to say? An anecdote? A joke!?...contact the editor at the details below....seriously, this is your newsletter, and it can only be as interesting as you make it!

Ad Space

Got anything archaeological to advertise? If you know of, or are running fieldwork this year and you need volunteers, or you want to volunteer for work, then drop us a line, and we'll advertise it for you in Old News. Websites and archaeological events are also welcome!

Become the official CAS field trip reporter

For those of you who are keen fieldtrippers, we are in need of a field trip reporter for our next field trip. Your duty will be to record the fieldtrips you attend in writing, and photographs, and any other media you see fit which will then be kept in the CAS archives, and published in the newsletter! How does it all work? Well, you need to write to us at contact@cas.asn.au stating in 100 words or less why you'd make a good CAS reporter....a camera will be provided if you do not own one, and basic out-of-pocket expenses eg. developing a roll of film, CD to burn photos onto, basic writing equipment (up to about $10 only....sorry, this is not the NY Times!) will be covered....so get scribbling!

A.C.T. Region Archaeology Day Trip

Dear CAS members,

I am organizing a CAS fieldtrip for Sunday 9 October. This is a one-day fieldtrip and we will be visiting archaeological sites in Namadgi National Park in the ACT. The approximate cost will be $15. We plan to visit Yankee Hat rockshelter (elevation 1067 metres) with rock art and an Aboriginal occupation deposit. We also plan to visit Orroral Valley where we will see the former space tracking station and the historical Orroral homestead, built in the 1800s. The Orroral tracking station is famous for receiving the first message from the Moon landing (as opposed to what you saw in "The Dish"). There are also numerous protected stone artefact scatters in the area.

If you are interested in coming, please let me know by Wednesday 14 September. We will be travelling in one minibus so if the bus fills up, people who book first will be given preference.

Lad Nejman

CAS Fieldtrip Coordinator

lad.nejman@anu.edu.au

COMFORT ~~SURVING~~ IN THE BUSH

TIPS ON ENJOYING FIELDWORK

It is always important to look after yourself when away on fieldwork, especiaclly when it comes to nutrition, but sometimes cans of baked beans just don't cut it. If you have any recipies or just general camping or fieldwork tips, share your expertise and send it in to us at: contact@cas.asn.au

<u>Canned Dace and Preserved Vegies</u>

1 can Dace (a preserved fish with flavourings such as black bean or olive – can be found in any Chinese grocery store)
1 pack Preserved Vegetable (little foil packages found in Asian grocery stores – they are all good, so just get any)
1 Garlic Clove - crushed
Splash of Soy Sauce [optional]
Splash of Shao Xing (Chinese cooking rice wine – another one to be found in Asian stores) [optional]

Use a fork to shred the dace in a large bowl, then add the rest of the ingredient and mix. Let this sit and absorb flavours while you cook the rice then just mix it all together and eat it up with a beer or two.

Apart from the garlic (which most people keep a good supply of), the ingredients are all things that can be stored in the cupboard for years, so they are perfect for taling on fieldtrips and camping.