General Cross-Disciplinary Perspectives

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Why Cross-Disciplinarity?

"A cross-disciplinary whole greater than the sum of its individual discipline parts."

(Pre)History:

"A damn dim candle over a damn dark abyss" (Charles A. Beard)

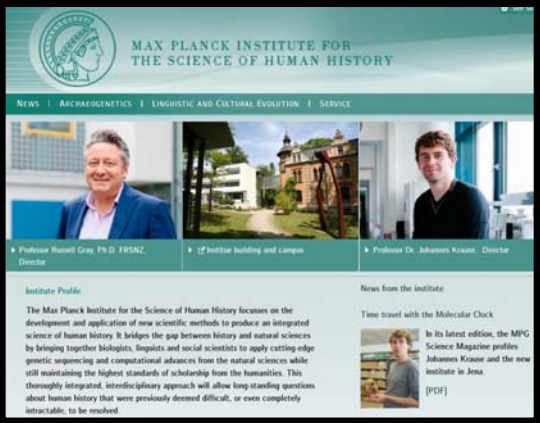
- So get as many candles as we can:

  = 'multi-proxy' evidence from as many data sets and methods as possible.

Why Now? Living a Revolution

- Advances opening up new 'windows on our past':
  - Genomic revolution.
  - Ancient DNA.
  - Isotope 'provenience' analysis.
  - Reconstructing palaeoclimate.
  - etc...

- A new science of human (pre)history?



Haak *et al.* (2015) = [Reich group]

The New York Times

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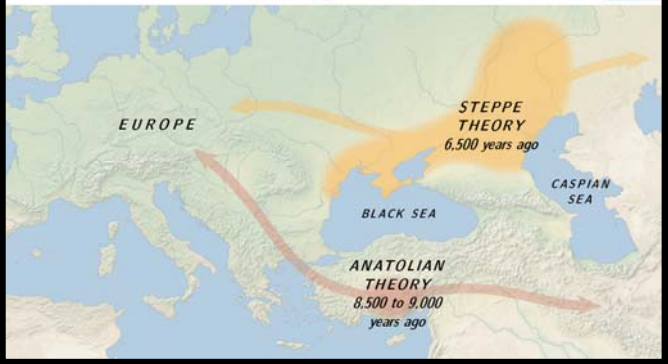


nature International weekly journal of science

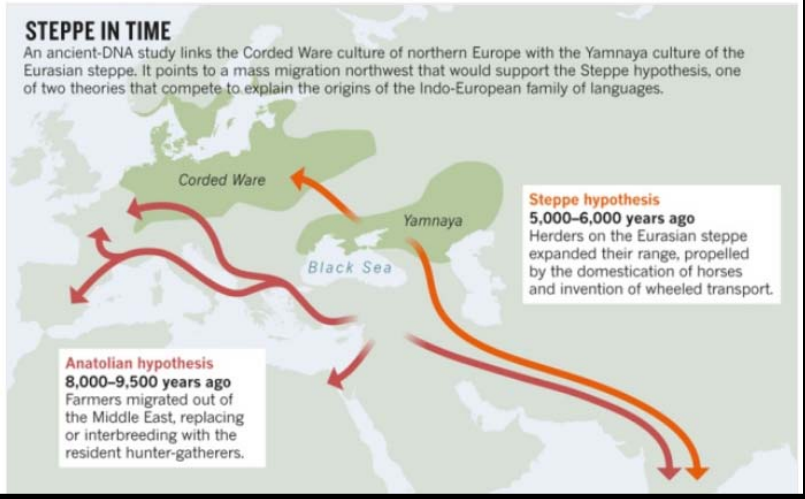
NATURE | NEWS

Steppe migration rekindles debate on language origin

Eurasian region gains ground as birthplace of Indo-European tongues.

Ewen Callaway

18 February 2015



Science

Daily News

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LATEST NEWS

JUG WITH BROAD HANDLE AND INS ICED DECORATION/WERNER FROM AN ARCHIVE/BRIDGEMAN IMAGES

The creators of the Corded Ware culture, named after this intricate pottery, may have spoken an Indo-European language derived from one spoken by herders from the East.

Mysterious Indo-European homeland may have been in the steppes of Ukraine and Russia

nature International weekly journal of science

Massive migration from the steppe was a source for Indo-European languages in Europe

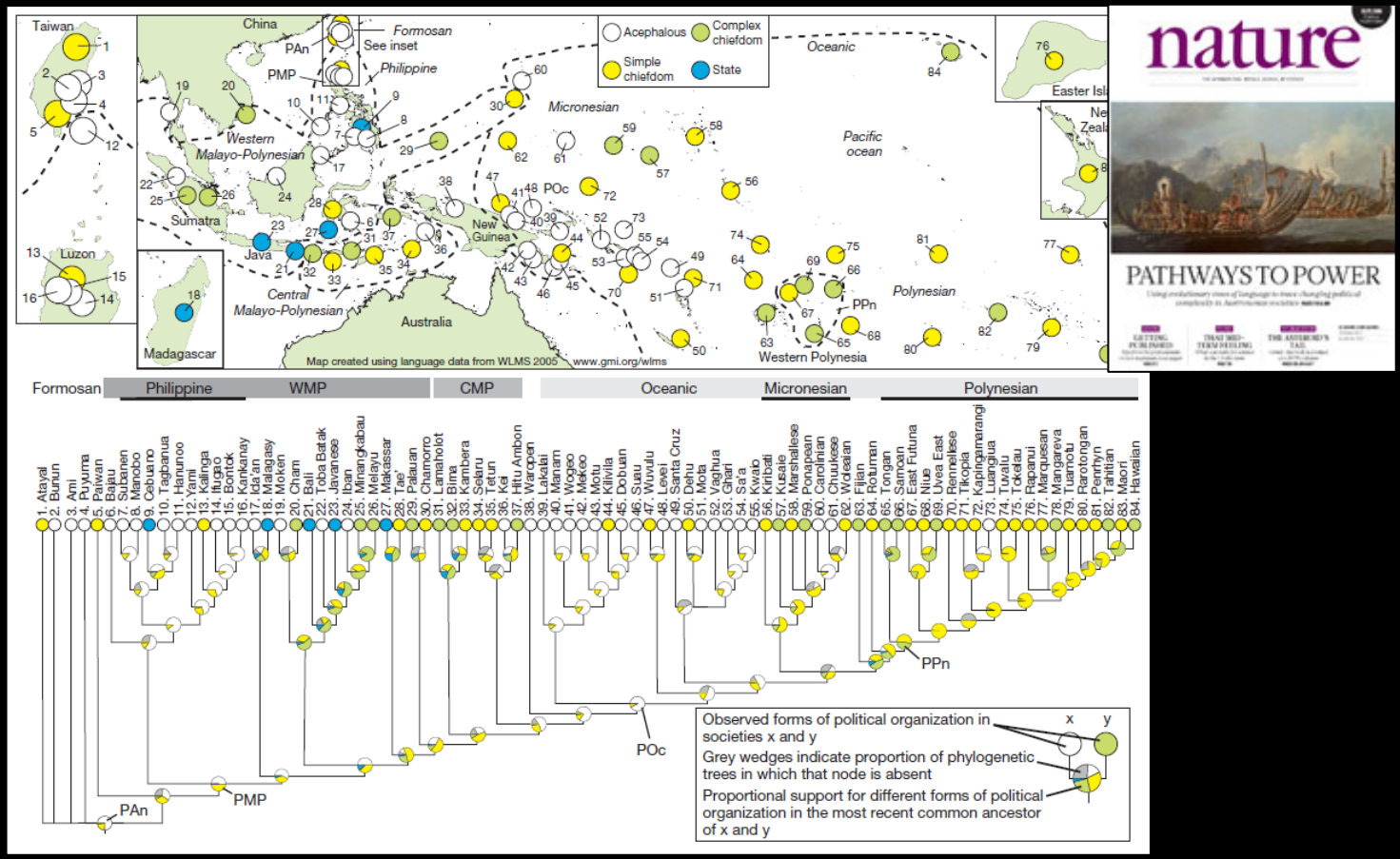
Some? All?

Wolfgang Haak, Iosif Lazaridis, Nick Patterson, Nadin Rohland, Swapan Mallick, Bastien Llamas, Guido Brandt,

Currie *et al.* (2010)

Rise and fall of political complexity in island South-East Asia and the Pacific

Thomas E. Currie[1,2], Simon J. Greenhill[3,4], Russell D. Gray[3], Toshikazu Hasegawa[1] & Ruth Mace[2]



Linguistics as a reference framework for human cultural (pre)history?

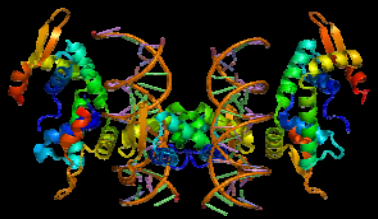
Towards a More Coherent Human (Pre)History

One human past — different, complementary perspectives and strengths.

Material Culture →

Language →

Genes →



Complementary 'Windows on the Past'

But do our different discipline perspectives all tell the same, coherent story?

Archaeology? →

Linguistics? →

Genetics? →

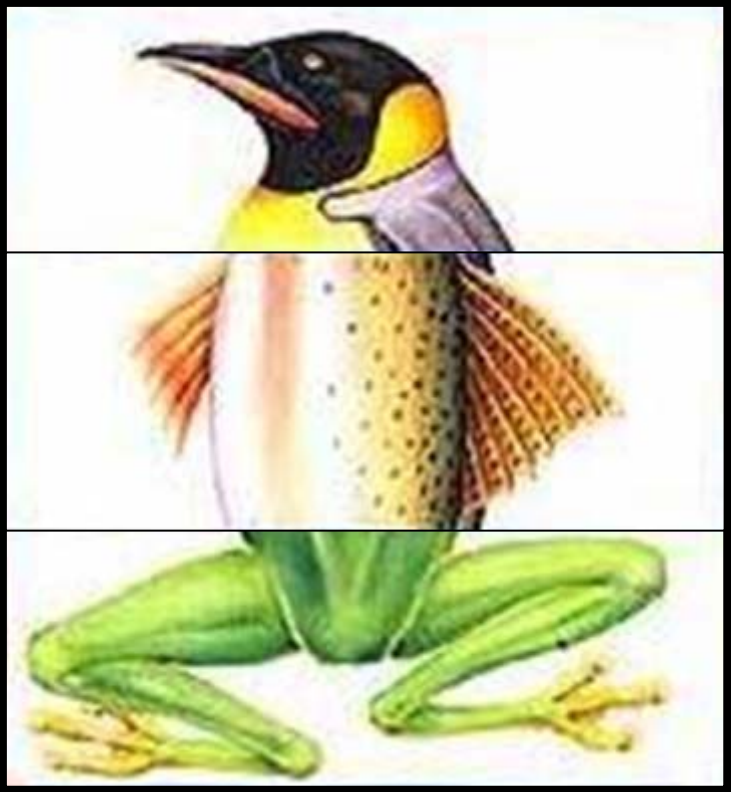
Or "Building on Each Other's Myths"?

(Renfrew 1987: 287)

Archaeology? →

Linguistics? →

Genetics? →



How Not to Go About It:

"Culture" = "Peoples" = "Races" = Language

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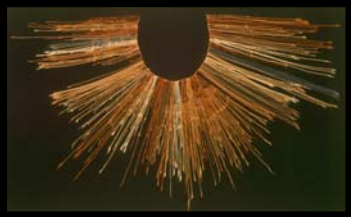
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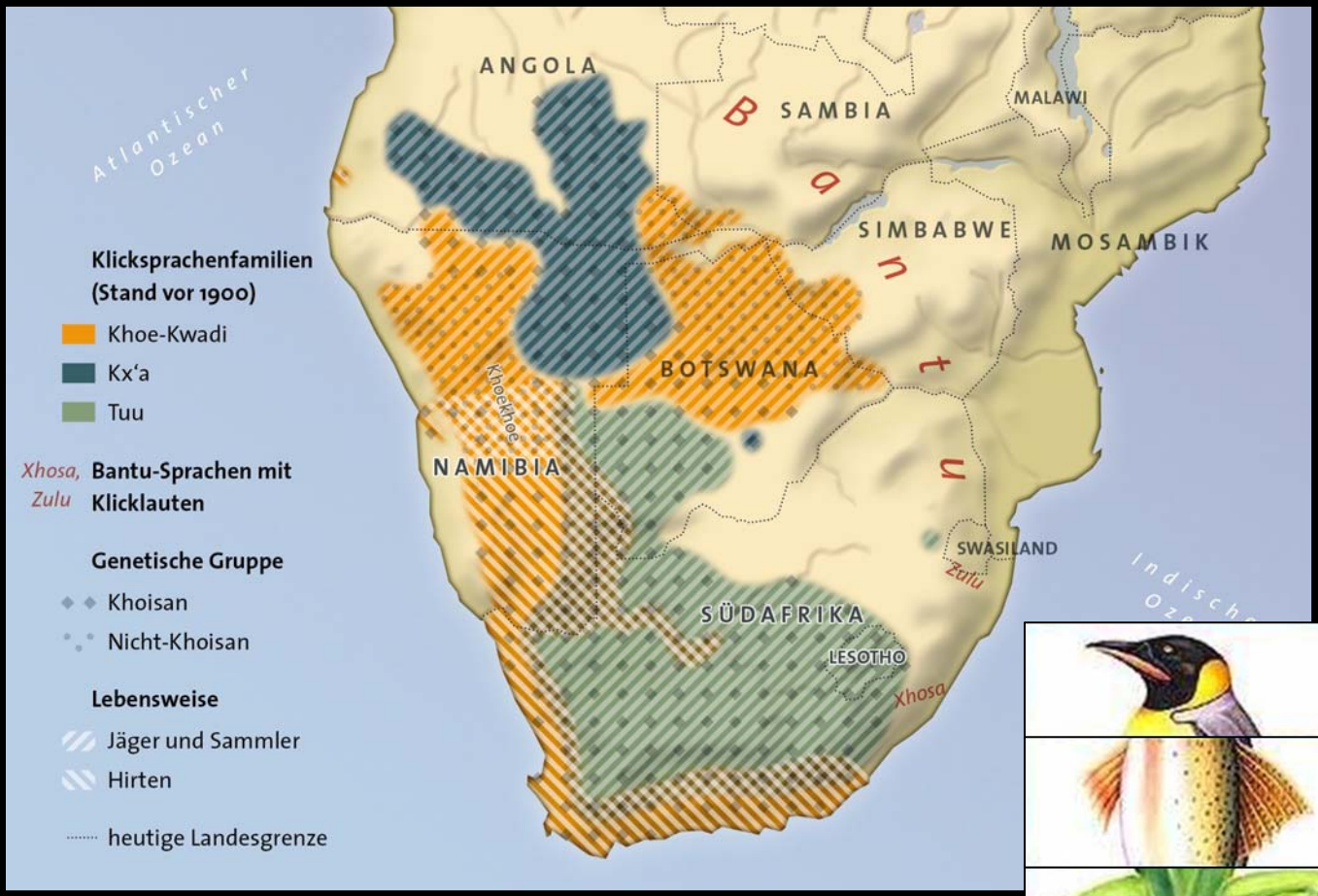
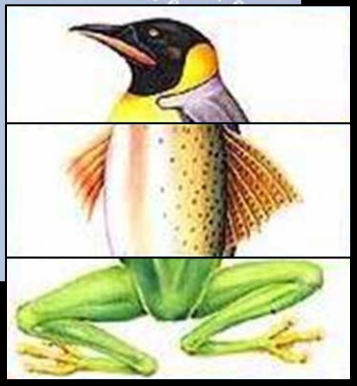
Languages, Genes and Culture: Informative Mismatches





Simplified! Based on Güldemann (2008).

Cross-Disciplinary Circularities:

How Do You Choose/Define Your Populations?

LETTER

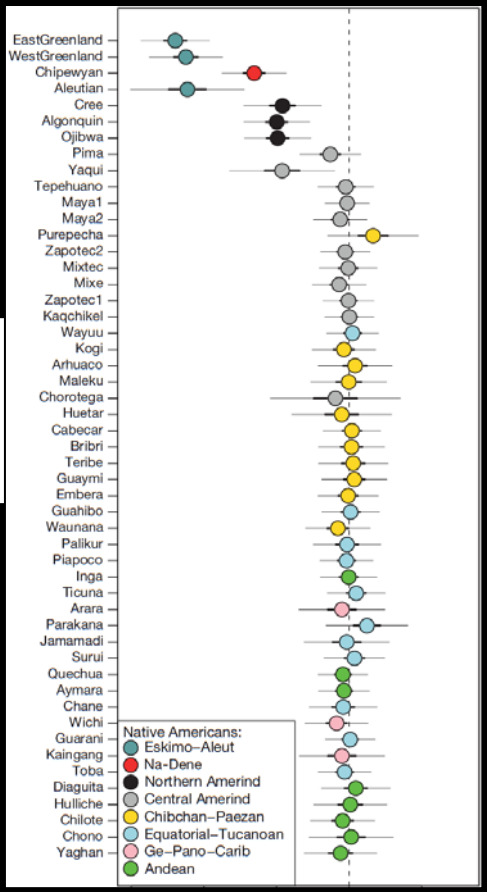
doi:10.1038/nature13025

The genome of a Late Pleistocene human from a Clovis burial site in western Montana

Morten Rasmussen[1]*, Sarah L. Anzick[2]*, Michael R. Waters[3], Pontus Skoglund[4], Michael DeGiorgio[5]†, Thomas W. Stafford Jr[1,6],

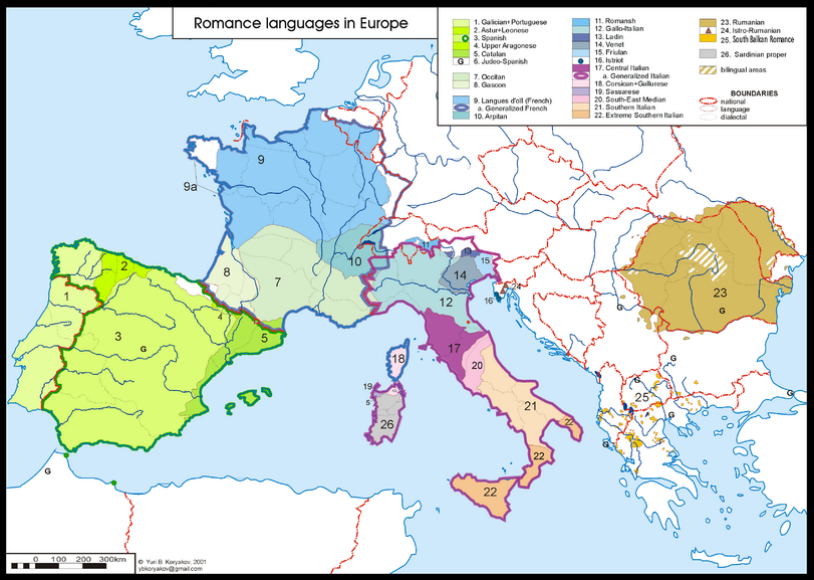
Interestingly, the Anzick-1 individual showed less shared genetic history with seven Northern Native Americans from Canada and the Artic, including three Northern Amerind-speaking groups ('NA' group),

Rasmussen *et al.* (2014)



Example: What Languages Tell Us of the Past

Today



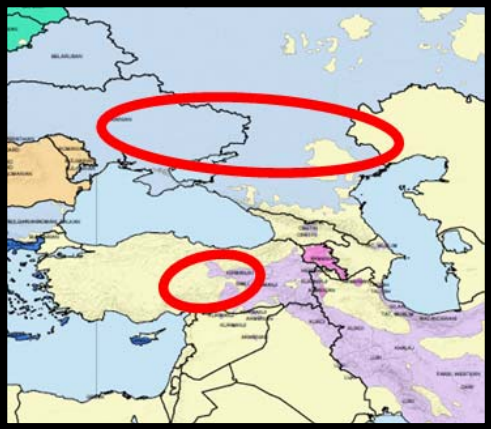
Iron Age

But why me?

- Language families do not happen by chance, for no reason.
- All Roman, not all Romance — but mismatches informative on Roman rule.

Principle: 'Real-World' Cause → Linguistic Effect

- Family = single ancestor language, small 'homeland' → major expansion.

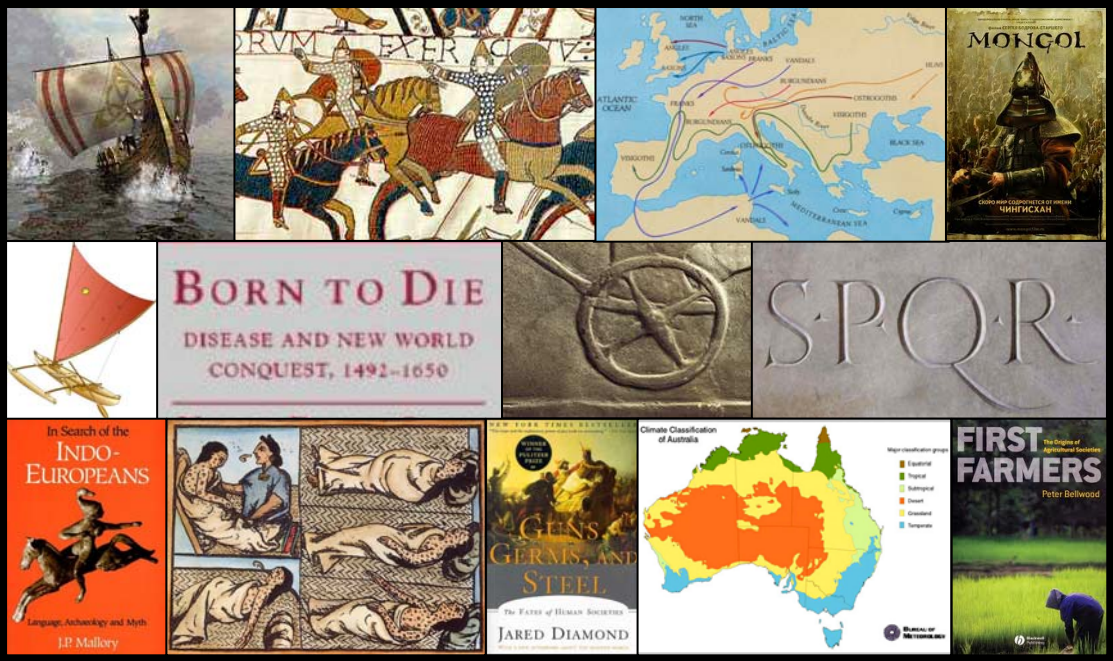


Language families only exist because of powerful expansive processes impacting upon people/cultures.

[= Linguistic evidence of past processes impacting on populations and cultures.]

Processes: 'Forces of History' — But Which?

- Demographic.
- Subsistence.
- Economic.
- Technological.
- Political.
- Socio-cultural.



- Population size, density, growth and expansion.
- Contacts with (or isolation from) other populations.
- Power and/or prestige/utility of a cultural package (and language?).

- Driving forces in modern globalised world not representative of prehistory!

Why Are the Disciplines Linked: Through 'Processes'

The same processes shaped and left patterns in all records of human past:

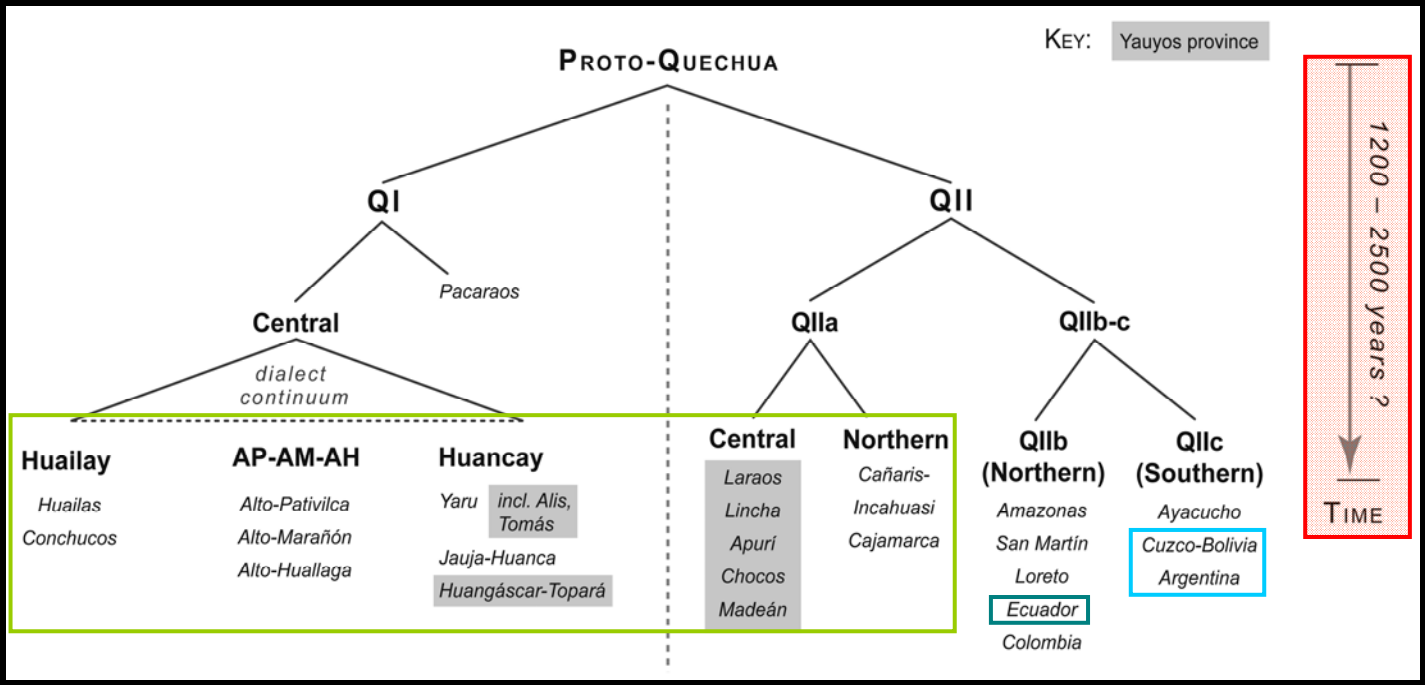
- DNA, modern and ancient.
- Human remains ('bio-archaeology').
- Material culture.
- Languages.

'Processes' impacting on human societies and populations.

The real link between the disciplines!

e.g. Language families = expansive, divergent processes.

Dimensions to Match: Where, When and Why?



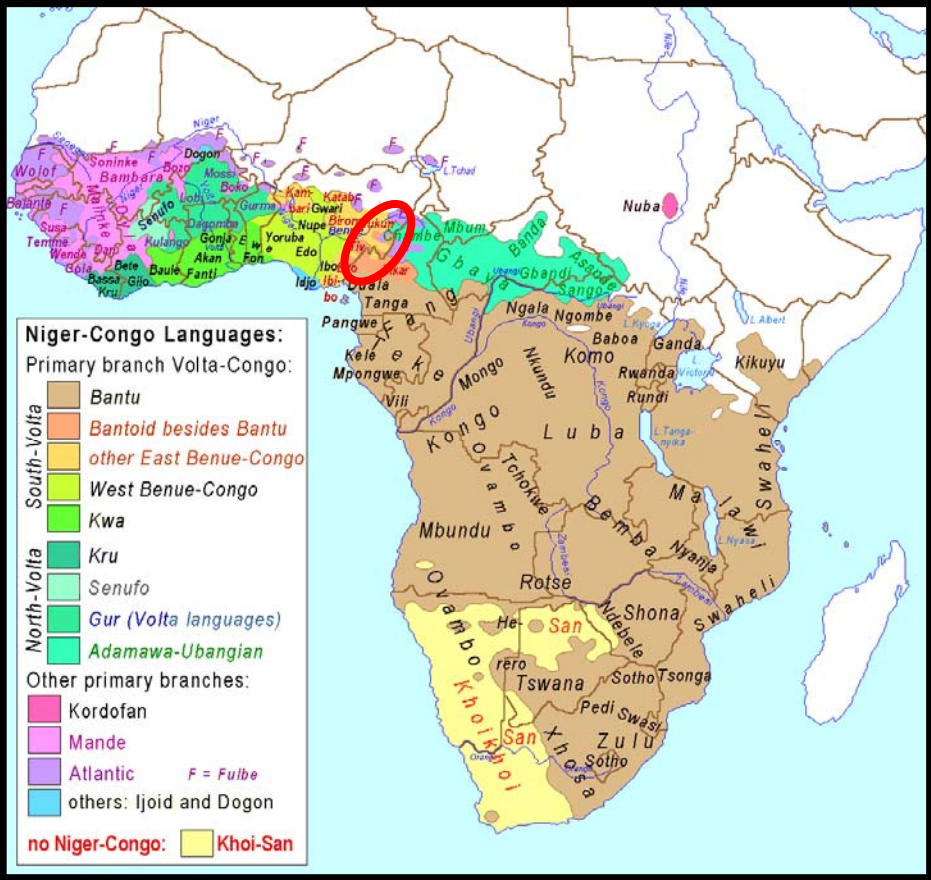
How a language family tree (e.g. Quechua) informs on different levels.

Three Levels: Romance

- Where:
  - Rome/Latium.
- When:
  - from 2nd century BC.
- Why:
  - Roman Empire, with its many impacts.

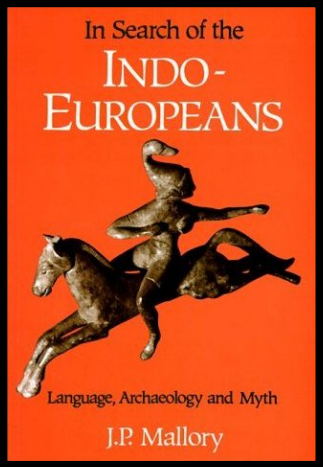
Three Levels: Bantu

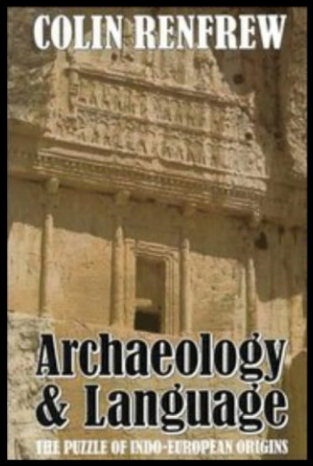
- Where:
  - Nigeria/Cameroon border region.
- When:
  - 2000-1000 BC?
- Why:
  - Farming and iron-working.



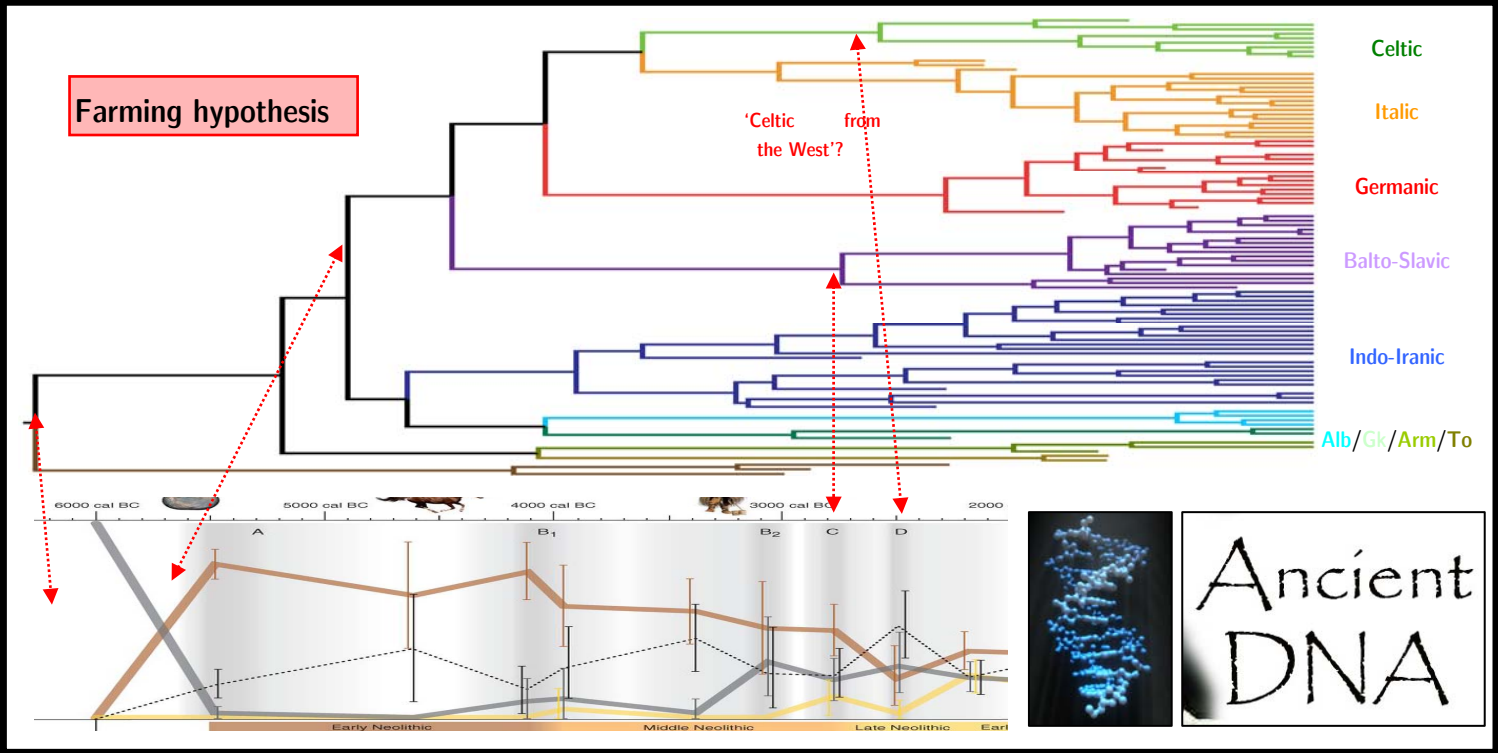
Indo-European: A Sample Enigma

- When?
  - Short chronology: c. 6000 BP.
  - Long chronology: c. 9500 BP.
- Where?
  - Pontic-Caspian Steppe (Ukraine).
  - Central-East Anatolia (Turkey).
- Why?
  - Nomadic pastoralism and technologies: domestication of horse, riding, wheel.
  - Farming, demographic expansion.

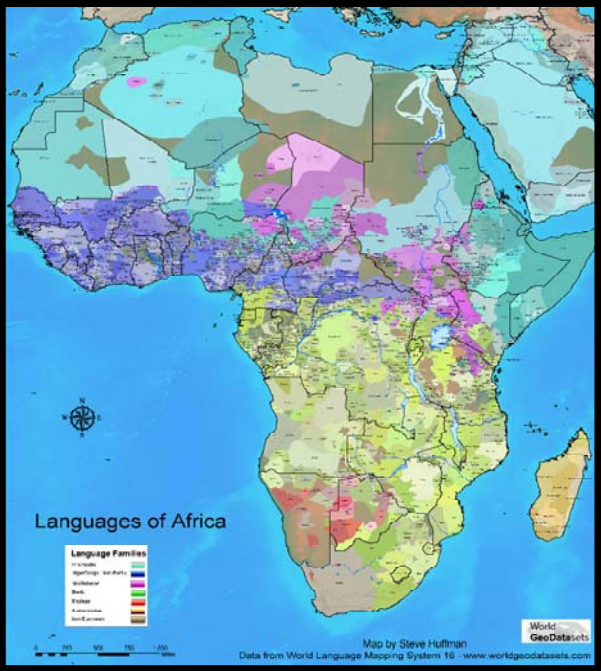


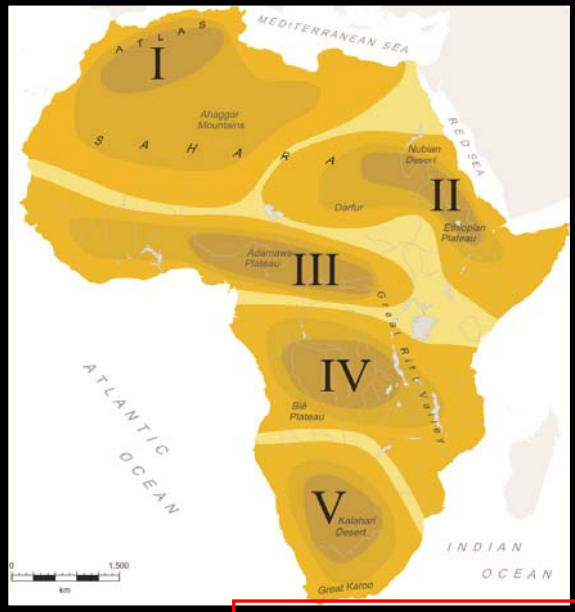


Unlocking the Language of the Genes?



Not Just Families: Other Effects, Other Causes





↑ Güldemann (2010)

Language Families

← expansive, divergent processes

Clear-cut: Member of family, yes or no?

Linguistic Areas

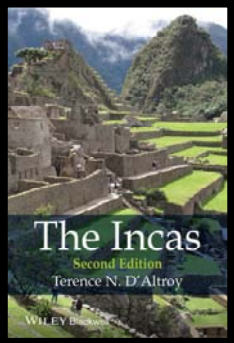
← convergent processes.

Diffuse: core vs. periphery.

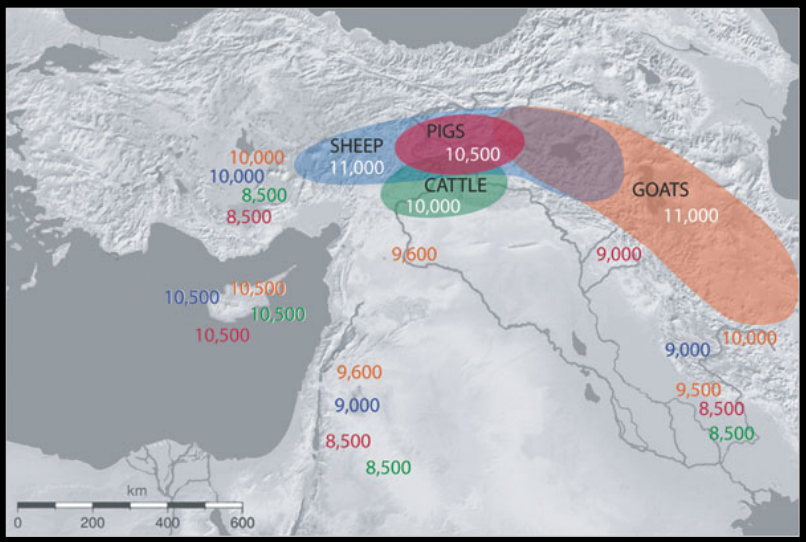
Archaeological Patterns: Core vs. Periphery

… the most widely used approach in anthropology and history divides empires into their core and periphery.

D'Altroy (2014: 9) *The Incas*



Neolithic Animal Domesticates

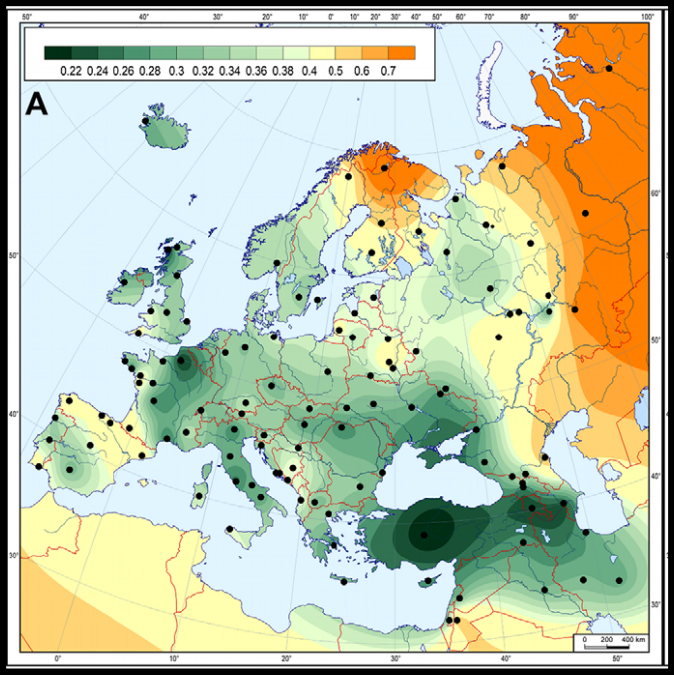


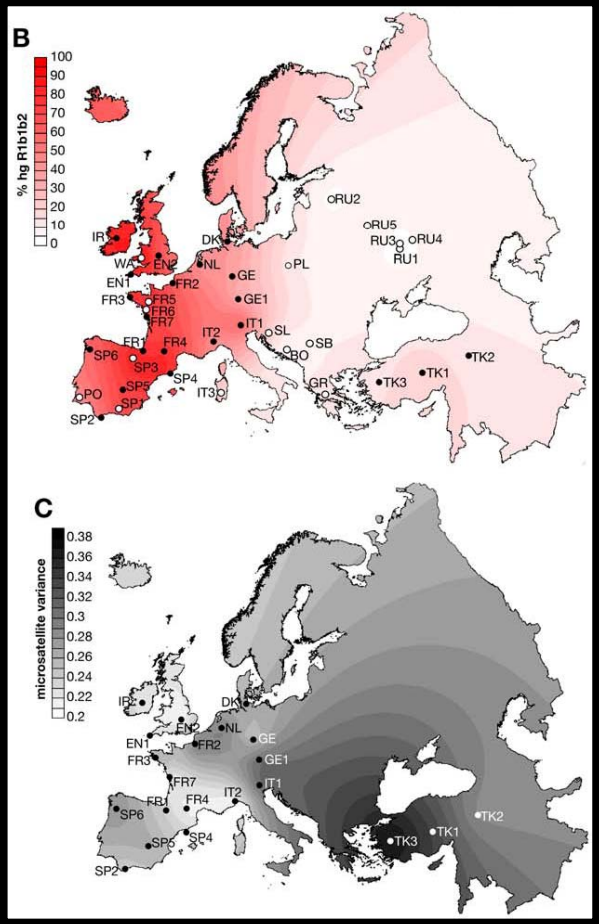
Gothic Architecture!

Genetic Patterns: Clines and Diffusion

Balaresque *et al.* (2010)

[Paternal lineage — modern DNA] →





- ↑ Haak *et al.* (2010) [Maternal lineage — ancient vs. modern DNA]
- Or just mathematical artefacts? Novembre & Stephens (2008).

Perspectives from Elsewhere

- Most lineages spread in from the north:
  - Drawn by farming lands?
  - Pushed by Chinese southward spread?
- Distributions in part by altitude/eco-zone 'niche':

  e.g. Hmong-Mien as 'mountain peoples'.

- Many scattered small families and isolates.
- Four major mid-age families, but distributions very fragmented and intermixed.
- Contexts shaping these patterns?

  e.g. Shifting cultivation, river corridors for migration and trade, flood plains vs. interior...

What's Special About This Meeting?

How to Approach It

- Aim is to advance not thinking *within* any one discipline — that is for conferences in each field.
- Gains here are from opening up each discipline to perspectives of others.

Who Can Help Who?

- What in your discipline should be of most relevance/value to others.
- What are the main findings in your discipline, and main opposing views.
- What your own discipline could most benefit from learning from others?

Target Audience

- Your target audience is in all other disciplines, not your own.
  - Make sense to area specialists in disciplines other than yours.
  - Do not descend into in-house technical disagreement within your discipline.

Terminology

- Avoid with terms that may have unclear or inconsistent meanings:

  e.g. 'horizontal transmission', 'morphology', 'context'.

- Avoid technical terms wherever possible:

  e.g. morphology → word structure phonology → sound structure

  e.g. mtDNA → female line

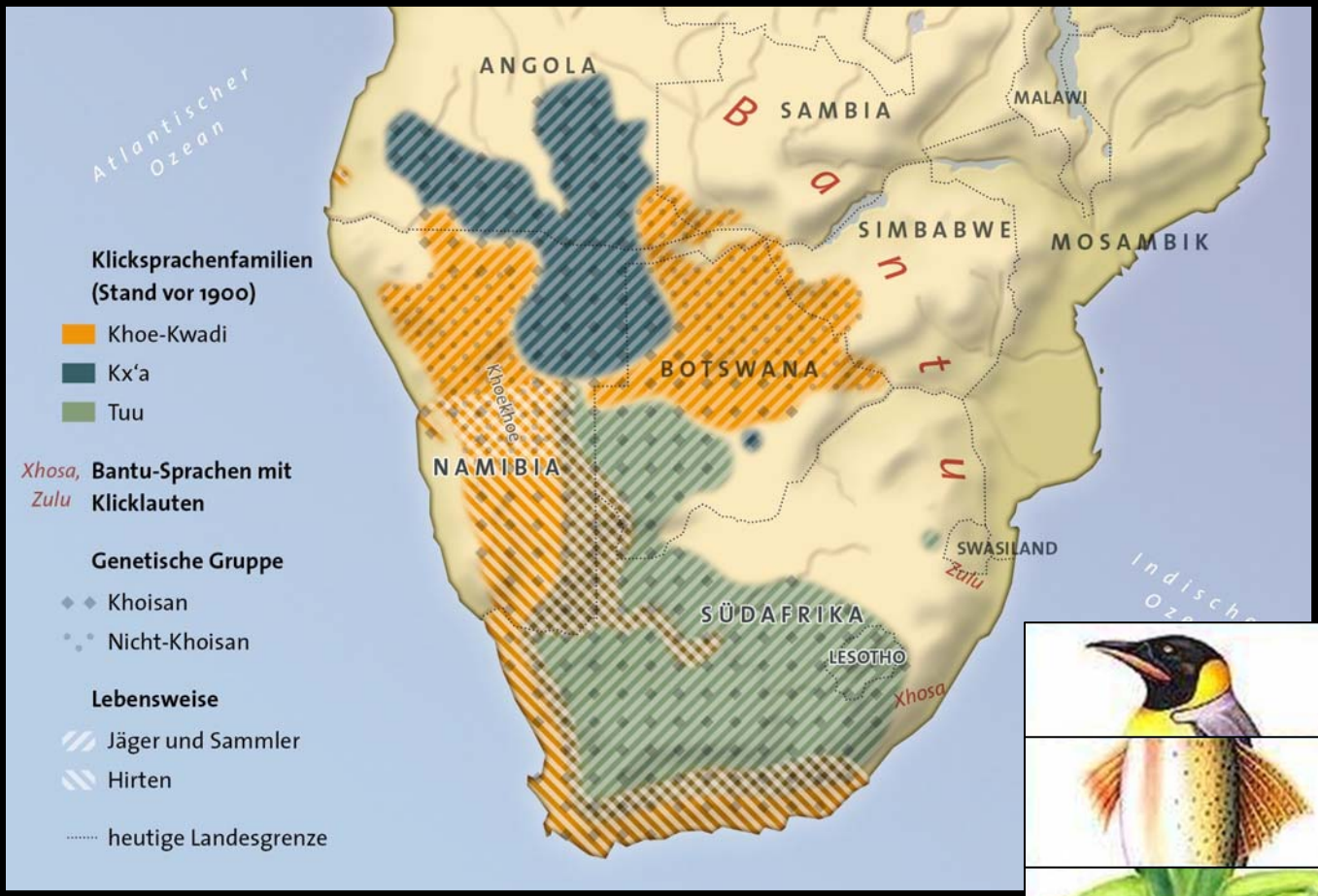
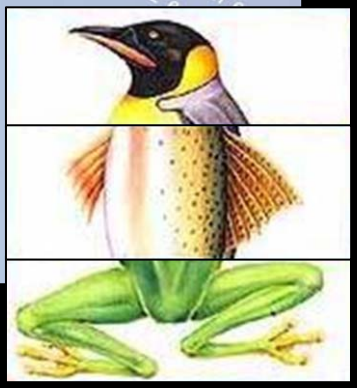
Represent Your Discipline, Not Yourself

- Represent (all) your discipline: balanced view, to help other disciplines not in a position to judge this well.
- Your presentations should not be partisan, your pet theories.

Certainties, Uncertainties, and Honesty

- Help complement each other's strengths and weaknesses.
- What is sound consensus vs. what is disputed hypothesis?
- Come clean on what is clear-cut and reliable in your field — and what is not.

  e.g. Dating, population density/size, relatedness hypotheses.

  e.g. Anthropological studies of modern hunter-gatherers now confined to marginal environments — valid for inferences elsewhere, in prehistory?

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