■ Out of Africa
■ behavioral advantage
■ MHB
■ “package” v. cumulative model
■ predictions of OOA
■ predictions of MR
■ Europe & the Aurignacian
■ blade technology
■ organic technologies

■ ornaments
■ portable art
■ parietal art
■ function v. style
■ Aurignacian chronology
■ non-linear
■ strong predictions of Out of Africa
■ biology & behavior
■ alternative visions?

Out of Africa & MHB
■ the “package” model
■ features that characterize MHB arose simultaneously
■ coincident with origin of anatomically modern humans

■ the “cumulative” model
■ individual features added gradually to behavioral repertoire culminating in MHB
■ event that produced anatomically modern humans also produced cognitive conditions necessary for cumulative behavioral evolution to occur

adaptive implications
■ the “package” model
■ adaptive advantage resides at “level” of the behavioral package
■ remove one feature and the “package” fails

■ the “cumulative” model
■ adaptive advantage lies at the level of the individual behavior
■ adaptation increases with each additional feature added to repertoire

■ Out of Africa: behavioral predictions
■ chronology…
■ MHB earliest in Africa & then spreads to other areas of the Old World

■ stratigraphic sequences…
■ in Africa continuous transition from archaic to modern behavior
■ archaic traits transformed into modern behavioral traits
■ outside Africa abrupt replacement of archaic behavior with modern behavior
■ no transition between archaic and modern behavior allowed
Out of Africa: predictions
behavior and biology…
appearance of MHB tightly linked to the appearance of AMH
MHB is the primary pre-mating isolation mechanism

ecology and evolution…
MHB gives higher RS
energy capture greater and/or mortality reduction greater

support for a “cumulative” Out-of-Africa model

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>Age</th>
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<tbody>
<tr>
<td>Blade tech</td>
<td>Kapthurin</td>
<td>250 ka</td>
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<tr>
<td>Organic tech</td>
<td>Katanda</td>
<td>90 ka</td>
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<td>Small-game</td>
<td>Klasies</td>
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<td>Ochre use</td>
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<tr>
<td>Art</td>
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Multiregional: predictions
chronology…
different elements of MHB appear earliest in different regions
no constraint on date of earliest appearance
should be expected to be regionally variable in timing of appearance

stratigraphic sequences…
continuous transitions from elements of archaic to elements of modern behavior found in different regions
individual archaic traits transformed into modern behavioral traits

Multiregional: predictions
behavior and biology…
appearance of modern behavior NOT linked to appearance of a geographic population of AMH
MHB is not a pre-mating isolation mechanism
MHB appears in “bits and pieces”
MHB appears as a geographic and temporal mosaic
traits may spread individually or as clusters, but there is no single “package” of traits definitive of modern behavior

ecology and evolution…
modern behavioral “package” != higher RS
individual “modern” traits combine with “archaic” traits yielding same energy capture & survival rates
Upper Paleolithic Revolution in Europe

- Upper Paleolithic in Europe
  - Aurignacian Stone Technology
    - prismatic blade technology
    - UP Tools: end scrapers, burins, carinated scrapers
      - low frequencies of MP tools: side scrapers, backed knives, points, notched denticulates
  - Aurignacian bone-tooth-horn-ivory-shell
    - split-based bone points
    - tooth/shell pendants and other ornaments
    - bone awls (sewing?)
  - Aurignacian clothing/textiles?
    - bone awls at start of Aurignacian
    - bone needles by 27 ka (?)

Upper Paleolithic Blade Technology

- “prismatic” blades

- working of bone reductive technology, but plastic

- complex composite technologies

- split-based bone point (also bevel-based)
Aurignacian personal ornamentation
deer tooth pendant from La Souquette, SW France

working of
tooth, shells and soft stone

“Venus of Willendorf” 27-22 ka

Dolni Vestonice, Czech Republic, ca. 30 ka
woven basket impressions on fired clay!

Aurignacian bone awls
indication of coarse sewing (skins?)

“Lowenmensch” from
Hohle Fels, Germany
c. 33 ka

Chauvet, France ca. 31 ka
function vs. style
- artifact function =
  - hypothesized or inferred mode of use
  - related to mundane activities → energy capture + mortality reduction
  - considered to constrain design of artifacts (i.e., there are “best” designs for a harpoon or blade core)
  - assumed to be what selection “sees”
- artifact style =
  - artifacts or attributes that are not easily attributed a mode of use
  - particularly if appear to have no function in RS = CR + FR
  - not considered to be seriously constrained in design
  - assumed to be under limited or no selective pressure
    - style is “neutral” and can “drift” like neutral genes

vessel form = function
painted design = style

Style… “I know it when I see it”

Non Functional?!!?

Chronology of the Upper Paleolithic in Europe
- Aurignacian (45 ka?) 40-28 ka: East-West trend in dates?
  - N. Spain earlier dates than S.W. France?
    - Abric Romani, Spain: AMS ¹⁴C = 37 ka, U-Series 43-45 ka
Out of Africa predicts a strong relationship between hominid type and behavior:
- AMH → modern human behavior
- archaic hominids (e.g., neanderthal) → archaic behavior

Out of Africa predicts abrupt replacement of MP over its entire range:
- no mixing of MP and UP traits
- what does this mean in terms of Culture?

Behavior vs. hominid types:
- modern anatomy – archaic behavior!
  - Qafzeh and Skhul 120-80 ka

Behavior vs. hominid types:
- archaic anatomy – modern behavior!
  - Chatelperronian, SW France and N Spain, (45?) 36-32 ka

Skhul V

associated MP stone technologies

St. Cesaire neanderthal

mix of MP-UP tools in Chatelperronian
neanderthal ornaments from Arcy-sur-Cure!

Multiregional Mosaic in Cultural Evolution