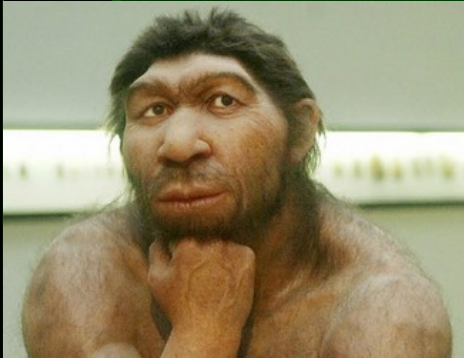




What happened to the Neanderthals?

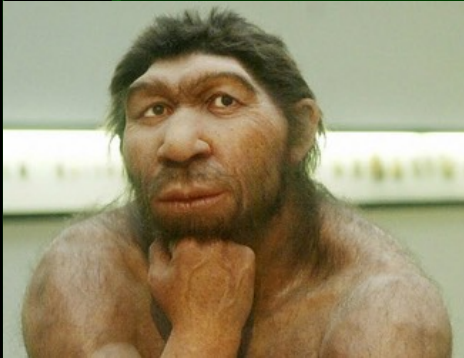
Jan Willem van der Drift, Stone-age-day 2018
State Museum of Antiquities & Leiden university 1

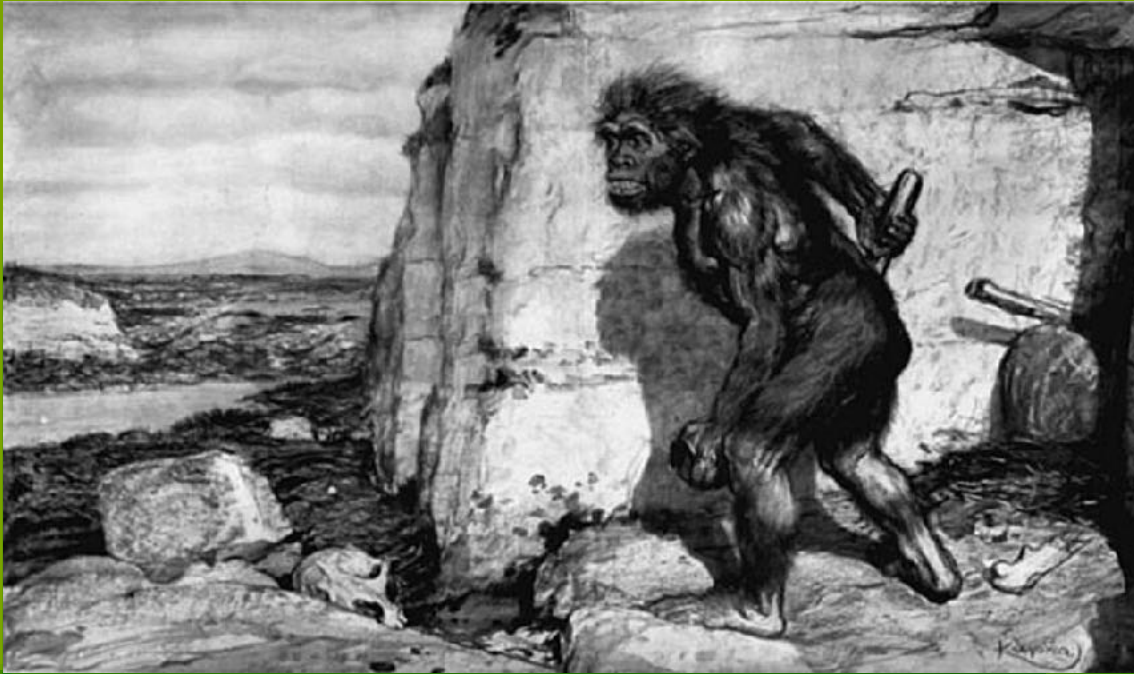
**what happened to the Neanderthals
becomes clear
when we answer 9 simple questions ...**



Thinker, Landesmuseum
für Vorgeschichte Halle

question 1: what can we learn from the fact that Neanderthals were stronger than us?





la Chapelle aux Saints
wild primitive caveman
by Krupka 1909

in 1900 strong men were uneducated poor laborers
that often struggled to survive
so scientists believed that Neanderthals were strong
because they were ignorant and struggled to survive



Neanderthal Museum Mettmann

but today our strong men
are athletes and many have
college degrees

we admire our athletes and
Neanderthals were even
stronger, so they deserve
our greatest admiration



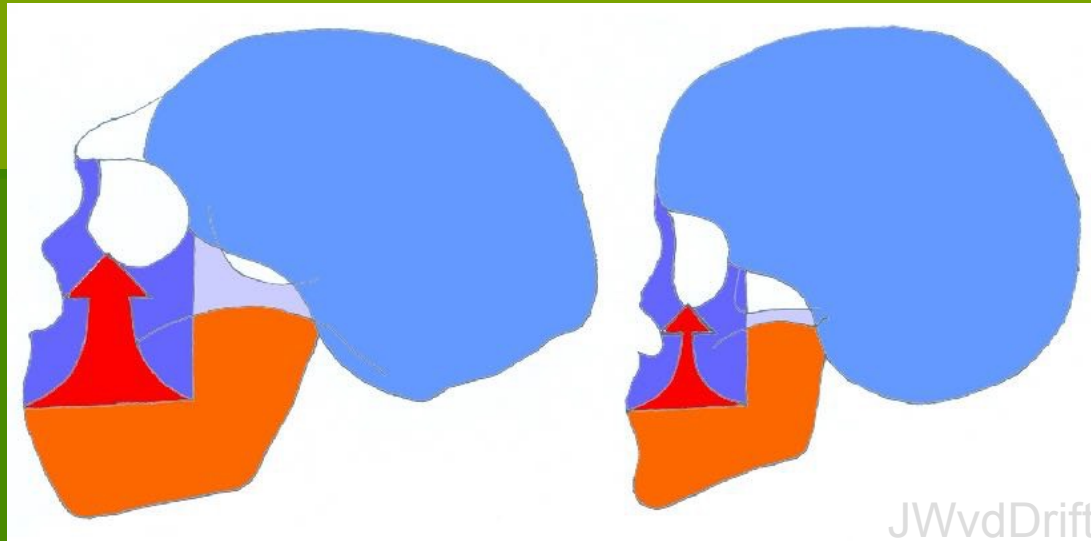
our athletes need a lot of food, the Neanderthals were far stronger and needed far more food:
so their big mouth is not an 'apelike' primitive remnant, but a highly functional and efficient food processor



strong athletes also need a lot of oxygen to perform;



so the large nose and conical chest are not 'apelike' but highly evolved features that support speed and endurance, the Neanderthals were able to outrun our gold-medalists



even the brow-ridge isn't 'wild and primitive'; the brow-ridge is a cleverly designed light weight arch that prevented the face from breaking off under the enormous bite-strain



JWvdDrift
Amud-1

and the midface had an 'inflated' shape because this gave it a perfect form to transmit that strain

millennia of survival of the fittest selected each detail of the Neanderthal body to achieve the greatest strength and performance



Atapuerca
Heidelberg man

the evolution made
all early-hominids
strong and fast
because the best
hunters survived

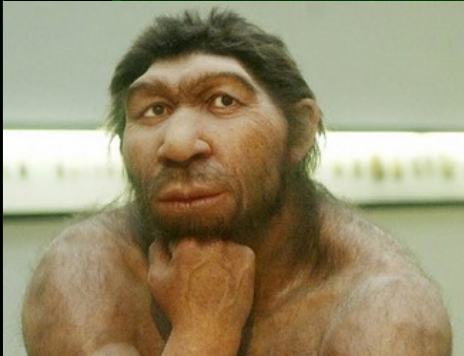
but the Moderns are
different: we are far
thinner and weaker



Olduvai Gorge
Modern man

question 2:

**why are Moderns so different,
what made us thin and weak?**





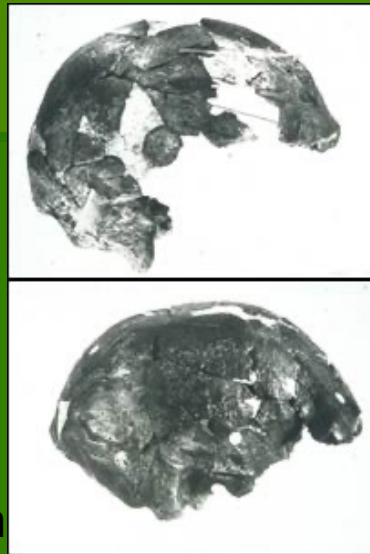
Jebel Irhoud

early Modern fossils are found all over Africa:

- Morocco 300.000
- South Africa 260.000
- Ethiopia 195.000 years old



Florisbad
Omo Kibish



so we do not yet know where the Modern anatomy has first evolved



Hadza-Bushmen cooking squirrel

but our bodies must have become weaker in places with frequent food shortages,

because becoming thin is the result of economic selection...



4WD-performance



economy car

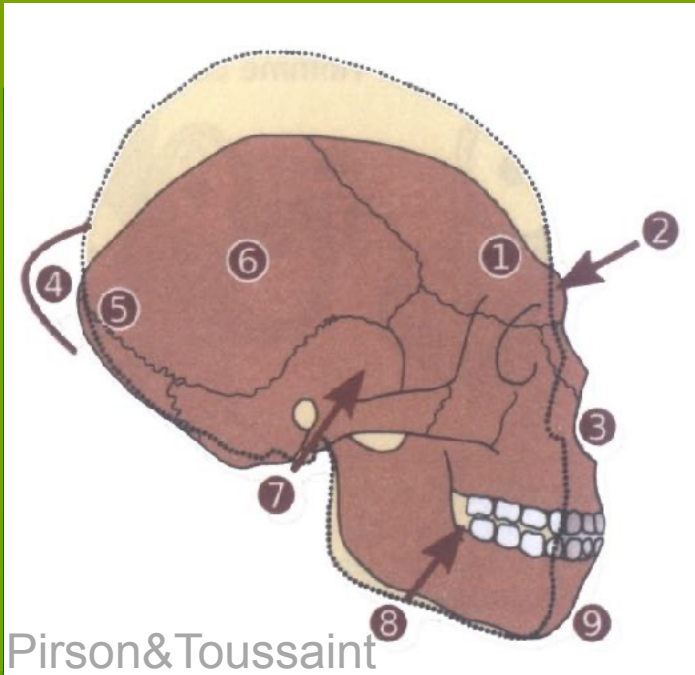
Let me explain how economic selection works: people do not drive a small car because it performs better, but because it gets them further on one liter of fuel ... so the Modern body became thin and weak because this gets us further on one small share of food !!!



Hadza bushmen

fast growing and muscular children need the most food so when all food-shares are small, they get ill and die

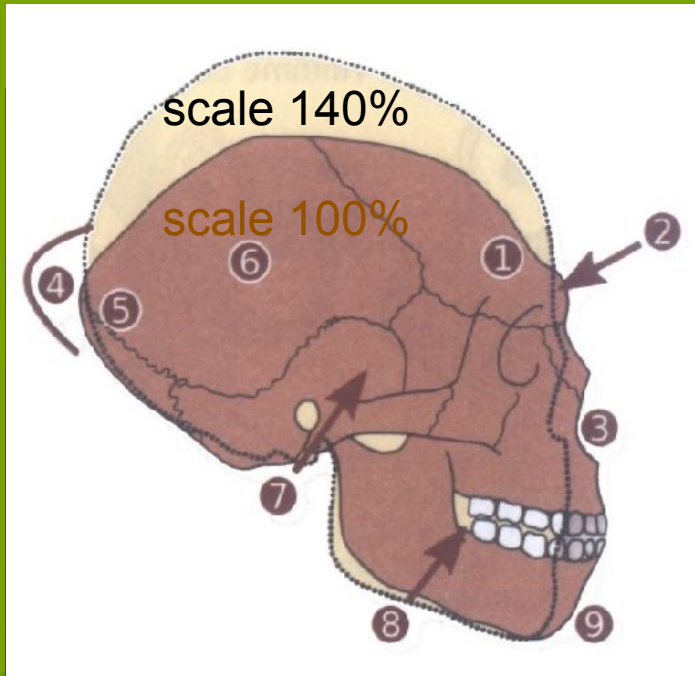
whilst thinner weaker slow growing children will stay healthy on small shares



the economic selection also changed the form of our skull

we proudly claim that our raised forehead proves that Moderns developed higher and thus superior brains ...

1 receding forehead 2 brow ridge
3 large protruding nose 4 narrow angle
5 occipital torus 6 rectangular parietal bone
7 temporal low rim
8 retromolar gap 9 'weak' chin



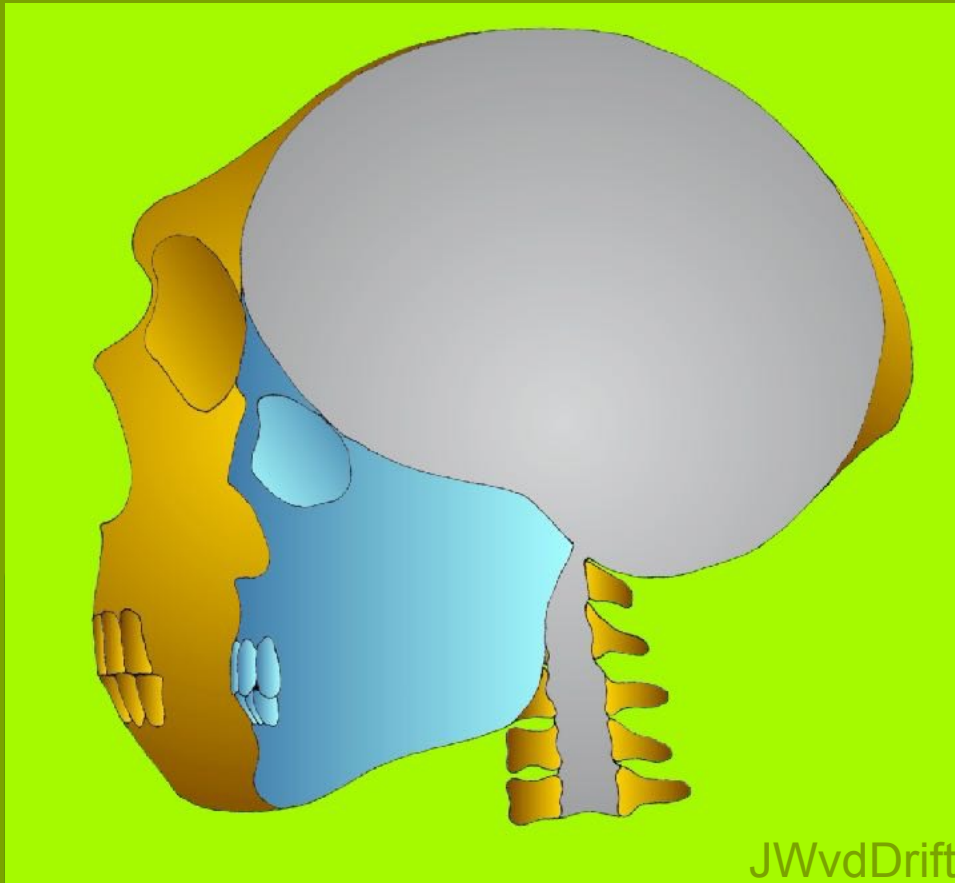
but when we project both faces onto each other we are fooling ourselves, because this is only possible if you enlarge the Modern skull by 40%

false scale comparison



in reality both brain-cases have the same hight

comparison at the same scale:



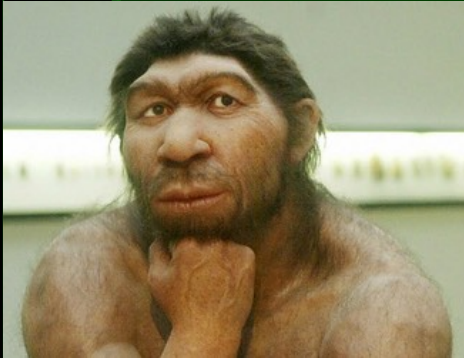
Neanderthal face shrinks to Modern face

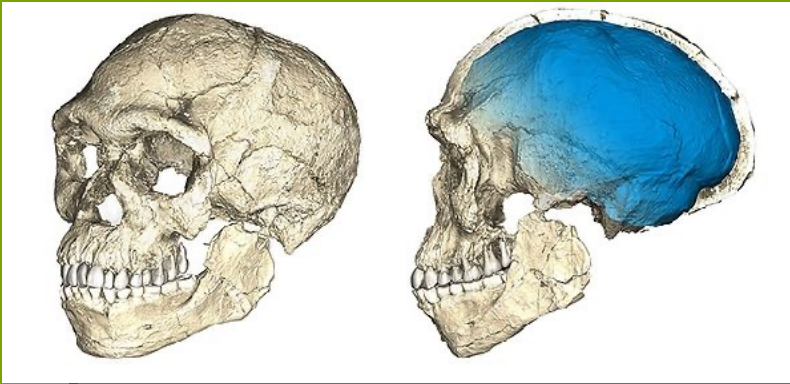
comparing both skulls at the same scale shows that the economic selection made our mouth and nose much smaller, this made the Modern face shrink like a deflating balloon

so the truth is that our brains did not grow higher, our eyes simply sank below the brain-case

question 3:

**the Moderns evolved 300.000 years ago
but only arrived in Europe 50.000 years ago,
so why did they not get here sooner?**





northwest:300.000



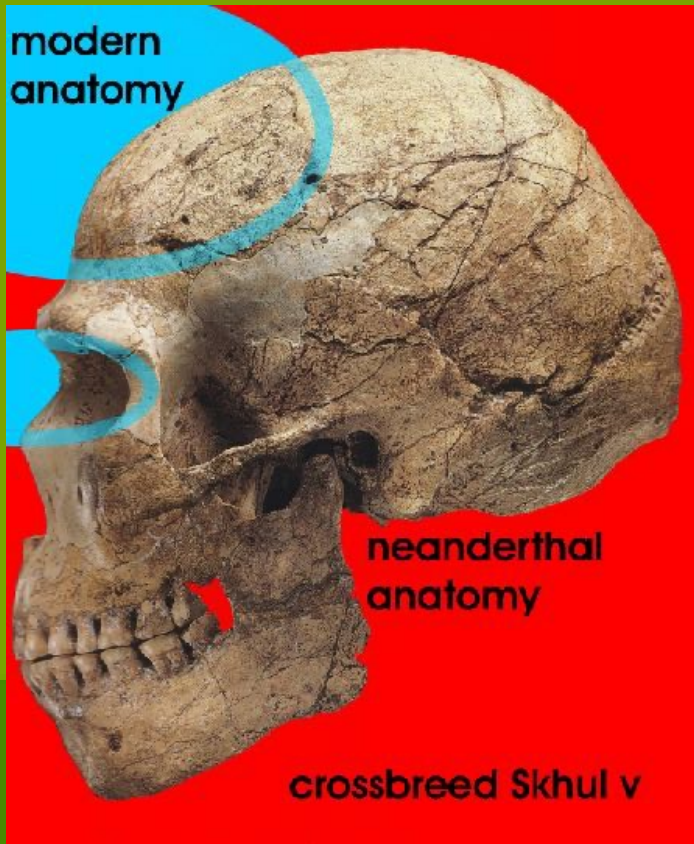
south:260.000

east:195.000



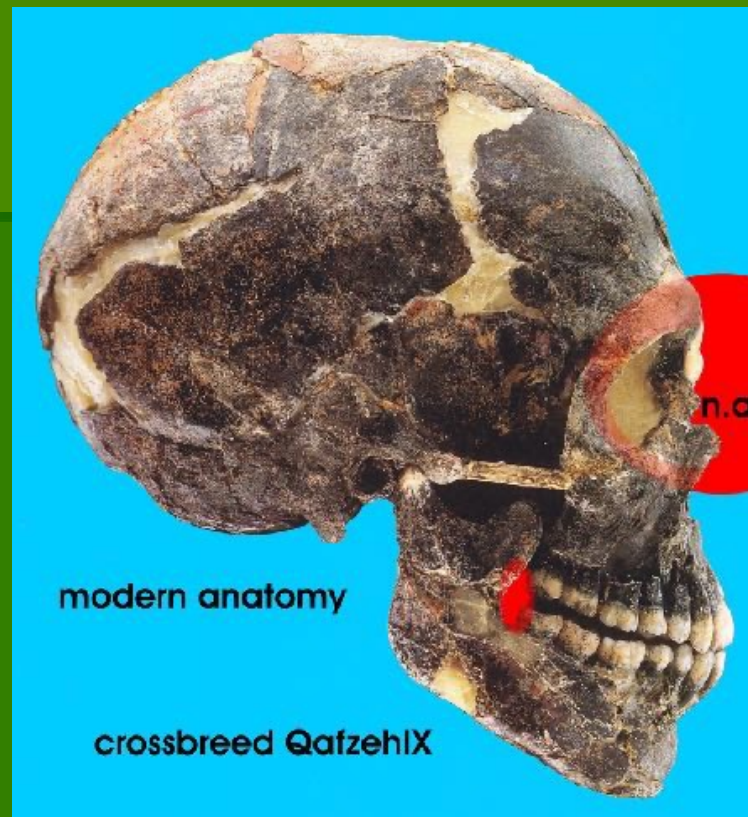
a quarter of a million years ago the Moderns had spread all over Africa, so why did they not migrate to Europe?

this is certainly not due to closed roads ...



JWvdDrift

because 100.000 years ago the Neanderthals had no problem going to the Middle-East, where they even crossbred with the African Moderns: the fossils show that both races mixed

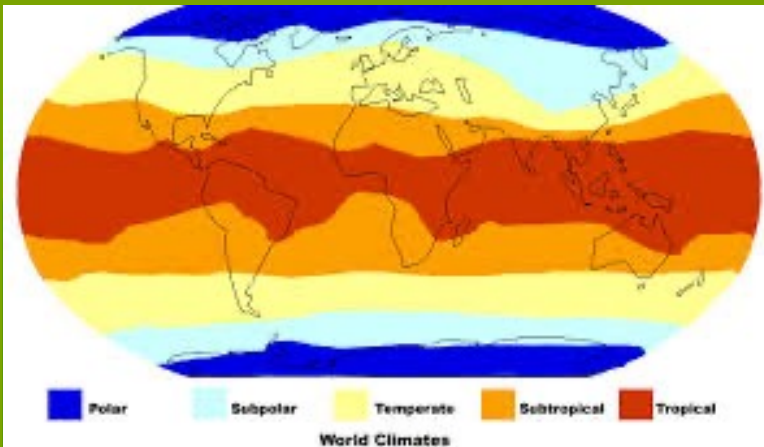




the Neanderthals even took Modern-DNA that they had acquired in the Middle-East north-east to the Altai ! so the roads were open

why did the Moderns not use the same routes, what stopped them from coming out of Africa ?

DNA as a souvenir from the Middle-East: Prüfer, K. et al. The complete genome sequence of a Neanderthal from the Altai Mountains. Nature 505, pp. 43-47 (2014)



north of 40 degrees latitude
the winters are cold

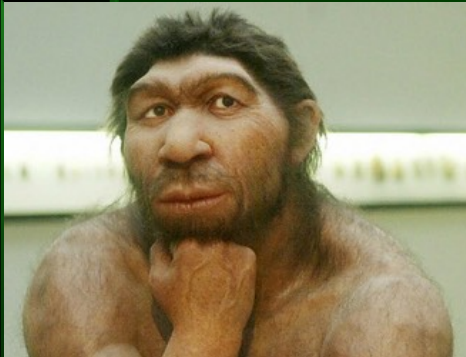


the answer is simple:

Modern children are so
thin and weak that they
failed to survive the cold
winters in the temperate
climate zone

question 4:

**100.000 years ago Moderns were too thin
and weak to survive temperate winters,
but 50.000 years ago the same Moderns
were migrating all over the world...
so what had changed???**





night-shelter in tree

to understand what changed you first need to know that chimpanzees build a new night-shelter every evening

the hominids also sought safety; Neanderthals often used a fire as night-shelter



when necessary they protected the fire with a windbreak and when it rained they built a roof shelter

but in a shelter you essentially sleep in the open air and Modern children suffer and tend to get ill when they sleep in the open air (even in Africa)



so the Moderns improved their night-shelters and this slowly changed shelters into huts

hut



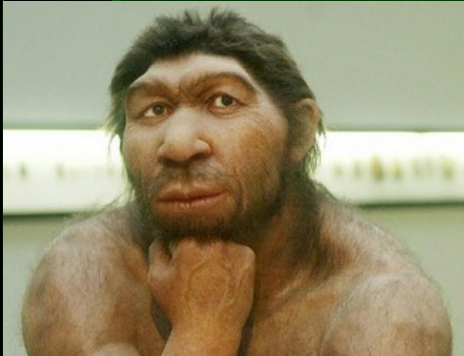
this hut is almost a tent

the huts kept the children warm in Africa, they gave Modern-man control over his 'microclimate'

and huts also kept the children warm in temperate winters, so the invention of life in huts enabled the Moderns to go out of Africa roughly around 75.000 years ago

question 5:

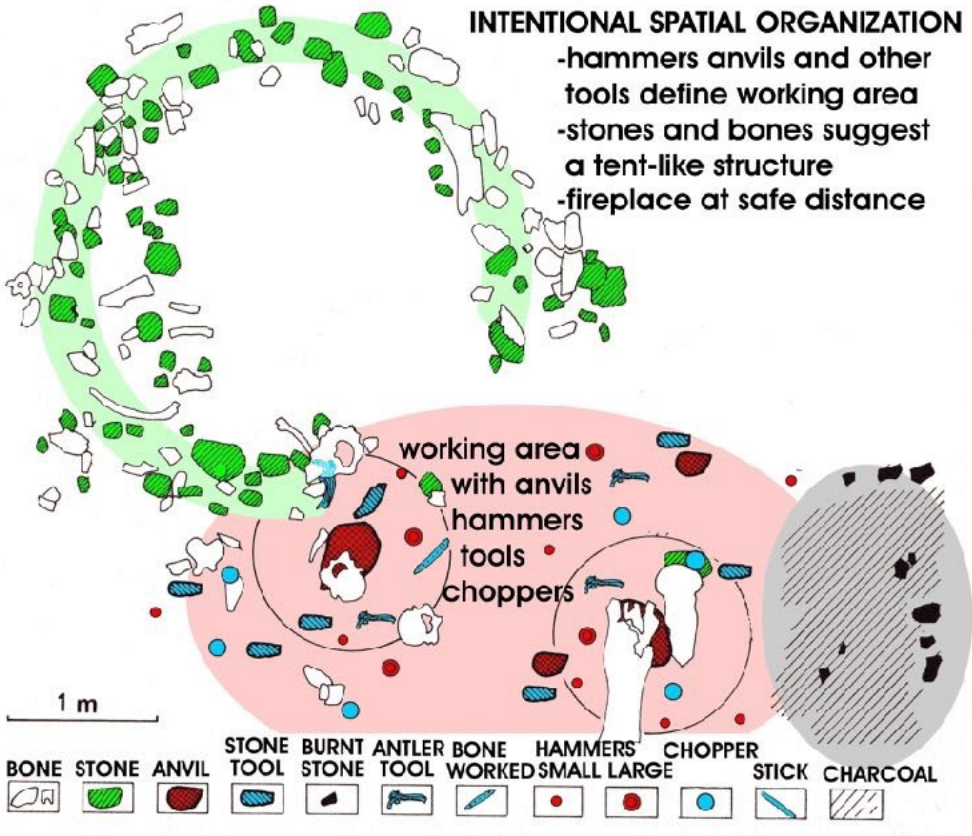
**did Moderns in Africa really invent huts?
some believe that huts already existed
in Europe 400.000 years ago ...**





INTENTIONAL SPATIAL ORGANIZATION

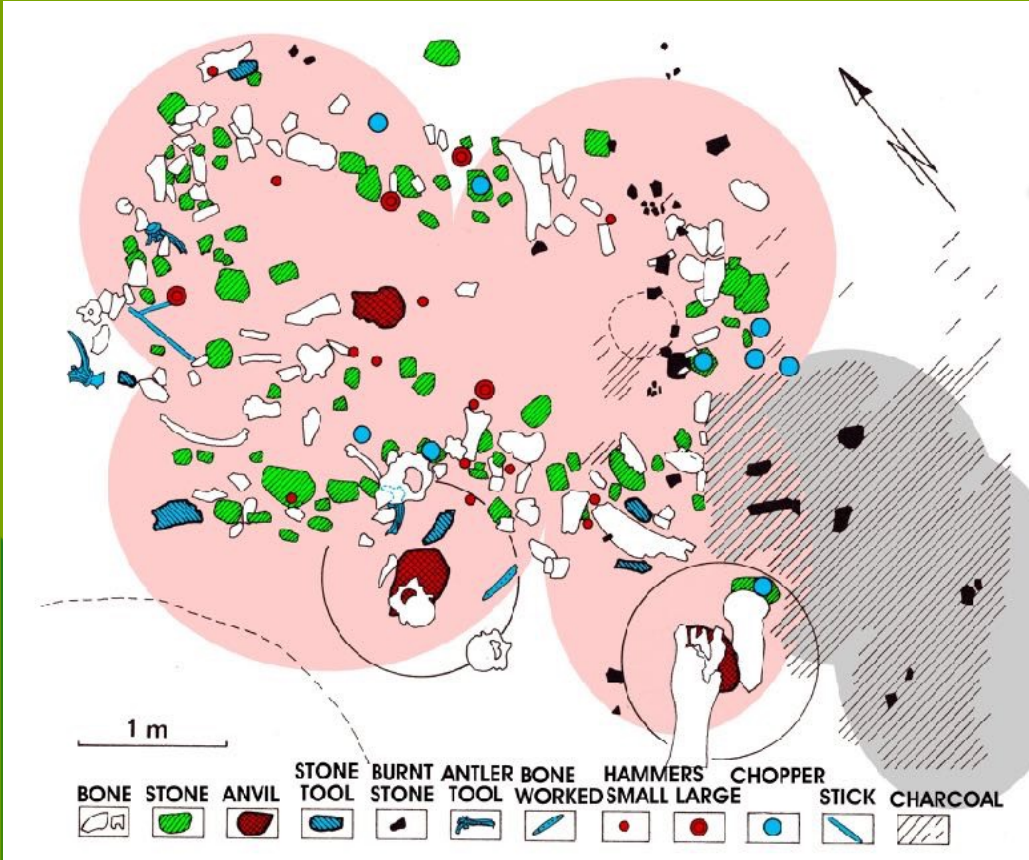
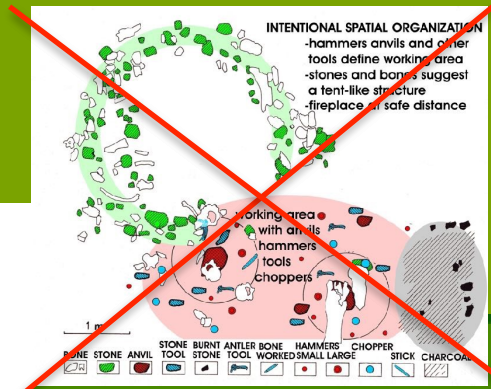
- hammers anvils and other tools define working area
- stones and bones suggest a tent-like structure
- fireplace at safe distance



researchers say they found plans of round huts in Bilzingsleben

but the original floor-plans are very different from this drawing

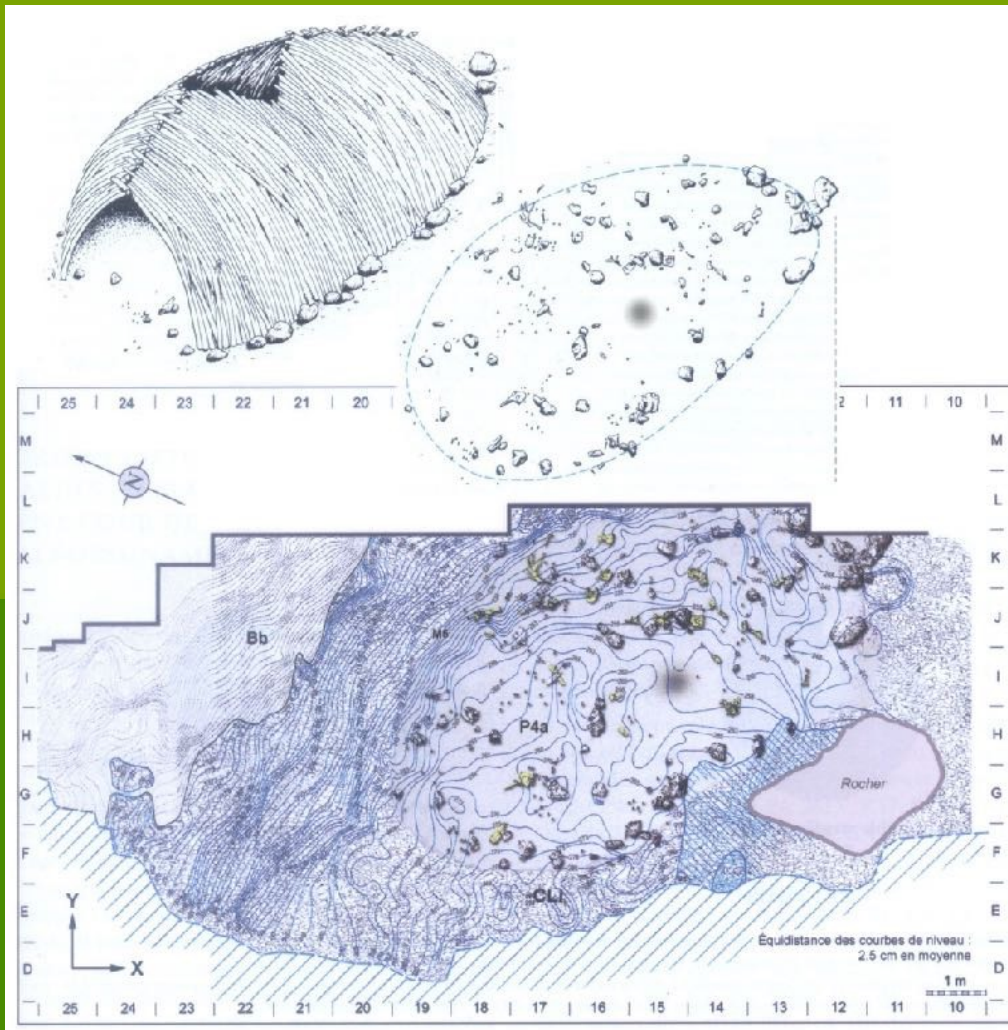
did huts exist 400.000 years ago?



in reality the tools and waste were spread all over the place, so there were no walls that blocked objects from spreading

so in Bilzingsleben the hominids simply worked and slept next to a fire

excavation-plan Bilzingsleben



the same goes for the 9 by 5 meter supersize 'hut' in Terra Amata:

there are postholes from windbreaks that protected the fire on the windy beach, but man simply worked and slept near a fire

excavation-plan Terra Amata beach Nice



we know exactly why the Neanderthals never made any huts: they ate so much that the group ran out of food within just a few days

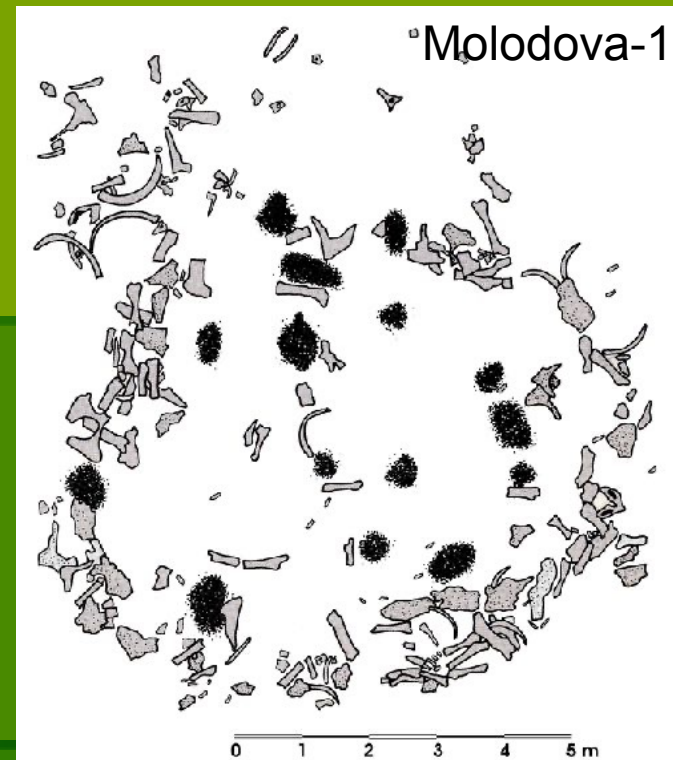
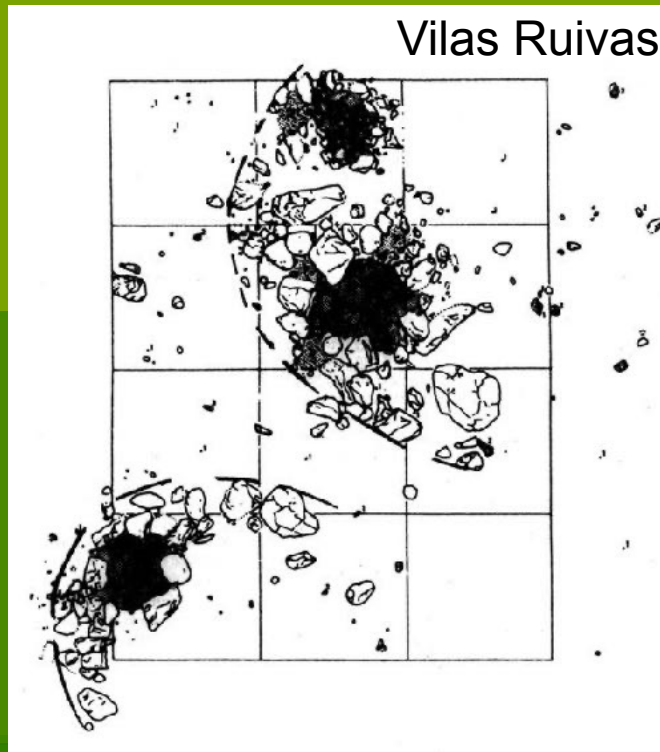
so the groups quickly went to new hunting grounds

Kolen, J. Hominids without homes. in W. Roebroeks et al, Leiden 1999



a fire provides shelter for the night

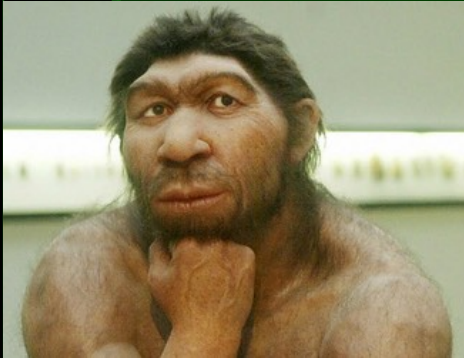
nobody builds a hut for just a few nights, because that is a complete waste of valuable time and energy; even Modern hunters sleep in shelters when they make a camp for only a few days



a fire cannot be set inside 'walls' so these living-structures are not huts on top of that, Neanderthals had no reason to sleep indoors: they metabolized so much food that they were not cold, so it is no real surprise that they still slept in the open air 50.000 years ago, sheltered by their fires

question 6:

**how did living indoors change
the course of our evolution?**





chimpanzee mother

a chimpanzee mother has to carry her young until this can follow the group by itself,

the result is that it takes five years before a chimpanzee mother can have her next baby



Neanderthal mothers also carried their children from one camp to the next, this tells us that they also had large intervals between births

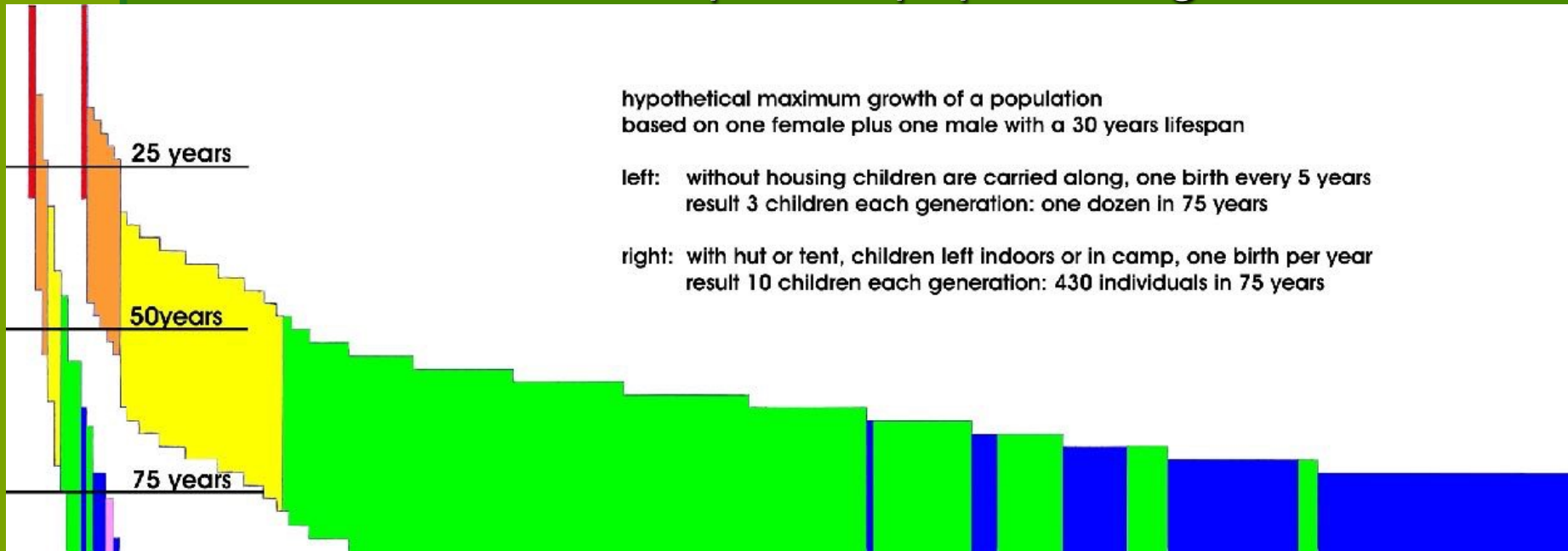
Neanderthal mother
as portraid in 1910
Natural Sciences Brussels



but Modern women do not carry their children all day long; they leave them at home in grandma's care

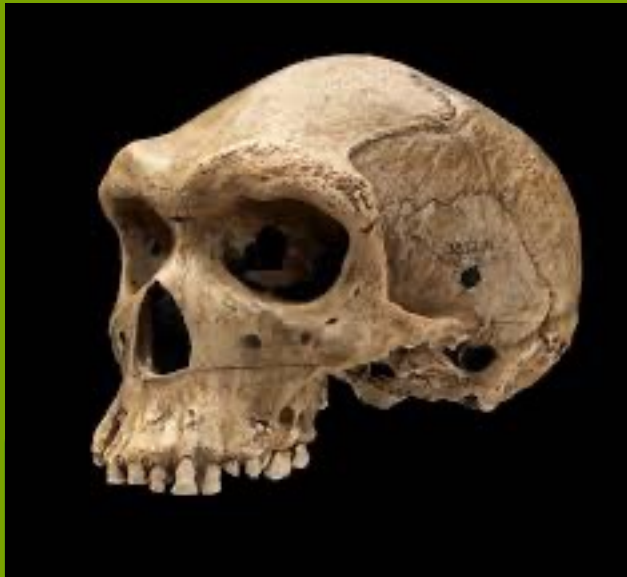
the result is that a Modern woman can have a new baby every year !!!

this explains why the world hominid population was very stable, until the Moderns began to live in huts: the huts started an explosive population growth



the effect of the changed birth interval on growth potential

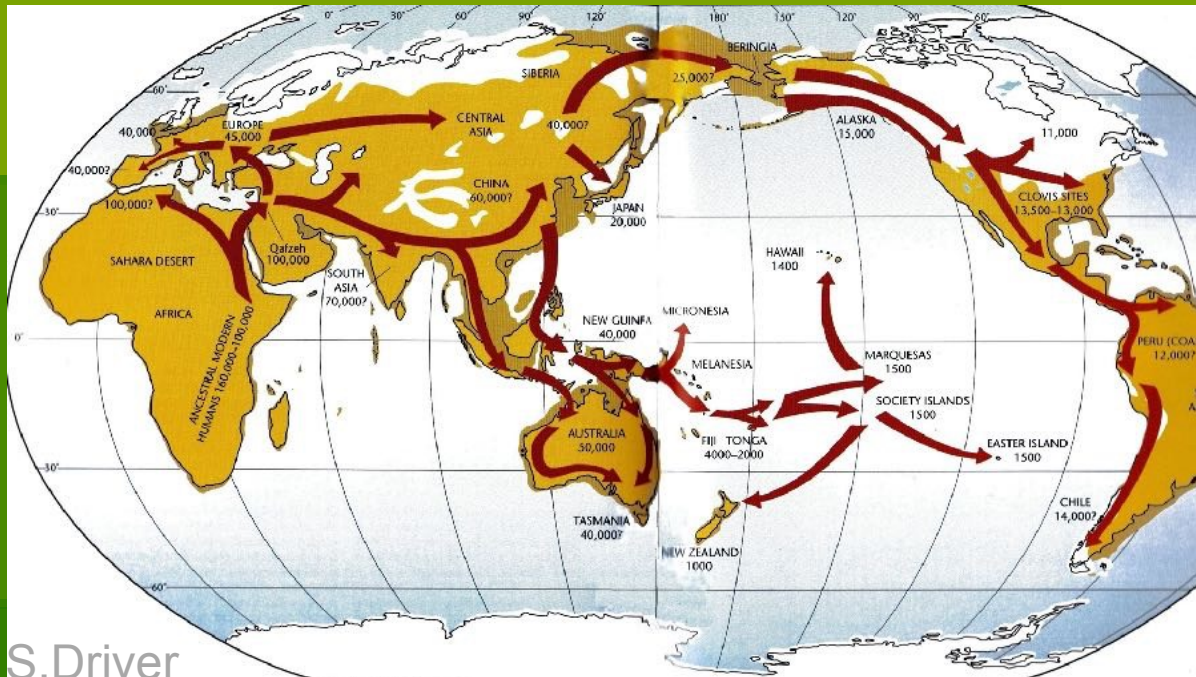
JWvdDrift



Kabwe (Broken Hill) Zambia
300.000-120.000 years ago

so before 100.000 years ago, the Moderns lived side by side with strong Kabwe-type hominids but when the Moderns began to live in huts their numbers quickly grew

this caused food shortages all over Africa and the economical selection became so strict that the African strong-hominids went extinct

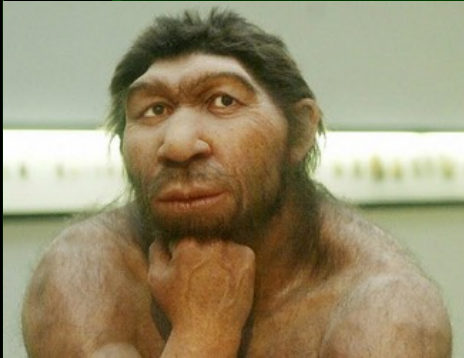


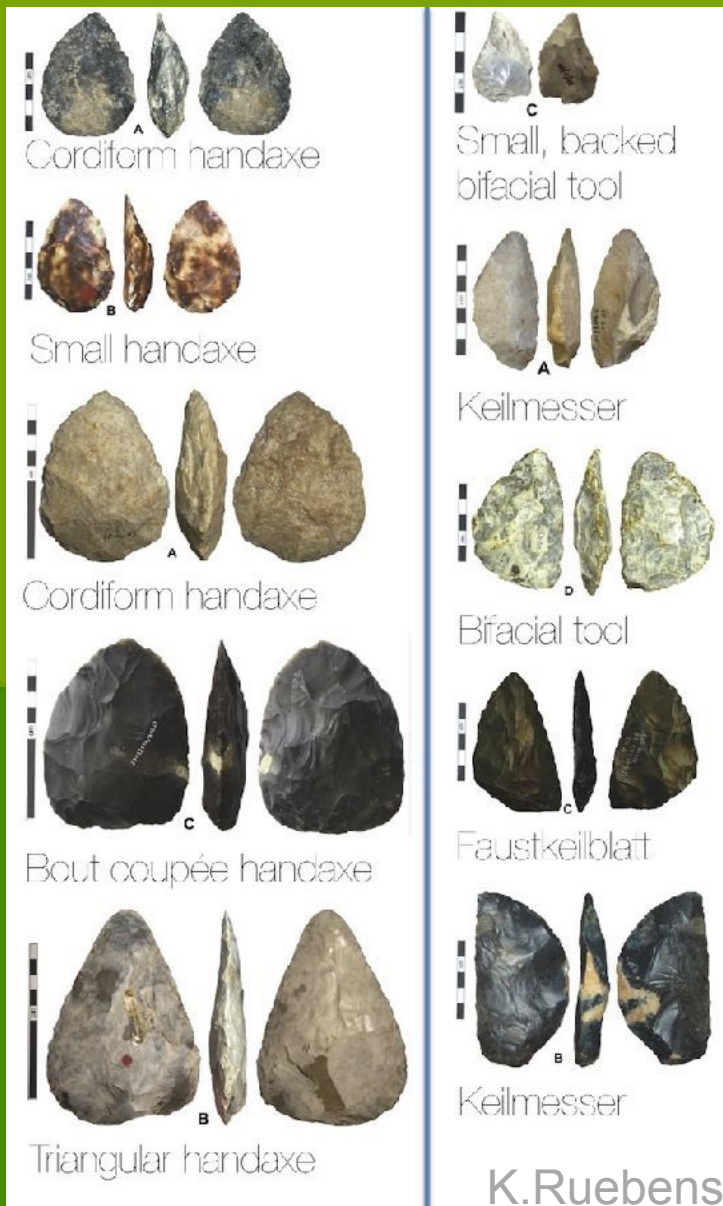
S.Driver

the population kept growing so the search for more food drove groups of Moderns out of Africa and across the world

question 7:

**but we are intelligent and we make art
and symbols ! Isn't that what makes us
different and better than Neanderthals ?**





some Neanderthal groups made tools in characteristic styles (i.e. handaxes which are either symmetrical or have only one cutting edge)

but tool-traditions are not the same as cultural symbols

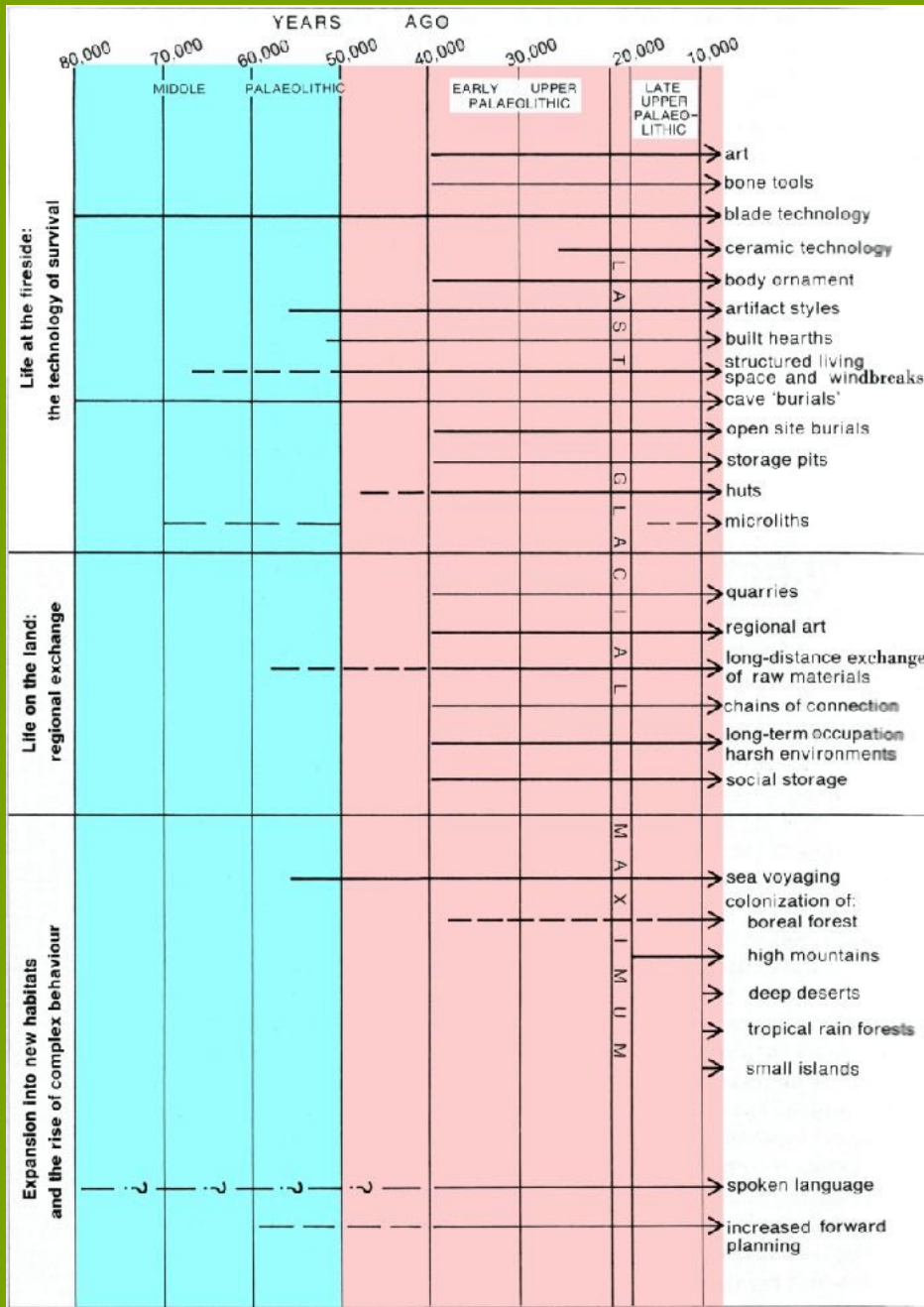


Hohlenstein
-Stadel, Ulm

the Moderns made objects on a completely different level: they made paintings and sculptures that truly express 'symbolic thinking'



Grimaldi

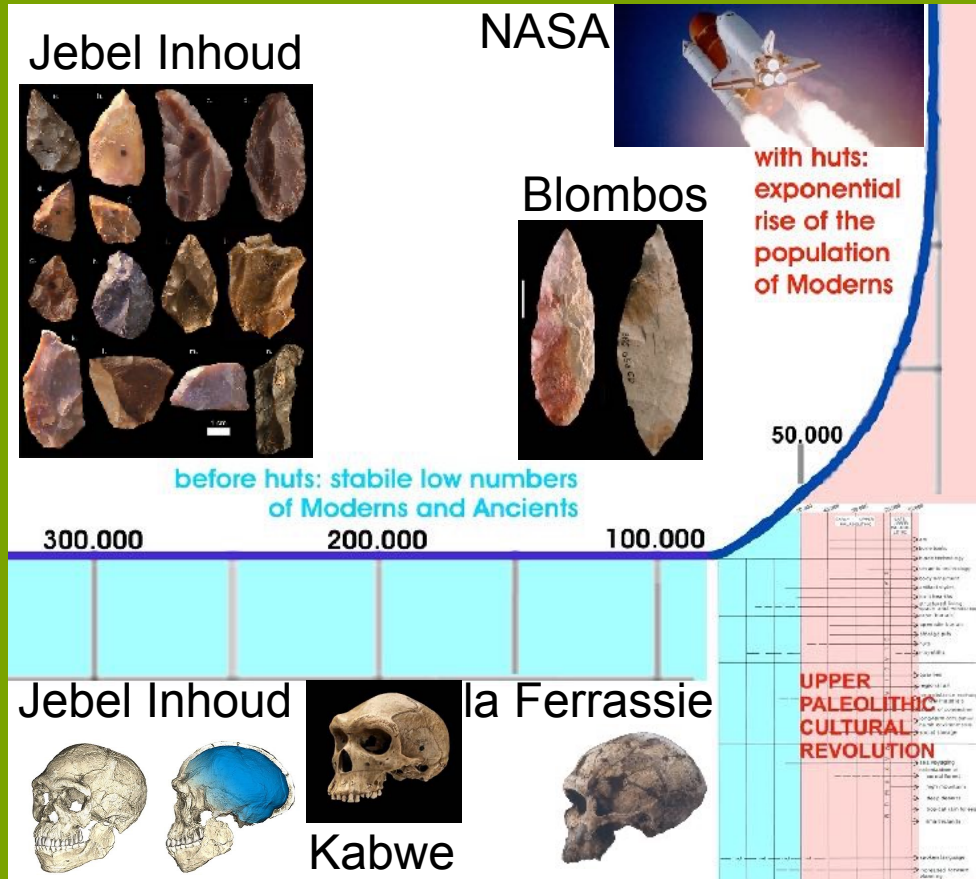


and this long list suggests that almost every aspect of our present complex culture came to Europe with the Moderns

so the Neanderthals had no significant role in this cultural revolution

Upper-Paleolithic cultural revolution
Stringer&Gamble

but if we want to understand what happened we must not forget that Moderns evolved 300.000 years ago,



so what put our cultural revolution on hold until around 50.000 years ago? we must clearly link this to the time when we began to live in huts: the population growth led to communication with more individuals, so to a greater exchange of ideas

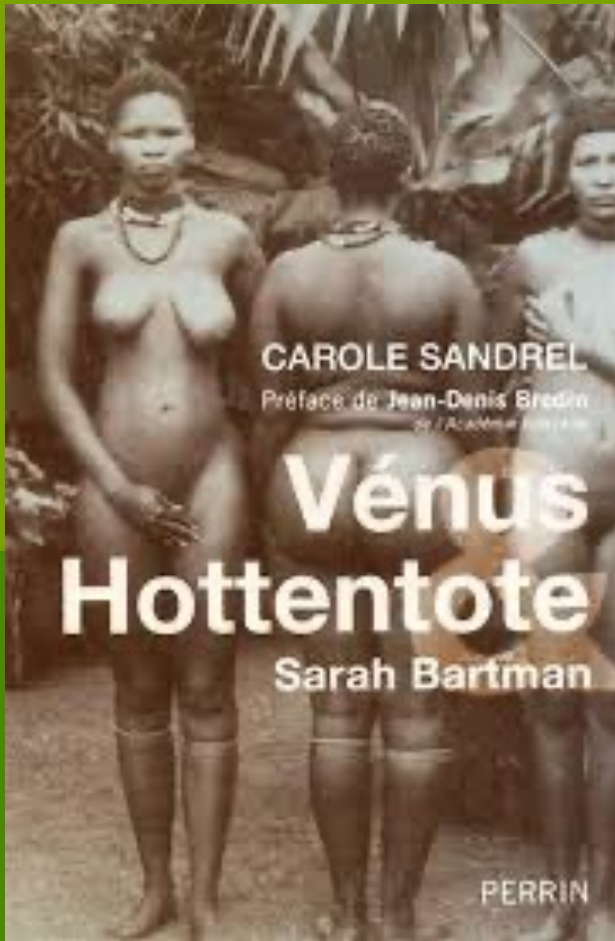
JWvdDrift



but far more important is that a material culture can only develop when people have a home where they can keep their objects

the Neanderthals had to carry every object they owned all day long, so they could only have very few (and strictly vital) objects, because when a hunter carries too much weight his preys will escape

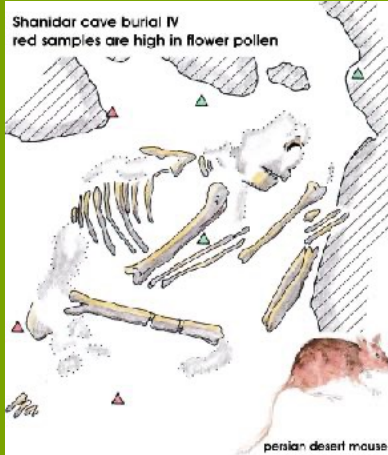
Neanderthal Museum Mettmann



in 1900 everyone believed that material culture was a measure for intelligence
the Egyptians had pyramids and treasures so scientists admired them but bushmen were qualified as a low race, at a stage close to the apes

today we still make this mistake with Neanderthals; but their lack of material wealth is the inevitable result of their mobile lifestyle

Shanidar IV flower burial?



even their burials reflect this mobile lifestyle;
if you understand that their survival fully depended on
their freedom of movement, you can understand why
Neanderthals never made deep graves; imprisoning a
dead friend two meters under the ground was like
forever denying that friend his afterlife freedom !



but Moderns lived in one place for months, this forced them to keep their campsite clean by disposing of the dead in deep pits

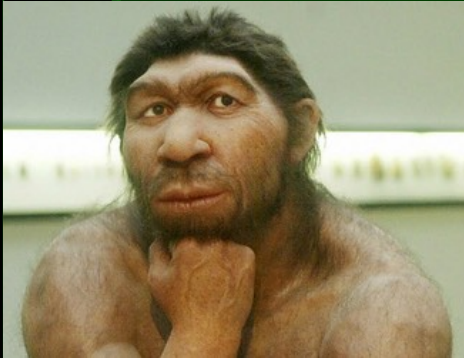


and the Moderns learned to see these pits as places where the dead sleep safely, because they locked sleeping children indoors and told them that it's dangerous under the open skies

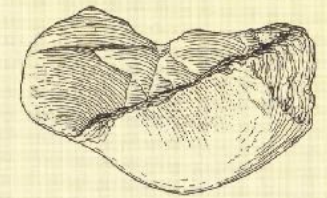
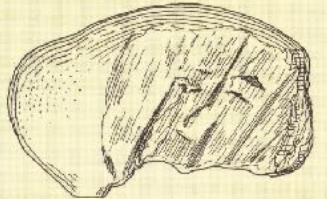
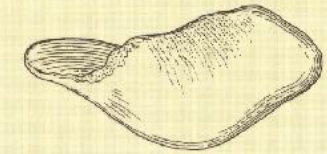
Arene Candide basket-weaver

question 8:

**so the lack of cultural objects doesn't prove
that Neanderthals were stupid,
but why would we think they were intelligent?**



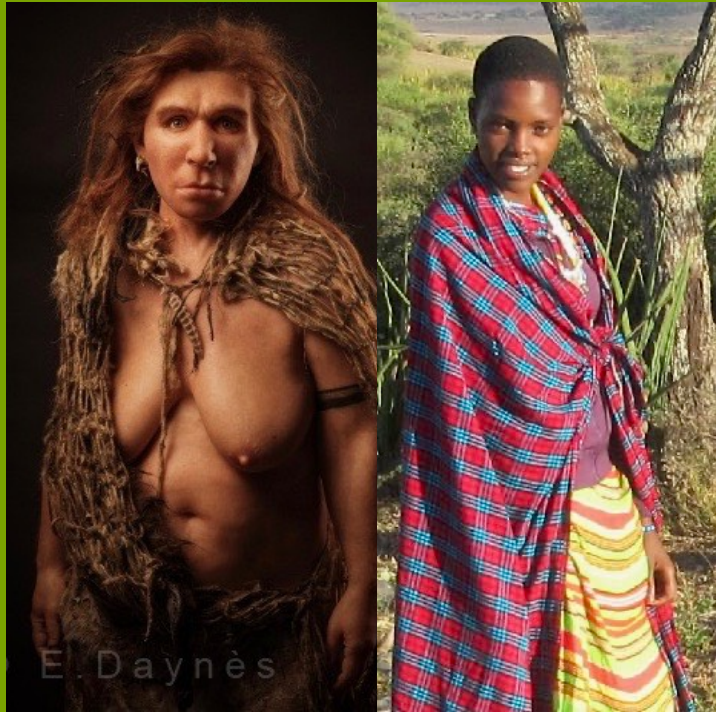
birch-pitch with
imprint of flint knife
Königsau- A



we know that Neanderthals used color-pigments, made pitch to haft points and knives, used medicinal plants, smoked fish, took care of wounded friends ...

but we really don't need such archeological facts to prove their intelligence, because we know that Neanderthal brains worked exactly like our own brains





in the past we believed that Neanderthals had a different sort of brain because paleontologists called them a separate species,

but this classification was made on morphological grounds: we called Neanderthals a separate species simply because they did not look exactly like us

different morphological-species



but these animal-races also look like separate species and we know that they are one species on biological grounds



racess share the same intelligence so a creature's intelligence is not defined by his morphological-species; it is instead defined by his biological-species

different morphological-species form one biological-species

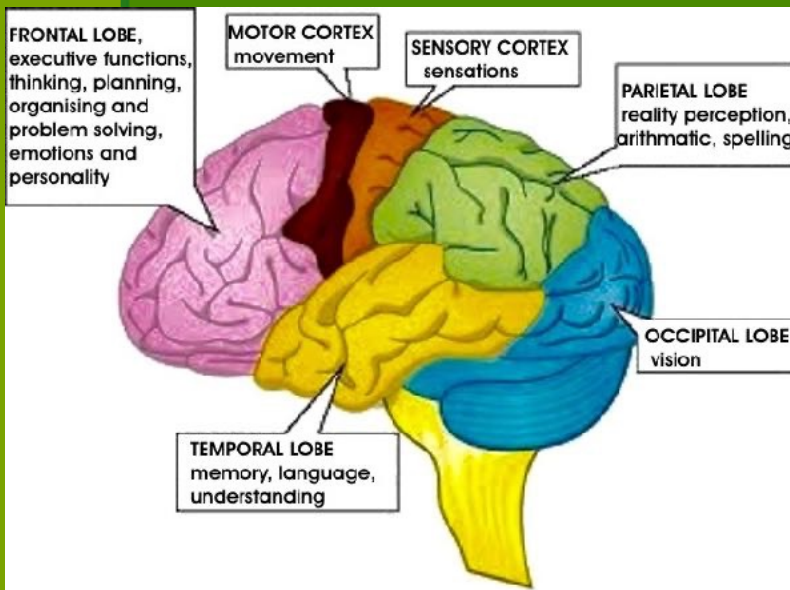


different morphological-species
form one biological-species

individuals belong to the same
biological-species when they
can mate naturally and
produce fertile offspring ...

so if Neanderthals crossbred
with Moderns, both are part of
the same biological-species

Green, R.E. et al. A draft sequence of the Neanderthal genome. Science 328, pp. 710-722 (2010).



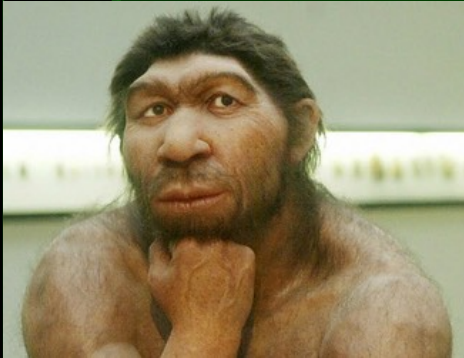
one biological species

geneticists found that the Moderns (from outside Africa) have up to 4% Neanderthal-DNA, so the Neanderthals and Moderns both belong to the same biological-species

so they may have had different talents, but Neanderthals were just as intelligent as Moderns

question 9:

but if Neanderthals had the same brain and stronger muscles, why are they extinct?

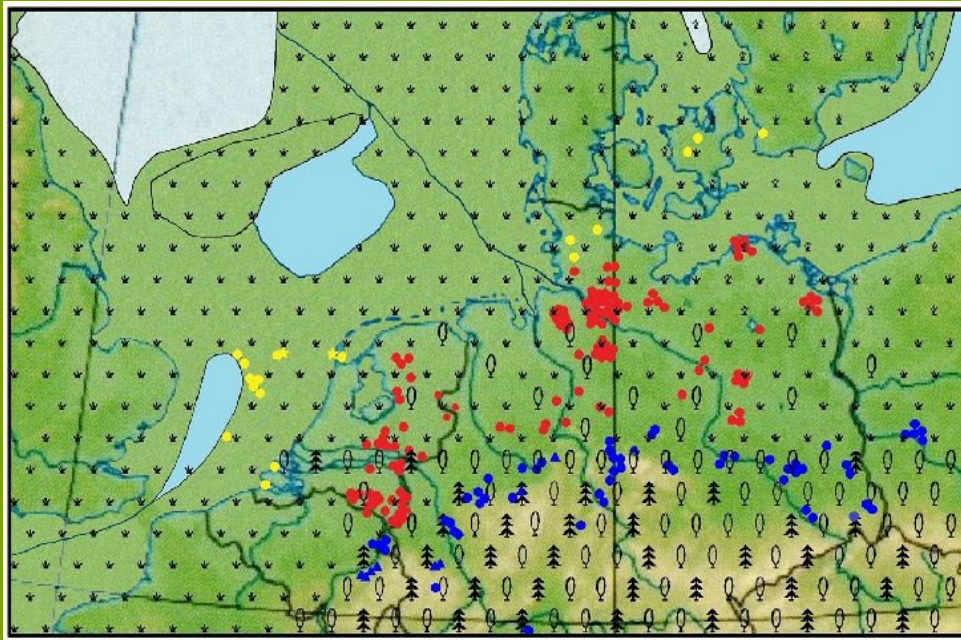




our success is based on economic selection: we simply need less food



but high fuel consumption did not wipe 4WD-cars out so if the Neanderthals had no other flaws, why would eating three times what we eat result in their complete extinction?



summer **spring/autumn** **winter** camps
Ahrensburg tradition, GvNoort

to understand this you must know that the first Moderns in Europe lived in very large groups during the spring and the autumn, in places where big herds gathered

but in summer and winter the large groups split-up into smaller units (microbands)



Modern woman
Tierra del Fuego

the small units only spanned
about a dozen people

because in the seasons without
large herds, there simply was
not enough food within walking
distance of the camp to support
larger hunter-gatherer groups



Neanderthals needed three times more food, so you can do the math:

a summer or winter seasonal camp could only provide enough food for one third of a dozen Neanderthals



economy



performance



Shanidar-IV Neanderthal

but a handful of hominids is simply not enough to run a seasonal-camp: you need two adults to gather food and one to mind the children, so there are not enough adults left to form an effective hunting-party

the math shows that Neanderthals could not have seasonal tent-camps, they were better off staying mobile



this explains why Neanderthals kept on living in shelters after the arrival of the Moderns

but the Modern-population grew so fast that large herbivores were decimated and the Neanderthals were the first to starve because they needed so much food

hunting spoils at Dolní Věstonice

JWvdDrift



neanderthal
St. Césaire

Châtelperronian 36.000

a small number of the starving Neanderthals sought refuge in the camps of Moderns and they crossbred:

so perhaps the Saint-Césaire Neanderthal was in reality a crossbreed, this might explain his low rectangular eye-sockets

Trinkaus&Zilhoã chubby crossbreed



living on small shares

and the Lagar Velho child was perhaps a crossbreed that became weaker and died, because it got the same small shares as the Modern children:

only the thinnest crossbreds survived this economic selection, so after just a few generations all crossbreds looked fully Modern

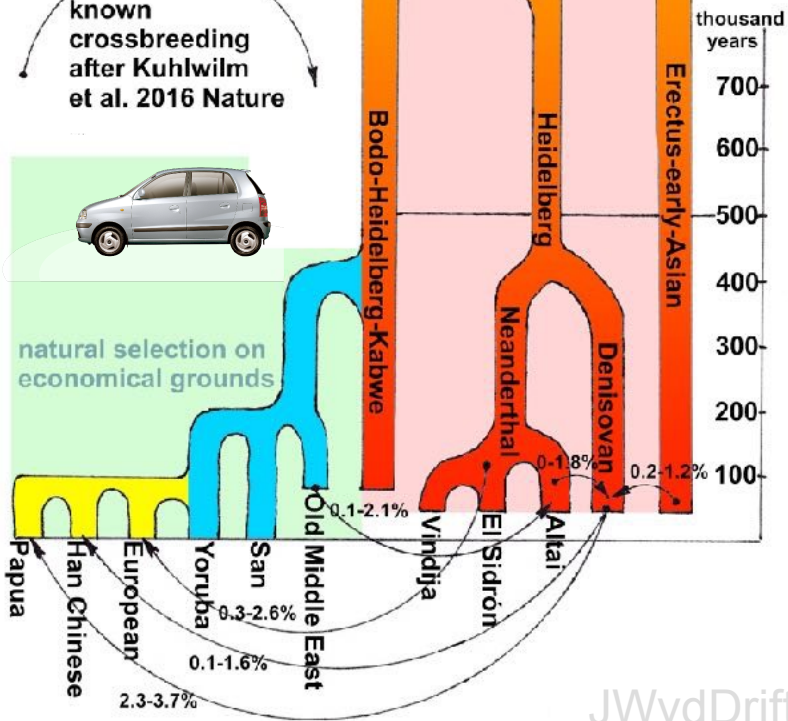


natural selection on top performance

known crossbreeding after Kuhlwilm et al. 2016 Nature



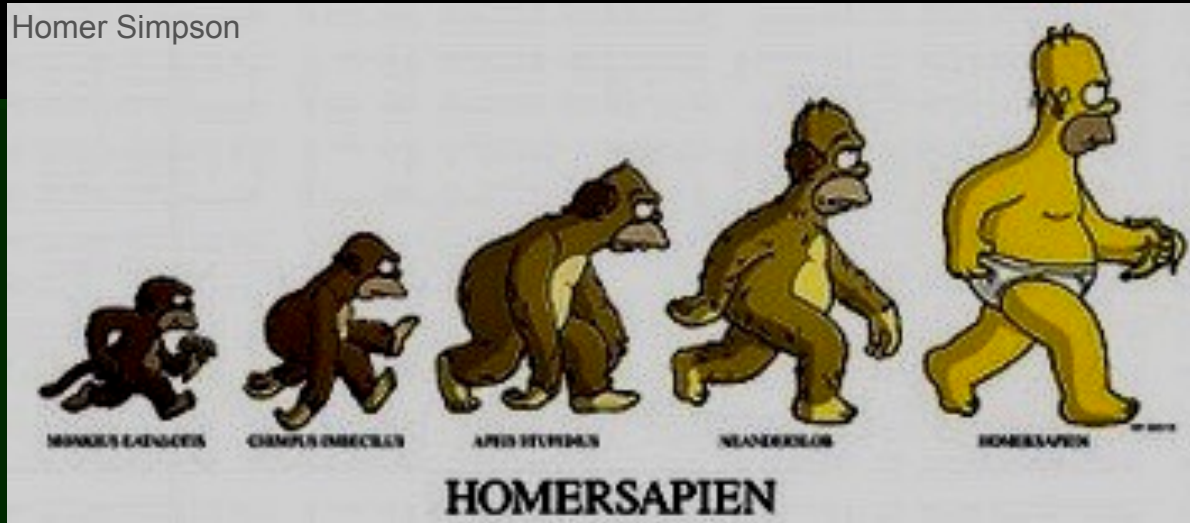
natural selection on economical grounds



in short:

all hominids were strong until half a million years ago, because nature selected the best hunters but in Africa the thinnest survived food shortages, they needed huts and huts increased childbirth migrations and crossbreeding combined the gene-pools of the Moderns with the strong Ancients but from this mix only the thinnest survived: the economic selection made everyone live indoors and made everyone look Modern

Homer Simpson



is Homo sapiens:

**the superior race or
Homo domesticus?**

thank you for your attention

janwillemvanderdrift@icloud.com