

MCDB 150 Global Problems of Population Growth

Lecture 3 Notes

I have been describing the very intimate relationship that sex and violence have in the Chimpanzee social system.

Today, the focus changes to humans and we will ask what has changed and what has stayed the same.

The most obvious similarity is in our forms of violence and war.

Here is data on the causes of death from a tribe, the Ache, in Paraguay that had not yet had significant contact with Europeans.

Infants 0-3 yrs old:

Ache life history 1

Illness	28%
Violence	56% infants died from violence twice as frequently as from sickness

Children 4-14 yrs old:

Ache life history 2

Illness	15%
Violence	74% children die from violence 5X as often as from sickness

Adults 15-59 yrs old:

Ache life history 2, 3

Illness	28%
Violence	46% adults die from violence twice as often as from sickness

Adults 15-59 yrs old:

Ache life history 3

Illness	28%
Violence	46% adults die from violence twice as often as from sickness

Old folk 60 and over

Ache life history 3

Illness	19%
Violence	33% adults die from violence twice as often as from sickness

At all ages violence accounts for more deaths than any other cause.

It is only for old people that violence accounts for less than half of deaths.

Communicable diseases are less important than they become in more densely populated communities.

All illness, whether communicable or not, accounts for ~25% of deaths.

More individuals (131) die in the 3 years of infancy than in the 45 years of adulthood (126).

Out of 383 people, only 7 people died of 'old age'.

WAR IN HUMANS

Of the diverse forms of violence, war is the most noticeable.

I define war as the intentional killing of members of one group by another group.

The killing is done because they are members of a group, rather than because of any prior conflict between individuals.

Humans seem to have a social system quite similar to that of Chimps.

For most of history, humans lived in small, tribal groups.

These are multi-male groups with strong male bonding, competition for status, lots of inter-group conflict, competition for females and violence against females.

Archaeological data indicates that humans, up through early farming times, lived in small, disperse settlements. The average size seemed to be in the same range as for current Chimpanzees. Ballpark 40 individuals. Hassan p92-93

Keeley p26: Anthropologists still find that the smallest organized group of humans is a politically autonomous group of 20 -50 people with a headman. They call this a "band". Basically, it's still the same size as a Chimpanzee community.

Among Chimps, intergroup violence is a hit and run operation – where a small group of Chimps from one community attacks an even smaller group, or better yet, a single individual from a neighboring group.

In Chimps this behavior is called "lethal raiding."

In humans it is called it war.

Lethal raiding of Chimps and warfare of primitive humans employ much the same strategy.

Among the current 'primitive' groups that anthropologists have studied, the commonest form of combat is small raids and ambushes.

Communities are rather constantly engaging in hit and run raids on each other and springing ambushes to catch lone members of the other group.

So, how shall we think of these similarities?

Either the behavior is a direct descendant of our Chimp-like ancestors' behavior

OR, at some point in history this inter-group violence disappeared, and then,

later on, the pattern of war was re-established for some quite different reason.

If so, we should see some time in the past where humans got away from the Chimpanzee behavior and were peaceful. Then we should see this new kind of war arising in conjunction with agriculture, or private property or governments or some other particular aspect of human culture.

So, what was the situation for pre-historic humans?

Keeley p37, 38

Neanderthals had heavy musculature and robust bones:

But one study found that 40% of Neanderthal skeletons had head injuries.

Either they were very clumsy and accident prone (and somehow managed to always fall on their head)

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or there was a lot of club wielding and head bashing going on.

The earliest human burials, we're talking 20,000 to 35,000 years ago, show spear points embedded in the bones, cranial fractures, scalping marks, etc.

These burial grounds are found in Italy, France, Egypt, Czechoslovakia.

At a 13,000 year old cemetery in Sudan, over 40% of the skeletons had spear or arrow points embedded in them.

The wounds found on the children in the cemetery were all execution shots in the head or neck.

This was not the result of one horrific conflict.

The cemetery was used over several generations, and many of the adults show not only death causing wounds, but healed fractures from previous battles.

One skeleton had 20 wounds.

Violent conflict was common.

When you get to more modern times - but still prehistoric - before anything you would call civilization, things get stylized. There is a middle stone age cave in Germany (5,000-10,000 years old) where there are 2 caches of skulls:

They are neatly arranged, like eggs in a basket.

They are the disembodied heads of men women and children.

Most w/ multiple holes knocked through their skulls by stone axes.

More recent skull display (Thailand)- SLIDE 7

In 1991 one of the glaciers in the Alps disgorged a stone-age man who had died 5,300 years ago.

Had a lot of press as the "iceman".

Since it took 5,300 years for the glacier to slide down and free him,

he must have died high in the mountains.

For 10 years it was assumed that he froze to death while trying to cross the mountains.

Finally, scientists took a CAT scan of the whole body.

Science 8/3/01 p795.

Guess what: there was a 2 cm flint arrowhead that had ripped through his scapula (shoulder blade) and lodged about 6cm deep in his shoulder.

He had been shot from behind by an arrow and DIED OF INTERNAL BLEEDING.

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A fortification ditch from a Native American settlement from ~1325 AD contained the remains of 500 men, women and children . These victims had been scalped, mutilated and left exposed for a few months to scavengers before being interred.

Keeley Fig 4; <http://www.usd.edu/anth/crow/crow1.html> SLIDE 9

In short, Archaeology documents warfare in every well-studied region for the past 10,000 years.

Now, the other place to look for signs of a peaceful stage in human evolution is in currently primitive humans.

Here the anthropologists take over from the paleontologists or archaeologists.

Kp28:

Anthropologists find that 90-95% of known societies have been involved in war.

In one sample of 50 societies: 45 engaged in war frequently.

K:28

The other 5, "were not total strangers to violent conflict".

Of these 5, 4 had recently been driven by warfare into isolated refuges and just didn't have contact w/ other societies any more.

And the last one, the Monachi, in the California Mountains, "apparently did occasionally go to war, but only very rarely".

Keeley p32: In another study 66% of primitive societies went to war every year.

75% every at least every two years,

and up to 90% went to war at least once in every 5 years.

The Dani tribesmen of New Guinea had 7 full battles and nine raids in one 5 1/2 month period.

One Yanomamo village was raided 25 times in 15 months.

In the US West, 86% of the Indian tribes went raiding, or had to resist raids, at least once a year.

Kp31: The Semai of Malaysia were usually very peaceful.

But they were recruited as scouts by the British to fight a guerilla insurgency (1950s to 1960s).

After the guerillas killed some of their kinsmen, they became extraordinarily warlike:

One Semai veteran recalled: "We killed, killed, killed."

"The Malays would rob the corpses - but we did not want anything."

"We thought only of killing. Wah, truly, we were drunk with blood."

Sounds like their culture had somehow repressed a warlike killing instinct -

but when the cultural control came off - boom, the instinct roared up full blown!

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Similarly, the genocide in Cambodia rocketed a peaceful people into an extreme orgy of killing. (I was there shortly before the US destabilized their government and the Khmer Rouge took over).

On March 18, 1690 the Abenaki Indians raided Mercy Short's home in Salmon Falls, New Hampshire, which was then on the Frontier.

Mercy saw them kill her parents and 3 of her brothers and sisters.

During a long winter March into Canada with her captors,

Mercy saw a 5 year old boy chopped to bits and a young girl scalped,

and was forced to watch, her hands tied as another fellow captive was stripped bound to a stake and tortured with fire, after which the Abenaki "Danced about him, and at every turn, they did with their knives cut collops of his flesh, from his naked limbs, and throw them with his blood into his face." 11/3/02 p12 NYT Book Review of Mary Beth Norton: The Salem Witchcraft Crisis of 1692 Alfred Knopf 2002.

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Amerigo VESPUCCI, 1502

Primitive Humans in Uncorrupted State: Garden of Eden

"Their marriages are not with one woman, but with as many as they like.

And without much ceremony, and we have known someone who had ten women."

"They are a very prolific people, but have no heirs because they hold no property."

Even childbirth is without pain: "Women in parturition do not use any ceremony as ours do; they eat everything, go on the same day to the fields and wash themselves; and it seems that they hardly feel their parturition."

Pain of childbirth is God's punishment for the original sin of eating the apple.

Good health and longevity:

They are people who live many years."

"and according to their succession, we have known many men who have four generations living."

Beyond biblical span of 70 years.

BUT: "They are a warlike people ... and when they fight they do so very cruelly, and that side which is lord of the battlefield bury their own dead, but the enemy dead they cut up and eat. ... One of their men confessed to me that he had eaten the flesh of more than 200 bodies."

"The most astonishing thing about their wars and cruelty is that we could find no reason for them, since they have no property or lords or kings or desire for plunder, or lust to rule, which seems to me to be the causes of wars and disorder.

When we asked them to tell us the cause of wars and disorder, they could give no other reason except that this war began among them a long time ago and they wish to avenge the death of their ancestors."

Vespucci's idea is that war is caused by some combination of original sin - which leads to all evil - and the normal political / economic / power reasons for war.

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But the Indians don't fit any of that pattern.

The same message comes from modern anthropology

K16: The Yanomamo of Venezuela and Brazil are embroiled in almost constant warfare. Yet Yanomamo villages are surrounded by abundant unoccupied territory. Napoleon Chagnon, the Anthropologist who studies the Yanomamo, believes that the fighting between them was apparently motivated only by desires to exact revenge and to capture women.

But in primitive warfare females are killed as often as captured; and most of these primitive tribes experience difficulty in obtaining sufficient food only as a RESULT of warfare.

When we come to historic times, after writing is invented, the written histories seem to flow continuously from the folklore and legends of preliterate cultures which are usually very bellicose.

Kp3: The first written accounts of the exploits of mortals are military histories.

The earliest annals of the Chinese, Greeks, and Romans are concerned with wars and warrior kings. Most Mayan hieroglyphic texts are devoted to the genealogies, biographies and military exploits of the Mayan kings.

The earliest Egyptian hieroglyphs record the victories of Egypt's first Pharaohs. The first secular literature or history written in cuneiform recounts the adventures of the Sumerian warrior-king Gilgamesh.

The early and extreme warlikeness of the earliest civilizations is laid out clearly in the Bible. The earliest written part of the old testament recounts the brutal Hebrew conquest of Canaan.

Numbers 31:7-18

After the Israelites get the 10 commandments with the prohibitions

Thou shall not kill they start the conquest of Canaan.

They waged war against the Midianites, as the Lord had commanded Moses, and killed every male among them.

But the Israelites kept the women of the Midianites with their children as captives. When Moses learned this he became angry,

"So, you have spared all the women.

Why, they are the very ones who prompted the unfaithfulness of the Israelites toward the Lord "

Slay, therefore, every male child and every woman who has had intercourse with a man.

But you may spare and keep for yourselves all girls who had no intercourse with a man."

Reminiscent of the Chimps being violent to females with children, but accepting of young females.

Or, after the fall of Jericho under Joshua (6:21): The Israelites "put to the sword all living creatures in the city: men, women, young and old, as well as oxen, sheep and asses" (Catholic Bible).

Or, in the next place they attacked (Ai) Joshua (8:25): "There fell that day a total of 12,000 men and women, the entire population of Ai."

Very, very Chimp like. There is an in-group and there is an out-group.

There are very different behaviors acceptable toward the two.

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This passage comes rather soon after the 10 commandments: Thou shalt not kill.

This and many, many subsequent passages make it very clear 10 commandments was supposed to apply to the ingroup. The outgroup was different.

Chimps: dominance fights within the in group don't lead to death.

Attacks between groups lead to death whenever the attackers can manage it.

When it comes to modern times, our knowledge of atrocities increases exponentially.

I'll describe just one out of a countless number that I could describe.

Iris Chang, *The Rape of Nanking* NYT Book Review 12/14/97 p16

Iris Chang, *The Rape of Nanking* NYT Book Review 12/14/97 p16

In December 1937, the Japanese army captured the Chinese city of Nanking. In short order the Japanese slaughtered 350,000 people. This was amazing since the total population of Nanking was only ~650,000 and several hundred thousand had already fled. In short, they basically killed all the Chinese they could find.

A Japanese newspaper reporter watched Chinese prisoners being bayoneted on top of the city wall. "One by one the prisoners fell down to the outside of the wall. Blood spattered everywhere. The chilling atmosphere made one's hair stand on end and limbs tremble with fear.

Another Japanese military correspondent described another locale where the murders were by Samurai style decapitations. 'Those in the second row were forced to dump the severed bodies into the river before they themselves were beheaded. The killing went on non-stop from morning until night, but they were only able to kill 2,000 persons that way. The next day, tired of killing in this fashion, they set up machine guns. So great was the slaughter that the Japanese General complained that he could not find ditches deep enough to bury the enormous pile of corpses.

Tens of Thousands of Chinese women were raped, often in schools and nunneries. Thousands more were put into sexual slavery - these women forced into prostitution were referred to in Japanese as 'public toilets.'

May soldiers went beyond rape to disembowel women, slice off their breasts, nail them alive to walls. Fathers were forced to rape their daughters and sons their mothers. Not only did live burials, castration, the carving of organs and the roasting of people become routine, but more diabolical tortures were practiced like hanging people from their tongues on iron hooks or burying people to their waists and watching them torn apart by German shepherds. So sickening was the spectacle that even Nazis in the city were horrified.

When the Japanese took Singapore, (right after Pearl Harbor, 1942) they shot, decapitated or bayoneted 20,000 more Chinese civilians.

Well, let's stop this recitation of violence and try to see what it means

The bottom line is that

1) war seems to be characteristic of almost all human societies at all times in our history

The amount of death caused by war is demographically very significant

In primitive societies war death ranges from 10% to 60% of all male deaths

And it ranges from 10 to 40% of all deaths (male+female)

SLIDE Keeley n90

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This is in the same ballpark as for Chimps: 30-40% of adult male mortality is from lethal raiding.
Wrangham, Yearbook of Physical Anthropology 42:10, 1999

War is not an aberration of modern societies.

On the contrary, the percentage of deaths due to war seems to be going down.

Total human population is larger than ever, so wars kill more people absolutely,

But an individual's chance of being killed by war has been going down.

SLIDES Keeley p90, 89

These data underestimate the significance of war.

They show the numbers of immediate, violent deaths.

But, at least in modern war, the destruction and disruption of war is frequently
the cause of famines and the spread of disease.

These usually cause many, many more deaths than the outright killing of the war.

It's frustrating to not really understand what is the basis of all this warfare.

Some of the primitive warfare stuff I've been telling you comes from a wonderful little book, War Before Civilization, by Lawrence Keeley p16 :

He concludes that primitive societies

"engage in warfare because, among other reasons, THEY CANNOT STOP,
NOT because they derive any benefit from fighting.

IN THE ABSENCE OF ANY CENTRAL AUTHORITY THEY ARE CONDEMNED TO FIGHT FOREVER ... SINCE FOR ANY ONE GROUP TO CEASE DEFENDING ITSELF WOULD BE SUICIDAL.

It sounds like what the Indians told Vespucci.

Once war becomes endemic in a species

It is very hard to reverse the process.

All groups have to renounce war at the same time.

It doesn't happen.

ISSUES FOR DISCUSSION:

BIOLOGY IS NOT DESTINY: Pavlov, My dog

TASHA

NATURAL (BIOLOGY) DOES NOT MAKE RIGHT OR WRONG.

Catholic Natural Law.

"Reason is the Slave of the Passions" David Hume 1711-1776

A Dissertation on the Passions (1757)

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BONOBOs do it differently.

Do humans have some sort of 'instinctual' need to belong to a community?

To identify an ingroup and an outgroup.

To be protective of the ingroup and to be hostile to the outgroup.

Does culture simply tell us who is the in group and who is the out group (this year)?

Anything will work to distinguish in and out group

Skin Color

Religion

Language - Canada, Belgium, Moldavia

Political System (Capitalists vs. Communists)

Geographical residence (from street gangs to national conflicts)

Sports Team

Can change with extraordinary rapidity

Germans and Japanese - from worst enemies during WWII to best friends after

Chinese – from "Yellow Peril" during Korean war to wonderfully industrious people after 1970s

The foundation of all demography is births and deaths.

We've been talking about violence, one of the main causes of human deaths.

We find that there is clear continuity from the Chimpanzee situation to the human.

Now, let's talk about births.

We will find that, in this area, humans are drastically different from Chimps.

POINT 1. Chimpanzees were never very successful demographically.

At their peak there may have been 2 million Chimpanzees.

Now that's reduced to ~100,000. PAI, Nature's Place IUCN Red List of Threatened Animals, 1996

They never spread beyond central Africa.

Humans on the other hand number in the Billions and have spread to the farthest corners of the earth.

There are 10s of thousands times as many humans as there are Chimps.

From a demographic point of view, we want to know why there are so many humans and so few Chimps.

HOW MANY HUMANS ARE WE TALKING ABOUT IN PREHISTORY?

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The evolutionary line of humans and chimpanzees separated from each other

some 6 Million years before present (MyrBP)

Wrangham tree Slide 18

(Wrangham p1) Diamond 1997, p36: ~7 (5-9MyrBP) (Sci Am 5/94 ~8 MyrBP)(4-5MyrBP:p 354 in Topics in Primatology.

QL737 P9 T67X 1992 Vol. 1.).

The population size of the common ancestral species that gave rise to humans, bonobos and chimps was ~50,000 individuals at the time of the chimp-human split.

A small breeding group split off from the ancestral population and started evolving differently eventually to generate the human species.

With small numbers, groups of our ancestors could have been widely dispersed. In those situations it is easy for subgroups to become isolated.

Without interbreeding they can evolve separately into different species.

Our evolutionary line fractured repeatedly into different species

Small numbers in a population not only leads to rapid evolution, but also entails a high danger of extinction –all of our sister species went extinct.

The Genus Homo, in which humans eventually evolve, originates ~2.5 Meg yrs ago (NG 8/98). (Sci Am 5/94 ~3 MyrBP)

Paleontologists start calling skeletons Homo sapiens ~ 1/2 Myr BP (before present).

But at that time they still had brains significantly smaller than ours.

Anatomically modern humans, our subspecies Homo sapiens sapiens, begins ~100,000 to 150,000 years ago.

Up until that time, the number of humans was very small.

With a very small population - we must have been close to extinction

Just as all the other humanoid species did.

MITOCHONDRIAL EVE and Y-CHROMOSOME ADAM

It seems that about 100,000 years ago, there was a bottleneck in the growth of our species and that a small number of humans living at that time are the ancestors to all current humans. NYT 5/2/00 Adam & Eve ~ 140,000 yrs ago.

Cavalli Sforza (10/27/01) says Y chromosme date for Adam is 75,000 yrs ago, but date for mitochondrial Eve is older.

At that time there was a small population of about 2,000 (Am J Human Genetics, '03) to 10,000 inter-breeding humans living in Africa.

Some research puts the numbers higher.

There may have been other breeding populations at that time that have died out since. Studies of mitochondrial DNA, which is inherited only in the female line, and Y-chromosme DNA which is inherited only in the male line suggests that this founder population for humans had only 10,000 individuals.

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Other research on the chromosomes inherited from both fathers and mothers suggests a somewhat larger number more than 20,000 but less than 500,000.

With no substantial population growth, each individual had,
on average, 2 surviving offspring.

When the average # of children is 2,
many individuals will leave no surviving children.
Many lineages just die out.

In fact the genetic evidence suggests that all but one of the lineages of this original small ancestor population died out. NYT 5/2/00 pF1,5.

It is now believed that from that population, all current humans are descendants of a single female, and a single male.

The male and female may not have been living at the same time.

At some point in the past, from the variety of females living then, all lineages but one died out. The one remaining female is the ancestor of all of us.

Same for the males at some (probably different) time in the past.

POINT 2 Until ~100,000 years ago, humans, as a species

were not unique, not numerous and not particularly successful.

We could easily have gone extinct.

THE EXPLOSION OUT OF AFRICA:

After millions of years of being confined to Africa, about 50,000 years ago.- humans migrated out of Africa.

Latest is that maybe only a few hundred humans left Africa as recently as 25,000 years ago.

Once out, humans burst out upon the rest of the world and spread everywhere.

Humans are found everywhere on the Eurasian continent by about 20,000 years ago.

Then, expanding from Siberia into Alaska, they radiated in the Americas reaching the tip of South America maybe 10,000 years ago.

POINT 2 In ~40,000 years, the blink of an eye in evolutionary terms,

Humans spread everywhere on earth

An incredible population explosion.

Our great success in this period had nothing to do with modern technology –

It predated even the invention of farming. So, what is the main demographic difference between Chimps and Humans.

Chimp females can have only 1 young every 5-8 years.

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There is no way that Chimp numbers can increase rapidly.

Human females have babies very much more frequently than do chimps.

It is quite possible to have a baby every 1 1/2 to 2 years and this is often seen. My brother and I were born only 20 months apart.

Chimpanzees take care of only 1 infant at a time.

Human females often take care of more than one infant at the same time.

The reproductive potential of humans is tremendously increased over that of chimps.

POINT 3 A major mechanism of the original human population explosion

POINT 4 What evolutionary factors changed to allow this increase in fertility?

To understand what changed, we have to understand what limited Chimp population expansion.

The main factor is the extended period of time that brain development takes.

The brain can be only so big at birth.

The size of the pelvic opening limits how large a head can pass through.

So great apes are born with only a partially developed brain.

They finish development after birth.

During this long period, the young are dependent on adults.

Females spend most of their time alone with their children

And they take care of the young alone.

Remember that Chimp females get very little in the way of resources from the males. They mostly forage and fend for themselves and their young.

Males are only helpful in defending the whole community.

As a result, females never take care of more than 1 young at a time.

Their reproductive potential is severely limited by the helplessness of the young and their need for full time care.

Africa was drying out at the time of human evolution.

Some proto-chimps must have migrated out into the more open woodland and eventually even grassland.

Remember Chimps eat mainly fruits from trees.

In open woodland, the tree density and hence food density is less.

The food density may have been a key factor in this newly evolving social system.

The community had to spread out more to find food.

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Individuals had to travel farther to find food.

In the absence of hard data, several lines of speculation open up:

As groups spread out, dominant males could no longer keep watch over all the females.

So, males who would otherwise be subdominant, could pair up with a female and travel together.

While chimp males and females may pair for short times in consortships,
there is no consistent pairing between individual males and females.

In humans there is.

Chimpanzees are male bonded, males spend more time with each other in grooming and other friendly activities than they do with females.

In humans, there is still a lot of male bonding going on – military units and sports teams and all-male clubs and football watching parties, etc.

But, there is much more male-female bonding than in Chimps.

Female sexuality changed.

While Chimps always mate with the male behind, humans engage in frontal copulation. Since the face is how humans (and Chimps) primarily detect emotions and respond to each other, this face to face position is considered to be part of the evolution of male-female bonding.

We see the same changes in Bonobos who also have evolved a less violent sexual system than Chimps Bonobo Copulation SLIDE

Females also use this position with each other.

Scientists call it Genito-genital rubbing, local people call it HOKA HOKA

SLIDE

We can see that they are females by their swollen rumps

While female Chimps don't show any signs of pleasure during sexual intercourse; Bonobos and Humans definitely do.

Clitoris migrates more ventrally in Bonobos and humans.

Probably to facilitate sexual pleasure in the face-to-face position.

Humans have hidden estrous. No swollen red rump.

Why the hidden estrous?

Female Chimps, as we've seen, have an evolutionary interest in inciting males to compete.

Something even more valuable evolutionarily must have come to dominate.

If food is scarce, or the chimps live in more open country where they can be seen and attacked by big carnivores – it might be worth it for a female to have a male hang around.

If a male knows when a female is in estrous, then he knows when she is not in estrous. When she is not - it might be to his evolutionary advantage to try to find another female.

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So one purpose of hidden estrous might be to keep a male around

A side result is reduced male competition.

It looks like human females are switching their strategy from trying to get the best genes - by inciting physical competition-

To trying to get RESOURCES from males.

Story is rather more complicated: good reading on this in your packet.

How does the male respond:

If males and females start pairing,

you might think of it as the rudiments of monogamy.

Then paternity can become at least somewhat more certain

Depending on how monogamous the pairing is.

It then becomes evolutionarily worthwhile for the male to put resources into child-rearing.

In human societies adult males provide resources for the rearing of offspring -

Eventually some form of stable pairing develops so that males know who their children are, and have some responsibilities toward these children.

POINT 4 AN INCREASE IN MALE CONTRIBUTION TO CHILD REARING IS A POSSIBLE REASON FOR THE INCREASED FERTILITY OF HUMANS.

Monogamy hasn't by any means taken human societies totally over.

Aside from those societies with overtly sanctioned polygamy,

In our culture, Europe and North America, genetic testing shows that 10 -15% of humans don't have the father they're supposed to have.

American women report 6 different sexual partners lifetime.

Males report 16 female partners. . Both can't be true; the averages must be equal. Maybe ~12 is correct. NYT 5/29/01

A significant male contribution to childrearing is a huge change with many possible implications.

For instance,

Among Chimp males, it is primarily the alpha-male who gets to reproduce.

Thus, those traits that make him alpha are what evolution selects for: size, aggressiveness, leadership.

But, if most males get a more equal chance to reproduce, and the survival of their offspring depends on the resources they bring or can create -

Then, many other traits can be selected for --- including intelligence.

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