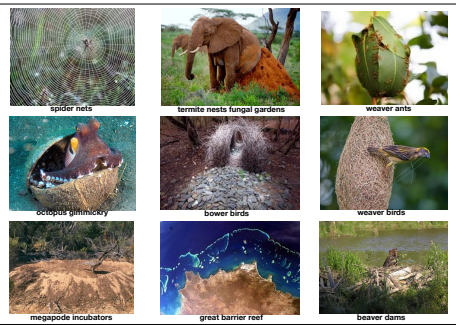
CULTURE

ANTH 203 Introduction to Anthropogeny
November 16, 2023

Lecture 8
Pascal Gagneux

How many of you still know how to make twine or a rope? or use such twine to make a net? This is an example of how cultural knowledge can erode…..

Animal Material Culture

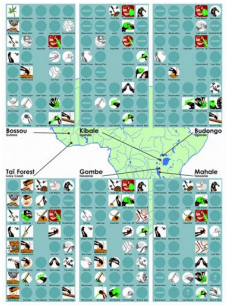


Examples of animal material and tool use, many of these examples do not include learnt behaviors.

Animal cultural transmission

Animals actively teaching, very few examples if any from apes.

Chimpanzee culture



material and social

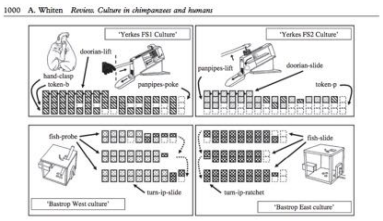
Whiten et al. ***NATURE*** 1999

Behaviors are arranged in the 5times 8 arrays to cluster those behaviors customary or habitual at each site, with clusters for westerly sites on the left of the array and clusters for easterly sites on the right. The secondary Mahale site (K) is omitted. Colour icons, customary; circular icons, habitual; monochrome icons, present; clear, absent; horizontal bar, absent with ecological explanation; question mark, answer uncertain.

Chimpanzees

Savannah chimpanzees in Issa Valley, Tanzania, 5 years later, fully habituated and not afraid of human observers anymore.

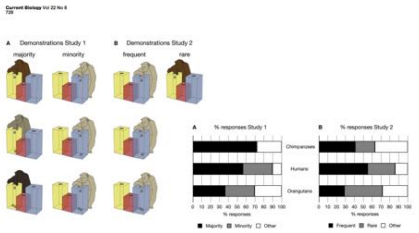
Conformity bias in captive chimpanzees



Whiten A Phil. *Trans. R. Soc B.* 2011

Spread of experimentally seeded, multiple traditions generating four chimpanzee ‘cultures’. At each pair of locations, alternative techniques were experimentally seeded in a single individual and spread locally. Each column represents a single chimpanzee, with hatching corresponding to the alternative techniques seeded in the leftmost individual in each case. At Yerkes, row 1 ¼ lift versus slide methods to open door in ‘doorian fruit’, run as a diffusion chain; row 2 ¼ poke versuslift panpipes techniques spread in an open (unconstrained) diffusion; row 3 ¼ bucket versus pipe posting option fortokens in an open diffusion ;
row 4 ¼ hand-clasp grooming, which arose and spread spontaneously in only Yerkes FS1 community. At Bastrop, row 1 ¼ fish-probe versus fish-slide techniques; row 2 ¼ turn-ip-slide versus turn-ip-ratchet techniques, used to extract food from two different devices; each technique spread to a second group (middle) and then a third (bottom).

Normative transmission in Chimpanzees



Haun *et al.* ***Current Biology,*** 2012

Structure of Peer Demonstrations in Study 1 and Study 2(A) Demonstrations of different response options in study 1. One option is demonstrated by three different individuals, once each (majority). One option is demonstrated by one individual three times (minority). One option is never demonstrated. The real boxes were opaque, not transparent as indicated here. Every observer saw these two types of demonstrations by conspecific peers in counterbalanced order. (B) Demonstrations of different response options in study 2. One option is demonstrated by one individual three times (frequent). A second option is demonstrated by one individual once (rare). One option is never demonstrated. The real boxes were opaque, not transparent as indicated here. Every observer saw two demonstrationsby conspecific peers in counterbalanced order.

Figure 2. Percent Responses following Different Demonstrations in Study 1 and Study 2 (A) Percentage of given responses in either of the three response categories (majority, minority, or other), separately for the three tested great ape species in study 1.(B) Percentage of given responses in either of the three response categories(frequent, rare, or other), separately for the three tested great ape species in study 2.

Apes have culture but do not know it

Jourdain Hypothesis :

"Par ma foi! Il y a plus de quarante ans que je dis de la prose sans que j'en susse rien, et je vous suis le plus obligé du monde de m'avoir appris cela."
Mr Jourdain, Le Bourgeois-Gentilhomme, Acte II, scène 4, Molière (1670).

["By my faith! For more than forty years I have been speaking prose without knowing anything about it, and I am much obliged to you for having taught me that." Mr Jourdain, The Middle-class Gentleman, Act II, scene 4, Molière (1670) The Gutenberg Project, translation by Philip Dwight Jones].

Table 2 | Summary of the different stages of representations involved in the cultural process and their presence in humans and great apes, according to current knowledge.

Species / Representational stage	Humans	Non-human great apes
Primary (simple) mental representation	Present	Present (e.g., spatial memory, see Janmaat et al., 2013).
Re-representations		
– Categorisation	Present	Present at the perceptual level but experiments needed to explore the conceptual level (Hauser and Santos, 2007; Ruiz and Santos, 2013).
– Representation of techniques	Present	Potentially present (Whiten, 2000; Hobaiter et al., 2014) but experiments needed to confirm their extent.
– Representation of practitioners	Present	Understanding of different models (Hopper et al., 2011) group identity present but no group-mindedness (Gruber and Zuberbühler, 2012; Tomasello et al., 2012).
Metarepresentation of cultural beliefs	Present	Absent (Call and Tomasello, 2008).

Lack of Metarepresentation of cultural beliefs

Gruber *et al.* 2015 ***Frontiers in Psychology***

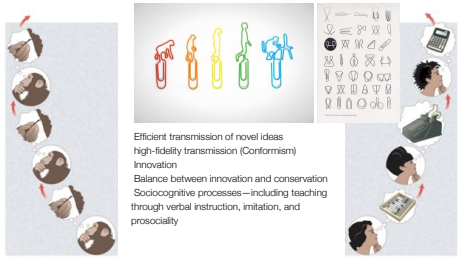
Mental state attribution! The highest stage of metarepresentational process, in our context, is to appreciate that members of another group may harbor beliefs that are different from one's own group, that is, to compare 'how things ought to be' (Figure Figure3C3C). Here, cognition goes beyond simple re-representations, which could sustain all previous aspects of cultural knowledge, i.e., categorisation, representation of techniques, and representation of models. In effect, the metarepresentational processes must become 'representations of representations as representations', that is metarepresentations. In humans, this type of metarepresentation probably underlies complex mental state attribution, intentional teaching and belief-based imitation, the human 'theory of mind' (Tomasello et al., 2005 and comments; Meltzoff, 2007). The ability to mentally represent and compare own and others' knowledge may refine the categorisation of partners as 'same' or 'other.' Such reasoning, if associated with feelings of group identity, appears to be an ingredient for the emergence of social norms. Humans have an urge to conform to the behavior of others, but to perceive group behavior as normative and recognize deviation, it is also necessary to mentally represent the group norm, 'the way things ought to be.' Humans tend to become aggressive toward non-followers, while positive reinforcement also plays a role, for instance, in the case of the 'chameleon effect,' when individuals engaged in an interaction unintentionally match each other's behaviors (Chartrand and Bargh, 1999). How this effect connects to norms, however, remains to our knowledge to be investigated. The theory of mind of great apes, in contrast, appears to be more limited and unable to take into account others' false beliefs, suggesting that their metarepresentational abilities are equally limited (Call and Tomasello, 2008).

Conformism and Norm

Swiss Meta-representation of cultural beliefs

1. We have always done it like this.
2. We have never done it like this.
3. If you do it differently, then anyone could do so.

The origin of ratcheting culture



Efficient transmission of novel ideas
high-fidelity transmission (Conformism)
Innovation
Balance between innovation and conservation
Sociocognitive processes—including teaching through verbal instruction, imitation, and prosociality

Kurzban & Barrett *Science* 2012

The evolution of the paper clip is sometimes used to illustrate this principle

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The origin of ratcheting culture

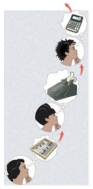
Efficient transmission of novel ideas.

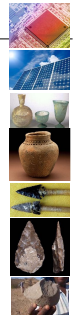
High-fidelity transmission (Conformism).

Innovation.

Balance between innovation and conservation.

Socio-cognitive processes including teaching through verbal instruction, imitation, prosociality, and the creation of meaning.





Kurzban & Barrett ***Science*** 2012

Building on others' ideas, tinkering and innovating while also conforming to a certain degree.
Language does wonders to sharing ideas.
From Oldowan stone tool, to Acheulean hand axe, to hafted arrow points, pottery, glass, microchips and photovoltaic panels, all different uses of silicate minerals!

CULTURE (Indo-European)

from cultura: growing, cultivating (Neolithic!)

Looking up the word for culture in a small sample of different language families reveals: different views of culture and reflexiveness of human cultures.

Utamaduni (Bantu) Πολιτισμός

from مدينة (Madina) Arabic for “city”, Urbanity, Culture

ثقافة (Afro-Asiatic) thaqafa

etymology from: instructing, teaching, educating

Paleolithic Culture

no writing system

no farming

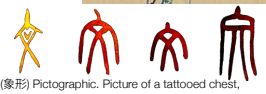
no currency / market economy

no towns

YET all profoundly cultural!

Πολιτισμός politismos: Polis (city)

文化 (Sinotibetan) wén hùa



(象形) Pictographic. Picture of a tattooed chest, representing its former meaning of "tattoo"

紋 current character for tattoo

The intricate patterns of 2,500-year-old tattoos - some from the body of a Siberian 'princess' preserved in the permafrost - have been revealed in Russia. The remarkable body art includes mythological creatures and experts say the elaborate drawings were a sign of age and status for the ancient nomadic Pazyryk people, described in the 5th century BC by the Greek historian Herodotus. But scientist Natalia Polosmak - who discovered the remains of ice-clad 'Princess Ukok' high in the Altai Mountains - is also struck about how little has changed in more than two millennia.

Sanskrit (Indo-european)

from संस्कृति Sanskrit saṃskṛta 'composed, elaborated,' from saṃ 'together' + kṛ 'make' + the past participle ending -ta

17

Elaborated, composed

Teko (Tupi-Guarani, South Amazon)

custom, mode of being

Custom, mode of being.
Cultural anthropologists would insist that human culture is a system for the creation of meaning.

Contrasting European Views on the Past

"No arts; no letters; no society; and which is worst of all, continual fear, and danger of violent death: and the life of man, solitary, poor, nasty, brutish and short."

Thomas Hobbes 1588- 1676

"Civilization is a hopeless race to discover remedies for the evils it produces."

"Nature made me happy and good, and if I am otherwise, it is society's fault."

Jean Jaques Rousseau 1712-1778

Two extreme views of civilization by European philosophers of the 17th and 18th century, also known as DWEMs (Dead White European Men).

Eurocentrism including among intellectual giants

"I am apt to suspect the Negroes, and in general all other species of men to be naturally inferior to the whites. There never was any civilized nation of any other complexion than white, nor even any individual eminent in action or speculation."

David Hume 1711-1776

Die Menschheit ist in ihrer größten Vollkommenheit in der Rasse der Weißen. Die gelben Indianer haben schon ein geringeres Talent. Die Neger sind weit tiefer, und am tiefsten steht ein Teil der amerikanischen Völkerschaften. […] Die Negers von Afrika haben von der Natur kein Gefühl, welches über das Läppische stiege.

Humanity exists in its highest perfection in the White Race. The yellow Indians already have a lower talent. Negroes are far lower, and lowest are the peoples of America. […]. The Negroes of Africa have by nature no feeling that rises above the trifling.

Immanuel Kant 1724-1804

Ethical Giants too: Albert Schweitzer

Material progress much faster than mental progress.

"I have given my life to try to alleviate the sufferings of Africa. There is something that all white men who have lived here like I must learn and know: that these individuals are a sub-race. They have neither the intellectual, mental, or emotional abilities to equate or to share equally with white men in any function of our civilization. I have given my life to try to bring them the advantages which our civilization must offer, but I have become well aware that we must retain this status: the superior and they the inferior. For whenever a white man seeks to live among them as their equals they will either destroy him or devour him. And they will destroy all of his work. Let white men from anywhere in the world, who would come to Africa, remember that you must continually retain this status; you the master and they the inferior like children that you would help or teach. Never fraternise with them as equals. Never accept them as your social equals or they will devour you. They will destroy you." -
Dr. Albert Schweitzer, winner of the 1952 Nobel Prize for peace, in his 1961 book, From African Notebook.

Political Giants too: ?

The Jewish n***** Lassalle who, I'm glad to say, is leaving at the end of this week, has happily lost another 5,000 talers in an ill-judged speculation. The chap would sooner throw money down the drain than lend it to a 'friend', even though his interest and capital were guaranteed……..

It is now quite plain to me — as the shape of his head and the way his hair grows also testify — that he is descended from the negroes who accompanied Moses' flight from Egypt (unless his mother or paternal grandmother interbred with a n*****). Now, this blend of Jewishness and Germanness, on the one hand, and basic negroid stock, on the other, must inevitably give rise to a peculiar product. The fellow's importunity is also n*****-like.

Ferdinand Lassale

Friedrich Engels

Der jüdische N***** Lassalle, der glücklicherweise diese Woche abreist, hat [...] 5000 Taler in einer falschen Spekulation verloren. Der Kerl wür- de eher das Geld in den Dreck werfen, als es einem ‚Freunde' zu pum- pen, selbst wenn ihm Zinsen und Kapital garantiert würden. [...] [D]er Kerl, der die Geschichte mit Amerika usw. weiß, also die Krise kennt, in der ich mich befinde, [...] hat mir Zeit gekostet und, meinte das Vieh, da ich ja jetzt doch ‚kein Geschäft' habe, sondern nur eine ‚theoreti- sche Arbeit' mache, könne ich ebensogut meine Zeit mit ihm totschla- gen!

Es ist mit jetzt völlig klar, daß er, wie auch seine Kopfbildung und sein Haarwuchs beweist, – von den Negern abstammt, die sich dem Zug des Moses aus Ägypten anschlossen (wenn nicht seine Mutter oder Groß- mutter von väterlicher Seite sich mit einem n***** kreuzten). Nun, diese Verbindung von Judentum und Germanentum mit der negerhaften Grundsubstanz müssen ein sonderbares Produkt hervorbringen. Die Zudringlichkeit des Burschen ist auch n*****haft.“[1]

Paul Lafargue and Laura Marx

Karl Marx, Brief an Friedrich Engels [vom 30. Juli 1862], in: MEW 30, S. 257–259. (Im Folgenden wird in der Regel nach der Ausgabe Karl Marx, Friedrich Engels, Werke [MEW], hg. v. Institut für Marxismus-Leninismus beim ZK der SED, Berlin 1956–1990, unter Angabe der jeweiligen Bandnummer zitiert).

Leslie Derfler, Paul Lafargue and the Founding of French Marxism, 1842–1882, Cam- bridge (Mass.) 1991, S. 46 (dort auch der Hinweis auf die Marxschen Namensgebungen).

Political Giants too: ?

Guevara's 1952 diary:

“The blacks, those magnificent examples of the African race who have maintained their racial purity thanks to their lack of an affinity with bathing, have seen their territory invaded by a new kind of slave: the Portuguese.”

“The black is indolent and a dreamer; spending his meager wage on frivolity or drink; the European has a tradition of work and saving, which has pursued him as far as this corner of America and drives him to advance himself, even independently of his own individual aspirations.”

Laurent Kabila and son Joseph

Che was wrong! Kabila overthrew Mobutu and became the president of DRC. His son Joseph also became president.

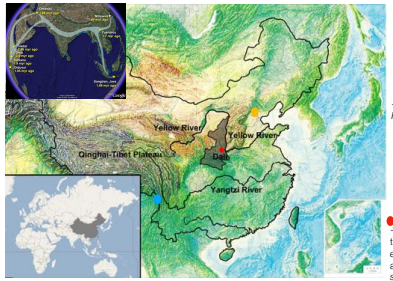
中國 China: sees itself as the “middle country”

Ethnocentrism not restricted to Europe

Zheng He 鄭和 1371-1433

The ships mod the ancient Chinese navy were more tan three times the size of the Portuguese ships!

We can’t be from Africa!



~700 ky old Choukoudian *H. erectus* " Peking Man"

~140 ky old Harbin skull *H. longi*?

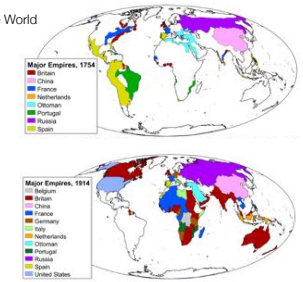
~200 ky old Dali skull transitional between *H. erectus* and modern Chinese *H. sapiens* ???

~14 ky old Red Deer Cave AMH

The view that Chinese people cannot possibly be descending from recently out of Africa populations is still rather popular in China.

Smaller boats, but drive to explore, convert and conquer

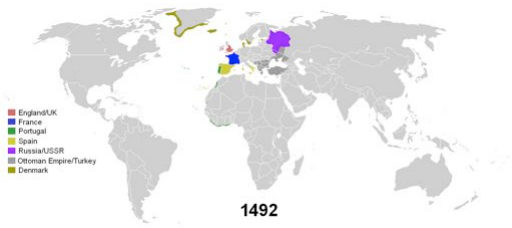
European Conquest of the World



Top: Colonialism in 1754. China remained the richest country on Earth, but had not conquered an overseas colonial empire. Major European powers concentrated on establishing colonies in the Americas (some of the most valuable of which, in the Caribbean, are too small to be shown here) and trading posts in Africa and Asia. based on a map by Wikimedia/Andrei nacu

Below: Colonialism in 1914. This map shows the world's major empires on the eve of World War I. The focus of European colonialism has shifted to the Eastern Hemisphere, and neo-European United States has become a colonial power in its own right, seizing some of declining Spain's possessions. After the war, much of the Ottoman Empire's territory was divided up among Britain and France, while Germany lost its overseas possessions to the victorious nations. China's power was severely weakened by the ongoing fall of the Qing Dynasty. based on a map by Wikimedia/Andrei nacu

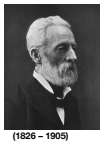
Colonial History

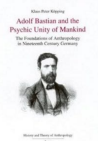


Brief instant replay of European, Ottoman and Japanese colonialism..

Ethnography vs “Anthropogeny”

Adolf Bastian vs Ernst Haeckel

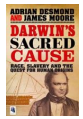

(1826 – 1905)

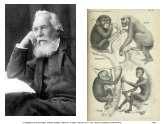



(1834 –1919)

German ethnographers who experience the “psychic unity of man”, having spent decades living in far away societies, strongly disagreed with Haeckel’s racial hierarchy, causing many of them to refuse notions of evolution.

Darwinian Abolitionism vs Evolutionary Racism





Ironically, in Britain, many Darwinian evolutionists strongly opposed slavery, while German proponent of Darwinism such as Ernst Haeckel fell into scientific racism.

Ethnography
Socio-Cultural Anthropology

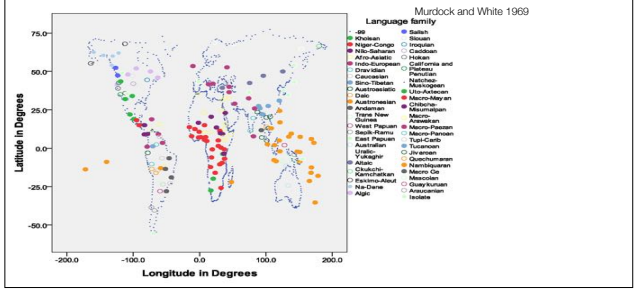
Observing other societies
Living in other societies

Looking for patterns

Quest for universals

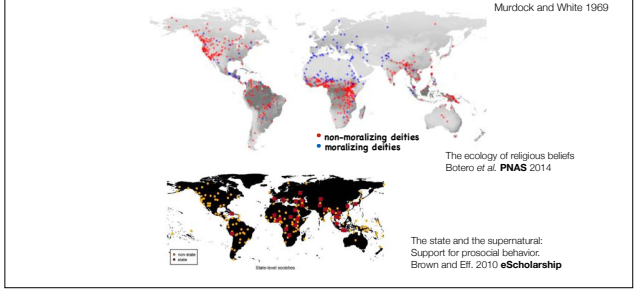
Quest for violations of universals

SCCS - Standard Cross-Cultural Sample: 186 cultures



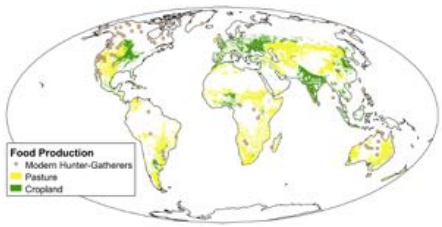
A classic collection of ethnographic data widely used in cross-cultural comparisons.

SCCS - Standard Cross-Cultural Sample: 186 cultures



Top:Global distribution of societies that exhibit beliefs in moralizing high gods (blue) or not (i.e., atheism or beliefs in nonmoralizing deities or spirits in red). The underlying map depicts the mean values of net primary productivity (i.e., the net balance of monthly consumption relative to production of carbon dioxide by living plants) in gray scale. Darker localities reflect places with greater potential for overall plant growth.Cross-cultural research entails a particular statistical problem, known as Galton's problem: tests of functional relationships (for example, a test of the hypothesis that societies with pronounced male dominance are more warlike) can be confounded because the sample of cultures are not independent. Traits can be associated not only because they are functionally related, but because they were transmitted together either through cross-cultural borrowing or through descent from a common cultural ancestor. George Peter Murdock attempted to tackle Galton's problem by developing a sample of cultures relatively independent from each other—i.e., with relatively weak phylogenetic and cultural diffusion relationships. Murdock began with the twelve hundred or so peoples in his Ethnographic Atlas (Murdock, 1967), dividing them into roughly 200 "sampling provinces" of closely related cultures. Murdock and Douglas R. White chose one particularly well-documented culture from each sampling province to create the Standard Cross-Cultural Sample (SCCS) (Murdock and White, 1969). The number of cultures is large and varied enough to provide a sound basis for statistical analysis; the sample includes 186 cultures, ranging from contemporary hunter gatherers (e.g., the Mbuti), to early historic states (e.g., the Romans), to contemporary industrial peoples (e.g., the Russians) (Silverman & Messinger 1997; Mace & Pagel 1994).

Living Foragers and their Plight



Gatherer-Hunters!

data from Navin Ramankutty and Ohio State University Hunter-Gatherer Wiki

Modern agriculture and hunter-gatherers. Map shows area used for major agricultural and pastoral production in 2000, and locations of societies that have depended on hunting and gathering for a significant portion of their food in the modern era. data from Navin Ramankutty and Ohio State University Hunter-Gatherer Wiki

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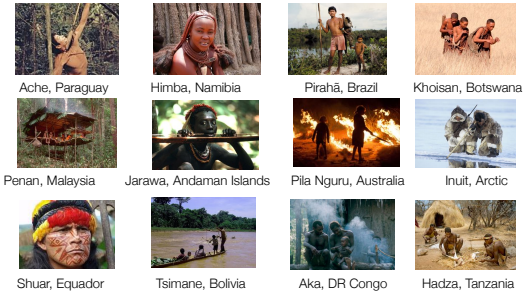
Last Living Hunter Gatherers/Foragers



Ache, Paraguay | Himba, Namibia | Pirahã, Brazil | Khoisan, Botswana

Penan, Malaysia | Jarawa, Andaman Islands | Pila Nguru, Australia | Inuit, Arctic

Shuar, Equador | Tsimane, Bolivia | Aka, DR Congo | Hadza, Tanzania

Most of these societies are in major transition into sedentarism and farming.

Study of pre-agricultural societies - value to Anthropogeny?

What is left from pre-neolithic times?
Living Foraging Societies as models?

PRO: Natural fertility, minimal material culture, strongly reflect ecological conditions.

CONTRA: marginalized ecologically, influenced by pastoralist or agricultural neighbors, oppressed by neighbors and possibly secondarily hunter-gatherer.

Human relations area files
http://hraf.yale.edu/

Egalitarian Levelling Mechanisms

Mobility and flexibility: There are no fixed dwellings, fixed base camps, fixed stores, fixed hunting or fishing apparatus-such as stockades or weirs-or fixed ritual sites to constrain movements. People live in small camp units containing usually a dozen or two people and moving frequently.

Access to means of coercion: Another important factor in this context is the access which all males have to weapons among the !Kung, Hadza, Mbuti and Batek. Hunting weapons are lethal not just for game animals but also for people.

Access to food and resources: In all these societies individuals have direct access, limited by the division of labour between the sexes, to the ungarnered resources of their country.

Sharing: Levelling mechanisms come into operation precisely at the point where the potential for the development of inequalities of wealth, power and prestige is greatest.

Sanctions on the accumulation of personal possessions: Rules of inheritance are flexible and no-one depends on receiving such objects either by inheritance or by formal transmission from close kin of the previous generation during their lifetime.

The transmission of possessions between people: Hadza use a distinctive method for transmitting such personally owned objects between people which has profound consequences for their relationships. In any large camp men spend most of their time gambling with one another, far more time than is spent obtaining food. They gamble mainly for metal-headed hunting arrows, both poisoned and non-poisoned, but are also able to stake knives, axes, beads, smoking pipes, cloth and even occasionally a container of honey which can be used in trade.

Leadership and decision-making: In these societies there are either no leaders at all or leaders who are very elaborately constrained to prevent them from exercising authority or using their influence to acquire wealth or prestige

James Woodburn. Egalitarian Societies , ***Man*** **1982**

The techno-cultural niche:

A second inheritance system -Cultural universals of technology


Shelter, Home Base


Control of Fire


Tool making


Weapons (projectile)


Twining/weaving/nets carrying slings

Containers

Cooking

Lever

Tying material

Brown, Donald (1991). Human Universals. Philadelphia: Temple University Press.

technical aspects of the winning modern human App!

Theodosius Dobzhansky on evolution and culture

“Nothing in biology makes sense, except in the light of evolution.”
(Theodosius Dobzhansky)
American Biology Teacher. 1983;35(3):125–129

"Human evolution cannot be understood as a purely biological process, nor can it be adequately described as a history of culture. It is the interaction of biology and culture. **There exists a feedback between biological and cultural processes**”.
(Theodosius Dobzhansky)
Mankind Evolving, p. 18. 1962

Cultural Universals of Language and Cognition:

Language employed to manipulate others
Language employed to misinform or mislead
Language is translatable
Abstraction in speech and thought
Antonyms, synonyms
Logical notions of "and," "not," "opposite," "equivalent," "part/whole," "general/particular"

Binary cognitive distinctions
Color terms: black, white

Classification of: age, behavioral propensities, body parts, colors, fauna, flora, inner states, kin, sex, space, tools, weather conditions

Continua (ordering as cognitive pattern)

Discrepancies between speech, thought, and action

Figurative speech, metaphors
Symbolism, symbolic speech
Synesthetic metaphors
Tabooed utterances
Special speech for special occasions
Prestige from proficient use of language (e.g. poetry)
Planning
Units of time

Brown, Donald (1991). Human Universals. Philadelphia: Temple University Press.

Cultural Universals of Society:

Personal names
Family or household
Generally Male Dominated
Males Generally More Overtly Violent than Females
Kin groups
Peer groups not based on family
Actions under self-control distinguished from those not under control
Affection expressed and felt
Age grades
Age statuses
Age terms
Law: rights and obligations, rules of membership
Moral sentiments
Distinguishing right and wrong, good and bad
Promise/oath
Prestige inequalities
Statuses and roles, LeadersDe facto oligarchy
Property
Coalitions
Collective identities

Conflict
Cooperative labor
Gender roles Males on average travel greater distances over lifetime
Marriage
Husband older than wife on average
Copulation normally conducted in privacy
Incest prevention or avoidance, incest between mother and son unthinkable or tabooed
Collective decision making
Etiquette
Inheritance rules
Generosity admired, gift giving
Redress of wrongs, sanctions
Sexual jealousy
Sexual violence
Shame
Territoriality
Triangular awareness (assessing relationships among the self and two other people)
Some forms of proscribed violence
Visiting
Trade

Brown, Donald (1991). Human Universals. Philadelphia: Temple University Press.

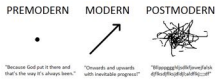
Cultural Universals of Myth, Ritual and Aesthetics:

Magical thinking
Use of magic to increase life and win love
Beliefs about death
Beliefs about disease
Beliefs about fortune and misfortune
Divination
Attempts to control weather
Dream interpretation
Beliefs and narratives
Proverbs, sayings
Poetry/rhetorics
Healing practices, medicine

Childbirth customs
Rites of passage
Music, rhythm, dance
Play
Toys, playthings
Death rituals, mourning
Feasting
Body adornment
Hairstyles
Art

Brown, Donald (1991). Human Universals. Philadelphia: Temple University Press.

Post-Modernism



Martin Heidegger
1889-1976

Jaques Derrida
1930-2004

"Dasein"
subject and object are inseparable

"there is no out-of-context" (il n'y a pas de hors-texte)

Impossibility of objectively studying humans or their societies.

- The exercise is a way of oppressing others.
- All narratives are equally true if they are lived.
- Anthropologists need to be advocates for the oppressed.
- Emphasis on including the opinions of the people being studied.
- A sense of relativism for the practices of other cultures.
- Rejection of science.
- Rejection of grand, universal schemes or theories which explain other cultures.

JOURNAL ARTICLE

Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity

Alan D. Sokal

Social Text
No. 46/47, Science Wars (Spring - Summer, 1996), pp. 217-252 (36 pages)
Published by: Duke University Press

Sokal wrote that the concept of "an external world whose properties are independent of any individual human being" was "dogma imposed by the long post-Enlightenment hegemony over the Western intellectual outlook."

After referring skeptically to the "so-called scientific method", the article declared that "it is becoming increasingly apparent that physical 'reality'" is fundamentally "a social and linguistic construct." It went on to state that because scientific research is "inherently theory-laden and self-referential", it "cannot assert a privileged epistemological status with respect to counterhegemonic narratives emanating from dissident or marginalized communities", and that therefore a "liberatory science" and an "emancipatory mathematics", spurning "the elite caste canon of 'high science'", needed to be established for a "postmodern science [that] provide[s] powerful intellectual support for the progressive political project."

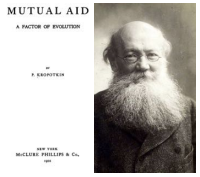
They apparently felt no need to analyze the quality of the evidence, the cogency of the arguments, or even the relevance of the arguments to the purported conclusion.

The hoax was meant to to expose the sloppiness, absurd relativism, and intellectual arrogance of "certain precincts of the academic humanities."

Testing the postmodernist system?

Cultural Relativism

Prince Pyotr Alexeyevich Kropotkin
Mutualism, Reciprocal Altruism
Russian Anarchism



Shinji Imanishi
Sociality Matters
Japanese Collectivism

Just as Victorian imperialism influenced Darwinian ideas, Russian anarchism and Japanese collectivism strongly influenced thinkers like Kropotkin and Imanishi.

Babakiuaria

https://www.youtube.com/watch?v=oUMpPgMGCe8

https://www.youtube.com/watch?v=oUMpPgMGCe8

Culture Kit of behaviorally modern human

Fossilisable Hardware

D'Errico and Stringer ***Proc R Soc*** 2012

Organic Artifacts from S Africa

Bone awls and points (1–7), OES beads (8–21), N. kraussianus beads (22 and 23), lump of organic material bound with vegetal fibers (24), digging stick (25), poison applicator (26), and gas chromatograms of the lipid fraction extracted from the residue from one end of the poison applicator (27) and from the lump of organic material (28). (Scale bars: 1 cm.)

Behavioral Innovations of the Middle Stone Age

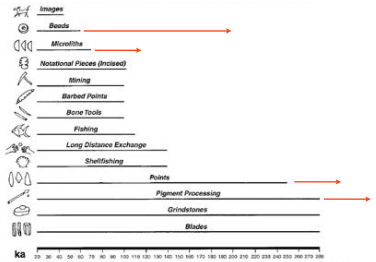


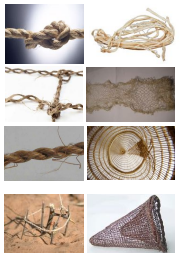
Figure 13. Modern behaviors and their time depths in Africa. © Sally McBrearty & Alison S. Brooks.

McBrearty & Brooks 2000, ***J. Human Evol.***

Smooth transition into behaviorally modern humans, or revolution?

Fiber Technology: plant fibers and animal fibers

flax fiber 34 ky old Rep. Georgia



- combining 2 dimensional objects for needs in a 3D world
- from linear to spatial reasoning
- hunting machines: traps -planning, delaying gratification, time travel

Fiber Technology: Mexican fan palm fibers for rope

Washingtonia spec.
Mexican Fan Palm

Phormium spec.
New Zealand Flax

Fibers can be twisted into strands and strand can be twisted together in opposite directions, causing the twist to remain permanent. additional fibers can be spliced into the nascent cord allowing the production of long ropes……

Body Art (Karo tribe, Omo Valley, Ethiopia)

Body art in the Omo Valley of lowland Ethiopia. natural pigments from different color earth (red and yellow ochre and kaolin clay) are used in combination with flowers and other vegetation to create stunning body art in males and females, adults and children.

Origins of Symbolic Capacity?

Symbolic “Transition”

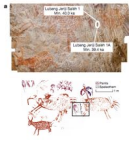
El castillo Cave, N. Spain 40 ky

Abris du castanet, S. France 38 ky

- Shared Symbols for social niches

Hohle Fels, Germany 38 ky

carved shell, Java, 540 ky!!!!



Luband Jerji Saleh, Borneo ~40 kya,

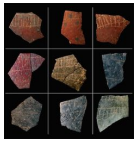
El Castillo cave N Spain 40 kya hands
Abris du Castanet S France 38 kya
Hohle Fels Venus, Germany 38 kya
540,000-Year-Old Shell Carvings May Be Human Ancestor's Oldest Art Live Science - December 3, 2014
The ancient, big-bodied relatives of modern-day humans not only ate freshwater shellfish, but engraved their shells and used them as tools, a new study finds. Researchers in Java, Indonesia, discovered engravings on a shell that dates to between 540,000 and 430,000 years ago. The ancient artwork could be the oldest known geometric carving made by a human ancestor, the researchers said. It's unclear what the engraving - a series of slashes and an "M"-shaped zigzag - means, but it could indicate that *Homo erectus*, the ancestor of modern humans, may have been smarter than was previously thought.

Our bodies as canvas: Ochre body paint

Himba women using ochre and milk fat

Blombos Cave ochre and palette
100 cya

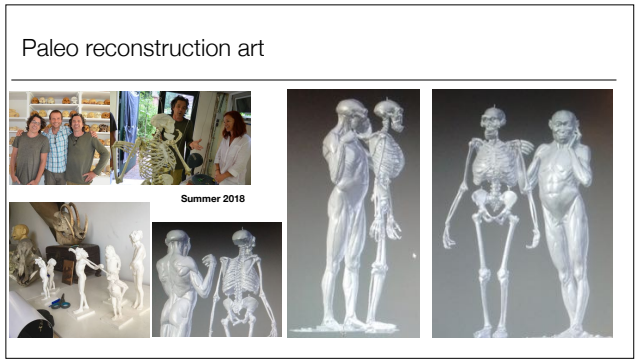
Blombos Cave ochre 70 cya



Diepkloof Rock Shelter, Western Cape, South Africa, dated to 60,000 BP.

Evidence that 100,000 years ago humans were using ochre to paint and paint themselves, likely in very similar ways than present day Himba people of Namibia.
Engraved ostrich egg shells stained with various pigments date back to 60 kya, A panel of mineral pigments used by the Koumeyaay Tribe in San Diego County.

UC San Diego graduate students producing “primordial art” using mollusc shell, suspension of ochre and two pieces of hollow reed to create an “air brush”.



Kennis brother working on Java woman, 1.6 millions year old homo erectus.

2023 Fall Class hand portrait with airbrush using water suspension of white CaOH (slaked lime), red: clay, and black: coal dust.

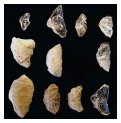
Kennis brothers' Java woman, 1.6 millions year old *Homo erectus* called pithecanthropus by it finder Eugene Dubois.

Why and why not?

Why are Lascaux-type cave paintings not found all over Africa or the Americas?

Projectile weapons

Spears
Schöningen Germany
270 ky old



Arrow heads
Sibudu Cave, S Africa,
64 ky old

Cognitive demands of hunting with spears, atlatls, sling shots and bows and arrows?

Exaptation for positional relations in syntax?

Symmetrical projectile points?

Balance, aim and timing?

Conditioning in massively delayed gratification: laborious manufacture of weapons for the incertitude of catching prey.

Spear, atlatl, bow and arrow, slings, blow gun

Niche Construction

social niche: language, kinship, tribe, alliances
belief/value systems, myths, religion
technology/culture: fire for landscape modification
technology/ culture: fire for cooking
technology: weapons for hunting and social competition.
technology/culture: symbolic creation for social cohesion, mental niche e.g. numbers, concepts.
technology/culture: weapons, shelter, clothing, shoes, boats - survival kits for any ecology

CULTURE: the hominid ecological niche? Loring Brace

CULTURE: the hominid ecological niche? Loring Brace

The Cultural Niche

non-biological inheritance system
rapidly evolving
human biology has become embedded in culture

A selection of cultural packages

Mbuti pygmies: fire, huts, dogs, projectile weapons, hunting nets, music, drugs, rituals, taboos, patrilineal and sister exchange common, mostly monogamous

Khoisan: fire, huts, carrying slings, projectile weapons, arrow poison, containers, rituals taboos

Penan: fire, huts, blow gun, arrow poison, music, hunting traps, rituals, taboos

Polynesians: fire, huts, outrigger canoes, crops, domestic animals (chicken, pig, rat and dog), navigation, rituals, taboos (and tattoos)

Inuit: fire (oil fire), snow huts, clothing, eye protection, projectile weapons for marine hunting, kayaks, dogs, sleds, rituals, taboos.

Cultural Convergence

e.g. Axial Age: 800 to 200 BCE three distinct region:

Yellow River, Yangtze, Ganges, Middle East: religious traditions with unprecedented emphasis on self-discipline, asceticism and otherworldly moralizing doctrines

Shift from short term to longterm strategies

Adaptive cultural norms

cooking
gift giving
kinship alliances / social networks
incest taboos
shared belief systems
leveling of opportunities (e.g. monogamy)
ethnocentrism /parochialism
slavery
cast systems
domestication
farming
exploration / curiosity
respect of authority?
traditions

Maladaptive cultural norms

Colostrum taboos
Baby formula
Unilateral breast feeding in Tanka Women
Infants sleeping alone
Human sacrifice
Genital mutilation
Foot binding in China, body modifications?
Lead-based cosmetics in Japan
Sweetened Soda
Sati (widow burning) in India
Male dominance / chauvinism
Human sacrifice / witchcraft / homeopathy / psychoanalysis
Prestige bias
Hygiene hypothesis?
Suicide, seppuku?
Endogamy?

Loss of Innovation? – Cultural (drift) attrition?

Tasmania: fishing technology, boomerang, complex tools, bone tools, sewed clothes
Polynesia: bow and arrow, pottery
Medieval Europe: loss of wheel pottery
Lascaux in the Americas?
Australia: bow and arrow (though woomera/atlatl retained)
Dorset Inuit: Bow and Arrow

Culture-Driven Evolution

- Tool manufacture
- Tool use
- Projectile tool use
- Language
- Fire and Cooking
- Clothing
- Property and Inheritance
- Fairness

Baldwin Effect

a mechanism for specific selection for general learning ability

"fixation of learnt behavior"

"plasticity to rigidity"

James Mark Baldwin suggested that an organism's ability to learn new behaviors (e.g. to acclimatise to a new stressor) will affect its reproductive success and will therefore have an effect on the genetic makeup of its species through natural selection.

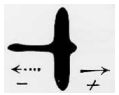
Like other systems for the inheritance of acquired variation, culture can play an active role in evolution through what is known as the Baldwin effect. Systems for phenotypic flexibility, if they are adaptive, will generate phenotypes that tolerate small environmental changes and small genetic departures from current optima.

Boyd and Richardson 2010 ***PNAS***

Baldwin Effect

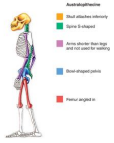
evolutionary basis of psychological traits

ostrich calluses on heel and sternum



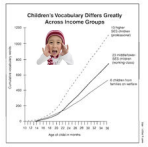
instinctive fear of predator, Niko Tinbergen

James Mark Baldwin



bipedality

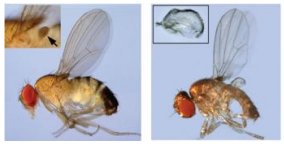
throwing



human language development

Fire

Genetic Assimilation
Conrad Waddington, 1957

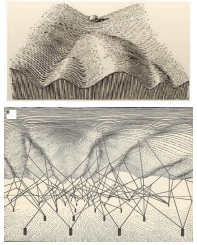


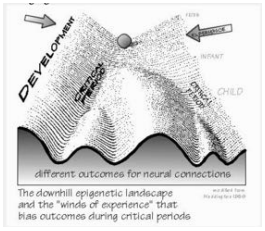
Drosophila embryos were exposed to ether, producing a bithorax-like phenotype. Flies which developed halteres with wing-like characteristics were chosen for breeding for 20 generations, by which point the phenotype could be seen without ether treatment.

The classic example of genetic assimilation was a 1953 experiment by C. H. Waddington, in which Drosophila embryos were exposed to ether, producing a bithorax-like phenotype (a homeotic change). Flies which developed halteres with wing-like characteristics were chosen for breeding for 20 generations, by which point the phenotype could be seen without ether treatment.

Developmental Canalization, Waddington, 1957

developmental trajectory represented by rolling ball





The downhill epigenetic landscape and the "winds of experience" that bias outcomes during critical periods

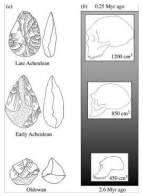
Waddington's ‘ developmental landscape’. (a) The developmental trajectory of the organism, represented by the rolling ball, is determined by a landscape representing the developmental dynamics of the organism. (b) The shape of this landscape is determined by genes, here represented by pegs pulling the landscape into shape via strings, and by epistatic interactions between genes, here represented by connections between strings. From Waddington (1957: 36).

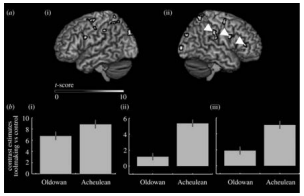
Genetic Assimilation - Badlwin effect

- bipedal locomotion
- manual dexterity
- language acquisition
- prosociality
- menstruation (spontaneous decidualization)
- belief in the supernatural?
- fire (pyromania)?
- fear or defiance of authority?
- other?

Stone tools and language

shared neuronal basis?

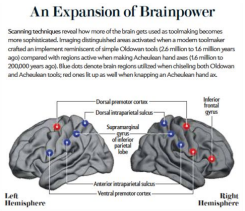




PET scans of stone tool makers injected radioactive Fluo sugar

Stout et al. ***Philos Trans R Soc Lond B Biol Sci.*** 2008

Experimental archeology Dietrich Stout



The socio-cultural niche

- Shared Symbols
- Personal Names
- Kinship Terms
- Tribes
- Shared Rituals
  Dance & Music
- Sacred Spaces
- Group Identity
- Increased capacity to cooperate with and compete against other groups.








socio-cultural winning App: no personal names, no language, no reputation!

The modern socio-cultural niche:

- Shared Symbols
- Personal Names
- Kinship Terms
- Tribes
- Shared Rituals
- Sacred Spaces
- Group Identity
- Increased capacity to cooperate with and compete against other groups.

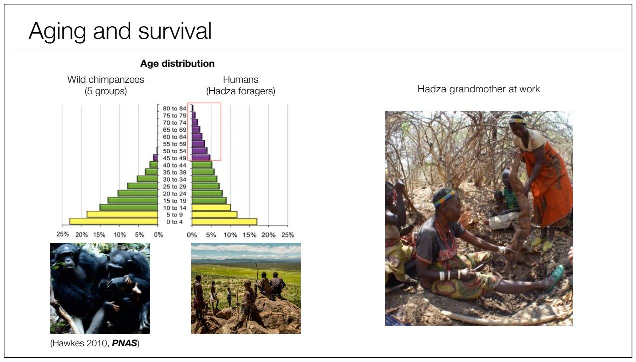




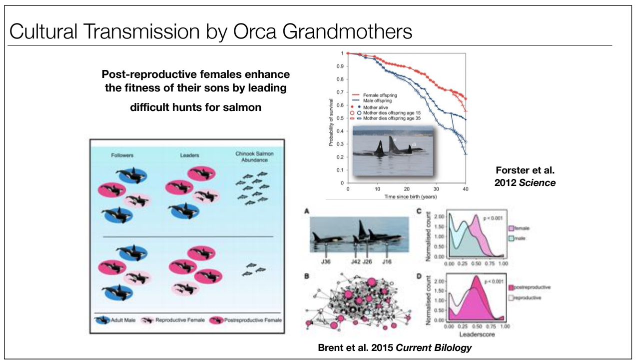

Many modern technologies rely heavily on reputation: AirBnB, UBER, Ebay…

Reputation

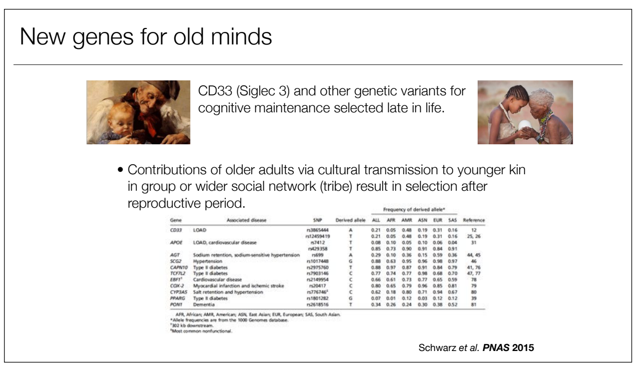
- language, personal names, and cultural values
  - cooperation with non-kin, third party punishment
  - awareness of ones reputation changes the game!
  - Cooperation becomes much more than reciprocal altruism or kin selection!



Humans populations have many individuals who survive long after the period of reproduction. In Most other animals, when reproduction ceases, most individuals tend to die. Due to the bias favoring female survival , many more older females survive. Up to 25% of living adults in a given social group can be post-reproductive females. The grandmother hypothesis proposes that these females benefit their younger relatives buy provisioning children with food, care and knowledge.

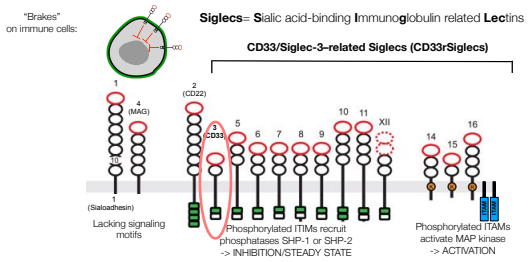


Postreproductively Aged Female Killer Whales Lead Group Movement (A) A postreproductively aged female, J16, leads her adult son and two adult daughters. (Photo
credit: Dave Ellifrit, Center for Whale Research.) (B) In this example leadership network (year 2003), arrows point toward leaders. Age increases with node size. Dark pink nodes represent postreproductively aged females, light pink nodes represent reproductively aged and juvenile females, and blue nodes represent males. (C) Distribution of "leader score" values by sex, normalized to have the same area and smoothed using kernel density estimates. Leader score values are used for visualization only and were calculated as number of times an individual led a group movement in a year/the total number of times they were seen. Statistical results are based on permutation-based binomial regression models in which the dependent variable was the number of times a whale was a leader in a given year relative to the number of times they were a follower. Adult females were significantly more likely to lead compared to adult males (N = 48 females, 24 males, 419 whale years), controlling for the impact of age on leadership. (D) Distribution of leader scores in adult females. Postreproductively aged females (35+ years of age) were significantly more likely to lead compared to reproductively aged females (12–34 years of age) (N = 23 postreproductive females, 32 reproductive females, 307 whale years).



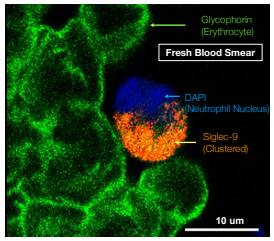
Making oneself useful while old? The benefit of older wise minds to younger related members of the tribe.

Human Siglecs: fine-tuning immune responses



Immune cells carry “brakes” self and non-self sensing innate molecules that can tune down unnecessary inflammation.

“Self-Associated Molecular Patterns” (SAMPs) for Siglec-9 are widespread!

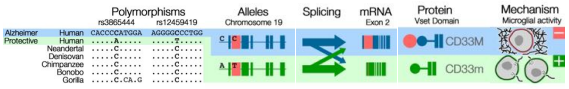


Lizcano, A. *et al.* Erythrocyte sialoglycoproteins engage Siglec-9 on neutrophils to suppress activation. ***Blood***. 2017.

Fresh blood smear of human blood with red blood cells (erythrocytes) stained for the glycoprotein glycophorin (with a green fluorescent antibody). A white blood cell (neutrophil) is stained with DAPI (blue stain for chromatin, red blood cells have no chromatin left in them) and with a yellow fluorescent antibody against the SIGLEC-9 protein, an innate silica acid sensing receptor that signals the immune cell to “relax” when it engages sialic acids on the surface off neighboring cells…..

Cognitive maintenance?

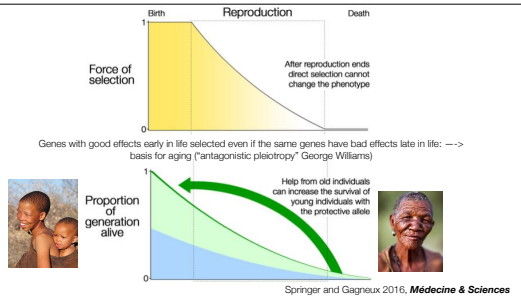
Different blend of splice variants leads to increased microglia activity, resulting in better amyloid beta clearance —> less plaque accumulation.



Schwarz et al. ***PNAS***, 2015
Springer and Gagneux ***Médecine & Sciences***, 2016

Two point mutations in DNA are associated with different mix of proteins (splice variants, one with and the other whiteout the outermost domain of Siglec-3), resulting in protection from Late onset Alzheimers disease. The splice variant lacking the sialic acid-binding outermost domain, does inhibit microglia resulting in higher microglia activity (cleaning up amyloid beta plaques).

Culture Can Change the Selective Landscape



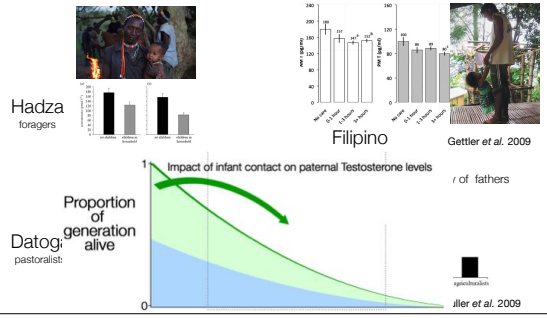
The altered human age pyramid allows for unexpected selection late in life, mediated by help provided by elders to younger group members.Genetic variants that protect the aging mind can be selected by their effects on younger relatives, an example of kin-selection in action.

Derived Human Growth Schedule

- Delay allows increased transmission of behavior and concepts.
- Human minds are effective copying devices and idea generators.
- Language is one of the major target of imitation and idea transmission.
- Delayed development: biological assimilation of culture?
- Paradoxically shorter Inter-birth-Interval than apes.

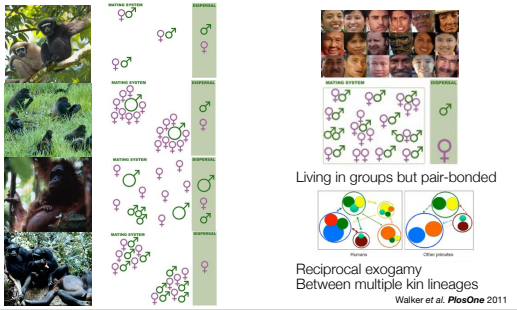
Minds as copying machines and idea generators
Humans over-imitate, focusing as much on the way than on the goal, chimps go for the goal.
Ratcheting culture.

Paternal testosterone and child care



Brian Wood, Frank Marlow
Chirs Kuzawa
Exposure of males in their prime to infants reduce their testosterone level!
Less aggression and much less reason to fight (as no possession/cattle)

Mating Systems



Living in groups but pair-bonded

Reciprocal exogamy
Between multiple kin lineages

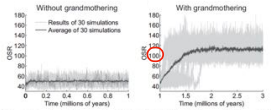
Walker *et al.* ***PlosOne*** 2011

We are the only primate that lives in groups but forms strong pair bonds Combined with names and kinship terms, this allows the large social networks of tribes, even when the groups are small hunter gatherers. Cooperation by pair-bonded male and female in raising young and provisioning for "family" and group.
Decreased intra-group aggression by leveling reproductive opportunities for males?
Reproductive pairs within small groups, within very large social networks! Lessening of sexual conflict?

Grandfathers: wise teachers or reproductive competitors?

Surviving older men form new competition

Operational sex ratio (OSR):
number of men capable of competing for the fertilization any given egg ovulated.



Mate guarding leading to pair bonding? (Coxworth *et al.* ***PNAS*** 2015)
Female choice for male body guard? (Smuts, ***Human Nature*** 1992)

Extending the grandmother hypothesis to mate guarding and pair-bonding. Operational sex ratio (males to female that could breed) increases dramatically with more elderly surviving adults.This could massively increase competetion for younger females and result in younger males pair-bonding to guard females against attention of older males.

Modeling effect of grandmother/grandfather survival on operational sex ratio: Time evolutions of ASRs and OSRs with and without grandmothering. (A) ASRs of 30 simulations over 1 million y without grandmothering. Each simulation is shown in light gray. The average of the 30 simulations is shown in black and ends at an ASR of 0.77. The ending point of the simulation shown in medium gray serves as the starting point for the 30 new simulations with grandmothering shown in B. (B) ASRs of 30 simulations over 2 million y with grandmothering. Each simulation is shown in gray. The average of the 30 simulations, in black, ends at an ASR of 1.56. (C) OSRs of 30 simulations over 1 million y without grandmothering. Colors as in A. The average of the 30 simulations ends at an OSR of 50. (D) OSRs of 30 simulations over 2 million y with grandmothering. Colors as in B. The average ends at an OSR of 111.

Operational sex ratio in four foraging people

!Kung
Botswana

Hiwi
Venezuela

Ache
Paraguay

Hadza
Tanzania

Table 2. Demographic parameters for human hunter-gatherers

Population	Males age 20–65 years	Females age 20–48 years	Birth interval, year	Male paternity, days/year	Female fecundable days per cycle	Cycles to conception	ASR M/F	OSR M/F
Dobe !Kung (26, 27)	0.593	0.407	4.17	365	6	4	1.46	92.40
Ache forest (28)	0.652	0.348	2.44	365	6	4	1.87	69.52
Hiwi (29)	0.618	0.382	3.70	365	6	4	1.62	91.04
Hadza (30)	0.616	0.384	3.23	365	6	4	1.60	78.80

Coxworth *et al.* ***PNAS*** 2015

Assuming stationary populations, the mortality curve mirrors the age structure. To model age structures we used probability of survival to each age in the published life tables, summing the calculated number of survivors for men and women to each of the fertile ages, then dividing the sum for each sex by their combined total to get the fraction fertile adults by sex (columns 2 and 3). We included men from 20 and 65 years based on reported age ranges of fertilities from the ethnographers and those reported by Tuljapurkar et al. Women from 20 to 40 years are included based on average ages of first and last birth.

Marriage Ceremonies

anchoring pair-bonding in social networks and conventions

Traditional Telugu wedding in Hydrabad, India

Marriage tend to be major social affairs, highly publicized, subject to strong cultural norms, involving display of status and wealth, exchange of goods or money (dowry or bride price) and anchoring a couple in a complex mesh of social relationships, debts, gratitude etc.
Cheat and you face not just your partner, but an entire clan behind him or her…..

Merci grand-maman!

Sambucus nigra: source of sialic acid binding lectin protein SNA

Julie Sumi, 1905-1998

Summary

Human mind is made for and by culture

Humans are biologically cultural e.g. language

Humans are culturally biological e.g. cooking

Cultures are subject to their own dynamic evolution.

Cultures can generate highly adaptive tool kits.

Cultures can generate highly maladaptive behaviors.

We are only beginning to appreciate how deep the interactions between culture and biology are for our species.