gert stulp • g.stulp@rug.nl • www.gertstulp.com

My Perspective

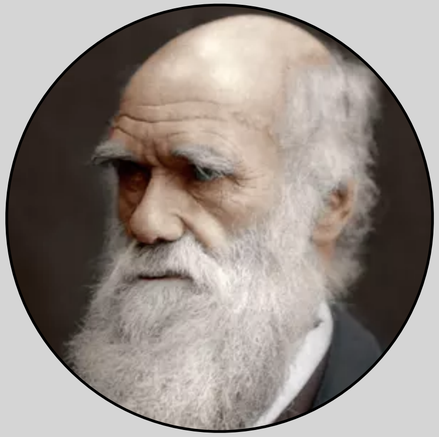
~~biology~~

AI

BSc

BCN

MSc

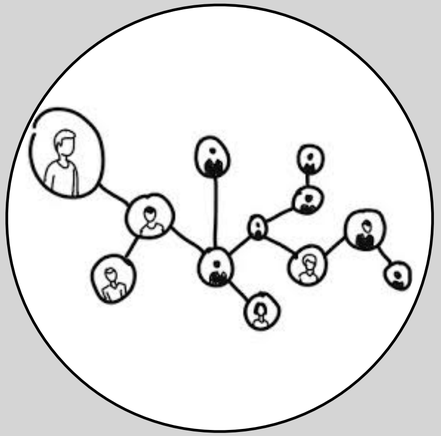


psychology

PhD

demography

post-doc



sociology

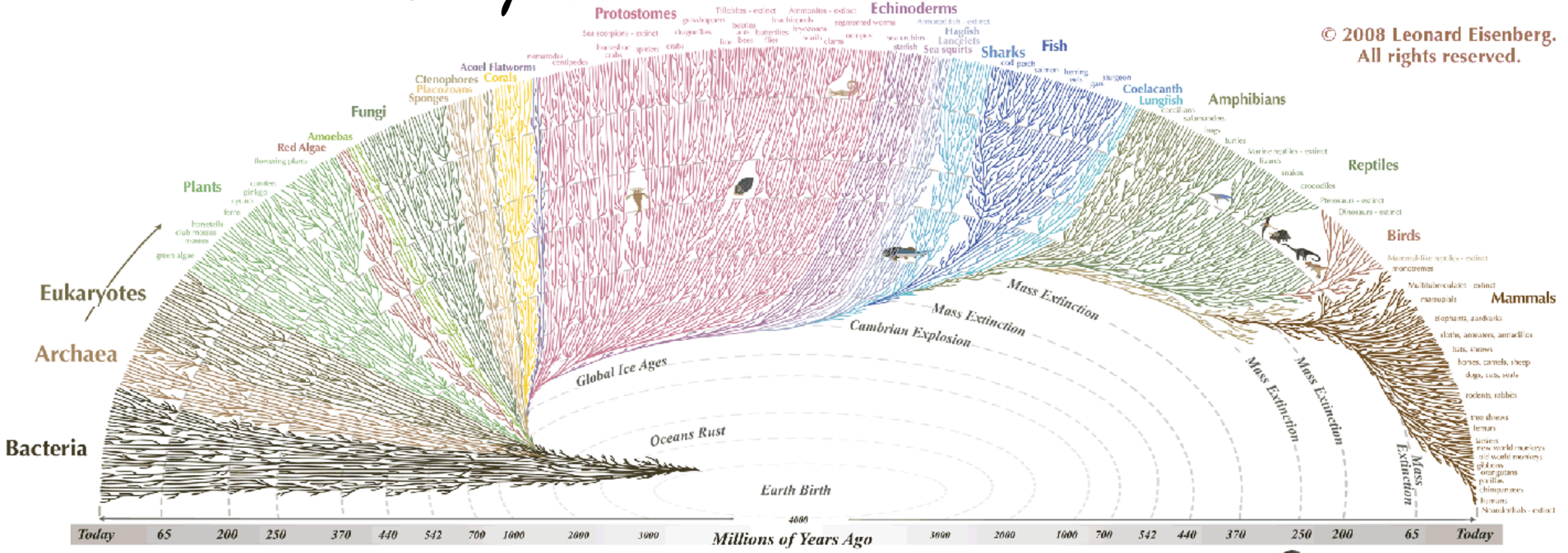
tenure

I think

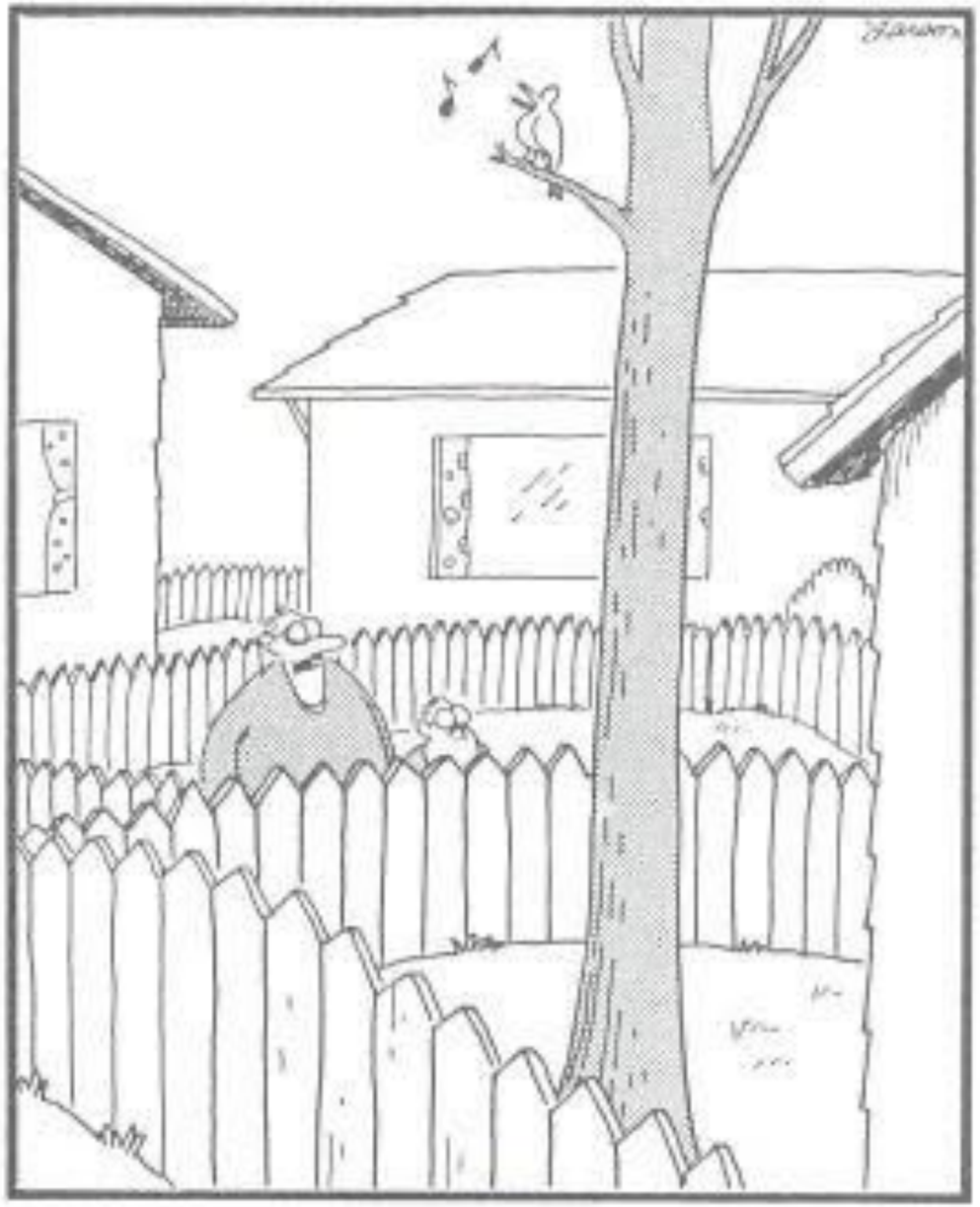
I think

it's slightly

more complex



All the major and many of the minor living branches of life are shown on this diagram, but only a few of those that have gone extinct are shown. Example: Dinosaurs - extinct



"and now, Randy, by use of song, the male sparrow will stake out his territory... an instinct common in the lower animals

Is this haunting picture proof that chimps really do grieve?

[joke © Louise Barrett]

Is this haunting picture proof that pears really do grieve?

[joke © Louise Barrett]

This Talk

PART I: The Evolved Human Life History

PART II: Searching for trade-offs

PART III: The usefulness of LHT within species

PART IV: Evolutionary Perspectives on Human Behaviour

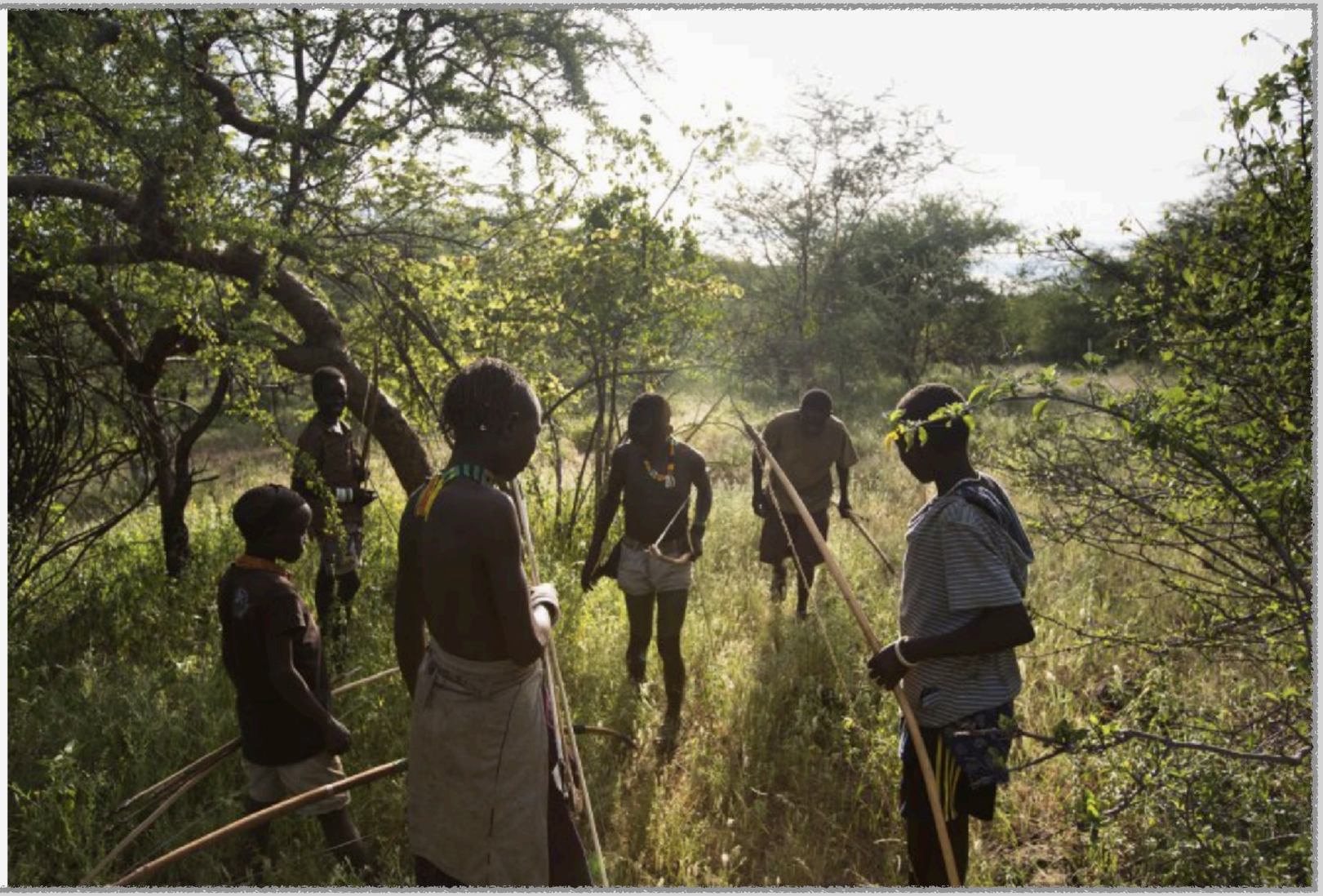
PART I: THE EVOLVED HUMAN LIFE HISTORY

IMAGE

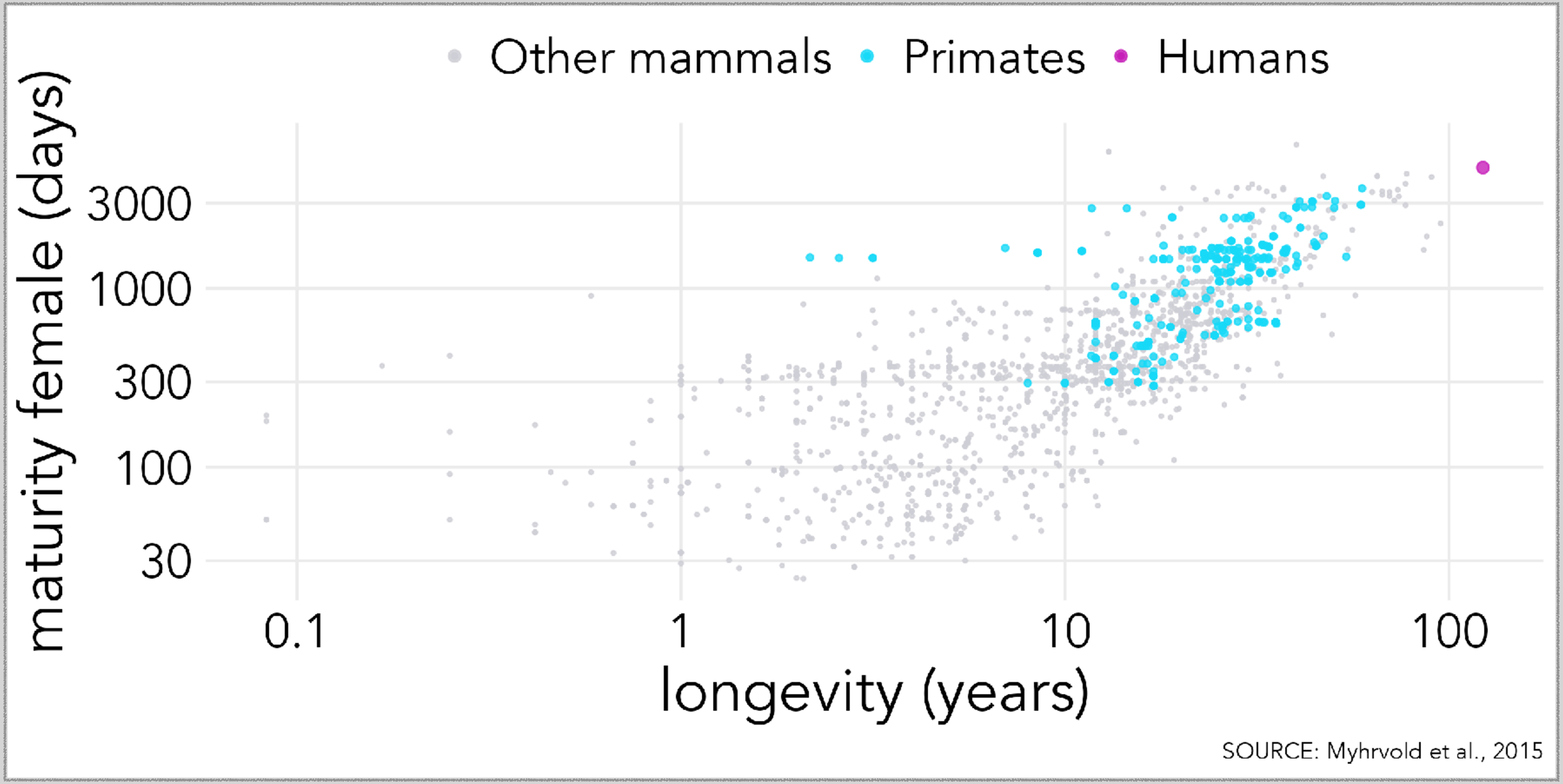
Hunting for Game

The Hadza people of Tanzania rely on hunting wild game for meat, a task that requires great skill in tracking, teamwork, and accuracy with a bow and arrow.

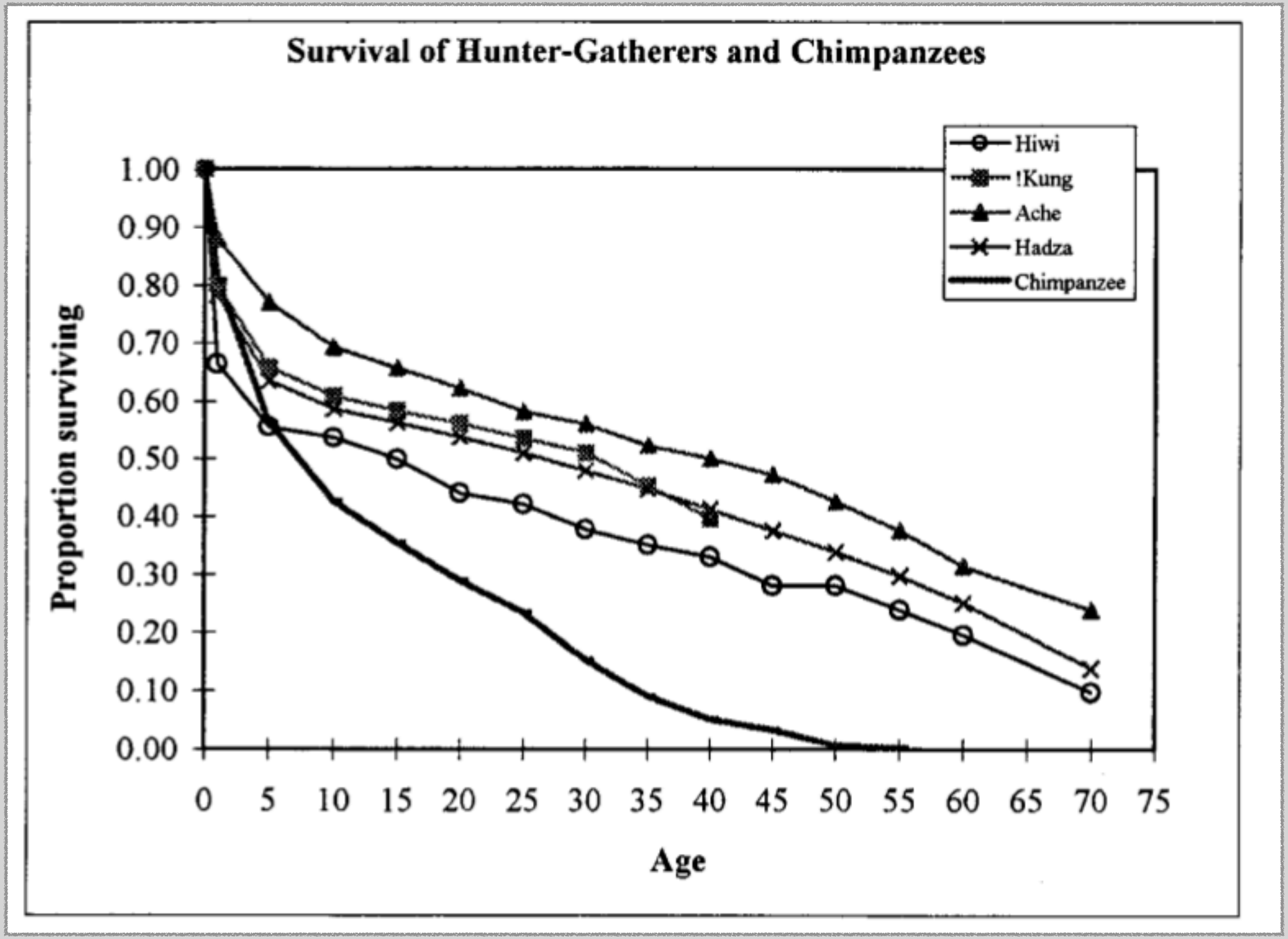
PHOTOGRAPH BY MATTHIEU PALEY



Long-lived, late age at maturity

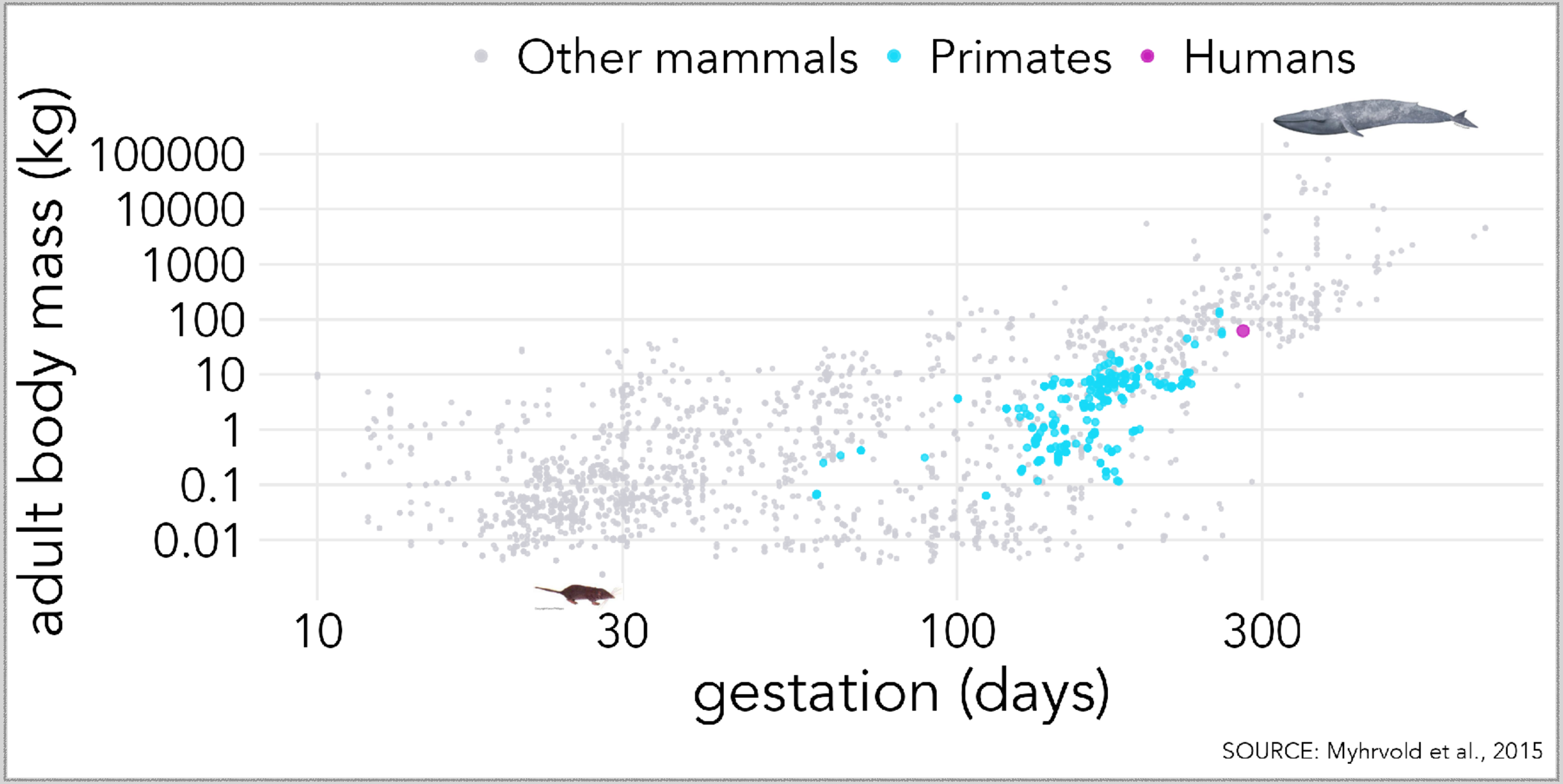


Long Lifespan

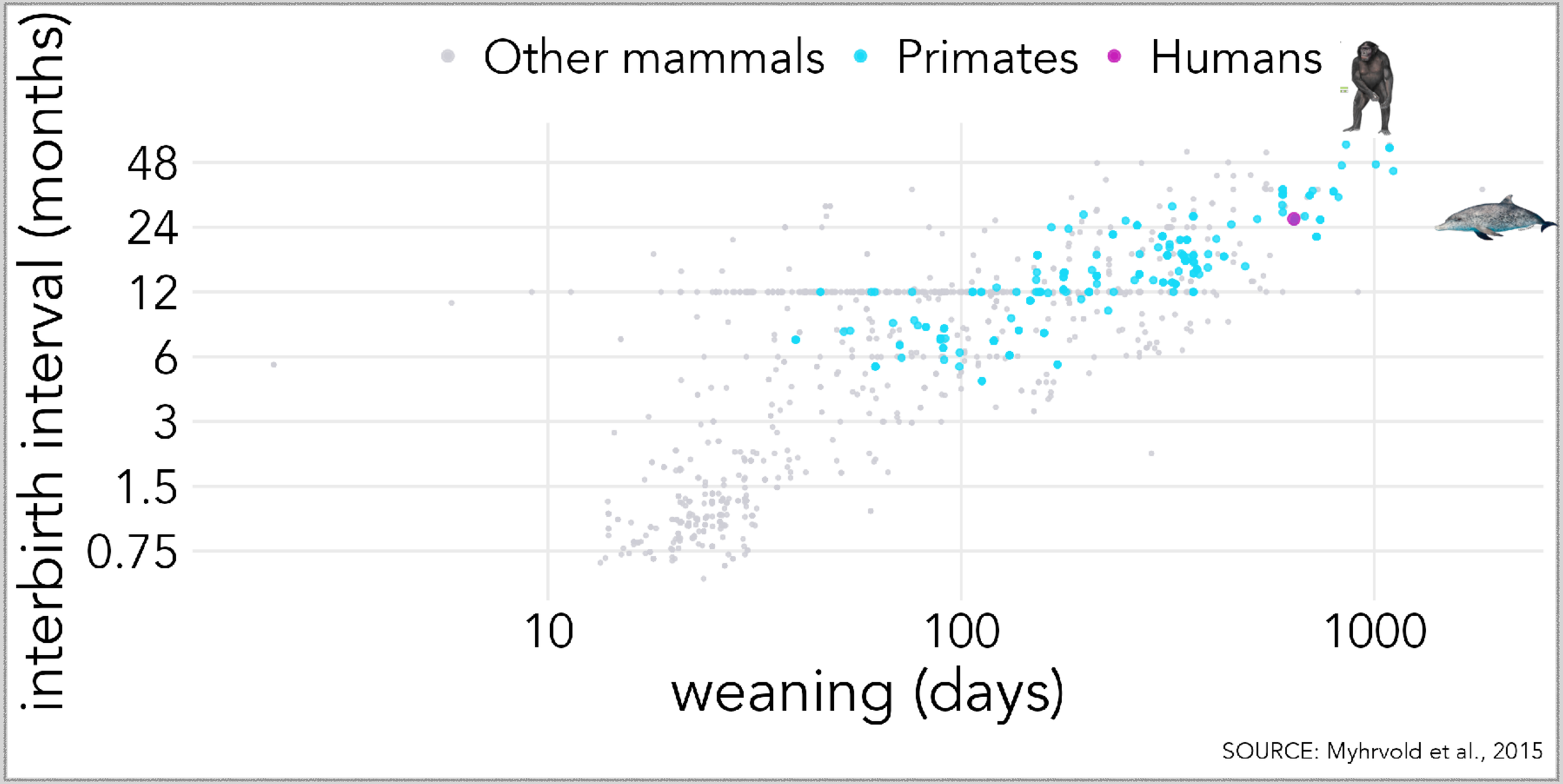


Kaplan et al 2000

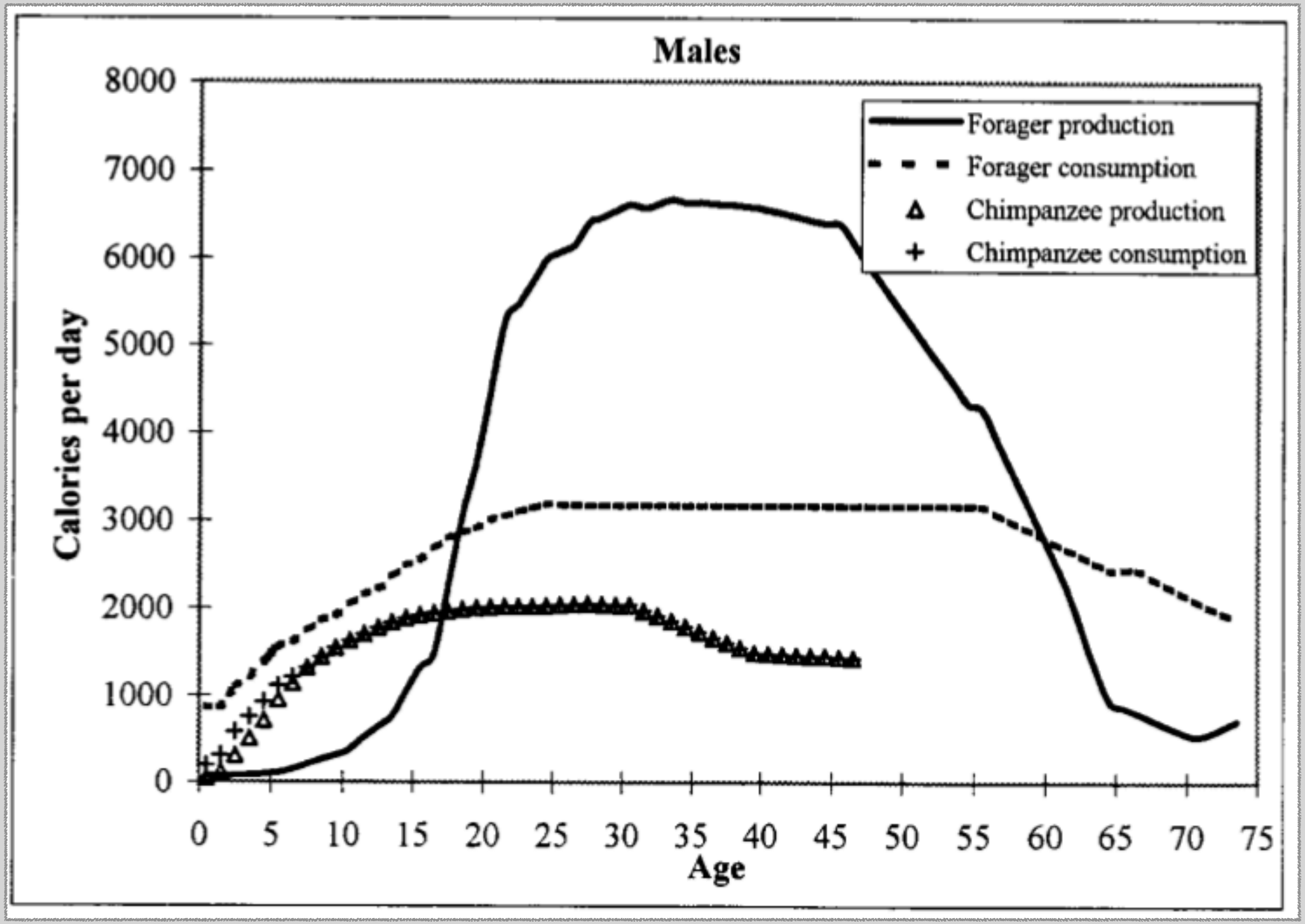
Relatively long gestation and large body size (particularly among primates)



Late age at weaning, high interbirth interval (but not for a primate)

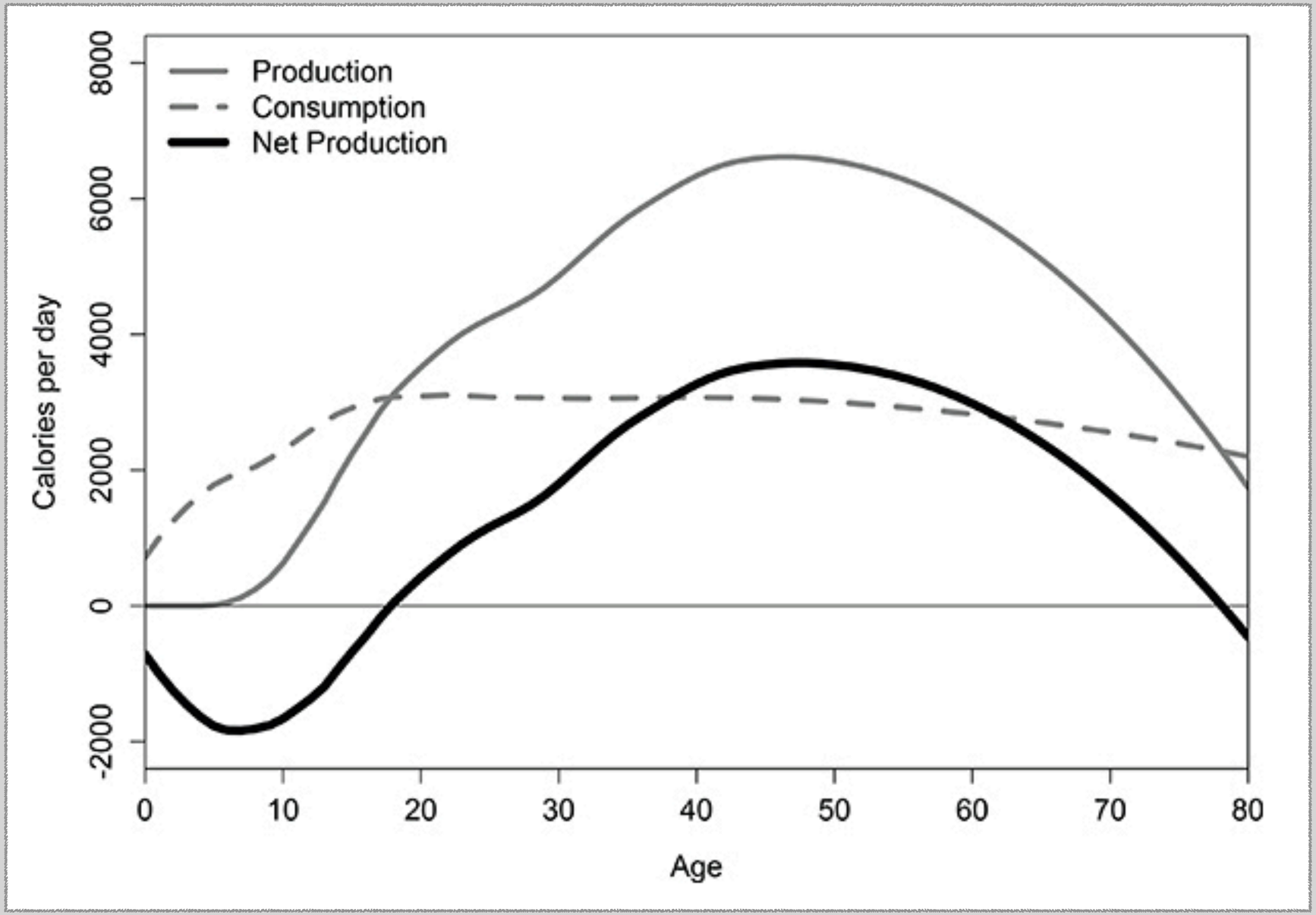


Long Dependency



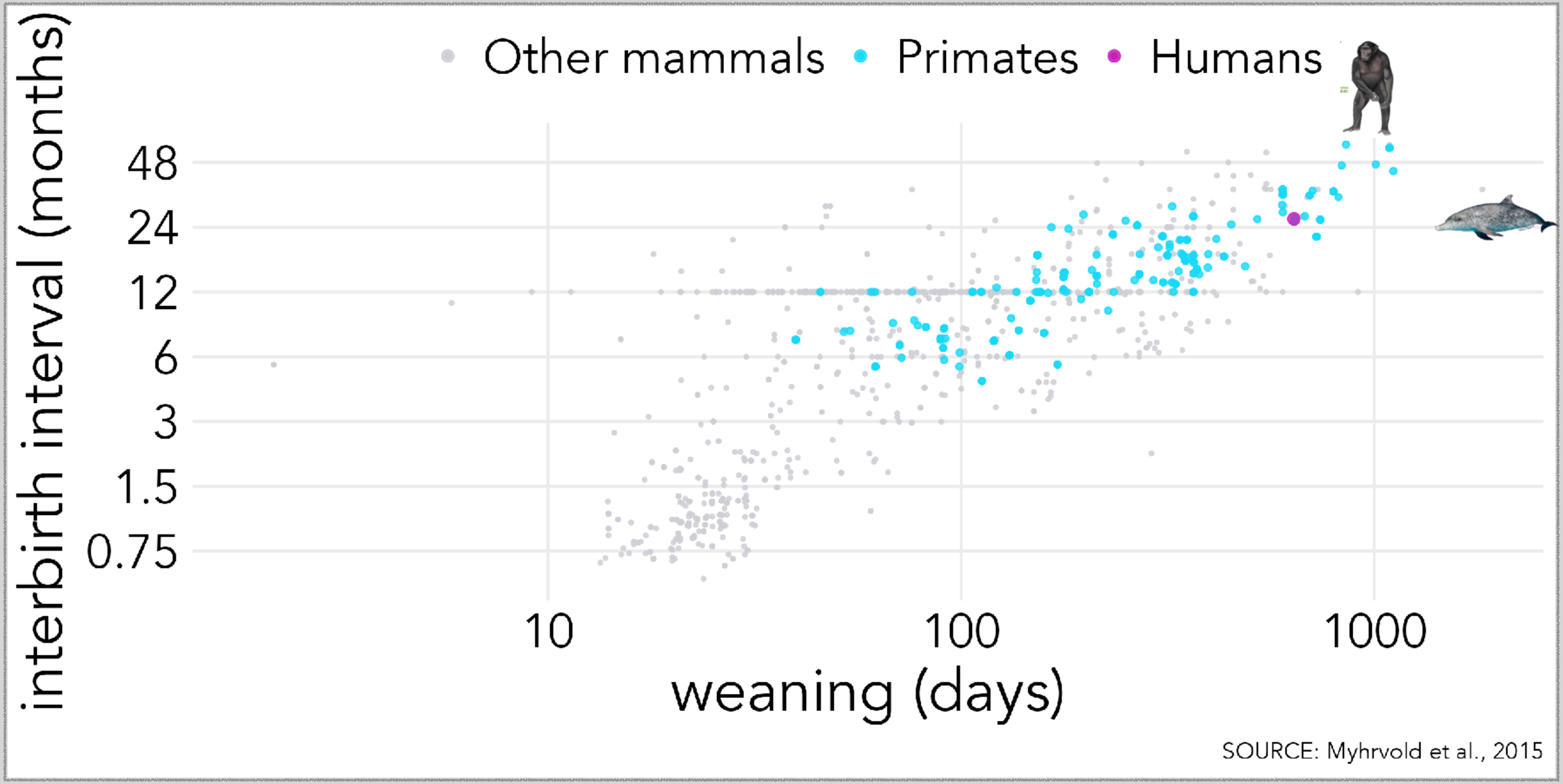
Kaplan et al 2000

Long Dependency

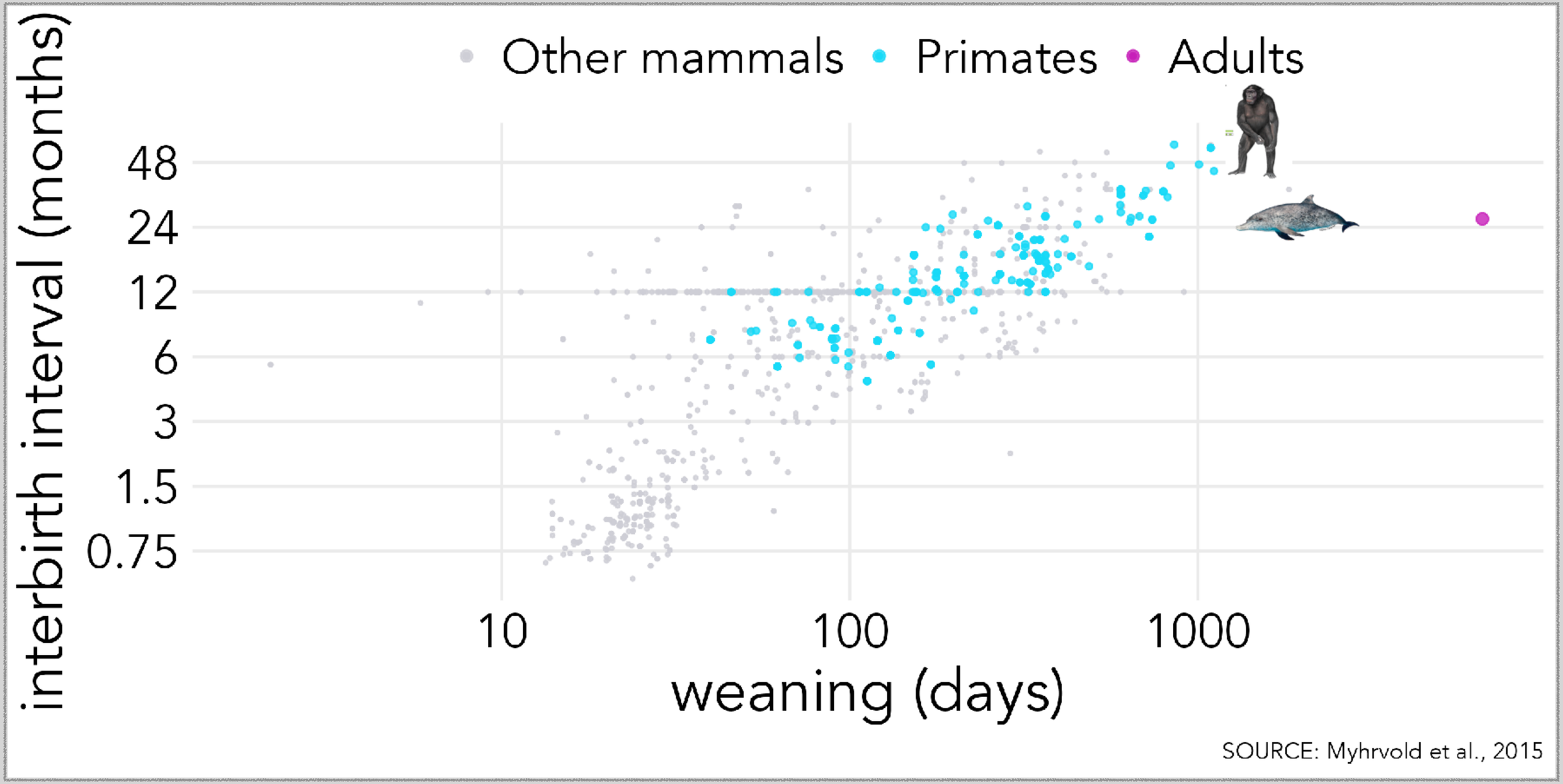


Gurven et al 2012

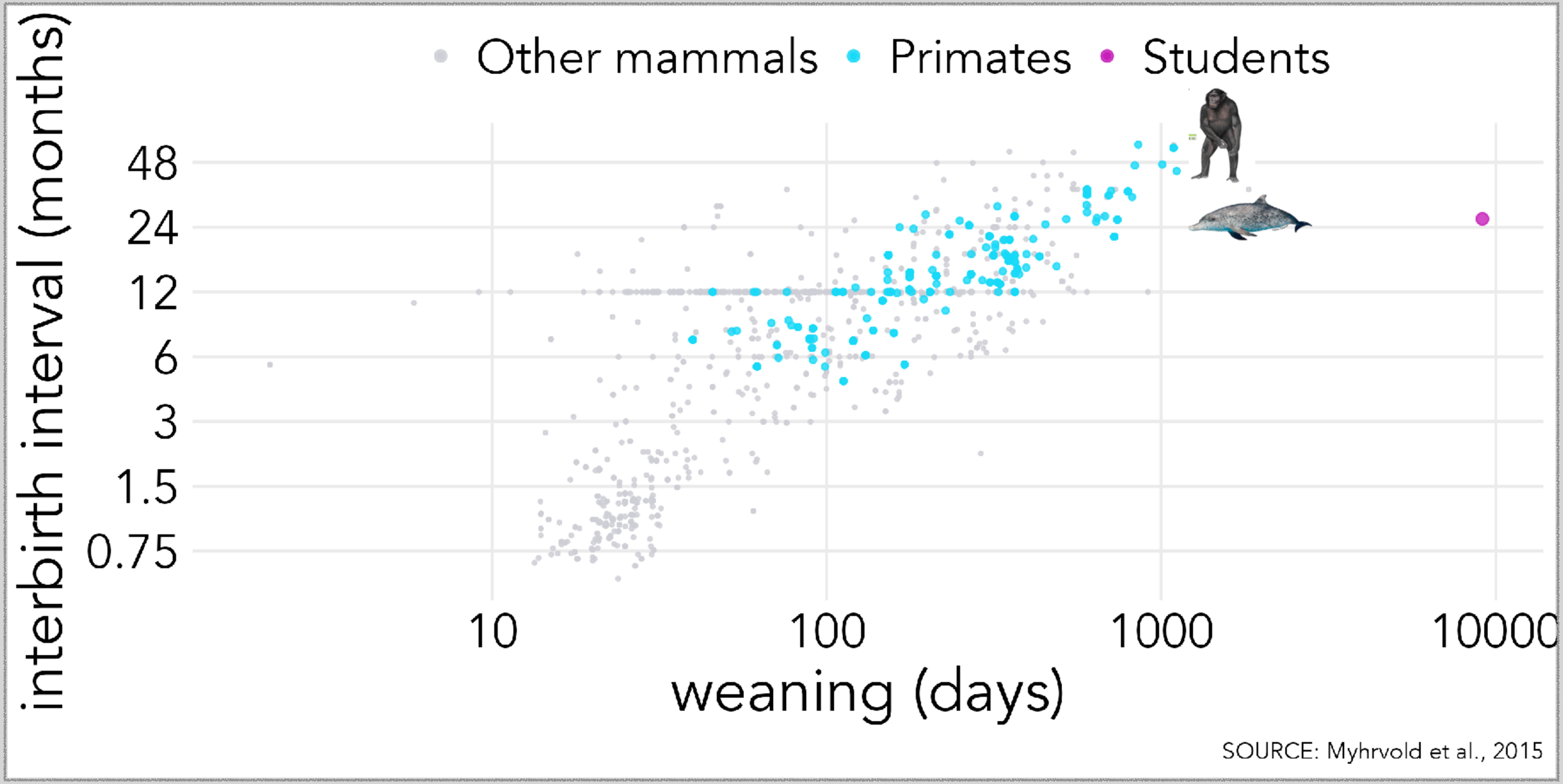
Late age at weaning, high interbirth interval (but not for a primate)



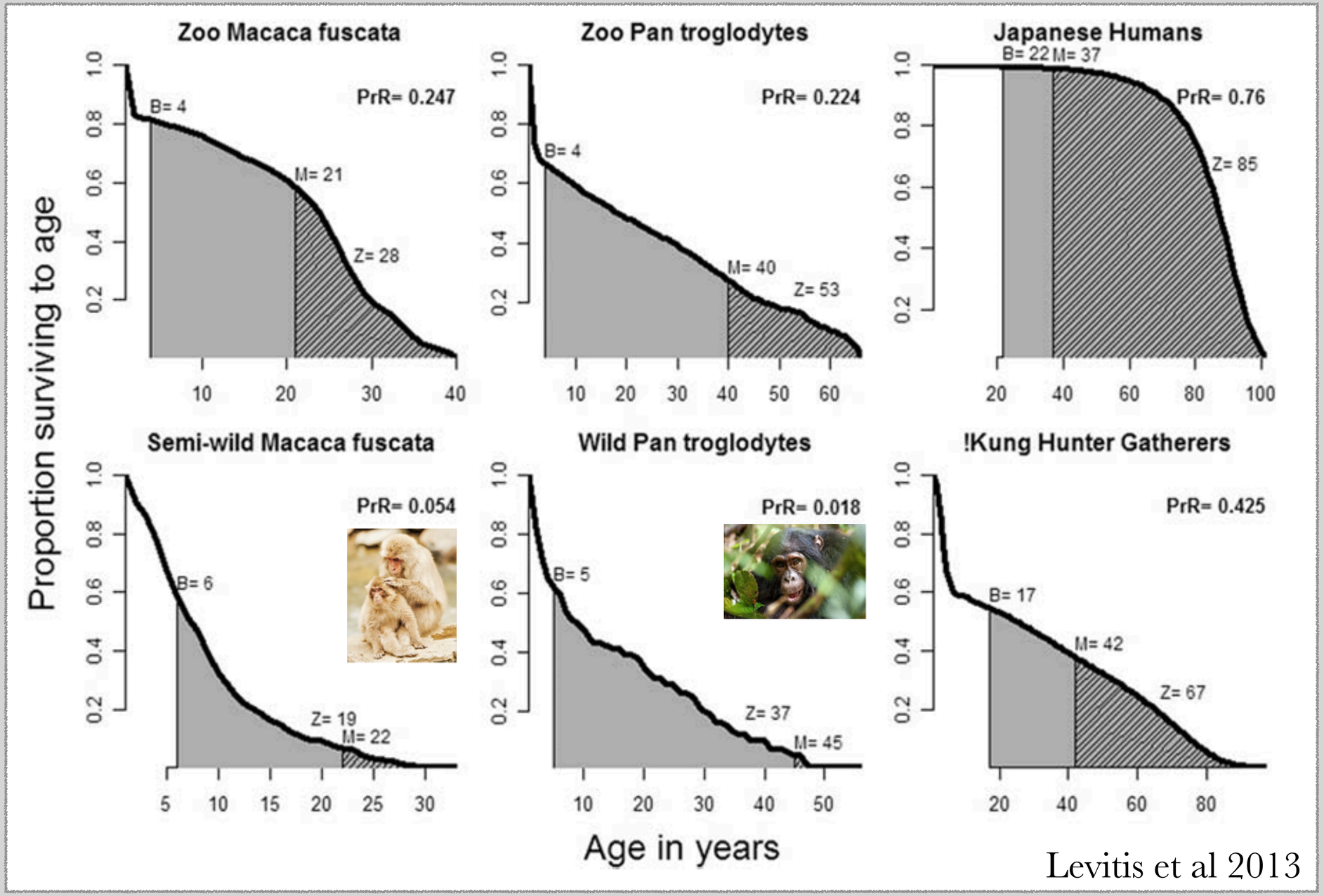
Late age at weaning, high interbirth interval (but not for a primate)



Late age at weaning, high interbirth interval (but not for a primate)



Postreproductive phase



Levitis et al 2013

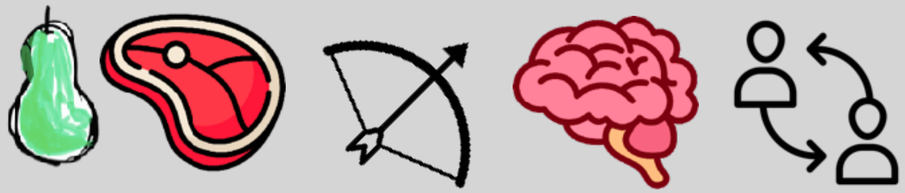
Human Peculiarities

1. Exceptionally long lifespan
2. Extended period of juvenile dependence
3. Long postreproductive periods

How did we evolve like this?

Why do we have such a high fertility rate,
despite major investments in soma and offspring?

Where did we get the energy from?



Energy through Food

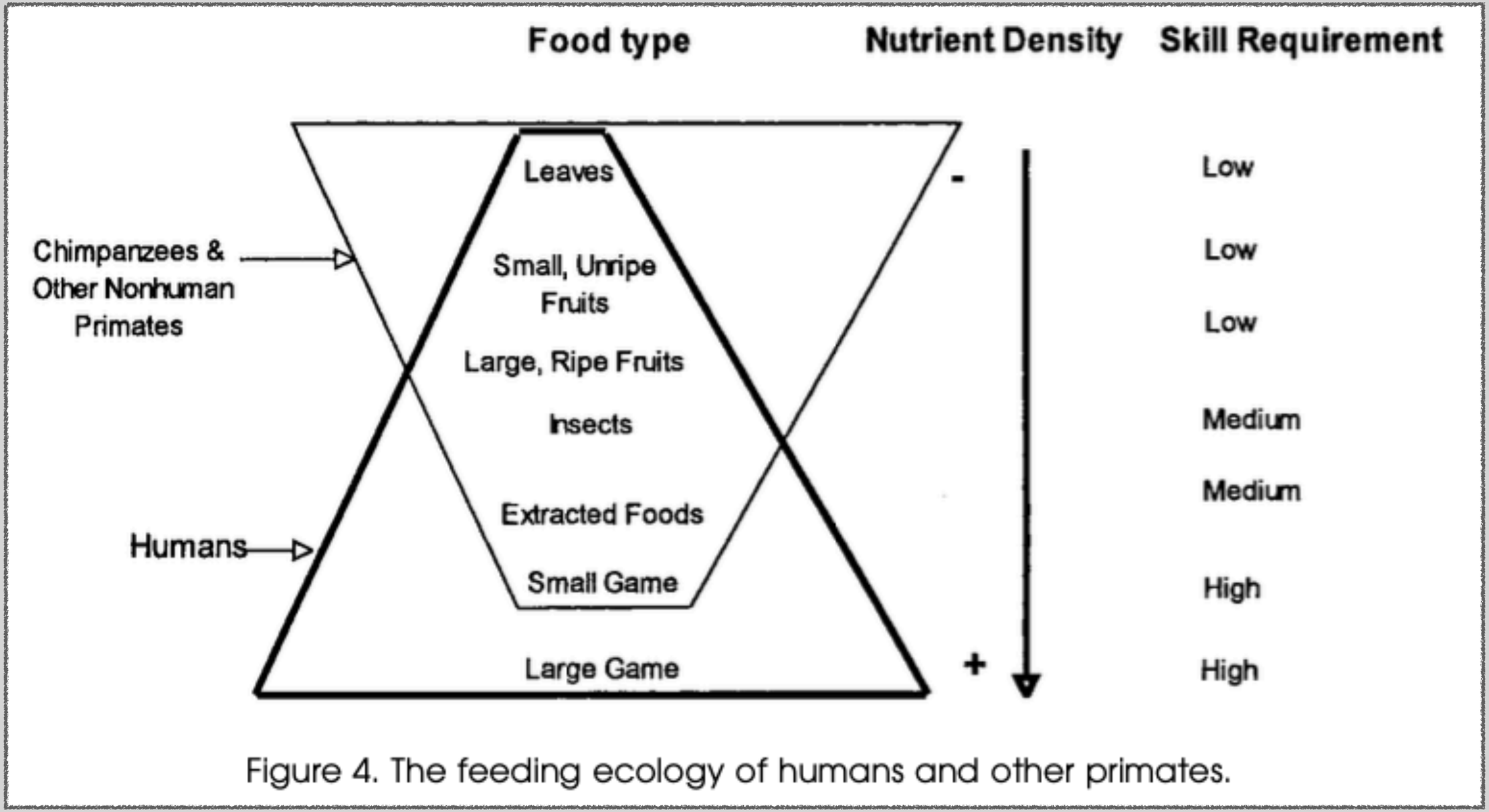


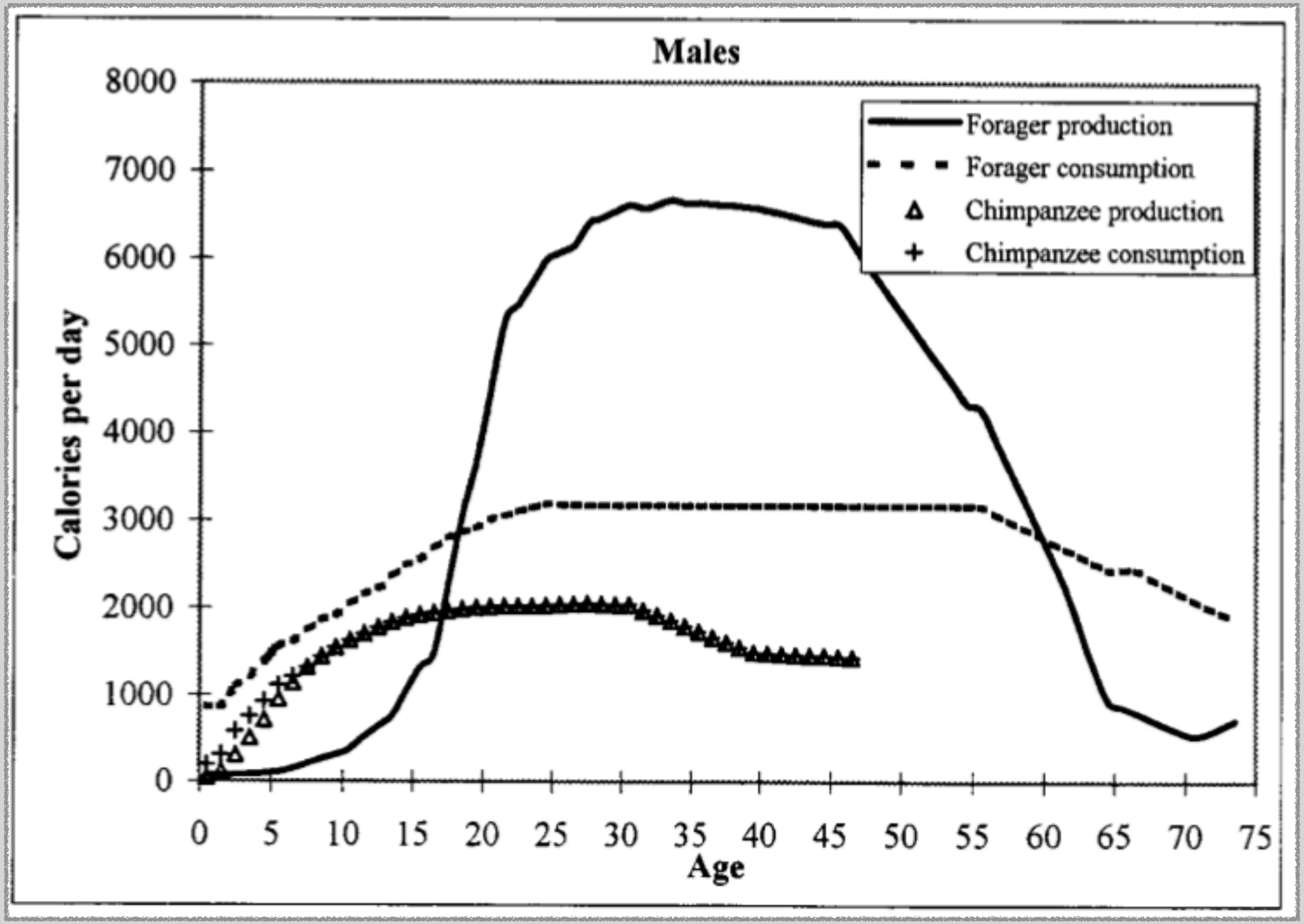
Figure 4. The feeding ecology of humans and other primates.

Kaplan et al 2000

Energy through Food

> Chimpanzee per capita meat intake is estimated at about 10 to 40 g per day, while human meat intake ranges from about 270 to 1,400 g per person per day

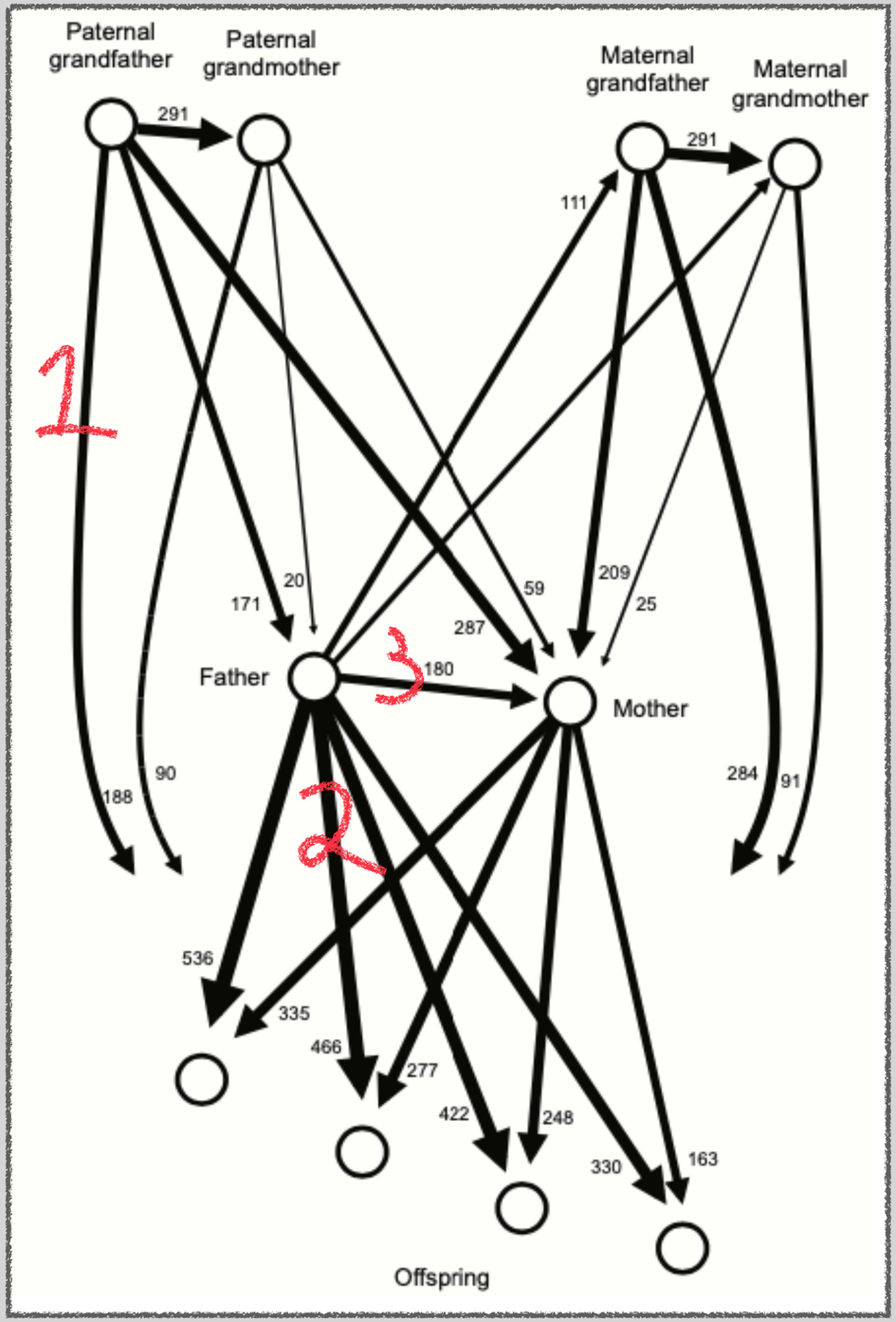
Developing Skills



Kaplan et al 2000

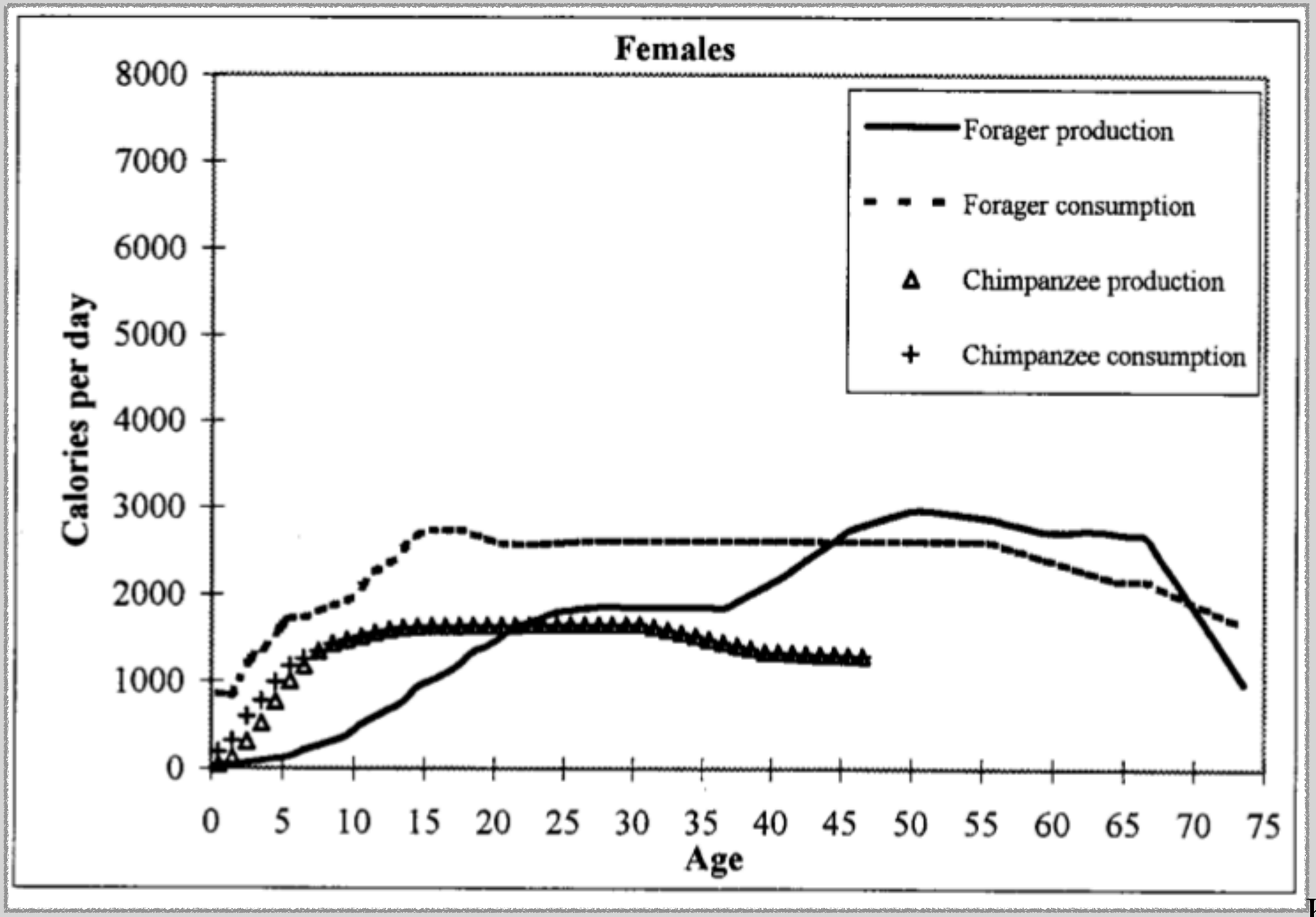
Energy through Transfers

1. Intergenerational transfers
2. Male parental investment
3. Investment in partner
4. *Reciprocity transfers*



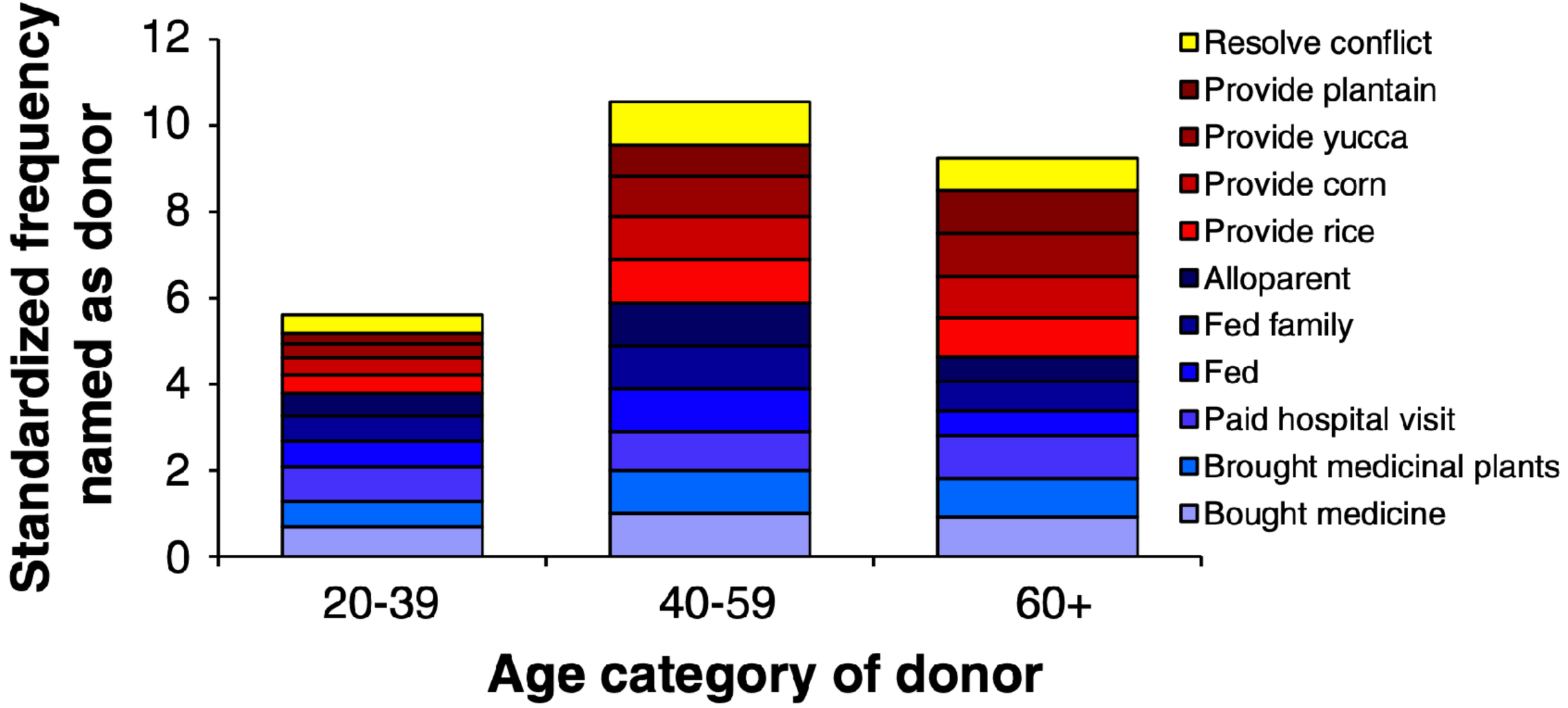
Hooper et al, 2015

Energy through Transfers



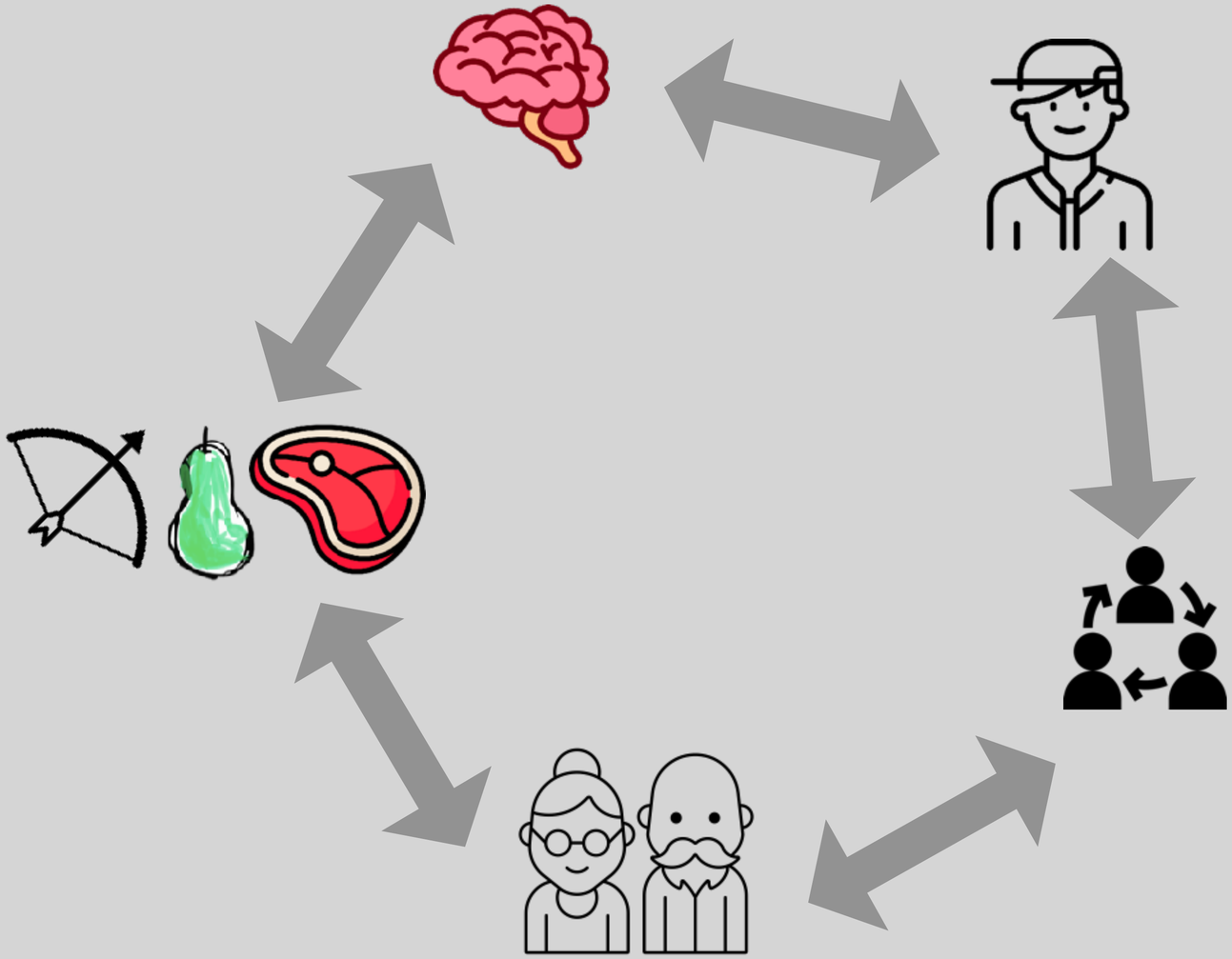
Kaplan et al 2000

Energy through Transfers



Gurven et al 2012

Co-evolution of Traits



Kaplan et al, 2000

Key Points

Humans have:

1. Exceptionally long lifespan
2. Extended period of juvenile dependence
3. Long postreproductive periods

Made possible through:

1. (Intergenerational) resource transfers
2. Nutrient-rich diets from difficult to acquire foods
3. Paternal investment

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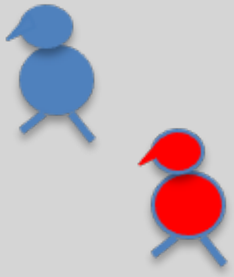
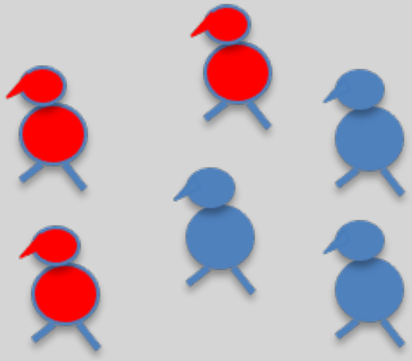
PART II: Searching for trade-offs

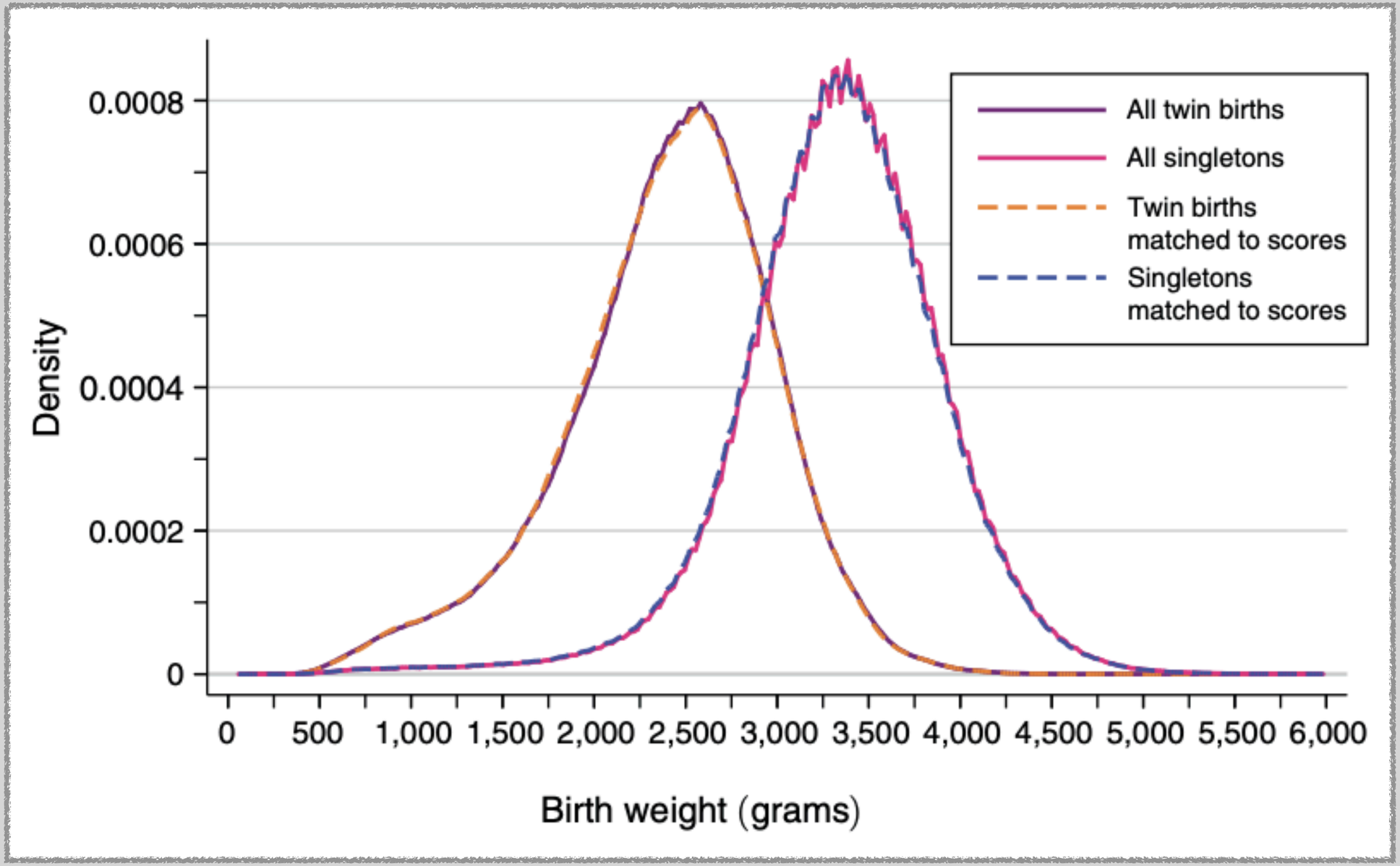
Varying resource budgets



No experimentation

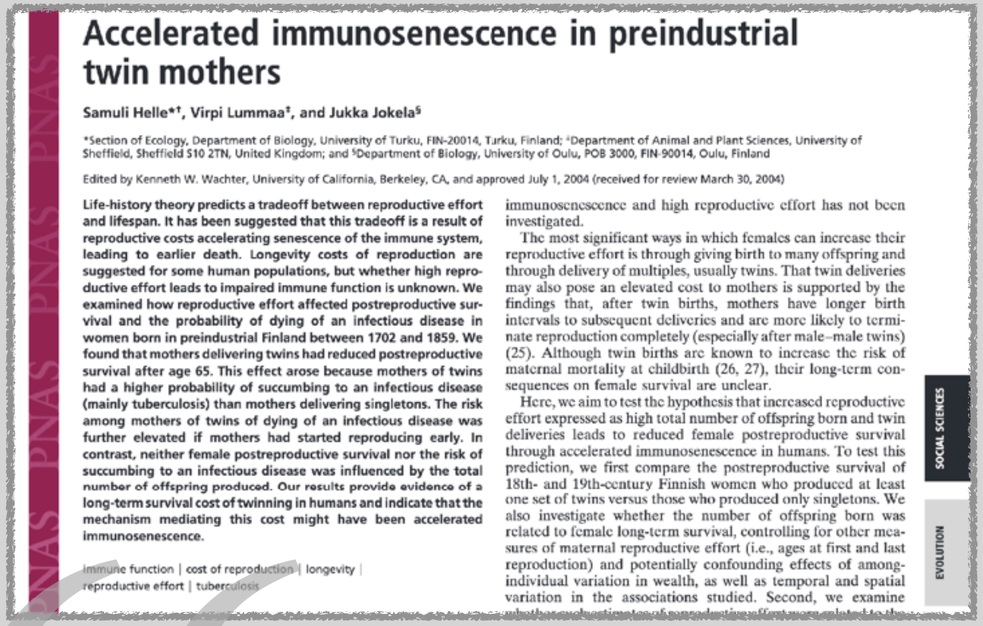


Costs of Reproduction



Figlio et al 2013

Costs of Reproduction



Accelerated immunosenescence in preindustrial twin mothers

Samuli Helle*†, Virpi Lummaa‡, and Jukka Jokela§

*Section of Ecology, Department of Biology, University of Turku, FIN-20014, Turku, Finland; ‡Department of Animal and Plant Sciences, University of Sheffield, Sheffield S10 2TN, United Kingdom; and §Department of Biology, University of Oulu, POB 3000, FIN-90014, Oulu, Finland

Edited by Kenneth W. Wachter, University of California, Berkeley, CA, and approved July 1, 2004 (received for review March 30, 2004)

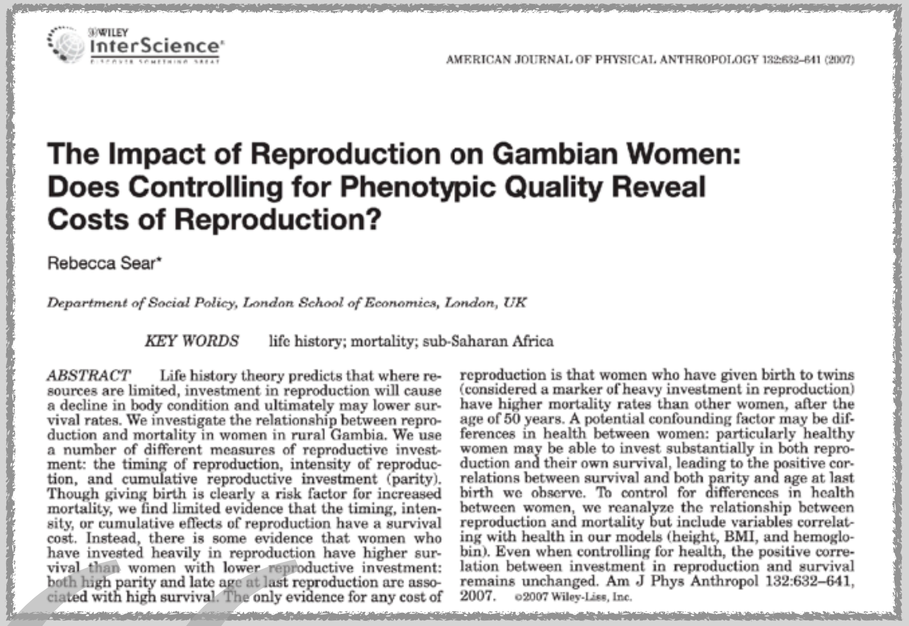
Life-history theory predicts a tradeoff between reproductive effort and lifespan. It has been suggested that this tradeoff is a result of reproductive costs accelerating senescence of the immune system, leading to earlier death. Longevity costs of reproduction are suggested for some human populations, but whether high reproductive effort leads to impaired immune function is unknown. We examined how reproductive effort affected postreproductive survival and the probability of dying of an infectious disease in women born in preindustrial Finland between 1702 and 1859. We found that mothers delivering twins had reduced postreproductive survival after age 65. This effect arose because mothers of twins had a higher probability of succumbing to an infectious disease (mainly tuberculosis) than mothers delivering singletons. The risk among mothers of twins of dying of an infectious disease was further elevated if mothers had started reproducing early. In contrast, neither female postreproductive survival nor the risk of succumbing to an infectious disease was influenced by the total number of offspring produced. Our results provide evidence of a long-term survival cost of twinning in humans and indicate that the mechanism mediating this cost might have been accelerated immunosenescence.

immune function | cost of reproduction | longevity | reproductive effort | tuberculosis

immunosenescence and high reproductive effort has not been investigated.

The most significant ways in which females can increase their reproductive effort is through giving birth to many offspring and through delivery of multiples, usually twins. That twin deliveries may also pose an elevated cost to mothers is supported by the findings that, after twin births, mothers have longer birth intervals to subsequent deliveries and are more likely to terminate reproduction completely (especially after male–male twins) (25). Although twin births are known to increase the risk of maternal mortality at childbirth (26, 27), their long-term consequences on female survival are unclear.

Here, we aim to test the hypothesis that increased reproductive effort expressed as high total number of offspring born and twin deliveries leads to reduced female postreproductive survival through accelerated immunosenescence in humans. To test this prediction, we first compare the postreproductive survival of 18th- and 19th-century Finnish women who produced at least one set of twins versus those who produced only singletons. We also investigate whether the number of offspring born was related to female long-term survival, controlling for other measures of maternal reproductive effort (i.e., ages at first and last reproduction) and potentially confounding effects of among-individual variation in wealth, as well as temporal and spatial variation in the associations studied. Second, we examine



WILEY InterScience®

AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY 132:632–641 (2007)

The Impact of Reproduction on Gambian Women: Does Controlling for Phenotypic Quality Reveal Costs of Reproduction?

Rebecca Sear*

Department of Social Policy, London School of Economics, London, UK

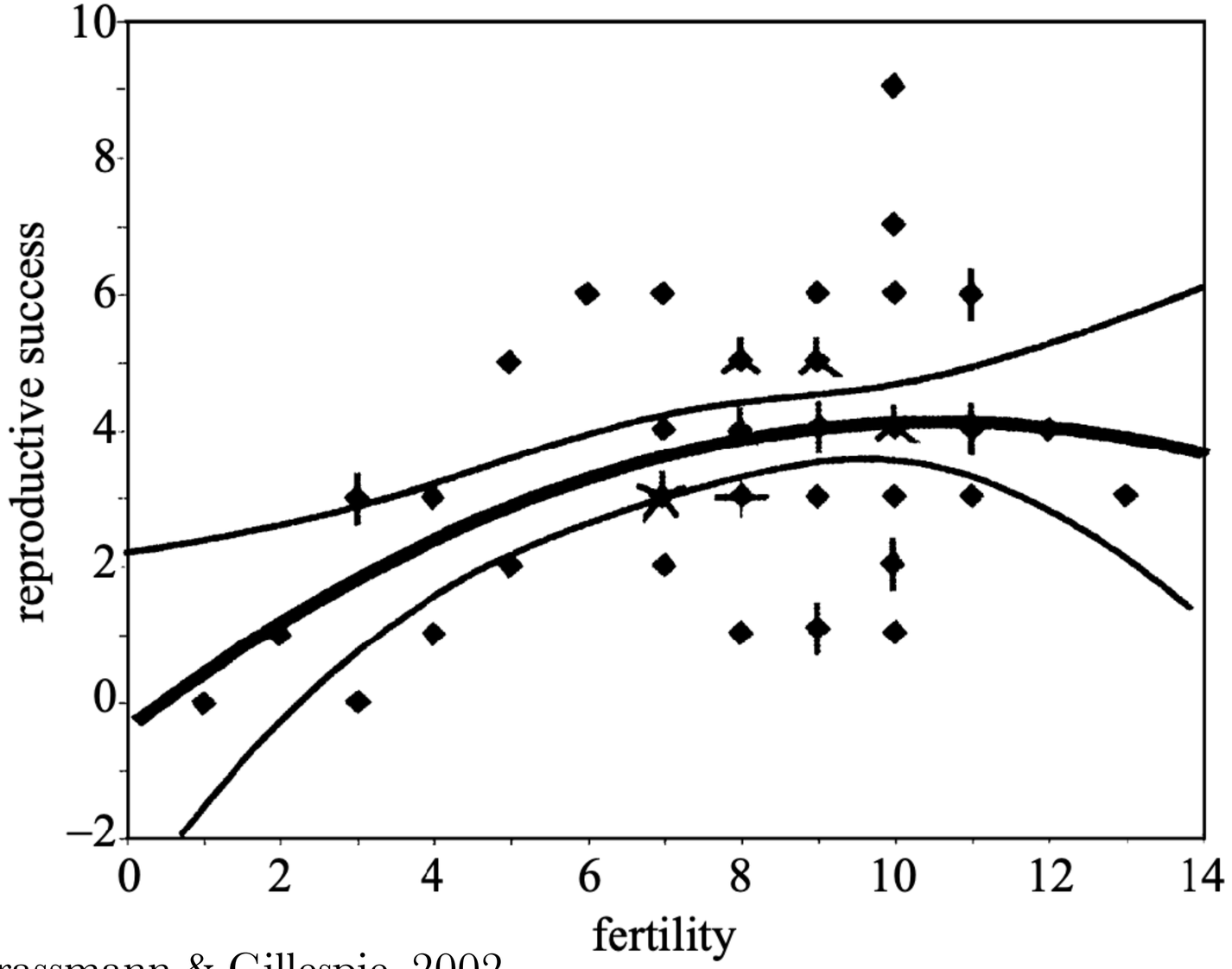
KEY WORDS life history; mortality; sub-Saharan Africa

ABSTRACT Life history theory predicts that where resources are limited, investment in reproduction will cause a decline in body condition and ultimately may lower survival rates. We investigate the relationship between reproduction and mortality in women in rural Gambia. We use a number of different measures of reproductive investment: the timing of reproduction, intensity of reproduction, and cumulative reproductive investment (parity). Though giving birth is clearly a risk factor for increased mortality, we find limited evidence that the timing, intensity, or cumulative effects of reproduction have a survival cost. Instead, there is some evidence that women who have invested heavily in reproduction have higher survival than women with lower reproductive investment: both high parity and late age at last reproduction are associated with high survival. The only evidence for any cost of reproduction is that women who have given birth to twins (considered a marker of heavy investment in reproduction) have higher mortality rates than other women, after the age of 50 years. A potential confounding factor may be differences in health between women: particularly healthy women may be able to invest substantially in both reproduction and their own survival, leading to the positive correlations between survival and both parity and age at last birth we observe. To control for differences in health between women, we reanalyze the relationship between reproduction and mortality but include variables correlating with health in our models (height, BMI, and hemoglobin). Even when controlling for health, the positive correlation between investment in reproduction and survival remains unchanged. Am J Phys Anthropol 132:632–641, 2007.

> We found that mothers delivering twins had reduced postreproductive survival after age 65. This effect arose because mothers of twins had a higher probability of succumbing to an infectious disease (mainly tuberculosis) than mothers delivering singletons.

> The only evidence for any cost of reproduction is that women who have given birth to twins(considered a marker of heavy investment in reproduction)have higher mortality rates than other women, after the age of 50 years.

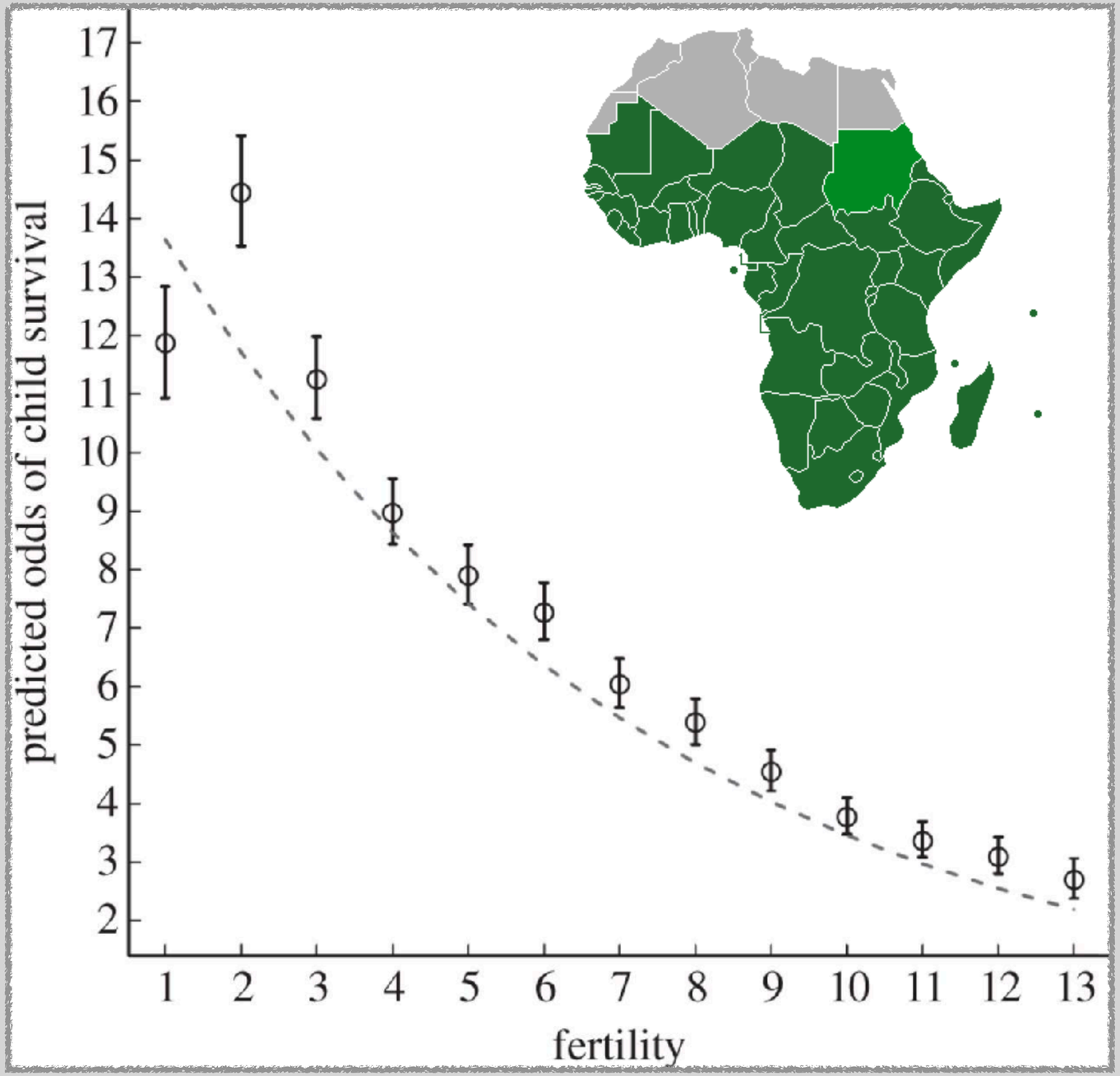
Quantity~Quality



Strassmann & Gillespie, 2002

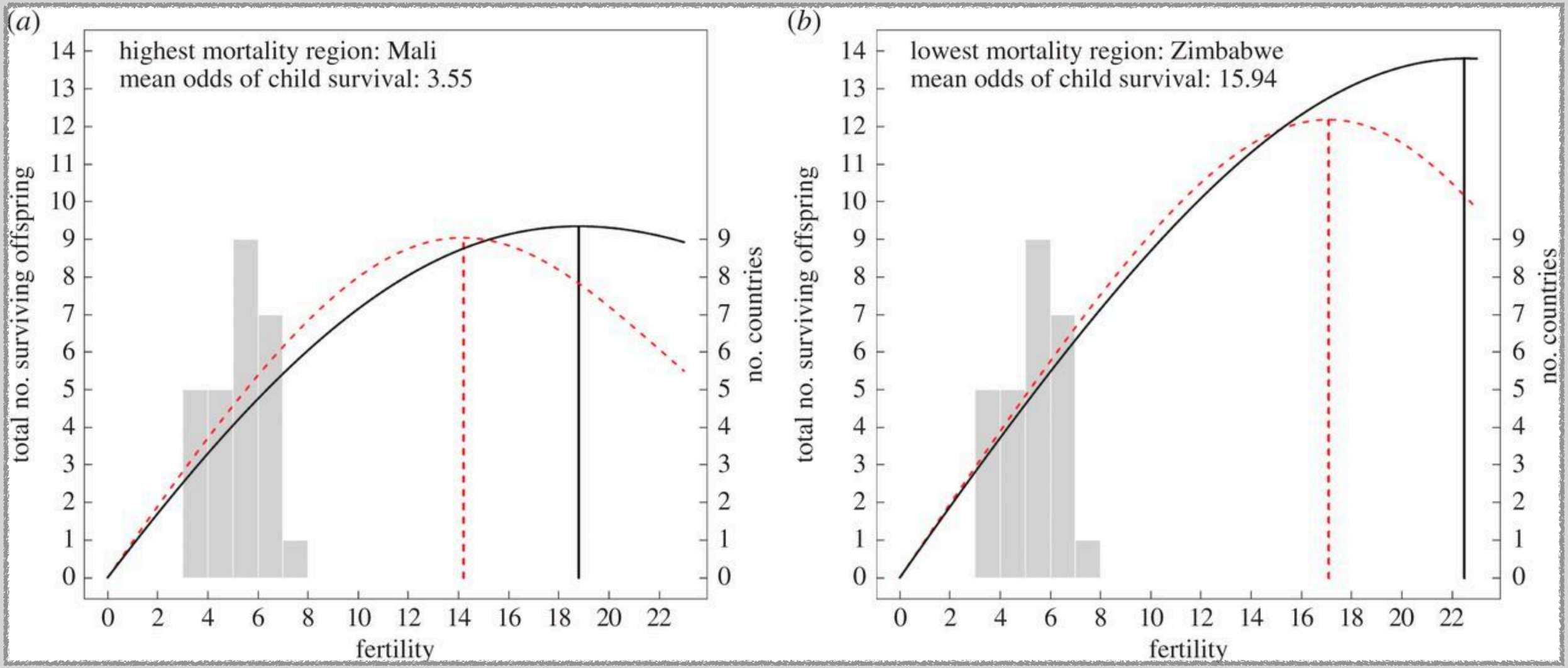
Dogon of Mali
West Africa

Quantity~Quality



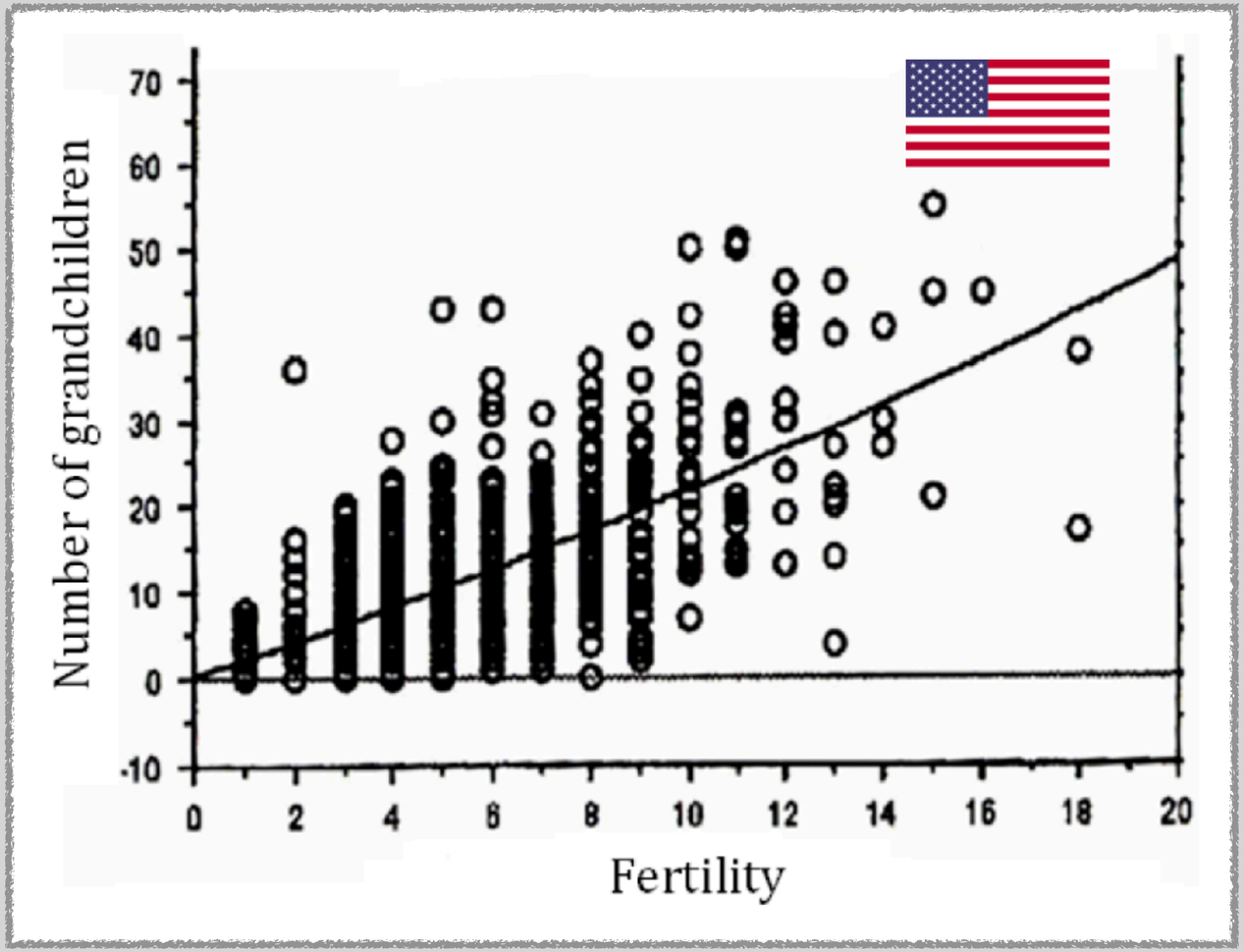
Lawson et al, 2012

Fitness Maximisation?

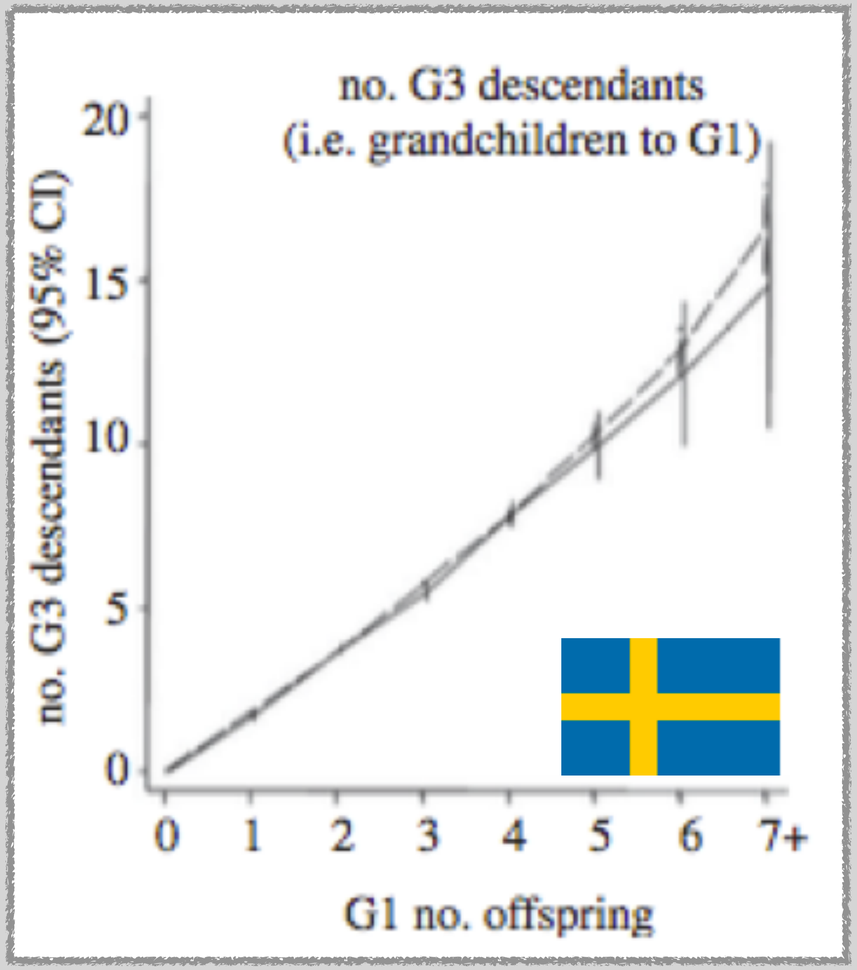


Lawson et al, 2012

Fitness Maximisation?

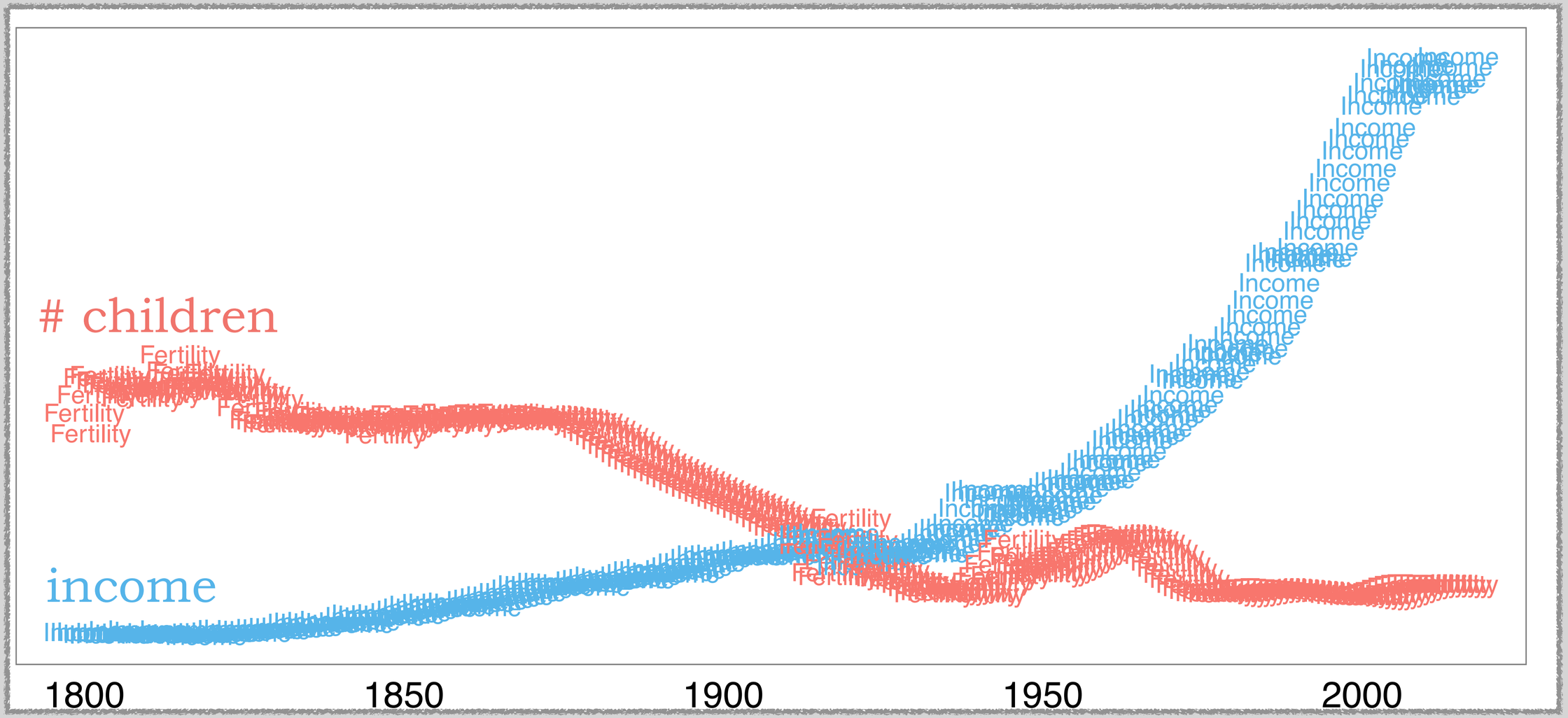


Kaplan et al 1995

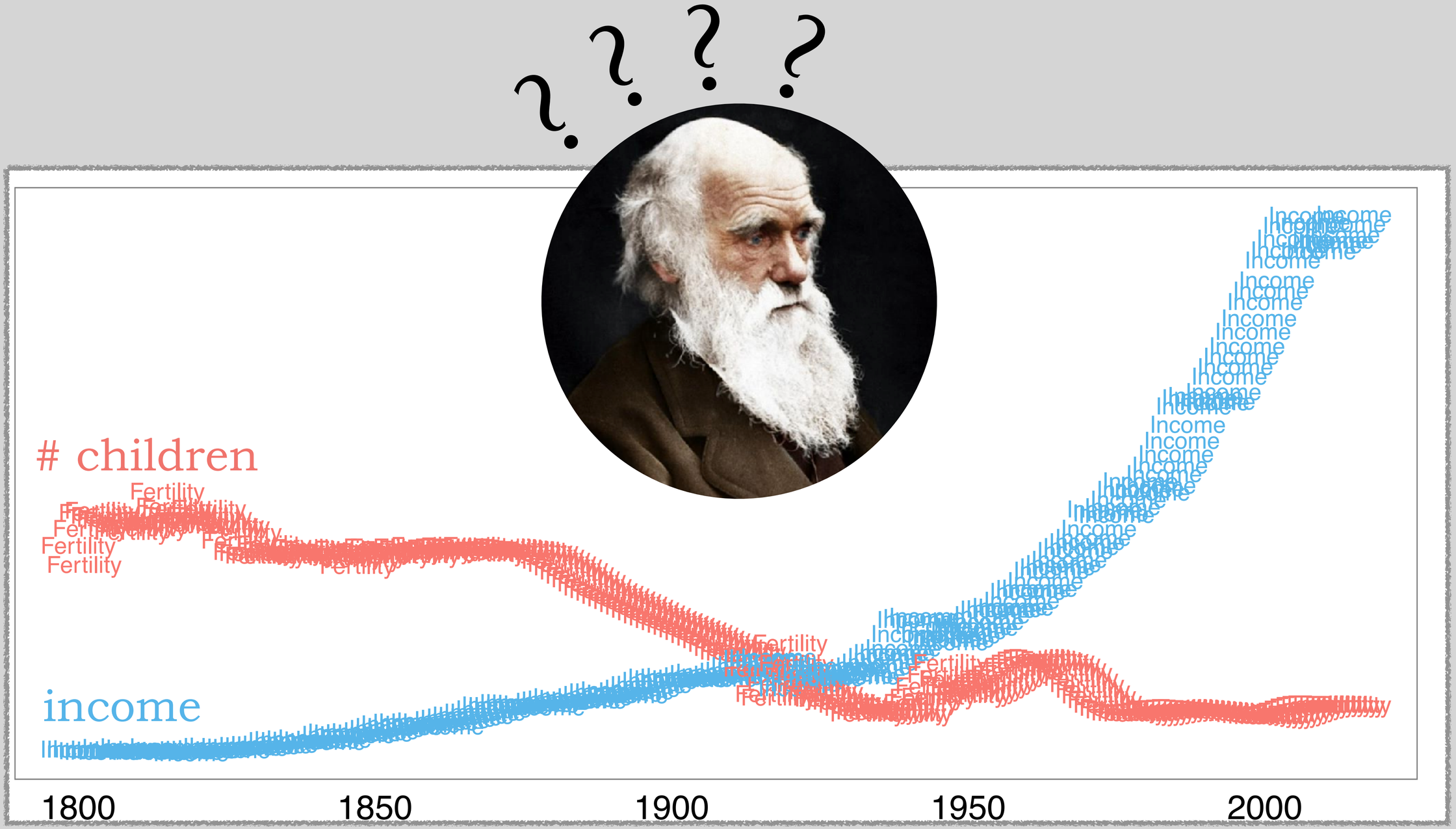


Goodman et al 2012

The Demographic Transition



The Demographic Transition



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Life History Theory

"fitness is maximised by natural selection
over the lifespan of an animal"

Growth ~ Reproduction ~ Maintenance

Across species

Across populations

Within populations

HARSH & UNPREDICTABLE ENVIRONMENTS

Favours a “faster” life:

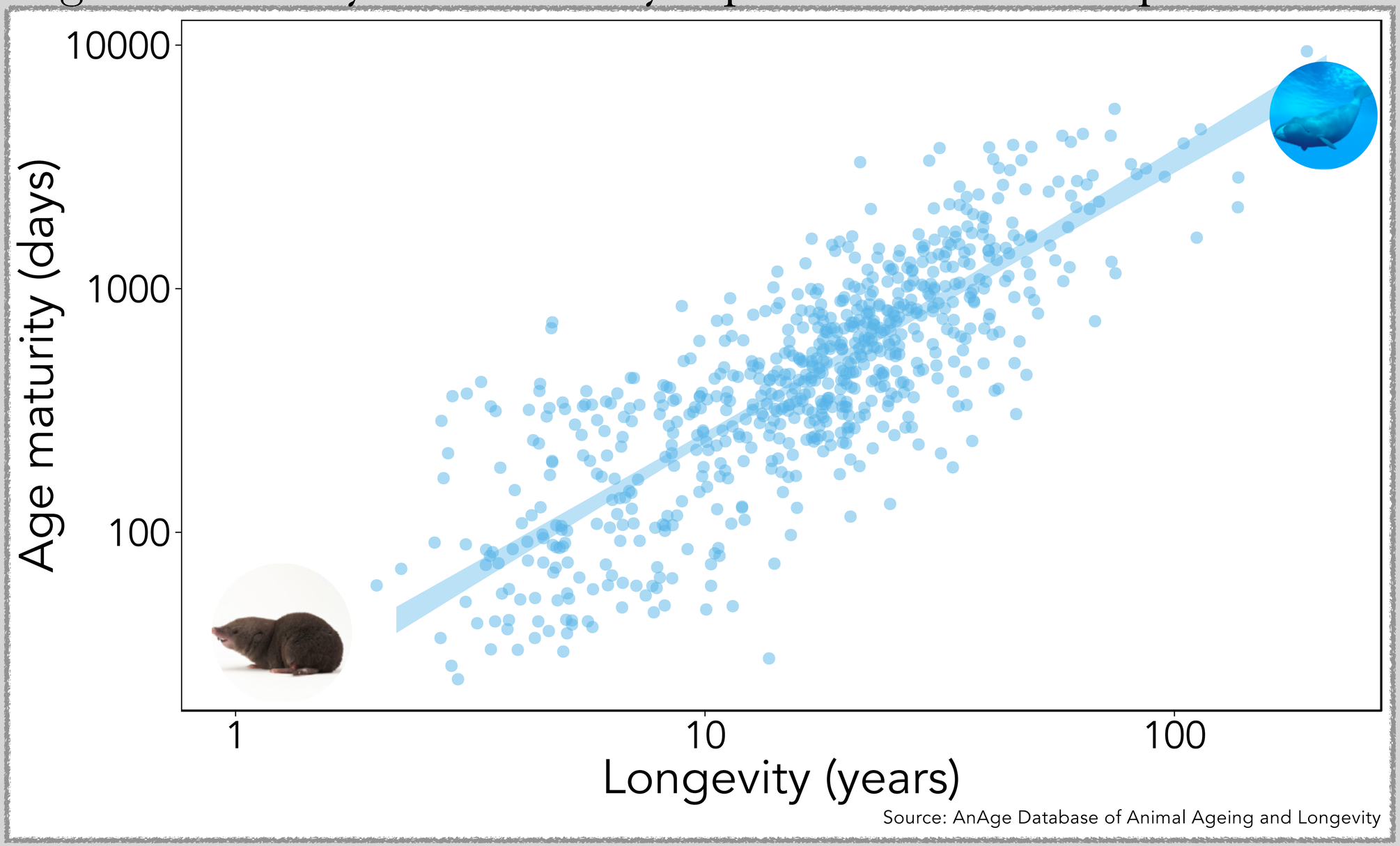
- early maturity
- many offspring
- little parental investment
- prioritise investment in present over future

BENIGN & PREDICTABLE ENVIRONMENTS

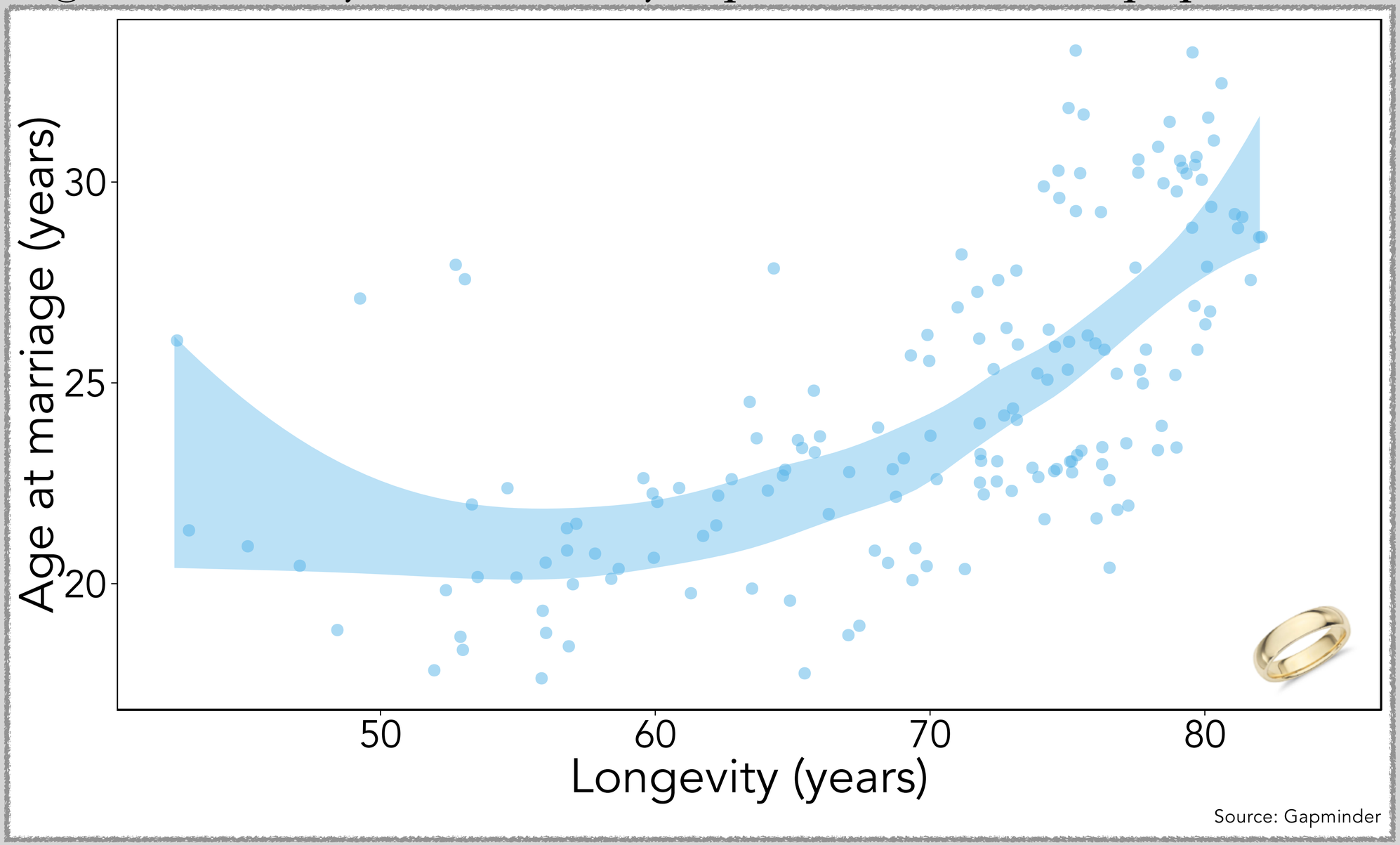
Favours a “slower” life:

- late maturity
- fewer offspring
- high parental investment
- long-term fitness goals

Higher mortality leads to early reproduction across species



Higher mortality leads to early reproduction across populations



Higher mortality leads to early reproduction within populations


spatial.ly/2012/07/
lives-on-the-line/

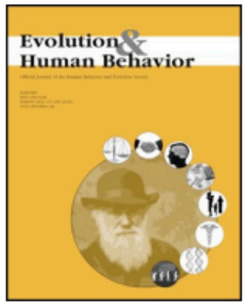
Current Debates

Evolution and Human Behavior 41 (2020) 469–473

Contents lists available at ScienceDirect

Evolution and Human Behavior

journal homepage: www.elsevier.com/locate/ens



Current debates in human life history research

Willem E. Frankenhuis[a,b,*], Daniel Nettle[c]

[a] Department of Psychology, Utrecht University, the Netherlands
[b] Behavioural Science Institute, Radboud University, the Netherlands
[c] Population Health Sciences Institute, Newcastle University, UK

Current Debates

Evolution and Human Behavior 41 (2020) 474–485

Contents lists available at ScienceDirect

Evolution and Human Behavior

journal homepage: www.elsevier.com/locate/ens

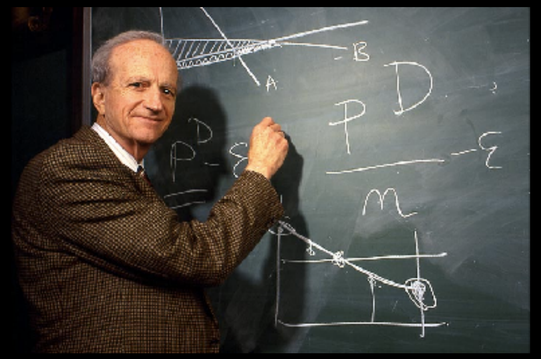
On the use of "life history theory" in evolutionary psychology

Stephen C. Stearns[a,*], António M.M. Rodrigues[a,b]

[a] Department of Ecology and Evolutionary Biology, Yale University, Box 208106, New Haven, CT 06520-8106, USA
[b] Department of Zoology, University of Cambridge, Downing Street, Cambridge CB2 3EJ, UK

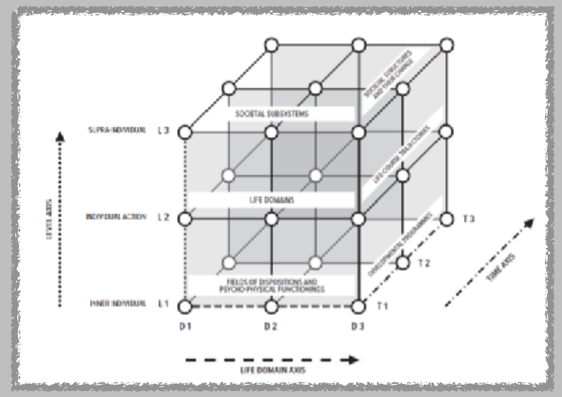
"First, concerning plasticity, should we expect the effects of plasticity on the developmental response of a trait to mirror the effects of selection on the mean of that trait? **We conclude that we should not**. Do only plastic responses to harsh or unpredictable environments accelerate maturation, or are there plausible alternatives, such as nutrition? In many situations better nutrition is a plausible alternative.

ECONOMISTS



CENTRAL THESIS
"Home economics"
Quantity versus Quality
Maximise utility/income

SOCIOLOGISTS



CENTRAL THESIS
Interdependence
"Shadows of the past/future"
Maximise wellbeing

BIOLOGISTS

CENTRAL THESIS
Principles of energy allocation
Trade-offs
Maximise fitness

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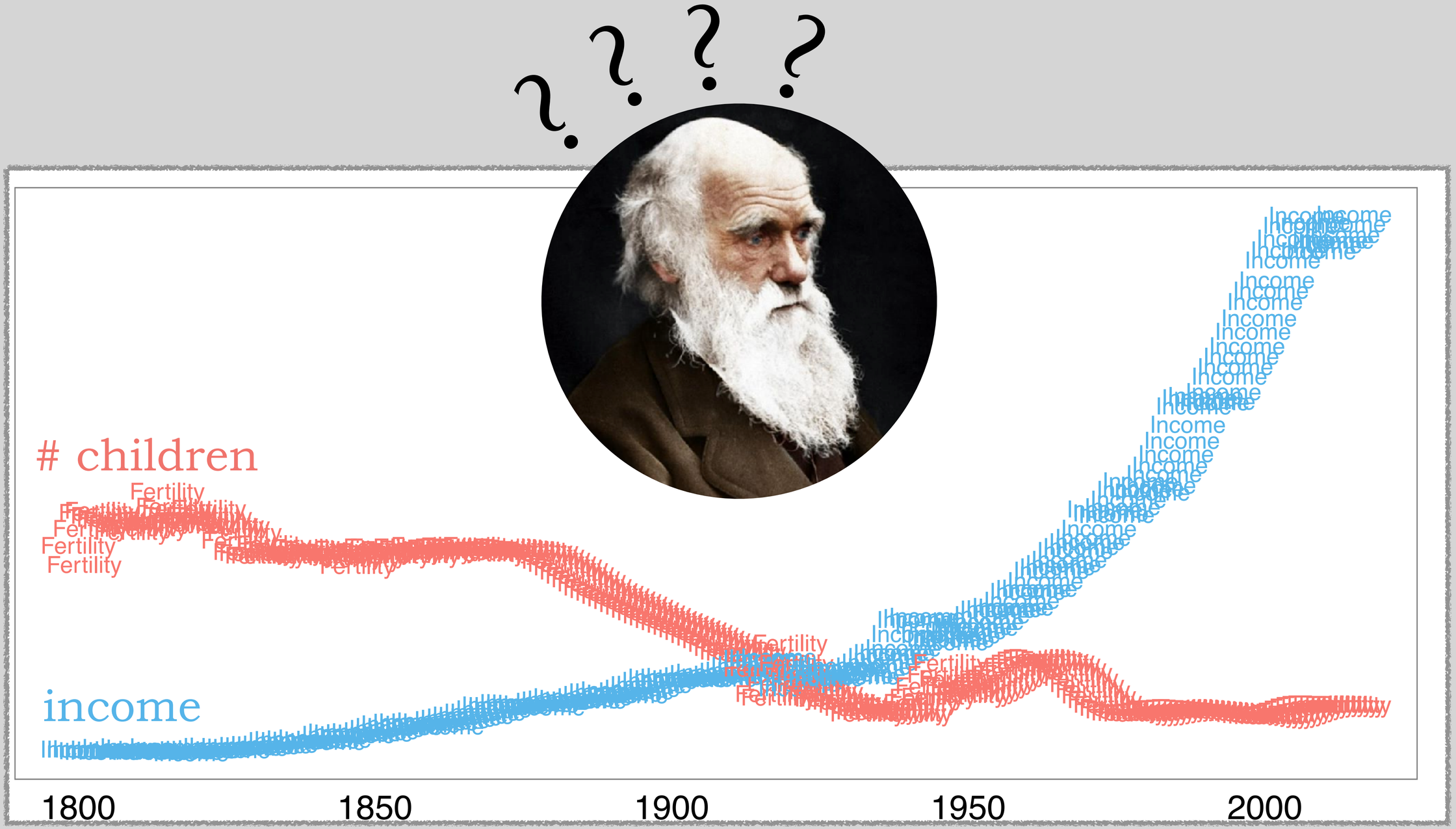
The Demographic Transition



BEHAVIOURAL ECOLOGISTS

Behavioural ecologists with interest in humans

CENTRAL THESIS
humans are evolved to flexibly deal with their environments in ways that maximise fitness

WAY OF WORKING
studying human behaviour in their ecology/environment

CULTURAL EVOLUTIONISTS

Mathematicians with interest in humans

CENTRAL THESIS
social learning has led to humans' success, but it can lead to maladaptive behaviour

WAY OF WORKING
mathematical models and experiments on social learning

EVOLUTIONARY PSYCHOLOGISTS

Cognitive psychologists with interest in humans

CENTRAL THESIS
the brain is adapted to environments that no longer exist, and 'mismatched' to the modern world

WAY OF WORKING
experiments on perceptions and preferences

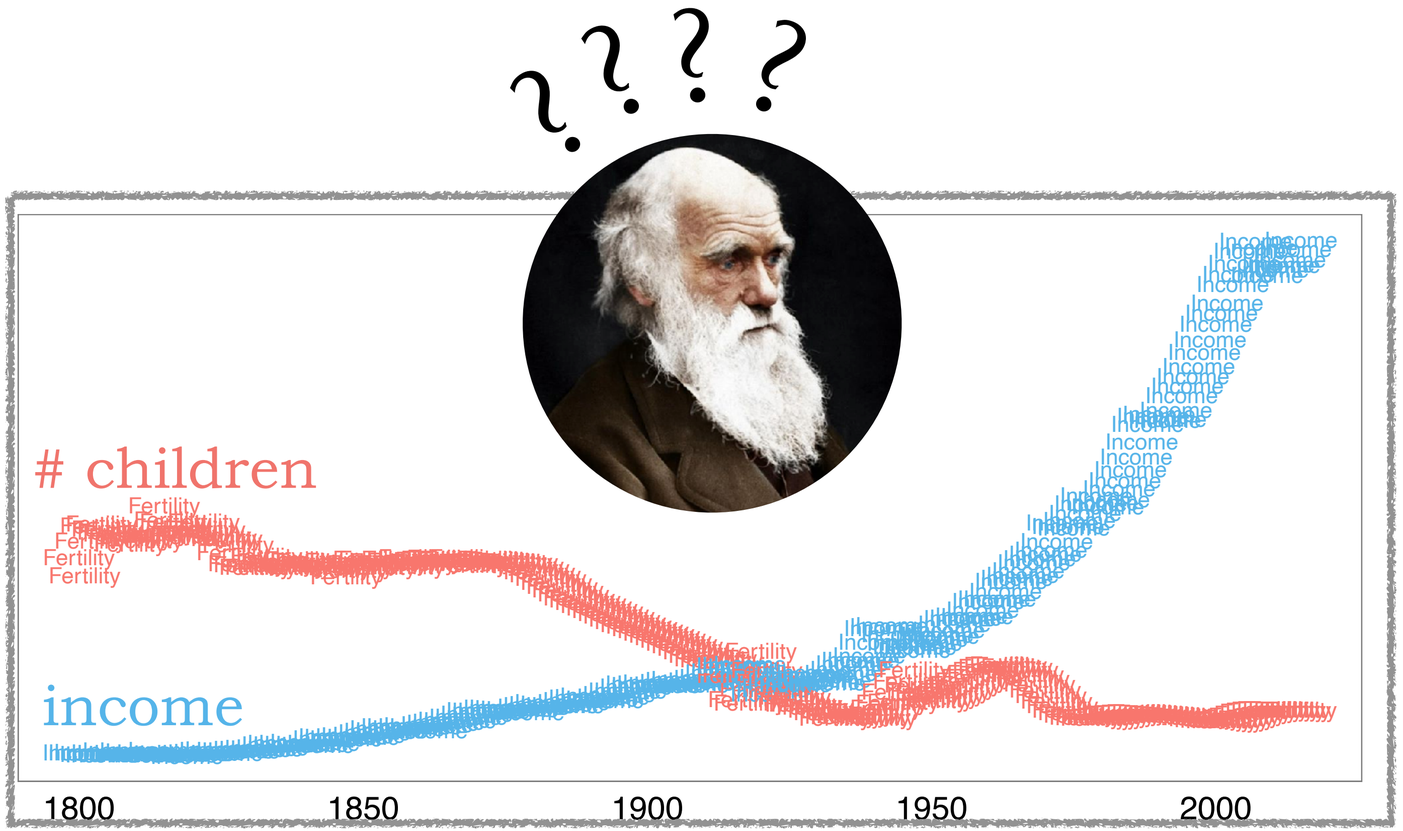
BEHAVIOURAL ECOLOGISTS

Behavioural ecologists with interest in humans

CENTRAL THESIS
humans are evolved to flexibly deal with their environments in ways that maximise fitness

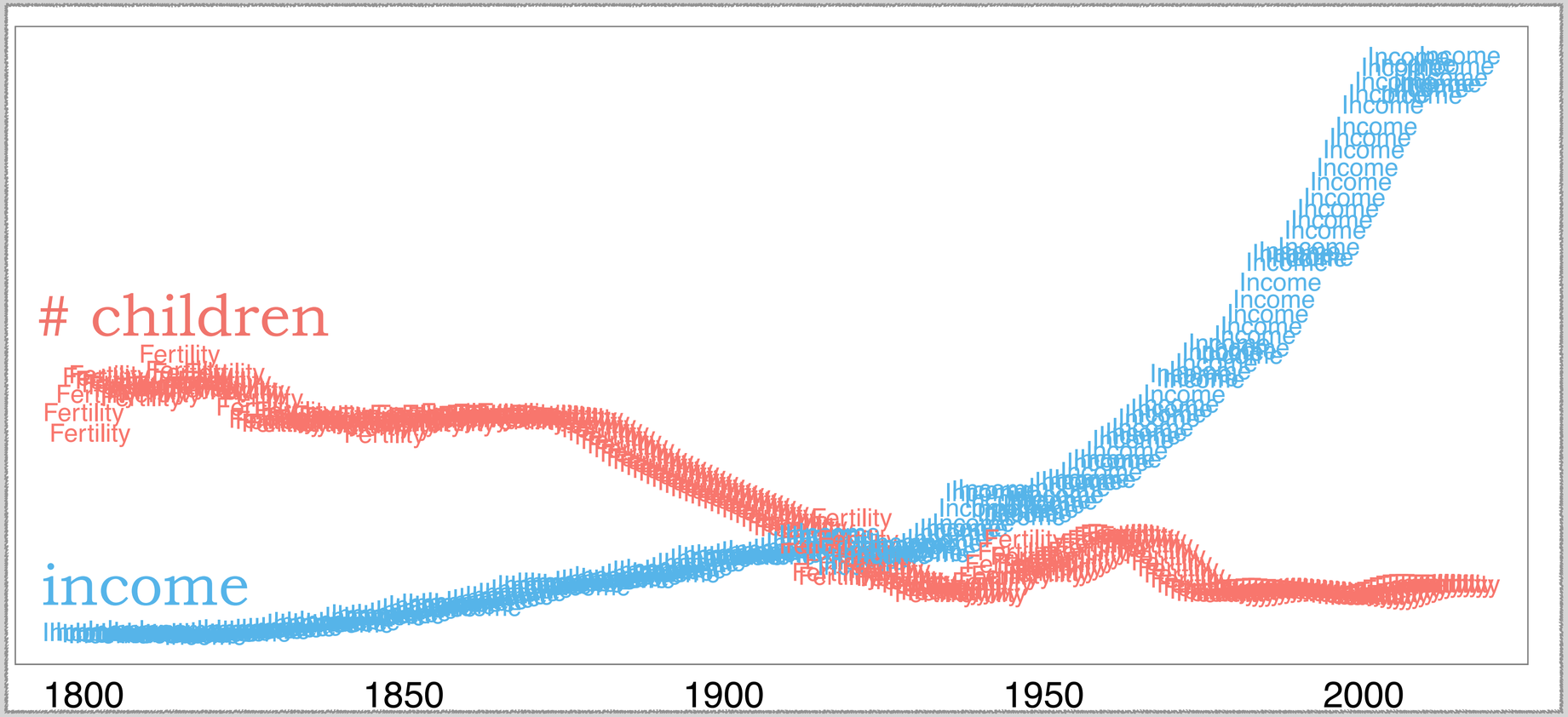
WAY OF WORKING
studying human behaviour in their ecology/environment

HOW WOULD BEHAVIOURAL ECOLOGISTS LOOK AT THIS?

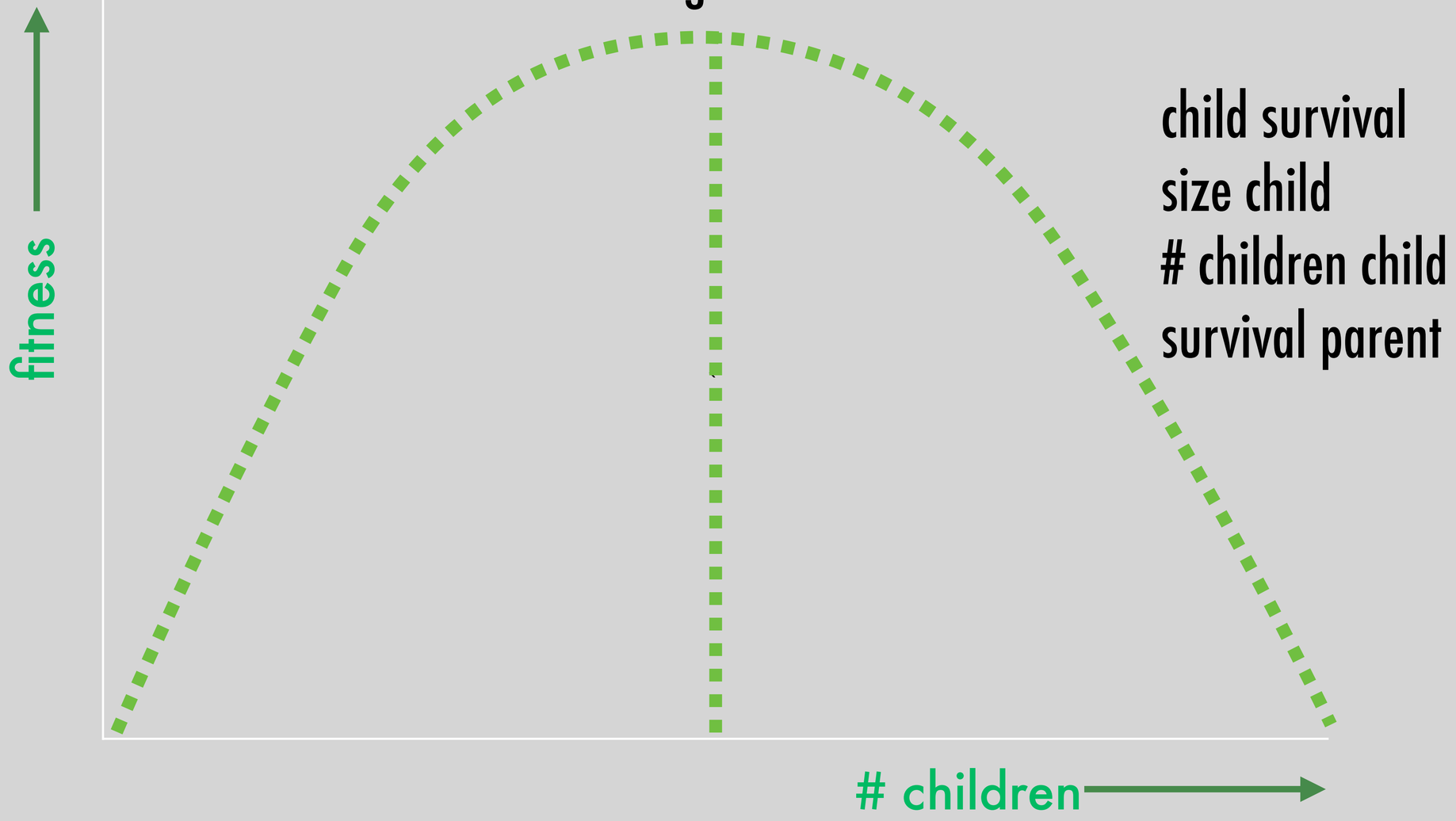


“The cost of raising a child from birth to age 18 for a middle-income, two-parent family averaged $226,920 last year (not including college)

CNN Money



maximising the number of children
is not the same as maximising fitness



child survival
size child
children child
survival parent

Reducing Fertility is Adaptive

ELSEVIER

More Status or More Children? Social Status, Fertility Reduction, and Long-Term Fitness

James L. Boone and Karen L. Kessler
Human Evolutionary Ecology Program, Anthropology Department, University of New Mexico, Albuquerque, New Mexico

Evolutionary Economics of Human Reproduction

Alan R. Rogers
Department of Anthropology, Salt Lake City, Utah

The Royal Society

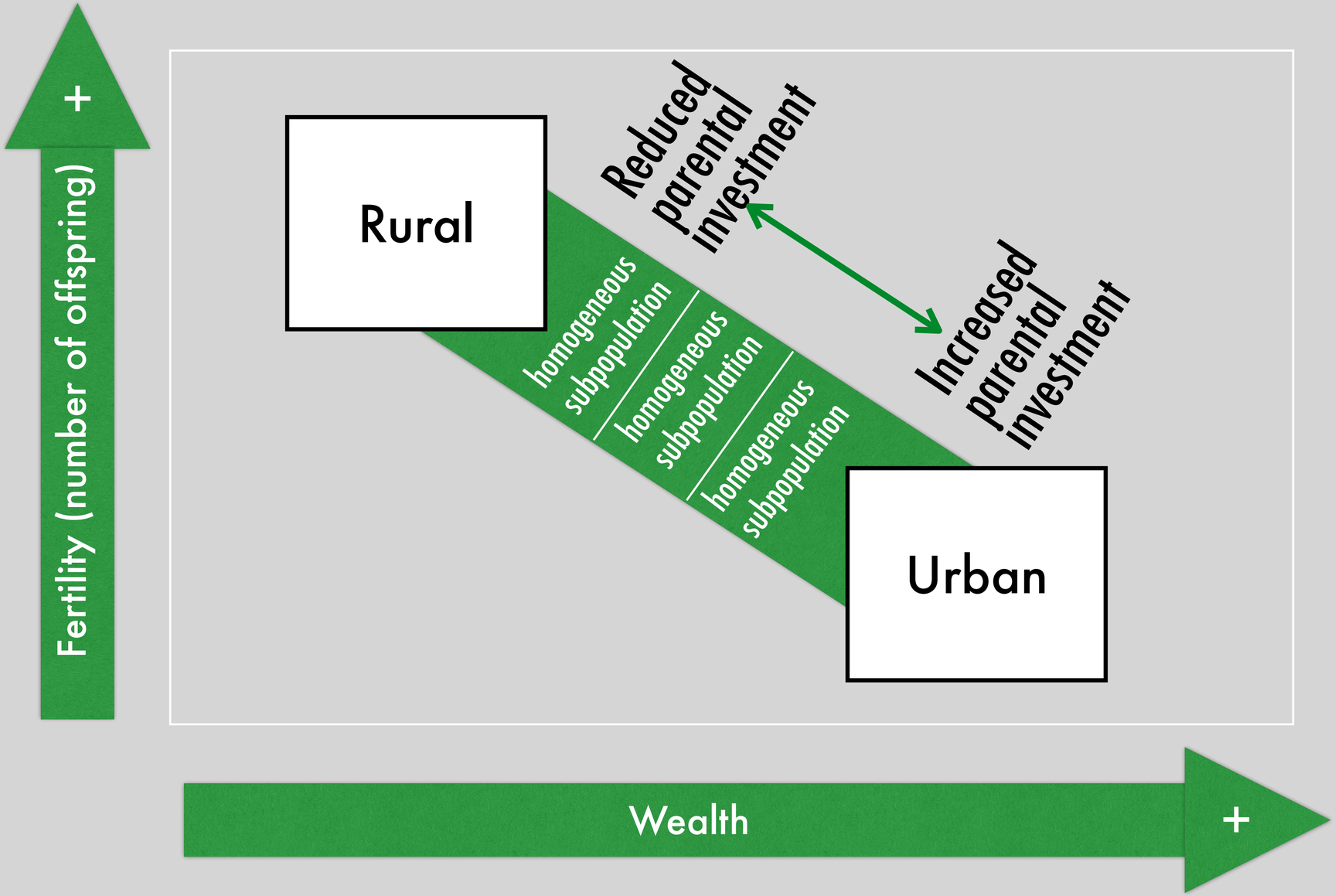
The coevolution of human fertility and wealth inheritance strategies

Ruth Mace
Department of Anthropology, University College London, Gower Street, London WC1E 6BT, UK (r.nace@ucl.ac.uk)

Behavioral Ecology
doi:10.1093/beheco/ari001
Advance Access publication 3 November 2004

Low fertility in humans as the evolutionary outcome of snowballing resource games

Sarah E. Hill[a] and H. Kern Reeve[b]
[a]Department of Psychology, University of Texas at Austin, 1 University Station A8000, Austin, TX 78712, USA, and [b]Department of Neurobiology and Behavior, Cornell University, Ithaca, NY 14653, USA


+
Fertility (number of offspring)
Rural
Reduced parental investment
Increased parental investment
homogeneous subpopulation
homogeneous subpopulation
homogeneous subpopulation
Urban
Wealth
+

Mace 2008

PROCEEDINGS OF THE ROYAL SOCIETY B

CrossMark click for updates

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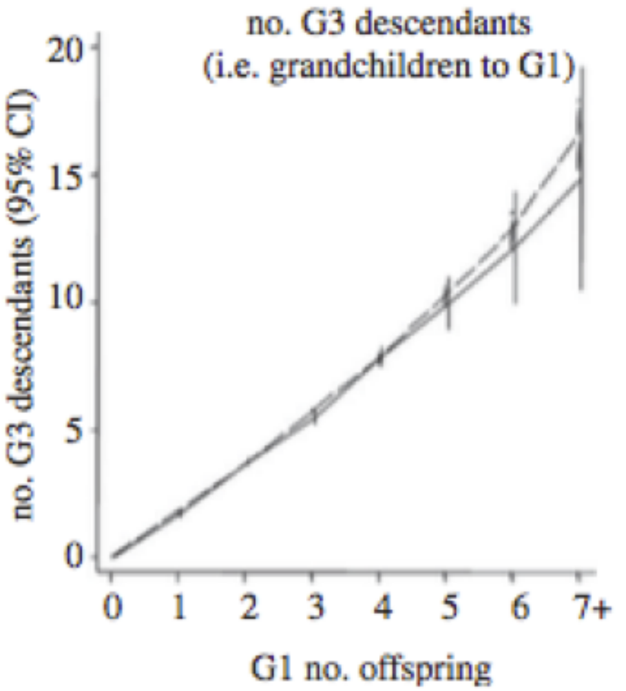
Proc. R. Soc. B
doi:10.1098/rspb.2012.1415
Published online

Low fertility increases descendant socioeconomic position but reduces long-term fitness in a modern post-industrial society

Anna Goodman[1,2,*], Ilona Koupil[2] and David W. Lawson[3]



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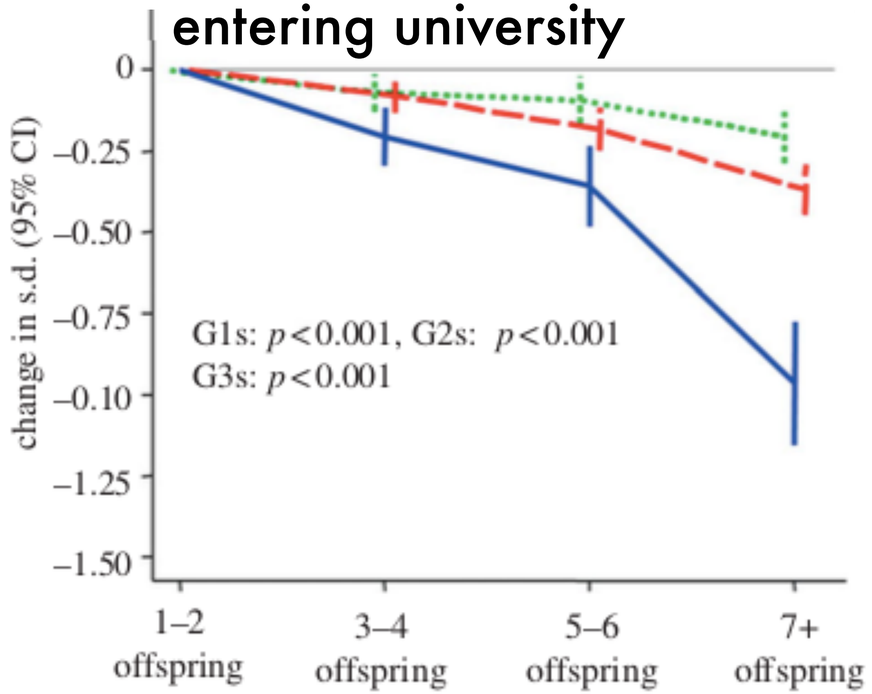
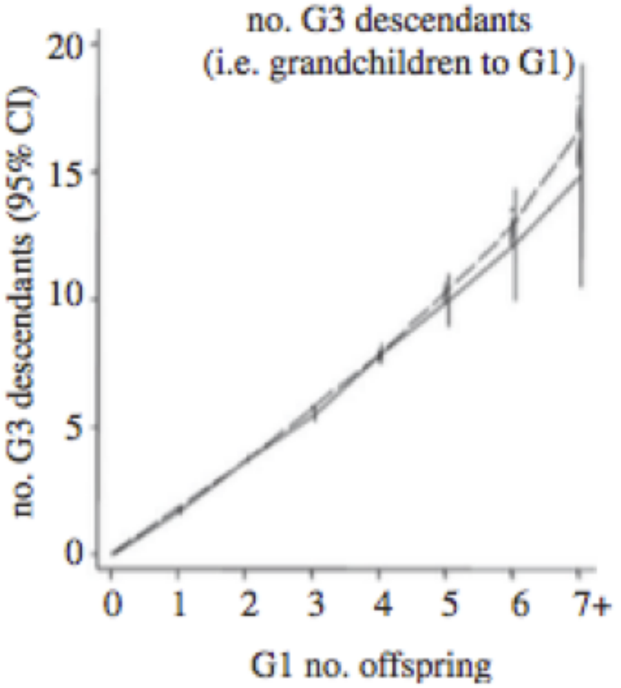
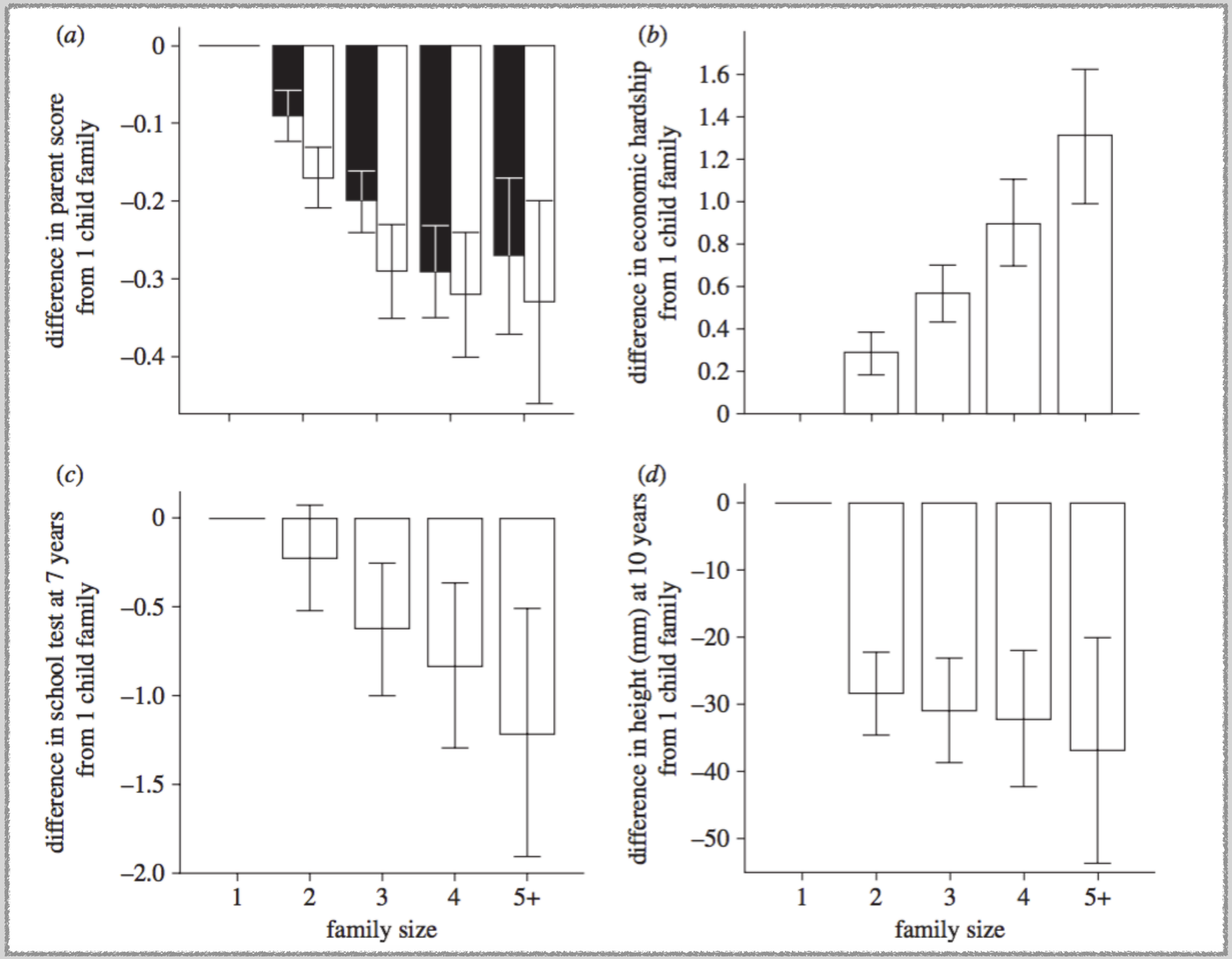
entering university

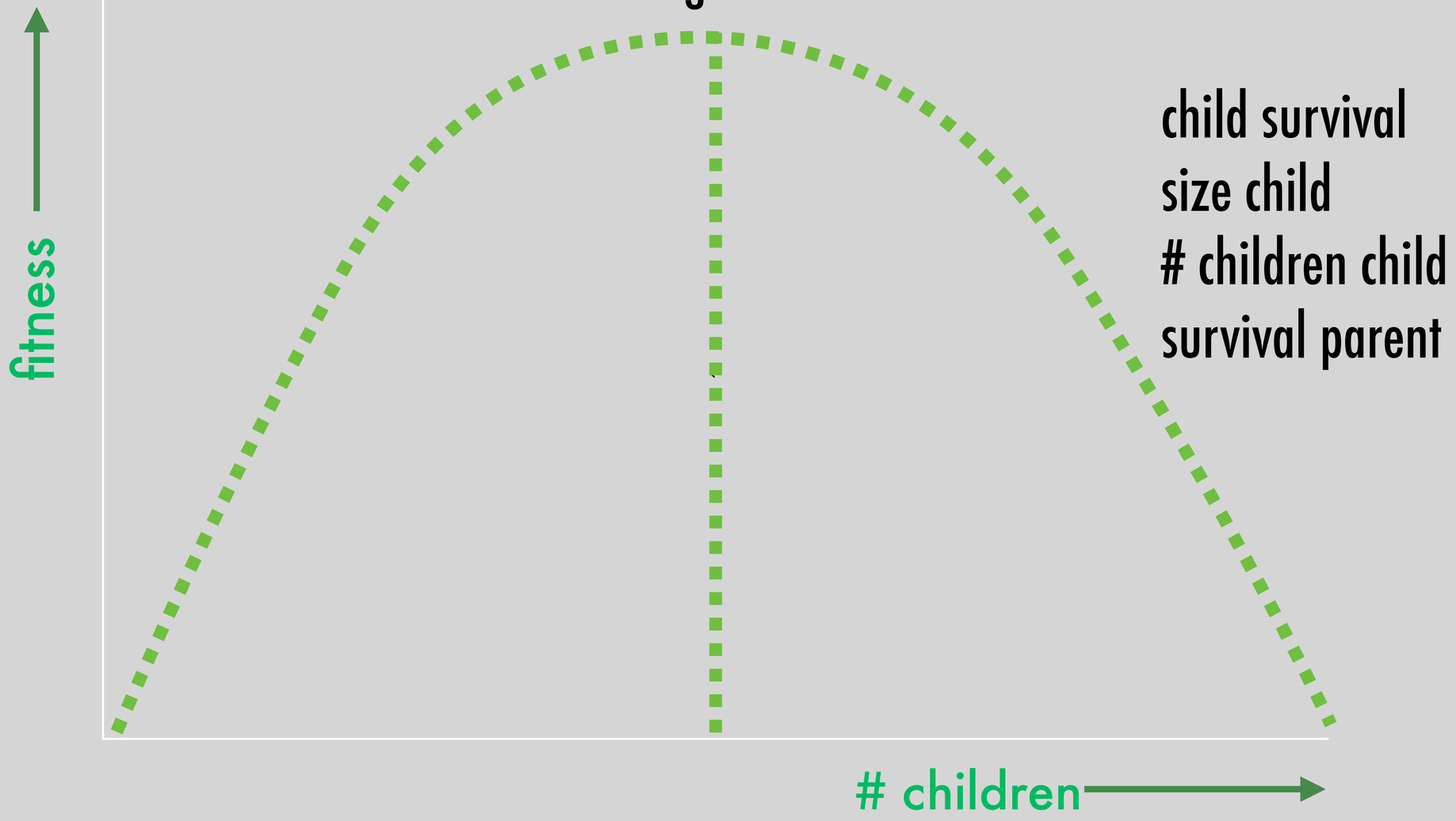






Lawson & Mace 2011

maximising the number of children
is not the same as maximising fitness



child survival
size child
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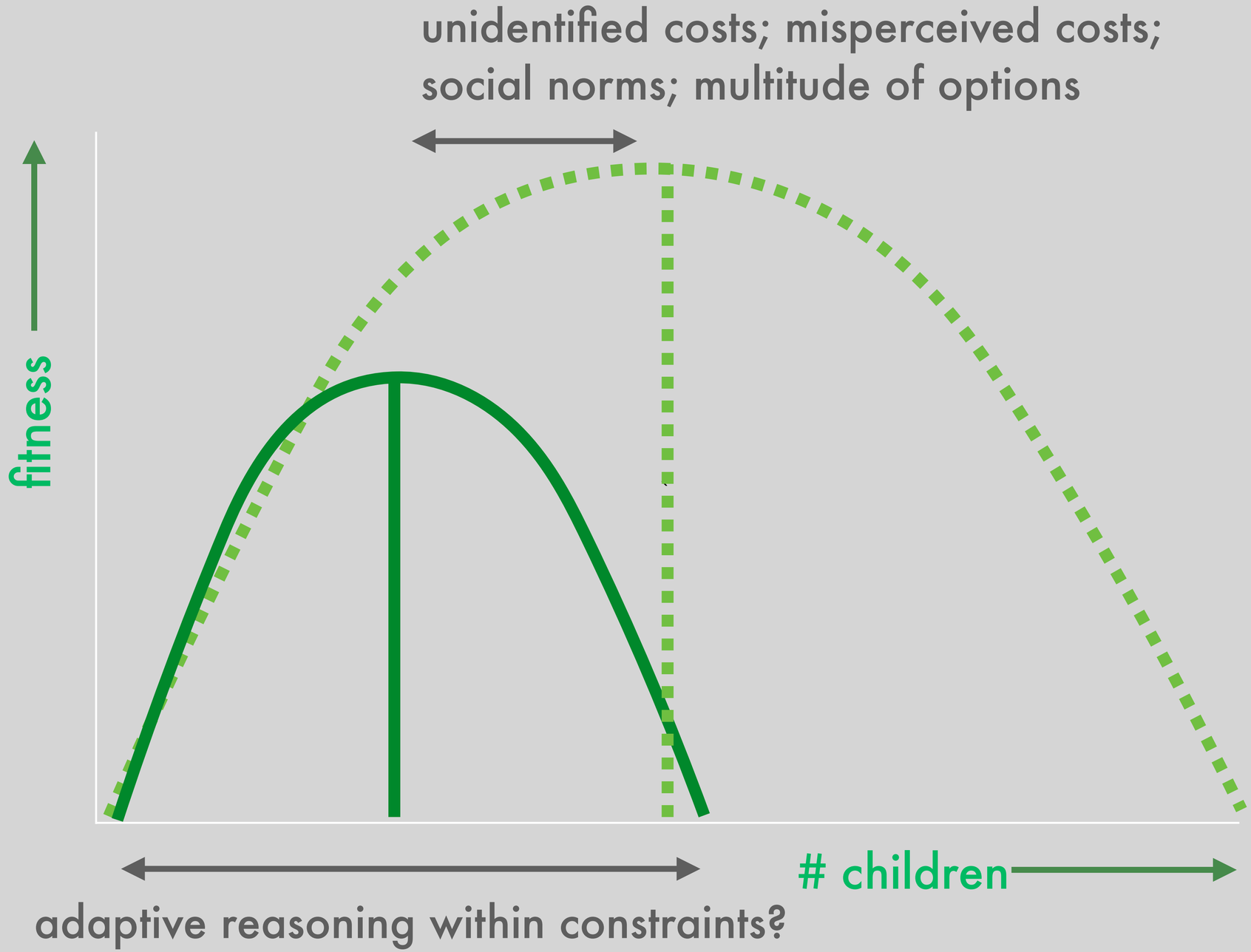
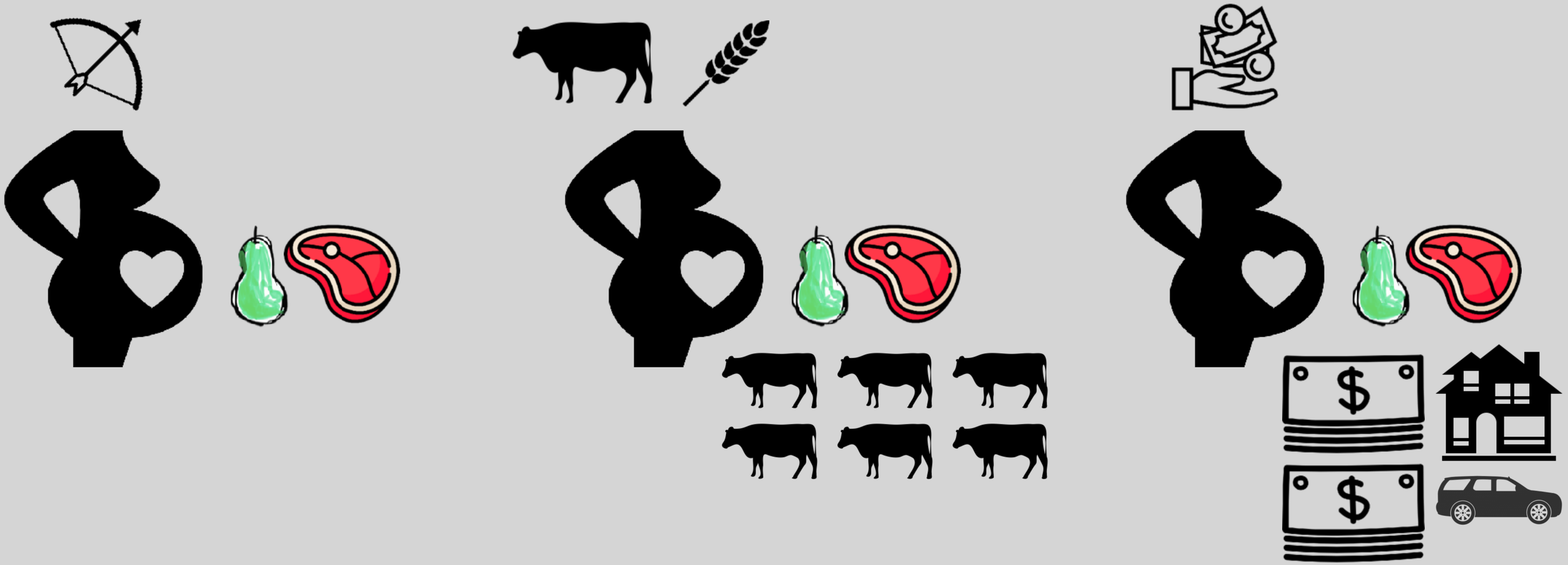

unidentified costs; misperceived costs;
social norms; multitude of options
fitness
children
adaptive reasoning within constraints?

Where Did We Go Wrong?

Extra-somatic wealth



Kaplan 1995

BEHAVIOURAL ECOLOGISTS

Behavioural ecologists with interest in humans

CENTRAL THESIS
humans are evolved to flexibly deal with their environments in ways that maximise fitness

WAY OF WORKING
studying human behaviour in their ecology/environment

- ✗ people do not maximise fitness
- ✓ studying actual behaviour in ecology
- ✓ useful scientific framework where deviations from predictions are also insightful

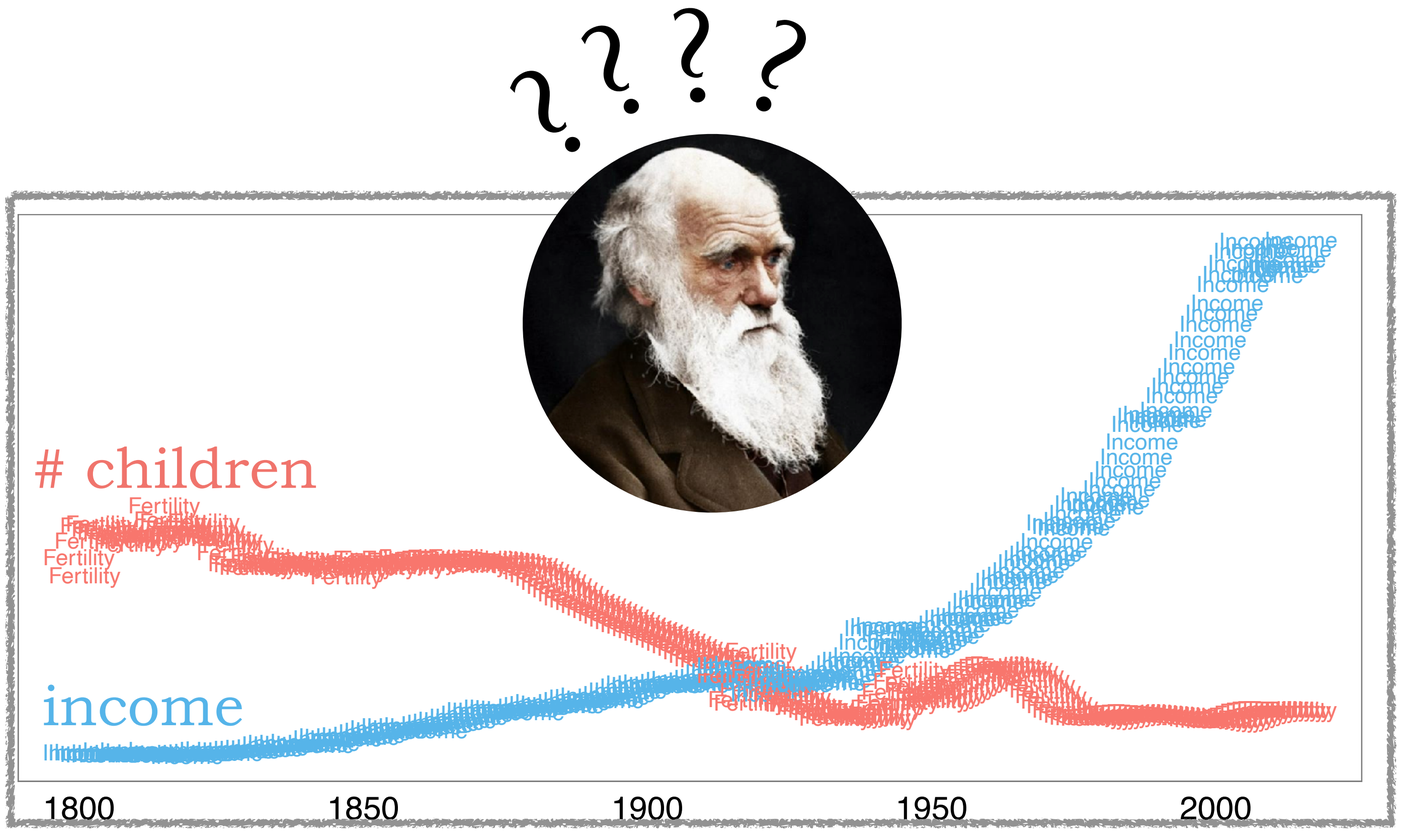
CULTURAL EVOLUTIONISTS

Mathematicians with interest in humans

CENTRAL THESIS
social learning has led to humans' success, but it can lead to maladaptive behaviour

WAY OF WORKING
mathematical models and experiments on social learning

HOW WOULD CULTURAL EVOLUTIONISTS LOOK AT THIS?



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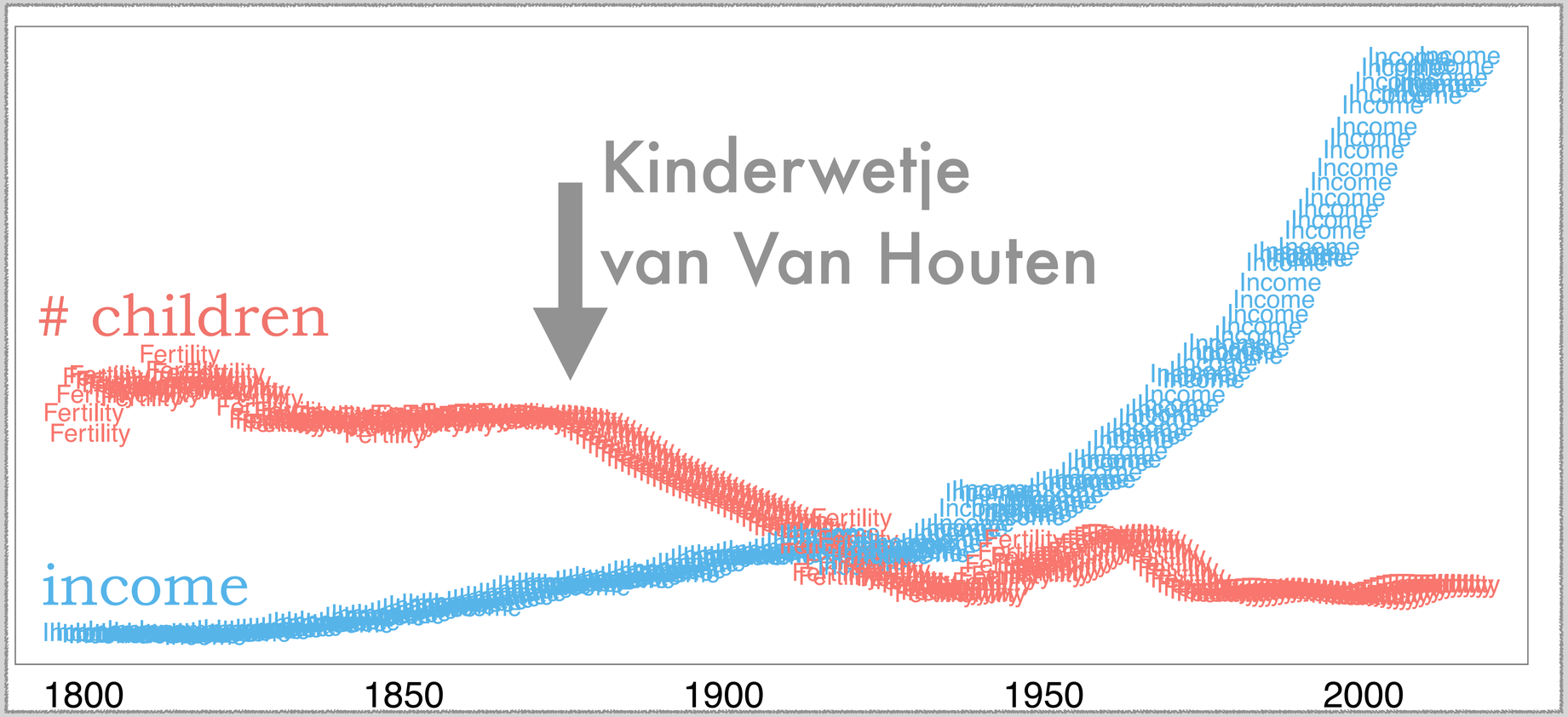
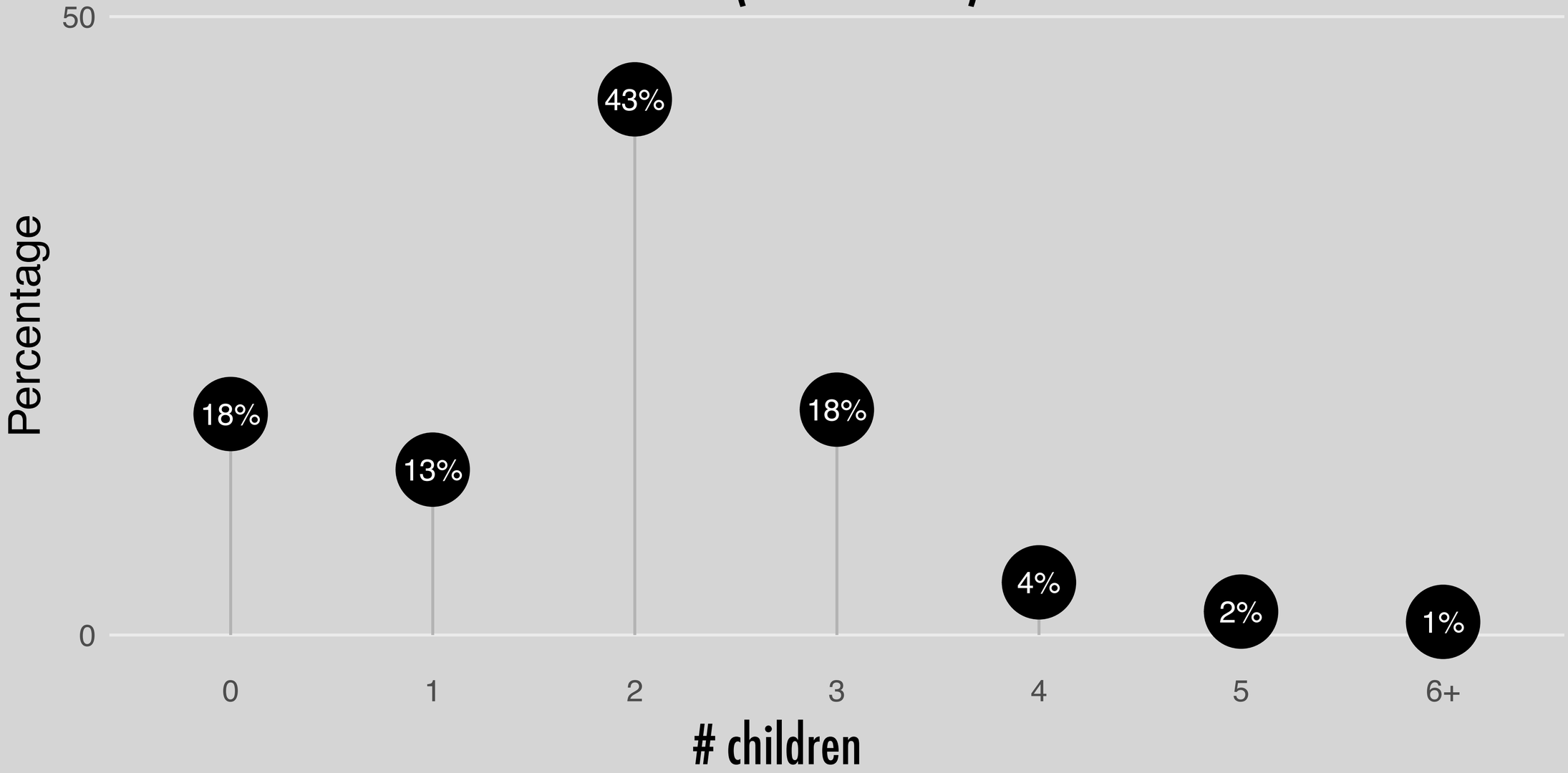
CNN Money



40% of Dutchies have two children, almost 20% are childless (or 'childfree')



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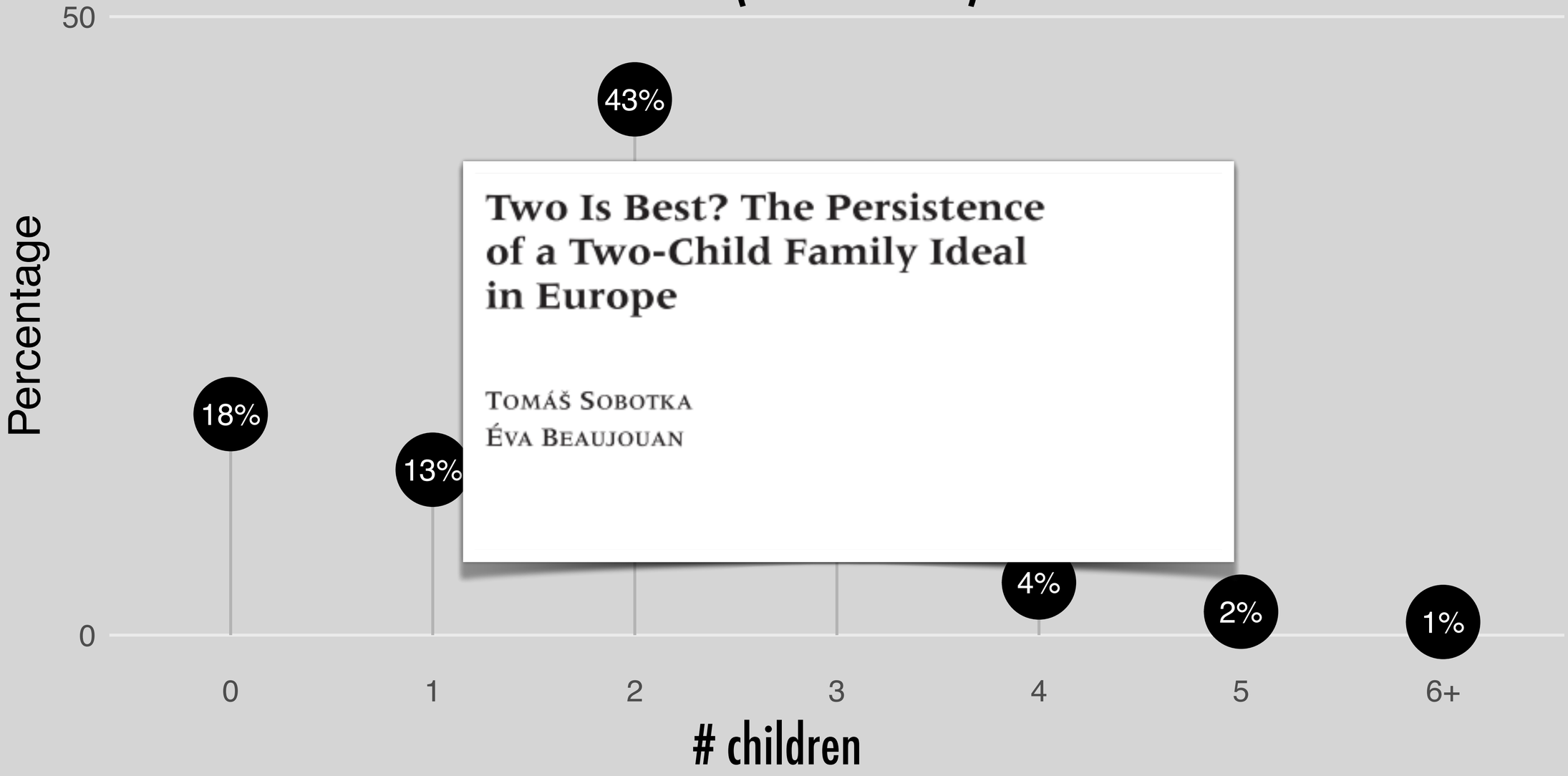

Two Is Best? The Persistence of a Two-Child Family Ideal in Europe

TOMÁŠ SOBOTKA
ÉVA BEAUJOUAN


jewly ann
PHOTOGRAPHY

Bright-Side Economics / Pope & Change /

TIME

THE CHILDFREE LIFE

When having it all means not having children

CULTURAL EVOLUTIONISTS

Mathematicians with interest in humans

CENTRAL THESIS
social learning has led to humans' success, but it can lead to maladaptive behaviour

WAY OF WORKING
mathematical models and experiments on social learning

✅ taking into account constraints and history

❌ chicken-and-egg problem

EVOLUTIONARY PSYCHOLOGISTS

Cognitive psychologists with interest in humans

CENTRAL THESIS
the brain is adapted to environments that no longer exist, and 'mismatched' to the modern world

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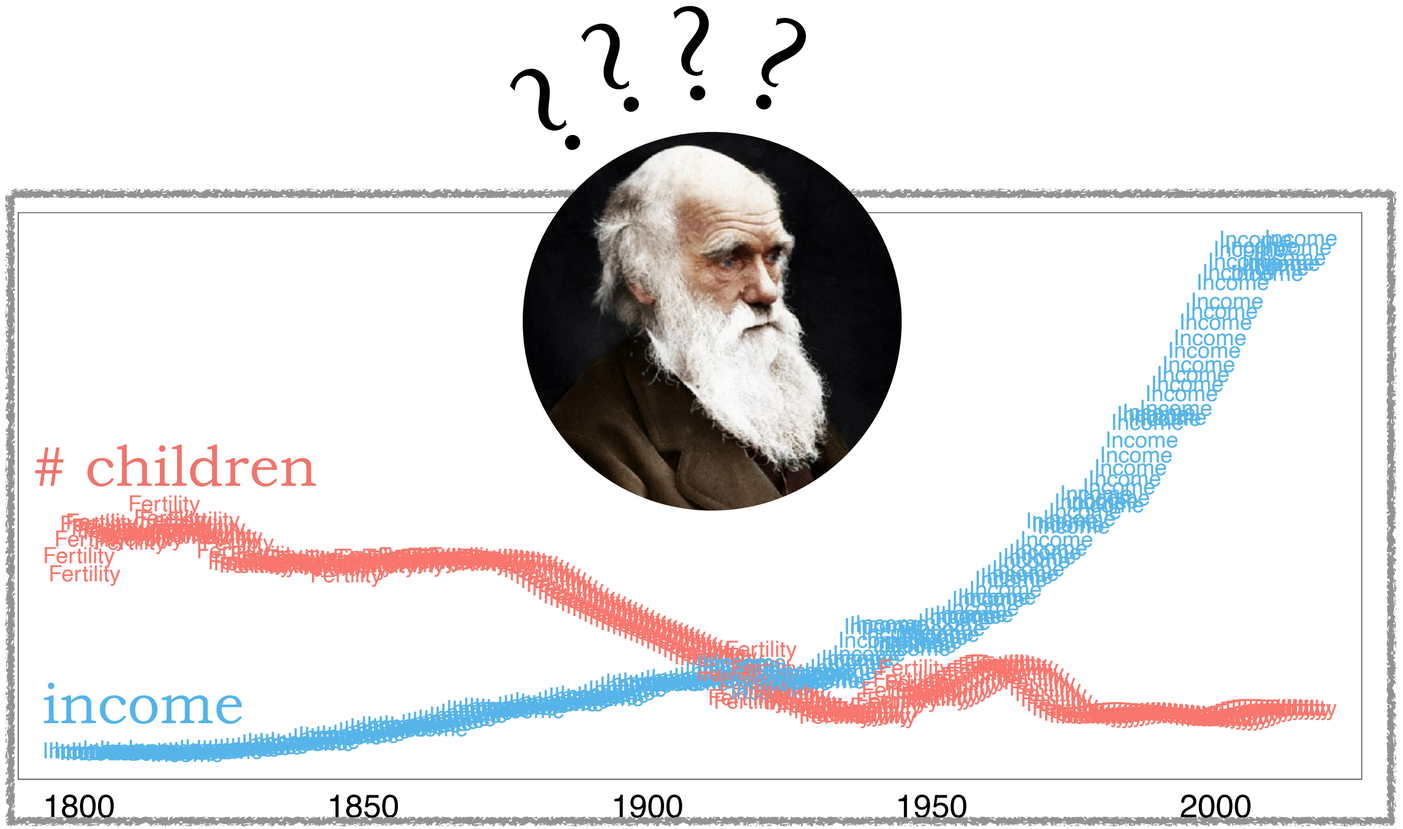


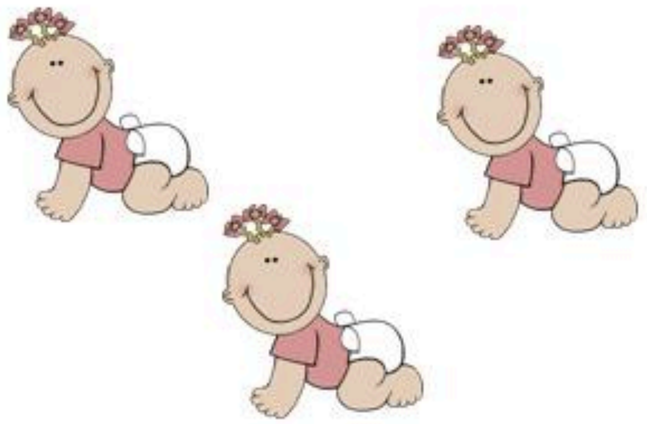
People in the modern world fail to maximize fitness in innumerable ways, and there are innumerable differences between modern and natural environments

Symons, 1986

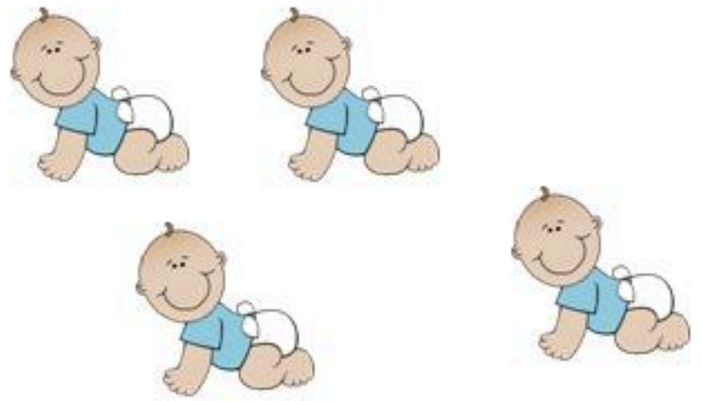
“Counting babies”

Crawford 2000

Directions: Count the babies. Circle the correct number.



1 3 4



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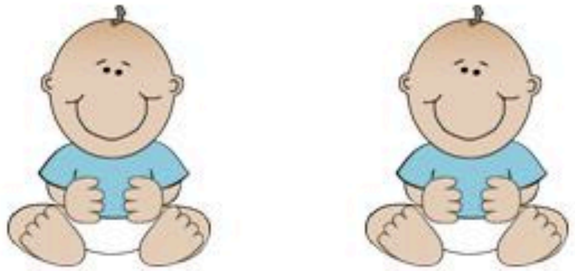
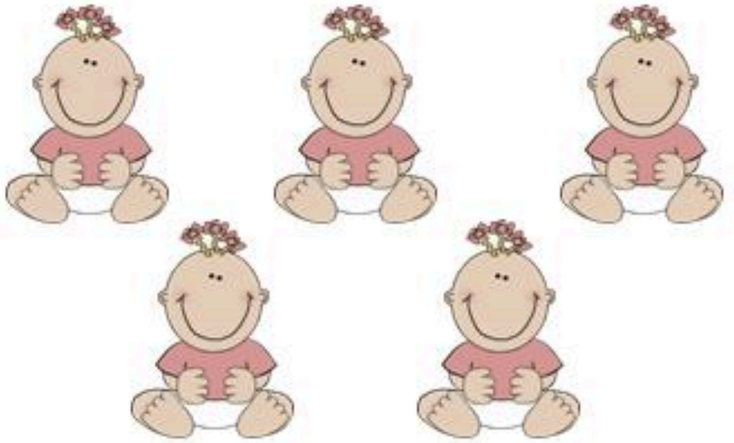


2 5 4



2 5 4

“

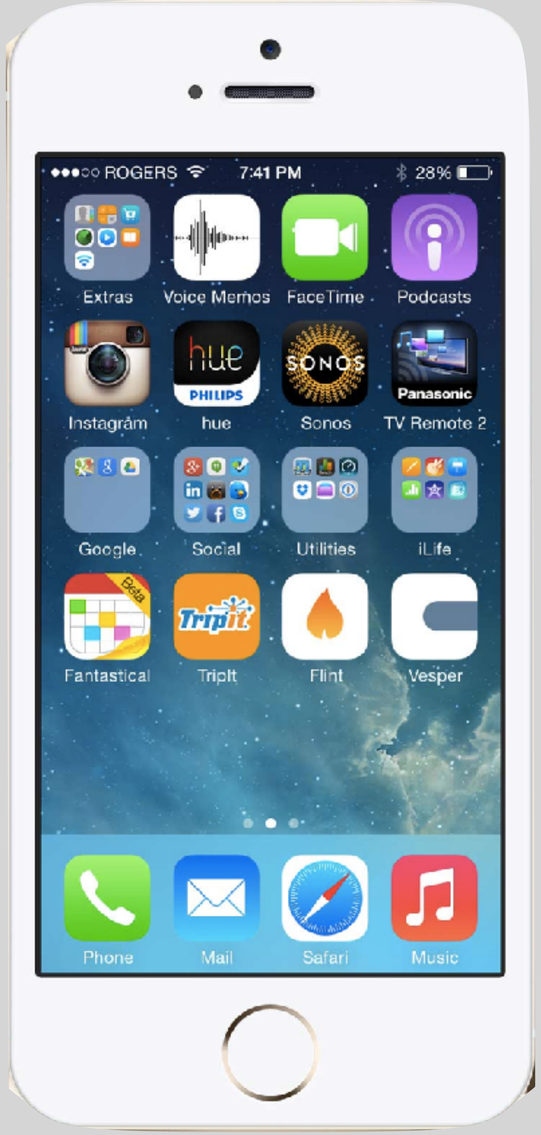
… a surprising lapse in many excellent evolutionary researchers’ thought…

Cosmides & Tooby, 1997

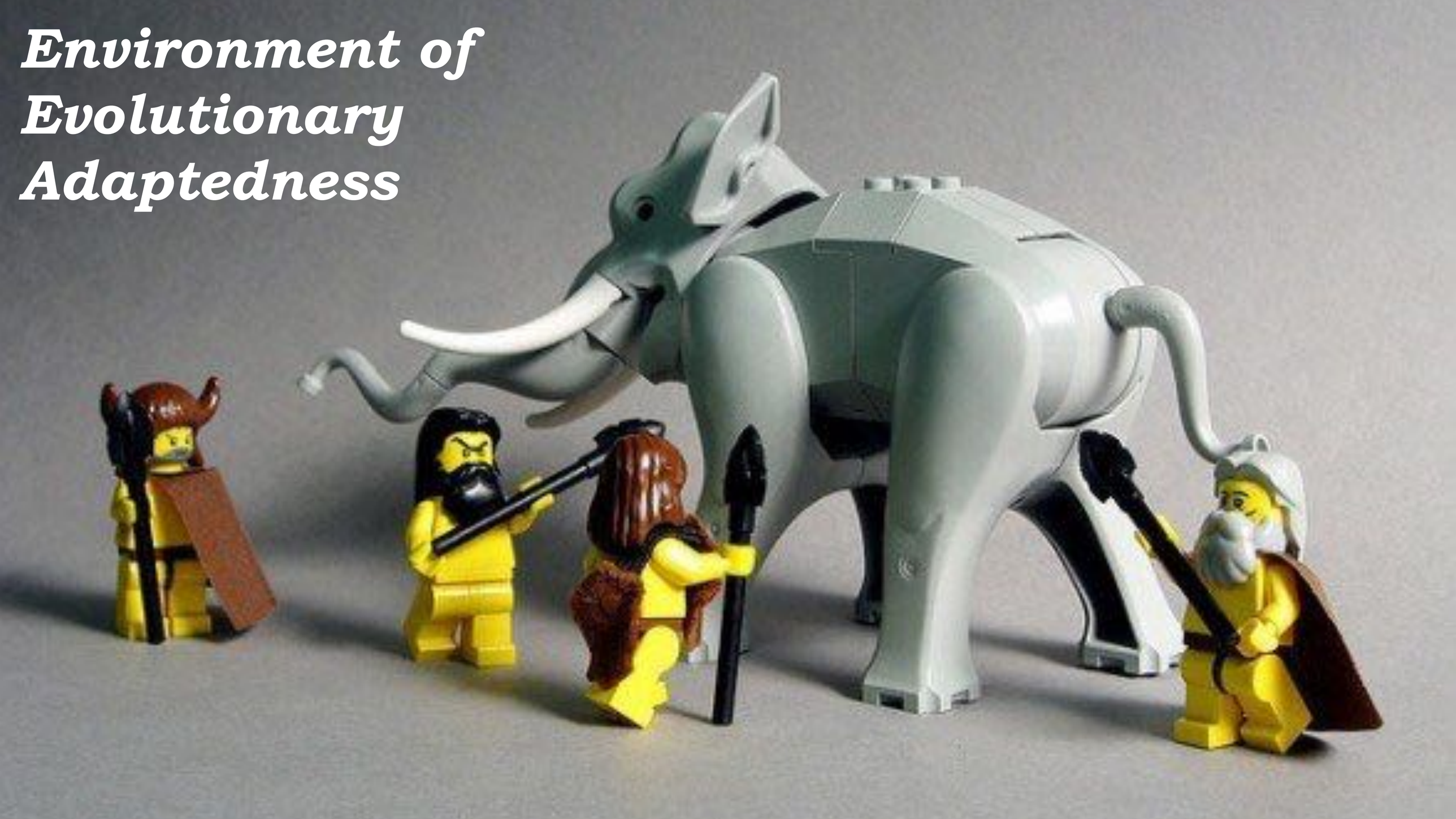
> The study of adaptiveness merely draws metaphorical inspiration from Darwinism, whereas the study of adaptation is Darwinian

Tooby, quoted in Symons, 1990

The brain is an organ
evolved to solve
adaptive recurring problems



Environment of Evolutionary Adaptedness

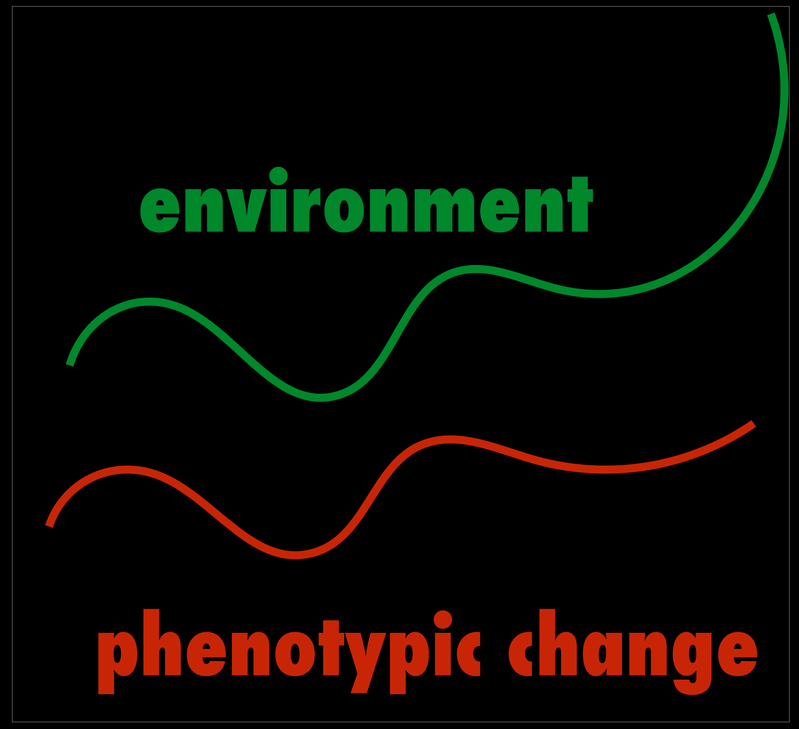


reflects completed rather than ongoing selection

Our modern skull houses a stone-age mind

Tooby & Cosmides 1990

MISMATCH



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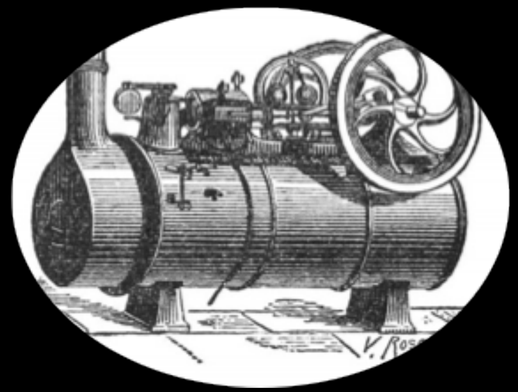
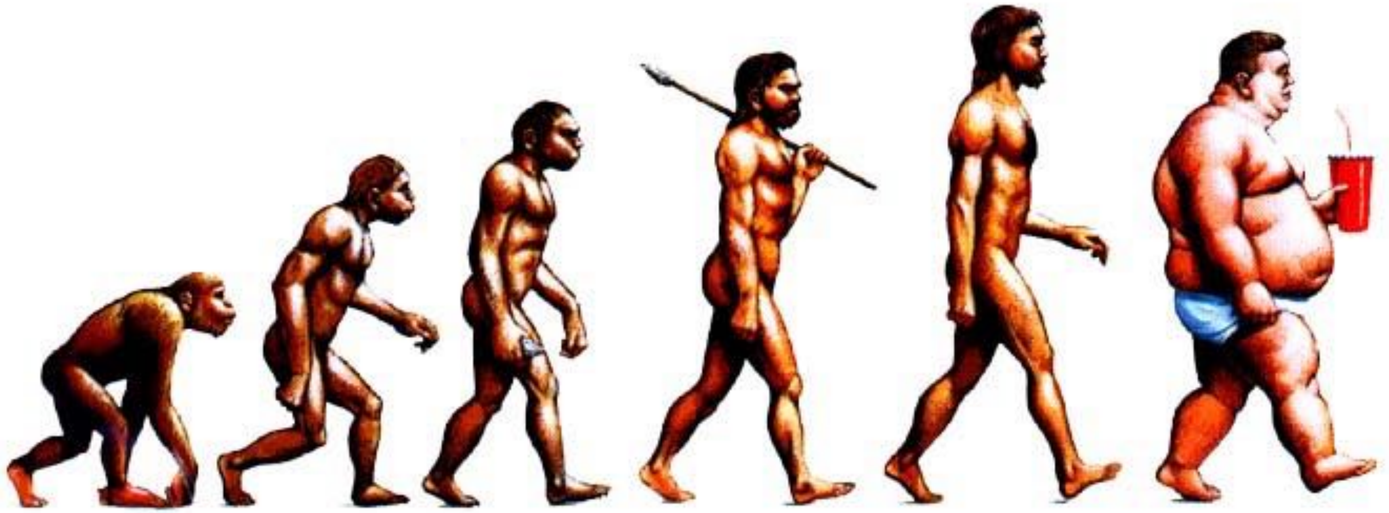
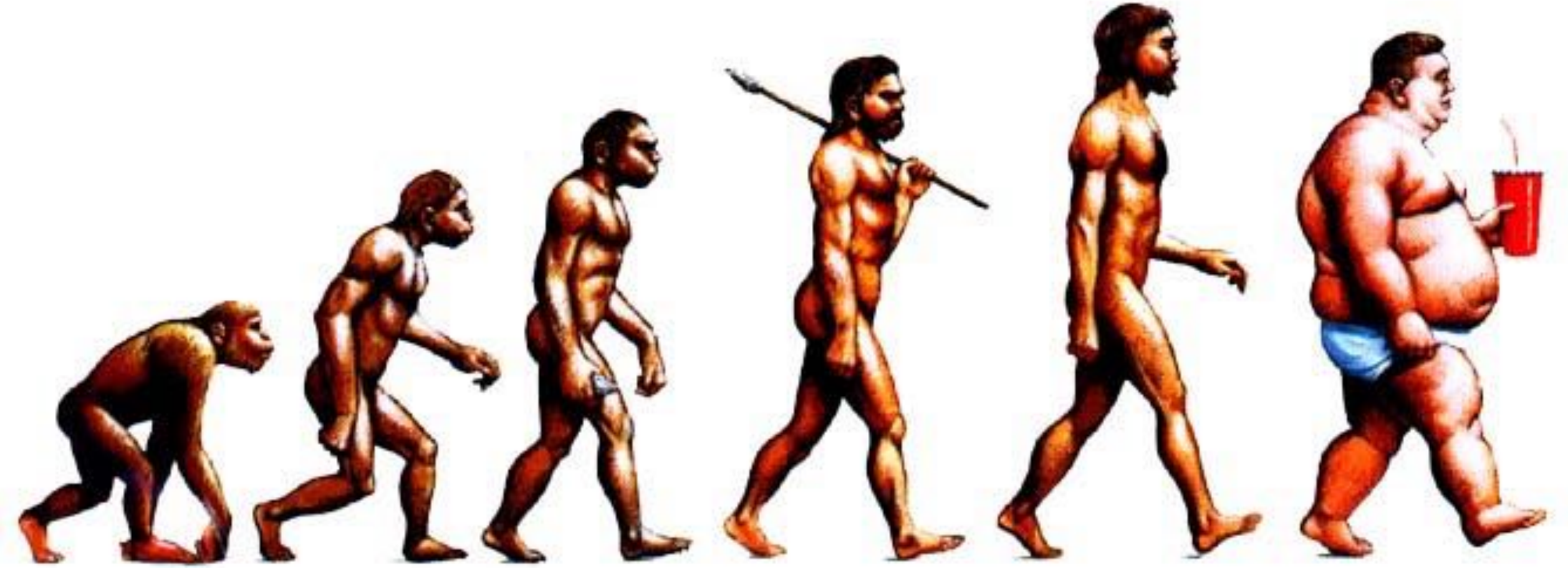


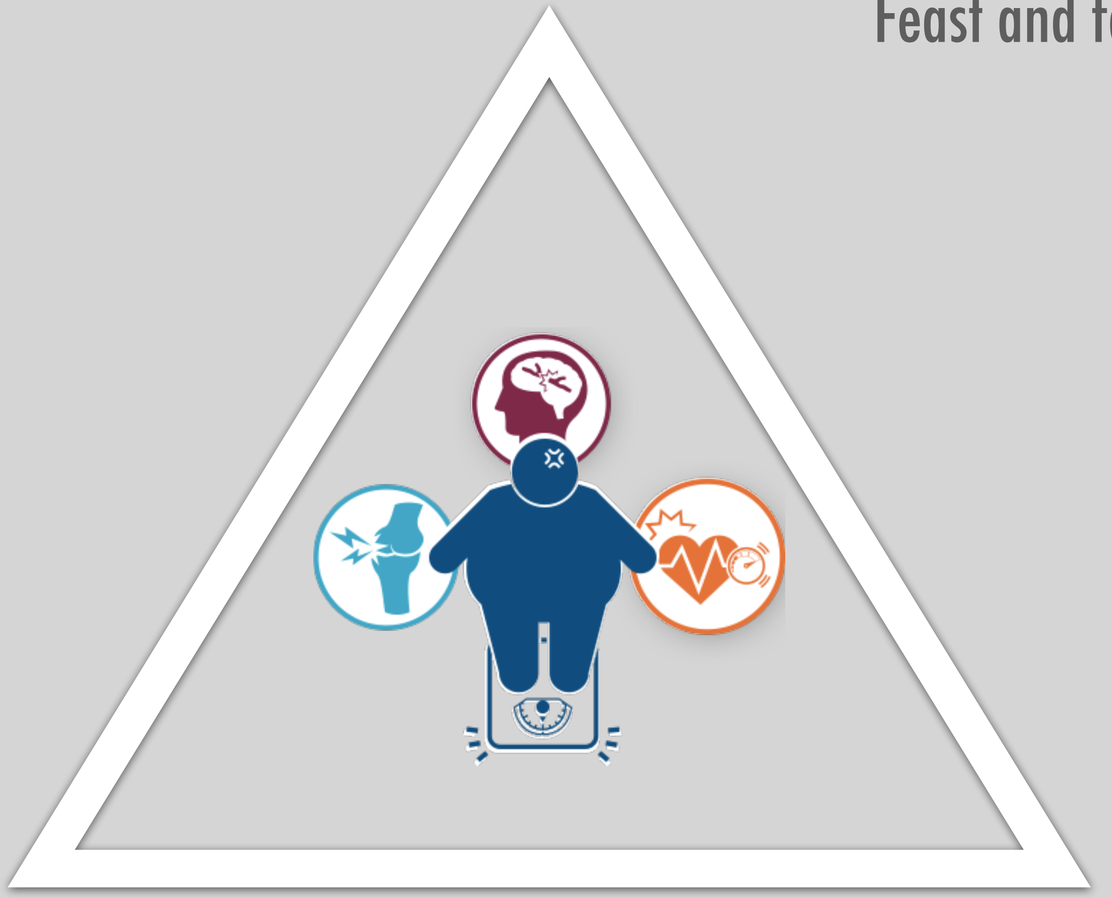


Obesity



EVOLVED MECHANISM

Sweet tooth
Fat storage
Feast and famine



More sweet, high calorie food

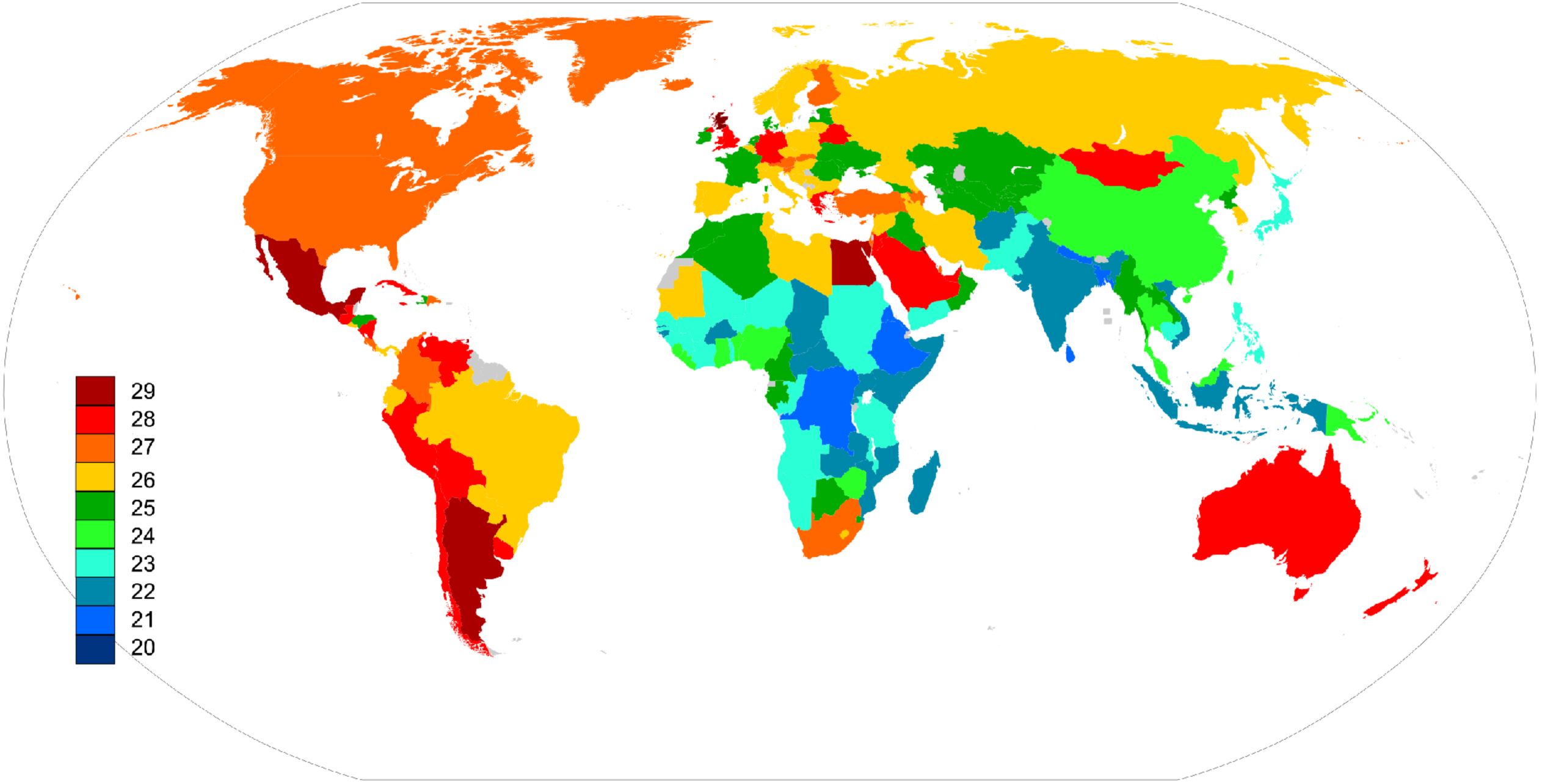
Health costs

CUES FROM ENVIROMENT

FITNESS (COSTS)

Blame our evolved gustatory preferences

Gad Saad, 1997


29
28
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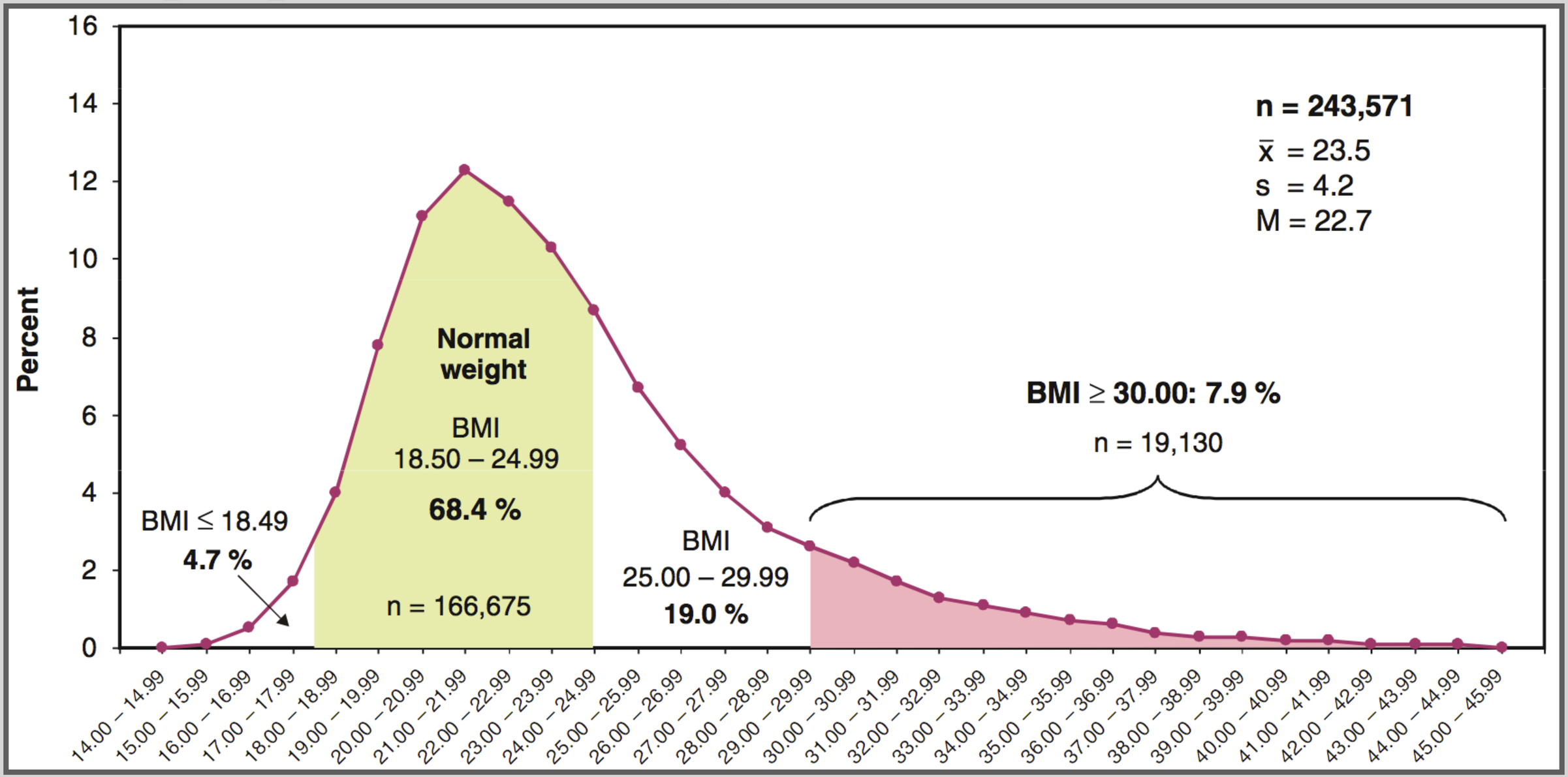
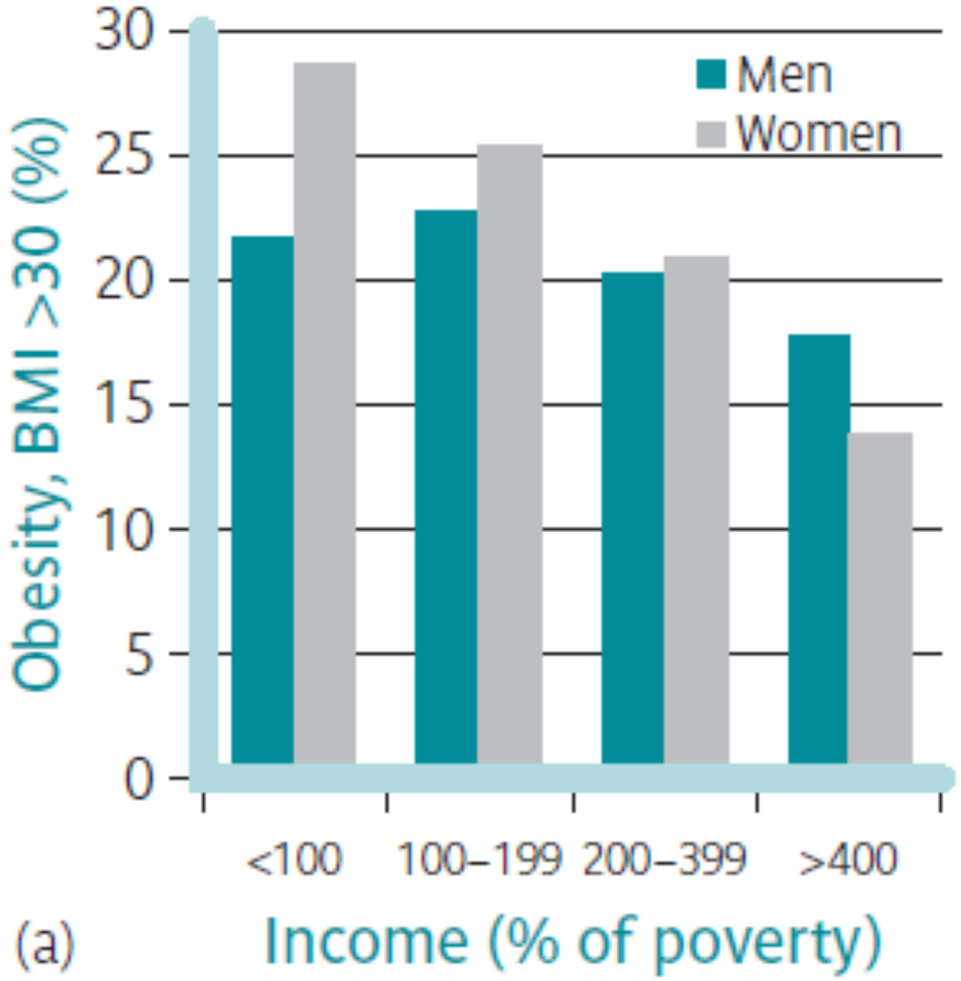
20

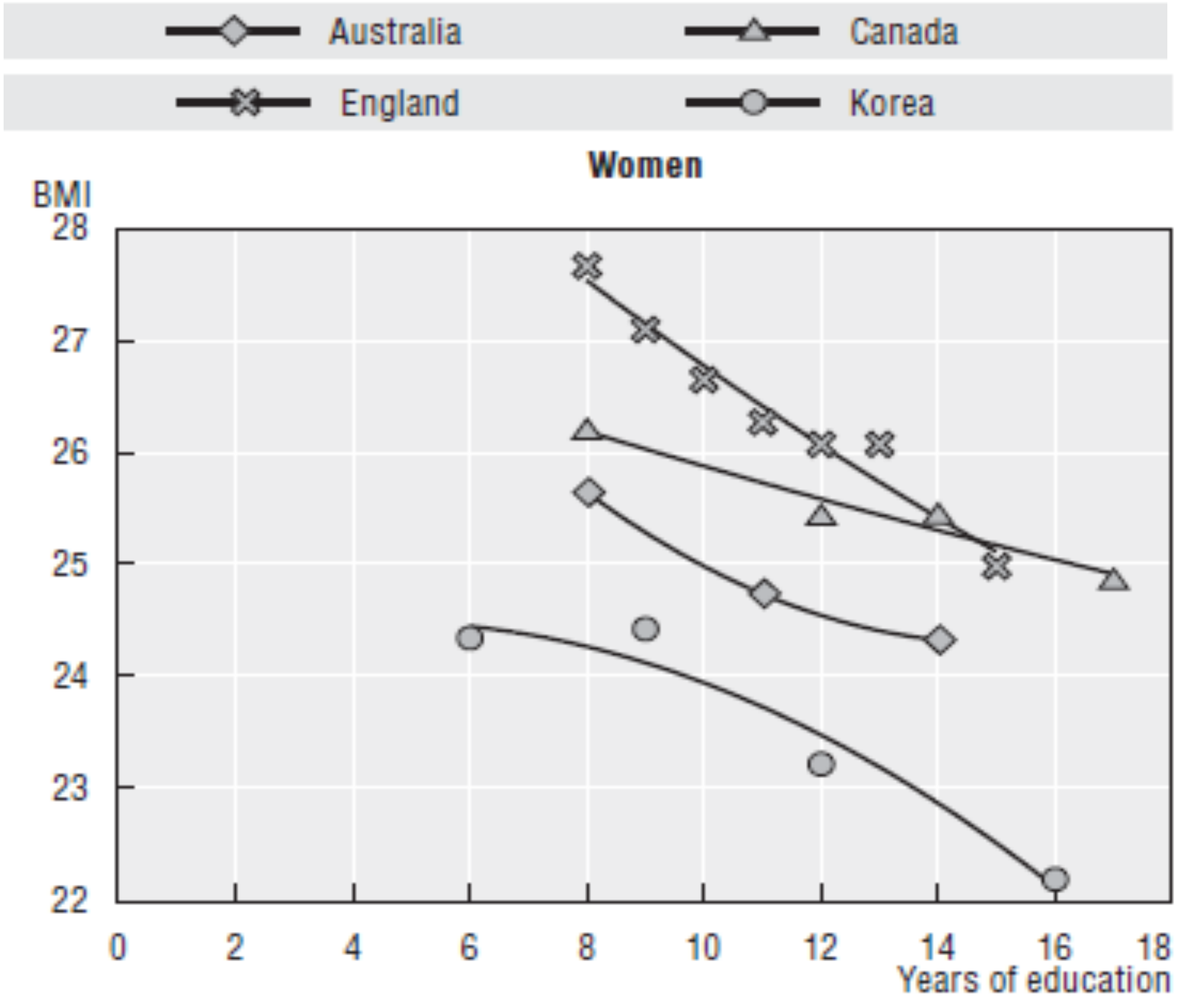
most people have ‘healthy’ BMI



Briese et al, 2011

BMI constrained by possibilities





Nettle, 2009; Devaux, 2011

Childhood obesity today seems to be largely confined to those whose same-sex parents are obese, and the link does not seem to be genetic

Perez-Pastor, 2009

Evolutionary Relevant Health Problems?

Association of All-Cause Mortality With Overweight and Obesity Using Standard Body Mass Index Categories

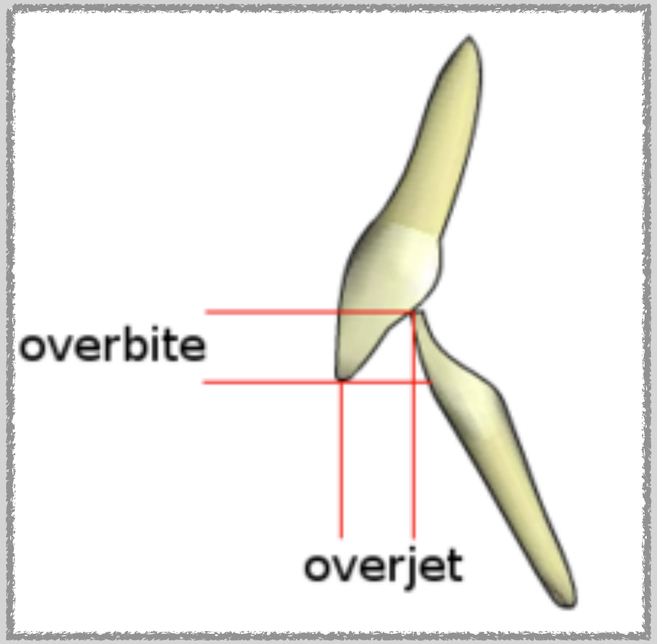
A Systematic Review and Meta-analysis

Katherine M. Flegal, PhD
Brian K. Kit, MD
Heather Orpana, PhD
Barry I. Graubard, PhD

N=2,800,000

> Grade 1 obesity [BMI: 30-35] overall was not associated with higher mortality, and overweight [BMI: 25-30] was associated with significantly lower all-cause mortality.

Mismatch?



MISMATCH

The brain/body contains evolved mechanisms that potentially work maladaptively in the modern world

BUT:

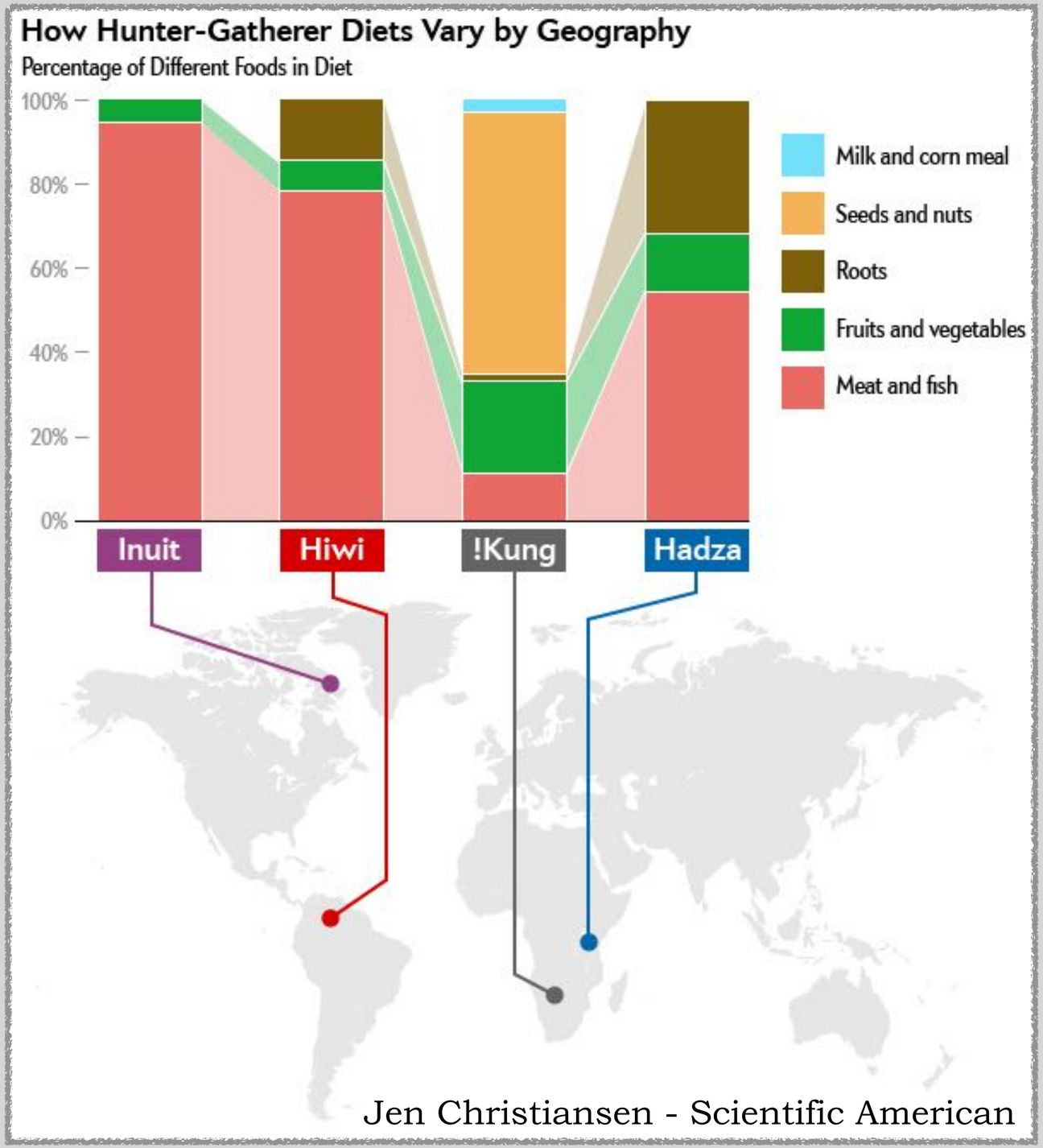
1. Evolutionary costs rarely quantified

#GoPaleo

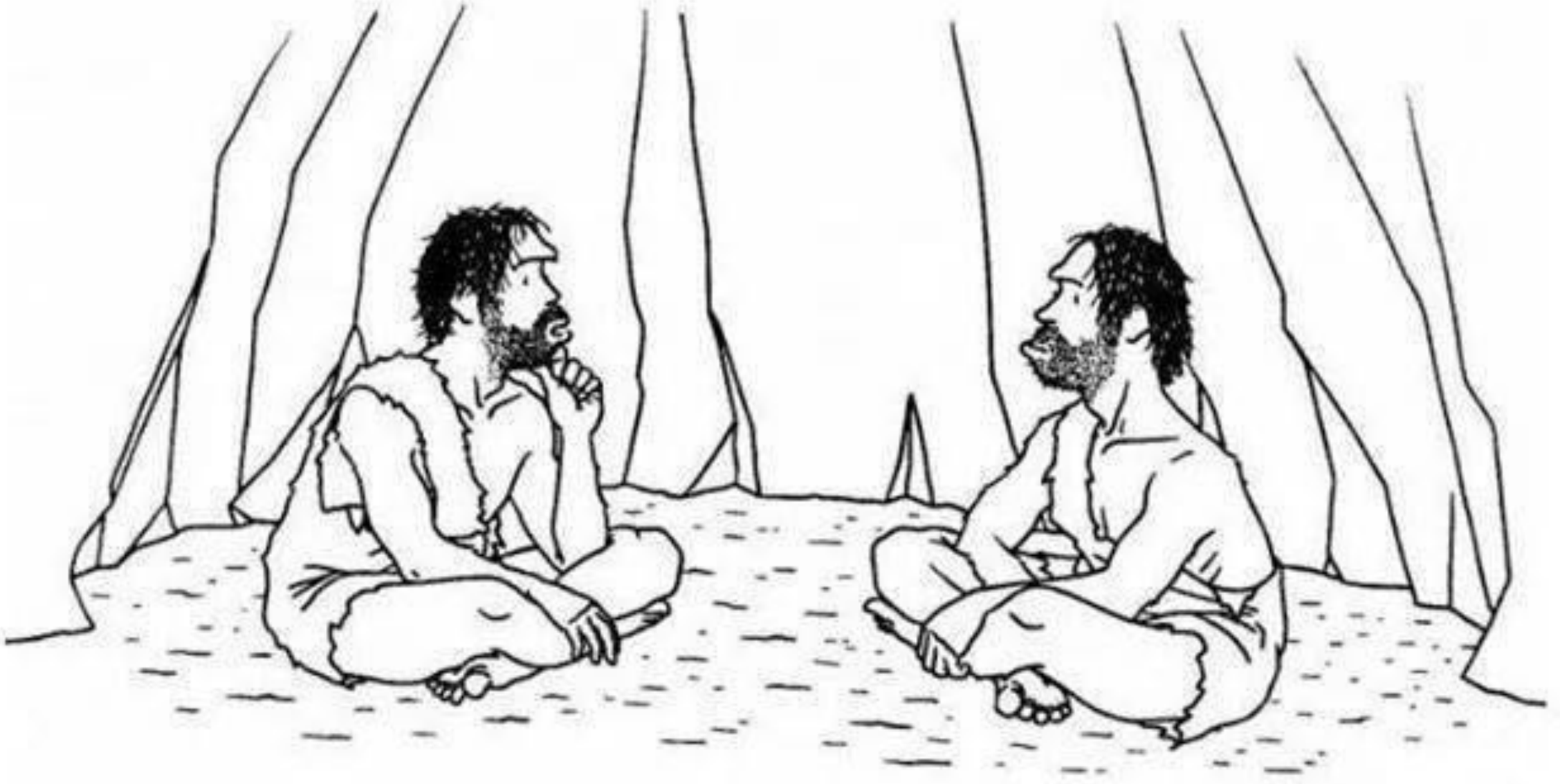
> [If Americans] all ate Paleo diets and did CrossFit, mental and physical health would soar

#GoPaleo

#GoPaleo??


How Hunter-Gatherer Diets Vary by Geography
Percentage of Different Foods in Diet
100%
80%
60%
40%
20%
0%
Milk and corn meal
Seeds and nuts
Roots
Fruits and vegetables
Meat and fish
Inuit
Hiwi
!Kung
Hadza
Jen Christiansen - Scientific American

LIVE FAST AND DIE YOUNG

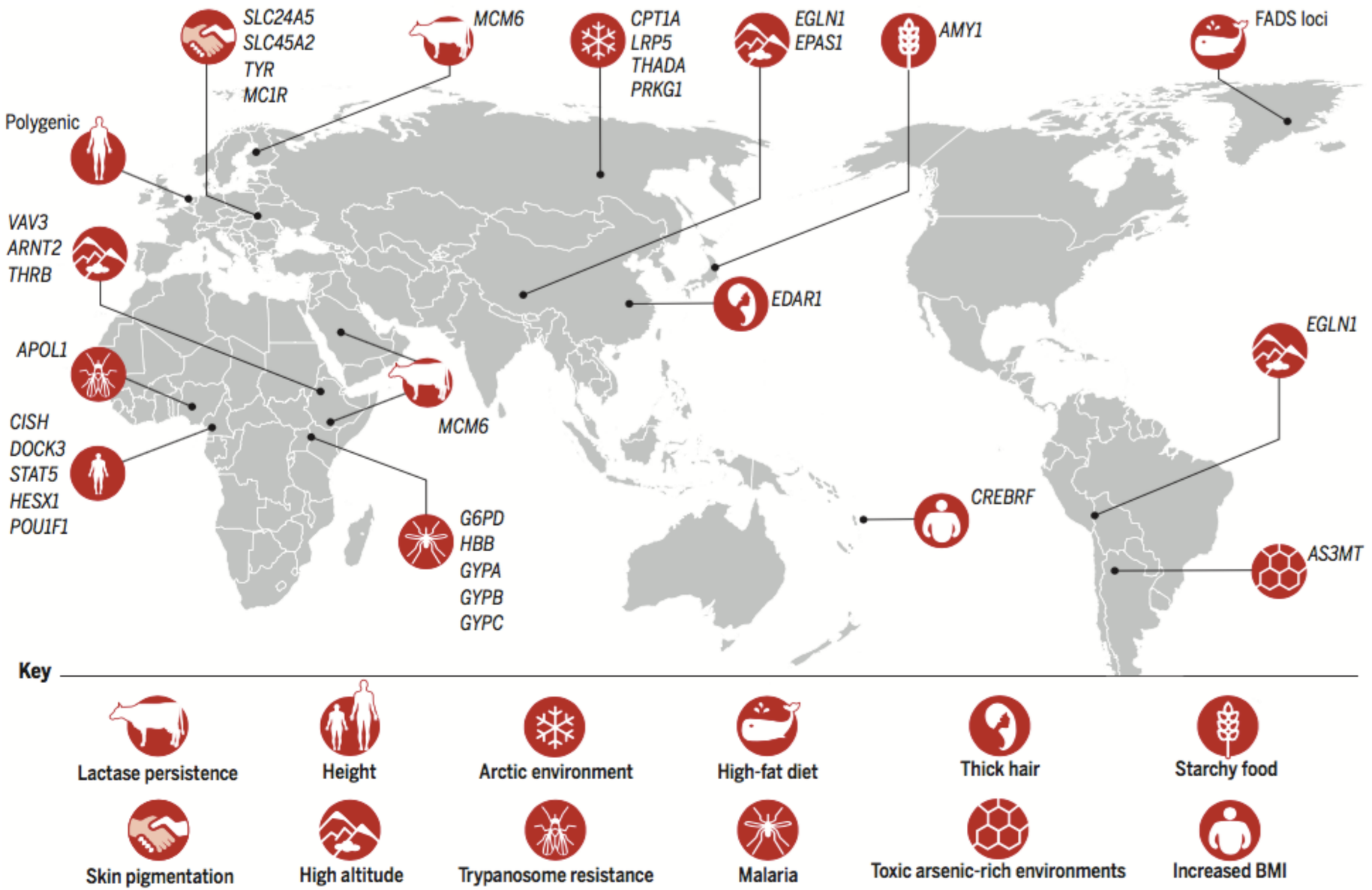


"I'm thinking of converting to the 20th Century Diet.
I heard they can live up to 100".


MILK

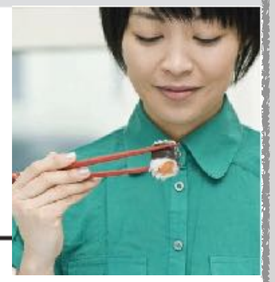
Going global by adapting local: A review of recent human adaptation

Shaohua Fan,[1*] Matthew E. B. Hansen,[1*] Yancy Lo,[1,2*] Sarah A. Tishkoff[1,3†]



nature

Vol 464|8 April 2010|doi:10.1038/nature08937



LETTERS

Transfer of carbohydrate-active enzymes from marine bacteria to Japanese gut microbiota

Jan-Hendrik Hehemann[1,2]†, Gaëlle Correc[1,2], Tristan Barbeyron[1,2], William Helbert[1,2], Mirjam Czjzek[1,2] & Gurvan Michel[1,2]

> Host–microbiome mutualism holds great relevance to the field of human evolution as it vastly propels the genetic landscape for adaptation well beyond somatic potential

Schnorr et al, 2014

Pete Evans paleo for kids cookbook put on hold amid health concerns

Public Health Association president says recipe in book co-authored by celebrity chef has 10 times safe daily intake of vitamin A for babies


theguardian
Winner of the Pulitzer prize
ort football opinion culture business lifestyle fashion environment tech travel
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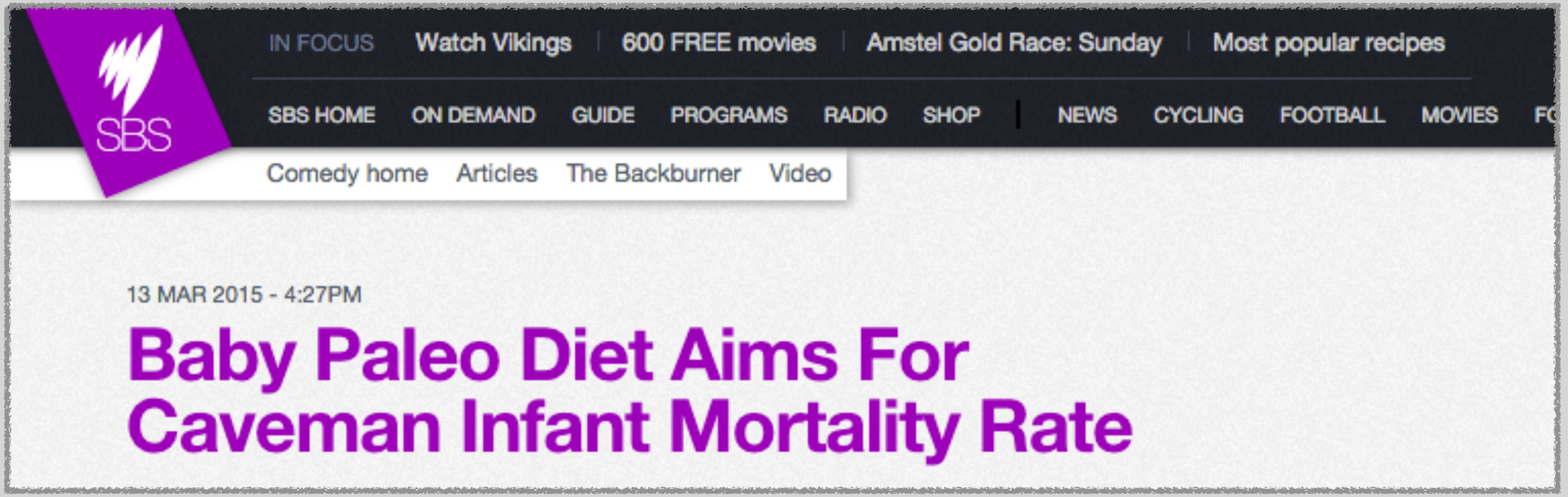
Pete Evans paleo for kids cookbook put on hold amid health concerns
Public Health Association president says recipe in book co-authored by celebrity chef has 10 times safe daily intake of vitamin A for babies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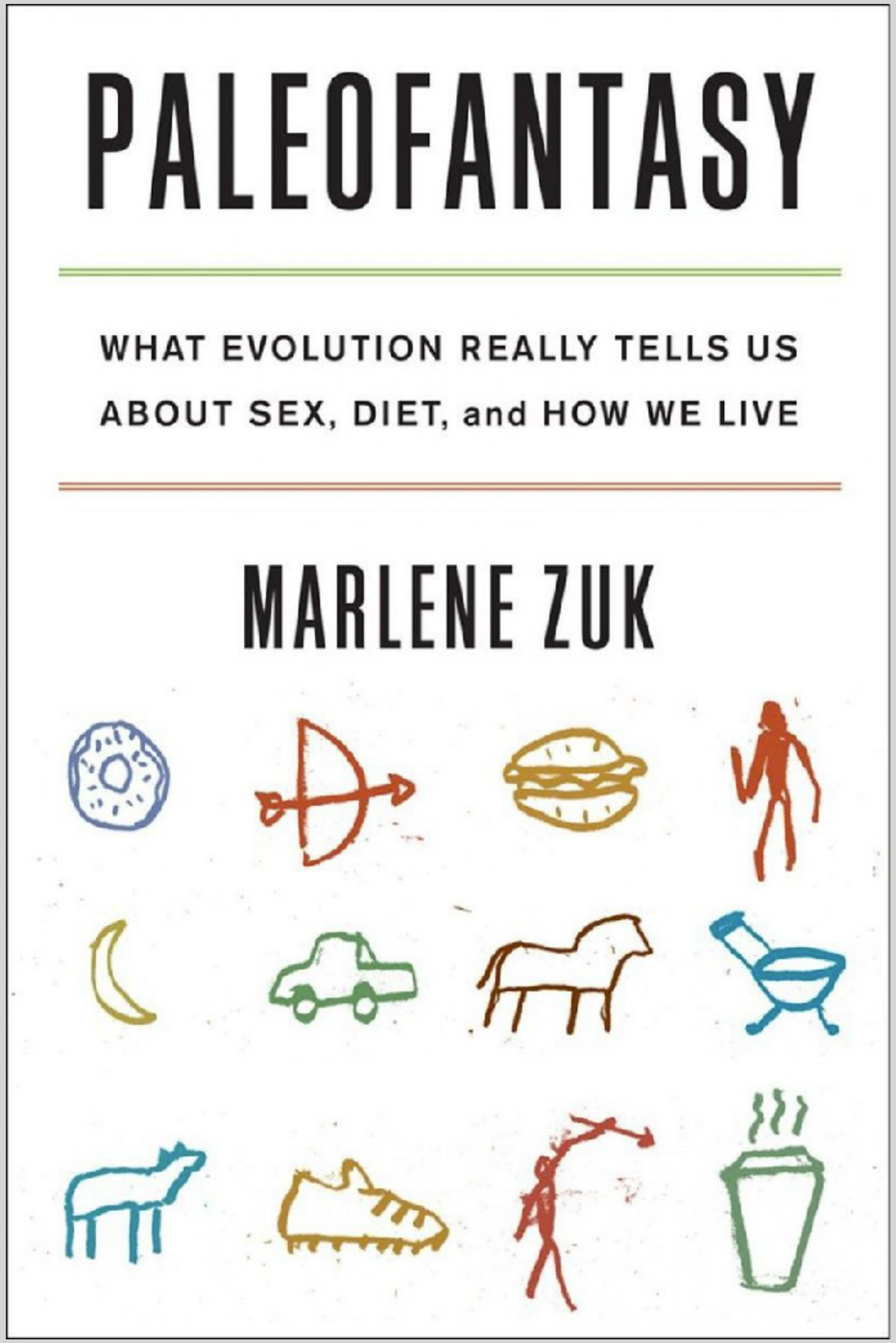
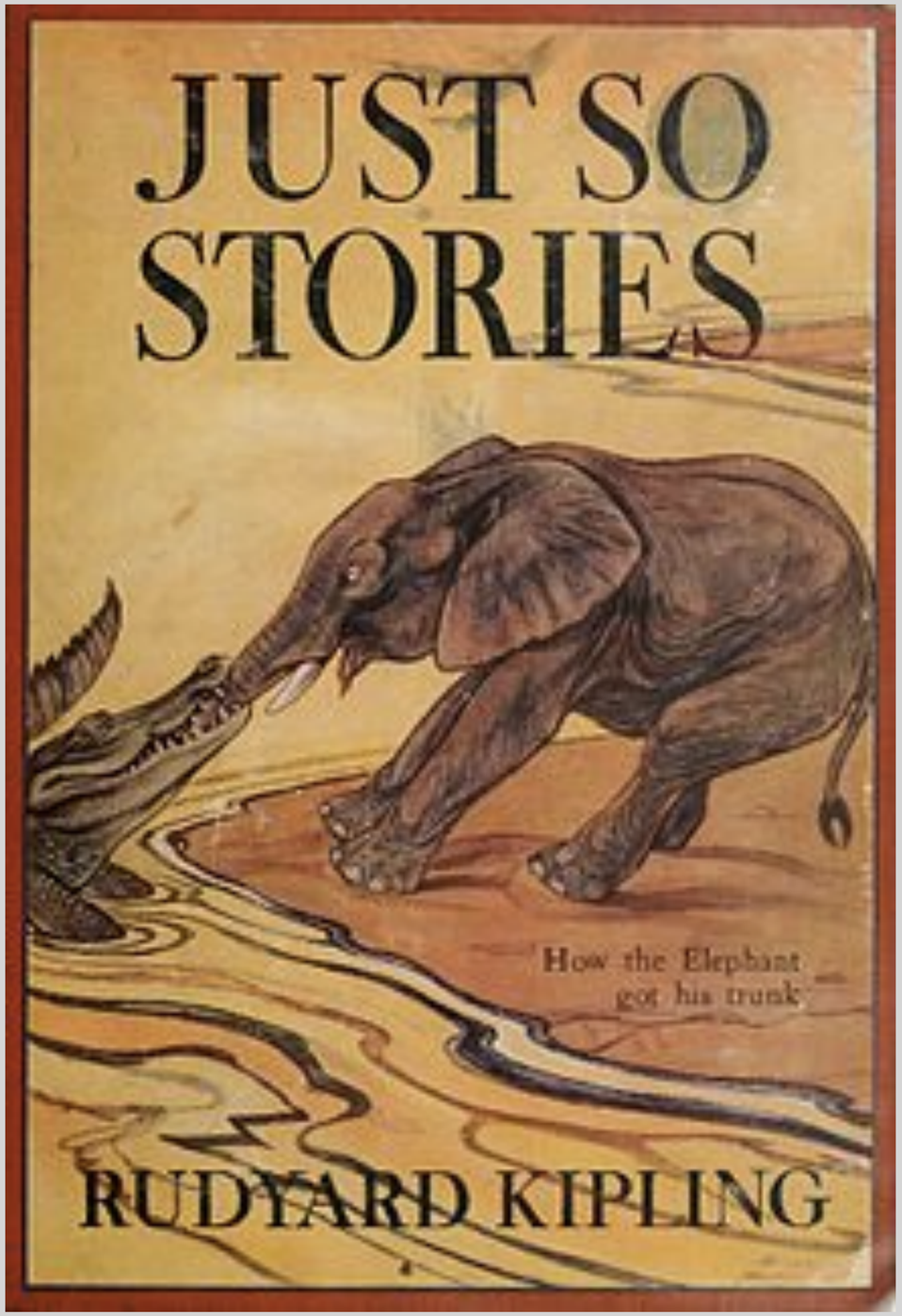
Comedy home Articles The Backburner Video
13 MAR 2015 - 4:27PM
Baby Paleo Diet Aims For Caveman Infant Mortality Rate


PALEOFANTASY
WHAT EVOLUTION REALLY TELLS US
ABOUT SEX, DIET, and HOW WE LIVE
MARLENE ZUK

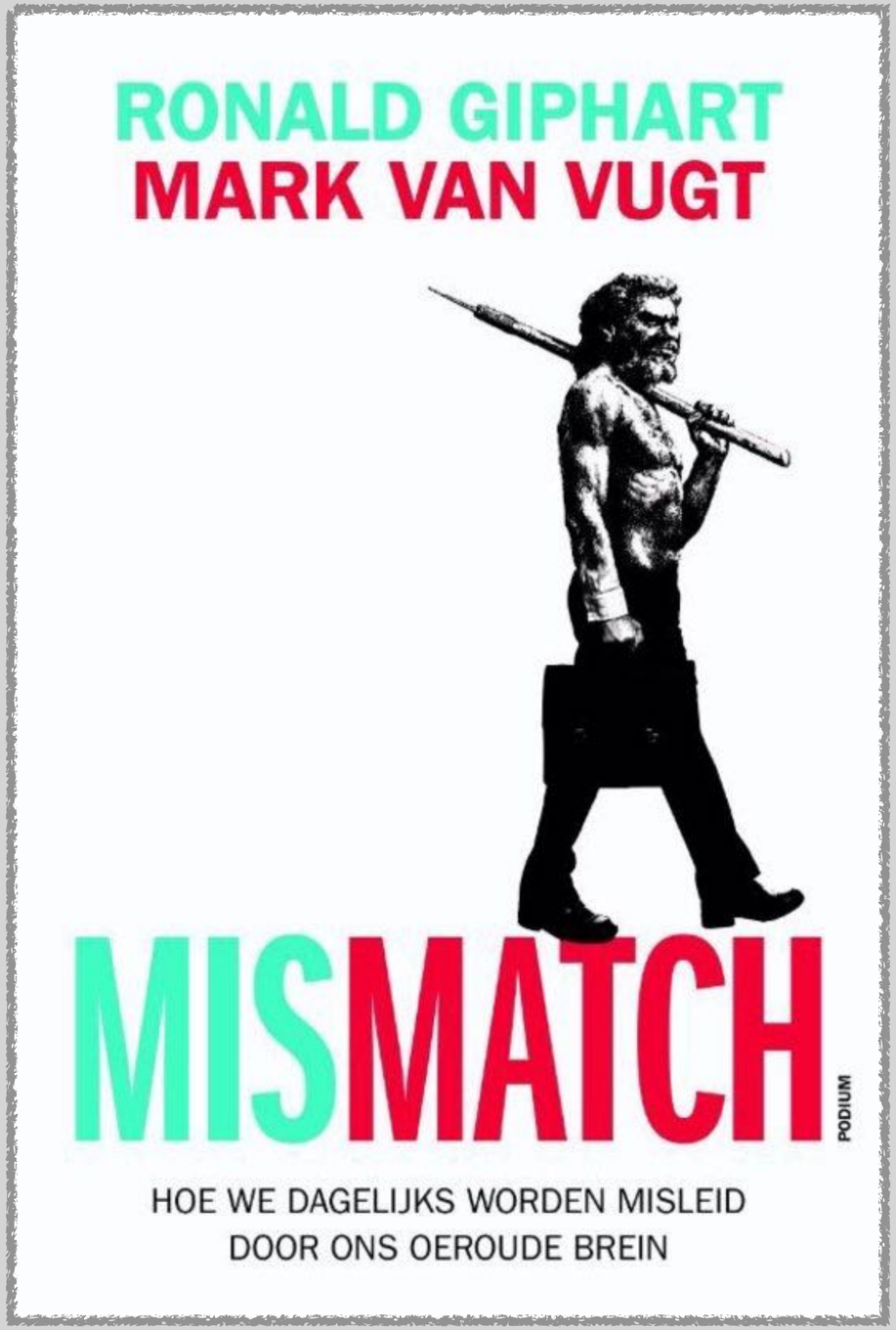

JUST SO
STORIES
How the Elephant
got his trunk
RUDYARD KIPLING

MISMATCH

The brain/body contains evolved mechanisms that potentially work maladaptively in the modern world

BUT:

1. Evolutionary costs rarely quantified
2. The evolutionary optimal situation is unknown and can lead to speculation (“paleofantasy”)


RONALD GIPHART
MARK VAN VUGT
MISMATCH
PODIUM
HOE WE DAGELIJKS WORDEN MISLEID
DOOR ONS OEROUDE BREIN


Mark Van Vugt @markvanvugt1 · 15 aug.
Natuurlijk gedrag uit de oertijd geeft #mismatch - Uw Hersenen
Natuurlijk gedrag uit de oertijd geeft mismatch - U...
Ons brein is niet opgewassen tegen de moderne maatschappij. Dat komt omdat wij voor een belangrijk deel nog net zo geprogrammeerd zijn als onze prehisto...
uwhersenen.nl
1
1
1


Evolutionair psycholoog Mark van Vugt
'Werken voor een baas is onnatuurlijk'
Veertig uur per week op kantoor zitten en doen wat de baas zegt: het past niet bij ons oerbrein, zegt evolutionair psycholoog Mark van Vugt. In zijn boek 'Mismatch' legt hij uit waarom onze huidige manier van leven zo slecht aansluit op onze aanleg. Over missers van sollicitatiecommissies, onze voorliefde voor zoet eten, en het nut van kleurstof in het kraanwater.

Mark Van Vugt
@markvanvugt1

Volgen

Is #eu mismatch? Pleased that we are talking to publisher @littlebrown about the book rights of #Mismatch @ronaldgiphart @uitg_podium

Vertaling bekijken

RETWEETS	VIND-IK-LEUKS
2	2



03:59 - 25 jun. 2016

2 2

MISMATCH

> our evolved followership mechanisms often [...] use cues reliably associated with good leadership in ancestral times. [...] the selection of leaders on these bases has been predicted to result in suboptimal outcomes for modern organizations

Li et al 2017

EVOLVED MECHANISM

?

?

CUES FROM ENVIROMENT

?

FITNESS (COSTS)

MISMATCH

The brain/body contains evolved mechanisms that potentially work maladaptively in the modern world

BUT:

1. Evolutionary costs rarely quantified
2. The evolutionary optimal situation is unknown and can lead to speculation (“paleofantasy”)
3. A mismatch is much harder to establish for psychological traits

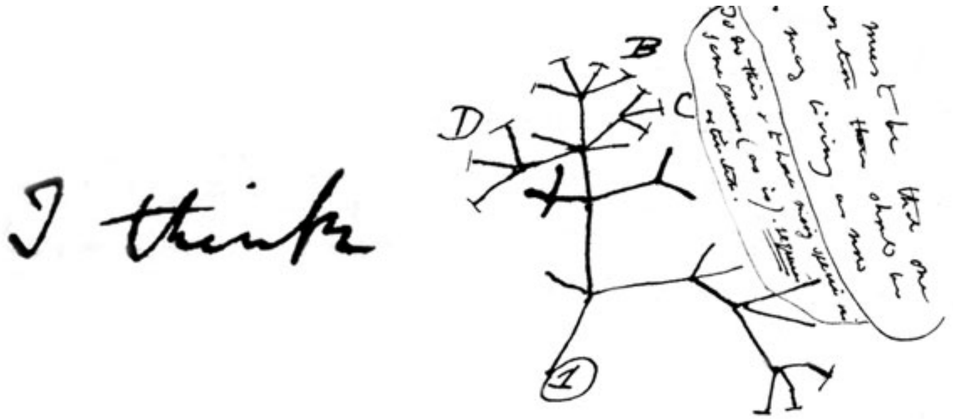
“reflects completed rather than ongoing selection

Tooby & Cosmides 1990

Sir David Attenborough: Humans have stopped evolving

Human beings have stopped evolving after becoming the only species to "put halt to natural selection of its own free will", Sir David Attenborough has said, as he predicts the "cultural evolution" of the future.

Sir David Attenborough at home in Richmond Photo: EDDIE MULHOLLAND



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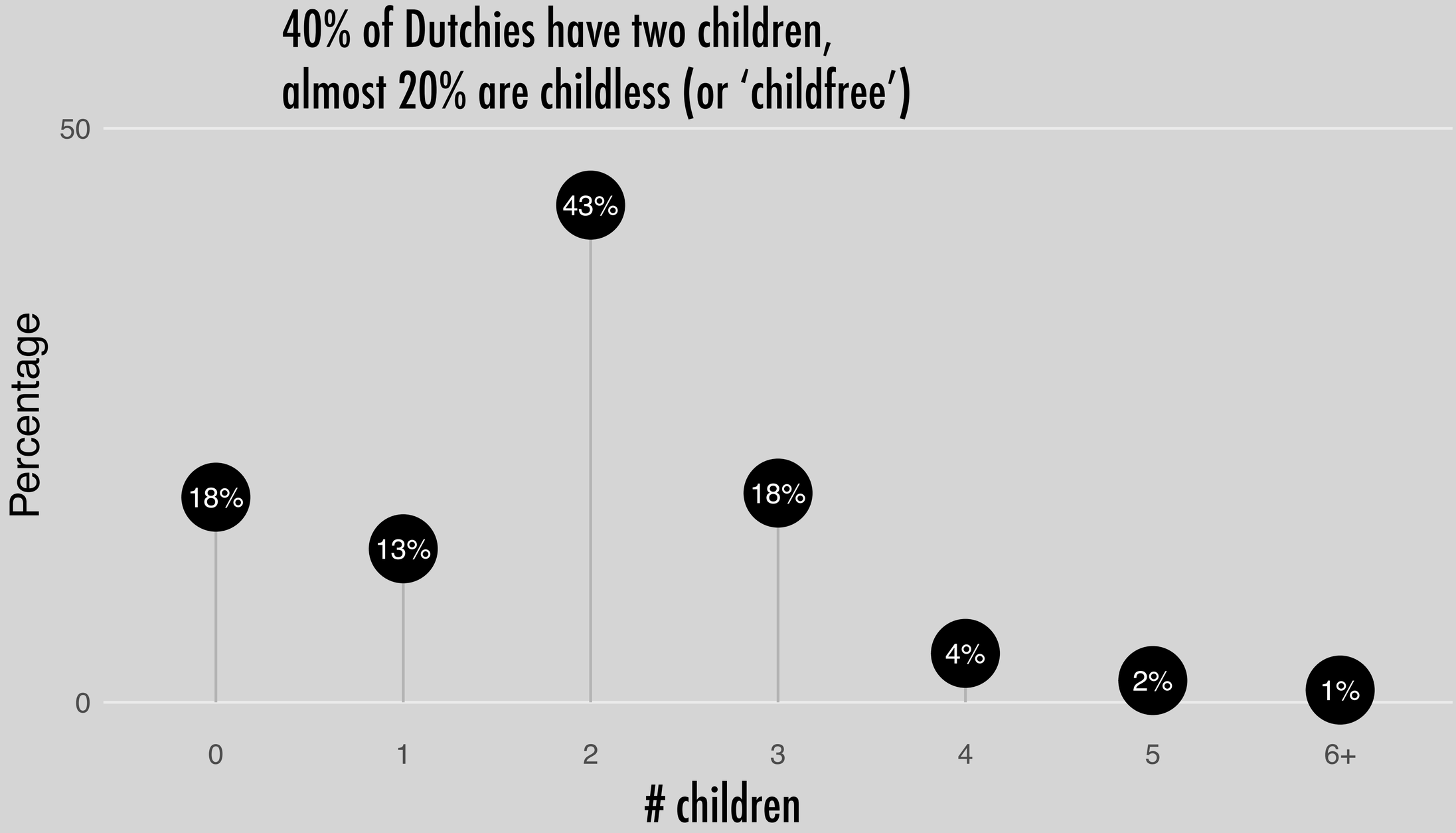
Sir David Attenborough at home in Richmond Photo: EDDIE MULHOLLAND

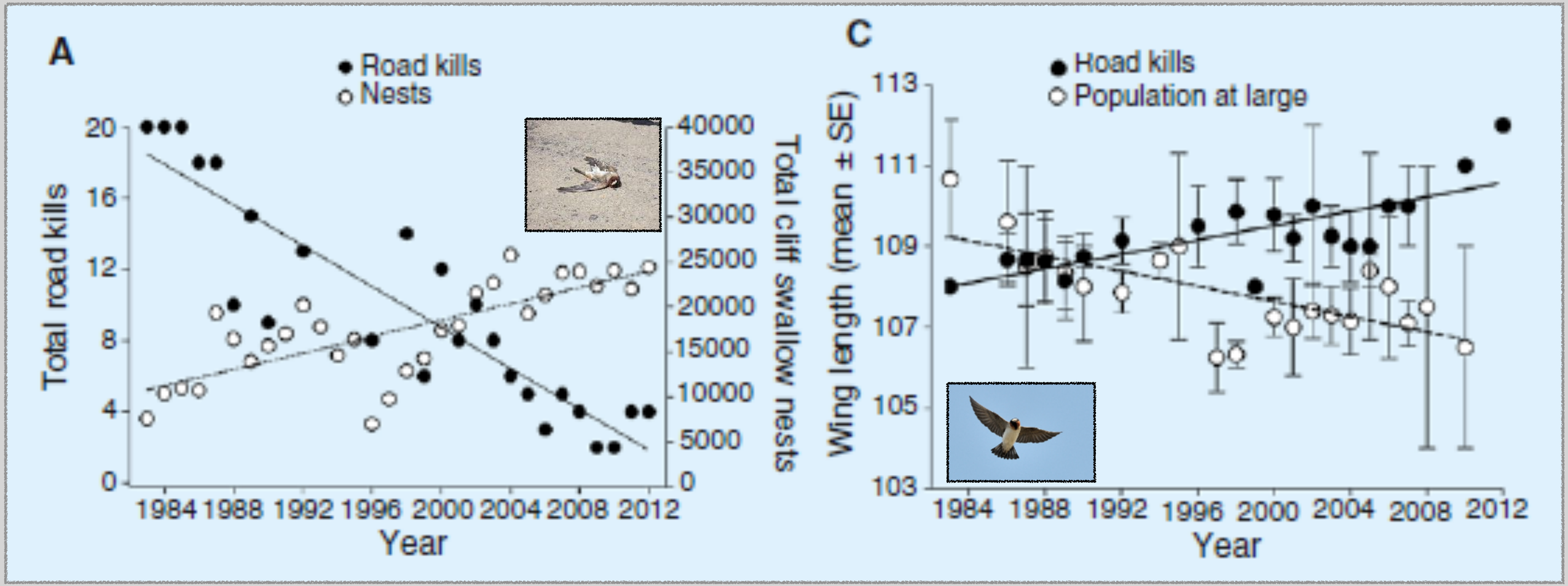
I think not

No selection?



Slow selection?

Where did all the "roadkill" go?



Brown & Bomberger Brown, 2013

Slow selection?

PNAS

Recent acceleration of human adaptive evolution

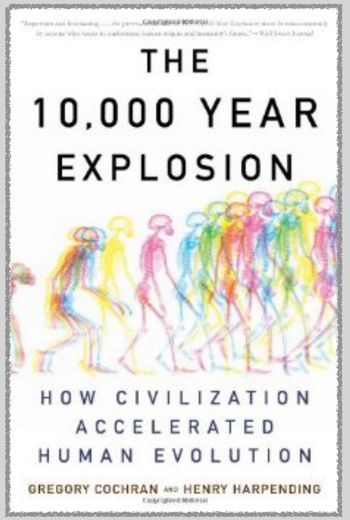
John Hawks*†, Eric T. Wang‡, Gregory M. Cochran§, Henry C. Harpending†§, and Robert K. Moyzis†¶

*Department of Anthropology, University of Wisconsin, Madison, WI 53706; ‡Department of Algorithm Development and Data Analysis, Affymetrix, Inc., Santa Clara, CA 95051; §Department of Anthropology, University of Utah, Salt Lake City, UT 84112; and ¶Department of Biological Chemistry and Institute of Genomics and Bioinformatics, University of California, Irvine, CA 92697

Contributed by Henry C. Harpending, August 13, 2007 (sent for review May 24, 2007)

Genomic surveys in humans identify a large amount of recent positive selection. Using the 3.9-million HapMap SNP dataset, we found that selection has accelerated greatly during the last 40,000 years. We tested the null hypothesis that the observed age distri-

Human genetic variation appears consistent with a recent acceleration of positive selection. A new advantageous mutation that escapes genetic drift will rapidly increase in frequency, more quickly than recombination can shuffle it with other genetic variants (11).



PNAS

Natural selection in a contemporary human population

Sean G. Byars[a], Douglas Ewbank[b], Didd

[a]Department of Ecology and Evolutionary Biology, Philadelphia, PA 19104-6299; and [c]Department of

Edited by Peter T. Ellison, Harvard University, Cam

Our aims were to demonstrate that natural on contemporary humans, predict future ev

PNAS

Evidence of directional and stabilizing selection in contemporary humans

Jaleal S. Sanjak[a,b], Julia Sidorenko[c,d]

[a]Department of Ecology and Evolutionary Bio
of California, Irvine, CA 92697; [c]Queensland B
Biosciences, The University of Queensland, Bri
1010, Switzerland

Edited by Aravinda Chakravarti, Johns Hopkin
2017)

PLOS ONE

RESEARCH ARTICLE

Human Fertility, Molecular Genetics, and Natural Selection in Modern Societies

Felix C. Tropf[1]*, Gert Stulp[2], Nicola Barban[3], Peter M. Visscher[4,5], Jian Yang[4,5], Harold Snieder[6], Melinda C. Mills[3]

Slow selection?

PNAS

Recent acceleration of h

John Hawks*†, Eric T. Wang‡, Gregory M. Cochran§, H

*Department of Anthropology, University of Wisconsin, Madison, WI
Santa Clara, CA 95051; §Department of Anthropology, University of U
of Genomics and Bioinformatics, University of California, Irvine, CA 92

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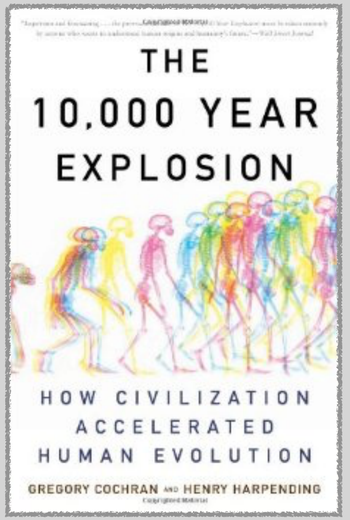

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[a]Department of Ecology ar
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Biosciences, The University
1010, Switzerland

Edited by Aravinda Chakra
2017)

ACHTERGROND

Smallere heupen bij vrouwen en lactose beter kunnen verteren: de menselijke evolutie gaat sneller dan ooit

Menno Schilthuizen • 4 januari 2024

ection

Molecular Genetics, and
n in Modern Societies

cola Barban[3], Peter M. Visscher[4,5], Jian Yang[4,5],
s[3]

EVOLUTIONARY PSYCHOLOGISTS

Cognitive psychologists with interest in humans

CENTRAL THESIS
the brain is adapted to environments that no longer exist, and 'mismatched' to the modern world

WAY OF WORKING
experiments on perceptions and preferences

- ✓ mismatch is an important idea, particularly for humans
- ✗ speculation rife (paleofantasy)
- ✗ there is no such thing as "completed selection"


you are the result
of 3.8 billion years
of evolutionary
success.
act like it.