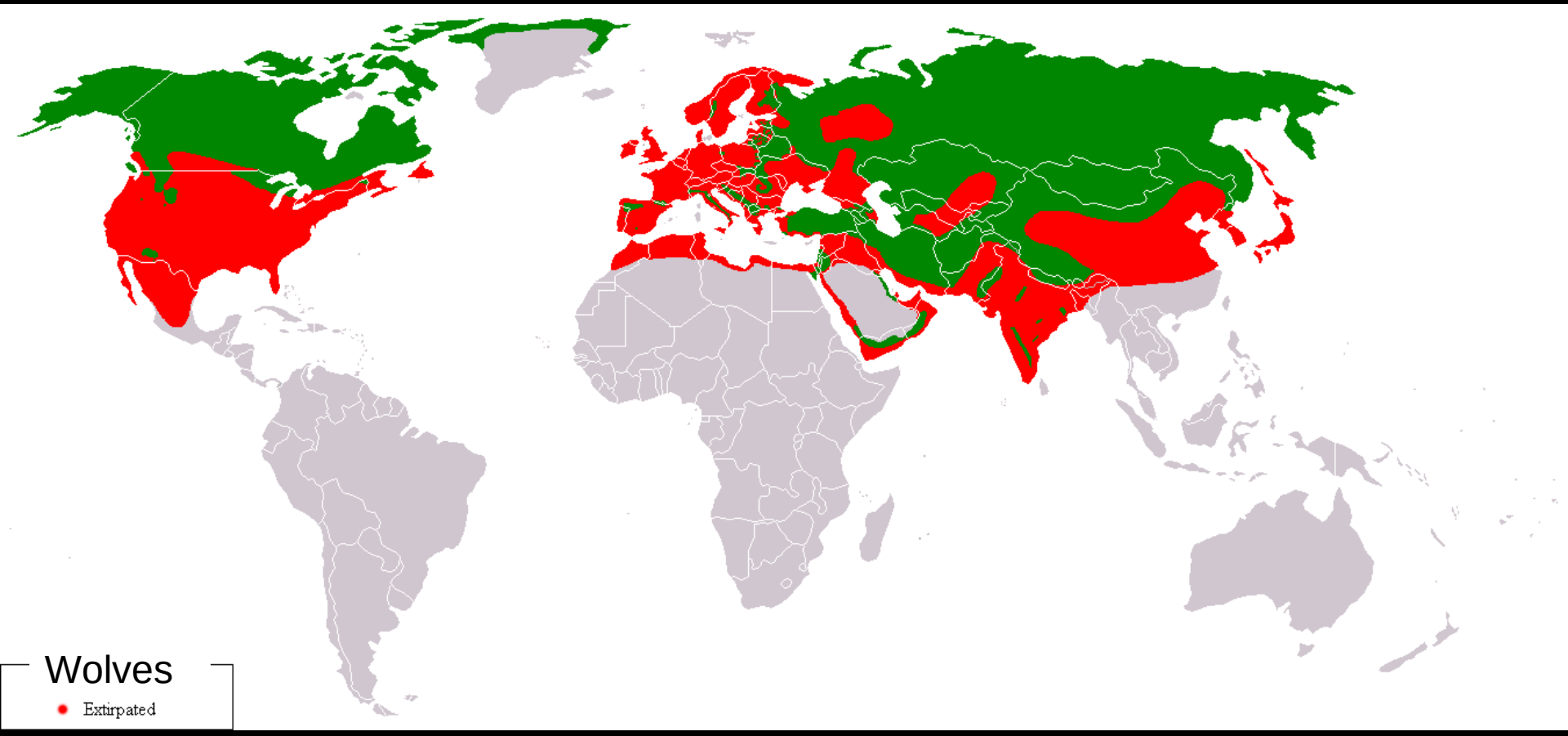
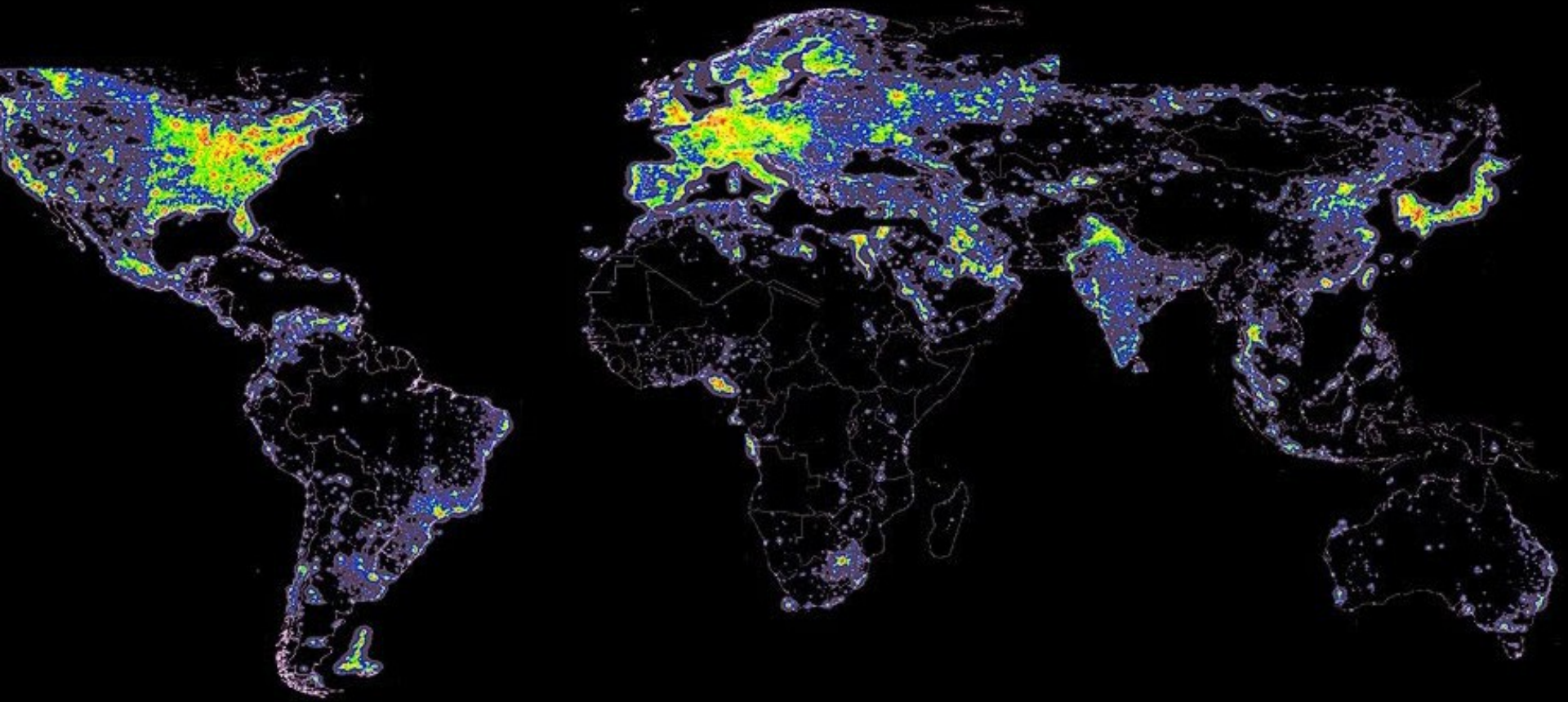
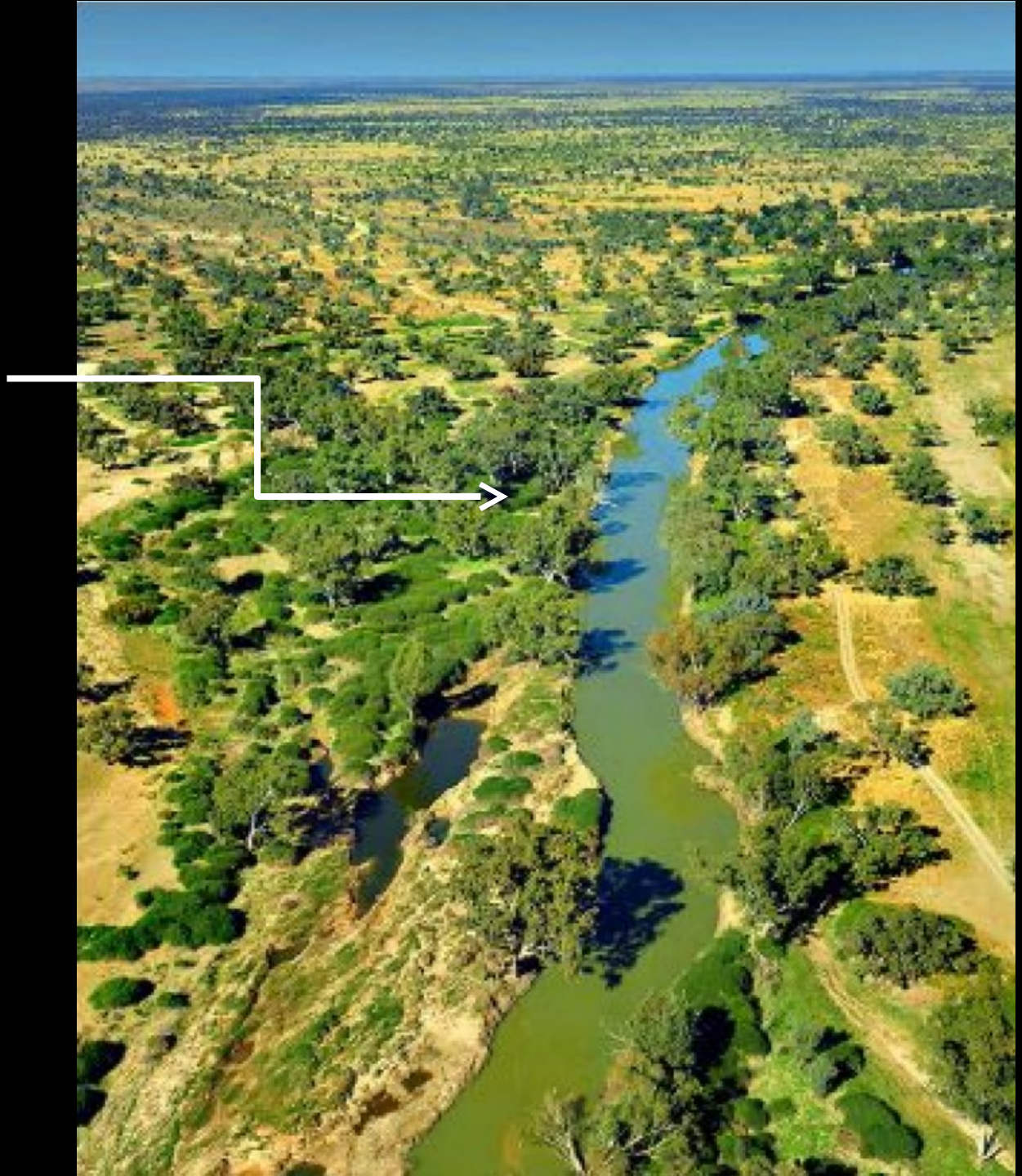
Are humans outliers in the natural world?


Wolves
Extirpated



How were we able to do this?

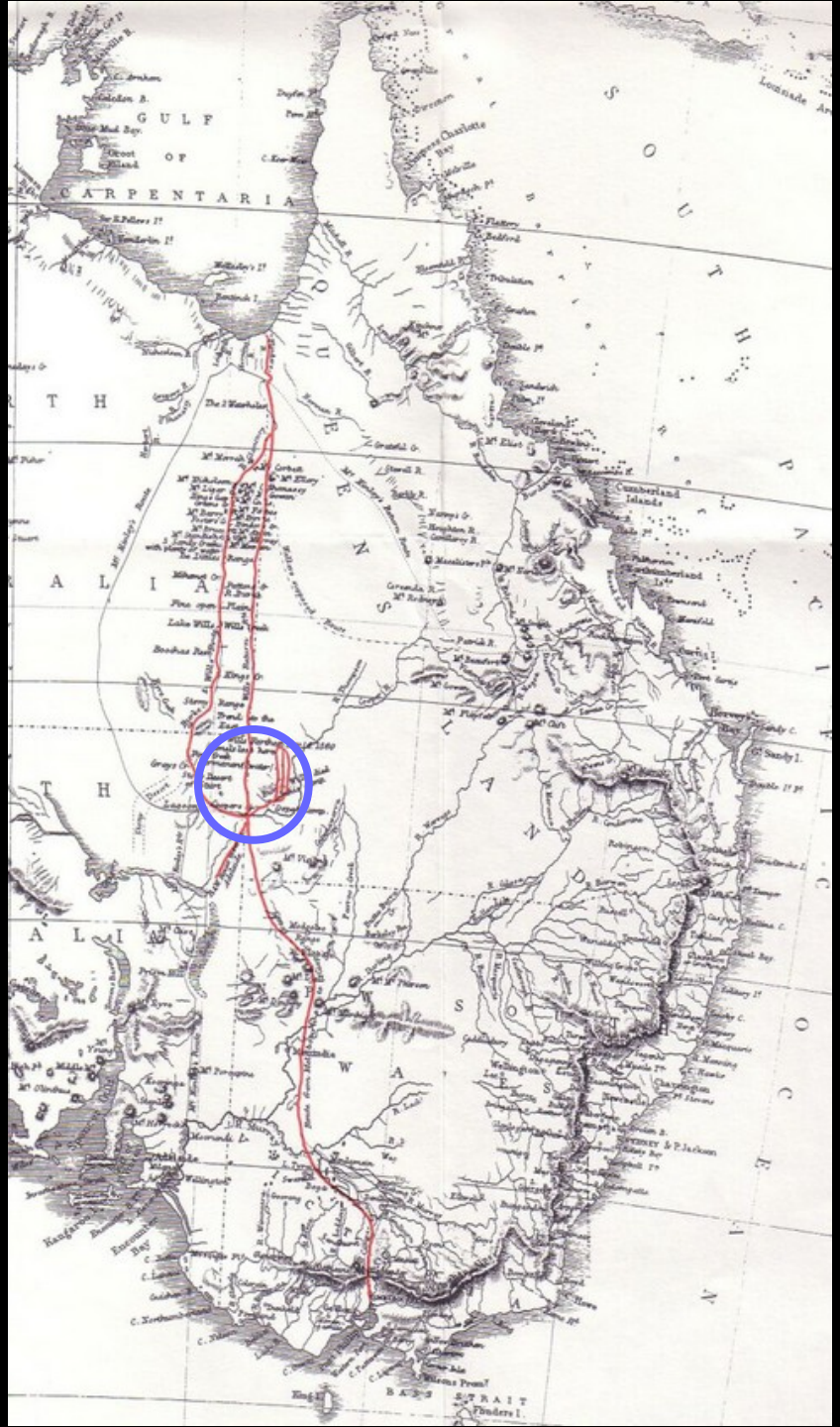
Usual explanation:



Not a ridiculous question

So, will you make it?

I don’t like your chances


GULF
OF
CARPENTARIA
Mt Isa
Cloncurry
Normanton
Burketown
Camooweal
Mt Gordon
Mt Elliot
Mt Merlin
Mt Wyatt
Mt Hogan
Mt Fox
Mt Flinders
Mt Oxley
Mt Isa Mines
Mt Isa Railway
Mt Isa Road
Mt Isa Creek
Mt Isa Mine
Mt Isa Township
Mt Isa Airport
Mt Isa Hospital
Mt Isa Police Station
Mt Isa Post Office
Mt Isa Library
Mt Isa Museum
Mt Isa Art Gallery
Mt Isa Swimming Pool
Mt Isa Golf Course
Mt Isa Racecourse
Mt Isa Showground
Mt Isa Cemetery
Mt Isa Water Supply
Mt Isa Power Station
Mt Isa Sewerage Works
Mt Isa Rubbish Tip
Mt Isa Abattoir
Mt Isa Saleyards
Mt Isa Stock Route
Mt Isa Travelling Stock Reserve
Mt Isa Pastoral Holding
Mt Isa Station
Mt Isa Homestead
Mt Isa Bore
Mt Isa Windmill
Mt Isa Dam
Mt Isa Creek
Mt Isa Gorge
Mt Isa Range
Mt Isa Hills
Mt Isa Plateau
Mt Isa Valley
Mt Isa Basin
Mt Isa Region
Mt Isa Shire
Mt Isa City
Mt Isa Suburbs
Mt Isa CBD
Mt Isa Industrial Area
Mt Isa Residential Area
Mt Isa Commercial Area
Mt Isa Retail Area
Mt Isa Tourist Area
Mt Isa Historical Area
Mt Isa Cultural Area
Mt Isa Recreational Area
Mt Isa Sporting Area
Mt Isa Educational Area
Mt Isa Medical Area
Mt Isa Emergency Area
Mt Isa Transport Area
Mt Isa Communication Area
Mt Isa Utility Area
Mt Isa Infrastructure Area
Mt Isa Environmental Area
Mt Isa Conservation Area
Mt Isa Protected Area
Mt Isa National Park
Mt Isa State Forest
Mt Isa Reserve
Mt Isa Wilderness Area
Mt Isa Heritage Area
Mt Isa Scenic Area
Mt Isa Natural Area
Mt Isa Geological Area
Mt Isa Mineral Area
Mt Isa Resource Area
Mt Isa Development Area
Mt Isa Future Area
Mt Isa Planning Area
Mt Isa Zoning Area
Mt Isa Boundary
Mt Isa Border
Mt Isa Limit
Mt Isa Extent
Mt Isa Size
Mt Isa Area
Mt Isa Population
Mt Isa Demographics
Mt Isa Statistics
Mt Isa Census
Mt Isa Data
Mt Isa Information
Mt Isa Facts
Mt Isa History
Mt Isa Culture
Mt Isa Economy
Mt Isa Industry
Mt Isa Agriculture
Mt Isa Mining
Mt Isa Tourism
Mt Isa Recreation
Mt Isa Sport
Mt Isa Education
Mt Isa Health
Mt Isa Safety
Mt Isa Security
Mt Isa Transport
Mt Isa Communication
Mt Isa Utility
Mt Isa Infrastructure
Mt Isa Environment
Mt Isa Conservation
Mt Isa Protection
Mt Isa Management
Mt Isa Development
Mt Isa Future
Mt Isa Planning
Mt Isa Zoning
Mt Isa Boundary
Mt Isa Border
Mt Isa Limit
Mt Isa Extent
Mt Isa Size
Mt Isa Area
Mt Isa Population
Mt Isa Demographics
Mt Isa Statistics
Mt Isa Census
Mt Isa Data
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Mt Isa Mining
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Mt Isa Recreation
Mt Isa Sport
Mt Isa Education
Mt Isa Health
Mt Isa Safety
Mt Isa Security
Mt Isa Transport
Mt Isa Communication
Mt Isa Utility
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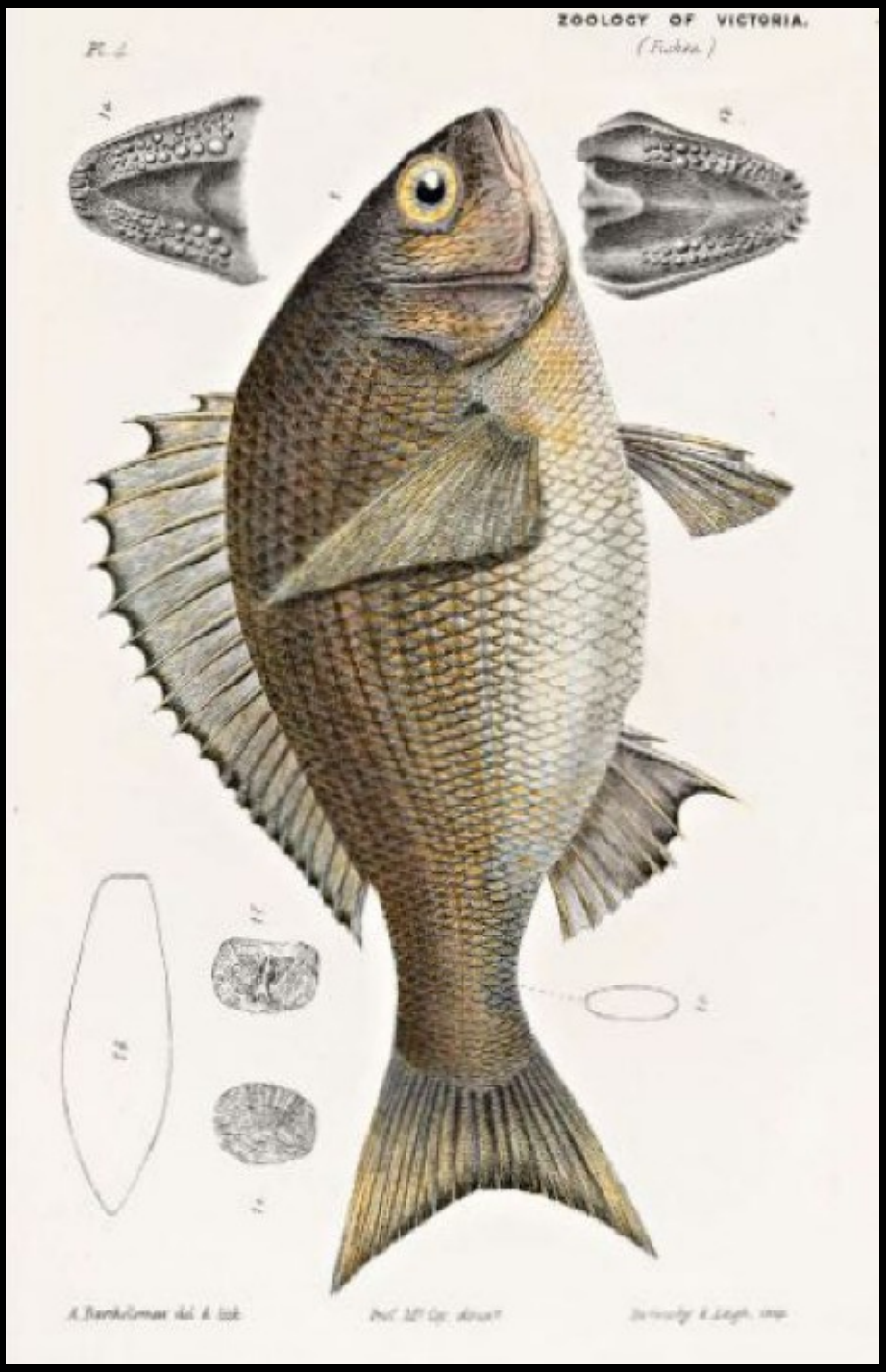
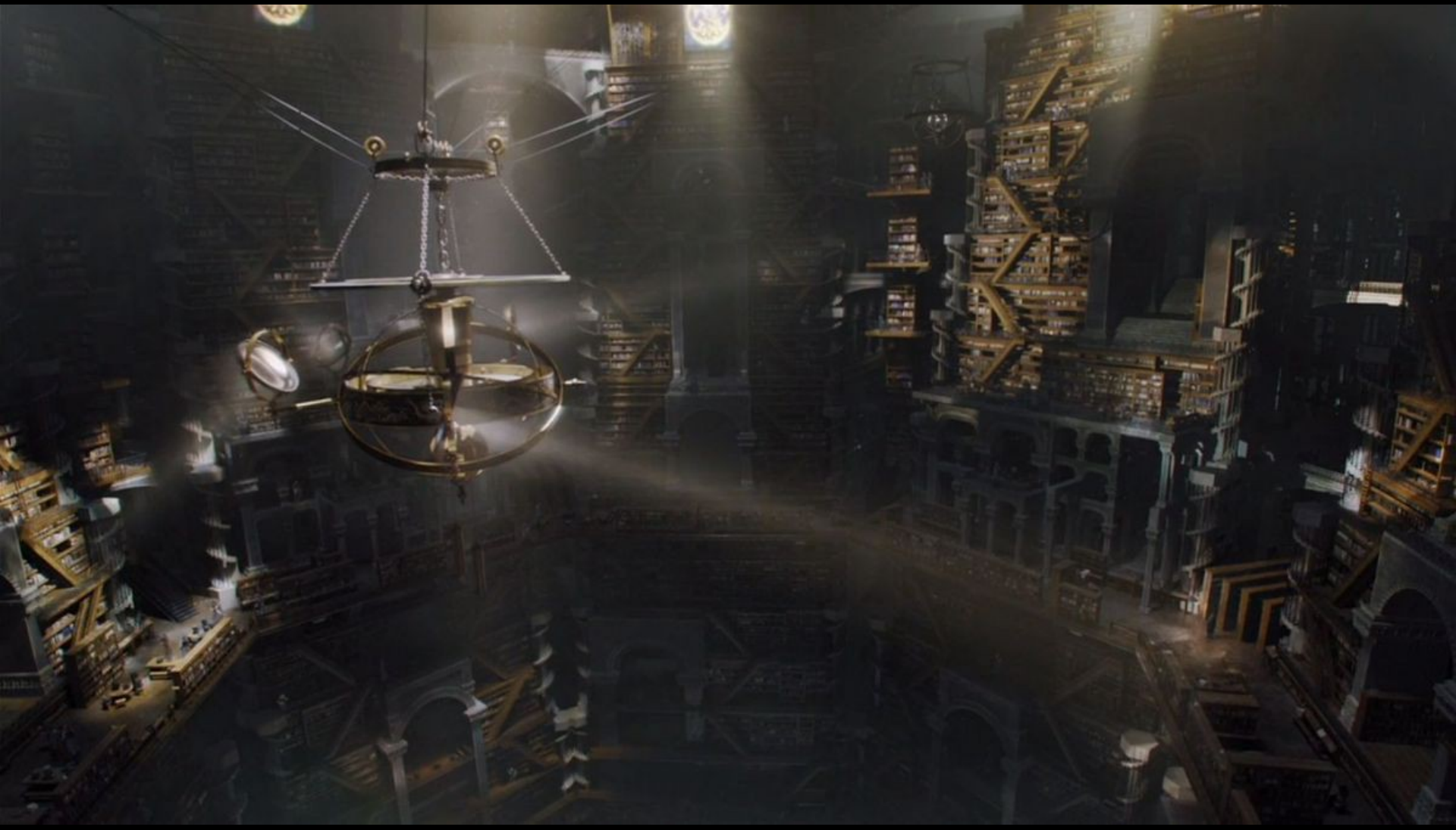
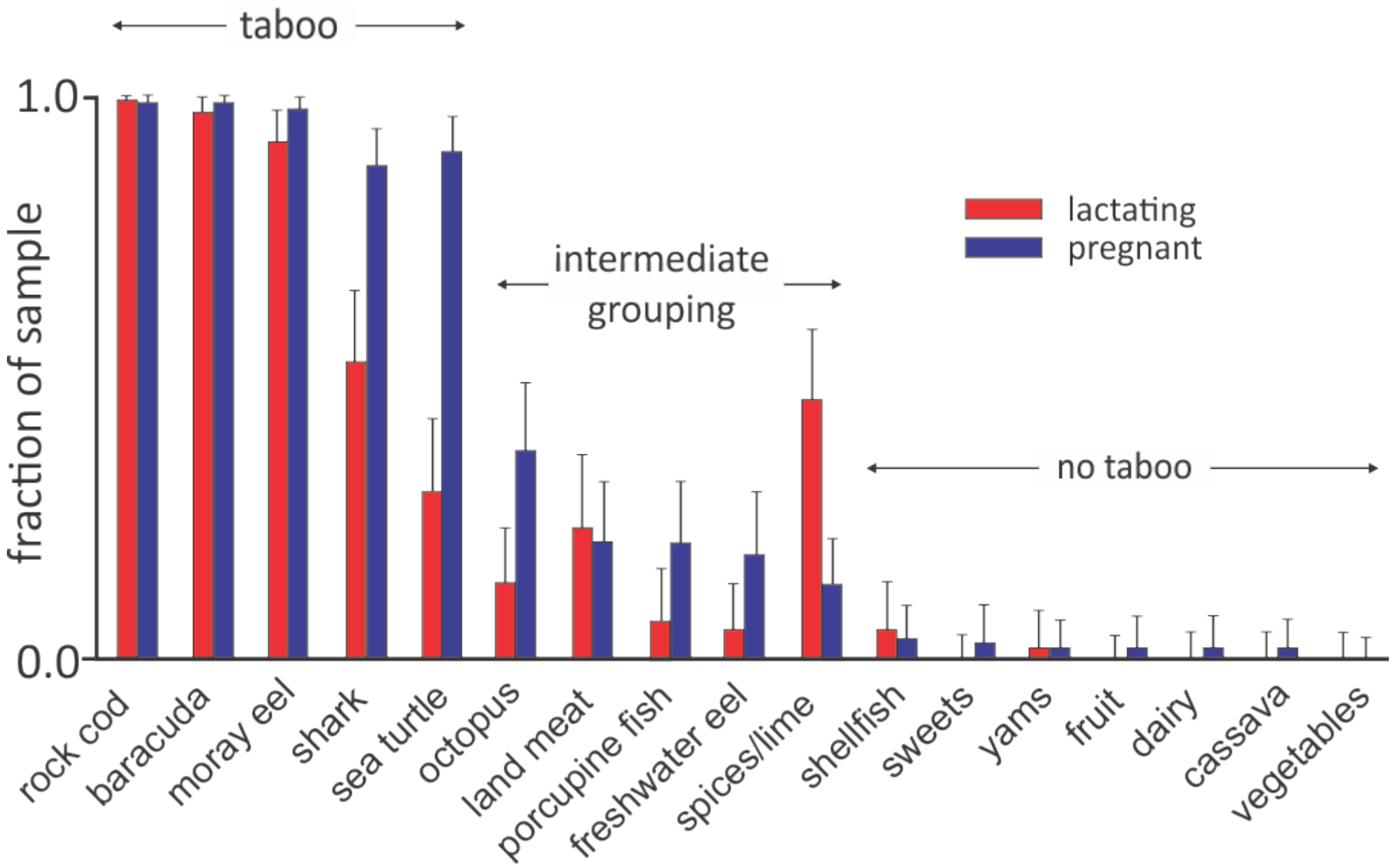
Mt Isa Environment
Mt Isa Conservation
Mt Isa Protection
Mt Isa Management
Mt Isa Development
Mt Isa Future
Mt Isa Planning
Mt Isa Zoning

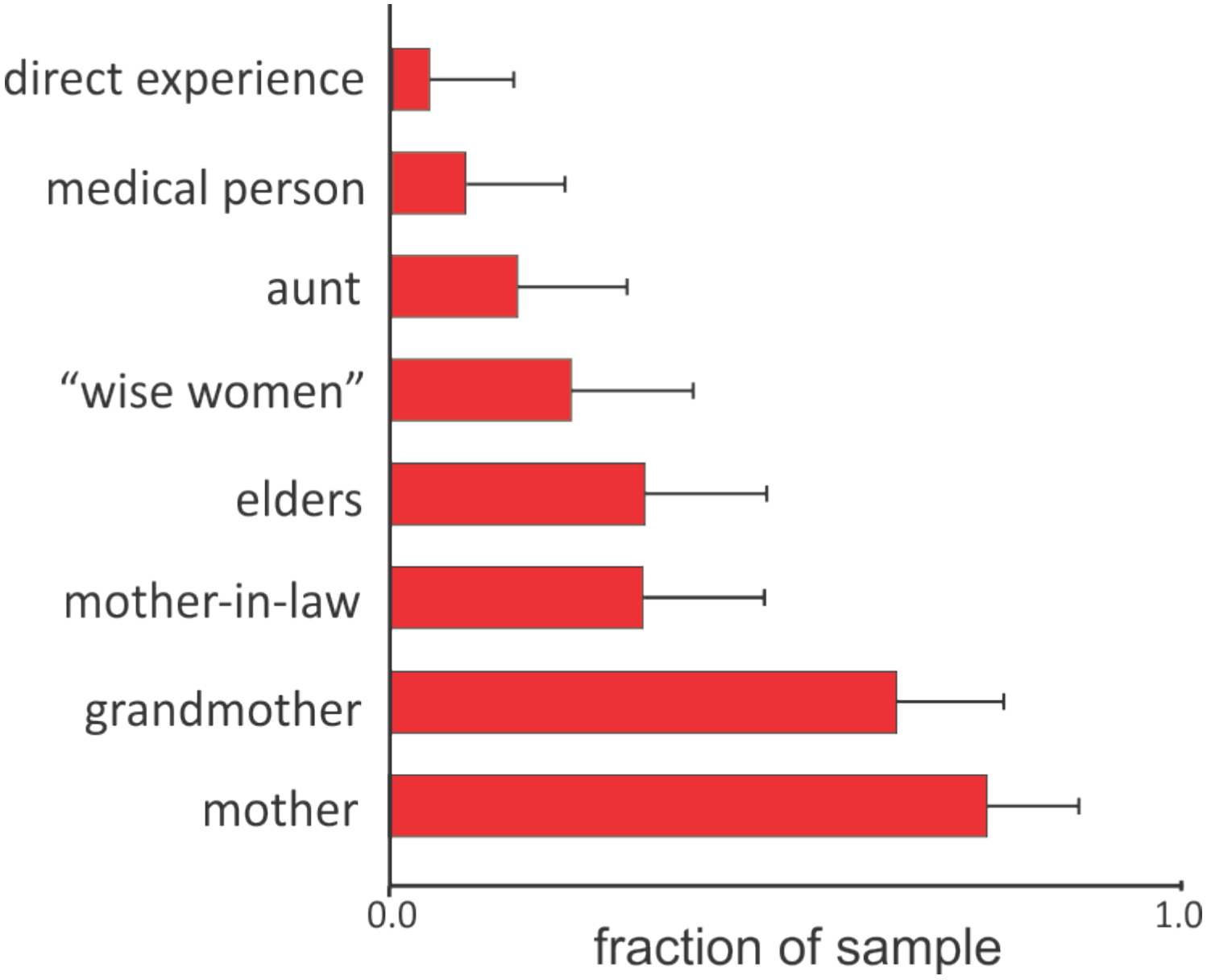

ZOOLOGY OF VICTORIA.
(Fishes.)
Pl. 2.
A. Bartholomew del. & lith.
Imp. Mr Cox direxit
Dubrovsky & Leigh, imp.

Why is cultural information any good?



LIFEGUARD
Dorothy

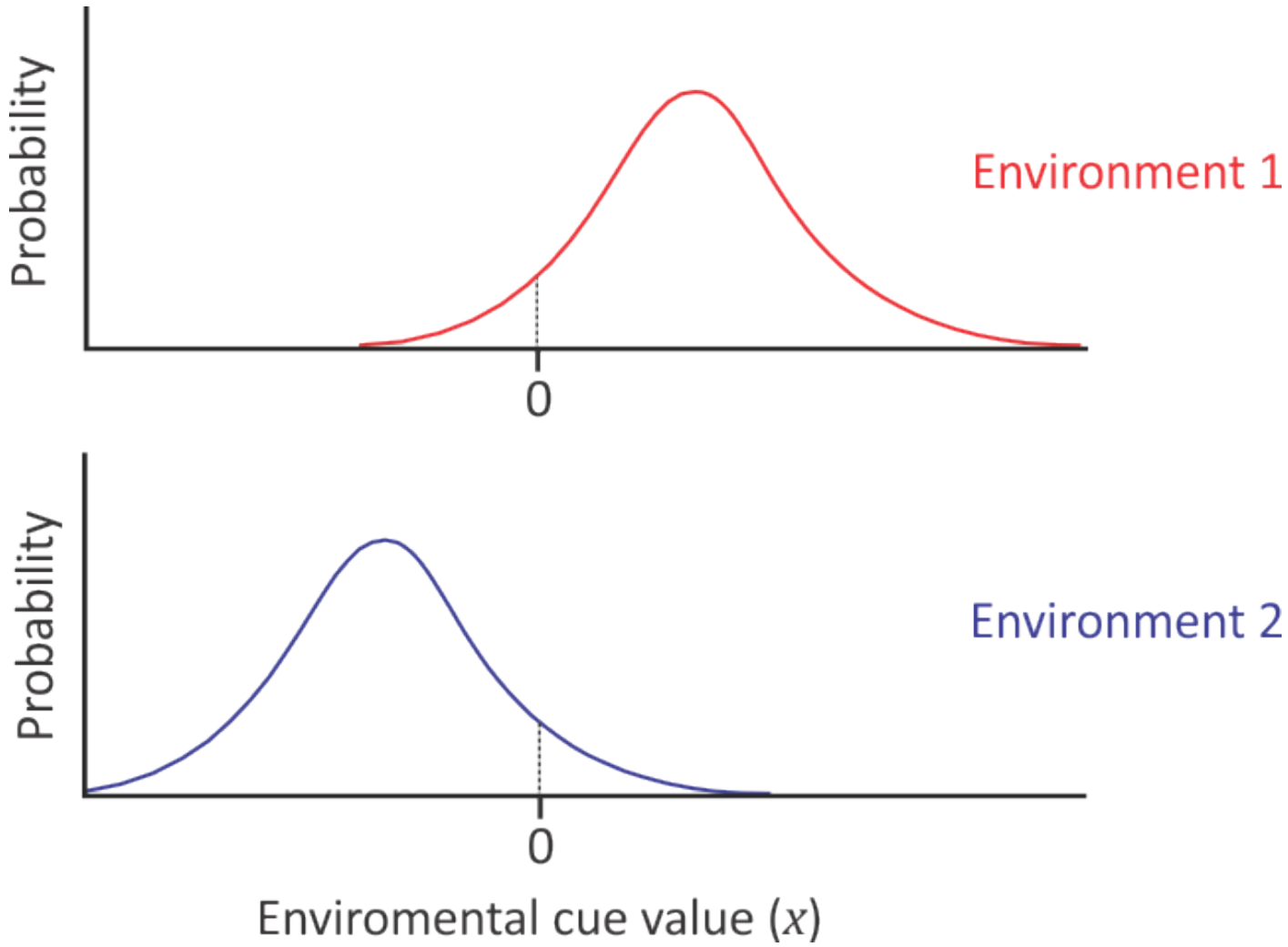

taboo
1.0
fraction of sample
0.0
lactating
pregnant
intermediate
grouping
no taboo
rock cod
baracuda
moray eel
shark
sea turtle
octopus
land meat
porcupine fish
freshwater eel
spices/lime
shellfish
sweets
yams
fruit
dairy
cassava
vegetables


direct experience
medical person
aunt
“wise women”
elders
mother-in-law
grandmother
mother
0.0
1.0
fraction of sample

Why believe the wise women?

The evolution of imitation

1.


Probability
Environment 1
0
Probability
Environment 2
0
Enviromental cue value (x)

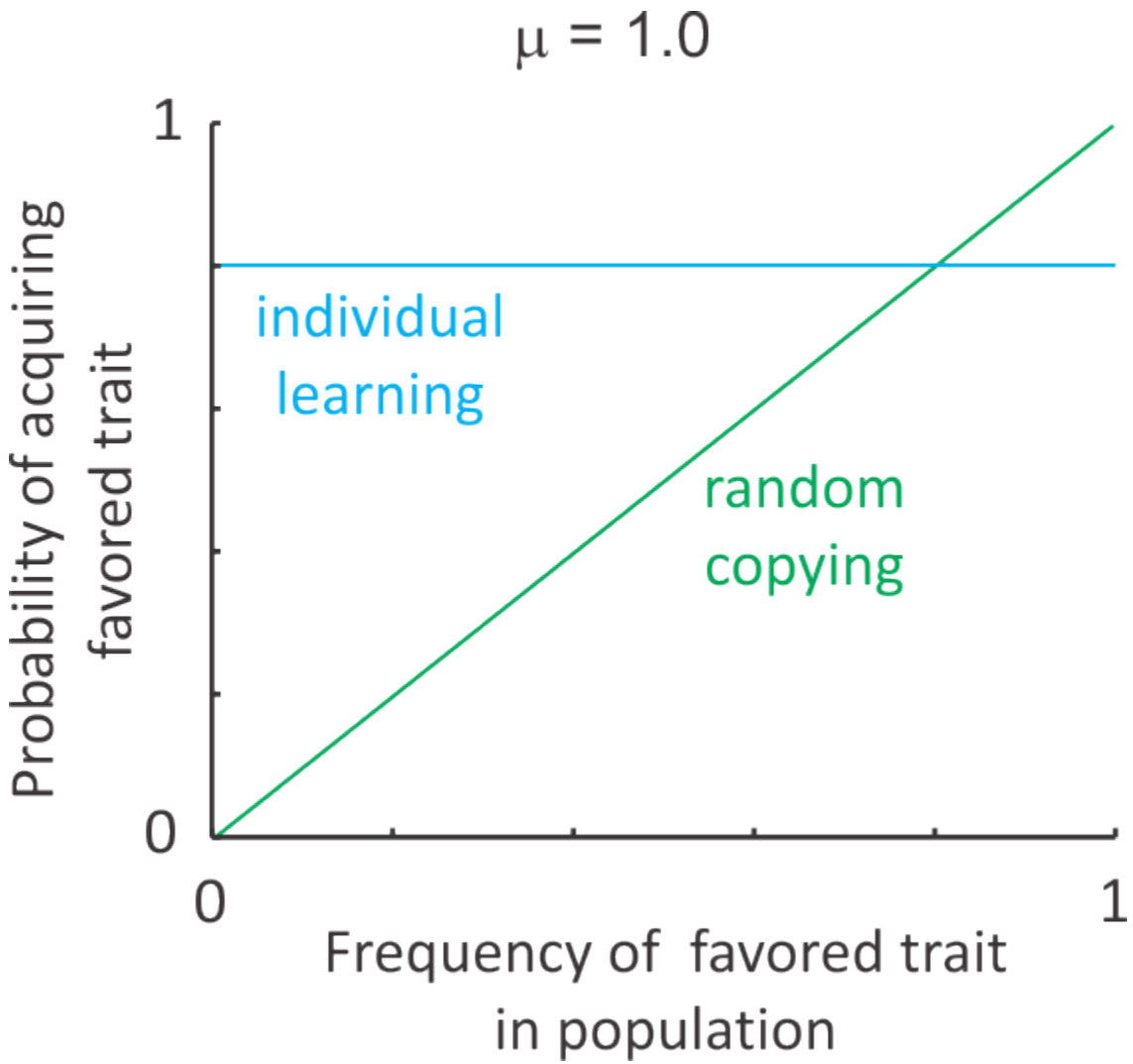
1.

2.

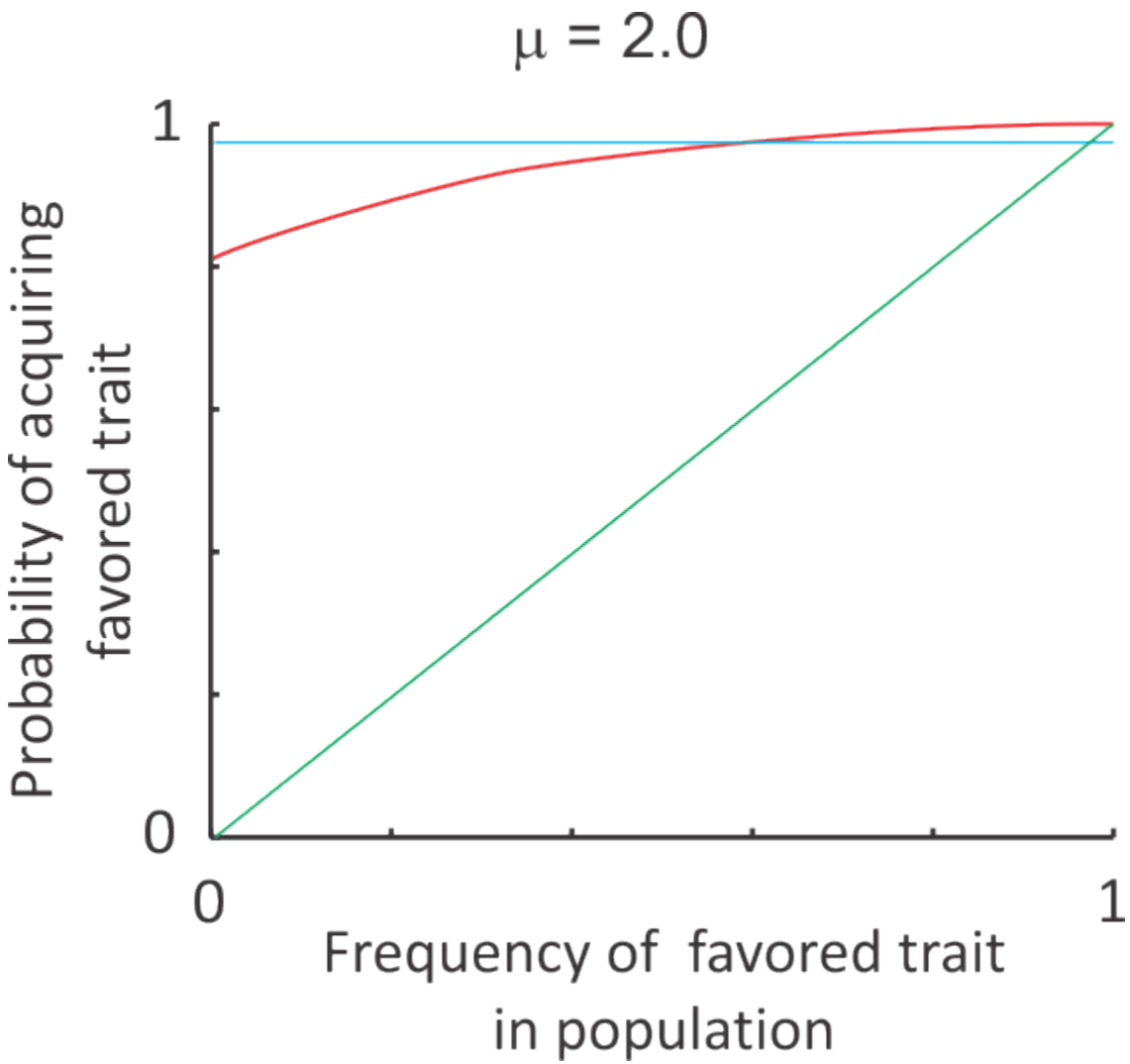
- To maximize expected fitness, choose behavior 1 if

$$j - \frac{n}{2} > -gx$$

Plot equilibrium results in this space

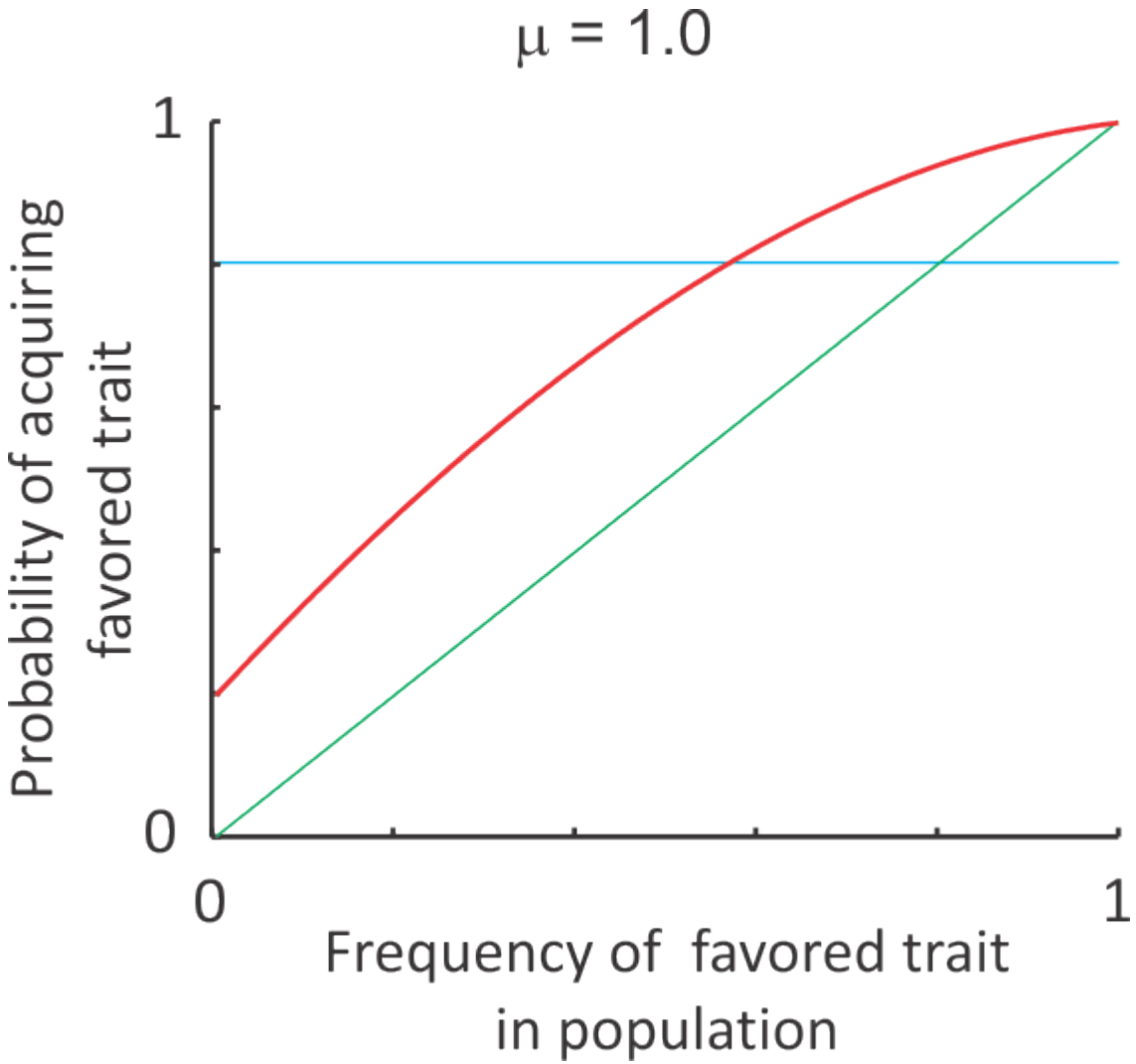


Accurate cues ! little social learning



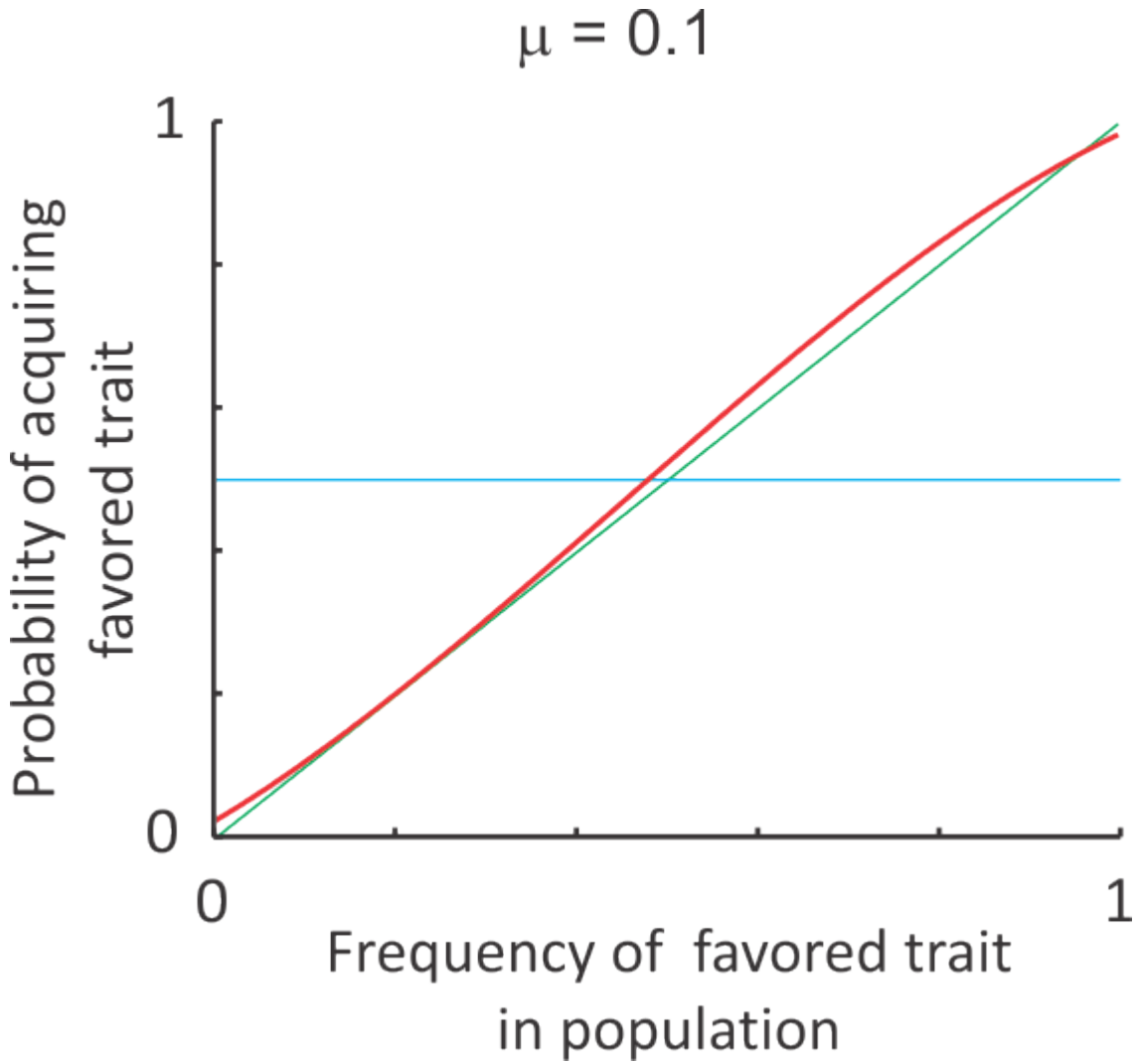
$n = 3$, $B = 0.01$

Medium quality cue ! more copying



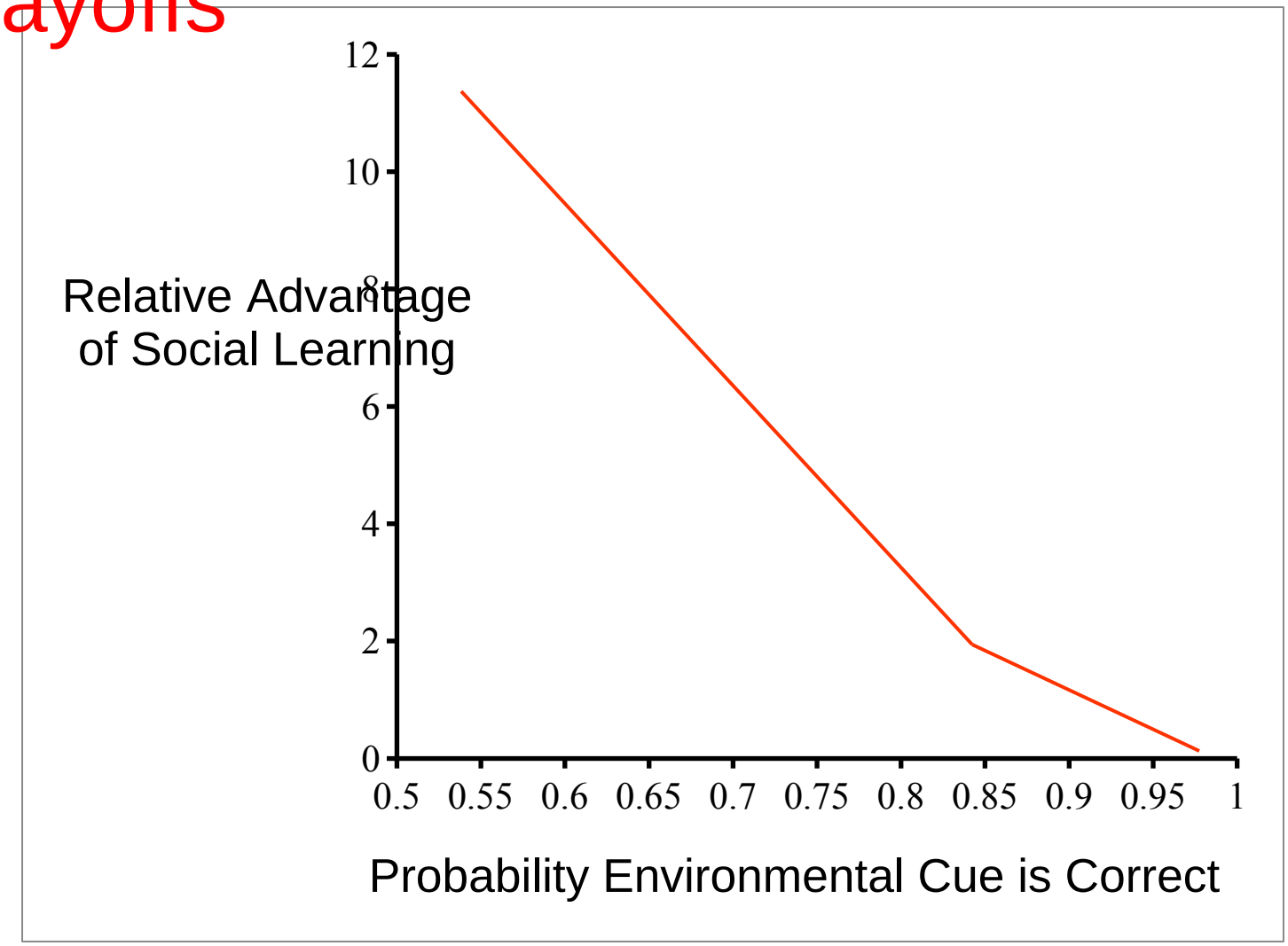
n = 3, B = 0.01

Low quality cue ! emphasis on copying



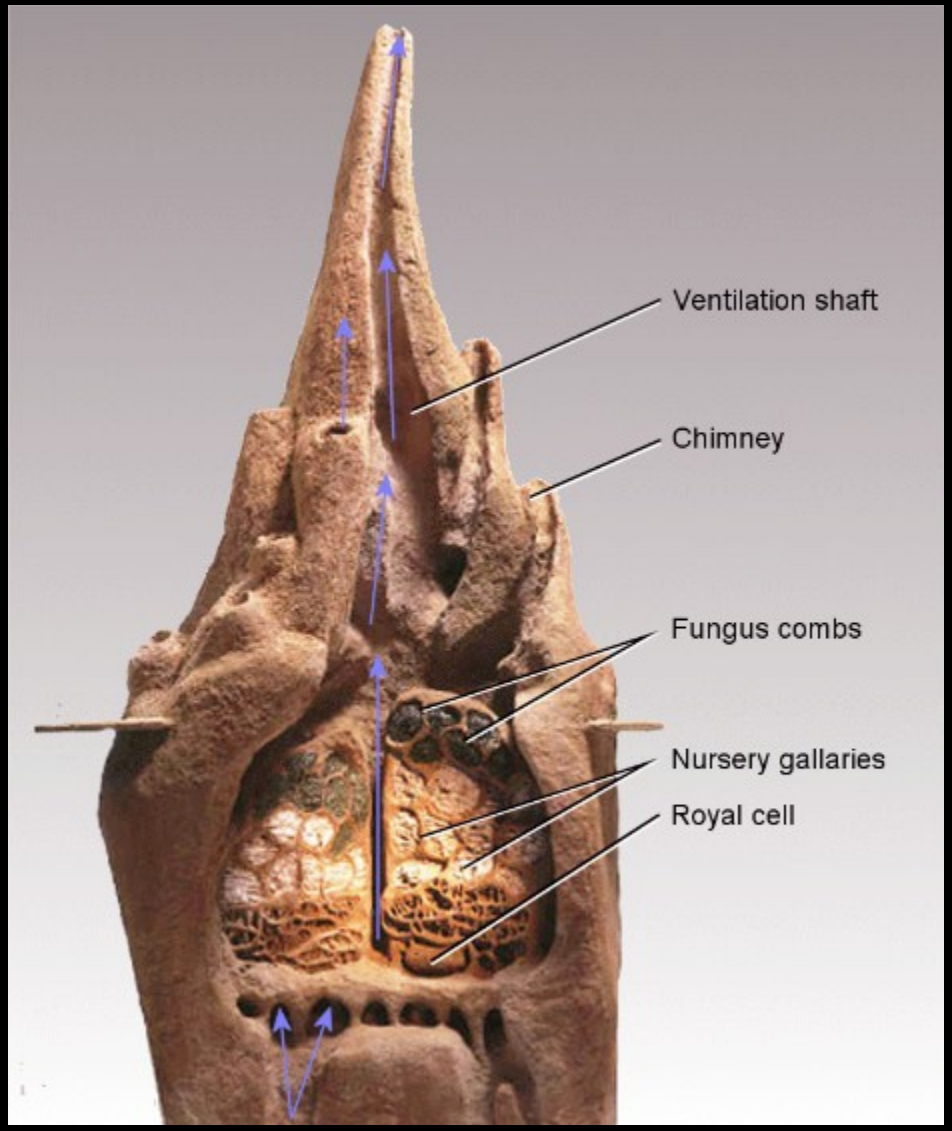
n = 3, B = 0.01

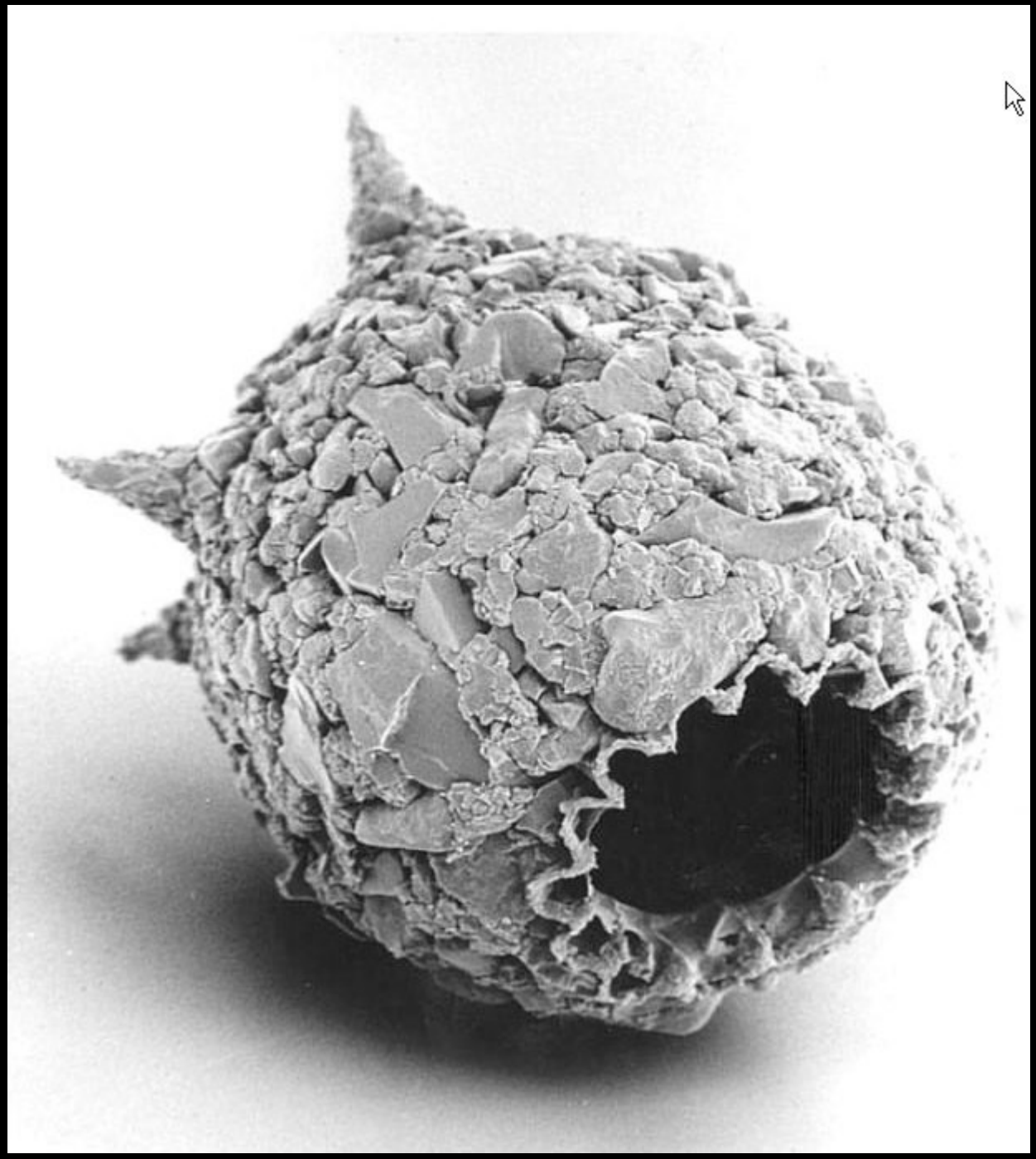
Social learning leads to higher payoffs

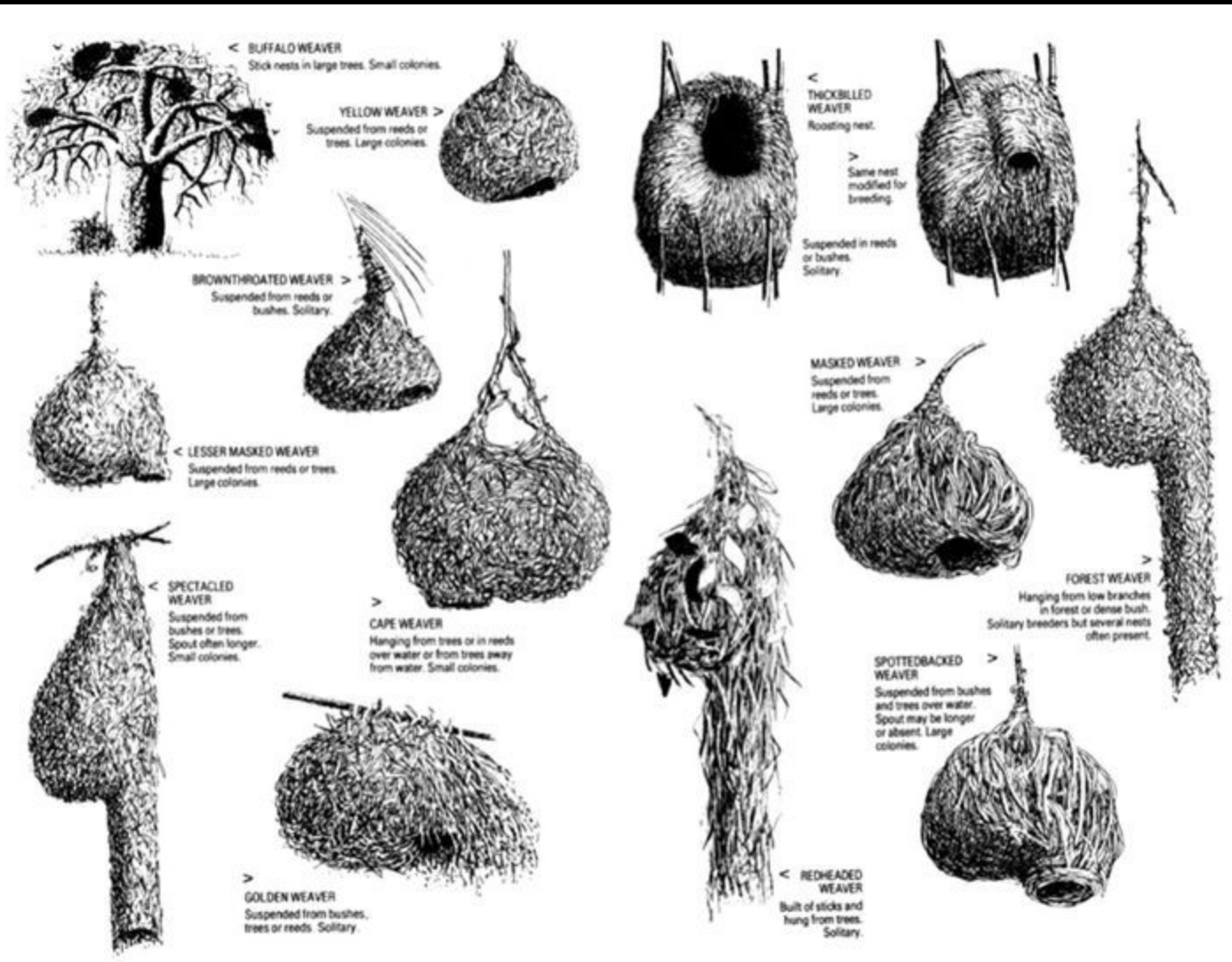


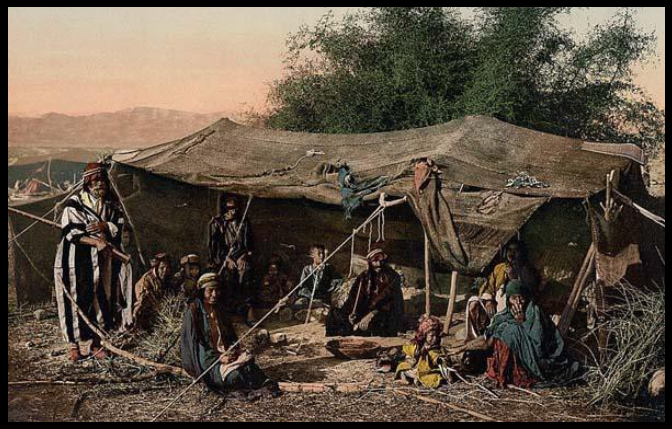
$n = 3$, $B = 0.01$

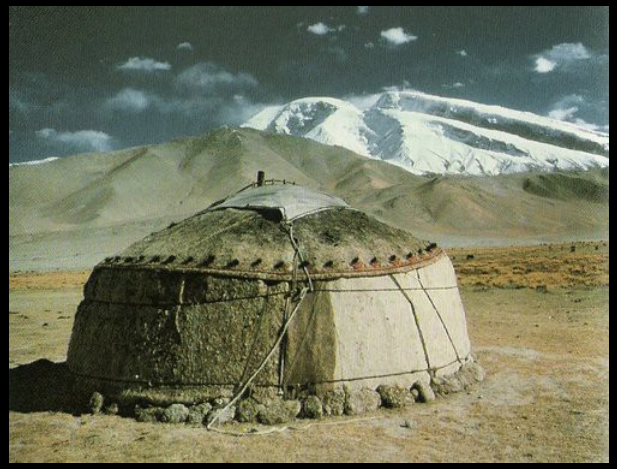
Can complex adaptations result from such a dumb process?

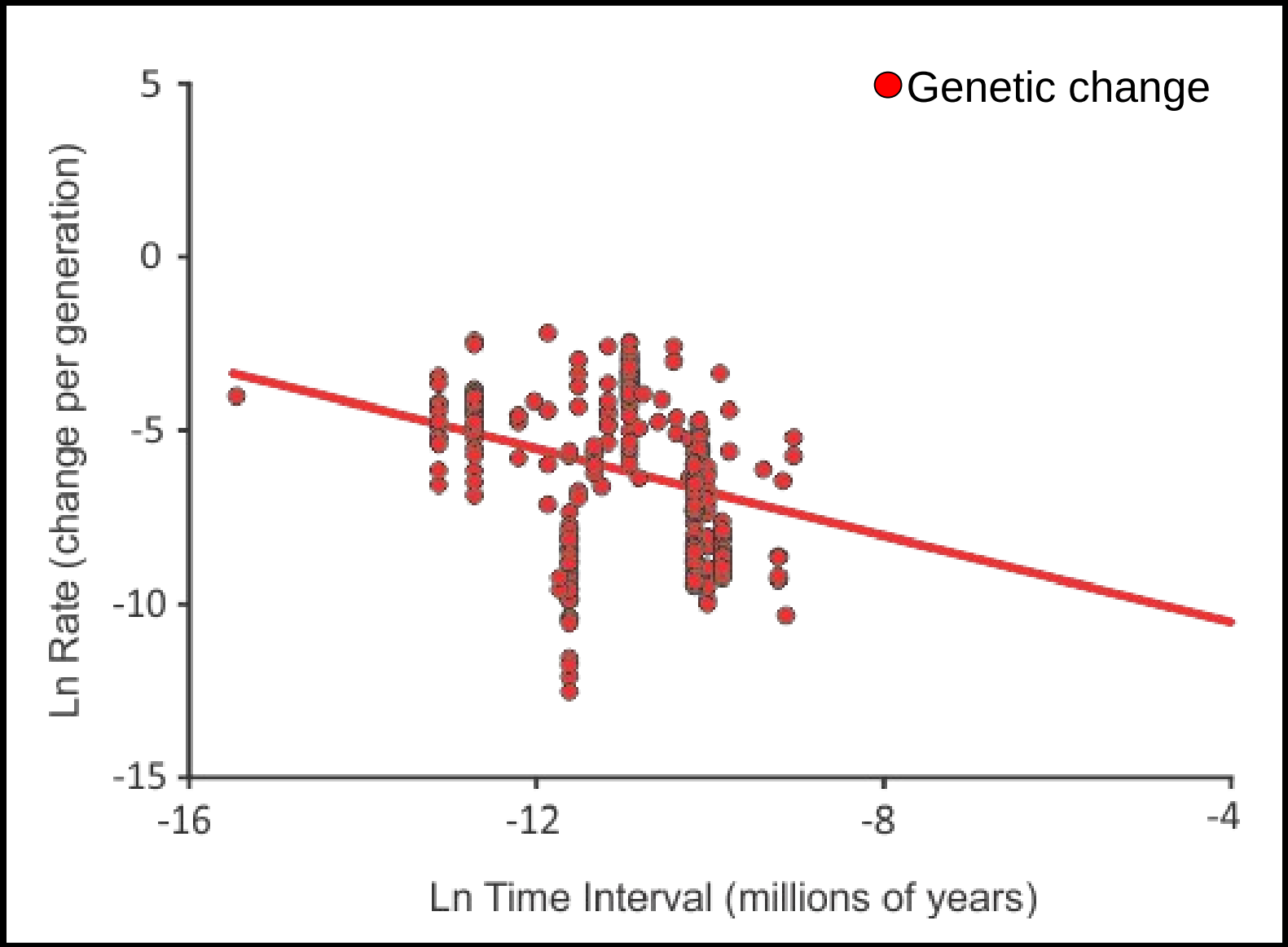

Ventilation shaft
Chimney
Fungus combs
Nursery gallaries
Royal cell

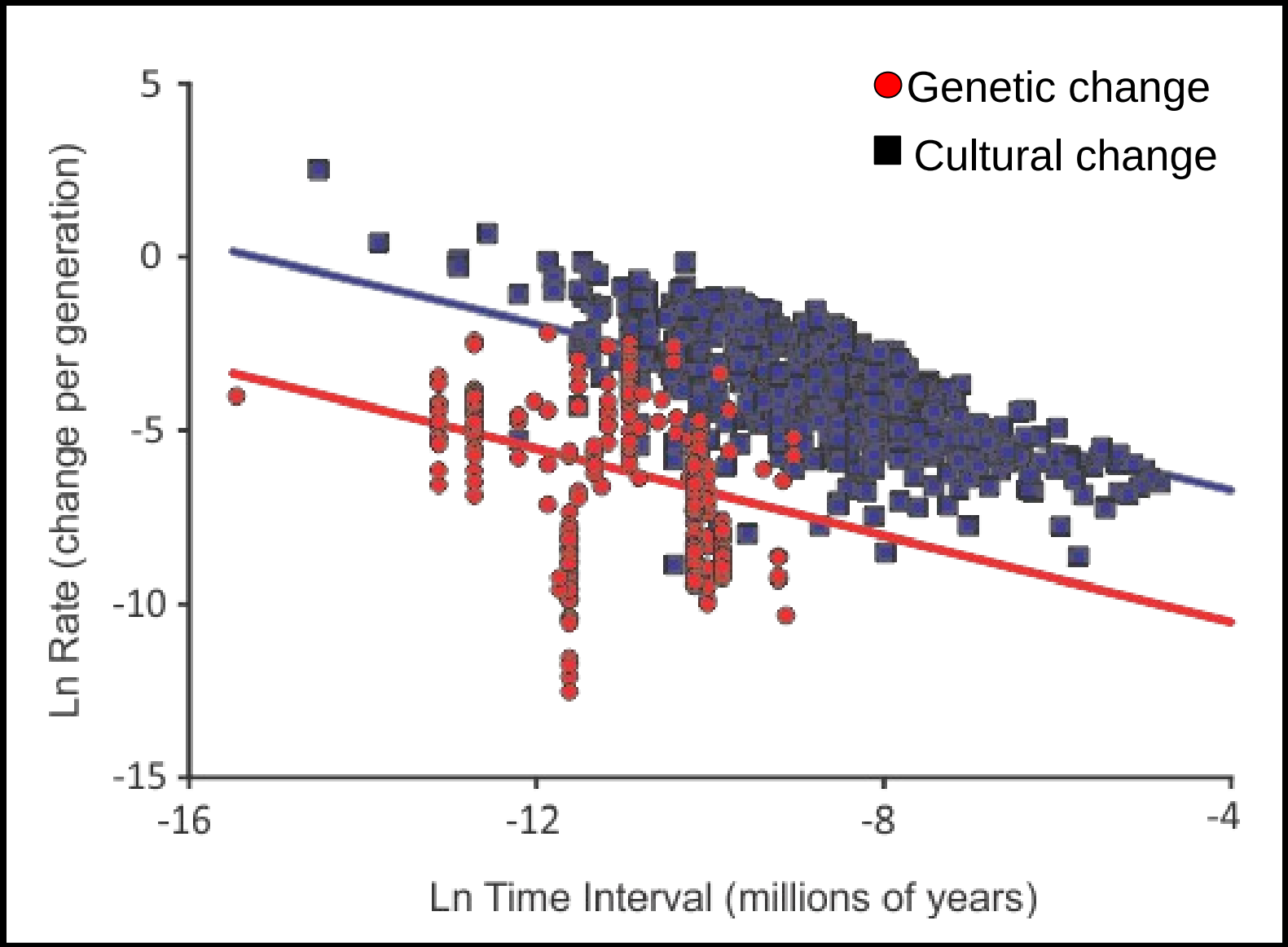


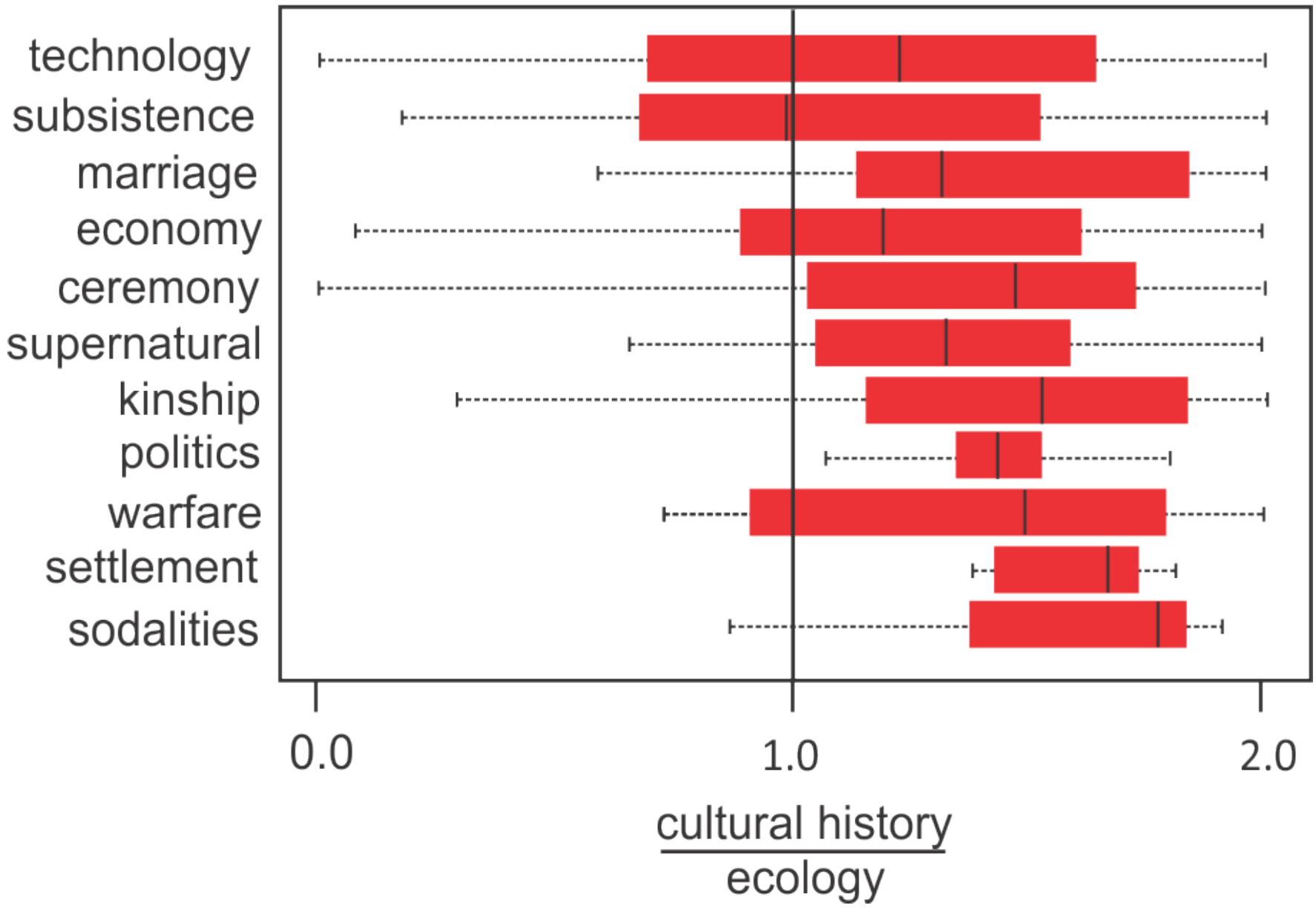

< BUFFALO WEAVER
Stick nests in large trees. Small colonies.
YELLOW WEAVER >
Suspended from reeds or trees. Large colonies.
BROWNTHROATED WEAVER >
Suspended from reeds or bushes. Solitary.
< LESSER MASKED WEAVER
Suspended from reeds or trees. Large colonies.
< SPECTACLED WEAVER
Suspended from bushes or trees. Spout often longer. Small colonies.
>
CAPE WEAVER
Hanging from trees or in reeds over water or from trees away from water. Small colonies.
>
GOLDEN WEAVER
Suspended from bushes, trees or reeds. Solitary.
<
THICKBILLED WEAVER
Roosting nest.
>
Same nest modified for breeding.
Suspended in reeds or bushes. Solitary.
MASKED WEAVER >
Suspended from reeds or trees. Large colonies.
>
FOREST WEAVER
Hanging from low branches in forest or dense bush. Solitary breeders but several nests often present.
SPOTTEDBACKED WEAVER >
Suspended from bushes and trees over water. Spout may be longer or absent. Large colonies.
< REDHEADED WEAVER
Built of sticks and hung from trees. Solitary.

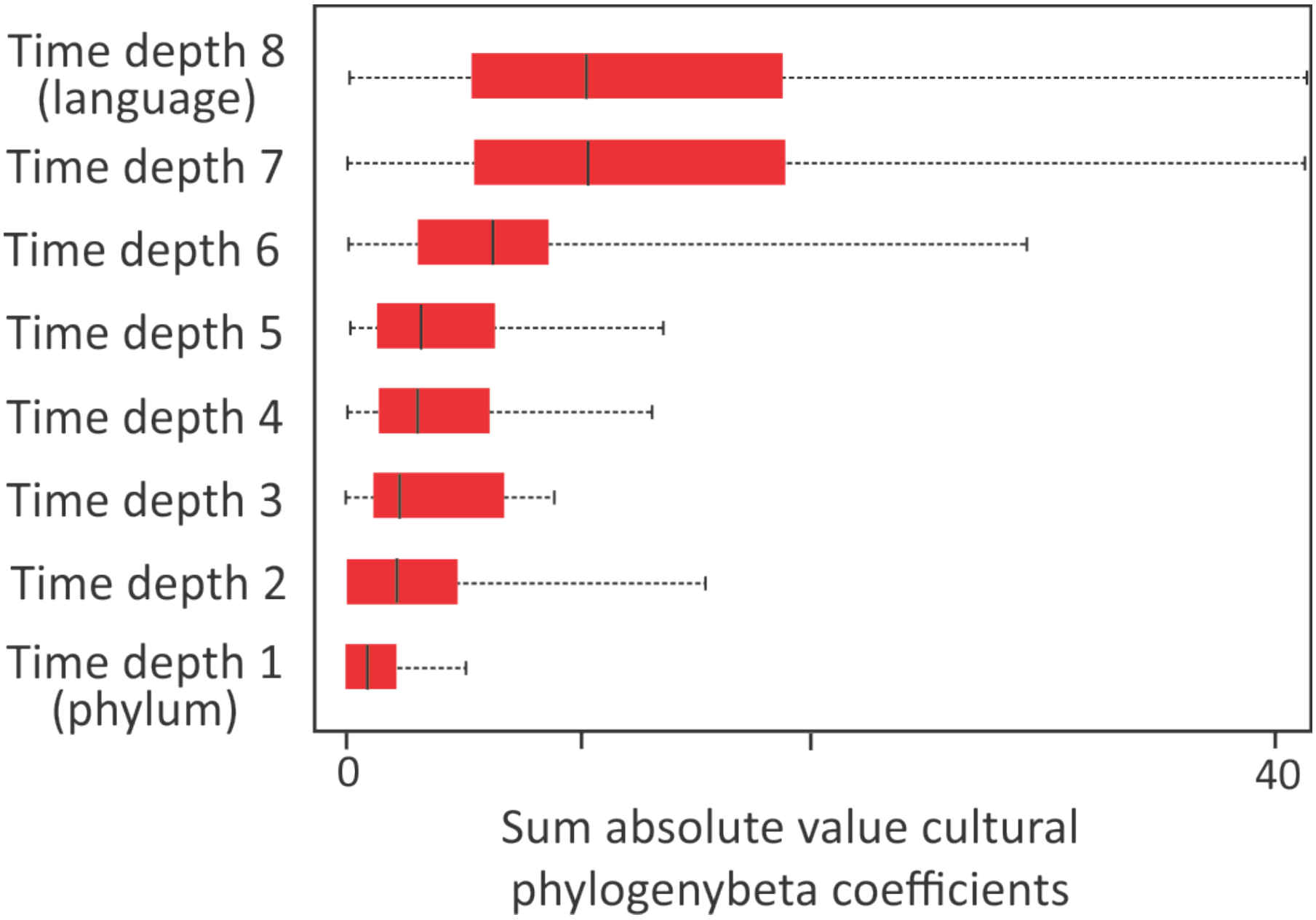




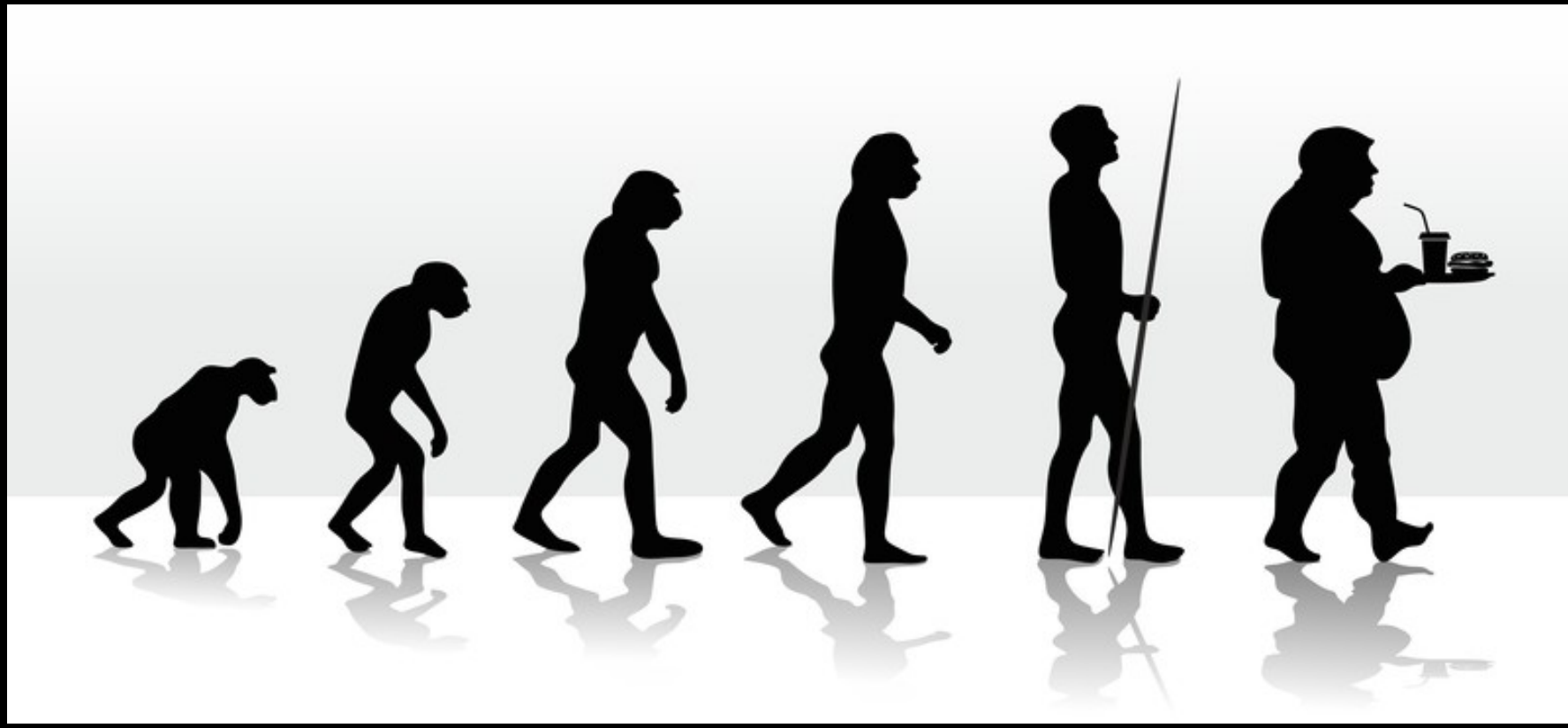

Genetic change
5
0
-5
-10
-15
Ln Rate (change per generation)
-16
-12
-8
-4
Ln Time Interval (millions of years)


Genetic change
Cultural change
5
0
-5
-10
-15
-16
-12
-8
-4
Ln Rate (change per generation)
Ln Time Interval (millions of years)


technology
subsistence
marriage
economy
ceremony
supernatural
kinship
politics
warfare
settlement
sodalities
0.0
1.0
2.0
cultural history
ecology


Time depth 8 (language)
Time depth 7
Time depth 6
Time depth 5
Time depth 4
Time depth 3
Time depth 2
Time depth 1 (phylum)
0
40
Sum absolute value cultural phylogenybeta coefficients

This changes everything



What about rodents?

Many habitats = many species

Many habitats = one species