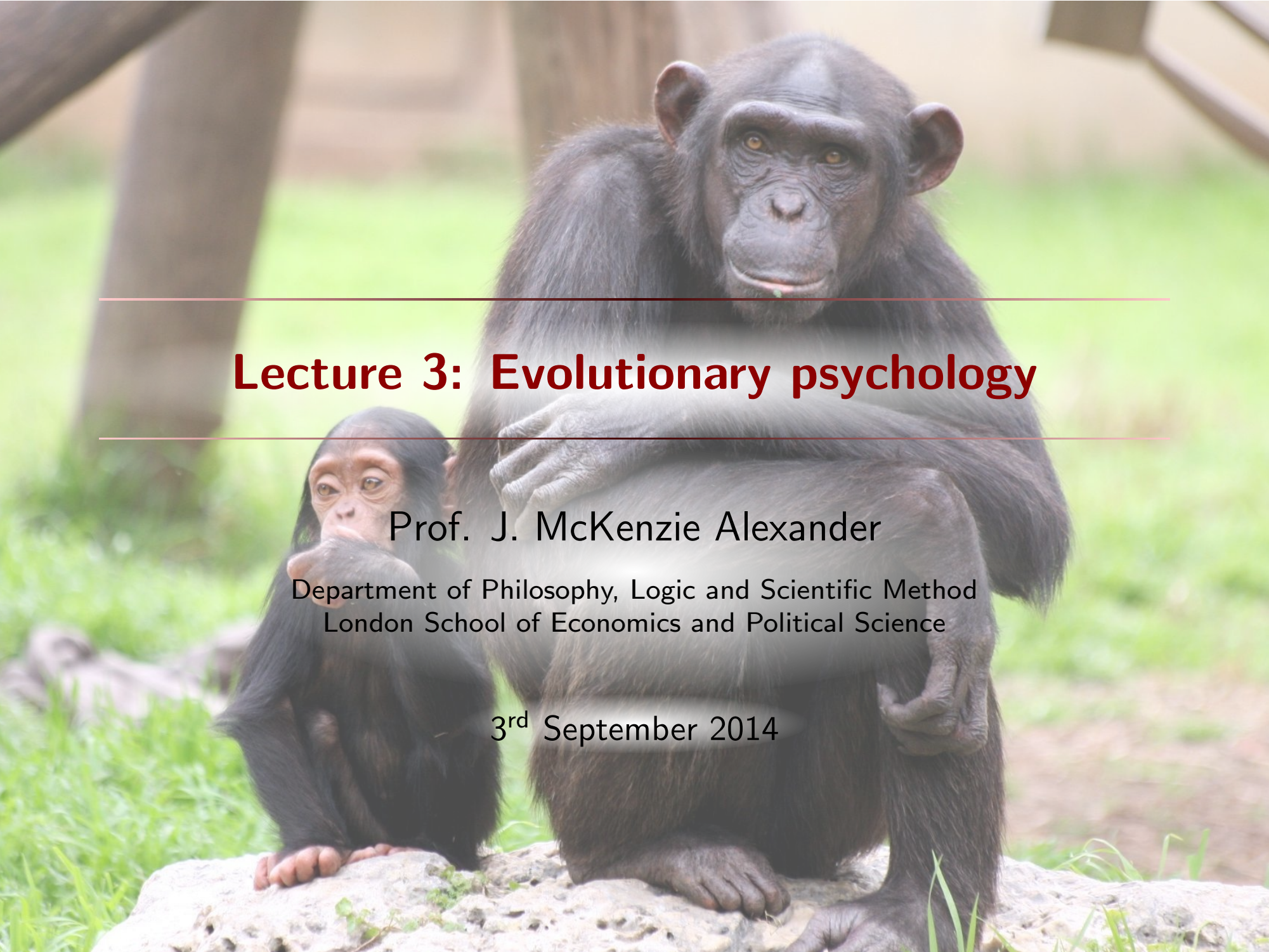

Lecture 3: Evolutionary psychology

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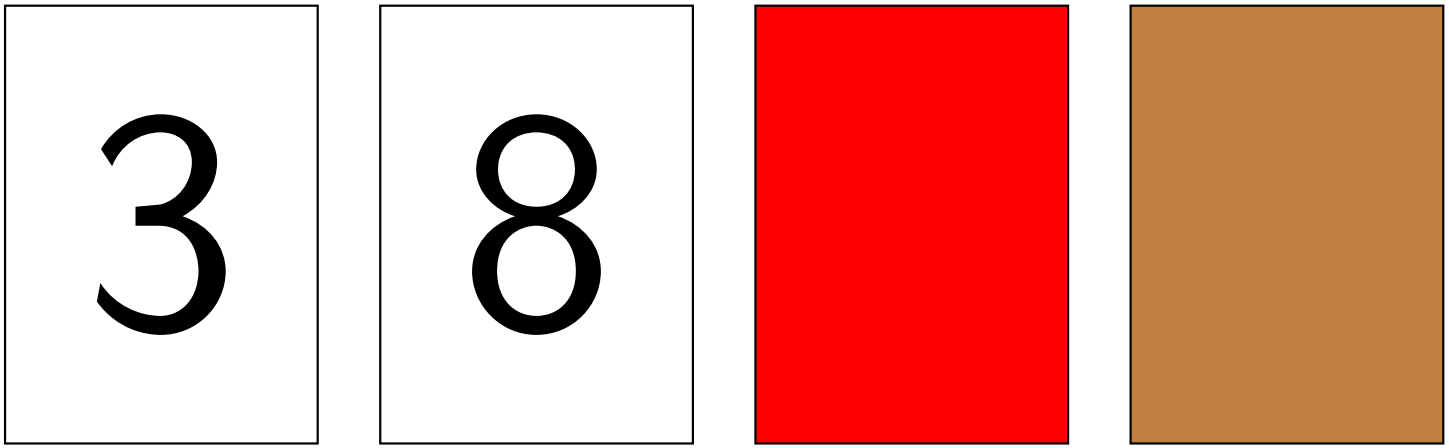
Outline

Outline

The Wason selection task I

A deck of cards has numbers on one side and a colour on the other. Suppose that the following cards are placed on the table:



What cards do you need to turn over to test the proposition: *If a card shows an even number on one face, then the colour on the opposite side is red*?

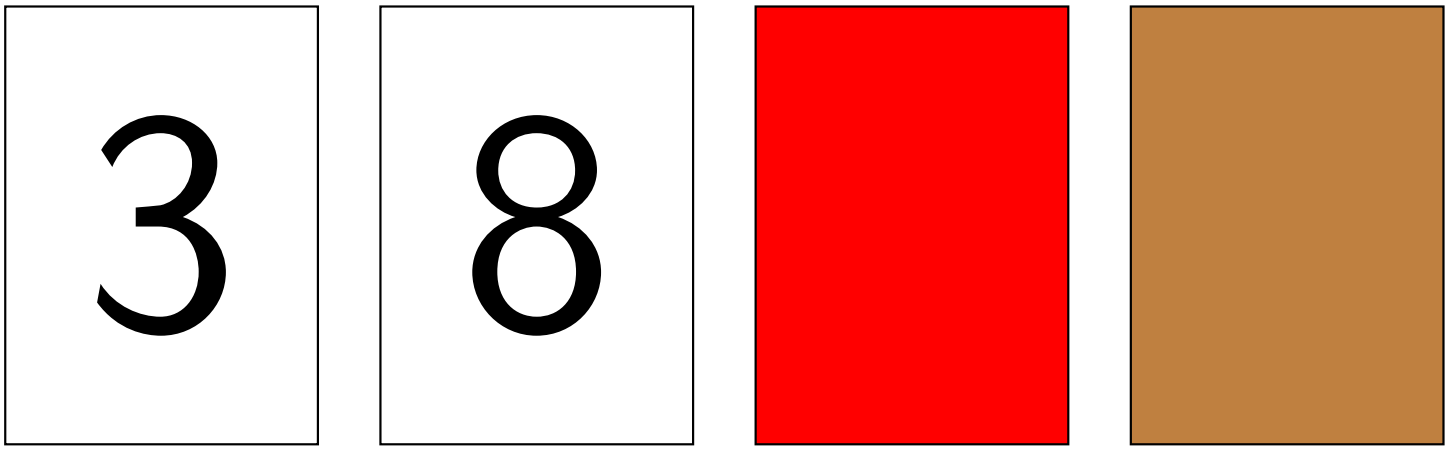
The Wason selection task II

A deck of cards shows people drinking either beer or coke on one side, and their age on the other. Suppose that the following cards are placed on the table:


What cards do you need to turn over to test the proposition: *If you are drinking beer, then you must be at least 21*?

The Wason selection task I (solved)

A deck of cards has numbers on one side and a colour on the other. Suppose that the following cards are placed on the table:



What cards do you need to turn over to test the proposition: *If a card shows an even number on one face, then the colour on the opposite side is red*?

The Wason selection task II (solved)

A deck of cards shows people drinking either beer or coke on one side, and their age on the other. Suppose that the following cards are placed on the table:


What cards do you need to turn over to test the proposition: *If you are drinking beer, then you must be at least 21*?

The Wason selection task III

Wason (1966) found that only about 10% of subjects answered the even/red form of the question correctly.

John Tooby and Leda Cosmides obtained the following experimental results:

	Cards selected			
Problem	P alone	Q alone	P and not-Q	Other
Abstract	33	46	4	17
"Social contract"	20	0	73	7

Subjects had a much higher success rate when the question was framed in terms of *social norms*.

The evolutionary psychological explanation

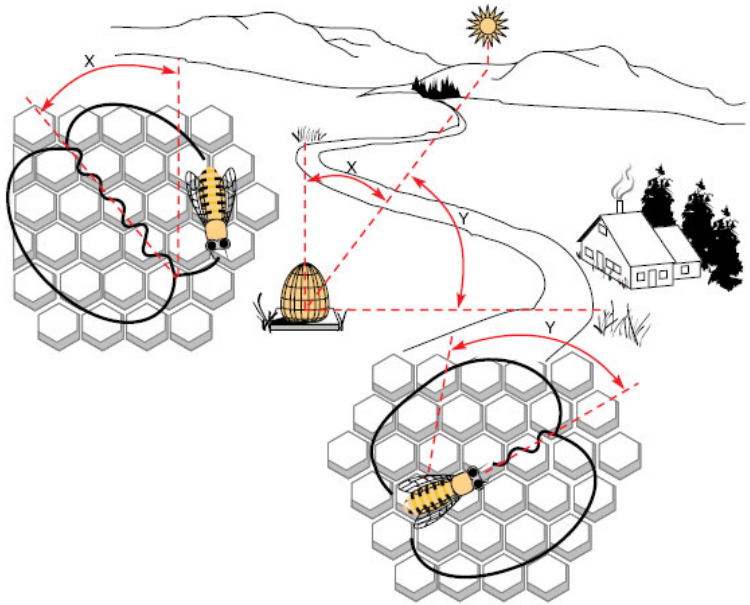
Tooby and Cosmides hypothesized this is because people have an *evolved psychological mechanism* for solving problems of this kind (see Barkow et al., 1992).

Outline

What is evolutionary psychology?

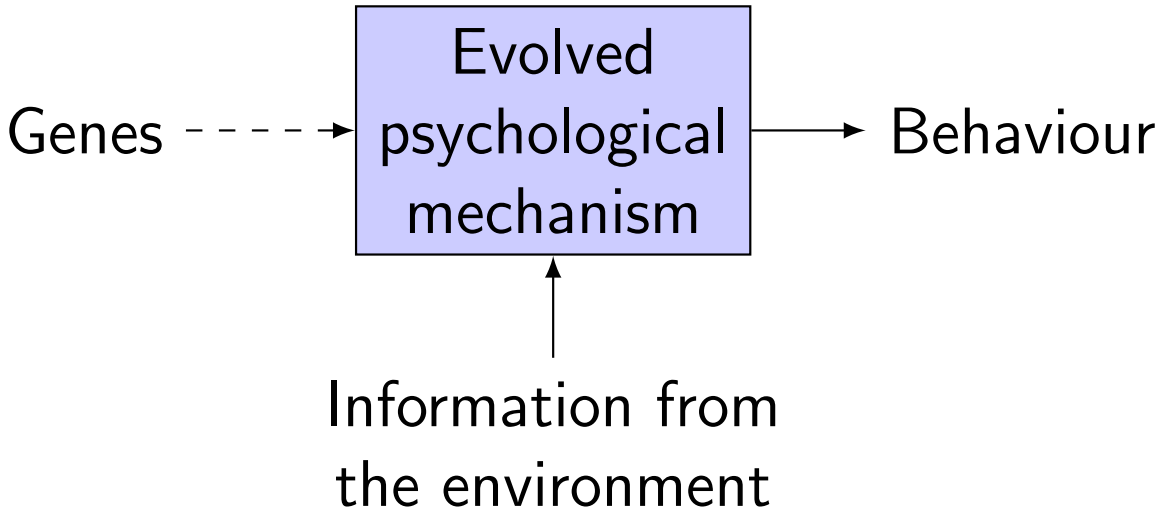
Essentially, second-generation sociobiology.

Sociobiology (see Wilson, 1980) posited a relatively direct connection between genes and behaviour. In many instances, this makes sense:



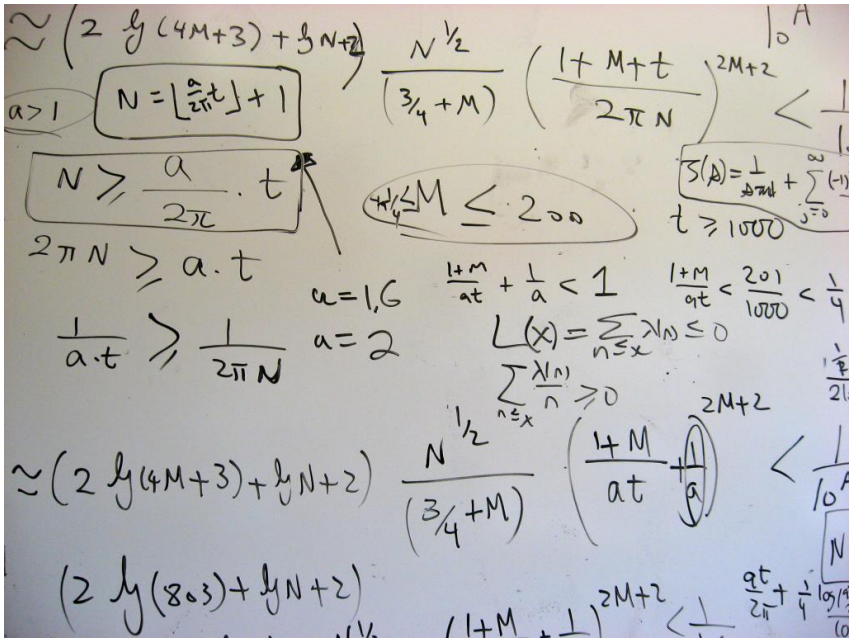
What is evolutionary psychology?

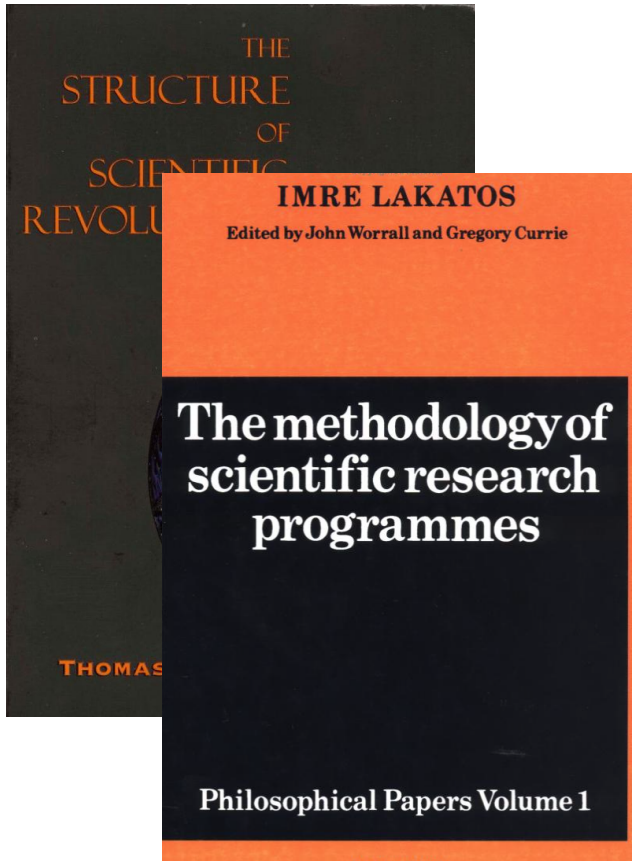
However, since so much of human behaviour is environmentally influenced, evolutionary psychology proposes an *indirect* connection, one mediated by evolved psychological mechanisms.



What is evolutionary psychology?

Field of inquiry, or a paradigm (or research programme)?





What is evolutionary psychology?

David Buller notes that some people define "evolutionary psychology" as just "the evolutionary study of mind and behaviour."

This makes it a *field of inquiry*.

Others, following Tooby and Cosmides, claim that the evolutionary study of mind and behaviour entails several specific claims about the human mind.

This makes it a *paradigm*.

In this lecture, I concentrate on the paradigmatic conception deriving largely from the work of Tooby and Cosmides.

Basic tenets of evolutionary psychology

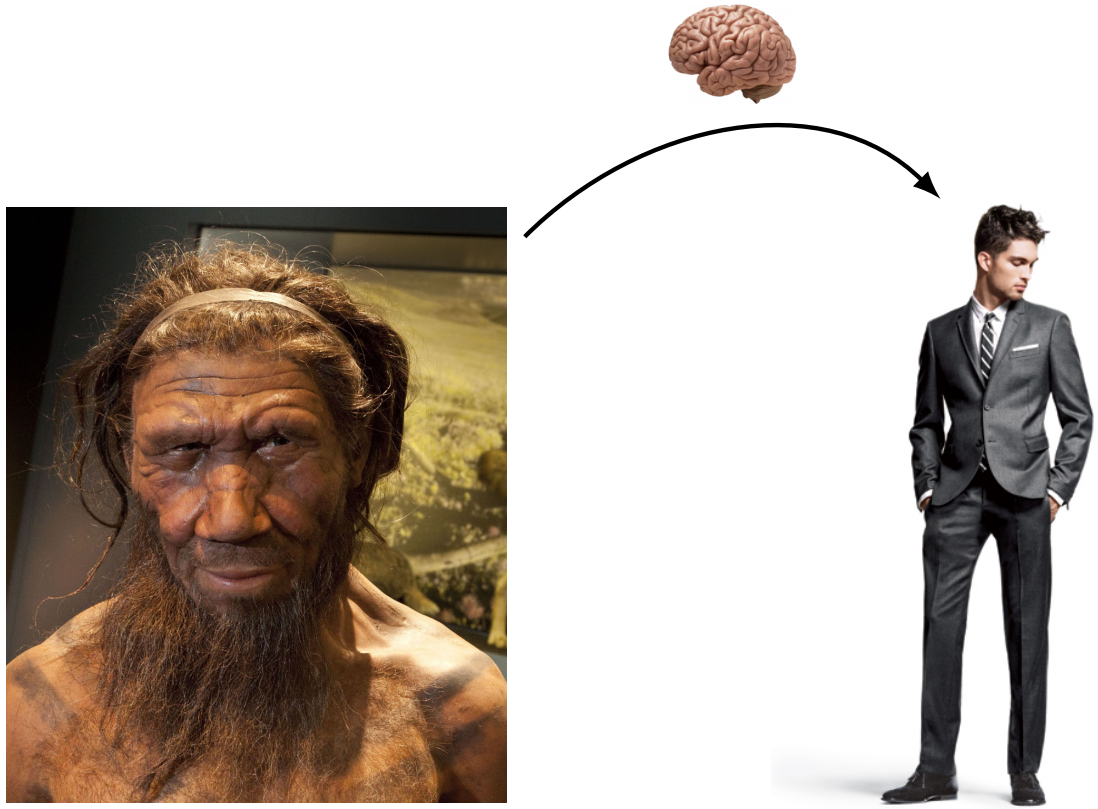
1. There is a universal human nature.

   This universal human nature exists at the level of evolved psychological mechanisms, not expressed cultural behaviours.

2. These evolved psychological mechanisms are adaptations produced by natural selection over an extended period of time.

3. The evolved structure of the human mind is adapted to the lifestyle of Pleistocene hunter-gatherers, not contemporary society.

The slogan of evolutionary psychology



"[O]ur modern skulls house a Stone Age mind."

Arguments supporting evolutionary psychology

Human civilisation has existed for a short period of time: all of the great classical civilisations arose over the last few thousand years.

> "In contrast to this, our ancestors spent the last two million years as Pleistocene hunter-gatherers, and, of course, several hundred million years before that as one kind of forager or another." (Barkow et al., 1992, pg. 5)

Arguments supporting evolutionary psychology II

> "The few thousand years since the scattered appearance of agriculture is only a small stretch in evolutionary terms [...] for this reason, it is unlikely that new complex designs [...] could evolve in so few generations."
>
> (Barkow et al., 1992, pg. 5)

> "Therefore, it is improbable that our species evolved complex adaptations even to agriculture, let alone to postindustrial society."
>
> (Barkow et al., 1992, pg. 5)

Arguments supporting evolutionary psychology III

> "If selection had constructed complex new adaptations rapidly over historical time, then populations that have been agricultural for several thousand years would differ sharply in their evolved architecture from populations that until recently practised hunting and gathering. They do not."
>
> (Barkow et al., 1992, pg. 5)

A rejection of "no theory" theories

Evolutionary psychology thus rejects the view of Franz Boas (the founder of American anthropology):

> "In my opinion, laws of cultural development as rigid as the laws of physics are supposed to be unattainable; absolute laws for phenomena as complex as those of culture are impossible; they will always be reflections of our own culture."
>
> (Boas, 1940, pg. 311)

Evolutionary psychology and the social sciences

Arguments for why the social sciences allegedly *need* evolutionary psychology

1. **The principle of conceptual integration:** The social sciences should be mutually consistent, in addition to being consistent with what is known in the natural sciences.

2. **The social sciences aren't conceptually integrated:**

> "[O]ne finds evolutionary biologists positing cognitive processes that could not possibly solve the adaptive problem under consideration, psychologists proposing psychological mechanisms that could not possibly have evolved, and anthropologists making implicit assumptions about the human mind that are known to be false."
>
> (Barkow et al., 1992, pg. 4)

Evolutionary psychology and the social sciences

Arguments for why the social sciences allegedly *need* evolutionary psychology

3. Theoretical defects of the Standard Social Science Model stunt the social sciences.

- The "central logic" of the SSSM relies on false premises drawn from outmoded theories of development.
- Simply because many features of adult cognition are not present at birth does not mean that they need to be attributed to cultural transmission.

Evolutionary psychology and the social sciences

Arguments for why the social sciences allegedly *need* evolutionary psychology

3. Theoretical defects of the Standard Social Science Model stunt the social sciences.

The SSSM rests on a false analysis of nature-nurture issues:

- It is not that traditional accounts underestimate the importance of biological as opposed to environmental factors in development...
- but rather, the entire framework that assumes one can divide "biological factors" and "environmental factors" into mutually exclusive sets is misguided.
- This false dichotomy creates the mindset that the more one explains "biologically", the less there is to explain "socially."

Evolutionary psychology and the social sciences

Arguments for why the social sciences allegedly *need* evolutionary psychology

4. Theoretical defects of the Standard Social Science Model stunt the social sciences.

Finally, the SSSM rests on an impossible psychology.

> "Results out of cognitive psychology, evolutionary biology, artificial intelligence, developmental psychology, linguistics, and philosophy converge on the same conclusion: A psychological architecture that consisted of nothing but equipotential, general-purpose, content-free mechanisms could not successfully perform the tasks the human mind is known to perform or solve the adaptive problems humans evolved to solve." (Tooby and Cosmides, 1992, pg. 34)

Outline

Sex differences in jealousy

According to Buss et al. (1992), jealousy evolved as an alarm warning a person to the potential infidelities of a partner.

The behaviour generated is supposed to reduce the possible fitness cost of reproductive investment. But there are sex differences in the possible cost:

Men: Parental investment in another man's offspring.

Women: A male's emotional involvement with another woman that leads to lost parental resources.

Evidence for sex differences in jealousy

The Buss et al. (1992) experiment

Instructions given to subjects

Please think of a serious committed romantic relationship that you have had in the past, that you currently have, or that you would like to have. Imagine that you discover that the person with whom you've been seriously involved became interested in someone else. What would distress or upset you more?

Evidence for sex differences in jealousy

The Buss et al. (1992) experiment

Dilemma 1

(A) Imagining your partner forming a deep emotional attachment to that person? [Emotional infidelty]

(B) Imaging your partner enjoying passionate sex with that other person? [Sexual infidelity]

	Survey sample								
	USA [31]	USA [32]	USA [33]	China [32]	N.lands [30]	Germany [30]	Korea [12]	Japan [12]	Avg.
Male	55	53	73	21	51	28	59	38	51
Female	32	23	4	5	31	16	18	13	22

Percentage choosing (B) as more upsetting in Dilemma 1. (Some data omitted.)

Evidence for sex differences in jealousy

The Buss et al. (1992) experiment

Dilemma 2

(A) Imagining your partner trying different sexual positions with that other person? [Sexual infidelty]

(B) Imaging your partner falling in love with that other person? [Emotional infidelity]

	Survey sample							
	USA [12]	USA [30]	USA [34]	N.lands [30]	Germany [30]	Korea [30]	Japan [12]	Avg.
Male	43	44	47	23	30	53	32	38
Female	11	12	12	12	8	22	15	13

Percentage choosing (A) as more upsetting in Dilemma 2. (Some data omitted.)

Darwinian evolution and attitudes towards offspring

Infanticide and the "Cinderella effect"

Daly (1989) argues that natural selection will cause parents to develop "mechanisms of discriminative parent solicitude" with respect to their offspring.

Darwinian evolution and attitudes towards offspring

Infanticide and the "Cinderella effect"

Why might the Cinderella effect exist?

Not all offspring are created equal.

Offspring which are more likely to survive should, therefore, received greater parental attention and support.

Why waste time and energy taking care of a child who is unlikely to survive and propagate your genes?

Darwinian evolution and attitudes towards offspring

Alexander (1979, pg. 109) [not me!] argues that selection would be expected to "refine parental altruism" as if in response to three questions:

1. What is the genetic relationship of the putative offspring to its parents? (I.e., is it really my kid?)
2. What does the offspring need? (I.e., will it convert parental support into grandchildren?)
3. What alternate investment possibilities exist? (I.e., what else might I be doing?)

Evolution and parental motivation

> "[A] perfectly adaptive parental psyche would be one that adjusted its willingness to expend [parential investment] of any sort in exact proportion to the magnitude of the doubt that parenthood was correctly attributed. In general, then, we may hypothesize that any evolved system of parental motivation is likely to include some unitary intervening variable [...] which has causal influence upon the whole gamut of parental activities. In the case of our own species, this intervening variable is child-specific parental love."
>
> (Daly, 1989, pg. 33)

An evolutionary explanation for infanticide

"These evolutionary considerations point to several predictors of mitigated parental solicitude: substitute parenthood, paternity doubt, poor phenotypic quality of the child (deformity), and a variety of circumstantial considerations that bode ill for child rearing, including poverty, famine, lack of social supports, and maternal overburdening from offspring too numerous or in too rapid succession. Review of the ethnographic literature on "infanticide" [...] indicate that the above list encompasses virtually all the circumstances in which parentally instigated infanticide is carried out in traditional societies."

(Daly, 1989, pg. 35)

How to confirm the theory

Prediction: Rates of maternal infanticide (of first-born children) should *decrease* as the age of the woman *increases*.

Reason: A child might reduce a young woman's marital and lifetime reproductive prospects. Yet the opportunity cost for an older woman is less. So an "evolved maternal psyche" should value the child according to the possible life courses comprised by its existence.

Purported empirical corroboration of the claim

Bugos and McCarthy (1984) found the predicted pattern in a tribal society (the Ayoreo) which frequently practiced infanticide.

Daly and Wilson (1984) also found the predicted pattern in Canada, where the overall rate of infanticide was significantly less than among the Ayoreo.

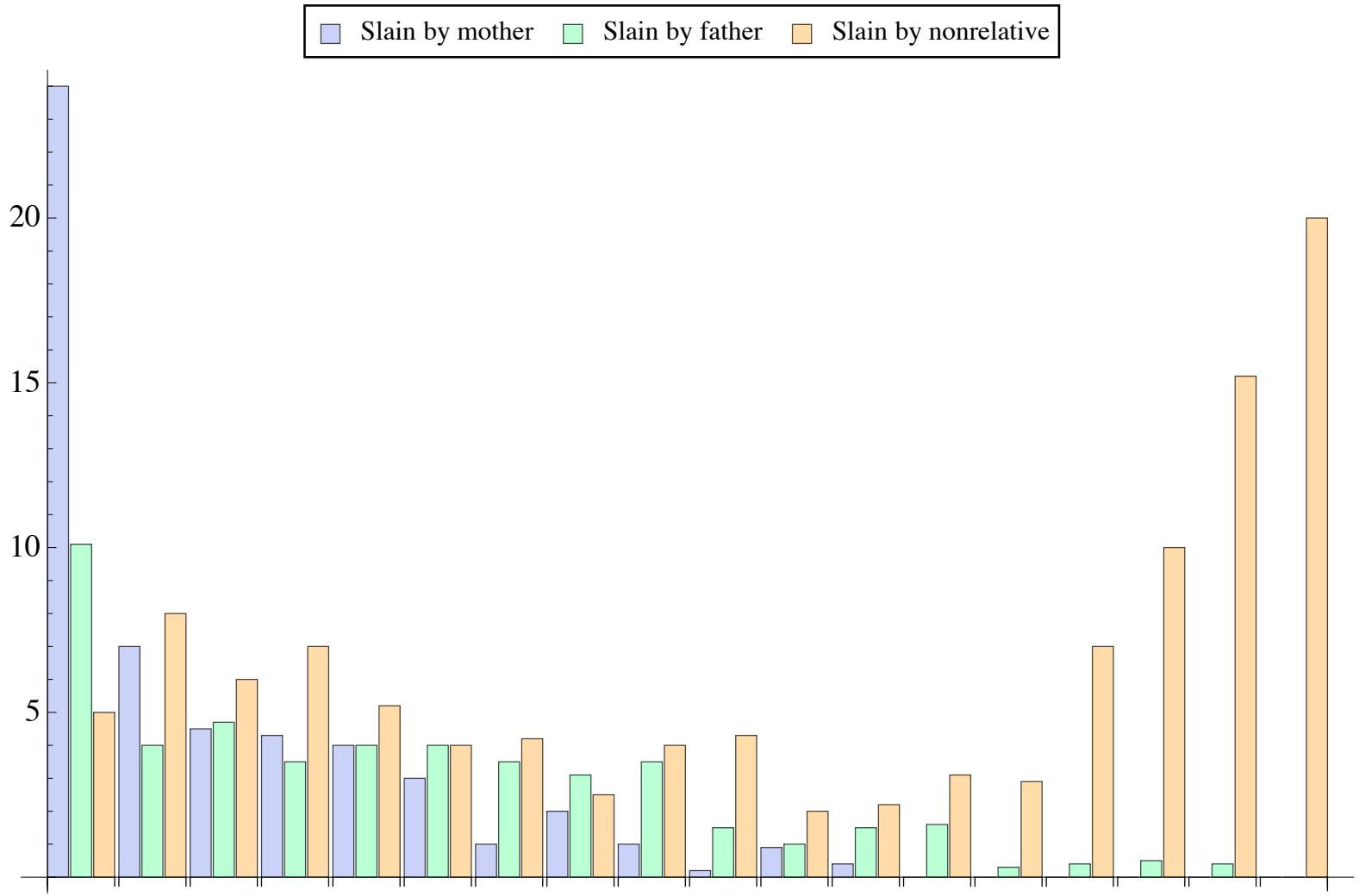
A later study by Daly and Wilson (1988) found the same pattern occurring in Canada, even when controlling for the marital status of the women involved. (Unmarried women were significantly more likely than married women to commit infanticide, but both groups exhibited the same trend.)

Further empirical support

Prediction: The rate of filicide should obey the following statistical laws:

1. It will decline as the age of the child increases. (And no decline should be found for homicides by nonrelatives.)
2. The rate of decline should decrease over time, with the greatest decrease occurring in the first year of the child's life.
3. "Filicides perpetrated by the mother may be expected to constitute a more steeply declining function of the child's age than those perpetrated by the father." (Daly, 1989, pg. 37)

Homicides per million children, per annum



The "Cinderella effect"

"Possibly the most obvious prediction from a Darwinian view of parental solicitude is that parental love will favor own offspring. Selection clearly penalizes those parental psyches that dispense their limited resources indiscriminately with respect to genetic relationship. These considerations raise the question of the validity of the Cinderella story. **Do stepparents resent, exploit, and mistreat their fictive children while nurturing their own?...the short answer is yes...**"

(Daly, 1989, pg. 38–9)

Evidence for the Cinderella effect

As cited by Daly and Wilson

- An American child living with one or more substitute parents in 1976 was roughly 1000 times more like to be fatally abused as a same-aged child living with genetic parents only.
- An English sample of "fatal battered baby cases" included 15 killed by stepfathers and 14 by genetic fathers although "the babies were so young that well under 1% would have been expected to have a stepfather."
- Similar patterns were found in Australia, Canada, and elsewhere.

Outline

Criticism of Tooby and Cosmides' argument

Indicative versus deontic conditionals

One problem with the argument of Tooby and Cosmides is that they seem to assume all conditionals have the same logical form. Compare:

1. If (it's snowing in Chicago)$_p$, then (my flight has been cancelled)$_q$.
2. If (you drive a motor vehicle)$_p$, then (you must have a valid driver's license)$_q$.

1. is an *indicative* conditional: $p \rightarrow q$.
2. is a *deontic* conditional: $p \rightarrow \Box q$.

Criticism of Tooby and Cosmides' argument

What a false conditional entails

Suppose

If (it's snowing in Chicago)$_p$, then (my flight has been cancelled)$_q$.

is false. What does this entail?

Answer:

(It is snowing in Chicago)$_p$ **and** (my flight has not been cancelled)$_{\sim q}$.

$$\sim(p \rightarrow q) \models p \wedge \sim q$$

Criticism of Tooby and Cosmides' argument

What a false conditional entails

In contrast, if the following deontic conditional is false

If (you drive a motor vehicle)$_p$, then (you must have a valid driver's license)$_q$.

this entails

If (you drive a motor vehicle)$_p$, then (you do not need a valid driver's license)$_q$.

$$\sim(p \rightarrow \Box q) \models p \rightarrow \sim\Box q$$

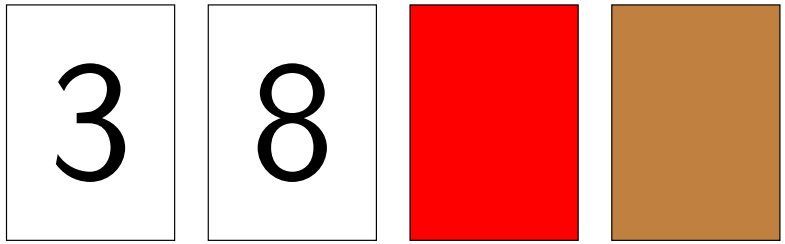
Criticism of Tooby and Cosmides' argument

The Wason selection task

Since the *logic* of deontic and indicative conditionals differs, Tooby and Cosmides are not justified in inferring that people's better performance on one is due to the existence of a special module.

Deontic:


Indicative:



Criticism of Buss's argument

Buss claims men focus on cues of sexual infidelity due to concern with cuckoldry. Women focus on cues of emotional infidelity due to concern of withdrawal of parental resources.

However, the data shows only *men care more about sexual infidelity than women do*.

What *needs* to be shown is that men care more about sexual infidelity than emotional infidelity, and the averages don't support this: only 51% in Dilemma 1, and 38% in Dilemma 2.

Criticism of Buss's argument

In addition, Buller (2005b) offers an alternate explanation: what really drives the survey data is people's views about what constitutes a greater threat to the relationship.

Numerous studies suggest that "female sexual infidelity is strongly correlated with dissatisfaction in the primary relationship, whereas male sexual infidelity is not."

Countries with more relaxed attitudes than America towards extramarital sex are much less likely to support Buss's hypothesis.

In any case, considerable cultural variation exists.

Criticism of Daly and Wilson's argument

To begin, what justifies the following inferences?

- That any evolved system of parental motivation is likely to include some *unitary intervening variable*. [Why unitary?]
- That the unitary variable for our species is *child-specific parental love*. (Even assuming a unitary variable, how do we know that is the one?)

Criticism of Daly and Wilson's argument

Concerns about possible sampling bias

Daly and Wilson rely on official reports. Why is this problematic?

- Clinical workers seek to identify child abuse by matching injuries with environmental risk factors.
- Child welfare professionals often take the presence of a step-parent to be partially diagnostic of whether a bruise or broken bone is the product of abuse.
- If being a step-parent is considered a risk factor but being a genetic parent is not, then abusive step-parents are more likely to be detected and hence over-represented in survey data.

Criticism of Daly and Wilson's argument

Concerns about possible sampling bias

Daly and Wilson reply:

> "[If there were a reporting bias], we would expect the bias, and hence the overrepresentation, to diminish as we focused upon increasingly severe and unequivocal maltreatment."
>
> (Daly and Wilson, 1988a)

> "At the limit, we can be reasonably confident that child murders are usually detected and recorded."
>
> (Daly and Wilson, 1999)

Criticism of Daly and Wilson's argument

Concerns about possible sampling bias

Independent studies in four U.S. States have shown that only 40–50% of all child maltreatment fatalities were recorded as such on death certificates or police reports.

However, careful analysis of U.S. records suggests maltreatment fatalities by "unrelated individuals" were over 8 times more likely to be recorded as such than maltreatment fatalities by genetic parents.

This reporting bias is sufficiently great so as to prevent Daly and Wilson from confirming their hypothesis.

Criticism of Daly and Wilson's argument

Concerns about sampling bias

Failure to identify source of violence. Daly and Wilson's data only identified the type of home abused children lived in. There is no way to identify which parent (in a family consisting of one genetic parent and one stepparent) actually committed the violence.

Contradictory surveys exist. A recent comprehensive study in Sweden, covering every case of child homicide that occurred in Sweden between 1975 and 1997, failed to find any such association. Temrin et al. (2000) report "children in Sweden living in families with a step-parent were not at an increased risk compared with children living together with two parents to whom they were genetically related."

Outline

The very idea of human nature

What, if anything, does evolutionary psychology teach us about human nature?

We must keep three things about the concept of human nature in mind:

1. It has always referred to what is *distinctively* human about us.
2. It has typically referred only to *biologically based* behavioural or psychological characteristics.
3. These biologically grounded characteristics have traditionally been assumed to be *universal* among humans.

The very idea of human nature

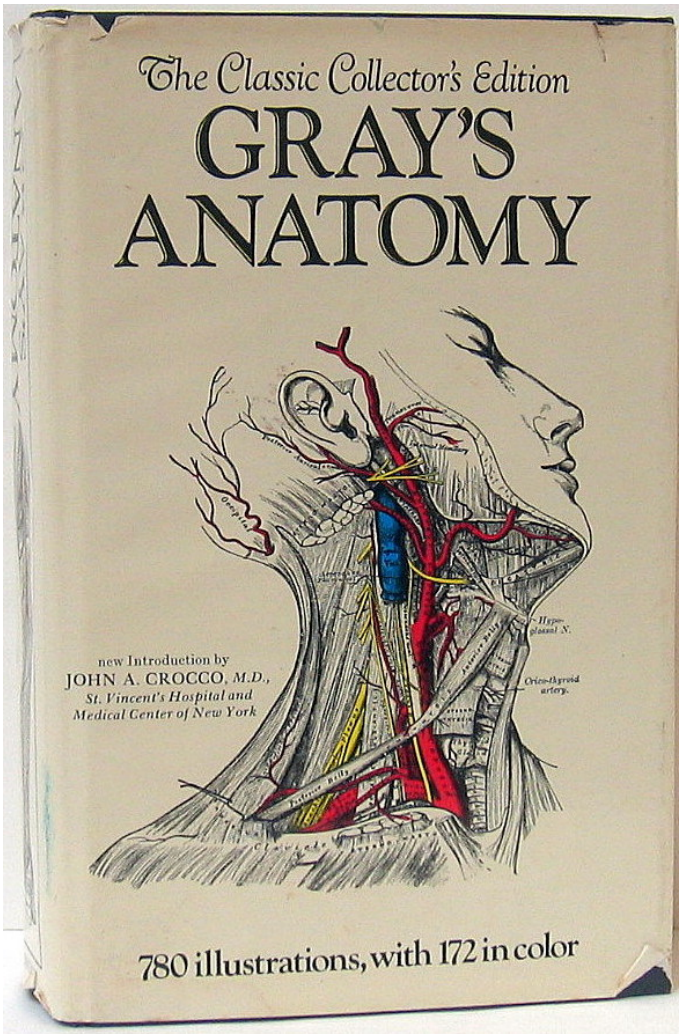
According to evolutionary psychologists, human nature consists of a set of psychological *adaptations* that are presumed to be *universal* among, *and unique to*, human beings.

This theory of human nature has a number of problems. Why do evolutionary psychologists find it compelling?

The argument from *Gray's Anatomy*

As argued by Tooby and Cosmides

"[T]he fact that any given page out of Gray's Anatomy describes in precise anatomical detail individual humans from around the world demonstrates the pronounced monomorphism present in complex human physiological adaptations. Although we cannot yet directly 'see' psychological adaptations (except as described neuroanatomically), no less could be true of them."



Problems with the argument from *Gray's Anatomy*

1. The analogy between anatomy and psychology is questionable.
2. "Uniformity at a coarse scale does not imply uniformity at finer scales."
3. Even though all humans have two eyes, two hands, and so on, it doesn't follow that similar universal adaptations emerged during recent human evolutionary history.
4. There is no single human anatomy and physiology possessed by all humans around the world, of which *Gray's Anatomy* provides a correct and detailed description.

A misguided appeal to essentialism

> "[W]hen Cosmides and Tooby claim that, 'by virtue of being members of the human species, all humans are expected to have the same adaptive mechanisms,' they are simply wrong."
>
> (Buller, 2005a, pg. 427)

Why? Their argument implicitly appeals to essentialism, a view unfounded for contemporary evolutionary biology.

Furthermore, species are, metaphysically, best thought of as *individuals*, not *natural kinds*.

Why should adaptations be privileged?

> "Thus, to see adaptations as central to human 'nature' in a way that nonadaptations are not — to see human 'nature' as consisting exclusively of adaptations — is to view the human organism through the theoretical prism of natural theology. It is to replace God with Natural Selection as the Creator, but to still maintain that the Creator's 'intention' as manifest in what was selected for, represents the 'nature' of our species, departure from which is 'abnormal'."
>
> (Buller, 2005a, pg. 476)

There is no human nature

"[I]f we learn to see ourselves as evolutionary theory teaches us to see ourselves, we will not be tempted by Evolutionary Psychology's theory of human nature. For we will learn to see our current adaptations — even if some of those are universal psychological adaptations — under the aspect of evolutionary time. When we do, we will recognize that evolution isn't finished with us yet, and our current adaptations will appear no more definitive of our 'nature' than past or future adaptations. We will then see why Michael Ghiselin says that evolution teaches us that human nature is a superstition."

(Buller, 2005a, pg. 480)

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