

The problems with evolutionary psychology

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Evolutionary robots? Credit: FWStudio

As evolutionary scientists, we devote much of our working lives to exploring the behaviour of humans and other animals through an evolutionary lens. So it may come as a surprise that [our show](#) at this year's Edinburgh Fringe is named Alas, Poor Darwin ...?, borrowing from one of the [most searing critiques](#) of evolutionary psychology ever

written. We've added a question mark, but still – it's no simple tale of how our minds evolved.

Evolutionary theory is a bit like a chocolate ice cream in the hands of a two-year old: it's going to get applied everywhere, but will anything useful be achieved in the process? The central tenets of [Darwinian theory](#) – variability, heredity and selection – are as beautiful as they are compelling. They completely revolutionised biology.

But applying these principles to the study of [human behaviour](#) has caused far more controversy. The evolutionary explanations for human behaviour that grab the headlines can often be neat; really neat – like tightly-plotted narratives in which everything works out perfectly in the end, usually with a guy getting a girl, where everything happens for a reason.

Real life rarely makes for such a neat story. We've all seen enough action movies to notice that the more satisfying the ending, the more plot holes you have to ignore as you walk out of the cinema. Neatness makes a good story, but it's not enough for good science.

Ovulation meets evolution

One [good example](#) of this problem is the story of how women's preferences for masculine male partners shift throughout the menstrual cycle in a strategic way. It goes like this: at the time of ovulation, when "good genes" are most important, women are attracted to more masculine men. For the rest of the [menstrual cycle](#) when faithfulness and cooperation are paramount, the opposite is true (we're glossing over some subtleties that are explained here).

In a similar vein, there's an elegant account of male violence. It says that men are more likely than women to behave aggressively everywhere in

the world because in the [Pleistocene epoch](#) (between 10,000 and 1.7m years ago), humans had a polygynous mating system, meaning one man mating with several women. The men who succeeded in aggressive competition with other men had more partners, and therefore more children, and so more of their genes got passed on.

These stories prompt some awkward questions. For example does a change in women's attraction have to be directly selected for? [Could it be](#) the by-product of some other evolutionary process? [Can we](#) be sure that the preferences reported in the lab by female undergraduates in 2015 are a good proxy for the real-life choices made by women 100,000 years ago? [What evidence](#) is there that our ancestors were polygynous? [What selection pressures](#) were acting on [women](#) while the men were all busy fighting? (Women's genes also get passed on to their children, in case anyone had forgotten.)

You begin to [find that](#) very accomplished scientists who know an awful lot about evolution and human behaviour disagree. [Vociferously](#). And there's a good reason for this: they're scientists. Destruction-testing of ideas is very much in the job spec.

The reality of scientific enquiry

In our own work we don't generally find neat, satisfying stories that are easy to tell, hard to critique, and make everything fall into place. We tend to end up with tantalising hypotheses, really interesting ideas that might be true but we haven't quite gathered the data to nail down beyond all doubt. We find theories that are dazzling in their elegance but multitudinous in their caveats.

We find that the mind steadfastly refuses to behave like a collection of perfectly adapted units, each with a single function that afforded a clear evolutionary advantage at some weirdly specific yet curiously under-

specified time during human evolutionary history. Instead the human mind seems to be full of compromises and by-products, highly flexible, and intricately intertwined with this weird thing called "human culture".

Yet having been drawn to [evolutionary science](#) for its extraordinary elegance and having found a thousand times more questions than satisfactory answers, we persist. Because if you expand your ideas about what "evolutionary" means – if you cease looking for the neat stories and embrace the fact that it's going to get very, very messy, you can start to get somewhere really interesting.

Culture and evolution [are not](#) opposites. Evolved [doesn't have to](#) mean adaptation. It might or might not mean "useful under some circumstances". (It certainly doesn't mean – and has never meant – good or right).

Refuting one evolutionary hypothesis about human behaviour doesn't invalidate all of them. That would be like saying that [evolutionary theory](#) is felled by the old question, "But if we evolved from monkeys, why are there still monkeys?"

Arguing about the how, when and why isn't a sign of science denialism, nor a reason to scrap the whole line of investigation – it's healthy disagreement and we'd like to see more of it. Being an evolutionary scientist is a bit like being [Dirk Gently](#): you might not get where you were hoping to go, but you'll probably end up somewhere it's worth being.

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