



ADVENTURES IN NORMAL BEHAVIOUR
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I learned a new word at the Wiko – the word is *normative*.

I'm a biologist who studies the evolution of animal social behaviour. I work on a few different organisms. For most of my career, I've studied an unusual and fascinating social mammal called the banded mongoose, but I've also worked on termites, wasps, and killer whales. I'm interested in the evolution of cohesion and diversity in animal societies: why some animal societies are egalitarian while others are despotic, why some individuals are more aggressive than others, and how altruism can evolve in a supposedly selfish Darwinian world. And of course I am interested in the evolution of our own unusual and often baffling social behaviour.

But here I was, newly arrived at the Wiko, surrounded by experts in human behaviour – sociologists, political scientists, philosophers, historians – and I kept hearing this word normative. This was a word I had rarely thought about, but now it was everywhere. Every time someone casually dropped it into a conversation, I'd spend the next minute or two distractedly trying to figure out exactly what they meant.

I confessed my ignorance to the philosopher Andreas Dorschel at dinner one evening. He explained using his knife and fork. You could place them like this, or like this, he said, and that would be perfectly useful. But everyone places them like this – that's normative. "So normative is behaving according to the rules?" I asked. Andreas smiled patiently and said there are whole books written about the meaning of normativity, but yes I could think about it as rules based on shared values, a shared appreciation of what is good or bad, right or wrong. The values themselves might be enacted every day – as in the knife and fork example – or they might be mere aspirations. The rule "If someone slaps you on the right cheek, offer him the other" is a norm that many might aspire to, but no one would ever do this really, would they?

This idea of shared rules or values that operate behind the scenes to shape behaviour is of particular interest to me because I spend a lot of time watching animal behaviour and trying to understand the social rules they might be using. For example, one of my study organisms is a paper wasp that forms small groups of four or five females who cooperate to build a nest (Cant and Field 2001). All of the females are fertilised and could lay eggs themselves, but only the top-ranking female does so; the rest form a queue to inherit her position, should she die for some reason. We have used experiments to uncover some of the rules that these animals follow. One such rule is "Reduce how hard you work as you move up the queue to inherit" (Cant and Field 2001). Another is "When you inherit the nest, treat your subordinates more aggressively if you were treated aggressively yourself" (Thompson et al. 2014).

Or another example: In one of the wonderful interdisciplinary discussions organised by Daniel Schönflug, Wiko's Academic Coordinator, I showed my colleagues a video clip (https://www.youtube.com/watch?v=VQr8xDk_UaY) of a Japanese puffer fish in which breeding males use their bodies to sculpt elaborate circular designs in the sand on the ocean floor, topped off with delicately placed seashells. These constructions are visited by females who, if sufficiently impressed, lay their eggs in the centre for the male to fertilise, and subsequently, look after her brood. At one point, over footage of a male working away at his design, the voice-over says, "In his head is an object of mathematical

perfection.” But whose head, I asked, contains the mathematical perfection? Is it his, or hers? The artist, or the art critic? And isn’t this normative behaviour in just the same way as the knife and fork laid out carefully at the dinner table?

Well, not quite, said some of the Fellows. Humans use their capacity for language to establish and disseminate their current set of norms and can change those norms overnight if they so choose. By contrast, the rules employed by Japanese puffer fish in the construction and assessment of artwork are presumably genetically encoded, hard-wired into the brains of both males and females. These seem to me like differences in degree rather than kind, however. Chimpanzees and paper wasps quickly learn a norm to respect social rank because they get beaten up if they fail to act submissively to a dominant. They are quick to adopt new, less submissive norms if a new leader takes over who is vulnerable or unable to enforce discipline. These animals are born with brains that are predisposed to learn the flexible rules of the societies they inhabit.

Human norms may be different from animal rules in other respects, however. One morning I mentioned to the philosopher Christel Fricke that I’d been upset and annoyed for a few days because someone had been mean to me. You’ve suffered a moral wound, she said. You’ve spent the weekend in the normative sphere – questioning whether you are justified in your anger, reassuring yourself of your right to feel wronged. Animals don’t do that, said Christel.

This is a good point. Most of us do spend a great deal of time engaged in moral modelling and self-reflection, but I don’t think animals do; not least because they don’t have time to. Again, however, I suspect this is merely a cognitive elaboration of our ancient hominin brains. The search for self-justification that had occupied my weekend was all very diverting but also very much after the fact. I don’t know what a chimpanzee thinks after it has been attacked, but perhaps something not so different from my own urge to retaliate, an urge quickly (and normatively) suppressed. The neural architecture that generates our normative sphere is the result of our long evolutionary history of life in close-knit groups composed of friends, relatives, and enemies, filled with risk and reward, opportunities for cooperation and conflict. Not so different, in other words, from the other animals I study.

In my year at the Wiko I published a study that I think illustrates how research on animal societies can yield potential insights into patterns of human behaviour that seem to be firmly in the normative sphere (Marshall et al. 2021). Across a range of traditional and industrialised societies, humans are found to possess a strong fairness norm – by which

I mean a preference for equality and sharing. Other mammals (e.g. capuchin monkeys, chimpanzees, dogs) show signs of annoyance or frustration when presented with inequality that is disadvantageous to themselves. But only humans typically pay costs to redress inequalities that place them at an advantage. In young children, for example, focal subjects sacrifice rewards to achieve equality with a social partner, whereas chimpanzees presented with an equivalent task do not (Ulber et al. 2017).

How did this fairness preference evolve? One theory is that fairness preferences evolved because of human reliance on cooperation in an uncertain world. Individuals that are successful in finding food or avoiding a predator today might not be so lucky tomorrow, so a preference for fairness and reciprocity can benefit everyone in the long run. The underlying logic is very similar to the philosopher John Rawls' famous "veil of ignorance" concept which was proposed as a theoretical mechanism to achieve fairness in human societies (Rawls 1971). Where decision-makers are ignorant or uncertain about their own gains, they should allocate resources for the good of society rather than themselves, typically reducing inequality. This is why, for example, a norm for U.S. presidents is to place their assets into a blind trust, to ensure that they make decisions in the interests of the country as a whole, not their own personal gain.

Our study tested whether a veil of ignorance can play the same role in promoting cooperation in a non-human cooperative species, the banded mongoose. One of the many unusual features of banded mongoose society is that multiple breeding females in each group (five, on average) synchronise birth to exactly the same morning. This remarkable birth synchrony appears to mix up cues to maternity among the communal litter, creating a veil of ignorance over parentage of offspring. Using a theoretical model, we showed that in these circumstances, from behind a veil of ignorance of parentage, mothers in good condition should focus their effort on caring for those offspring that are most in need. The predicted outcome is a redistribution of resources to level up inequality among the offspring.

We tested this prediction by giving half the pregnant females in each of our mongoose group extra food during pregnancy (35g boiled egg per day), leaving the other half of mothers as controls. Altogether we fed 101 mothers, and 97 unfed control mothers. As we suspected, fed mothers subsequently gave birth to larger offspring and the mothers themselves were in better condition after birth. But these females then directed almost all of their care at the smaller offspring of control females, not their own young, which levelled out the initial size differences between offspring and equalised their chances for survival

to adulthood. As predicted by our model based on the veil of ignorance, those most able to help offered it to the most needy, and in doing so minimised the risk that their own offspring would face a disadvantage. The paper attracted lots of media attention. One news article put it succinctly: “Rawlsian mongooses solve inequality problem!”

This research shows how simple experiments on wild animals can reveal new insights into the mechanisms of social evolution in general and the possible ancient origins of normative behaviour in humans in particular. Game-theoretical economic models designed to understand rational human behaviour often turn out to be even better suited to other animals, because natural selection (usually) favours rational or fitness-maximising behaviour, whereas we all know how irrational humans can be. Our study highlights also that in animal societies (including the societies of *Homo sapiens*) what counts as fitness-maximising behaviour is not necessarily selfish. Sometimes the Darwinian answer to life’s challenges is fairness and altruism.

All of this, I hope, conveys something of the intellectual thrill of my year at the Wiko. I was pleased to have achieved some of the goals I set myself, but even more excited to have discovered many new ones along the way. The Wiko enabled me to zoom out to appreciate a much broader world of human inquiry, to find a new sense of comradeship and shared endeavour with artists, scientists, historians, and philosophers. I am proud to have met such remarkable and inspiring colleagues, who were always generous with their time and knowledge. And of course I am proud to have learned my new word.

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