

Violence is relative

It wasn't me mum, the fig tree made me do it

IT'S GENERALLY agreed that it is bad to kill your brother. Mothers worldwide advocate this point of view. But this isn't so if you happen to be a fig wasp.

These tiny little insects have life-cycles dependant on the fruits of the fig tree, which acts as home. No human landlord could possibly condone the licentious activities performed within the cushioned walls of the fig. Adult female wasps lay their eggs in the developing fruit and then die. After the appropriate length of time, young wasps begin a two day carnival of brawling and (probably incestuously) mating. At the end of this Bacchanalian event, the females leave the fig and disperse, and the cycle starts again. The ripened fig will fall, filled with dead males.

The males pose an interesting problem for evolutionary biologists: they often kill their own relatives. This seems to go against the standard idea that animals are willing to help their relatives at their own cost, sometimes even to their death.

The basic scene of the fig wasp's dilemma may well be familiar to humans. Think of those stormy school holidays, shut up in close confines with siblings: a recipe for a fight across the taxonomic boundaries. One TV and two sisters is enough to bring out anyone's violent streak. My mother always told me to be nice to my sisters. I thought at the time she just wanted some peace and quiet. She was actually thinking genetically, trying to teach me Hamilton's Rule of Inclusive Fitness.

What Hamilton (and my mother) was saying was that it's beneficial for an animal to put himself out for a relative if it means that that relative has a better chance to produce more



THE JACKSON BROTHERS: If only they were fig wasps

or healthier offspring, because the altruist's relatives carry its genes.

The chances of an animal showing altruism depend upon how closely related the two individuals are. So, it is good to help your cousin, as his children may have your genes, but it is even better to help your brother, as his children are more likely to have your genes. Thus, your genes are indirectly passed on to the next generation: success! High relatedness is often found in populations of

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animals that do not disperse far from their families, due to increased levels of incest.

This is partly dependent on dispersal, ie how far you venture from the nest. With limited dispersal, there is more competition, and it is your own relatives you are competing with.

Remember our little fig wasp friends, who

aren't very nice to their brothers? A recent study at Edinburgh University showed that non-dispersing male fig wasps will fight for females regardless of how related they are to their opponents. If the stakes are high enough, family values mean nothing: you are more important than your brother.

It is only beneficial for an animal to show kindness to a relative if - after the altruistic act - the two individuals move out of competition with one another, usually by moving to a different area. Consider human families. While siblings live together, there is competition. Once you have all gone to university, you move out of direct competition with one another. Knowing she was going to a city far, far away, you could afford to indefinitely 'lend' your favourite top to your sister, as this may improve her fitness at the cost of her new competitors. Yet while you lived together, her wearing the sexy sequined number would still increase her fitness, and at a cost to you: she would be getting the attention you deserve. Bitch.

So what happens when brothers fight brothers? Assuming that increasing an individual's fitness (the chance of successfully passing genes on to the next generation) comes at an equal cost to the fitness of his competitor, helping is futile if the altruist is equally related to the beneficiary and the competitor. Genetically speaking, why step on one brother to lift another higher?

Animals cannot always consider their relatives in the struggle to survive; brotherly love cannot conquer all.

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