

## Sticks and stones

*Rooks, which do not use tools in the wild, can make and use them in the lab.*



*Nature Picture Library*

Finding animals that engage in the human activity of tool use has become a bit of a cottage industry. Chimpanzees, orang-utans, monkeys, various birds and even some insects can manage it. Finding a species that can use tools but doesn't is, however, a surprise. But that is what Christopher Bird and Nathan Emery of Cambridge University have done. As they report in the Proceedings of the National Academy of Sciences, they have discovered that rooks, which have never been seen to use tools in the wild, can learn to use them, and even make them, in the laboratory.

The basic task Dr Bird and Dr Emery set their rooks was to recover a tasty morsel called a waxworm. This was placed on an out-of-reach platform that could be brought within reach by dropping a stone, or pushing a stick, down a tube. In the first experiment, the rooks were presented with the apparatus (which they had never seen before) and left to get on with it. Not all of them worked out what to do, but four that did were selected and tested with more and more sophisticated versions of the task.

First, they were given stones of different sizes. When all these stones would fit down the tube, every bird preferred the biggest stone. If a narrower tube was used, though, the birds seemed to realise the significance of the change and picked a smaller stone, usually without trial and error. They were even able to do this when the stones and the apparatus were out of sight of each other.

Next, the experimenters substituted sticks for the stones. The birds worked this one out, too. Given heavy sticks, they just dropped them into the tubes as they did with stones. Given lighter ones, they realised they had to hold on to the stick and push down on the platform. When presented with a stick and a stone, they also picked the right tool for the job. Given a long stick and a stone too big to fit down the tube, they chose the stick without hesitation. Given a stick too short to be useful, and a stone of the right size, they chose the stone. They were even able to use a stone of the wrong size to release one of the right size, which they then used to get the waxworm, and, more remarkably still, to prune twigs off a stick to make it fit the tube.

On top of all this they were able, in a different sort of test, to bend a piece of wire into a hook to retrieve a bucket containing a waxworm. These last two tasks—stick modification and hookmaking—are equivalent to the sort of tool construction that chimpanzees engage in when they go "fishing" for termites in their nests. And, although New Caledonian crows, which also make tools in the wild, can manage the hookmaking trick, wild rooks are tool-using virgins.

The upshot is that toolmaking, at least in crows, does not look like a specifically evolved ability but rather an extension of general intelligence. Perhaps wild rooks are not presented with a

need to use tools, and so don't bother. What this implies for the evolution of human toolmaking is unclear. But it puts a new spin on the phrase "bird-brained".

STICKS and stones. **The Economist**, May 28, 2009. Disponível em: <[www.economist.com](http://www.economist.com)>. Acesso em: 3 jun. 2009.

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