

# A little bird tells us

Magpies may have a lot to teach people about the art of speech, **Nyssa Skilton** reports

**A** magpie warbles at the breaking of a new day. The sound, synonymous with the Australian bush, could unravel the mysteries of how humans speak.

More importantly, the sound could hold the key to reversing speech loss. Professor of animal behaviour Gisela Kaplan, of the University of New England in NSW, visited Canberra last week to speak at an international conference of the Australian Neuroscience Society. She presented evidence of the remarkable similarities between the way baby magpies learnt to sing and the way baby humans learnt to speak.

“Magpies actually follow the same stages of babbling as human infants,” Kaplan says. “It tells us that we have very similar features in the structure of the brain, and the same capacities.”

Kaplan says babbling is a higher cognitive ability. It is the initial attempt to shape sounds into something that equates to more than just noise. As babies grow older, their babbling sounds more like the language that surrounds them. Kaplan has observed the vowel sound that develops first in magpie babies is “a”, which is the same one that develops first in human babies. This suggests vocal developmental stages progress in an order, which is not necessarily species-specific.

Kaplan grew up in Europe, mainly Berlin, before moving to Melbourne in the late 1960s.

She has studied magpies for almost 15 years and is author of *Australian Magpie: Biology and Behaviour of an Unusual Songbird*. Her observations in the book are based on an average of 1200 hours a year over eight years of 42 hand-raised magpies and almost 150 others in research sites including Armidale and the New England Tableland in NSW. She describes magpies as one of the “foremost songbirds in the world”.

“I love working with magpies. They’re just wonderful, wonderful birds,” she says, her hands clasped together like a little girl’s. “They’re highly intelligent, they have a wonderful memory and they negotiate.”

Kaplan recalls the reaction of a flock of magpies after she built a bird-watching hide to try to study them in close proximity. “The

magpies came in and inspected my hide. They flew up to the inside of the hide and looked through it and suddenly they turned around and they were very angry,” she says.

“They ripped the entire hide apart. For an animal to have that kind of thought process, to look inside a hide without any provocation, suddenly get angry and rip it apart, then I don’t know. . . I think there’s a lot more going on in those brains.”

Magpies have a life expectancy of about 25 years. They eat small insects and animals and a favourite treat is the scarab beetle, which is a major pest of garden lawns. The birds are not aggressive for most of the year, but for four to six weeks during breeding season, they will defend their territory, swooping and occasionally striking with their beaks or claws. Despite studying magpies extensively and often at close proximity, Kaplan says she has never been swooped, “not once, ever”.

And she doesn’t wear spiky hats or draw eyes on the back of her head. She treats them with respect, taking a wide berth of nest sites when she first approaches and bribes of minced meat.

“I face them and say, I’ve come here as a friend,” Kaplan says. “You treat them with respect and you show them you come as a friend. They have as good a memory as elephants probably. Then they would address your intentions very carefully and once they have decided you are a friend, not a foe, then that would be for life.”

Kaplan is about to publish a study revealing the complexities behind magpies’ carolling.

The study shows magpies have the beginnings of a lexicon, where signals are known references. For example, people understand the word “table” refers to a flat surface propped up on legs. Kaplan has shown in the same way magpies understand a specific call to mean “eagle”.

“That’s the beginning of speech, and we do have that in magpies,” she says. What’s more surprising is that magpies across different subspecies and states appear to understand the same calls. Kaplan identified a magpie’s call that meant “eagle” and recorded the sound. “It’s a very painful, slow process to eliminate all other possibilities, so there are a lot of



Professor of animal behaviour Gisela Kaplan, above, says there are remarkable similarities between the way baby magpies learn to sing and the way baby humans learn to speak.

Photos: Richard Briggs and Fairfax

experiments – it takes years,” she says. “I’ve done this for five years now and we’ve finally got proof.”

She played the noise from a speaker on the ground to magpies

living far from where she originally recorded the sound. When the speaker called out from the ground, the birds looked straight to the sky.

“If they were responding just to the stimulus, they should’ve looked down and inspected the speaker, but they didn’t. They looked up, which is absolute proof they expected something in the sky.

“There was a cross-state-level language for ‘eagle’ in magpies. That’s quite remarkable.” Magpies have been known in many cases to befriend humans. They often

venture on to back porches and even into open kitchens and can form long-lasting friendships.

Kaplan describes in her book the response she has from Australians after she gives a radio or television interview on magpies. On every one of these occasions, she writes, the interview generates a spontaneous stream of letters and emails for several months afterwards.

One Canberra man rang Kaplan to tell her a group of magpies were “holding court”. He described how a large group of magpies stood in a

semi-circle, facing a single magpie. The magpie looked scared, but did not attempt to fly away. Each of the birds in the semi-circle then stepped forward to peck the individual. When they each finished, they flew away, leaving the severely injured bird behind.

Kaplan had no definitive explanation for the behaviour, which took place two times.

Magpies are an important model for understanding vocal communication and learning, because they sing all year round.

Other researchers in Europe and North America study seasonal singers for insights into human vocalisations, but Kaplan says there’s an important difference. Humans speak all year round. Also, in many other birds, singing is confined to males for mating purposes. “Not all human speech is for mating purposes – I don’t think,” Kaplan chuckles. “You’re not actually comparing like with like, so there are functional differences.”

Kaplan uses the similarities to try to better understand how humans

can talk and how speech loss may be repaired. While humans and birds have similar vocal systems, birds can do something humans can’t. They can repair damage to their vocal systems. If a bird has an auditory impairment or loses vocal function, it can repair it and regain its function.

The question is how.

“If we knew the answer to that, there wouldn’t be a single stroke victim with speech loss,” Kaplan says. Theories of how birds may repair damage involve a kind of

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**1.** What does the word quark (a subatomic particle) rhyme with: cork, work or bark?

**2.** Are sunspots warmer or cooler than the rest of the Sun’s surface?

**3.** What am I? I can grow over 36m in length and 2.3m in diameter. I am a marine animal. I have no brain and I have no skeleton. I have a polyp and a medusa stage in my life cycle.

**4.** Which ocean zone is closer to the surface; pelagic or benthic?

**5.** Within State, Territory and Commonwealth waters, can marine protected areas include shipwrecks?

**Answers:** **1.** According to the man who coined the word, Murray Gell-Mann, it rhymes with cork. **2.** Cooler. The average solar surface temperature is about 5800 degrees Celsius whereas the average sunspot burns at a mere 3800 degrees Celsius. **3.** The lion’s mane or Arctic giant jellyfish, *Cyanea capillata*. **4.** Pelagic. Benthic zones are those closest to the sediment layers of any body of water. **5.** Yes.

brain plasticity, where other neurons in the brain take over the function of the damaged area. But researchers don’t know what signals are involved in making certain neurons migrate to areas that are damaged and what makes them take on new functions.

Kaplan plans to continue to study these birds, hoping one day to unravel some of the mysteries behind their song. Does she ever get sick of magpies? “How could I?” she says. “Every time I have a finding, it raises 10 more questions.”