



GOING APE OVER APPS

Touch screens and iPads are revealing how primates think. Could they soon let animals communicate online like people?



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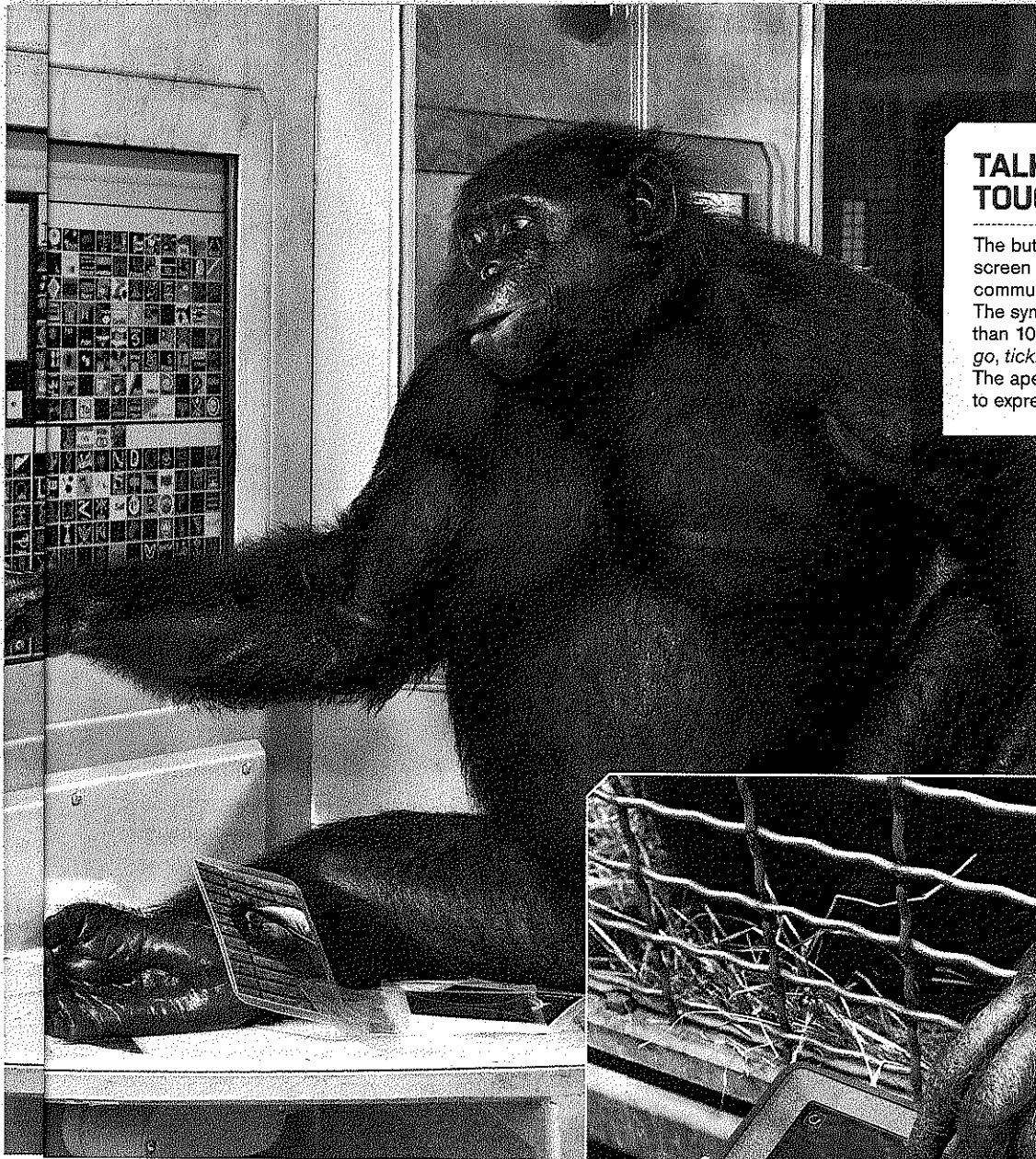
Jingga leans forward and scrolls through pictures on an iPad, her long, reddish-brown hair framing her face. She's keeping an eye out for photos of adorable puppies and kittens, which are some of her favorite things to look at.

Lots of us spend time looking at cute baby animals online. But Jingga isn't just any redheaded girl. She's an orangutan at the Toronto Zoo in Canada.

"The orangutans love baby animals," says Suzanne McDonald, a professor who studies animal behavior at the zoo. "It's funny because they've never even seen a puppy or kitten. But just like us, they can't resist looking at them!"

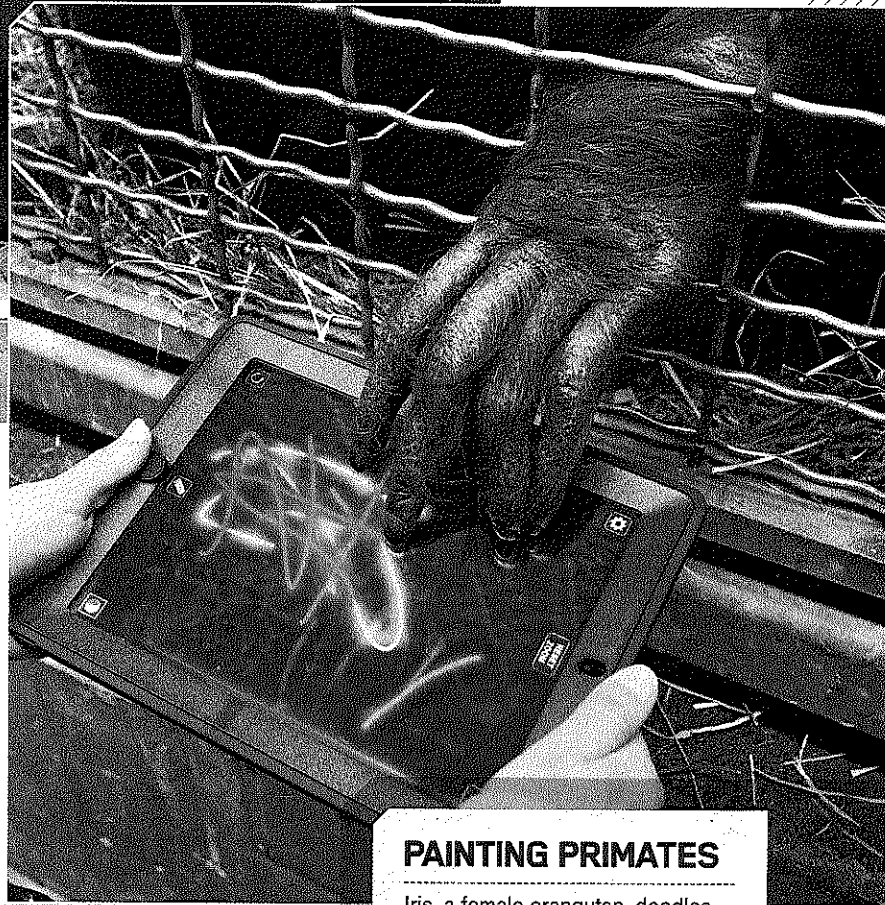
McDonald has used touch screens to learn about animal minds for over a decade. As technology has advanced, touch-screen programs have become a quick and inexpensive way for scientists to design many kinds of experiments. McDonald lets orangutans choose what pictures to look at so she can observe their likes and dislikes.

She quickly learned that orangutans love pictures of big-eyed baby animals. She also found that some young males don't like photos of older and bigger male orangutans. McDonald suspects they're intimidated by them. One young male got so scared he leapt back several feet and grabbed a stick. "After that he refused to use the screen without a stick for protection," says McDonald.



TALKING ON TOUCH SCREENS

The buttons on this touch screen help bonobos communicate with people. The symbols represent more than 100 words, including *go*, *tickle*, *dog*, and *burrito*. The apes can use the screen to express simple phrases.



PAINTING PRIMATES

Iris, a female orangutan, doodles on an iPad using a painting app called "Glow Draw." Iris lives at the National Zoo, in Washington, D.C.

ITUNES FOR ANIMALS

Recently, McDonald has been using touch screens to learn how apes listen to music. She wanted to teach orangutans to use a music app so people and apes could experience music together. It would be like selecting a playlist and sharing headphones with a friend.

McDonald designed a music program and began showing the apes how to use it. She taught them color codes for different kinds of music. A red screen corresponded to rock music, purple meant kids' songs, green meant country, and gray meant silence. The apes could scroll through the colors on their own and pick whatever music they wanted to listen to.

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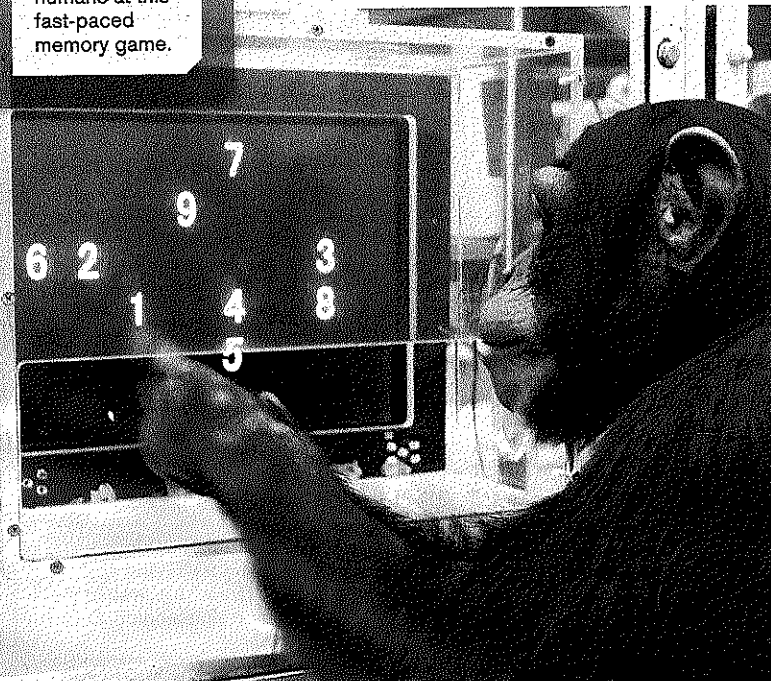
FAMILY FUN

A female orangutan named Puppe (*right*) explores an iPad memory app with her son Budi at the Toronto Zoo in Canada.



WINNING MEMORY

The chimp Ayumu is better than most humans at this fast-paced memory game.



But when McDonald put the touch screen in front of the animals, she was shocked by what happened: The orangutans almost always preferred silence to listening to music.

"When you give them a choice, they almost always choose to turn the music off," says McDonald. "Then they walk away."

She thinks the reason is that orangutans can't tell the difference between music and noise. To test this idea, she offered apes a treat for selecting a song instead of scrambled music, which just sounds like noise. But the apes still couldn't tell the difference.

"We've run the test thousands of times, and no matter what we do, they can't hear the difference between music and noise," says McDonald. "From a zoo standpoint, that's really important. Almost every zoo in the world plays music because they think the animals like it, but it now seems the orangutans prefer to turn it off."

CHIMP CHAMPIONS

At Kyoto University in Japan, a chimpanzee researcher named Tetsuro Matsuzawa created a memory game for chimpanzees to play on touch screens. The game works like this: A computer randomly puts numbers 1 through 9 around the screen. The chimps start by touching the number 1. Then white blocks cover the other numbers on the screen. The chimps have to touch the white blocks in the correct numerical sequence to receive a small chunk of apple.

Thirteen-year-old Ayumu is very fast. He can memorize the numbers' locations in 0.6

seconds. He's correct about 80 percent of the time. Two other young chimpanzees, Leo and Pal, perform similarly. Human subjects can do the task too, but it takes as long as 10 seconds to memorize the numbers' locations. If the numbers appear for only 0.6 seconds, humans get zero percent correct.

Matsuzawa thinks chimps might have a *photographic memory*, which allows them to memorize an image the instant they see it. This may have evolved so they could remember where food, water, and shelter are located in dense jungles.

BEATING BOREDOM

You might use an iPad or phone to entertain yourself during long bus rides or boring TV commercials. Apes can get bored too. They're some of the most intelligent animals in the world, so when they're kept in captivity without challenges like finding food or protecting themselves from predators, they can easily become restless and unhappy.

When the iPad first came out in 2010, orangutan activist Rich Zimmerman thought it could be a great tool for providing apes with *enrichment*. The iPads could challenge them with new games, sounds, and puzzles. Zimmerman founded Orangutan Outreach, a conservation organization based in New York that helps save orangutans threatened by hunting and large-scale *deforestation*, the clearing of forests where the apes live.

When an Orangutan Outreach supporter showed his iPad to orangutans at the Milwaukee County Zoo, "they totally dug it," says Zimmerman. "They loved watching videos and were fascinated by a bubble app where you burst bubbles by poking at them."

Soon after, people began donating iPads to Orangutan Outreach, which distributes them to zoos all over the U.S. so apes can play with them.

INTERNET FOR ANIMALS

Zimmerman's next big goal is to arrange Skype calls so orangutans can video chat with friends and relatives at other zoos. Many orangutans are separated from family when they're moved for breeding. Skype will allow apes to communicate with friends and relatives they miss.

Skyping orangutans might sound far-fetched, but someday animals could have even more-advanced computer skills than that. Recently Vint Cerf, a scientist who helped create the Internet, teamed up with British rock star Peter Gabriel and two research scientists to develop a project called the Interspecies Internet. The goal is to use touch-screen technology to allow all kinds of animals to communicate with each other online. Already some of the most intelligent ones—humans and other primates, dolphins, and pigeons—are using touch screens (see *Creatures on Computers*, below).

"The idea is all creatures should be able to communicate using the right technology," says Zimmerman. "Now that it exists, let's see what animals do with it." ✨

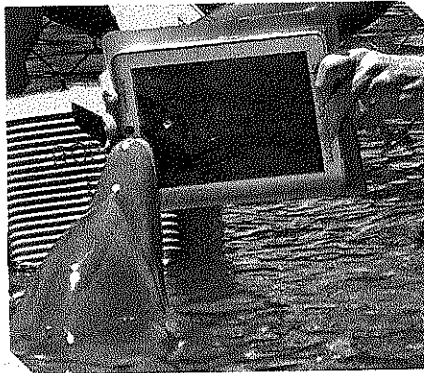
—Amy Barth

CORE QUESTION

How are touch screens helping people understand animals? Use at least three examples from the text to support your answer.

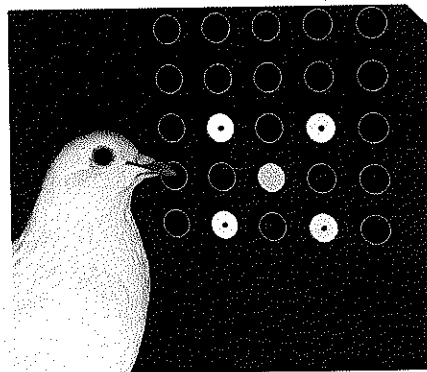
CREATURES ON COMPUTERS

Primates aren't the only animals using touch screens. Scientists are starting to give them to other intelligent creatures as well.



DOLPHIN DATA

A dolphin named Merlin uses an iPad in Mexico. Researchers show Merlin real objects and ask him to touch the same object's photo on the screen. The touch screens may improve communication between dolphins and people.



PIGEON PROGRAMMING

At the University of California, Los Angeles, scientists use a touch-screen game to learn how pigeons understand patterns. When the pigeons peck at the correct disks, they get a treat.