**Some Scientists Argue
We Are Built to Coo
At the Sight of a Baby
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We are drawn to a baby face, whether or not we claim to like children. Our brain can't help itself. Our neurons reflexively respond to an infant's big eyes, broad forehead, button nose and tiny chin, University of Oxford researchers recently reported in the online journal PLoS One.

Using a technique called magneto-encephalography that measures brain signals, the Oxford researchers found that a baby's face can seize our attention in milliseconds, activating an unusual mental organ called the *fusiform gyrus* that responds to human faces. Moreover, these distinctive infant features, unlike the mature features of an adult, trigger a sense of reward and good feeling in a seventh of a second. Picture Bambi's saucer-size eyes or those of Mickey Mouse.

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| [baby] |
| Getty Images  |

The researchers concluded that the parental instinct is present in all of us. "It suggests we are probably all hard-wired to respond and care for babies, to help us perpetuate the species," said Oxford child psychiatrist Alan Stein, who helped conduct the experiment. "The response to an infant face is too fast to be under conscious control."

If so, where did brain cells and synapses learn anything about a face? The question goes deeper than surface appearances. Our ability to distinguish faces deftly is central to a debate about the anatomy of knowledge.

"Why do we have special regions of the brain for some higher-level abilities but not for others?" asked neuroscientist Nancy Kanwisher, who studies visual perception and cognition at MIT's McGovern Institute for Brain Research. "Are they innate? Are they learned?"

Many scientists, in fact, remain convinced that the brain's intimate knowledge of faces is a byproduct of its ability to capture the visual essence of any object. "You can show that parts of the brain most selective for faces are also responsive to cars in a car expert and birds in a bird expert," said psychologist Isabel Gauthier at Vanderbilt University.

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Is our ability to recognize faces innate or is it simply a byproduct of our ability to capture the visual essence of any object? Share your view in [an online forum.](http://forums.wsj.com/viewtopic.php?t=2014)

So far, researchers have found four clusters of expert brain cells. One responds to faces; another just to places; a third to body parts, such as feet, knees, elbows and hands. There also is brain tissue devoted just to the visual appearance of written words -- and that intrigues researchers on both sides of the debate, because humanity hasn't been reading or writing long enough for evolution to lend a hand. "Letters and words could not be innate," Dr. Gauthier said.

That suggests something fundamental about the flexibility of the mind. Nature and nurture work together to shape our perceptions.

**RECOMMENDED READING**

![[Books]]()Testing our attraction to baby faces, [Oxford University researchers writing in PLoS One](http://www.plosone.org/article/info%3Adoi/10.1371/journal.pone.0001664;jsessionid=2313D2955CE23FC76621D4498E0B92E3) reported the neurological signature of a parental instinct.

In 2006, [neurobiologists at the University of Bremen reported in Science](http://www.sciencemag.org/cgi/content/abstract/311/5761/670) that, among primates, the brain's face recognition area is made up of neurons that only react to faces.

A recent experiment with monkeys suggests that the basic ability to discriminate faces can develop even if we never see a face while growing up, [researchers in Japan reported in The Proceedings of The National Academy of Sciences](http://www.pnas.org/cgi/content/abstract/105/1/394).

In [The Face: A Natural History](http://www.amazon.com/Face-Natural-History-Daniel-McNeill/dp/0316588121), science journalist Dan McNeill looked in the mirror of the human face to consider, among other things, why people developed their characteristic facial features and why most of us find certain features more appealing than others.

Monty Python comedian John Cleese and naturalist David Attenborough narrate [a four-hour BBC series called The Human Face](http://www.amazon.com/Human-Face-John-Cleese/dp/B00005LC1B) which explores the evolution of facial features, the face's role in sexuality, communication through facial expressions, and its part in defining identity.

To our eyes, every face is a unique volume in the library of human nature. We read its language of expressions at a glance, fluently translating a curled lip, raised eyebrow or averted gaze. "There are billions of faces in the world, and we can recognize them all and tell them all apart," said UCLA neuropsychologist Susan Bookheimer.

On average, the brain takes only 200 milliseconds to tell one face from another, responding swiftly and selectively to cues of gender, ethnicity and identity, University of Southern California scientists reported recently in the Proceedings of the National Academy of Sciences.

So attuned are we to the pattern of eyes, nose and mouth that we can see faces where none exist: in cloud banks or rock formations on Mars, and even in the shape of a cinnamon bun said to resemble Mother Teresa. When that neural ability falters, as in autism, we can find friendly faces threatening. In a rare disorder called prosopagnosia, we can't recognize faces at all.

Through brain-scanning experiments, researchers have located the neurochemical essence of our face expertise in a strip of temporal-lobe tissue about two inches long and three-quarters of an inch wide. Studying this face recognition area in macaque monkeys, neurobiologist Doris Tsao at the University of Bremen, Germany, reported in Science that the tissue consisted almost entirely of neurons that responded just to faces.

To understand how the tissue develops, Yoichi Sugita at Japan's Neuroscience Research Institute raised infant monkeys for two years without ever showing them a face. Lab workers wore hoods. When faces were finally revealed to them, the monkeys could readily tell them apart, Dr. Sugita reported in January in the Proceedings of the National Academy of Sciences.

"It is mind-blowing," Dr. Kanwisher said. "If you had to bet, you would bet it is innate."

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