

## Baby Born Talking— Describes Heaven

On May 21, 1985, a periodical called the *Sun* ran these intriguing headlines:

John Wayne Liked to Play with Dolls

Prince Charles' Blood Is Sold for \$10,000  
by Dishonest Docs

Family Haunted by Ghost of Turkey  
They Ate for Christmas

BABY BORN TALKING—DESCRIBES HEAVEN  
Incredible proof of reincarnation

The last headline caught my eye—it seemed like the ultimate demonstration that language is innate. According to the article,

Life in heaven is grand, a baby told an astounded obstetrical team seconds after birth. Tiny Naomi Montefusco literally came into the world singing the praises of God's firmament. The miracle so shocked the delivery room team, one nurse ran screaming down the hall. "Heaven is a beautiful place, so warm and so serene," Naomi said. "Why did you bring me here?" Among the witnesses was mother Theresa Montefusco, 18, who delivered the child under local anesthetic ... "I distinctly heard her describe heaven as a place where no one has to work, eat, worry about clothing, or do

anything but sing God's praises. I tried to get off the delivery table to kneel down and pray, but the nurses wouldn't let me."

Scientists, of course, cannot take such reports at face value; any important finding must be replicated. A replication of the Corsican miracle, this time from Taranto, Italy, occurred on October 31, 1989, when the *Sun* (a strong believer in recycling) ran the headline "BABY BORN TALKING—DESCRIBES HEAVEN. Infant's words prove reincarnation exists." A related discovery was reported on May 29, 1990: "BABY SPEAKS AND SAYS: I'M THE REINCARNATION OF NATALIE WOOD." Then, on September 29, 1992, a second replication, reported in the same words as the original. And on June 8, 1993, the clincher: "AMAZING 2-HEADED BABY IS PROOF OF REINCARNATION. ONE HEAD SPEAKS ENGLISH—THE OTHER ANCIENT LATIN."

Why do stories like Naomi's occur only in fiction, never in fact? Most children do not begin to talk until they are a year old, do not combine words until they are one and a half, and do not converse in fluent grammatical sentences until they are two or three. What is going on in those years? Should we ask why it takes children so long? Or is a three-year-old's ability to describe earth as miraculous as a newborn's ability to describe heaven?

All infants come into the world with linguistic skills. We know this because of the ingenious experimental technique (discussed in Chapter 3) in which a baby is presented with one signal over and over to the point of boredom, and then the signal is changed; if the baby perks up, he or she must be able to tell the difference. Since ears don't move the way eyes do, the psychologists Peter Eimas and Peter Jusczyk devised a different way to see what a one-month-old finds interesting. They put a switch inside a rubber nipple and hooked up the switch to a tape recorder, so that when the baby sucked, the tape played. As the tape droned on with *ba ba ba ba . . .*, the infants showed their boredom by sucking more slowly. But when the syllables changed to *pa pa pa . . .*, the infants began to suck more vigorously, to hear more syllables. Moreover, they were using the sixth sense, speech perception, rather than just hearing the syllables as raw sound: two *ba*'s that differed acoustically from each other as much as a *ba* differs from a *pa*, but that are both heard as *ba* by adults, did not revive the infants' interest. And infants must be recovering phonemes,

like *b*, from the syllables they are smeared across. Like adults, they hear the same stretch of sound as a *b* if it appears in a short syllable and as a *w* if it appears in a long syllable.

Infants come equipped with these skills; they do not learn them by listening to their parents' speech. Kikuyu and Spanish infants discriminate English *ba*'s and *pa*'s, which are not used in Kikuyu or Spanish and which their parents cannot tell apart. English-learning infants under the age of six months distinguish phonemes used in Czech, Hindi, and Inlekampx (a Native American language), but English-speaking adults cannot, even with five hundred trials of training or a year of university coursework. Adult ears can tell the sounds apart, though, when the consonants are stripped from the syllables and presented alone as chirpy sounds; they just cannot tell them apart as *phonemes*.

The *Sun* article is a bit sketchy on the details, but we can surmise that because Naomi was understood, she must have spoken in Italian, not Proto-World or Ancient Latin. Other infants may enter the world with some knowledge of their mother's language, too. The psychologists Jacques Mehler and Peter Jusczyk have shown that four-day-old French babies suck harder to hear French than Russian, and pick up their sucking more when a tape changes from Russian to French than from French to Russian. This is not an incredible proof of reincarnation; the melody of mothers' speech carries through their bodies and is audible in the womb. The babies still prefer French when the speech is electronically filtered so that the consonant and vowel sounds are muffled and only the melody comes through. But they are indifferent when the tapes are played backwards, which preserves the vowels and some of the consonants but distorts the melody. Nor does the effect prove the inherent beauty of the French language: non-French infants do not prefer French, and French infants do not distinguish Italian from English. The infants must have learned something about the prosody of French (its melody, stress, and timing) in the womb, or in their first days out of it.

Babies continue to learn the sounds of their language throughout the first year. By six months, they are beginning to lump together the distinct sounds that their language collapses into a single phoneme, while continuing to discriminate equivalently distinct ones that their language keeps separate. By ten months they are no longer universal phoneticians but have turned into their parents; they do not distin-

guish Czech or Inslekampx phonemes unless they are Czech or Inslekampx babies. Babies make this transition before they produce or understand words, so their learning cannot depend on correlating sound with meaning. That is, they cannot be listening for the difference in sound between a word they think means *bit* and a word they think means *best*, because they have learned neither word. They must be sorting the sounds directly, somehow tuning their speech analysis module to deliver the phonemes used in their language. The module can then serve as the front end of the system that learns words and grammar.

During the first year, babies also get their speech production systems geared up. First, ontogeny recapitulates phylogeny. A newborn has a vocal tract like a nonhuman mammal. The larynx comes up like a periscope and engages the nasal passage, forcing the infant to breathe through the nose and making it anatomically possible to drink and breathe at the same time. By three months the larynx has descended deep into the throat, opening up the cavity behind the tongue (the pharynx) that allows the tongue to move forwards and backwards and produce the variety of vowel sounds used by adults.

Not much of linguistic interest happens during the first two months, when babies produce the cries, grunts, sighs, clicks, stops, and pops associated with breathing, feeding, and fussing, or even during the next three, when coos and laughs are added. Between five and seven months babies begin to play with sounds, rather than using them to express their physical and emotional states, and their sequences of clicks, hums, glides, trills, hisses, and smacks begin to sound like consonants and vowels. Between seven and eight months they suddenly begin to babble in real syllables like *ba-ba-ba*, *neh-neh-neh*, and *dee-dee-dee*. The sounds are the same in all languages, and consist of the phonemes and syllable patterns that are most common across languages. By the end of the first year, babies vary their syllables, like *neh-nee*, *da-dee*, and *meh-neh*, and produce that really cute sentencelike gibberish.

In recent years pediatricians have saved the lives of many babies with breathing abnormalities by inserting a tube into their tracheas (the pediatricians are trained on cats, whose airways are similar), or by surgically opening a hole in their trachea below the larynx. The infants are then unable to make voiced sounds during the normal period of babbling. When the normal airway is restored in the second

year of life, those infants are seriously retarded in speech development, though they eventually catch up, with no permanent problems. Deaf children's babbling is later and simpler—though if their parents use sign language, they babble, on schedule, with their hands!

Why is babbling so important? The infant is like a person who has been given a complicated piece of audio equipment bristling with unlabeled knobs and switches but missing the instruction manual. In such situations people resort to what hackers call *frobbing*—*fiddling* aimlessly with the controls to see what happens. The infant has been given a set of neural commands that can move the articulators every which way, with wildly varying effects on the sound. By listening to their own babbling, babies in effect write their own instruction manual; they learn how much to move which muscle in which way to make which change in the sound. This is a prerequisite to duplicating the speech of their parents. Some computer scientists, inspired by the infant, believe that a good robot should learn an internal software model of its articulators by observing the consequences of its own babbling and flailing.