
fants are motivated to talk by a desire to convey information. But Locke and other researchers believe that a thirst for social and emotional interaction is responsible, bred by a mother-infant bond that has its origins before birth. French researchers found, for example, that by the time they were only four days old, babies born of French-speaking mothers preferred the sound of French to Russian. Between mother and child flows a constant exchange of emotion conveyed by verbal and facial expressions: the baby smiles, coos, and eventually talks to get the mother's attention. Language "piggybacks" on this channel.

Locke believes that language and emotion are literally bound together by biology during the first years of life. In adults, speech and certain analytical functions are governed by the left hemisphere of the brain, while emotion is largely the province of the right. But Locke and others have found that the right hemisphere plays an important role in language during the first three to seven years of life. One sign: in the act of speaking, the right side of an adult's mouth tends to open first, because motor control of the right side of the body and control of speech are both vested in the left hemisphere of the brain. But in young children, both sides of the mouth open at the same time. Apparently, in them the right side of the brain, which controls the left side of the mouth, also houses speech centers.

According to Locke, language develops in four phases. During the first, babbling is the main form of vocalization. The fact that even deaf infants babble is one piece of evidence that biology rather than a desire to imitate is responsible. Biology also seems to dictate the production of certain universal sounds. Locke discovered that in nearly every language, the "m" in mama is present early on. Only later in a child's babbling stage do sounds that are rare or unique to his language, such as the "r" in rabbit, appear. Yet biology is not everything. When an infant talks on a toy telephone, Locke notes, he "babbles, pauses, babbles, pauses again," seeking to secure a social bond by acting and sounding like the adult he sees the most.

Around the second birthday, phase two begins: children begin stocking up on vocabu-

lary. The right hemisphere still has a powerful role in speech, so while toddlers can parrot adults, they cannot form complex thoughts.

In phase three (between 20 and 36 months), children say memorably cute things like "We goed to the store" and "I saw some mouses." The errors occur because the children are beginning to learn—and to misapply—the rules of language. The left hemisphere of the brain is asserting greater control over language.

The next stage is integration, or, in lay terms, learning the ropes of language. And after that the real babbling begins.

Wasted Efforts

"Road to Nowhere" by Herbert Inhaber and Harry Saunders, in *The Sciences* (Nov.–Dec. 1994), 2 East 63rd St., New York, N.Y. 10021.

Americans don't agree on many things, but since the 1973 Arab oil embargo, most have viewed efforts to increase energy efficiency as a good thing. What better way to reduce dependence on foreign oil and to conserve precious resources for the future? Inhaber, a scientist at the Westinghouse Savannah River Company in Aiken, S.C., and Saunders, director of the San Francisco Bay office of Decision and Risk Analysis, see a flaw: the assumption that increased energy efficiency leads to lower energy consumption.

Consider the automobile. Throughout the 1950s and '60s, the average U.S. car got no more than 14.5 miles to the gallon. After the energy crisis of the mid-'70s, government regulation and rising gas prices prompted automakers to do better. By 1989, average mileage had jumped to 20.5 miles per gallon. The result? "Between 1973 and 1992," Inhaber and Saunders write, "the total gasoline supplied to American consumers hovered around seven million barrels a day, plus or minus perhaps five percent." With more-fuel-efficient cars, Americans drove more. They collectively logged 62 percent more highway miles in 1992 than they did in 1975, and bought 75 percent more new vehicles.

Efforts by public utilities to encourage customers to use energy-efficient lightbulbs, insu-

late their homes, and so forth, seem just as futile, Inhaber and Saunders observe: "Overall energy consumption refuses to drop toward the cellar. People always seem to find new uses for energy—hot tubs, floodlighting for their houses, central air conditioning—most of which were unknown a generation ago."

Is the failure to reduce consumption a bad

thing? The authors think not. Energy independence is an unrealistic goal in the modern world, they believe. And reducing overall energy use does not necessarily help future generations. Twentieth-century Americans, the authors note, would be no better off if their 19th-century forebears had insisted on hoarding their chief source of energy, wood.

ARTS & LETTERS

Middlemarch Down the Aisle

"George Eliot for Grown-Ups" by Gertrude Himmelfarb, in *The American Scholar* (Autumn 1994), Phi Beta Kappa Society, 1811 Q St. N.W., Washington, D.C. 20009.

What a disappointment it was for many viewers of the recent PBS television series based on *Middlemarch* (1871–72), not to mention generations of readers, when the high-minded Dorothea wed the morally flawed Will



Love and reverence is the message of George Eliot's *Middlemarch*—and the motto on her memorial stone.

Ladislaw. The idealistic Dr. Lydgate (who, inconveniently, was already married) seemed so much more suited to her. But even a marriage to Lydgate—had author George Eliot (1819–80) contrived to make him available—would have had some feminists gnashing their teeth. To them, Eliot (whose real name was Mary Ann Evans) is a feminist role model who defied the bourgeois, patriarchal convention of marriage by living in sin with the man she loved. Why, then, in her greatest novel, could she not create an equally independent spirit in Dorothea?

"The simple answer," writes Himmelfarb, the noted historian, "is that Eliot herself was not a feminist in the modern sense." Indeed, she honored the bourgeois virtues even in the breach. Yes, she defied convention by living with George Henry Lewes without marrying him, but "she did not willfully choose that role; she had no alternative, since Lewes was already married and could not get a divorce." Nor did she flaunt her defiance of convention. "Although Eliot lived with Lewes in that 'irregular relationship,' as the Victorians delicately put it . . . she tried to 'regularize' it by making it as much like a proper marriage as possible."

Eliot referred to Lewes as her "husband" and to herself as his "wife." She signed letters "Marian Lewes," and asked friends to address her as "Mrs. Lewes" (and even the real Mrs. Lewes did so). The 24 years that Eliot and Lewes were together "were spent in perfect domesticity and fidelity," Himmelfarb says. After he died, she wed John Cross, "with all the trappings of a proper marriage: a trous-