

SCIENCE & TECHNOLOGY

The automatic "subroutines" of language, grounded in specific circuits in the brain, incorporate the logic of syntax that governs sentence structure. People with brain lesions in Broca's area have difficulty both in producing speech *and* in understanding complex sentences; this suggests that the abilities to transmit language and to receive it both descend from similar "neural mechanisms" that evolved over time. Thus, the development of human speech, Lieberman says, resulted not from "deep structures" but from "the outcome of Darwinian processes."

Stereotypes

"The Physicist as Mad Scientist" by Spencer Weart, in *Physics Today* (June 1988), 335 East 45th St., New York, N.Y. 10017.

The "mad scientist," a sinister figure who lives to manipulate, create, or destroy life, is a surprisingly persistent archetype, still appearing in everything from children's TV cartoon programs to debates over genetic engineering. But where did this archetype originate? Weart, a historian at the American Institute of Physics, traces the origin of the mad scientist phenomenon to the 18th century.

Austria's Franz Mesmer (1734–1815) claimed he could cure numerous ailments through a form of hypnosis known as "Mesmerism." His exploits, which attracted thousands of admirers, were used by popular 19th-century authors (most notably Nathaniel Hawthorne) as the basis for pulpish tales of Mesmeric "scientists," who enticed the unlucky with eerie scientific powers. By the turn of the century, this stereotype was deep rooted; a popular American stage show of the time featured the villainous Svengali, who seduced victims with "hypnotic rays."

During World War I, scientists created new weapons (including poison gases) of unprecedented destructive power. After the war, many prominent American and European laymen feared that scientists, left unchecked, would produce devices that could destroy civilization. Lawyer Raymond B. Fosdick, for example, warned in *The Old Savage in the New Civilization* (1928) that a technological civilization could become "a Frankenstein monster that will slay its own maker." Critics' fears were shared by some scientists: A French Nobel laureate in chemistry, Frédéric Joliot, cautioned in 1935 that the forces of atomic energy could make the Earth explode if left uncontrolled.

Articles, stories, and films that did not show scientists as evil geniuses frequently portrayed them—as in Sinclair Lewis's *Arrowsmith* (1925)—as selfless saints. But even these heroic representations made scientists seem inhuman. Thus, in the film *Madame Curie* (1944), Marie Curie, discoverer of radium, is portrayed as "unable to mourn" her husband's death; in reality, she had to be dragged from the room where her husband's corpse lay.

Rather than creating false images of scientists as "wonder-workers," Weart suggests, the best antidote to the "mad-scientist" archetype is realistic journalism, and fiction that does not treat researchers as either godlike or satanic. In everyday life, men and women in laboratories work to *improve* civilization, not "to seize personal control over it."