

Silicon Real Estate

Gordon E. Moore, chairman of Intel Corporation, proposes in *Daedalus* (Spring 1996) an arresting image of the semiconductor.

Our industry sells an area on the silicon wafer for about a billion dollars an acre; this has remained roughly constant since the advent of the integrated circuit. By making things smaller, development density is increased. More function can be built on a given area, causing the price of electronic functions to be cheaper and cheaper.

strands are repeatedly broken and reattached by enzymes during the replication process." Such mechanisms may be nature's ad hoc

way of sidestepping the problems with the double helix, he observes, but they hardly enhance its aesthetic appeal.

Electromagnetism Unplugged

"Apocalypse Not" by Jon Palfreman, in *Technology Review* (Apr. 1996), Bldg. W59, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

For more than 15 years, some scientists, journalists, and activists have been warning that the electromagnetic radiation generated by electric power lines may cause cancer or other diseases. Journalist Paul Brodeur, in a much-noted series in the *New Yorker* (and later in a book, *The Great Power-Line Coverup* [1993]), wrote about a high incidence of cancers among the residents of a Connecticut street and the staff of a California school, both near power substations. Despite such "smoke," there is no convincing evidence of any "fire," maintains Palfreman, a senior producer at WGBH, Boston's public TV station, where he specializes in medical-political issues.

Of some four dozen epidemiological studies, he points out, none have established any cause-and-effect relationship between proximity to electromagnetic fields and disease. The high incidence of cancer Brodeur found, Palfreman notes, could well be simply the result of chance.

The proposition that power lines' electro-

magnetic fields cause cancers or other diseases is unlikely in the first place, Palfreman says, given the extensive existing knowledge about the interaction of such fields with living tissue and what one physicist calls the "absolutely minuscule" strength of the fields involved. "Cancer is usually caused when very energetic radiation, or some chemical agent, directly breaks or rearranges DNA," he observes. "But the forces holding DNA molecules together are millions of times larger than any force that electromagnetic fields from power lines could produce."

Laboratory studies conducted as part of a \$65 million federal program under the auspices of the National Institute of Environmental Health Sciences have so far failed to find any adverse health effects in lab animals from electromagnetic fields.

"Even if we suppose that magnetic fields from power lines do cause cancer," Palfreman points out, "the fact that the connection has been so hard to prove means that, by definition, the risk cannot be large."

The Tinted City

"City Lights" by James Bradley, in *Metropolis* (April 1996), 177 E. 87th St., New York, N.Y. 10128.

Since the 1970s, America's cities have literally been cast in an entirely new light. During that decade, municipalities across the country began replacing their old incandescent and mercury-vapor streetlights with

more energy-efficient, high-pressure sodium lamps. The change, says Bradley, a New York writer, has hurt city street life.

The sodium lamps emit a yellowish light that casts a strange, muddy pall over the

streetscape and, apparently, the human spirit. Near his own Brooklyn home, Bradley notes, Eastern and Ocean parkways are much alike during the day. But on warm nights, Eastern Parkway throbs with life while Ocean Parkway is an urban desert. Ocean is illuminated by sodium lights, while Eastern is lit by newer metal-halide lamps that produce something much closer to the full-spectrum “white” light of the sun. In car dealerships and shopping mall parking lots, where bad lighting can hurt sales, metal-halide lights are invariably used. Costs are the rub. Metal-halide lights burn out relatively quickly. In 1992, the city of Toronto judged that a switch to the aesthetically superior lighting would triple maintenance out-

lays—yet made the change anyway.

Oddly, anti-light-pollution activists are adamantly opposed to the new technology. Astronomer David Crawford, executive director of the International Dark Sky Association, claims that it creates more glare than sodium lights. (And astronomers can more easily filter out interference from sodium lights.) But Bradley says that many specialists believe that the glare is caused by poor fixture design, not the lamps.

Where will it all end? Not in a world lit by metal-halide alone, Bradley hopes. As one lighting designer told him, using different kinds of lighting as each situation demands is the secret to creating a more “textured nighttime experience.”

Smart, Smart, Stupid

“What Should We Ask about Intelligence?” by Robert J. Sternberg, in *The American Scholar* (Spring 1996), Phi Beta Kappa Society, 1811 Q St. N.W., Washington, D.C. 20009.

Almost everyone knows of a bright, even brilliant person who succeeds in school but flunks in life. Is such an individual really intelligent? Yes and no, says Sternberg, a professor of psychology and education at Yale University.

Traditionalists in the controversial field of intelligence take much too narrow a view of what intelligence is, he contends. (See “The IQ Controversy,” *WQ*, Spring ’96, pp. 133–35.) He and other “revolutionaries,” notably Harvard University psychologist Howard Gardner, have been trying to expand the conventional horizons. Every major college textbook in introductory psychology “now prominently features two of the revolutionary theories,” Sternberg’s and Gardner’s.

In Sternberg’s view, intelligence has three major aspects: analytical, creative, and practical. IQ tests and the like tend to weigh analytical skills most, he writes, and these are

likewise emphasized in most school curricula (which is why such tests can predict school achievement fairly well). In fact, Sternberg says, schools sometimes even penalize the exercise of creative and practical skills, “as when students who depart from a teacher’s expectations or point of view find themselves graded down for having done so.”

Gardner favors a different typology, with seven “relatively independent intelligences”: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, and “intrapersonal” (self-knowledge).

If human intelligence is as broad as he and Gardner believe, Sternberg argues, colleges and universities are misguided when they reject students because of low scores on SATs and other standardized tests. Such tests may indeed indicate likely class grades. But—as everybody with common sense knows—grades aren’t everything.

ARTS & LETTERS

The Failure of Public Art

“What Happens when American Art Goes Public” by Peter Plagens, in *New England Review* (Summer 1995), Middlebury College, Middlebury, Vt. 05753.

Works of “public art” are everywhere to be seen these days, from downtown plazas and college campuses to office-building lawns

and lobbies. But whether sponsored by governments, universities, or corporations, argues Plagens, who is a painter and art critic