

Science at the AAAS

From our reporters at the annual meeting of the American Association for the Advancement of Science in Boston

Pop science: Science in popular culture

Sociologist Amitai Etzioni recently wrote an editorial in *SCIENCE* urging all scientists to see the movie *Jaws*. He wanted them to see the refreshing portrayal by Richard Dreyfuss of a scientist—the marine biologist—who was warm, friendly, outgoing, concerned and lovable. His point was that this very positive image of a scientist portrayed in the phenomenally popular *Jaws* would do more to correct the bad image of scientists in society than anything scientists could.

The marine biologist in *Jaws* stands in stark contrast to the stereotyped scientist in most forms of popular entertainment. Historian George Basalla of the University of Delaware points out that most Americans get their images of scientists from comic strips, television shows and movies. He has recently completed a study of this “pop science” and concludes that scientists have little to cheer about. “Scientists are rarely the heroes in the current world of popular culture. More likely, one encounters the pop scientist as a villain who uses his knowledge to destroy or thwart the hero who has the public’s sympathy.”

Basalla says that when he began his research he expected to find a rising curve of interest in, and comprehension of, the scientist in popular culture since 1945. “What I found was a portrait of the scientist that received minor embellishments through time but underwent no major alteration.”

Science-oriented publications and even such popular television series as Jacob Bronowski’s *Ascent of Man* and the *Nova* series on public TV can do little to redress the misconceptions, Basalla says, because they reach comparatively so few people.

Backward step into knowledge

A group of nurses took what they call a giant step backward in a recent study on the family, and discovered some surprising things.

Kathleen Astin-Knafl told a AAAS session on the adolescent-adult transition process that much existing information on the family misrepresents that institution. Astin-Knafl and colleagues at the University of Illinois College of Nursing at Chicago were trying to assess the quality and quantity of such information available to health educators and others who help prepare adolescents for marriage and family life. They found the information so inadequate that they decided to take a step backward and do their own long-term, “exploratory, descriptive investigation of families.”

They followed 20 couples from engagement through the first two years of marriage and were surprised by several of their findings. One such finding, Astin-Knafl says, which contradicts the traditional wisdom, is that engagement is not generally used as an opportunity to prepare for married life. It is for most couples, instead, a period largely spent planning the wedding and becomes a “developmental moratorium” for work toward a mature marriage relationship. Wedding plans are often the first real source of conflict the couple experiences, but are considered by most of them to be just stumbling blocks over which they will tumble into perfect married bliss.

Later interviews reveal, Astin-Knafl says, that the couples find marriage as difficult as the wedding stage, and not the paradise they expected. Legitimate work toward their future relationships, encouraged by enlightened counselors, might have helped them prepare for that reality.

The implication of the study, she says, is that sociologists need more baseline data about how people grow into marriage and family roles if they, and other professionals, are to aid individuals with that process.

Preserving more than freshness

The Seventies may well be remembered as the decade of the environmental carcinogen. Current estimates tag environmental chemicals with the blame for 80 to 90 percent of human cancers. Many of these suspected carcinogens are added intentionally to foods.

Two food additives that have been eyed suspiciously in the past, the antioxidants butylated hydroxytoluene (BHT) and butylated hydroxyanisole (BHA), are now being seen as beneficial.

Thomas J. Slaga of the Fred Hutchinson Cancer Research Center in Seattle, Wash., reported to an AAAS session on “Diet and Cancer” that BHT and BHA, plus the trace metal selenium and vitamins C and E actually inhibit cancers in experimental animals. Experiments done in a number of laboratories show that when added to foods, these chemicals will inhibit skin, lung, mammary, stomach and liver cancers in animals.

The five substances may act by preventing the breakdown of carcinogens into chemically reactive forms, Slaga says. But whether or not they reach high enough concentrations in the human body to protect against carcinogens, he says, is still in doubt and must be studied.

Crime with computers

Computers, enormously powerful and useful tools in science and business, can be misused by the unscrupulous.

Donn B. Parker and colleagues at the Stanford Research Institute have documented 380 cases of intentional computer abuse, many bordering on the criminal. They interviewed 17 perpetrators and prepared this profile:

- The cases split equally into acts that involved only manipulation of data going into or coming from computers and more technical cases where computer programs were changed and data manipulated in unauthorized ways.

- Perpetrators tend to be highly skilled.

- The types of losses were mostly from financial fraud or theft and property fraud and theft.

- The Robin Hood syndrome was present in 12 cases. Perpetrators differentiated between doing harm to people, which they considered immoral, and doing harm to organizations.

- For 15 of the perpetrators, their acts represented fascinating challenges, almost a game.

- Generally they were aggressive, eager, bright, quick-witted and gregarious. “They exhibited all the characteristics that would make them highly desirable employees,” says Parker.

The constraints on the corporate scientist to behave in ethical ways in the computer technology environment are easily rationalized away, concludes Parker. “This is a new environment in which there are few precedents and few generally agreed upon ethical, good practices.”

Accelerate the gifted

Enrichment programs for intellectually gifted youngsters are potentially dangerous if the students are not allowed to skip grades and subjects, especially math subjects. This is the conclusion of psychologist Julian C. Stanley of Johns Hopkins University. Stanley found that most enrichment programs afford the student merely horizontal, not vertical movement, and that skipping grades, as long as the student is in favor of it, does not usually lead to social or emotional problems. He proposes that elementary and high schools encourage grade skipping and early graduation for gifted students, find and help students able to move more quickly than normal through math courses, and help gifted students enroll in college and mail courses.