

SUPERSCIENTISTS OF THE MEDIA



The Visible Scientists: A small number of highly communicative scientists tends to dominate science news and public perceptions of science.

BY ROBERT J. TROTTER

In 1970 he received more than two dozen requests a day for personal appearances. He charged \$2,000 for lectures and was booked a year in advance. *Ramparts*, *Playboy* and *McCalls* were after him to submit articles, and he was featured in *Life*, *Look* and the *Washington Post*. Television crews crowded his office. Johnny Carson featured him on the Tonight show for an unprecedented 60 minutes. On the run 18 hours a day, 80,000 miles a year, his popularity finally forced him to flee the country for a little peace and quiet.

Who is this eminently desirable personality? He is the distinguished author of several textbooks and more than 100 technical papers with titles like "The integumental anatomy of the silver-spotted skipper, *Epargyreus clarus* Cramer (Lepidoptera: Hesperiiidae)." That's right, he's

From top left: Commoner, Ehrlich, Mead, Pauling, Teller, Seaborg, Watson, Asimov, DeBakey, Dubos, Skinner, Shockley, Sagan, Abelson, David, Wiesner, Handler, Mayer, Leakey, Wald.

a scientist. But he is a special breed of scientist. A highly visible and sought-after scientist. He is Paul Ehrlich.

Ehrlich's visibility is not, strictly speaking, the result of his work as an entomologist. Rather, he is known for his best-selling book *The Population Bomb* and for his highly quotable pronouncements on population problems and the environment ("Give your child an IUD to take to Show and Tell." "No one today can deny that the United States has the grossest national product in the world.").

Ehrlich is a prime example of what Rae Goodell calls "the visible scientists." In her doctoral dissertation (recently presented to Stanford University), Goodell, now doing postdoctoral research in science communication at the Massachusetts Institute of Technology, analyzes the phenomenon of the visible scientist and the fact that "a large amount of news on science is based on the statements and actions of a relatively small number of scientists."

"Individually," explains Goodell, "contemporary visible scientists have been much discussed, idolized, cursed, applauded and ridiculed. A few have been studied in detail." Her intent was to "look at the visible scientists as a whole, exploring the dimensions of this group and its new influence." Goodell examines the role of the visible scientists, particularly the processes by which a certain few scientists attain visibility, their personal characteristics, their effects on news about science, their relationship to the rest of the scientific community and their influence on public understanding of science and science policy. The dissertation will be published next winter.

The visible scientists (see chart) were selected for study on the basis of information provided by a panel of 24 science news experts, all but three of whom are practicing journalists. These particular scientists, Goodell finds, have five characteristics that make them especially attractive to the press and, therefore, visi-

PANEL'S SELECTION OF WIDELY KNOWN SCIENTISTS*		
Scientist	Number of Mentions	Mentions in Science News since 1962**
Barry Commoner	19	12
Paul Ehrlich	14	4
Margaret Mead	10	13
Linus Pauling	10	11
Edward Teller	9	17
Joshua Lederberg	9	12
Wernher von Braun	8	4
George Wald	8	5
Glenn Seaborg	7	21
James Watson	6	14
Paul Dudley White***	6	5
Isaac Asimov	6	1
Michael DeBaakey	6	15
René Dubos	6	9
B. F. Skinner	6	14
William Shockley	5	10
Ralph Lapp	5	6
Carl Sagan	4	21
Philip Abelson	3	14
Christiaan Barnard	3	7
Noam Chomsky	3	1
Denton Cooley	3	8
Edward David Jr.	3	12
John Foster	3	10
John Gofman	3	6
Fred Hoyle	3	13
Daniel P. Moynihan	3	9
Frank J. Rauscher Jr.	3	7
Hyman G. Rickover	3	4
Albert Sabin	3	14
Jonas Salk	3	8
Benjamin Spock	3	0
Harold Urey	3	14
Jerome Wiesner	3	17
Philip Handler	2	20
Edwin Land	2	13
Jean Mayer	2	10
Karl Menninger	2	5
Louis S. B. Leakey***	2	23

50 additional names received one mention each

89 names mentioned in all

*Survey conducted August 1972
 **Data added by SCIENCE NEWS
 ***Died after survey was conducted

ble. Each has a "hot topic," is controversial, is articulate, has a colorful image and has established a credible reputation within the scientific community.

The importance of the "hot topic" characteristic is easy to understand. Ehrlich has population, Masters and Johnson have sex and Carl Sagan has exobiology. Media representatives jump on such stories because they know their editors and their audiences are interested.

Controversial topics are also seized by the media. "For better or worse," says Goodell, "it is a habit of the news media to emphasize drama and conflict, and to highlight the controversial aspects of news stories." B. F. Skinner evokes heated debate when he attempts to explain human behavior in terms of environmental determinism or when he glibly repudiates such "human" qualities as individual freedom and dignity. William Shockley catalyzes riots and sit-ins when he makes even the blandest statements about the genetic inferiority of blacks. "The visible scientists seem almost controversy-prone," says Goodell. "They are the kind of people who look for new approaches and, finding them, advocate change. The same tendency is apparent in their scientific work: They are revolutionaries, questioning established theory, proposing new concepts."

In addition to having a hot or controversial topic, scientists must be articulate and colorful to be heard and seen. Margaret Mead has a grandmotherly, if outspoken, charm, spins out 3,000 words on a good morning and carries a big forked stick. Ehrlich has charisma and sex appeal and an ability to be at ease in front of an audience or a television camera. He has had a vasectomy. Isaac Asimov is a prolific writer (160 books) who cultivates his image as an egoist, demigod and "dirty old man." William Shockley's colorful image consists partly of his ubiquitous tape recorder and signs of paranoia about the press, blacks and critics. Linus Pauling is a political "radical."

Contrast such colorful personalities with the rather quiet John Bardeen, a two-time Nobel Prize winner in physics. Bardeen has been described as a likable, sympathetic figure, as well as a "scientific



Mary Harman

giant," but his name will never become a household word. As Goodell says, "In these days of crowded streets and crowded newspapers, the scientist who becomes visible to the general public will be the one with a colorful image that sticks in the reader's mind. A quiet scientist is no more likely to be featured than a quiet politician."

The press may play up the colorful and the controversial, but it also looks for scientists who are credible. Reporters and their audiences are not immediately impressed by the work of an unknown scientist. And information from an unknown is often looked on with skepticism. When a Nobel Prize winner speaks out, the effect is different. People are more inclined to listen. Six of the 39 visible scientists have Nobels. Membership in the National Academy of Sciences and affiliation with a widely known institution are also looked on as badges of credibility. And in almost every case, the visible scientists earned a good reputation in their own field before they became public figures. So the media, by seeking out credibility as well as color, help push certain scientists into the limelight.

As a result of the media's demand for credibility, visible scientists are seldom young. The average age of Goodell's visible scientists is 59. All except one (Carl Sagan) are over 40. It obviously takes a lot of time and serious work to build up a reputation as a top scientist.

The characteristics that lead to public visibility, says Goodell, are also the same characteristics that make for success within a scientist's, or in any, field—ambition, energy, inquisitiveness, creativity, facility at explanations, organizational ability and intelligence.

"The media," says Goodell, "have certain needs, and they are finding scientists to fill them. In the process, the media are of course shaping the kinds of scientists who will reach public attention." There are, however, other forces at work in shaping visible scientists. In the 1940's most scientists hibernated in their laboratories and avoided the taint of politics. In the 1950's it became fashionable to make occasional trips to Washington and give behind-the-scenes advice to government officials. In the 1960's this advisory system lost some of its effectiveness and gave way to a rash of alternative "outside" activities—lobbying in Congress, working in political campaigns, speaking out in the press, taking litigation to the courts.

Several incidents facilitated the gradual decline of the advisory system. If reports from scientific panels were unfavorable to the administration's position, they could be classified and pigeonholed; this apparently happened during the SST battle. For more than three years there was evidence that the herbicide being used in Vietnam could cause birth defects. The report was repeatedly sent back for further study until it finally became public as the

result of a Nader study. In the meantime, the chemical was used in the defoliation of one-eighth of South Vietnam.

Partially because of such incidents, the influential advisers or "insiders" began to lose some of their prestige in the last half of the 1960's, and a type of socially involved scientist came to the fore—the "outsider" or guerrilla scientist. Goodell's dissertation, which contains case studies of the careers of eight highly visible scientists, describes Glenn T. Seaborg as the perfect example of an "insider" and as one of the most visible of the postwar establishment scientists. A Nobel Prize-winning chemist and for 10 years chairman of the Atomic Energy Commission, Seaborg is a visible scientist of the "old" type. He is as outstanding and as unusual as a Paul Ehrlich or a Margaret Mead, but in a totally different way—the establishment-accepted way for his time.

But times change. "Perhaps," says Goodell, "it is partly a reflection of a changing mood in science news that while Seaborg was generally praised by journalists ten years ago ('enormous political skill,' 'an adroit reconciler of divergent personalities') the media are now cooler ('his ability to duck controversy' and 'celebrated sangfroid')."

Meanwhile, the media began to warm up to scientists like Barry Commoner, the outsider or guerrilla. Engaging in a wide spectrum of political and public activities, Commoner made his name almost synonymous with the ecology movement. He did not, however, win too many friends in the scientific establishment. Speaking of his outsider status, Commoner says, "You understand that there is an establishment . . . and you either have to decide that you are going to bend yourself to do the right thing and conform, not upset people—or if you don't you just turn your back on it."

And Commoner did turn his back on the establishment. He has been involved, he says, in every left-wing political activity in the academic world. This penchant for "sticking my neck way, way out" has resulted in animosity—especially at Washington University. Commoner has had to nearly divorce himself from the Biology Department—"I'm exiled."

The philosophy of outsiders like Commoner has been that scientists should not become separated from the implications of their work; nor should they confine their efforts to advising officials in Washington; nor, at the opposite extreme, should they become involved as prophets, commenting both on the technical and value aspects of the issues. Instead, scientists should use their special background to provide citizens with facts with which informed decisions can then be made.

Reaching the citizens with the facts, however, requires that a scientist be visible. But a visible target is easy to hit, and some outspoken scientists have suffered for the positions they have taken. Linus

Pauling, for instance, has two Nobels (chemistry and peace), and is considered by some to be a genius and "the greatest scientist alive today." Even so, his efforts on behalf of a nuclear test ban, detente with the Russians, world peace and vitamin C have cost him dearly. Personal insults, pressure from university administrations, distractions from career interests and research, governmental intimidation during the McCarthy era and professional scorn often accompanied his visibility.

Visibility may be a liability, but it can be a definite asset in getting one's ideas across. Biochemist Irwin Stone studied vitamin C for 30 years and was convinced of its salutary effects. But few people paid any attention to Stone's claims until he told Pauling and Pauling began to hype vitamin C. And with this crusade, Pauling is again being blasted by other scientists.

Visible scientists might be expected to pay another price. It is the insider, establishment scientists who review research proposals in Washington, says Goodell. But the visible scientists, as a rule, have not found this a serious problem. In spite of their maverick status, visible scientists do not seem to be subject to reprisals from the scientific community as far as research funding is concerned. As controversial as B. F. Skinner may be, his work and funding continue.

Visibility may, in some cases, even help scientists get funding. But even if it does, the more establishment-oriented scientists have traditionally disliked the media. Einstein, says one of his biographers, detested the press. The complaints of such scientists are many: sensationalism, oversimplification, lack of perspective, poor selection of material, lack of space, lack of interpretation and investigation, lack of professionalism, inaccuracy. To avoid such problems, some scientists will simply turn off a reporter with a frosty "No comment!"

The visible scientists are not blind to the shortcomings of the press. They understand its workings, tolerate its failings and feel at ease with it. They know that they need the media and usually do what is necessary to cultivate coverage. "Margaret Mead has been known, friends say, when a floundering reporter is assigned to write about her, to write the story for him. Even Glenn Seaborg," Goodell goes on, "who had frequent contact with the media when he was chairman of the AEC, said he got to know some reporters in Washington 'almost as though they were friends.'"

But if scientists can dictate what gets into the news, they are, in effect, manipulating the media. Bias is inevitable. Scientists who are especially adept at making their own news are sometimes called operators. An operator, for instance, might hang around the press room during a large scientific meeting and precipitate an "instant press conference" just by saying

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something quotable or controversial to a group of reporters who are desperate for a story. Barry Commoner is known for this. William Shockley makes sure that the wire services and press representatives know where and when he is going to appear. And after a story gets reported, he can sometimes keep it alive for weeks by following it up with letters to the editor.

"The press," says Goodell, "has mixed feelings about operators, as indeed the public would if it were aware of their existence." But operators do come in handy when a story is needed. "On the other hand, while science writers tend to be tolerant of operators, they are not fooled. . . . And reporters sometimes express concern that operators receive an unfairly extensive and unbalanced treatment in the press, while the public is none the wiser."

But the visible scientists, says Goodell, are not always operators. They have already made their mark. And although they may have been operators at one time, once they have reached the top, they don't have to rely on tricks. The press beats a track to their door.

In addition to charges of manipulation, some of the visible scientists have also been called "anything authorities." In other words, they speak out on subjects out of their field of expertise and are listened to by the public because of their credibility as scientists. This, Ehrlich admits, is a dilemma. How much generalization and drawing of conclusions, he asks, is legitimate (in contrast to 'letting the facts speak for themselves') in order to get the message across? He answers that if you have to wait till you are 100 percent certain in your mind before you speak, you might become paralyzed and never take action. "So I think," he goes on, "you've got to realize there's going to be a certain amount of error." But he makes his errors and takes "his lumps" with a consciousness of his role and a sense of responsibility—"the more successful you are, the more responsibility you have."

Responsibility for one's actions or statements is obviously necessary. A more viable suggestion, says Goodell, is that scientists, when they make a statement, state clearly whether they are speaking as "scientists," or as individuals with specialized technical information on a subject, or as "concerned citizens," with the same tendency to express a personal opinion as any other member of the involved public.

Discussing the implications of the visibility system, Goodell asks: "What does a system in which visibility brings influence mean for the rest of the scientists, those who are, intentionally or not, ignored? The visible scientists," she answers, "become spokesmen for the rest in a way which everyone finds disturb-

ing." There is the possibility that a few scientists, while providing valuable input, may distort the public's view of science by presenting a minority view. Yet, the visible scientists appear at a time when most scientists feel the visibility of science is decreasing, that public goodwill is waning. And, scientists have to admit, the visible scientists are effective in getting a message to the public, boosting public awareness of science and communicating scientific ideas. They are adapting to the changes taking place in the media, in science and in society in order to meet the public's need for scientific input on important issues of the day. And, says Goodell, since the public has always been ambivalent towards science, the change could be for the better.

"The problem of lack of balance," suggests Goodell, "would be partially resolved by the participation of more scientists in the media, scientists willing to make the necessary rejoinders to work towards fairness in coverage." In other words, there is a need for more scientists who know how, and are willing, to use the many methods of communication open to them. We need more visible scientists. They may not be the "model" scientists the scientific community thinks it wants, she concludes, "but they have been successful in science as well as in public. And they certainly have not been dull." □

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