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Current Comments

Scientists' Image in Movies and TV Programs

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When the *Philadelphia Inquirer* ran a page one story about an experiment in which a few human chromosomes were inserted into mice, the paper made it clear that the mice were "not anything like monsters." And the caption under a picture of two of the experimenters, Drs. Hilary Koprowski and Carl Croce of Philadelphia's Wistar Institute, pointed out that they were "no mad scientists."[1]

In a similar vein, a *New Times* article on brain transplant research with monkeys asserts that Dr. Robert White, director of Cleveland's Brain Research Laboratories, "is certainly no mad scientist out to create a Frankenstein monster."[2] The fact that the paper and the magazine felt the need to add these disclaimers to their stories says something about the popular image of the scientist.

"Without a doubt, Dr. Frankenstein is better known in America today than any other scientist, living or dead," writes George Basalla, a University of Delaware historian who specializes in the study of the social implications of science and technology.[3] Panelists at a symposium at this year's annual meeting of the American Association for the Advancement of Science (AAAS) agreed that the popular image of scientists is remarkably bad, and that the mass media bear a great deal of the responsibility for that. Thomas H. Maugh II, who covered the meeting for *Science*, reports that panelists agreed that movies and television portray scientists as "frequently foolish, inept, or even villainous," and that the image is "eroding public support for science and may be turning away potential Einsteins, Paulings and Pasteurs before they mature enough to appreciate the joys and the wonders of science."[4]

I must confess I am a bit skeptical of the effects of these portrayals on children and adults. Ask typical working-class parents if they would approve of their child becoming a scientist. I think they would be delighted that one of their children had enough intelligence to do so. But how their attitude affects the child's career choice is another issue. Teachers are probably a more potent force in career choices. Unless parents present a career model they would prefer, teachers make the most significant impact.

However, it is probably true that many persons who might otherwise pursue a scientific career are turned off to science at an early age for a multitude of reasons, perhaps including the negative portrayals of scientists on TV and in movies.

There are about 130 million television sets in use in the US alone,[5] many of them tuned to the popular reruns of *Star Trek* and *Twilight Zone* which are shown in most major American cities. The many science fiction films of the past few decades are also viewed on TV again and again on Saturday afternoons and late at night. In contrast to science news and documentaries which get relatively little air time on TV,[6] fictionalized portrayals of scientists are available to the public at almost any hour.

Add to all this TV viewing the fact that *Star Wars,* the highest-grossing film of all time, so far has made over $225 million in the US and Canada alone.[7] If the average admission price is $3, that means over 75 million tickets were sold. And another recent science fiction film, *Close Encounters of the Third Kind,* has grossed $115 million in just over seven months, having sold approximately 38 million tickets.[8]

With science fiction movies and TV programs reaching such large audiences, it is obvious that these media have the potential to affect the public's perceptions of science and scientists. Some believe that what the public is seeing on TV sets and movie screens should cause disquiet in the scientific community.

Most often the scientist is seen as a dangerous character—especially in the horror films of the 1930s and '40s, and the science fiction films of the '50s. But as film director and critic Susan Sontag points out, this presentation of scientists as dangerous is nothing new. She asserts that Shakespeare's Prospero (in *The Tempest*), "the overdetached scholar forcibly retired from society to a desert island, only partly in control of the magic forces in which he dabbles," remains one of the oldest images of the scientist.[9]

Scientists often appear as satanists or Faust-like figures in the movies, and Sontag sees this as an extension of attitudes that have been with us for a long time. The link between past and present images is clearly illustrated by a film deliberately modelled on *The Tempest.* In *Forbidden Planet,* directed by Fred Wilcox in 1956, Morbius, an overdetached futuristic Prospero, is marooned on a desert planet and only partly in control of a vanished race's magic-like technology.

Like Dr. Frankenstein (who is best known today through James Whale's 1931 film *Frankenstein*), Morbius unleashes a monster not through malevolence but through irresponsibility. Like Dr. Frankenstein he watches the monster menace his loved ones, repents, and is killed by the creature. This is what scientists get for tampering with "things man was not meant to know." Both characters are typical of the scientists who appeared in the B-movies, and are not especially different from those who are seen on screen today.

Scientists in the movies of the

'30s and '40s have a number of easily recognizable characteristics. The scientist is usually an elderly white male. He may be insane or evil. But since the 1950s, the cackling madman hatching plots to rule the world has more or less vanished from the screen (though he remains a favorite prop in comic strips and comic books).[3]

More often in the films of the last 25 years, the scientist (still a white male) is well-meaning but obsessed with the pursuit of knowledge. Amoral rather than immoral, he will stop at nothing to find out what he wants to know. He will not let human sensitivities or sympathies stand in his way.

He displays his insensitivity in small ways. If the scientist has a family, he usually neglects it. More often, scientists in the movies are shown as bachelors or widowers; they are rarely shown as being sexually or emotionally involved. The audience may hear his beautiful daughter or assistant say that he is married to his test tubes and has no time for socializing.

But the scientist's capacity for destruction on a large scale is the major recurring theme in the films. Sontag notes, "Science fiction films are not about science. They are about disaster, which is one of the oldest subjects of art. In science fiction films disaster...is always extensive."[9] She notes also that somewhere between the film *Frankenstein* and the period that produced *Forbidden Planet,* the scientist's capacity for causing disaster increased. In the horror films of the '30s, Sontag suggests, the worst scientists could do was lay a small Bavarian village to waste. But later they had the power to imperil the world, even many worlds.

Note that the scientist most often wreaks havoc by building or creating something. The process of scientific research is rarely distinguished from the process of technological application; usually they are one and the same.

Sontag notes that the B-films of the '50s reflected the fears of the time: nuclear war, political subversion, dehumanization, and mass conformity. She suggests that the films represent, at least in part, attempts to exorcise those fears by treating them symbolically. Thus many of the film disasters were brought about by the atomic bomb or its after effects. Prehistoric monsters awakened by nuclear testing were easier for audiences to pretend to deal with than the complex issues surrounding disarmament.[9] Scientists, of course, were often seen as responsible for the sudden appearance of monsters.

Scientists also played an important role in the many alien invasions or infiltrations portrayed on film in the '50s. The aliens, cold and implacably hostile, either brought ruin to the world with flying saucers and ray guns, or took over the minds of humans by remote control. In *The Thing from Another World,* a hostile alien threatened an arctic research base staffed by scientists and soldiers. The foolish scientist wanted to communicate with the hostile invader; the military men wisely saw the menace and tried to destroy the creature. In films where

the aliens turned humans into mindless robots who did their bidding by remote control, scientists were often the first to submit. These themes are important if seen in the context of the Cold War, when many real scientists and intellectuals were accused of being dupes of subversives. Scientists, in the movies, were always to be distrusted, and they were especially suspect in that paranoid atmosphere.

Has the situation improved since the '50s? While recent screen science fiction is more visually satisfying than ever, the stereotype of scientists, with a few exceptions, remains much the same. Television certainly hasn't changed it much. In *Space: 1999* a scientist developed a spacecraft propulsion method which, for reasons not made clear to the viewer, destroyed several inhabited planets. The responsibility for this catastrophe fell on the shoulders of the scientist who, like Dr. Frankenstein, repented and ended up dead.

Carl Sagan points to a Saturday morning cartoon program for children in which a "Dr. Nerdnik" has to be told that "the people of Earth will not appreciate being shrunk down to 3 inches high, even if it *will* save space...."[10] And the weekly series *Man from Atlantis* features as a recurring character a scientist villian who is always trying to do things like melt the icecaps.[11]

In an episode of the popular American series *Star Trek*, a scientist developed a computer that could think for itself. True to the conventions of video science fiction, this made it dangerous. The machine was put in command of a test flight of the spaceship *Enterprise*, promptly ran amok, and had to be destroyed. The problem, it turned out, was a flaw in the programming. The scientist, in bestowing a personality on the computer, gave it *his* personality. This scientist got off easy; he merely had a nervous breakdown.

If you look hard enough, you can find a few exceptions to the stereotype. In *Star Trek*, Leonard Nimoy played the *Enterprise*'s "Science Officer," one Mr. Spock from the planet Vulcan. The inhabitants of Vulcan had no emotions, and for much of the series, Mr. Spock was a relentlessly rational, typically heartless scientist. He was only half-alien, however; his mother was terrestrial. Carl Sagan calls this "about as likely as successful mating between a man and a petunia,"[12] but it allowed for occasional dramatic conflicts between Spock's Vulcan nature and his human one. He was thus a sympathetic character, and this characterization accounts for much of *Star Trek*'s popularity.

A few recent science fiction movies have also broken the scientist stereotype. Robert Wise's 1971 film, *The Andromeda Strain*, shows us a scientist with a conscience. The story is about a team of scientists who try to contain a deadly micro-organism brought to earth by a malfunctioning satellite. They learn that the accident resulted from a secret military attempt to use the organism as a biological weapon. Kate Reid, in a refreshing

departure from the amoral, uncaring (male) scientist, plays the scientist who condemns the military project. She serves as the story's moral voice. Also, Nelson Gidding's screenplay, based on Michael Crichton's novel,[13] emphasizes the difference between pure science and its applications. We see a discovery misused, not by an irresponsible scientist, but by irresponsible militarists. It was interesting, for a change, to see scientists trying to save the world from disaster that was someone else's fault.

Jaws, the 1976 blockbuster, also gave us an unstereotyped scientist. Instead of unleashing a monster, the young marine biologist in the movie helped destroy the white shark which had been preying on swimmers at a beach resort.

And what of last year's science fiction films? In George Lucas' *Star Wars* and Steven Speilberg's *Close Encounters of the Third Kind,* the image of a scientist, if not entirely favorable, is at least ambiguous. Both films contain spectacular special effects and provide little more than escapist entertainment. *Star Wars* has no scientists in it at all (except for one brief scene), but is worth mentioning here because it seems to contain certain tacit assumptions about technology. But there is wide disagreement on what those assumptions are.

The universe in *Star Wars* is one in which scientific discoveries and their applications have supplied the characters with a host of devices most viewers would be delighted to have—notably fast-moving hover crafts and robots to handle everyday drudgery. Harvard University sociologist Nathan Keyfitz says the film shows a favorable attitude towards the promise of science and technology. But, he complains, the most spectacular technology is shown in the service of war, and the film seems to approve of that.[14]

One could argue, however, that a more complex inference could be drawn from the film. The large-scale war technology of the villains is overcome by the relatively small-scale technology (small spacecraft and swords with blades of deadly light) of the heroes. And the film's most sympathetic characters, two robots, are unswervingly loyal and helpful to the human heroes. They seem to suggest that humans may make a technological advance without it necessarily turning into a Frankenstein monster.

On the other hand, Ben Bova, editor of *Analog,* asserts that the film is anti-science and technology because during a crucial space battle, the film's hero shuts off his ship's computer and relies instead on "The Force."[15] "The Force," the film explains, is a "mystical energy field" that can be harnessed to deliver miracles. "The Force" is the film's *deus ex machina;* it serves the heroes of *Star Wars* in much the same way as the good witch of the north periodically aided Dorothy in *The Wizard of Oz.* Bova considers this anti-science because it compromises human rationality.

Bova, like other observers, sees an anti-intellectual attitude in *Close Encounters,* a film about contact with UFOs.[15] Why, he asks, do creatures capable of building a

mountain-sized interstellar vessel ignore the scientists and engineers who come to greet them? Instead, the aliens wish to deal with the film's "Everyman" protagonist. Bova's point is reasonable, but the film seems to have a few saving graces. It displays curiosity towards the unknown, rather than the paranoia of the '50s. Also, the closest thing in the film to a scientist, a UFOlogist played by Francois Truffaut, is portrayed sympathetically. Like Reid's character in *The Andromeda Strain*, he acts as the film's conscience, opposing the government's cover-up of the truth about flying saucers.

This image can be seen as an improvement over much of what has been offered. But in the minds of many filmmakers, scientists are still nothing but trouble. In the recent film *Capricorn One*, Hal Holbrook plays a formerly idealistic NASA scientist who worked for years to send a manned flight to Mars. But a contractor delivered a "faulty life support system," forcing the agency to scrub the flight.

To keep the space program alive, the scientist supervises a faked flight to Mars, filmed in a TV studio. The scientist commits everything up to and including blackmail, kidnapping, and murder to keep the secret covered up. The message is not new: a scientist will walk over his grandmother for the sake of his project.

Why do the media present such a poor image of scientists? Various reasons have been suggested. Bova asserts that American cinema has a wide anti-intellectual streak: "The 'natural' farmer always outsmarts the city slicker. Rural values always prevail over urban values."[15] He suggests that this attitude is naturally carried over to story lines in which scientists represent the intellectual city slickers.

Bova also suggests that another reason scientists are inaccurately portrayed is because most Americans have never met a scientist.[4] George Basalla of the University of Delaware suggests a similar reason: the public really doesn't have a clear idea of what goes on in a research institution. Basalla contrasts this with the favorable treatment of physicians in televised drama. Physicians' work is tangible; it is therefore widely appreciated.[3]

This may be changing. Although the family physician, sentimentally portrayed on TV, is still with us, successful movies have mirrored public dissatisfaction with large health care establishments. *The Hospital* (1974) was a black comedy in which the staff and patients were easily murdered by a madman in the confusion and depersonalized environment of a big city hospital. In this year's film *Coma*, an unscrupulous director of another large hospital runs a black market in heart, kidney, and lung transplants. With a recent Harris poll showing public confidence in physicians at a twelve-year low,[16] one wonders if doctors will soon face the same negative media treatment as scientists.

Basalla also asserts that the confusion between science and technology so apparent on screen is at least partly the fault of scientists.

He writes: "By overemphasizing the practical results of his work, especially when seeking public funds, [the scientist] contributes to the existing national confusion between science and technological application and opens himself to criticism that might be better directed against engineers, managers, and industrialists."[3] He further argues that scientists cultivate the image of the cold, distant, humorless individual, leading others to caricature that image.

Does the media image of scientists mold the public's image? Or does it reflect perceptions that already exist? Basalla writes of a "feedback loop between widely held American ideas of science and their popular artistic representation." He argues that "by presenting these attitudes in a popular medium...the creators of popular culture perpetuate and strengthen them."[3]

What can be done to improve the situation? Science fiction novelist and screenwriter David Gerrold, as well as other panelists at the AAAS symposium on the scientists' image, noted that blacks, women, chicanos, and gays have protested to networks when they have seen inaccurate or degrading portraits of themselves. The protests have been so effective, Gerrold said, that sometimes the networks ask feminist and minority groups to screen scripts in advance, to help guard against stereotypes. Gerrold asserted that similar pressure by scientists could yield similar results. He said, "When people tell a network, 'This is wrong,' they appoint a vice president to listen to you. They don't want anybody to make waves. All they want is to see the money rolling in."[4] Presumably similar values prevail in the motion picture industry.

If, as Sagan warns,[10] TV and films are leaving children (and many adults) with the impression that science is always dangerous and never beneficial, then scientists could not make the situation worse by making their views known. Scientists are a minority group in society, but groups that suffer discrimination must defend themselves before they win the sympathy and support of intelligent outsiders.

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