On U.S. network television in the 1940s and 1950s, pioneering broadcasters such as Roy K. Marshall, Lynn Poole, and Don Herbert demonstrated that serious science programs could also be entertaining. Developers of early science series embraced television’s ability to dramatize. They also mixed facts and fictions, combining real film footage of scientists with scientific explanations from animated cartoon characters, as in the specials underwritten by the Bell Telephone System. This survey examines the science content of early television broadcasting in the United States and the role played by key individuals, associations, and corporations in the development of innovative programming. It also considers the extent to which these programs and techniques were harbingers of trends observable in popular science communication today and identifies a number of topics deserving more research by historians of science communication.

A Survey of Science Content in U.S. Television Broadcasting, 1940s through 1950s
The Exploratory Years

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Between 1948 and the late 1950s, network television in the United States delivered a small but steady diet of images and information about science. Often combining entertainment and educational goals, programs explored all sorts of topics, from comets to chemistry, archeology to atomic physics, in formats influenced by production techniques then being developed throughout commercial television. In addition, the progress and potential of scientific research was referenced in drama programming, where physicians and space heroes alike came armed with science.

Television offered interesting new possibilities for communicating to the public about science. Radio had forced scriptwriters to concentrate on ideas.
or verbal descriptions of experiments and natural phenomena. Scientists who delivered radio talks presented their material logically, precisely, and carefully; yet compared to demonstrations in the laboratory, radio science had always seemed flat, unidimensional, and tied to its texts. Television now extended and visualized science. Although many of the first programs simply mimicked radio’s lecture model, early television innovators responded to the challenge and quickly learned how to exploit the medium’s rapidly improving technical capabilities. They supplemented scientists’ words with illustration, demonstration, and reconstruction. They added film footage of exploding volcanoes or running gazelles. They went on location to zoos as well as atomic bomb tests. And they figured out how to direct cameras through microscopes and telescopes, thereby sharing an immediate visual experience with the audience. Production approaches that are now standard practice on NOVA and the Discovery Channel derive, in fact, from experimentation by television pioneers like Lynn Poole and Don Herbert and such programs as Adventure, Zooparade, Science in Action, and the Bell Telephone System’s science specials. These early efforts were also influenced by television’s love of the dramatic, refined during its first decade and continuing to shape news and public affairs programming, as well as fiction and fantasy, today.

This article surveys the early history of the representation of science on television in the United States, part of my project to identify programs and people too long neglected in the history of science communication and to contextualize them within the history of U.S. broadcasting. It follows part 1 (LaFollette 2002 [this issue]), which examines science programming on U.S. network radio from the 1920s through the 1940s. By returning some of these early series from historical oblivion, I hope to encourage further research into, for example, why some series succeeded while others failed. To what extent were these programs harbingers of future trends or mere pleasant interludes in network television’s relentless march toward ratings-driven programming choices? To what extent did they mirror American viewers’ pragmatic cultural incorporation of science into their lives and the integration of its information into their entertainment? And how successful were scientists in influencing how science was popularized on television during this time?

The thoroughly commercial environment of U.S. network television in the 1940s and 1950s, where survival demanded that mass audiences be entertained to be retained, profoundly influenced the models for science presentation favored on television in the following decades. Its history should also push us to reconsider the ways in which we merge, within discussions of public understanding of science, the distinctive goals of educating, informing, and entertaining audiences. The social studies of science, for example, tends to treat popularization as a process ancillary to science generally—that is, as
a supplement to professional communication among scientists or, at least, influenced by that communication. When viewed from the perspective of communications studies (and especially the history of television), science appears not as something requiring special handling but as one among many potential topics clamoring for broadcasters’ attention. Science may be vitally important in the real world, but it has never dominated mass media content overall. Journalism research has long shown that science competes for space in the news hole with politics, environment, economy, and crime. Similarly, informational or educational science programs on television were expected, quite early on, to compete with conventional public affairs programming, game shows, or even weekly comedic and dramatic series. In the early days of radio, scientists had been allowed to appear somewhat on their own terms, speaking directly into the microphone with few of the artifices utilized by performers and personalities elsewhere on the airwaves. On television in the late 1940s and 1950s, the window for unfiltered communication closed rapidly. If science and scientists were to appear on television at all, and allowed to compete for audience attention, then it must be on the terms that broadcasters set. Look directly at the camera. Powder your nose (or bald spot). Look natural. And keep the technical explanation brief and to the point. The goal of that bargain was to keep the audience entertained, including, as necessary, entertaining them with the facts of science.

Early Innovators

Even in the late 1940s, Gianakos (1980, 3) observed, there was still a tendency to perceive television primarily as a “carrier” of events and information, its role more disseminator than entertainer. That attitude changed as the quality and sophistication of comedy and drama presentation improved and as more Americans purchased sets. The medium soon took on the role of friendly, reliable entertainer, always waiting to provide fantasy, distraction, or useful information.

The few notable efforts to communicate science via television before 1947 were sober offerings. Television producer Judy Dupuy (1945) recalled that one of the first science programs on General Electric’s station WGY (Schenectady, New York), on 13 December 1940, commemorated the founding of the General Electric Research Laboratory and “opened with a demonstration of Glass to Metal Seal by Dr. Francis Norton” (p. 68). In 1943, the series that Dupuy produced took viewers “backstage in radio,” watching production of a General Electric-sponsored Excursions in Science broadcast (see the discussion of this series in LaFollette 2002). As Dupuy (p. 67) herself
admitted, audiences deserved much more exciting approaches than these; educational presentations, she wrote, should be “heightened dramatically” to hold viewers’ attention.

Nevertheless, what is probably the earliest network television science series, *Serving through Science*, simply adopted a standard radio formula of panel discussions guided by a permanent host (television executive Miller McClintock), interspersed with short films produced by *Encyclopedia Britannica*. Telecast on the DuMont network on Tuesday nights from 9:00 to 9:30 p.m., *Serving through Science* lasted less than a year (from 18 June 1946 to 27 May 1947). According to Brooks and Marsh (1995, 919), viewers found the program worthwhile but “boring,” and so the sponsor (U.S. Rubber) “added a musical segment . . . which had nothing whatever to do with the subject at hand,” and the program flopped.

The stakes—and the competition—increased with the number of broadcasters and viewers. From 1947 to 1948, the number of stations increased from seventeen to forty-one, the numbers of cities served by these stations almost tripled (from eight to twenty-three), and Americans purchased more than 1 million sets (Head 1956, 158). Television strengthened technically, programmatically, and economically, quickly emerging as a “viable medium” for communicating to huge audiences and competing for attention with “radio, sports, and other cultural and leisure activities” as the broadcasting companies applied the programming and marketing skills they had developed in radio (Head 1956, 158). In 1948, three years before the premiere of the more well-known science show, *Watch Mr. Wizard*, two important science series went on the air in network prime time.

*The Nature of Things* premiered on the National Broadcasting Company (NBC) network on Monday night, 13 December 1948, with a broadcast from the Franklin Institute’s Fels Planetarium in Philadelphia. Hosted by the planetarium’s director, Roy K. Marshall, this half-hour weekly series became so popular that it ran continuously year-round until 1954. During its first season, *The Nature of Things* was scheduled for various weekday evenings, but it eventually settled into an early Saturday evening slot (except when it ran as a summer weeknight replacement for more popular shows in 1950, 1951, and 1952). Marshall has been called one of “early tv’s favorite scientists” (Brooks and Marsh 1995, 732-33). The live, fifteen-minute broadcast featured his illustrated talks and interviews with guest scientists who discussed astronomy, physics, weather phenomena, and similar topics, all woven into an “entertaining exploration of seemingly simple facts of universal science” (Poole 1950, 2-3). Marshall apparently became a popular television personality, making regular appearances, for example, during the 1950-1951 season on a musical comedy variety show.
The Nature of Things demonstrated television’s capability for realistic recreation, for showing, not just telling, about astronomy. By transmitting directly from a laboratory or by building a demonstration laboratory in a television studio, a director could now evoke a realistic sense of being there. If they remained behind their podiums, scientists might still preserve an appropriately dignified distance between “teacher” and “pupils”; if they were willing to venture closer to the camera, then they could exploit television’s ability to create an artificial sense of intimacy. They could also become familiar personalities known to their public through appearances on television rather than only their research or professional accomplishments or, with those Rae Goodell (1977) later dubbed “visible scientists,” their political and social activities.

The other significant innovative program from these early years emerged from within academe, demonstrating a keen grasp of television’s potential and proving a successful competitor for prime-time audiences. By 1947, Johns Hopkins University in Baltimore had allowed NBC to make an experimental remote broadcast of one of its “blue baby” operations to an audience of several hundred doctors and nurses in New York City (Barnouw 1968, 244; Barnouw 1982, 102), but during the next year, the university made an even greater commitment to public communication of science. Lynn Poole, the university’s director of public relations, believed passionately in television’s educational potential, so he persuaded University Provost P. Stewart Macauley to allow him to approach a new Baltimore station, WMAR, with the idea of a program based on Hopkins research. The station, eager to fill its broadcasting hours, agreed. The Johns Hopkins Science Review went on the air 19 March 1948. Later that year, the series became the first university program, on any subject, to appear weekly on network television, when the Columbia Broadcasting System (CBS) began to carry it on its eastern chain (Poole 1950, 2). In 1950, the series was moved to another Baltimore station, WAAM-TV, and was broadcast nationally via the DuMont network on weekday evenings until 1954 and then for another year on Sunday afternoons. The series received the George Peabody award in 1950 and 1952 and other national broadcasting awards through the years.

Hopkins’s willingness to support this venture contrasts dramatically with attitudes in many parts of the academic community. Criticisms of television continued a long-standing intellectual debate about whose values should dominate popular culture. The public always seemed to go its own way, ignoring the advice of social critics. “For generations,” Paul Lazarsfeld and Robert Merton ([1948] 1957) complained in 1948, “men fought to give people more leisure time, and now they spend it with the Columbia Broadcasting System rather than with Columbia University” (p. 460). Such undisguised
hostility toward entertainment, Gabler (1999, 20-21) argues, sprang from academics’ distrust of public tastes and sensibilities rather than from any caring protectiveness for American audiences; it also reflected the experts’ fears that their own authority and prestige could be challenged. Such views constructed the public as victims, mass culture as corporate tools, and the media as “victimizing agents” rather than examining media content honestly as a reflection of the public’s “genuine tastes and values” (Gorman 1996, 114, 165). Academics in the late 1940s thus often blithely dismissed television as irrelevant and frivolous, “a menace to education,” or “wasteful and dangerous” to intellectual standards and goals (criticisms cited in Heldenfels 1994, 178). Chemist Harold C. Urey apparently told comedian Steve Allen in the 1950s that although he had perceived television’s “educational potential” and even appeared on it in the early days, he had grown “disappointed” that the medium’s potential “had not been realized” (cited by Allen in his introduction to Heldenfels 1994, vii).

Neither Poole nor the Johns Hopkins administration appears to have shared such views. Throughout his career, Poole was a tireless popularizer, coauthoring many science books for adolescents with his wife Gray Johnson Poole and continually advocating television’s enormous potential for communicating about science. “Television, of all available media, is the ideal one for satisfying widespread public demand for science data,” he wrote (Poole 1950, 1).

Every week, The Johns Hopkins Science Review introduced itself as a “look over the shoulders of today’s scientists,” as a way for viewers to “catch a glimpse of the results of [scientists’] work” (program introduction, reprinted in Stettel 1955, 7). The first program in the series, presented locally, was titled “All about the Atom.” Subsequent topics ran the gamut of scientific possibilities, from archeology to public health engineering. One program, “The World from 70 Miles Up,” explored new work on guided missiles, culminating with photographs of the earth taken from space by the university’s Applied Physics Laboratory. “Seeing Is Not Believing” (7 January 1949) focused on the science of perception, with university professors Clifford T. Morgan and Wendell R. Garner as guests.

The pace for developing these live broadcasts was frenzied and remarkably compressed, compared to today’s months (or years) of planning and production. After a few weeks of program development and script writing, the production group would hold a two-hour reading rehearsal on Wednesday and then, on Friday morning, arrange the studio for that night’s broadcast. They held a two-hour dry run for camera placement, a two-hour camera rehearsal, and a two-hour final rehearsal, and at 9:30 P.M., they went on the air live for the half-hour broadcast. Poole himself acted as the host, although that
had not been in the initial plan. Once he was persuaded to appear, Poole proved to be a television natural, the type of cool but engaging personality then favored by the industry, and he remained the show’s producer, host, and chief writer until the end.

Scripts from two programs, selected “Top TV Shows of 1954-55,” demonstrate Poole’s skill in simplified but accurate presentations about science. “Toys and Science” (20 January 1954), singled out as “Top Children’s Show,” featured an inventive plot in which a toy maker explains the science behind various toys, from a simple spinning top to kaleidoscopes, mechanical helicopters, and little cars with friction motors: “it isn’t often that we stop to think that toys are the result of complex scientific research . . . and embody principles discovered by Archimedes and Newton and many other scientists,” the narrator explained (Stettel 1955, 8). That program apparently drew the series’ largest audience to date. “Conquest of Pain—Anesthesiology” (29 September 1954), designated “Top Science Show,” represented an excellent example of how Poole combined text and visuals to set a scientific advance within its historical and technological context. The script pointed out that in the eighteenth century, “Montgolfier had invented a balloon to carry above the earth” (a drawing of an eighteenth-century balloon was shown), plans were under way for the first steamboats (steamboats shown), homes were lit for gas lights (gas lights shown), and “science was moving forward swiftly . . . but human beings were suffering brutal torture when doctors had to cut into their diseased bodies” (Stettel 1955, 221). Then the program constructed a similar historical context for W.T.G. Morton’s first use of sulfuric ether in 1846. The remainder of the program revolved around a live interview with a professor of anesthesiology and film clips showing how anesthetics are administered. Both the toys and the anesthesiology programs strove to heighten viewers’ curiosity through simple, uncomplicated themes presented with unbounded enthusiasm.

In developing their programs, these early television producers had few textbooks or models to guide them. “There was no past experience from which to draw,” Poole (cited in Heldenfels 1994) explained; “all we had was a conviction that on television, informational programs could be exciting and dramatic” (p. 182). As Poole (cited in Heldenfels 1994) outlined at a 1952 symposium on educational television, the medium demanded an approach that was sensitive to television’s competitive context:

we believed that programs could be devised which would entertain, delight, and hold audience attention while giving out worthwhile information. I ask you to note that I said entertain. . . . Television is an entertainment medium for the most part, and if informational programs are to survive, they must be planned
and presented in such a way that they can hold their place in competition with the mystery drama, variety show, and quiz program. (P. 182)

Fortunately, Poole (1950) recorded many of his experiences in *Science via Television*, one of the first such guides for science communicators, and the book provides keen insight to the challenges these pioneers faced, with advice we now take for granted. The text includes, for example, rough estimates of the time involved in planning and production of a single broadcast as well as detailed descriptions of how to telecast an image in a microscope. To show living microorganisms in a drop of polluted water, the director used a projection microscope, feeding its image to a translucent paper screen. The camera then focused on the image from the opposite side of this crude screen. On other occasions, the camera lens was placed onto a microscope eyepiece.

Poole’s book provides more than a simple how-to guide, however. As he explained, television required new levels of formality and planning, unlike that necessary for popularization via print or even radio. Live television was unforgiving. It allowed no retakes. Even seemingly spontaneous roundtable conversations had to be rehearsed for the camera if guests wanted to illustrate their remarks. Everything had to be carefully timed so that programs would not run over or under their allotted minutes. “Just because the format appears to be informal and spontaneous, the program sequence cannot be left to chance,” Poole explained (p. 11).

When *The Johns Hopkins Science Review* ended in 1954, Poole created a series called *Tomorrow* (and then retitled *Tomorrow’s Careers*), which ran only one season (1955-1956) on the American Broadcasting Company (ABC). As host, Poole discussed career opportunities for young people, including careers in many technical fields. His next television venture was more successful—the general educational series *Johns Hopkins File 7*, produced by ABC in cooperation with the university, which ran from 1956 to 1960 on Sunday afternoons. This series tackled subjects ranging from art to zoology, focusing in its early years more on medicine than on other subjects but then gradually expanding its range.

**Economic Reality**

Given the success of the Marshall and Poole programs, one might wonder why similar efforts were not initiated by other universities or scientific organizations. To a great extent, the answer is money. The university underwrote all production costs and all of Poole’s time, yet *The Johns Hopkins Science Review* was frequently cited as an example of “how much can be done in
television on a virtual 'shoestring' ° (Stettel 1955, 6). The cost for an entire year’s fifty-two shows (less than $30,000) represented about what the networks were then routinely paying for a single commercial telecast. By partnering with a local station and then a national network, Hopkins parlayed its investment and reached a wider audience beyond the university without having to establish its own television facilities. Other U.S. universities were setting up their own stations, with annual operating costs running between $25,000 and $500,000, usually in support of emerging mass communications programs and with less concern for attracting large audiences (Heldenfels 1994, 179). Such money had to come from either a university’s own budget or foundation grants because the educational channels were not allowed to derive revenue from advertising.

As Heldenfels (1994, 179) notes, educational television in the 1950s faced “problems of both practice and principle,” especially as the commercial broadcasters attempted to discourage setting aside channels for educational use. Eventually, the proponents of separate stations prevailed, making sure that large urban areas had more than one channel available for educational purposes, but the Federal Communications Commission’s decision to allow nonprofit groups to acquire licenses for the educational channels did not include proposals for funding. These stations (almost always ultrahigh frequency) had weaker transmission facilities, and their programs lacked the sophistication and polish of network fare.

Only in 1975 did the federal government begin substantial funding of public television projects. In the interim, commercial television influenced the tone, techniques, and audience expectations for everything that appeared. Without lavish sets and well-known stars, the educational offerings tended to look amateurish, unless they were able, like the Hopkins series, to engage a commercial partner and attract talented producers and directors.

Museums and Zoos

Experiment with Television

In hosting a series at a museum planetarium, Roy Marshall continued a long tradition of commercial broadcast ventures sponsored, produced, or set within America’s observatories, museums, and zoos. In the 1930s, for example, the Buffalo Museum of Science cooperated on radio talks related to the museum’s exhibitions, and the Smithsonian ventured into radio (see discussions in LaFollette 2002 [this issue]). Museums and zoos formed natural partners for television. Direct broadcasts could exploit an exhibition’s visual riches or show animals in their zoological habitats. Three of the earliest such
partnerships were *Museum of Science and Industry* (NBC), broadcast live from a museum in New York City in July, August, and September 1948; *Sunday at the Bronx Zoo* (ABC), which ran during the summer of 1950 and which featured visits to the zoo’s exhibits along with discussions about the animals; and *Meet Me at the Zoo* (CBS), broadcast live from the Philadelphia Zoo during spring 1953. In the latter two series, there was a regular host, usually a television personality, who accompanied children on visits to the various animals and chatted with the zoo director or staff.3

The California Academy of Sciences, a public museum in San Francisco, ventured into production of a live television series in 1949. *Science in Action* represented a natural project for the academy, which frequently sponsored lecture and film series and other public communication efforts in conjunction with its exhibitions. And so, with underwriting from the American Trust Company, a Northern California bank, they began working with KRON-TV to create a weekly program featuring visits and demonstrations by renowned scientists. The show’s topics, Executive Producer Benjamin Draper (1956) explained, “ranged from the inevitable atoms, anesthesia, bison, and calligraphy all the way to wombats, Yampa canyon, and zoo-morphology” (p. x). *Science in Action* was on the air from September to June. Each summer, the team would film segments on location to be used during the following year.

In its first season, guests included a half-dozen Nobel Prize recipients, U.S. Navy Admiral Chester W. Nimitz, and astronomer Harlow Shapley. Along with the host, Earl S. Herald, curator of aquatic biology at the California Academy of Sciences, guests would perform various tasks in the laboratory, such as “isolate viruses, grade eggs with a micrometer or assemble a transistor,” or they would discuss their own research (Draper 1956, xi). The program strove to be “intimate, unostentatious and modest in feeling” and to encourage scientists to speak in conversational tones (Draper 1956, xv). The program thereby took advantage of the fact that programs would be viewed in homes on a small screen. As Draper (1956) explained:

> the limitations of live television, enforced to a degree also by the small size of the screen on which it is viewed, are no particular obstacle to our specific aim—an informal, close-at-hand atmosphere where the viewer sees scientists at work in their natural surroundings. (P. xv)

The settings were, of course, not really natural. The laboratory in which Herald presented the guests and their demonstrations, which audiences might have presumed to be at the California Academy of Sciences, had been constructed within a television studio. Programs included specially filmed rear projection backdrops. All sorts of tricks were used to make things clear for
the camera. Just as in the Johns Hopkins series, this was live television, not a classroom. Audiences had to be engaged. Nothing could be left to chance. A little illusion, a little entertaining deception for the sake of communicating better, was deemed acceptable. As Poole (1950, 79) declared forcefully in *Science via Television*, the scriptwriter must strive toward “reality” yet “create an atmosphere of here and now, an atmosphere leading the viewer to the feeling that he himself is beside the demonstrator”:

one of the best ways to do this is to make no mention of the “area” in which the program is being given. If the program is confined to an uncluttered, small space in which the action takes place at rapid pace, the viewer will not think about the location of the action. (P. 79)

Another ambitious museum series was the CBS Sunday afternoon program *Adventure* (1953–1956), which evolved from the same network’s radio program *Adventures in Science* (1938–1957). Produced in cooperation with the American Museum of Natural History in New York, the television series focused during its first season on research and exhibits done by the museum’s curatorial staff. The topics ranged across all the institution’s fields of expertise, from anthropology to astronomy. The first broadcast (10 May 1953) contained three segments—“a trip through space via the Hayden Planetarium,” “Life in the Garden” (a film about competition among species), and “Undersea Story” (a film exploring the lives of Sicilian tuna fishermen). Subsequent shows looked at the Saharan desert, bees, chicken embryos, human sensory perception, and Mayan gold artifacts. By August 1953, programs usually had a single theme and increasingly consisted of films produced especially for the series—“Army Ants,” “The Migration of Birds,” “Celestial Hide and Seek” (about eclipses), and “The Hopi Indians.” There were interviews with famous scientists such as Alexander Fleming and Konrad Lorenz. Certain episodes recounted the history of the discovery of cortisone and Darwin’s voyage on the *Beagle*, and some took viewers to the Alps, Alaska, New Guinea, and Tibet. In January 1955, Jacques-Yves Cousteau made one of his first television appearances on *Adventure*, with a film about the mating habits of fish, and the 19 February 1956 episode (“Catalina Under Sea”) apparently included the “first live undersea broadcast in television history,” filmed in kelp beds off the California coast (Mitman 1999, 174). Shows like these, Mitman (1999) argues, did not just entertain viewers but also encouraged them “to draw universal moral principles from nature” (p. 144).

Natural history topics were popular choices, but in fact, not every program focused on flora and fauna. Especially in its later seasons, *Adventure* embraced a far wider vision of science. During 1955, for example, the series
took viewers to a site of cold war reality—the nuclear testing facility at Yucca Flats, Nevada—where the narrator discussed the long- and short-term effects of radiation.

*Adventure*’s last season (1955-1956) offered a smorgasbord of science and culture. Bernard de Voto toured the American West and described the cliff dwellings at Mesa Verde. Comedian Henry Morgan hosted several programs on the human body and its functions, with the help of a forty-foot model. There were programs on seals, penguins, apes, headhunters, rattlesnakes, hawks, and horses and four segments on the world’s great religions. The content of the last few shows demonstrates the direction in which television was heading. Two of them included clips from new Hollywood movies about dinosaurs (*The Lost World*) and whales (*Moby Dick*), foreshadowing the movie tie-ins that now occur routinely on television today, even in the midst of science news and public affairs programs.

**The Wizard**

Few science programs can rival the cultural impact or longevity of *Watch Mr. Wizard*. Even those who never watched the show will recognize the name and associate it with science. The formula created by its host Donald “Don” Herbert—a “scientist” demonstrating experiments that children could replicate at home or school—was astonishingly simple. *Watch Mr. Wizard* began as a live broadcast from WNBQ-TV in Chicago in 1951, ran continuously on NBC until 1965, was revived briefly in the 1971-1972 season, and then was reincarnated as a weekly series, *Mr. Wizard’s World*, on the Nickelodeon cable channel from 1983 to 1991 (Amory 1972; Brooks and Marsh 1995, 1111; Davis 1995, 151-53; Dismuke 1994, 9; McNeil 1996, 562; Terrace 1976, 120). Each week, Mr. Wizard would explain one or two scientific principles to children who acted as his helpers. The first of these assistants, ten-year-old Willy, was actually one of Herbert’s neighbors, but the series quickly switched to child actors who could more reliably memorize their lines. By 1953, girls as well as boys were emoting the classic line, “Gee, Mr. Wizard!” at the appropriate moment. As Herbert himself later explained, “it was a quiet, low-key show . . . with just a child—only one child at a time—and myself. There was nothing hurried about it” (Alexander 1981, 23).

During its first four years, the series was broadcast early on Saturday evenings but thereafter became a Saturday morning show aimed primarily at twelve-year-olds. It enjoyed consistent praise, awards, and high ratings throughout its history. At its peak, *Watch Mr. Wizard* drew audiences in the
millions, but its impact was far wider. By 1956, it had prompted the establishment of more than five thousand Mr. Wizard science clubs, with an estimated membership greater than one hundred thousand. Teachers incorporated its themes into their classes, and Mr. Wizard science kits, books, and other product tie-ins filled the holiday gift lists of countless children. By 1965, children’s television had become captive of crasser, flashier products, and Watch Mr. Wizard was canceled.4

Herbert, in fact, had originally planned to be a science teacher, having majored as an undergraduate in general science, English, and dramatics. After serving in World War II, he capitalized on his earlier experience in the theater and moved into radio, appearing as an actor on such programs as Captain Midnight and Jack Armstrong, All-American Boy. He also coproduced a documentary health series on a Chicago station. The idea for a Mr. Wizard television show apparently began to form in his mind in the late 1940s, and he eventually convinced NBC to try it out on a fourteen-station network. Much like Lynn Poole, Herbert turned out to be a television natural; he was relaxed in front of the camera and able to keep young audiences enthralled. He later explained that he had designed the show around his own “interests and capabilities and then looked for a market,” eventually learning that the Cereal Institute, a trade organization of cereal manufacturers, “was looking to sponsor an educational TV show”: “they paid for the Mr. Wizard facilities and NBC provided the time” (Dismuke 1994, 9).

Throughout his career, Herbert has maintained cordial relationships with his commercial sponsors and underwriters. In the 1950s, while the Watch Mr. Wizard series was at the height of its popularity, Herbert (still in character as Mr. Wizard) served as the General Electric progress reporter. His live commercials, explaining such things as how electric motors work, ran regularly during the commercial breaks of General Electric Theater, a drama series then hosted by Ronald Reagan. As was described in its corporate magazine in 1956, General Electric liked Herbert because in addition to “being an expert at performing graphic demonstrations for television cameras,” he had “a businesslike mien and an ingratiating air” (Schramm 1960, 161-74). Herbert concluded each commercial by assuring viewers, “As you know, at General Electric, progress is our most important product.”

The businesslike air extended to Herbert’s production standards as well. Like the programs produced by Johns Hopkins, California Academy of Sciences, and the American Museum of Natural History, the Mr. Wizard series may have appeared to be spontaneous and informal, but in reality, nothing was left to chance. The explanations, gestures, expressions, and exclamations about a successful experiment were all part of the script. Television thrived on rehearsal and preparation—all for the sake of re-creating spontaneity.
Programs such as those created by Poole and Herbert, while praised by the television industry, were increasingly forced to compete against entertainers such as Lucille Ball and Milton Berle. The schedules were controlled by networks hungry for advertising dollars. The first major content analysis of television programming, conducted by the Ford Foundation, showed that by 1949-1951, advertising already constituted 20 percent of television time and that educational programs constituted less than 1 percent; by the mid-1950s, network control over prime-time hours (weekday evenings from 7:00 P.M. to 10:00 P.M.) had tightened further (Smith 1995, 55). From October 1952 to October 1954, network programming for the evening hours increased from sixty-nine to eighty-six hours per week (Stettel 1955, xv). Television slowly became a national pastime for adults, its content shaped by commercial entities that did not perceive their role as that of educator.

**Showcasing Nature**

In recent years, the growth of scholarly attention to media representations of nature has brought better understanding of the social and political values expressed in various television efforts (see, e.g., McKibben 1993; Mitman 1999; Wilson 1992). Most historians trace the photographic techniques—especially the acceptance of re-created encounters between animals and prey and the dramatization of animals’ life stories (courtship, mating, birth, and escape from death)—to the natural history films popular in the early part of the twentieth century. Television thoroughly embraced and routinized the film industry’s practices of smoothing out reality’s rough edges and promoting artificiality, but as the previous sections described, these techniques were applied to all sorts of topics, not just representations of the natural environment.

Television was ideally suited to visualizing nature. Radio may have broadcast the white-throated sparrow’s hopeful mating call, but television could now bring viewers into a sparrow’s nest, showing chicks emerging from their eggs and learning to fly as an actor narrated their perilous journey to maturity. Using such techniques, television nature programs proffered powerful intellectual frameworks for interpreting the relationship between humans and other species or between humans and the land; they created unnaturally tidy perspectives of nature; all too often, they implied authenticity where it did not exist.

Television’s greatest nature showman began his career in 1945, when Beulah Zachery, a director at a local television station, invited Marlin Perkins to bring small mammals to the studio and “talk about them” on camera (Perkins 1954, 10; Perkins 1982). The program starring Perkins, the youthful
director of Chicago’s Lincoln Park Zoo, lasted only fifteen weeks, but in 1949, the local NBC affiliate asked him to host a half-hour daytime program. Perkins proved to be such an engaging performer on Visit to Lincoln Park Zoo that the show, renamed Zooparade and broadcast live from the park, became a commercial network series on NBC from 1950 to 1957, sponsored nationwide by Ken-L Ration dog food until 1955. Within a year of its premier, Zooparade was being carried in forty-one cities; by 1952, it had an audience of 11 million (Mitman 1999, 133). As the series began traveling to other zoos around the country, it also set the stage for the star’s subsequent career and the program’s dual emphasis on conservation and re-created nature. At the beginning of each episode, Wilson (1992) recounts, “Perkins sat in his library and talked about saving animals,” attributing the rescue of many species to the efforts of zoologists and wildlife photographers (p. 133). As Perkins (1954) explained at the time, he sought to elicit the emotional connection between viewers and the animals: “by moving the camera in close, it was possible to get extreme close-ups of the animals . . . and point out characteristics and adaptations which really show and explain how the animals function” (p. 10). Perkins, however, was often showing manufactured drama rather than reality. The techniques exploited to obtain these close-ups involved “drug-and-tag,” the decades-long accepted practice of natural history filmmakers who chased animals, filmed the chase, tranquilized them, and then “captured” them again for the filmed rescue (Wilson 1992, 134). After Zooparade was canceled in 1957, Perkins returned to television in 1963 with a new series. Sponsored solely by the Mutual of Omaha Insurance Company, Wild Kingdom ran on NBC until 1971 and then in regular syndication from 1971 to 1988. It was so popular that new shows were even produced for a few years after Perkins left (he died in 1986).

Programs such as these invite more attention from historians of science communication because despite their intrinsic grounding in conservation biology and associated fields, neither Zooparade, Wild Kingdom, nor any of dozens of syndicated imitators appear to have emphasized the science relevant to what was shown; instead, they focused on animal survival and anthropomorphized relationships between predator and prey or else simply encouraged viewers to become caught up in the beauty of plumage or fur. On Zooparade, viewers met Sinbad the gorilla and Noah the camel and could read more about their fictionalized life stories in a children’s book written by Perkins himself (Perkins 1954). The programs offered comfortable havens for parents and children and were laden with factual information about habitats and eating patterns that was seemingly educational. Yet these television series made only token acknowledgment of the contributions of the zoologists, ornithologists, entomologists, and similar experts whose research had
uncovered the facts being conveyed. The television programs told nature’s story, not science’s. Only the National Geographic Society and Jacques Cousteau specials, which premiered in 1963 and 1968, respectively, deviated from this model by including interviews with scientists and explicitly discussing their research. The tradition survives, however, in the rhetoric of countless commercially syndicated nature series.

Medical Miracles

Because of its perennial interest to viewers, medicine has long been a favored topic for radio and television, with the active encouragement and assistance of the medical establishment. The first two medical series on network television appeared in 1951, and they exemplify television’s disparate approaches to medical topics. One was an informational series, America’s Health, the other a live studio drama, City Hospital. Both program types also demonstrate how medical practitioners and their professional associations interacted successfully with the television networks, just as they had worked with radio executives in the 1930s (see LaFollette 2002).

Informational Series

America’s Health, which aired on ABC from August 1951 to March 1952, consisted primarily of public health films provided by organizations such as the American Cancer Society and the Veterans Administration. It was followed through the years by other prime-time documentaries explaining the latest medical advances, such as March of Medicine, a group of occasional specials produced by the Medicine Television Unit of Smith, Kline and French and presented on NBC in cooperation with the American Medical Association (AMA). At least thirteen of these half-hour programs aired between 1953 and 1960. In 1954, they were attracting almost 14 million viewers and being praised for their production quality (Stettel 1955, 77). Another regular prime-time series, ABC’s Sunday evening program Medical Horizons (1954-1957), evolved from Erik Barnouw’s general-topic Horizons. Hosted by a past president of the AMA, Medical Horizons consisted of explanations of recent discoveries, research programs, and types of medicine, interspersed with interviews and films of operations or demonstrations of new equipment. From 1955 to 1957, the series was sponsored by Ciba Pharmaceuticals, expanded to thirty minutes, and hosted by various television personalities. In the 1950s, as is true today, public affairs programming also paid consistent attention to advances in medicine. The fifth program of
Edward R. Murrow’s See It Now series, for example, featured a remote broadcast from a Massachusetts Institute of Technology neuroscience research project (16 December 1951), and Murrow interviewed Jonas Salk repeatedly in 1955 just as the polio researcher was about to announce development of an effective vaccine. Ten of the twenty-seven research projects visited on The Search (CBS, 1954-1958), described in more detail below, involved topics in human biology or psychology, such as research on heart disease.

Most efforts to use television for public health education rather than medical reporting occurred at the local level, where station owners were happy to collaborate with county or state medical societies to produce public service content that could fill off-peak hours, just as the radio stations had done in previous eras. The AMA encouraged its members to cooperate in such ventures. Because amateur efforts were so obvious in television, the AMA cautioned local medical societies to be willing to invest far more time and effort than they had had to do for radio communication:

> telecasting requires many times the number of persons for production... Equipment, floor-space, time and personnel are all commodities in such short supply that the local station manager is rapidly developing ulcers, or a coronary, or both, over implementing his own concerns, let alone ours. In addition, television requires tremendous outlays for scenery, costumes, art work, props, special effects and lighting. (Hester, Fishel, and Magner 1955, 6)

In light of such constraints, the AMA suggested that groups choose low-budget formats like interview or roundtable talk shows or incorporate films produced by the national organizations. Involvement was voluntary, of course, and it was not always easy to persuade physicians to spend time on these projects. The AMA stressed, therefore, that advising on medical programs or working with the television industry to create such programs should be regarded as a professional obligation. The ethical physician willingly shared such expertise with the public, the AMA declared, although that responsibility was probably best fulfilled through group, not individual, efforts. “Physicians invited to appear or participate in any television program [should] obtain clearance” from their local medical society, the association recommended (Hester, Fishel, and Magner 1955, 9).

Dramatized Medicine

Given the amateur nature of most locally produced series and given the networks’ disinclination to devote prime-time advertising hours to public service broadcasting that attracted smaller audiences, it should not be surprising that the most powerful images of medicine on television in the 1950s came
via episodic drama series. The popularity of medical dramas tapped Americans’ long-standing respect for physicians as well as their cultural images of doctors as heroes armed with the insights of biomedical research. The dramas also pioneered in the practice of splicing film of real events into fictional plots.

The first television medical series presented a romanticized view of physicians and of the crises experienced in urban hospitals. *City Hospital* was a live studio drama that ran initially as a Saturday afternoon series on ABC (1951-1952) and then as a prime-time biweekly show on CBS (1952-1953). Its central character, Dr. Barton Crane, was the hospital’s medical director. The series also featured Dr. Kate Morrow, one of the few female lead characters to appear in a medical drama until decades later. The next year, NBC countered with an anthology series, *The Doctor* (1952-1953), unified by its host, The Doctor, played by Warren Anderson, who appeared at the beginning and end of every program to discuss that week’s story. And then, a few years later, James Moser created NBC’s hit medical drama *Medic* (1954-1956), starring Richard Boone as Dr. Konrad Styner.

From the beginning, *Medic*’s producers cultivated the cooperation and approval of the medical establishment because they wanted to film scenes at real hospitals and incorporate the hospital staff within the cast. The formal involvement of medical organizations represented a mutually beneficial arrangement (Alley 1985, 74; Turow 1989). A motivation researcher had pointed out to one physicians’ group that attaching friendly personalities to the profession, much as General Mills had invented Betty Crocker to promote its food products, could help to “establish an emotional connection with members of the public” (Turow 1989, 28-29). Congenial television doctors, he advised, could assist in this process. The television executives likewise regarded the medical group’s involvement as a plus, using it as a way to ensure advertisers of the show’s authenticity. Approval by a medical association added to a show’s overall aura of realism. Viewers were invited to believe that they were peering over the shoulders of real surgeons operating on real patients. The early medical drama series enhanced this assumption by incorporating film clips of real childbirth or surgical operations within their plots. Even the first sponsor of *Medic*, the Dow Chemical Company, entered into the fantasy by running advertisements for the show that shouted “*Medic* starts September 13! ‘No compromise with truth,’ ” a theme quickly picked up by the press in its reviews (Turow 1989, 25).

Lauded for its “seriousness and highmindedness,” the show sought to convey selected medical information “in a taut and intense manner, without humorous relief,” and did try to address serious topics (Alley 1976, 96). It was, for example, the first television drama or public affairs program to show
the birth of a baby (in 1955). Promising young actors like Dennis Hopper, Denver Pyle, Michael Ansara, and Charles Bronson appeared in dramas discussing such topics as manic depression and postpartum psychosis. And one episode centered on the destruction of a city with an H-bomb (“Flash of Darkness,” broadcast 14 February 1955) and featured an appearance by the real U.S. civil defense administrator, Val Peterson.

Filming in Los Angeles hospitals required the support of the Los Angeles County Medical Association (LACMA). In return for assisting the producers and allowing programs to show the association’s seal of approval, LACMA required Medic’s producers to “sign a contract that gave the Association control over the medical accuracy of every Medic script” (Turow 1989, 37). Initially, LACMA appointed a twenty-one-person advisory committee to approve every script, but that arrangement proved cumbersome. After six to eight months, the producers persuaded the association to reduce that group to five members. In Playing Doctor, Turow (1989) has documented the extensive negotiations between medical experts and producers through the years on television programs like these, revealing the extent of misunderstanding and manipulation on both sides and showing how the relationship changed once the television industry no longer believed it needed such imprimatur to attract viewers. During the 1950s and 1960s, the medical community created an effective but unique formal link to entertainment producers. One question for historians, then, is the extent to which other scientific organizations may have attempted to establish such relationships with the media. If other scientific societies made overtures to the broadcasters, were they rebuffed—or vice versa?

**Adult Entertainment**

The game show format, expressed in shows such as What’s My Line? and I’ve Got a Secret, dominated network schedules in the early 1950s. Several science-related game shows attempted to ride this popularity. ABC’s What’s on Your Mind? (1951-1952) was a panel show, moderated by Isabel Leighton, which discussed psychiatric problems in lay terms. Retitled after a few months to How Did They Get That Way? the primetime series was essentially a public service program disguised as entertainment, addressing topics like gossip, hostility, rejection, and eating disorders. Another weeknight panel show, DuMont’s The Big Idea (1952-1953), featured the display of new inventions, discussed by regular panelists and guest experts. Probably the most unusual series was What in the World? on CBS (1951-1955), where academic panelists were shown archeological and cultural artifacts from the
University of Pennsylvania Museum and then asked to identify them, giving their origin, their intended use, and the circumstances of their discovery (Brooks and Marsh 1995, 1122; McNeil 1996, 905). Regular panelists included Carlton Coon, Alfred Kidder, and the host Froelich Rainey, director of the University of Pennsylvania Museum.

Other offerings followed less playful formats. A live ABC series, Horizons, which ran on Sunday evenings from 1951 to 1955, was produced by Columbia University professor Erik Barnouw and featured talks by various academics and scientists. Margaret Mead, for example, gave a lecture titled “The Future of the Family.” In its last season, as mentioned above, the (rechristened) series concentrated on medicine. Another Sunday evening series on CBS, The Search (1954–1956), showcased research at American universities, focusing each week on a different academic project. Hosted in its first season by journalist Charles Romine and later by Eric Severeid, The Search ran as the summer replacement for See It Now during 1957 and 1958, describing research on stuttering (University of Iowa), auto safety (Cornell University), meteorology (University of Chicago), child development (Yale University), noise abatement (University of California, Los Angeles), and race relations (Fisk University). When The Search visited robotics researchers at the Massachusetts Institute of Technology (21 November 1954), the show included an interview with Norbert Wiener. Meanwhile, a romantic vision of science past was emerging on a different CBS show, You Are There, where Walter Cronkite narrated reenactments of events such as the ordeal of Galileo, the conquest of yellow fever, and the Scopes trial. Of 144 episodes in that series through the years, only 7 examined science-related historical events.

During the 1950s, the television industry came under increased criticism for the violence and sexual content of many of its prime-time drama offerings. In response, the National Association of Radio and Television Broadcasters established a television code, and stations as well as networks openly collaborated with religious groups as they attempted to dampen complaints (Heldenfels 1994, 75). To a considerable extent, the networks were vulnerable to these criticisms. Their most creative efforts were channeled into the crime shows, steamy dramas, and situation comedies that critics deemed so offensive. Moreover, the show often cited as emblematic of television’s positive potential, Omnibus, which was hosted from 1952 to 1957 by British critic Alistair Cooke, had not been initiated by the networks at all. As the first major television series underwritten by the Ford Foundation and produced under the auspices of the foundation’s Television and Radio Workshop, Omnibus sought to provide a mix of “information, enlightenment and education” for a broad, middle-class audience. Each telecast offered a variety of elite entertainment—for example, a musical or dance performance and a scene from
Antigone, Hamlet, or The Mikado would be followed by a short documentary on a serious topic. In its first few seasons, Omnibus even took viewers on visits to research laboratories, marveling at new diagnostic devices or experimental techniques. In November 1953, two separate programs looked at medical X-ray machines and interviewed a scientist involved in their development (“The X-Ray Machine” and “A Demonstration of a X-Ray Motion Picture Technique”); in January 1954, Omnibus showed a documentary titled “Latest Advances in Laboratory Chemistry” and demonstrated an atom smasher at Columbia University. That same month, Omnibus also ran the first of what eventually became more common television fare—Jacques Cousteau’s documentary film “Undersea Archeology,” his premier appearance on American commercial television. Cousteau films were also run on Omnibus during the 1956 and 1957 seasons, as were adventure films produced by the New York Zoological Society and the American Museum of Natural History.

Omnibus limped along until a final telecast on 16 April 1961, but by the mid-1950s, programs such as The Johns Hopkins Science Review, Adventure, and Omnibus were already starting to seem old-fashioned in their approach and production values. This is not to say that science disappeared altogether from prime-time network content.

Disney’s Special Magic

Elsewhere on television, a livelier approach to presenting nature and science was emerging, thanks to the efforts of one of Hollywood’s magic makers. Disneyland, created by Walt Disney Studios, ran in prime time on various networks from 1954 until 1990, when the company created its own cable network. During the 1950s, the series played a significant role in popularization of science by combining animation and live action drama, which Walt Disney himself reportedly characterized as “science factual,” in contrast to the genre of “science fiction” exemplified by such shows as Captain Video and His Video Rangers (1949-1955) (Mechling and Mechling 1995, 437).

Although Disneyland’s first program in October 1954 was, predictably, “A Pictorial Salute to Mickey Mouse,” its third featured excerpts from Disney’s award-winning true-life adventure feature films, Seal Island (1949) and The Vanishing Prairie (1954), along with behind-the-scenes narration describing how those documentaries had been made. Disney’s natural history films expressed the apotheosis of the tradition of re-creating nature through artificial representation, combining skillful photography of exotic people, places, and animals with constructed emotion, drama, and excitement.
(Mitman 1999; Watts 1997; Wilson 1992). Nature, Watts (1997) observes, never really appeared in a Disney film “on its own terms” (p. 305). And as Crichton (1999) explains, media fictionalizations of nature are typically edited to heighten the drama and build a connection between animal actions and motivations “because people like stories. . . . They find sequential narratives, even when probably untrue, interesting and organizing” (p. 1462). Disney’s adventures emphasized middle-class values and parental responsibility (although they invariably failed to mention that young animals would be abandoned if survival were at stake). When scientific knowledge entered the script—explaining, for example, courtship rituals or migration patterns—it was transmitted as if it were part of what humans had always known, not the result of years of painstaking research, observation, and experiment. In Disney productions, Mitman (1999, 110) concludes, nature “wrote the screenplay”: “the eloquence, the emotion, and the drama were nature’s own,” not, we should add, science’s.

During the early years of Disneyland, program segments were often labeled with terms such as “Adventureland” or “Tomorrowland,” which paralleled the organization of the company’s theme park. Films about nature or space travel alternated each week with segments starring animated mice or singing cowboys. During its first sixteen seasons, Disneyland devoted about 20 percent of its programs to science, nature, space, or technology themes, most of which were nature films in the “Adventureland” segments (see Table 1). Little science appeared in the series other than that associated with nature and space travel; in addition, attention to space appears to have faded by the mid-1960s. In the wildlife segments, which might be paired on a program with excerpts from a new Disney animated movie such as Pinocchio, scientific information took a back seat to sentimentality.

In the late 1950s and early 1960s, the “Tomorrowland” segments emphasized space travel rather than other futuristic technologies. Rocket scientists Wernher von Braun and Willy Ley served as guests or presenters on three separate shows (“Man in Space,” “Man and the Moon,” and “Tomorrow the Moon”). These programs have been called “typical” of Disney’s educational productions in that they “blended information and humor, pedagogy and entertainment” and were so popular that they were rebroadcast frequently and even repackaged for theatrical distribution (Watts 1997, 309). Attention to other science or math topics was sparse throughout the rest of the series, however (see Table 1). In 1957, a Disney program was titled “To the South Pole for Science,” and in 1961, there was “Mathmagic Land.” On occasion, Professor Ludwig Von Drake, a continuing character in the Donald Duck cartoons, visited to explain space or mathematics. By the mid-1960s, the science-related content consisted entirely of wildlife films.
Just as had *Adventure* and other series of the 1950s, *Disneyland* tackled the thorny issue of atomic energy. Walt Disney had initiated a number of company projects designed to “tell the story of the atom,” the most ambitious of which was the atomic energy exhibit within the theme park’s Tomorrowland section. Another aspect was production of *Our Friend the Atom*, a film first broadcast on television on 23 January 1957, along with a children’s book of the same name, written by Disney’s chief science consultant Heinz Haber, which sold more than two hundred thousand copies in its first edition (Mechling and Mechling 1995; Watts 1997, 372). In the book’s introduction, Disney explained, “We don’t pretend to be scientists—we are story tellers” who “combine the tools of our trade with the knowledge of experts” (Walt Disney Productions 1956, 11). The film combined live action footage with appealing animated characters, beginning with a clip from a recent Disney movie, *20,000 Leagues under the Sea*, about the fictional nuclear submarine
At first reading, *Our Friend the Atom* seems almost wistful in its attitude toward atomic energy—implying that knowledge of how to create a bomb was thrust on the world against its will and now humans must make the best of it by turning the energy toward peaceful uses. Walt Disney (cited in Watts 1997) is reported to have observed that “when most people think of atoms, they think of bombs”; his intention in *Our Friend the Atom*, he said, was to demonstrate “the limitless peaceful uses of atomic energy” (p. 312). In the programs, atomic energy was presented as a genie who could not be forced back into the bottle and whose power could be used for either good or evil. Television programs like these attempted to inspire optimism, not despair. Putting atomic energy in a positive light, of course, helped them remain entertaining.

**Dr. Research Turns Science into Entertainment**

Two years after the premiere of *Disneyland*, a group of innovative television specials expanded on this new model in which educational material was merged with comedy-laced cartoons. From 1956 to 1962, AT&T and the Bell Telephone System underwrote production of nine one-hour specials that combined clever story lines, sophisticated animation, veteran character actors, films of natural phenomena, interviews with scientists, and precise explanation of scientific and technical concepts—all in the pursuit of better public understanding of science. And, like Disney’s programs about atoms and natural history, the Bell series demonstrates the extent to which political and social contexts were subtly influencing public communication of science, an aspect frequently ignored in favor of retrospective assessments of their accuracy.

The Bell Telephone System, and its parent company AT&T, had been sponsoring cultural broadcasts on radio and television for years when their advertising agency, N. W. Ayer and Co., suggested they fund production of television specials aimed at family audiences. Science was a natural topic choice, given the accomplishments and reputation of the company’s research arm, Bell Laboratories. The resulting programs emphasized the connection between basic scientific understanding and useful applications, as well as how new communication and information technologies such as voice analyzers and digital computers would assist the search for knowledge.

Each special reflected the creative approach of its production team. The first four (*Our Mr. Sun*, 1956; *Hemo the Magnificent*, 1957; *The Strange Case of the Cosmic Rays*, 1957; and *The Unchained Goddess*, 1958) were overseen...
by Hollywood director Frank Capra, who was famous for such idealistic films as *Mr. Smith Goes to Washington* (1939) and *It’s a Wonderful Life* (1946). When the relationship with Capra ended, Ayer contracted with Warner Brothers Studio to produce four more films (*Gateways to the Mind*, 1958; *The Alphabet Conspiracy*, 1959; *The Thread of Life*, 1960; and *About Time*, 1962). A final special subsidized by Bell, *The Restless Sea*, first broadcast in 1964, was produced by Disney Studios but had a quite different tone and did not feature the same narrator.¹⁰

Despite the differences in their producers, the first eight programs displayed striking similarities in theme, tone, and approach, probably due to consistent guidance from the series’ underwriters and Scientific Advisory Board and to use of the same on-camera host. The central message never varied: to convey the importance of basic science and the nobility of scientists’ search for knowledge. Despite an avowed serious purpose of explaining “man’s effort to understand nature’s laws,” the series was conceived as a venture in “public education through entertainment,” cleverly integrating the latest animation techniques and amusing new cartoon characters with technical explanations often delivered by real scientists.¹¹ The Bell series’ primary significance to the history of popular science communication comes from two other aspects, however. First, the programs demonstrate how thoroughly contemporary social and political contexts can influence even the most carefully developed, accurate, and authenticated popular science. The frequency of appeals to religious authority, references to cold war espionage, casual mention of the atomic bomb, and the occasional demeaning caricatures of women and immigrants reflect the attitudes of the time. Second, because of school programs and video sales, the impact of the Bell series extended well beyond a single showing on television, a pattern repeated later in major television projects such as *Cosmos* and *NOVA*, but not yet studied as a modern communications phenomenon on its own. After the initial broadcasts, the corporation worked assiduously to provide copies of the films to schools throughout the United States either for free or at low cost; more than 1,600 prints were in circulation by the late 1950s and early 1960s, and the films had by then been shown to almost 5 million elementary and secondary schoolchildren and more than a half million college students (Gilbert 1997, 223, 367).¹² Such dissemination in the United States, coupled with occasional rebroadcasts in the 1960s and video resales in later decades, has magnified the series’ potential influence tremendously, to an extent that has gone largely unmeasured. As recently as 2001, copies of *Our Mr. Sun* were offered for sale in the gift shop of the Smithsonian’s National Air and Space Museum, alongside videos of real Apollo space missions and classic science fiction movies. Video sets of the first eight programs are available for sale through
educational material distributors and online retailers, forty years after they were first broadcast.

Discussions of the corporation’s sponsorship of a science series had begun in 1951, apparently encouraged by AT&T board member Vannevar Bush and other executives (Gilbert 1997, 202). The project involved an unusually high level of participation by scientists, as both advisors and on-camera experts. The advisory board appointed by Bell, headed by retired Bell Labs engineer Ralph Bown and mathematician Warren Weaver of the Rockefeller Foundation, represented a wide range of fields, from acoustics (John R. Pierce) to anthropology (Clyde Kluckhohn), from microbiology (Paul R. Burkholder) to physics (George R. Harrison). For each film, additional scientific experts were asked to suggest or review content, and some, such as physicist Richard Feynman, appeared on camera. According to Gilbert (1997, 206-8), Capra’s contract required that the programs “satisfy” the advisory board’s chairman and vice chairman, as well as any special advisors, yet it gave the director control over the final cut. This policy served to resolve most disputes in Capra’s favor, even if advisors objected.

Although scientists appeared throughout the films, the star turned out to be a balding, bespectacled professor of English literature at the University of Southern California, Frank Condie Baxter, who played a host character usually identified as Dr. Research. Baxter had already acquired some television experience by this time, winning a George Peabody award for his educational programs Shakespeare on TV (1954) and Now and Then (1954-1955). He had turned down many of the resulting lucrative offers to perform on commercial television until the Bell series (Head 1956, 410, n. 12). On camera, he was alternately shy and sharp, always friendly and innocuous, earnest in his explanations, concerned that the audience understand. It was never stated that Baxter was a scientist himself (he wore a sports jacket, not a white lab coat), but many viewers probably assumed so. He was unmistakably science’s expert mouthpiece, its promoter and defender. And, although he did not receive top billing in the first program, he had become the undisputed star by the fifth one, holding center stage as host and principal narrative voice. In Our Mr. Sun, he was a jolly, smiling optimist in a rumpled tweed jacket who introduced himself as Dr. Research. By the third film, he was wearing a “television blue” shirt, and by the fifth he was attired in a well-tailored wardrobe and called Dr. Baxter—polished and relaxed in front of the camera, slightly more formal in language and demeanor, clearly a professor deserving respect from the other actors.

Baxter’s costar for Our Mr. Sun was Hollywood actor Eddie Albert and then, for the next three films, Richard Carlson, fresh from his role as a government agent in television’s I Led Three Lives. Albert and Carlson each
played the role of The Writer, a wise-cracking skeptic with a slight hint of anti-intellectualism, a journalist who believes in science’s importance and relevance but always seems willing to examine its premises one more time.

The programs followed similar patterns of question and answer, designed to emphasize the tension between scientific and lay knowledge. Because questions about the natural world are limitless, the scripts implied, there will always be topics for science to explore; moreover, scientists are especially clever in understanding the limits of what they do not yet know—unlike nonscientists who fill in the blanks with myths and superstitions. Given enough time and resources, science can answer all nonscientists’ questions—and then raise a few more—but should never be presumed to have all the answers to everything. This message was established quickly in the specials, as was also the inclusion of religion as an alternate source of answers, a topic that Gilbert (1997) discusses in his analysis of the four Capra productions. 

Our Mr. Sun opened to the sound of a chorus singing Beethoven and to film of a sunrise, on which was superimposed a verse from the Book of Psalms (“The heavens declare the glory of God”). The scene then shifted to a cluttered laboratory-office, as The Writer asked how the sun was “born” and Dr. Research replied, “We don’t know exactly.” When The Writer expressed surprise that a scientist did not know the answer, Dr. Research responded that he could, of course, use his imagination to guess but that such creative action was better accomplished by The Writer. The two characters then proceeded to demonstrate their disparate approaches to knowledge seeking—on one side of the set was the writer’s “magic screen” (a manifestation of his imagination, on which cartoon characters appear), and on the other, Dr. Research’s screen, reserved for facts and films of scientists. “Your science and my magic,” The Writer observed.

In all the programs, there was constant appeal to facts, but the dialogue in the early programs often hinted that myth might be intrinsically purer than science. The narrator occasionally implied that something important is lost when science provides all the answers. Dr. Research would then reassure the audience that science would not destroy all of life’s mysteries; it had just begun the search. And at the conclusion of Our Mr. Sun, while the camera focused on a cross silhouetted against a sunset and a chorus again swelled, the cartoon character Father Time told the audience to proceed with science-based measurement of the external world but to be sure to “measure the inside with prayer.”

Such overt references to religion within a science program can seem disconcerting when viewed from today’s secularly segmented public life, where state must never touch church, and vice versa. Gilbert (1997) attributes the tone of the first four programs to Capra’s beliefs, explaining that as a devout
Catholic, the director wanted to produce a film that reassured religious Americans that “doing science was performing God’s work” (p. 200). Capra, who had a degree in chemical engineering from Cal Tech, apparently believed that the animosity between science and religion could be traced to broader cultural tensions between amateurism and expertise and that improving the public understanding of science would help to relieve that tension. Capra’s strong religious views do help somewhat to explain the extent of references in the first four programs, but appeals to religion appeared throughout all the specials, even those produced by Warner Studios. In fact, only two of the Warner programs did not contain Bible verses or religious symbols, and even those two contained inspirational statements about faith. Cultural context, in fact, probably played the most important role here. American society in the 1950s embraced a far more romantic, spiritual, and respectful view of science than is common today. Given the extent of references to atomic energy throughout the programs, perhaps the inspirational language also betokened a need for reassurance: Science may have been capable of creating horrible weapons, but this power was in trustworthy hands, the programs implied, because scientists shared values common to most of the viewers.

The set used for the first four specials—a cluttered studio-laboratory fitted with large movie screens on the walls—conveyed the feel of a science professor’s office or lab. Science was thus communicated from within its own space. Principal action in the next four programs took place “outside” science—on a sound stage or in Wonderland, for example. The settings for television’s representation of science thus evolved during a seven-year period from cluttered to stark, from warm and cozy to antiseptic and unemotional.

The entire series followed a presentation pattern copied by other television science programs in subsequent years—a host-narrator (always male) who does not himself conduct experiments but uses film segments or animation to explain scientific concepts to actors playing nonscientists (either adults or children). The quality of the cartoons, in fact, helped to distinguish the Bell specials, for they were created by some of the best animators in the business: UPA Studios, Shamus Culhane Productions (the studio that made Betty Boop, Snow White, and Pinocchio), Chuck Jones (best known as the creator of Roadrunner), and Warner Brothers. In addition, Bill and Cora Baird created a distinctive set of marionettes for Cosmic Rays. The fictional characters who explained scientific concepts—or acted as comedic foils for Dr. Research and The Writer—were three-dimensional, with engaging personalities, their voices supplied by veteran comedians such as Mel Blanc, Hans Conreid, Lurene Tuttle, and Franklin Pangborn and well-known actors such as Lionel Barrymore.
The cold war was ever present. In *Our Mr. Sun*, photosynthesis was explained using a character called ChloroPhyll, who engaged in a secret baking process and was described as so secretive that he could not be seen by even the most powerful microscopes. Signs on the character’s door read “TOP SECRET. SCIENTISTS KEEP OUT.” In *The Strange Case of the Cosmic Rays*, The Writer’s magic screen revealed a committee at the “Academy of Detection Arts and Sciences,” where marionettes of Edgar Allen Poe, Charles Dickens, and Fyodor Dostoyevsky (called “Dosty”) were awarding the “Edgar” for the best detective story of the first half of the twentieth century. The Writer interrupted the deliberations and entered “The Strange Case of the Cosmic Rays” into the contest, emphasizing that the problem of detecting cosmic rays had mystery and adventure. When the committee explained that the story must also have “scope,” The Writer responded with examples such as atomic power plants and the atomic bomb. For the latter, he did not say the phrase, just pointed to a photo of a mushroom cloud and asked, “How’s that for scope?” References to espionage and atomic bombs should not seem out of place in films produced in the 1950s, yet the lightness of the tone can still seem surprising a half century later. The cartoon character Thermo the Magician (with a European accent, mustache, black hat, and cape) cheerily described “nature’s way to make a hydrogen bomb,” and there were similar references to nuclear warfare and the nuclear standoff with Russia. In *Cosmic Rays*, the cartoon character Fagin was described as having the power of more than 5 million atom bombs, and there was an animated sequence in which the bank robbers were called “The Atom Bomb Gang,” “The Uranium Gang,” and “The Atom Bomb Boys.” When discussing hurricanes in *The Unchained Goddess*, The Writer mentioned that these natural phenomena release more energy every second than that from a dozen atom bombs and then (in an apparent backhanded reference to Project Plowshare) wondered what might happen “if we warm up Hudson Bay with atomic furnaces.” *Our Mr. Sun* stated confidently that in only eighteen years (by 1975) America’s energy demands would outstrip the capability to generate power through fossil fuels or atomic energy, and so the country must develop better means of solar power generation. But Dr. Research reassured his viewers that the human mind would solve this problem, too. A similar pattern of dire warning followed by technical reassurance appeared throughout the series.

The first program, *Our Mr. Sun*, reached about 24 million viewers and drew a respectable 32 percent share of that evening’s television audience. There were rave reviews, an Emmy award, and much favorable mail. The next two did even better (*Hemo the Magnificent* pulled a thirty-eight share and *The Unchained Goddess*, a thirty-three), but the television context itself was changing, and ratings dwindled toward the end of the project.
Obtaining knowledge requires hard work and a special type of person, of course. The Bell programs continually emphasized that while science may not look like physical labor, “scientists are burning the midnight oil” in research centers around the world, echoing sentiments prevalent in popular magazines from the 1920s through 1950s (LaFollette 1990). Issues of money and research funding were skirted throughout, and women played minor or marginalized roles, as usual for popular science of that era (LaFollette 1988). Few women scientists appeared in the filmed interviews or in the shots of groups of scientists, and some of the animated sequences (such as the character Meteora in The Unchained Goddess) openly ridiculed women.

By 1958, in Gateways to the Mind: The Story of the Human Senses, the comfortable, tweedy science was gone. The cluttered laboratory set was discarded in favor of a sound stage, with large models of ears and noses used to demonstrate the senses. Even Dr. Research seemed more sophisticated. He no longer explained science primarily to cartoon characters; instead, he lectured to (male) actors playing the roles of technicians and sound engineers. There were frequent analogies to computers yet less jargon and fewer technical terms. In one animated sequence, the brain of a stylized Joe Commuter was likened to a data bank or encyclopedia, and every sensory experience was oversimplified and pleasant—the sweet smell of cherry blossoms or bacon frying on a campfire, the sight of a sunset, the touch of a hug or kiss.

In the following year’s special, The Alphabet Conspiracy, Frank Baxter became Dr. Linguistics, accompanying a little girl (dressed like Alice) into Wonderland, where they encountered the Mad Hatter and Jabberwock and a Carroll-esque tea party. Although this topic related to communications research at Bell Labs, the special offered few technical explanations. The Mad Hatter, for example, put on a mad tea party, challenging Baxter to communicate with the other guests. The first was a jazz trumpeter, with whom Baxter talks jive; he then talks Madison Avenue lingo with a theatrical publicity man and exchanges colloquialisms with a cowboy. This was pure entertainment, with less informational or educational content. The Thread of Life returned to the question and answer style, outlining a problem, describing how science would analyze it, and then giving science’s answer. Baxter was now the only spokesperson, both tour guide and leader, with no crew to help him. Perhaps because this special explored the delicate issues of sex (and the genetic basis for gender and race), the set was clinically spare. No more stray microscopes or photos of Einstein on the wall. No signs or symbols of science appeared, other than the white coats on the scientists in the film clips. Dr. Research conversed with the other actors only through their black and white images on a wall of television screens. The program offered sterilized views of reproduction and genetics, emphasizing the role of chance and neutral,
nonreligious, occasionally prudish explanations. The program’s science was up to date, however, mentioning James Watson and Francis Crick and their model of the double helix. About Time, the final Warner film and the most abstract and stylized of the specials, paired Baxter with veteran actors Les Tremayne (as the King of Planet Q) and Richard Deacon (as his aide), in search of advice on how to set their planet’s clocks. “What is time?” Baxter asked, and then suggested that the question be answered by taking “an imaginary trip” to “Planet Q,” where people know little about time. Here, complex explanations of relativity mixed with the sheerest fantasy.

The Bell specials represented an important departure from how science had been previously presented on television, demonstrating that serious science communication could be slick and entertaining and could compete respectably in prime time with television’s regular offerings. This is science in the television age, each show declared at the outset. The conversational style echoed the soft-spoken, ironic, and occasionally sarcastic patter emerging on comedy and game shows of the time, and the two actors who served as Baxter’s initial sidekicks offered cool contrast to Baxter’s lumpy earnestness; by the last of the specials, the tone replicated television’s increasingly sophisticated presentations. The specials also came at a time when network television was eager to capitalize on the marketing success of the Disneyland series, which had shown that adults would watch shows with their children, no matter what the content, if the production values were sufficiently high. Nevertheless, the commercial networks failed to respond to this positive demonstration, and science faded away from prime time.

Magic in a Box

Heldenfels (1994) wrote that in its early decades, television grappled with two conflicting impulses—“the vision of it as an inspirational medium and the demand for it to reward its owners and advertisers” (p. 177). When it tried to feed both impulses at once, it tended to fail miserably. Quality programming survived if it was planted in a schedule’s back forty (where no one expected it to compete with the flash and glitz of prime-time offerings) or if it was blessed with generous underwriting from a sponsor-patron like Johns Hopkins University, the Ford Foundation, or AT&T. Some data on network specials demonstrate this point very well. Bailey (1967) compiled data on specials broadcast by ABC, CBS, and NBC from 1948 to 1966 and fortunately included descriptions of each program in an appendix, allowing analysis of the amount of science and medicine specials. As Table 2 shows, when
the amount of network prime-time schedule devoted to all specials rose in the 1950s, the proportion of those concentrating on science or medicine also increased, especially from 1953 to 1957. The attention to science and medicine varies considerably among the three networks, however, due to two subsidized projects, the Bell specials and March of Medicine. These two corporate projects, in fact, accounted for most of the science specials broadcast during the 1950s, even when networks became enamored of specials and their numbers overall rose.

The reason for this situation had much to do with television’s changing relationship to its advertisers. Throughout the radio age, commercial sponsors had actively shaped content, either by paying for productions themselves or by specifically vetoing potential program topics or approaches proposed by broadcasters (Lichty 1981, 63-64). When the networks began producing their own radio shows, they established a practice later adopted for television, whereby advertiser influence, albeit still substantial, became more indirect. In the never-ending quest for ever larger audiences, the television networks, producers, and sponsors negotiated attempts to translate the public pulse directly into plot lines rather than deliver the content that experts and executives may have believed the public deserved. Soon, even the sleepy corners of the television schedule were invaded in the quest for winning the ratings war. Cultural offerings on Sunday afternoon gave way to baseball, football, and golf. Only when enlightened corporations or foundations stepped in with subsidies did television science blossom, despite evidence that science shows, from Lynn Poole to Frank Baxter, could successfully combine education with entertainment and enchant millions of Americans.

Reliance on advertising and sensitivity to audience preferences were nothing new; mass magazines, for example, have long juggled advertisers’ demands, readers’ interests, and editorial standards even for science topics (LaFollette 1990). What radio and television broadcasting brought was the development of measurement techniques to track these interests in real time, allowing feedback that affected the next week’s broadcast. As Lichty (1981, 62) observes, television programming choices became “tethered to the audience”; they were like kites in that they became responsive to the most superficial complaints and shifts in attention. Moreover, the broadcasting industry continuously and aggressively asserted that its business was not one of public education. As a result, serious science programming eventually became pushed over to public television or dedicated cable channels.

The history of science content in television’s early years holds another, more difficult lesson. In 1950, Lynn Poole (1950, 78) emphasized that “a science program is not a vaudeville show,” even while he encouraged other
<table>
<thead>
<tr>
<th>Season</th>
<th>Number of Specials in Season, All Three Networks</th>
<th>Specials That Were about Science or Medicine</th>
<th>Science or Medicine Specials Not in the Bell or March of Medicine Series</th>
<th>Total Minutes for All Specials, All Three Networks</th>
<th>Total Minutes for Science or Medicine Specials</th>
<th>Total Minutes for Science or Medicine Specials without the Bell or March of Medicine Series</th>
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<tbody>
<tr>
<td>1948-1949</td>
<td>43</td>
<td>1 2.3</td>
<td>1 2.3</td>
<td>3,785</td>
<td>50</td>
<td>50</td>
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<tr>
<td>1949-1950</td>
<td>29</td>
<td>1 3.4</td>
<td>1 3.4</td>
<td>975</td>
<td>30</td>
<td>30</td>
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<tr>
<td>1950-1951</td>
<td>39</td>
<td>1 2.5</td>
<td>1 2.5</td>
<td>1,240</td>
<td>30</td>
<td>30</td>
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<tr>
<td>1951-1952</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>945</td>
<td>0</td>
<td>0</td>
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<tr>
<td>1952-1953</td>
<td>57</td>
<td>1 1.7</td>
<td>0</td>
<td>2,355</td>
<td>30</td>
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<td>1953-1954</td>
<td>33</td>
<td>2 6.0</td>
<td>0</td>
<td>1,200</td>
<td>60</td>
<td>0</td>
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<tr>
<td>1954-1955</td>
<td>39</td>
<td>3 7.6</td>
<td>0</td>
<td>2,070</td>
<td>90</td>
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<td>1955-1956</td>
<td>33</td>
<td>3 9.0</td>
<td>0</td>
<td>1,935</td>
<td>90</td>
<td>0</td>
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<tr>
<td>1956-1957</td>
<td>78</td>
<td>4 5.1</td>
<td>0</td>
<td>4,075</td>
<td>240</td>
<td>0</td>
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<tr>
<td>1957-1958</td>
<td>110</td>
<td>4 3.6</td>
<td>1 0.9</td>
<td>6,085</td>
<td>210</td>
<td>30</td>
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<tr>
<td>1958-1959</td>
<td>125</td>
<td>2 1.6</td>
<td>0</td>
<td>7,530</td>
<td>120</td>
<td>0</td>
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<tr>
<td>1959-1960</td>
<td>216</td>
<td>1 0.4</td>
<td>0</td>
<td>11,790</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>1960-1961</td>
<td>260</td>
<td>4 1.5</td>
<td>3 1.1</td>
<td>13,425</td>
<td>240</td>
<td>180</td>
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<tr>
<td>1961-1962</td>
<td>185</td>
<td>1 0.5</td>
<td>0</td>
<td>9,760</td>
<td>60</td>
<td>0</td>
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<tr>
<td>1962-1963</td>
<td>183</td>
<td>1 0.5</td>
<td>1 0.5</td>
<td>9,660</td>
<td>30</td>
<td>30</td>
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<tr>
<td>1963-1964</td>
<td>141</td>
<td>1 0.7</td>
<td>0</td>
<td>10,260</td>
<td>60</td>
<td>0</td>
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<tr>
<td>1964-1965</td>
<td>213</td>
<td>1 0.4</td>
<td>0</td>
<td>11,525</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>1965-1966</td>
<td>166</td>
<td>4 2.4</td>
<td>1 0.6</td>
<td>9,310</td>
<td>240</td>
<td>60</td>
</tr>
</tbody>
</table>

NOTE: Columns 2 through 6 were constructed by reclassifying listings in Bailey (1967); columns 7 through 9 combine Bailey’s data for the time the networks devoted to specials that season. The specials subsidized by the Bell Telephone System and by Smith, Kline & French (March of Medicine) appear to have made a difference in the amount of science specials that appeared.
educators to try out new camera angles. “After all,” he wrote, “this is show business.” Such contradictions infused science television productions from the onset, as facts and fantasy became merged with the greatest of ease. A University of Michigan survey commissioned in 1957 by the National Association of Science Writers (NASW) provides some revealing data showing the influence of this merging on the American audience. In the Michigan report (its data here reformatted as Table 3), the analysts listed the programs that respondents considered their prime source of news about science (other than regular news broadcasts, which were watched by about 28 percent of these respondents). Most named one of three series: *Medic, Science Fiction Theater*, or *Disneyland* (University of Michigan 1958, 113). A few respondents mentioned afternoon soap operas with medical themes, the science specials sponsored by the Bell Telephone System, and programs like *Mr. Wizard* and *Medical Horizons* (see Table 3). Hillier Kreighbaum, the principal author of the NASW report interpreting the survey, appears to have realized that such findings had troubling implications for science journalists. For consumers of all types of media, Kreighbaum wrote (NASW 1958), “confusion of fictionalized stories and programs with factual reporting complicated the recall” (p. 13). In no arena did this confusion seem greater than in television. The NASW committee seemed hesitant to “rush into any sweeping generalizations” about television viewers, perhaps troubled by what they were observing or perhaps reluctant to join in the chorus of antitelevision rhetoric described above. They did observe, however, that:

>a further confusing factor might be the great use of dramatization to present many ideas on television. Thus it would be more difficult for viewers with little science background to distinguish between dramas based on fact and those resting on fantasy. (P. 13)

In retrospect, these observations seem chillingly accurate. Fact and fiction had begun to merge comfortably in the world of television. Producers were skillfully interweaving films of real surgery with hospital scenes played by actors, just as they interspersed film of animals in the wild with carefully arranged simulations. Dr. Research talked to cartoon characters in the same tone he used for introducing scientists. And even the best science communicators admitted that they were now engaged in show business, competing for audience attention in an image- and information-rich world.
TABLE 3

Television Programs That Americans Named in 1957 as Their Primary Source of Science News, Other Than Regular News Broadcasts

<table>
<thead>
<tr>
<th>Program</th>
<th>Percentage of Survey Respondents Who Named That Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medic</td>
<td>30.5</td>
</tr>
<tr>
<td>Science Fiction Theater</td>
<td>19.0</td>
</tr>
<tr>
<td>Disneyland</td>
<td>10.0</td>
</tr>
<tr>
<td>Medical Horizons</td>
<td>9.2</td>
</tr>
<tr>
<td>Mr. Wizard</td>
<td>8.5</td>
</tr>
<tr>
<td>Wide Wide World(^a)</td>
<td>7.9</td>
</tr>
<tr>
<td>General Electric commercials(^b)</td>
<td>4.8</td>
</tr>
<tr>
<td>Dr. Hudson’s Secret Journal</td>
<td>3.3</td>
</tr>
<tr>
<td>Omnibus</td>
<td>2.8</td>
</tr>
<tr>
<td>Science in Action</td>
<td>2.6</td>
</tr>
<tr>
<td>Telephone Hour(^c)</td>
<td>2.6</td>
</tr>
<tr>
<td>Hemo the Magnificent(^c)</td>
<td>2.6</td>
</tr>
<tr>
<td>Our Mr. Sun(^c)</td>
<td>2.2</td>
</tr>
<tr>
<td>The March of Medicine</td>
<td>1.8</td>
</tr>
<tr>
<td>Dr. Christian</td>
<td>1.5</td>
</tr>
<tr>
<td>U.S. Steel Hour</td>
<td>1.3</td>
</tr>
<tr>
<td>Zooparade</td>
<td>1.3</td>
</tr>
</tbody>
</table>

SOURCE: This table was constructed by the author from data in University of Michigan (1958, 113).

a. *Wide Wide World* was an NBC documentary series that ran from 1955 to 1958, hosted by Dave Garroway. Each program visited a different location throughout North America but did not especially focus on science.

b. In 1957, Don Herbert performed in General Electric Company commercials in the character of Mr. Wizard.

c. *Telephone Hour* probably refers to the Bell science specials. *Our Mr. Sun* and *Hemo the Magnificent* were the first two specials broadcast.

Notes


2. Television’s creation of celebrities is discussed at length in such works as Gamson (1994) and Schickel (2000).

3. *Sunday at the Bronx Zoo* was cohosted by William Bridges and Durwood Kirby (later famous as comedian Garry Moore’s sidekick). *Meet Me at the Zoo* was hosted by a CBS sportscaster and featured regular appearances by the director of the Philadelphia Zoo, Freeman Shelly.
4. When the series was revived briefly in the 1971–1972 season, critic Cleveland Amory (1972) marveled at its consistency. Herbert was still “doing the same kind of show” as before, Amory observed, and would “still be doing it in 2051” (p. 48). In the 1970s, Herbert received funding from the National Science Foundation and General Motors Research Laboratories to produce a syndicated series of 208 eighty-second science inserts intended for stations to use as fillers in the rapidly expanding local news hour. The How About . . . series was seen on 135 stations in 1981. And in the 1990s, Herbert worked with the National Science Foundation and the Nickelodeon channel to develop a fifteen-minute series for science teachers, Teacher to Teacher with Mr. Wizard, and other educational materials developed through the Mr. Wizard Institute.


6. This quote is from the 1952 Peabody Awards Digest, as cited in the Library of Congress catalog description of Omnibus.


9. Watts (1997, 308-9) said that Walt Disney’s interest in space was prompted by reading the famous Collier’s Weekly series of articles on space exploration; these ran from 1952 to 1954 and were written by Willy Ley, Wernher von Braun, Heinz Haber, and other experts.

10. The Restless Sea, directed by Les Clark, is not addressed in this analysis. It is not marketed with the other eight videos, but a thirty-four-minute version is available for sale from Disney Educational Productions.

11. These are phrases from the opening and closing credits for each film.

12. The data cited in Gilbert (1997, 223, 367, n. 62) are based on information in archival manuscripts.

13. Other members of the Scientific Advisory Board were biologist George W. Beadle, medical researcher John Z. Bowers, microbiologist Paul R. Burkholder, chemist Farrington Daniels, marine geologist Maurice Ewing, physicist George R. Harrison, and anthropologist Clyde Kluckhohn. Physicist John Pierce joined the board during production of Gateways of the Mind.

14. In addition to participating in an active program of amateur theater productions while an undergraduate at the University of Pennsylvania, Baxter had assisted in the zoology department and worked with scientist Harold S. Colton in fieldwork in Arizona’s Painted Desert.


16. In About Time, for example, Baxter asked viewers to imagine that the life of the planet occurred in a single twenty-four-hour day. He started the clock at midnight, 4.5 million years ago. At 2 P.M., life began. At 7 P.M., life left fossil traces. At 11 P.M., the dinosaurs roamed. Only two seconds before midnight, human species appeared. The last one-tenth of a second represented the last 6,000 years. And in the last one-thousandth of a second, World War I and World War II took place. There were graphic symbols for all these events. The one for the twentieth-century wars was a mushroom cloud.

17. One exception to this occurs in the discussion of DNA, wherein Harriet U. Taylor, a woman with a slight accent and wearing a white coat, demonstrates an experiment using petri dishes, test tubes, Bunsen burners, and a microscope.
References

LaFollette / SCIENCE CONTENT ON U.S. TELEVISION


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