

**Captioning at WGBH-TV:  
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By  
Sharon Earley

*After graduating with a B.S. in History from Bates College, Sharon Earley joined the Caption Center at WGBH-TV in June 1973. She participated in the planning and development of The Captioned ABC News and worked as a caption writer, associate producer of The Captioned ABC News and assistant project director before becoming director of all caption center activities in February 1977. Her writing experience includes working as a free-lance reporter for a daily newspaper and having articles published in the ACT Handbook on TV Programming and Children with Special Needs and in the national magazine, The Deaf American, in May 1976.*

Six p.m., December 3, 1973. ABC feeds its evening news to affiliates across the country. WGBH, Boston's public television station, is also receiving the signal, and WGBH engineers are recording *The ABC Evening News* for rebroadcast.

In WGBH's Caption Center, a team of five captioners is also at work. Each person assumes a position, A, B, C, D, or E, and follows a tightly orchestrated schedule. They start by making nonbroadcast recordings of the program, three audio tapes and two half-inch helical videotapes. One person, designated as person A, is watching the show and making a log of the reports and the commercial breaks. At the first commercial break, another captioner (person B) stops an audio tape, rewinds it, and begins to type a verbatim transcript of the news. Once a few completed pages appear, a third captioner (person D) breaks away from viewing the incoming news program to edit the transcribed material into captions. At the third interruption, another captioner (person C) stops a second audio tape and begins to transcribe from the first commercial. A fifth person (person E) starts to check the edited captions to see that they do not include idioms, that they are written at an approximate sixth-grade level, that the text has been condensed by about one-third and that no obvious or subtle departures in meaning have occurred in editing the original script of *The ABC News* into captions.

At 6:30, the entire show has been recorded. Person E plays back one of the half-inch videotapes of the program and checks the timing of the edited captions for reading speed. At the same time, E is watching the ABC video and noting on the script where the captions will be placed on the screen—lower, in most instances, but middle when ABC ID's appear lower third, top of screen when an off-camera reporter is talking, and left and right, in the direction of the speaker, when dialogue occurs.

## **The Debut of the Captioned ABC News**

Satisfied that the captions are well written, accurate, and properly paced, E gives the checked pages to person D (B takes over the editing task) who begins to type the captions into the Vidifont character generator system.

Person A travels to the tape room to oversee the editing of all six minutes of commercials to black. It takes about 20 minutes; then A returns to the Caption Center office and takes over E's job of checking, timing, and placing, so that E can start transcribing the last portion of the original audio.

While A continues to check time and place, the other four captioners complete the transcribing, do original editing of the transcript, and type the captions into the Vidifont.

Though the checking and Vidifont typing require another half-hour, the transcribing and original editing is completed by 9:30. Working with the portion of the script that has been checked and typed in and

with the second half-inch videotape, persons B and C rehearse the display rate of the captions. At the same time, they are again checking the captions for clarity of expression and accuracy.

Person D compiles brief reports on New England sports and weather and enters them into a second character generator, a Videograph. Person E continues to enter news captions into the Vidifont.

By 10:00, A has completed the checking process and starts to plan the first broadcast of *The Captioned ABC Evening News*, which will have captions added over the news and feature materials run in place of the commercials. Some of the insert material is pre-produced; the sports and weather reports will be produced live on air. Person A determines the order of the breaks, pulls the proper tapes, selects the necessary slides and audio cartridges, and prepares a format sheet for the evening's broadcast.

E finishes the caption entry process by 10:10 and puts the system into the display mode. Each caption is called out of memory to be proofread.

At 10:30, A departs to the control room to set up for broadcast with the technical staff. E is finishing the proofing. After each caption has been checked—about 400 in all—E returns to edit mode and begins to correct the captions that had errors. Once B and C have finished their check and rehearsal of the captions, they give the list of changes in the script to E. B stays to help E make the adjustments; C joins A in the control room.

At 10:55, everyone is ready for air. The captions have been checked and corrected, the display rehearsed, and D has programmed the sports and weather breaks. A has had the engineers phase up, has checked that the roll-in tapes are cued to the right cuts, that the captions matte properly, and that the slides are all in order.

Each person's on-air role is predetermined. A will direct the broadcast; E will act as the control room production assistant. C will manually change the captions with support from B. D will operate the Videograph.

10:59:40

E: "Ten seconds to the roll . . . 5, 4, 3, 2, 1 . . ."

A: "Roll tape."

E: "Ten seconds to air . . . 5, 4, 3, 2, 1 . . ."

A: "Take VTR 1, matte captions."

At 11:00, *The Captioned ABC Evening News* is on the air for the first time. Two stations in the Eastern Educational Network are carrying the program, the first national network news program captioned for the deaf and hearing impaired. It's a big night, celebrated by the staff, who have been working toward this evening for six months, and by deaf viewers, whose plea for captioned news has finally been answered.

By the end of the first week, six more EEN stations began to carry *The Captioned ABC Evening News*, and in January 1974, four more stations joined. On August 5, 1974, the program became a national PBS program with 56 stations providing the service.

Today, *The Captioned ABC News* is seen on 141 PBS stations from Miami to Anchorage. The title no longer includes “Evening”; the insert materials are more sophisticated; the production schedule has been modified to accommodate two deaf staff members and a move to the 6:30 feed from ABC; the computerized Vidifont system has been reprogrammed; most of the original staff has moved on. But the philosophy that has governed the content of *The Captioned ABC News* has not changed significantly in the four years since that first program aired.

## Development of Captioning at WGBH

The WGBH approach to captioning was pretty well defined by the time the staff took on the challenge of captioning *The ABC News*. WGBH had first become involved in captioning in October 1971, when the Bureau of Education for the Handicapped, U.S. Office of Education, contracted the station to produce a captioned television program. WGBH offered one of its most popular programs, *The French Chef*, for the captioning demonstration.

BEH judged the pilot project a success, and contracted WGBH to produce an additional 25 captioned *The French Chef* programs and 26 other public television programs to be selected later.

WGBH began captioning as a broadcaster rather than as an agent with expertise in deafness. The technical aspects of captioning required some preparation, but they posed no real problems. The superimposition of printed material over existing video is a routine activity at any TV station. WGBH used a standard Vidifont character generator to create the captions and “married” the Vidifont to a computer (General Automation SPC-16) which could store on disk an unlimited number of captions. To control the timing of caption display and erase, the system was programmed to read timing beeps laid down on the videotape’s cue track—SMPTE time code—and pop captions in and out as programmed.

While the technical challenges of captioning were easily met, the subjective considerations involved in captioning posed many problems. The audio track, which a broadcaster relies on so heavily to provide essential program information, was suddenly useless. WGBH was attempting for the first time to communicate program content entirely by visual means.

Television producers take into account the capabilities and limitations of both their medium and the target audience when creating a program. WGBH had much to learn about its medium—print—and about its target audience—the deaf. We needed to know: How much information can a viewer—a deaf viewer—absorb visually? How long should captions be? How long should they stay on the screen? What is the best way to integrate print with program visuals?

Phil Collyer (who managed WGBH’s captioned efforts) and his staff enrolled themselves in a self-directed crash course in the science of reading and in deafness. They called on others who were producing captions, consulted with reading experts, deaf educators, and deaf people themselves. They read books, periodicals, census materials—anything from which they could glean information related to the task of captioning.

Through the research, and by actually captioning programs, WGBH developed captioning guidelines in two areas: presentation and content.

In the presentation of captions, WGBH's goal was to make the captions as communicative as possible, to serve as a printed soundtrack that provided the information in the audio track without interfering with visually presented information. The following guidelines were applied:

1. Captions deserve visual prominence. The audio track in most programming carries information essential to comprehension. Bearing in mind the fact that captions serve as the audio track for deaf viewers, it only made sense to WGBH captioners to caption using good-sized (28-scan-line high), easy-to-read characters, and to place them prominently on the screen. Essentially, we rejected the notion that captioning should be unobtrusive with the same reasoning that prevents a producer from recording the audio track at less than optimum level for hearing viewers.
2. Avoid covering important visual information. Much information is carried visually; to obstruct it with captions would cause frustration and possibly interfere with comprehension on the part of the viewers. Captions, which would appear over faces, for example, were avoided; when a face was shot full-frame and captions had to appear over them, they were shortened to one-line captions to minimize obstruction. When Julia Child was cracking eggs in the lower third of the screen, we moved captions to the middle third so that viewers could see her actions. When such activity occurred on the left side of the screen, captions appeared to the right, and so on.
3. Use caption placement to identify speakers. In programs in which speakers were not always alone in the shot, or were off-camera, we indicated dialogue and identified speakers by placing captions left or right of the center of the screen in the direction of the speaker. Off-camera narrators were captioned at the top of the screen.
4. Avoid captioning over shot changes. Because the eye does not immediately differentiate between a complete change in video and a change in background video only, it tends to rescan a caption that remains on the screen over a shot change, returning to the beginning of the same caption and failing to complete the first reading.
5. Limit captions to two-line lengths when possible. Two-line captions are preferred as covering less of the original video and as a less formidable reading task.
6. Caption in thought units. Given the limits on caption length, full sentences rarely fit into single captions. Each caption should be a completed idea that makes sense in itself and can be retained.
7. Eliminate unnecessary punctuation. Optional commas, for example, are dropped as excessive clutter. Commas, which would appear at the end of one caption, are likewise omitted; the change of captions makes the break that a comma provides.
8. Everything, but everything, must be checked and rechecked for accuracy. The attitude of the caption producer toward the deaf audience is reflected in the quality of the material generated.

In developing presentation techniques, WGBH was working largely on its own turf. Content guidelines were more difficult to formulate. Again, however, basic broadcast techniques impacted heavily upon

WGBH's approach to captioning. Advertisers, subtitlers—any producers who use printed text to communicate—make sure that information remains visible for enough time for the audience to read it easily. Broadcasters also prepare scripts with their target audience in mind. A news brief for children may analyze adult programs but in less sophisticated terms than an adult newscast does. The adult program, in turn, does not use the technical, military, diplomatic, or economic terminology that the specialists use; it reports the news in the layperson's language.

The caption medium is especially demanding. A viewer must simultaneously absorb the information provided by two separate sources, audio and video, visually. And, unlike reading a book, there is no second chance when reading captions to refer back to a previous paragraph once confusion sets in. Captions appear briefly and are gone.

Captioners at WGBH recognize two needs: (1) to reduce the amount of text in the average television program (roughly 180 words per minute) to allow time to read the captions and watch the program video, and (2) to adjust the language itself so that comprehension of the captions can be rapid and accurate.

Reducing text and modifying language seemed the optimal approach to captioning for any audience. The special characteristics of the deaf, whose handicap poses a tremendous obstacle to language acquisition, made these adjustments of the original script essential.

Text reduction plus language adjustment equals editing. Although everything we knew about the medium and about deafness pointed to the need for edited captions, the decision to edit was not easy to make. It would mean that the deaf audience would not receive its information in precisely the same terms that the hearing did; in fact, some information would be omitted altogether. It meant that the programs WGBH captioned would not afford viewers a great deal of exposure to unfamiliar terminology.

WGBH's decision to edit for reading speed and language level was essentially an affirmation of its role as a communicator. Our job was to make viewing a program enjoyable and meaningful to deaf viewers. When editing was necessary to insure comprehension or to prevent viewer frustration, we edited.

When verbatim captions would pass too quickly to be read, we reduced text along the following lines:

1. Caption the complete and corrected thought; omit rephrasing and misstarts.
2. If the format allows, bring in the caption a little ahead of audio; hold it in place even after the speaker has finished.
3. Omit descriptions of clearly visualized materials.
4. Condense the roundabout statements; express the intent of the speaker directly.
5. Eliminate, but only as necessary, information, which is least important to overall program content.

In modifying language, the captioner again had guidelines to follow:

1. Rephrase idioms that are not self-explanatory.
2. Avoid using passive verbs.
3. Structure short, direct sentences.
4. Substitute commonly used synonyms for “\$25” words.
5. Do not use contractions which resemble other words if the apostrophe is overlooked, i.e., “she’ll,” “we’re.”

In reducing text, the captioner had to use common sense. A slip of the tongue might be retained in the caption script because it was humorous. A seemingly irrelevant aside might be captioned because someone refers to the comment later in the program.

Subjective considerations were part of language modifications also. When difficult original language would not adversely affect comprehension, it appeared in the captions.

Captioners had guidelines to follow, but had to exercise a great deal of independent judgment at the same time. The hard and fast rules applied to the job were few and simple: Do not alter the intent of the speaker. If the original text is ambiguous, even totally incomprehensible, do not attempt to interpret it, improve it, or restate it. Caption it verbatim.

These were the captioning techniques applied to *The French Chef*. During August and September of 1972, eight *Captioned French Chef* programs aired over selected PBS stations. WVIZ-TV, Cleveland, Ohio, in cooperation with the Society for the Deaf, the Cleveland Speech and Hearing Center, WGBH, and PBS Research surveyed 106 viewers of *The Captioned French Chef*. This survey, while by no means a conclusive evaluation, indicated that The Caption Center was on the right track.<sup>1</sup>

Seventy percent of the respondents had lost their hearing before the age of two. Forty-eight percent classified themselves as “totally deaf,” twenty-seven percent as “almost totally deaf.” Sixty-seven percent of respondents “greatly enjoyed the programs,” twenty-two percent “moderately” so.

To the question, “How did you find the words used in the programs?” 4 percent found the words “too hard,” 78 percent “just right,” 7 percent “too easy.” Eighty-one percent of the respondents indicated that the programs had “about the right number of captions.” Eighty-three percent answered that the time each caption was on the screen was “about right.” Eighty-seven percent found the number of words in each caption “about right.” And 81 percent of them indicated that they liked the caption placement.

One hundred percent of the respondents answered “yes” to the question, “Do you want more television programs with captions?” In response to the follow-up question, “What kinds (of programs do you want captioned)?” 90 percent of the group listed “News and weather shows.”

## Preparing the Captioned News

That the deaf community wanted television news to be captioned was no surprise to anyone. Dr. Malcolm Norwood had been aware of this longstanding need for years. But until 1973, it had seemed

impossible. Many details needed resolution, but the most serious problem was the time it required to turn around a captioned version of a program.

The pieces fell together rapidly. In January 1973, the WGBH captioning staff undertook to caption Richard Nixon's Inaugural Address. The speech itself lasted 21 minutes. It was captioned and rebroadcast in five hours. With a same-day turnaround of a 21-minute program proven feasible, a 23-minute news program suddenly appeared within reach.

In the meantime, ABC was allowing another PBS station, WXXI in Rochester, New York, to broadcast *The ABC Evening News* with a sign language interpreter keyed into the screen. This demonstration of cooperation made ABC the logical network to approach first for permission to caption its news show and rebroadcast it on public television. ABC agreed to allow its program to be used free of charge and further agreed to permit the captions to be edited for language level and reading speed.

Collyer proposed *The Captioned ABC News* to the Bureau of Education for the Handicapped. Funding was secured, and the project geared up in May 1973. Collyer enlarged the staff. New captioners trained first on non-news programs to familiarize themselves with already established captioning techniques and equipment operation. Guests who had expertise and first-hand knowledge of deafness met with the staff to discuss specific captioning problems and to help captioners better understand the population they would be serving. Barbara Levitov, who had taught deaf children and who was heading toward interpreter certification, became a full-time language specialist. Under Levitov's tutelage, the staff acquired basic sign language skills to increase their understanding of how the deaf communicate.

The staff began to watch and discuss *The ABC News* daily to select individual stories and see what kinds of problems the news offered. It was immediately apparent that captioning *The ABC News* presented more challenges than any of the other programs The Caption Center had encountered, by virtue of the nature of news programming itself. A reporter has to present a great deal of information in a very short amount of time, and selects each word he uses carefully. A news program contains very little extraneous verbiage. There is very little time that is not filled with narrative. Editing for language level and reading speed appeared as if it would be very difficult.

But editing seemed more necessary than ever, precisely because of the nature of the news. The audience would encompass the whole range of language skills. The news contained a great deal of difficult, unfamiliar terms, and was faster-paced than most shows. Language simplification was necessary to make the content of the program clear, text reduction to allow viewers time both to read the captions and to see the footage of the actual news event. The short turnaround also posed difficulties. To accomplish it, several different team members would have to edit the news script into captions. In order to maintain a consistent captioning style from story to story, editing guidelines had to become much more formalized, and the decisions that captioners needed to make in the situations when guidelines conflicted or did not exist, standardized.

Applying what the staff already knew about general captioning to the news and dealing with specific problems as they arose seemed to be the most direct approach to developing techniques for captioning the news. We made regular recordings of *The ABC Evening News*, and each captioner edited a portion of the script into captions. The staff would meet, review the editing, and discuss its merits and weaknesses. Over a period of time, the editing became more stylized, and each captioner's work harder to distinguish from another's.



The next major task was to develop a schedule for the production of the captioned news. ABC fed the program at 6:00 each evening; with an 11:00 airtime scheduled, the show had to be ready in exactly five hours. There were a number of tasks to be accomplished within that time. A transcript of ABC's audio had to be typed. That had to be edited into captions. The captions needed to be checked and placed, and then entered into the Vidifont system, checked once more and corrected. Because there was no time to control caption display with the computer time-code system, captions had to be changed manually, live on air. This required a rehearsal. In addition, we had to prepare insert material to fill ABC's commercial breaks and set up for a live broadcast.

Collyer put a stopwatch to each captioner to determine the average amount of time he or she required to transcribe, to edit, to type in captions, and drew up schedules, which were tested and revised until one finally worked.

To maximize speed, the schedule rotated captioners from task to task. One person could transcribe at peak efficiency for about an hour before fatigue set in and slowed the typing. So an editor relieved the transcriber, who moved on to another task.

The schedule called for five captioners each night, each of whom assumed a position that defined both their production and on-air duties. Each of the seven news captioners trained in every position so that when the air date arrived, every position could be covered in the event of sickness or vacation.

Night after night, captioners turned out mock captioned news programs. Usually they were completed by 11:00 p.m., but sometimes deadline was not met. The next day, the staff reviewed each rehearsal show, pinpointed reasons for missed deadlines, and discussed the production's weaknesses. Twice prior to air, we invited a group of 25 members of Boston's deaf community to WGBH to view rehearsal shows and comment on the way *The Captioned ABC Evening News* was shaping up. On both occasions the reaction was very positive; language, pacing, and caption placement met with approval, and on December 3, 1973, the nearly eight months of research, training, and rehearsal culminated in the first broadcast of *The Captioned ABC Evening News*.

## Continuing Refinements

*The Captioned ABC News* of 1978 reflects the skill and experience that The Caption Center has acquired over five years. The presentation rate of captions is much more even, at about 120 words per minute. Language adjustments are more uniform, with each news program falling into a sixth-grade reading level. News captioners have developed their own stylebook to govern punctuation, capitalization, use of abbreviations, and so on, to provide a consistent look to each program.

The material inserted into the ABC commercial breaks is much better produced. A "Late Report" appears each night to update the early evening news. Sports and weather reports are now national in scope. "Deaf Heritage," a feature that appears each Tuesday night, is a well-researched history of the personalities and events which have had a lasting effect on the lives of the deaf. "Chronicle," formatted in a newspaper style, is a weekly report on current events that affect the deaf community. A consumer series provides product and safety information to our audience.

The changes that have been incorporated into the *Captioned News* over the years are essentially refinements to an approach that all the feedback The Caption Center has received supports as valid.

In the summer of 1974, Carolyn Ball, now a news captioner, then a candidate for a M.Ed. from the University of Massachusetts, conducted a survey of 125 captioned news viewers,<sup>2</sup> the results of which indicated that the captions were useful and formulated in the right direction.

Asked about language level, 111 of the respondents answered that the words in the captions were “about right,” 13 found them “too easy.” With respect to the pacing of the captions, 106 classified the amount of time a caption remained on the screen as “about right,” 12 people felt the time allotted to each caption “too short,” 5 “too long.”

Not everyone correctly understood why captions were placed in different parts of the picture, but 96 responded that caption placement facilitated their understanding. When asked, “How much of the news do you understand?” 74 respondents said “all” of the news, 40 answered “most” and 8 replied “about half.” One person checked off “most” and “all,” another “most” and “half.”

Ball’s survey was important in that it indicated that the news was captioned at a rate and language level that the majority of respondents found satisfactory. But the survey was by no means conclusive, and in 1975, WGBH contracted with the Deafness Research & Training Center at New York University to conduct a formative evaluation of the *Captioned News* on a national level.

The survey materials designed and pretested by Deafness Research included a questionnaire booklet for written responses and four alternative videotape versions of sample captions for demonstration purposes. Barbara Levitov, our language specialist, conducted evaluation sessions in 36 cities across the country. One thousand one hundred ninety-four persons participated in the evaluation.

The final report<sup>3</sup> concluded that four-fifths of the respondents reported that they understood the captions all of the time or most of the time. More than four-fifths responded that the vocabulary was about right, easy, or too easy. However, responses to a series of four questions about the speed of the captions indicated a strong desire for captions to remain on the screen for a longer time.

Respondents were asked to rate the special features of *The Captioned ABC News*. The overwhelming favorite special feature was “Special Deaf Events.” “News Background,” “Captioned Consumer,” and weather were the next most-liked series.

The study confirmed that the techniques applied to the *Captioned News* were appropriate, but did initiate some changes. Captioners began to use more difficult language in the captions, though they continued to maintain a sixth-grade reading level as an overall goal level. The reading rate of the captions was more carefully checked; the tendency of the caption rate to creep up above the 120 words per minute controlled. And the features that filled the commercial breaks began to focus more upon subjects of particular interest to the deaf.

Viewer reaction to *The Captioned ABC News* has been by far the most regular and heartwarming source of feedback about the program. Letters of praise and thanks have flowed in since the show’s first air. Few viewers refer directly to presentation techniques or caption content, but instead offer the generalization: “At last I can understand the news” or “You’re doing a great job, please keep it up.”

## REFERENCES

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