TELEVISION

AND

THE HEARING-IMPAIRED

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Department of Communications

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1. INTRODUCTION

The "hearing-impaired" as referred to in this paper include all those persons within the entire range of hearing impairment; that is, the hard of hearing to the profoundly deaf.

It is estimated that there are over 1.5 million persons in Canada who have hearing impairment in one or both ears which is severe enough to prevent their full enjoyment of the aural portion of television broadcasting. Of these, 200,000 are considered profoundly deaf; that is, they are unable to hear and to understand speech. In the United States, the corresponding figures are 14 million and 2 million, respectively.

Hearing-impaired persons can be served by broadcasting to some extent by presenting information in graphic form; such as with headlines, weather information, sports scores, etc., but extensive visual display of information which is normally provided aurally is reported to distract and to annoy a large minority of hearing persons, resulting in a possible loss of audience. Broadcasters, therefore, tend to use this as an explanation for their failure to better serve the hearing-impaired.

Thus historically, television has been of very little benefit to the hearing-impaired. Lest the reader think this is an overstatement, he is invited to turn down the audio portion of a TV "talk show" for only a few minutes and try to grasp the essence of the conversation, or if the hearing person believes that the hearing-impaired are blessed with superior lip-reading skills, it should be pointed out that even the most skilled lip-readers cannot follow a normal conversation closely, as over 75% of all English words look the same on the lips, while the proportion for French words is somewhat lower.

This historical neglect by television broadcasters of the hearing-impaired, fortunately, has recently begun to be remedied, thanks partially to attitudinal changes but more to technological innovation.

There are three main ways of adapting television to meet the needs of the hearing-impaired. They are:

a) by developing original productions especially for the hearing-impaired;

b) by employing an interpreter who presents a visual "sign language";

c) by providing captions, or translations of the TV soundtrack into words, that are shown on the viewer's television screen.

All three means will be addressed to some extent in this paper; however, more attention will be given to the last means - the use of captions, as captioning is considered to represent the state-of-the-art in television for the hearing-impaired and offers the greatest potential in the immediate future for a dramatic improvement in the ability of the hearing-impaired to enjoy television as never before.

It must be clarified, however, that it is not captioning, per se, which offers such promise; for as mentioned above, broadcasters fear that the hearing population would object to extensive use of any visual information display tech-

nique. Rather, it is the recently developed technological system which enables captions to be seen only on television sets equipped with a special decoding device but not on any other sets. These captions are thus known as "closed", and the system employing them as "closed captioning" - as opposed to conventional or "open captioning", which appears on all viewers' TV screens and is employed, for example, for foreign-language movies or for the Captioned ABC World News Tonight.

While this paper will deal with both open and closed captioning, it will deal more with closed captioning, particularly regarding developments in the United States.

It should be acknowledged here also, for the reader's interest, that there is activity in the area of television and the hearing-impaired in several countries throughout the world - including Australia, Austria, Finland, Sweden, Norway, Denmark, Iceland, Great Britain and Japan. However, this paper deals only with developments in the United States and in Canada.

This is for two reasons. First, the United States clearly appears to be the world leader in the area and, secondly, the implications of the situation in the United States are of more direct and greater significance for Canada than is the case with other countries.

In addition to reviewing developments in the United States, therefore, this paper presents a status report and analysis of Canadian developments (including the implications for Canada of the U.S. situation) and those factors which may hinder progress in this Country.

Finally, suggestions - in the form of options - are presented as a basis for consideration of possible remedial action in Canada. For the reader's convenience, these suggestions appear immediately after the "summary and conclusions" section of the paper.

2. SUMMARY AND CONCLUSIONS

The hearing-impaired population in Canada has been estimated at 1.5 million, including 200,000 who are profoundly deaf. In the United States the corresponding figures are 14 million and 2 million, respectively.

In the past fiscal year the U.S. government spent a total of $19.5 million to develop, promote and distribute audio-visual media for the deaf - including $5.5 million for captioning alone. In Canada, by comparison, the Captioned Films and Telecommunications Program of the Canadian Association of the Deaf receives $100,000 a year from the Federal Government (Department of National Health and Weflare), with most of this amount going for the purchase of film rights.

There are essentially three means of adapting television programming to meet the needs of the hearing-impaired:

a) by developing original productions especially for the hearing-impaired;

b) by employing an interpreter who presents a visual "sign language";

c) by providing captions, or translations of the TV soundtrack into words, that are shown on the viewer's television screen.

This paper presents a status report on the first two means, but deals also in much greater detail with current developments and potential of the third - captioning, and in particular - "closed" captioning, a system whereby only viewers whose TV sets are specially equipped or adapted can see the captions.

In the United States, a major Closed Captioning Project is already underway. By the end of 1980, it is expected that some 20-25 hours per week of closed captioned programs will be available to the hearing-impaired over 3 networks. The Department of Health, Education and Welfare is supporting developments through 1982 to the tune of $6 million, after which the program is expected to be self-supporting.

This paper reviews developments that have taken and are currently taking place in Canada in all areas of television for the hearing-impaired. It is seen that developments to date have been largely piecemeal and engaged in by the following major players: DOC, NH&W, CBC, the CRTC, CTV, OECA, The Deaf Media Group (Toronto), The Deaf Television Resource Centre (Kitchener), various cable systems (in Edmonton, Ottawa and Vancouver), the Canadian Co-ordinating Council on Deafness, and the Canadian Association of the Deaf.

It is seen also that while closed captioning in Canada is neither underway nor even about to be underway, this is where the overwhelming interest is on the part of most of the above-mentioned players and also where there is a tremendous push to respond, particularly in view of the U.S. situation.

Aside from the need to respond to closed captioning as a genuinely important social issue, it is important that the Federal Government, including the DOC, pursue the issue from a policy point of view, as the hearing-impaired now form a highly effective lobbying group which will bring continued public pressure to bear if the issue is not addressed.

The paper goes on to examine in some detail the implications of the U.S. situation (including closed captioning) vis-à-vis television for the hearing-impaired in the Canadian environment. It is shown that the American experience almost certainly will impact directly on Canadian viewers, both off-air and via cable in areas where 70% of the hearing-impaired in Canada reside. Among other implications addressed are: the question of providing a "Canadian alternative"; revenue flow out of the Country; the potential of closed captioning for economic return to Canadian broadcasters and for bilingual programming; the policy question of passively accepting or actively capitalizing on the U.S. experience; the importance of not focussing totally on closed captioning as the sole saviour of the hearing-impaired; and whether to proceed with existing Line 21 technology or to wait for a better, more efficient system(s) which appear(s) on the horizon.

The paper proceeds to examine some of the factors which may be hindering progress in Canada. These include: timing and the U.S. attitude; caution and inertia by Canadian broadcasters; cost; question marks related to Telidon; other potential technical problems; and other minor areas of concern.

The recommendations which follow attempt to take into account the total picture as presented throughout the paper, including the problems and potential pitfalls in exploiting the enormous potential of television, in general, and captioning in particular, for the hearing-impaired.

3. RECOMMENDATIONS

The recommendations presented here should be regarded as options, in the form of a "shopping list". They are not considered by the author as equal in importance, nor mutually exclusive.

It remains to be decided which of them, individually or in combination, are considered to be the best way(s) in which the Federal Government, including DOC, should proceed in order to facilitate the development of television programming for hearing-impaired Canadians and to promote greater access to such programming.

The options are as follows:

1. Establish a working group involving representatives of various Federal departments and agencies; such as DOC, NH&W, CBC and the CRTC to examine the area and to report to ministers and agency heads.

2. Within the DOC, to formally study the issue of closed captioning in research on and field trials of Telidon and other teletext systems, with the view to clarifying the obsolence - compabilitity question of such systems with today's Line 21 technology employed by the Public Broadcasting Service (PBS) system in the U.S.

3. Invite formal suggestions by hearing-impaired consumer groups and those representing them, such as the Canadian Association of the Deaf and the Canadian Co-ordinating Council on Deafness, either directly to the Department or to a working group which might be established as mentioned above, on how to best meet the total spectrum of television needs of hearing-impaired Canadians.

4. Contract an outside company or agency to study the area with the major focus to be on an implementation strategy.

5. Discourage reliance on any single approach, such as closed captioning, and encourage the development of a combination of all approaches in adapting television programming for the hearing-impaired, as described in this paper (i.e. open captioning as well as closed, interpreted programs and specially designed programs for the hearing-impaired on off-air television and cable television - including community channels). The adoption of a varied approach is crucial, as each individual means has its own distinct advantages and disadvantages.

6. For the DOC to support associations such as the Canadian Association of the Deaf (CAD), indirectly, through the Department of National Health and Welfare. (The CAD will be shortly presenting a formal proposal to NH&W for the establishment of a research/demonstration closed captioning centre in Canada.)

7. Urge the CBC to explore the option of a limited amount of open captioning over their regular network, and not simply to assume a negative reaction from hearing viewers. (Some such limited amounts of open captioning have been done by the American networks with good or acceptable reaction.)

8. Formally invite the Canadian Cable Television Association to examine the area, with the view to their making some commitment to meeting the needs of the hearing-impaired, in order to capitalize on factors such as the high percentage of cabled homes in the Country, combined with unused converter channel space in urban areas.

4. U.S. DEVELOPMENTS

Closed Captioning

What it is and How it Works

Closed captioning is a system whereby written translations (or captions) are converted to electronic codes and inserted in the regular television signal in a portion of the picture that is normally not seen. In order to see the captions on a home TV set, special decoding equipment must be used by the viewer.

The closed captioning system operates through the imposition of encoded visual subtitles on Line 21 of the TV vertical blanking interval - portion of the screen that does not ordinarily contain video program information. The encoded caption material is transmitted by the television station along with the regular audio and visual portions of a program. It becomes visible only when decoded by a special device either attached to or incorporated into the viewer's home TV receiver during the set's manufacture. At present, the attached device is known as an Adapter Unit; the television set with built-in decoding equipment is known as an Integrated TV Receiver.

History

The system under development at the Public Broadcasting Service (PBS) evolved from an experimental concept pioneered by the National Bureau of Standards. PBS has been refining and testing the system since 1972 and has been under contract with the Department of Health, Education and Welfare's Bureau of Education for the Handicapped since 1973. PBS began over-the-air tests of the system in 1974, under Special Temporary Authority from the Federal Communications Commission (FCC). Using prototype decoders placed at selected public television stations nationwide, PBS transmitted programs with closed captions to an audience of hearing-impaired persons gathered at schools and institutions for the deaf. The reactions of these viewers were collected and evaluated under the coordination of Gallaudet College in Washington, D.C., the nation's largest institution of higher learning for deaf and hearing-impaired students. The results of that study, along with technical information gained from the field trials, formed the basis for a PBS petition to the FCC in November 1975. The petition sought authority to broadcast the caption material on Line 21. With FCC approval granted in December 1976, PBS has committed itself to seeing the project through to completion.

How Hearing-Impaired Audiences Have Reacted

Test results reported by Gallaudet indicated that 90 percent of the hearing-impaired viewers surveyed would not have otherwise been able to understand the programs without captions. Some 95 percent of the test subjects indicated a strong desire to have decoding equipment in their homes.

Additional marketing surveys were conducted by the Deafness Research and Training Center, under contract by PBS. Results from these market surveys indicate a strong demand for both the Adapter Unit and the Integrated

TV Receiver, assuming a reasonable cost for the equipment and a reasonable volume of captioned television programming. Various associations that represent the deaf community have indicated they are prepared to take whatever steps are necessary to publicize captioning and encourage their members and their families to purchase the necessary decoding equipment.

Decoding Equipment: Development and Distribution

PBS has contracted with Sears Roebuck and Company for the development of integrated circuitry that would, when used in an Adapter Unit or an Integrated TV Receiver, take the hidden Line 21 signal and transform it into visible captions or subtitles superimposed at the top or bottom of the television picture. This circuitry is now in the final stages of development.

The Adapter Unit will be designed so it can be connected to any existing TV set at home without professional installation. No modification to the TV set will be necessary. The adapter will simply be connected between the television antenna and the antenna terminals on the set. The viewer whose set is equipped with either the Adapter Unit or the Integrated TV Receiver can choose to watch programs with or without captions.

The Cost of Decoding Equipment

Presently, the best estimate for the consumer price of Adapter Units is between $220-$250. The Integrated TV Receiver is expected to cost approximately $500, which includes the regular TV set price plus an additional $75-$100 for adding the decoding feature.

The Caption Editing Console

PBS engineers have designed a Caption Console to enable professional caption editors to produce closed captions for a television program. The heart of the Console is a microprocessor - a mini-computer. PBS staff have developed computer programs that are expected to reduce the time required to caption television programs considerably. Accordingly, the cost of captioning a one-hour program is expected to be approximately $2,000 - less than one percent of the average production cost per program hour. PBS is now in the process of assembling twenty Consoles.

So far, the captioning process has involved the encoding of television programs on video tape. PBS is now studying various techniques to caption television programs that are on film. The Rochester Institute of Technology, under contract from PBS, has analyzed more than 20 techniques for captioning film. Four techniques are now being studied further, with the goal of identifying the single best method later this year. This aspect will not delay the start-up of the overall Captioning for the Deaf Project, since sufficient programs are available which use video tape.

National Captioning Institute

A new, non-profit organization, the National Captioning Institute (NCI), will function primarily to caption programs on behalf of public television, ABC and NBC, and, in some instances, individual stations and producers. NCI will also perform various marketing functions related to the Captioning Project.

NCI began operations this year. It will be governed by a Board of Directors comprised of people with expertise in television operations and management; television advertising and program production; marketing; financing and retailing. Based in the Washington, D.C. area, NCI will concentrate on training caption editors and building up a supply of captioned programs during its first year of operation, so that a sufficient volume of captioned programs will be available for broadcast. It is expected that by the end of 1980, some 20-25 hours of captioned programs will be available weekly, including material from PBS, ABC, NBC and other broadcast groups. A companion centre will be established this fall near Los Angeles to serve network and production operations there.

Revenues to cover NCI's first year operating costs are expected to come from commercial and public broadcasters, HEW, ($3.5 million this year alone and another $2.5 million through 1982), the Corporation for Public Broadcasting (CPB), and other private corporations and foundations which have shown an interest in the Closed Captioning Project. Eventually, captioning should become a self-sustaining operation. After 1980, HEW will begin to phase out its share of support for NCI over several years. In the meantime, NCI will receive a royalty payment of $8. from the sale of each decoding device. This revenue is expected to become a significant means of underwriting the costs of captioning, although funding from the networks, private foundations, and ultimately the sponsors of television programs also is expected.

Additional Benefits of Closed Captioning

While the closed captioning system is designed primarily to help the hearing-impaired, it can benefit other groups. Captioning may serve a distinctive educational purpose in aiding children to read. It also has great potential for bilingual programming.

Where Things Stand

The technology necessary to implement closed captioning is either ready or is well along in the development process. The manufacture and distribution of decoding equipment will get underway late this year so that consumers should be able to buy Adapter Units or Integrated Television Receivers early next year. A National Captioning Institute is now incorporated, and will begin to train captioners as well as build-up the supply of captioned programs available for broadcast. By early 1980, closed captioned programs on both the commercial networks and public television should be available. In short, the Closed Captioning Project is very close to commercial implementation. It can soon be expected to provide a unique service to millions of hearing-impaired Americans.

Open Captioning

What it is

"Open" captioning is an interim service provided by PBS until Adapter Units or Integrated TV Receivers are made commercially available for purchase by hearing-impaired persons. PBS began this service in April 1975 and currently offers an average of five hours per week of programs with open captions. Open captions are broadcast as part of a television program and

can be seen on any television set. Among the many public television programs offered with open captions are: a weeknightly repeat of ABC's Evening News (captioned at WGBH Boston), Masterpiece Theatre, The Adams Chronicles, Nova, Once Upon A Classic, The Best Of Families, The National Geographic Specials, Great Performances and Over Easy.

In addition to children's series, dramatic and performance programs and documentaries, PBS has provided open captioned repeats of major special events, including the four presidential campaign debates of 1976. Initially funded by HEW, the interim Open Captioning Service has been supported by the Corporation for Public Broadcasting since September 1976.

Why Open Captions Cannot be Used all the Time

While open captioning is less complicated than the technically sophisticated closed captioning process, its usefulness is limited. Since open captions are visible to all viewers, they must be used with discretion. Viewers with adequate hearing may find the captions disruptive. Closed captions can be added to all programs and accommodate both the hearing-impaired and those who prefer to watch without seeing captions on their screen.

PBS Captioning Center (Washington)

Approximately two of the five weekly hours of open captioned programs now offered to public television stations across the country are captioned at PBS, the national membership organization of PTV stations based in Washington, D.C. PBS has pioneered in the development of the closed captioning process. It has been involved in testing and refining the system since 1972 and has been under contract with the Department of Health, Education and Welfare's Bureau of Education for the Handicapped since 1973. Under Special Temporary Authority from the Federal Communications Commission (FCC), PBS began over-the-air tests of the system in 1974. PBS petitioned the FCC for authority to broadcast captioned material on Line 21 in November 1975. This authority was granted in December 1976.

WGBH Caption Center (Boston)

WGBH, the public television station in Boston, Mass., provides the bulk of captioned programs that are distributed nationally by PBS, including a late-night captioned version of ABC's World News Tonight, seen over 141 stations across the U.S., which is still the only caption news service in the country. WGBH's involvement with the Captioning Project goes back to the beginning. In 1971, the station received funds from HEW to experiment with captioning one episode of The French Chef. Over the next two years, WGBH captioned some 50 programs. In the seven years since the Caption Center began, hundreds of programs have been produced and captioned for the hearing-impaired, including sports, documentaries, drama, science and public affairs.

Regular Television Programming for the Hearing-Impaired

The following excerpt from an article by Sendelbaugh and Powell, in the February 1978 issue of American Annals of the Deaf, provides a succinct and reasonably current picture:

To date, the greatest effort in regular television programming for the hearing-impaired has been placed in two areas; news/public affairs and religious programs. In the United States, 133 of 941 commercial stations are now providing these types of services on a continual basis. An additional 146 stations have broadcast various special programs of interest to deaf viewers. Examples of these programs include occasional episodes of Search for Tomorrow and Sesame Street, that have used deaf actors. The CBS production of A Child's Christmas in Wales, featured the National Theater of the Deaf.

The future use of cable television (CATV) programming for the hearing-impaired will depend on the development of CATV in large metropolitan areas. It should be noted that the hearing-impaired are concentrated in larger cities and it would seem more cost effective to develop programs for these areas. CATV in New York City has successfully produced a variety of programs for deaf viewers. The Deafness Research and Training Center of New York University has been awarded a demonstration grant to establish a National Cable Cooperative for deaf viewers.

Other than occasional documentaries of [sic] deafness, television services for parents of the hearing-impaired have not been developed. An example of this was a recent CBS "60-Minutes" production which included an excerpt about Gallaudet College.

5. CANADIAN DEVELOPMENTS

The Players

To date in Canada, activities in the area of television and the hearing-impaired have been largely piecemeal and carried out by individual players in the telecommunications environment.

Some of the major players and their activities are presented below:

The Department of Communications (DOC)

The DOC's activities have included: repeated expressed public support by the former Minister of Communications, Jeanne Sauvé, for closed captioning, recognizing the limited jurisdiction of the Department under the Radio Act to provide the technical clearances for the delivery of closed captioning, such as by using Line 21 of the vertical blanking interval; the release by the DOC on August 5, 1978 of Broadcast Specification 13, which permitted on a provisional basis the use of Line 21 for (but not exclusively for) closed captioning; the urging by the Minister of organizations of and representing the hearing-impaired to intervene at CRTC licence renewal hearings of the public and private broadcasters; the co-funding of a study by Queen's University into the needs (including television) of the hearing-impaired; and the provision of assurances by the Minister to both the Canadian Co-ordinating Council on Deafness and the Canadian Association of the Deaf that they will be included in all discussions involving the DOC which may relate to the establishment of reglations, policies or strategies for the implementation of closed captioning.

The Department of National Health and Welfare (NH&W)

NH&W has provided over the past few years financial support for the Captioned Films and Telecommunications Program of the Canadian Association of the Deaf. NH&W also provides core funding for the Canadian Co-ordinating Council on Deafness, and is generally committed to meeting the needs of the hearing-impaired in the area of broadcasting or any other area. A new focal point for the deaf (and the handicapped generally) was recently established in the Social Services Programs Branch of the Department, known as the Bureau on Rehabilitation.

The Canadian Broadcasting Corporation (CBC)

The CBC has shown increased concern in the past year to the expressed concerns of various organizations requesting the CBC to make a commitment to television for the deaf, to a point where they have now established a committee to explore the best means of serving the deaf; they have experimented with crawl captioning; and have applied to the CRTC for permission to use a translator (i.e. sign language interpreter) for parts of the proceedings of the House of Commons to be broadcast by satellite.

The Canadian Radio-television and Telecommunications Commission (CRTC)

In renewing the CBC network licences, the CRTC stated that the CBC should examine the possibility of providing captioning, but at the same

time the CRTC recognized the cost of such a service and that it could, therefore, not direct the CBC to undertake captioning unless specific monies can be obtained for that purpose.

The CRTC has sanctioned interpreted news broadcasts in Edmonton, Ottawa and Vancouver on cable television (about which more will be presented later in this paper).

CTV

The CTV is in basic agreement with the concern raised by the Canadian Co-ordinating Council on Deafness at their intervention before the CRTC at CTV's last licence renewal hearing. The CTV actively participated in the International Conference on Television and the Deaf held in Toronto on December 18, 1978. In addition, through submissions to the Canadian Association of Broadcasters and to the Department of Communications, CTV has supported the development of techniques to assist the deaf to more fully benefit from television. However, CTV has not provided a timetable for the introduction of any special service. Furthermore, while CTV cites a number of technical reasons as to why closed captioning cannot be implemented, it appears the main reason is its concern regarding costs.

Ontario Educational Communications Authority (OECA)

OECA has experimented with closed captioning and had decoders built based on PBS specifications. They have decoded a number of PBS Nova programs and rebroadcast them in an open format. While they have done research into closed captioning, they have not done any closed captioned programming because of limited funds. They remain interested in all future potential for closed captioning, particularly as it may be an application for Telidon.

The Deaf Media Group

This Group produces Quiet 30, a weekly one-half hour television show for the Toronto deaf community. Topics covered in the past include consumer, tenant and legal rights. The show is done with interpreters and appears on eight cable systems in Toronto.

The Deaf Television Resource Centre

Canadian Cablesystems Limited (CCL), which serves more than 640,000 cable subscribers with both broadcast signals and innovative community programming, announced in September 1978 that it was taking a major initiative in programming for the deaf. CCL provided funding for a research agency known as the Deaf Television Resource Centre and a full-time director. The Centre is located at the Company's cablecast facilities at Grand River Cable TV in Kitchener.

Interest in programming for the deaf grew from substantial participation of hearing-impaired people in a series of television workshops held in several cities across Canada over the past five years by community programmers and cablecast staff from Grand River Cable TV.

Objectives of the Centre include: the promotion of television programming for and by the deaf across Canada; development of systems to enable the practical use of encoded captioning; to seek funding for additional special programming for the deaf; to provide a film, video tape and print library of material pertaining to television for and by the deaf; to provide technical expertise in the field of television production for the deaf; to influence deaf groups to produce programming at their local cable company; and to promote a more sensitive approach by commercial television networks toward the problem of deafness and television.

One of the first projects undertaken by the Centre was to assist in the development of a new programming service for the deaf at CCL's Metro Cable TV division in Toronto which began on January 9, 1979. The service provides approximately three to four hours of programming per week, broadcast every Tuesday, Thursday and Saturday at 7:00 p.m.

The Centre has purchased the rights to 81.5 hours of PBS programming and a number of programs from Gallaudet College. They are offering to make their resources available to other cable systems, and they also have experimented with closed captioning, having purchased two decoders produced to PBS/OECA specifications.

Cable Television (Edmonton, Ottawa, Vancouver)

Signed news is catching on in Canada. Signed news and other interpreted programs can often be found on the community cable channel in a city. The major Canadian networks will not present interpreted programs on their regular channels because they fear that signing will prove distracting to hearing viewers. But cable is available to over 80% of Canadian homes. CRTC has ruled that community cable channels must serve those segments of the population not served by regular broadcasters. This includes the hearing-impaired, and that is why cable operators are open to the suggestion that they provide interpreted programs.

In three cities in Canada, hearing-impaired groups have succeeded in arranging interpreted news broadcasts on a regular basis:

Edmonton

Edmonton was the first city in Canada to have a simultaneously interpreted news broadcast. It began almost three years ago, with QCTV (a local community cable undertaking) receiving the CBC Friday night news "feed" at their studio, where an interpreter was inserted by means of a cameo into the picture. Viewers could watch either the uninterpreted version of the news on the regular channel, or the interpreted version on the cable channel.

The experiment was so successful that the CTV and ITV stations in Edmonton also offered their news for rebroadcast. The Edmonton deaf now have three broadcasts of signed news a week.

Ottawa

The service in Ottawa started about 1½ years ago. Interpreters cooperate with Ottawa Cablevision to produce signed news broadcasts. The

news is provided by the local CTV station, CJOH-TV, on Monday, Wednesday and Friday nights from 6 p.m. to 7 p.m.

Also viewers of the news on the regular channel now get to see five minutes of interpretation five nights a week. This regular exposure to interpretation has heightened public awareness of the handicap of hearing impairment in the Ottawa area.

Vancouver

The most recent development in interpreted news took place in Vancouver in the fall of 1978. The Western Institute for the Deaf approached Cable 10 in Vancouver and the local CBC station to arrange for interpreted news every Monday and Friday night. The program ran on an experimental basis from September to December, 1978. Reaction from the deaf community in Vancouver was so good that CBC Vancouver and the cable station agreed to continue providing interpreted news on a regular basis.

The Canadian Co-ordinating Council on Deafness (CCCD)

The CCCD is a non-profit, charitable organization whose mandate is to provide a high standard of concern for the hearing-impaired in Canada. This organization receives its core funding from the Department of National Health and Welfare which recognizes the CCCD as the main interfacing organization of and for all the hearing-impaired in Canada.

The CCCD intervened at both the recent CBC and CTV television network licence renewal hearings. In its intervention at the CBC hearing, it asked the CRTC to instruct the CBC to recognize the rights of deaf taxpayers; to monitor and support research and development in the field of captioning; and to formulate a corporate policy on captioning technology and to implement it as soon as financially feasible.

The Canadian Association of the Deaf (CAD)

The CAD, as did the CCCD mentioned above, intervened at the aforementioned licence renewal hearings.

The CAD has a "Captioned Film and Telecommunications Program" which receives financial support from NH&W. Its Executive Director is E. Marshall Wick. Mr. Wick must be considered the primary spokesman for the deaf on the subject of television. Exceptionally intelligent, knowledgeable and energetic, he convened the first International Conference on Television and the Deaf in Toronto on December 18, 1978. In attendance were 25 persons involved in the engineering, programming and social policy aspects of television, representing government, broadcasting and consumer groups.

It is expected that a second conference will be held in the near future as a follow-up and that Mr. Wick will also be submitting in the near future a proposal to NH&W for some degree of support for closed captioning in Canada.

Mr. Wick, a Canadian citizen, in addition to being heavily involved in Canada in the area of television and the deaf, is a full-time professor at Gallaudet College (for the deaf) in Washington, D.C. Thus, he is fully conversant with the U.S. situation vis-ã-vis television and the deaf, including captioning and its implications and potential for the Canadian environment.

Implications of the U.S. Situation

Direct Impact Off-Air and Via Cable

Once closed captioning becomes operational in the U.S., there will almost certainly be an immediate and direct effect in Canada. For, approximately 70% of deaf Canadians reside where they can receive one or more U.S. channels, either off-air or via cable. Thus, for the cost of the decoder alone, the deaf will be highly motivated to avail themselves of whatever American programming they can receive. This will entail up to 25 hours a week by the end of 1980, provided directly on U.S. stations over 3 networks. Furthermore, there are currently 8 hours per week of American programming purchased and shown by the CBC on its network. Some of these programs, because of their popularity, undoubtedly will have captioned versions available. If the CBC were to buy these captioned versions, this amount of programming would be available to even those hearing-impaired in Canada who do not have cable, for the cost of a decoder alone.

A Canadian Alternative?

A corollary of the above is the question which should be asked by Canadian broadcasters, and will be asked by the hearing-impaired in Canada, "What is the Canadian alternative?" Will the problem of cultural domination that has been established by bombardment of American programming and its ready acceptance by the population at large in Canada now be extended to include the hearing-impaired? If so, the degree of domination for the hearing-impaired will be total, unless a Canadian alternative is established.

Exploiting the Greater Flexibility of Cable in Canada

The higher cable penetration rate in Canada, combined with the availability of converter service in the urban areas (where the majority of the hearing-impaired are situated), offers the potential for a hybrid system of closed and open captioning combined. For example, closed captioned American programs could be picked up by CATV head ends in Canada by means of a decoder and then rebroadcast in an open manner over an unused community channel available on converter service. Or a second CBC network could provide captioned programming (either open or closed) on cable.

Revenue Flowing Out of the Country

If Canadian-made decoders or integrated sets are not available in Canada, the hearing-impaired will purchase these in the United States. If only 25% of the 1,500,000 hearing-impaired Canadians purchased U.S.- made

decoders, this would involve almost $100 million flowing out of the Country - or more, if integrated TV sets were being bought rather than add-on decoders.

Any such figures, of course, must be counter-balanced with the cost of R&D which would be required to produce a comparable Canadian product(s).

A Low-Cost Investment

If the Canadian hearing-impaired do purchase American devices, it must be realized that, due to the principle of "economy of scale", these Canadians will have access to considerable information and entertainment for a relatively low price by today's standards, because of the hundreds of thousands of devices manufactured primarily for the American potential market of 14,000,000 hearing-impaired persons.

Potential Economic Return to Broadcasters

The hearing-impaired have argued that closed captioning offers the potential for increased advertising revenues to Canadian broadcasters, due to an increase in audience, upon which advertising rates are usually based.

Bilingual Captioning

There is a potential for existing closed captioning technology to deliver programming in a bilingual format. The PBS decoder has three modes - English, second level English or a second language and a teletext display. Unless the load is heavy in all three modes, the data transfer rate is more than adequate to handle all three modes simultaneously.

The implication of this is that the CBC English and Radio-Canada networks could conceivably caption each other's material in aid of cross-cultural fertilization. This would be a significant advance from the position at present where there is very little viewing of the alternative network's programming by Canadians.

Passive Acceptance or Active Capitalization

The choice for Canadian policy makers is to simply passively accept the spillover effect of American captioning into Canada, as it will inevitably occur, and to do nothing more, or to capitalize on the American experience, by employing the American model or a modified version of it to suit the Canadian environment. The latter possibility is presented in the "recommendations" section of the paper.

Temptation to Focus Exclusively on Closed Captioning

Any success of the American captioning program may possibly deflect interest in and appreciation for continuing exploration of the other two major means of adapting television for the deaf; namely, interpreted programs and specially designed productions.

Interpreting, for example, has one unique advantage over captioning at present, in that it is the only means of providing "real time" programming for the deaf. For live events, important political events, emergency and disaster warnings, etc., interpreting is still the most desirable means.

Also, the potential for open captioning should not be ignored. With numerous channels available in urban areas through cable with converter service, some open captioning could be done without the risk of distracting or annoying the hearing population.

Furthermore, while there may be some truth in the argument that open captioning is distracting or annoying to the majority of viewers, experiences in the United States have revealed that once audiences realize the purpose behind the captions they readily accept them. At the very least, further research should be done into this area before open captioning is rejected outright.

Finally, open captioning, because of its lesser technological complexity and lower cost, should be explored as a means of providing limited programming. Surely there does not need to be an "all or nothing" approach taken. A public education program might well establish public acceptance of one half hour per day or every second day, even over the national networks.

"The Excellent - The Enemy of the Good"

There is some concern that the existing technology utilized by PBS for Line 21 may soon be or is already obsolete compared to other teletext systems, including Telidon, and if so that it would be a mistake to encourage Canadians to follow the U.S. experience.

In response to such concern, it should be pointed out that PBS are very much aware of what others think of as shortcomings in their system (such as the slow data transfer rate and that some day a better system will be developed) but they argue that their system is here today, using today's technology, and we should not ask the hearing-impaired to continue to wait for some yet to be developed system. Furthermore, PBS sees no problem in converting Line 21 signals at a later date.

In any event, the author of this paper is not in a position to evaluate the merits of the arguments and counter-arguments regarding technical compatibility with such systems as Telidon. The point in raising the matter here is simply to indicate that the questions of obsolescence and compatibility need to be looked into further.

However, it would seem reasonable to argue here that if the hearing-impaired are generally aware of these issues or are made aware of them by organizations such as the Canadian Association of the Deaf, the choice should be theirs whether they wish to purchase a few hundred dollars worth of technology today which may serve them for only a few years. The hearing-impaired should be allowed to decide for themselves if they wish to possibly write-off a $250 investment over 3 years, and should not be prevented or even discouraged from availing themselves of today's technology.

Factors Hindering Progress

Despite the large-scale commitment to and enthusiasm for closed captioning in the United States, there remains resistance to and reservations concerning the wisdom of following the U.S. lead by many in Canada. The major factors are outlined below:

Timing and U.S. Attitude

The fact remains that closed captioning, while imminent, is not yet operational. Therefore, its success still has to be actually established. Consequently, even the Americans - enthusiastic and optimistic as they are - are not unanimous in this regard.

While proponents estimate that about 1.9 million of the estimated 14 million hearing-impaired in the U.S. are totally deaf, some independent research indicates that closer to 1 million and perhaps as few as 200,000 actually require the closed captioning.

That uncertainty about the size of the potential market and the fact that the decoders may turn out to be so expensive that only a small percentage of the target audience could afford them has bothered both NBC and CBS.

In addition, one executive at CBS believes that the value of the PBS developed system is "highly-overrated" and that "far superior systems" are already in the works.

Still another problem which the networks will not discuss for the record is a belief that should the hearing-impaired be singled out as a target audience by the government, regardless of the unquestioned need, perhaps the next step would be to require networks to supply special materials for foreign-language speaking audiences and other special target audiences.

NBC, while they have agreed at the last hour to join ABC and PBS in the Captioning Project, feel that a number of problems remain, including: meeting a target of manufacturing and selling 100,000 adapters or integrated sets per year; superimposing captioning on rapidly changing competitive network program schedules; the limitation of the captioning technique to taped programs (a small portion of their total hours); and delivery of programs by producers in time for captioning and shipping to NBC for broadcasting. As a result, NBC has reserved its right to curtail or withdraw its support of the program, if the program turns out to be unsuccessful.

Caution and Inertia by Canadian Broadcasters

All the above-felt reservations by the Americans tend to be echoed by Canadian broadcasters in rationalizing why they cannot proceed. However, it is worth repeating here the fact that the Americans are proceeding!

Cost

Despite all the other reservations expressed by Canadian broadcasters regarding the feasibility of closed captioning, it appears that the single greatest barrier is cost. ABC and NBC both estimate their first year costs at $750,000 ($500,000 for the captioning and $250,000 for transmission and ancillary costs). A consistent estimate for the captioning process is $2,000 per hour and the cost of encoders is approximately $50,000 each. CTV has estimated that using present methods the cost of captioning the evening news as is done with the ABC news, to be rebroadcast the same evening, would amount to $500,000 annually.

It should be pointed out here, however, that the Canadian Association of the Deaf recognize and accept that such a cost may be high in relation to its potential benefit and in the near term would prefer whatever limited financial resources are available to go to the captioning of regular pre-recorded programming.

The question of cost in the abstract tends to be academic, however, as cost must really be tied to specific proposals and specific amounts of programming before this factor can be objectively evaluated.

Marshal Wick, Executive Director of the Captioned Films and Telecommunications Program of the Canadian Association of the Deaf, is expected to submit a concrete proposal very shortly to the Department of National Health and Welfare. It is felt that the proposal will probably seek to establish a demonstration/research centre in Canada, rather than a large-scale production center, which would cost $100,000-$200,000 in capital costs and $75,000-$100,000 per year in operating costs.

A final note regarding cost is that Marshall Wick has expressed the willingness of the hearing-impaired to approach advertisers on CBC's behalf for additional revenues, until such time as regular appropriations are made by Parliament.

Question Marks Related to Telidon

As referred to earlier in this paper, there appears to be some controversy or at least uncertainty as to whether or not the existing technology developed by PBS will be obsolete when more advanced teletext systems, such as Telidon, become operational. The question of compatability - the answer to which is also unclear - is related. For, if the PBS system were incompatible with Telidon it would mean that a person wishing both a captioning service and the broader range of interactive services would need two devices. If the existing technology turns out to be compatible with Telidon, Line 21 signals could be converted and the user could conceivably get all services via the Telidon terminal alone.

As mentioned above, however, the obsolescence-compatability issue may, in fact, be a red-herring (as the FCC obviously have concluded), if the hearing-impaired can get full value from the existing technology in the short term (say 2 or 3 years).

Regardless of how optimistic one may be about the likely market acceptance of interactive services, the fact must be acknowledged that these services are not yet in place.

Other Potential Technical Problems

At the International Conference on Television and the Deaf, held in Toronto in December 1978, CTV raised a number of potential technical problems that need to be looked into, other than those already identified as applying equally to the Canadian and American situation. These include the following: (a) most features obtained by the CTV are on film; (b) the time frames in Canada and the U.S. are different - more commercial time is available in Canada - so programs are cut or expanded accordingly; programs are also re-edited for breaks - so sometimes the soundtrack continues after the picture has faded; (c) pre-released U.S. programs are often not available to Canadian networks until shortly prior to broadcast time - which might make it impossible to caption them in Canada in time for their initial run; (d) in the time-delay centre in Calgary, the Vertical Interval is swept clean and rebuilt - meaning captions would be dropped and have to be re-inserted along with other information; (e) the chain of translators used to reach more remote areas may affect the caption signal.

Other Areas of Concern

The attitude of the unions should be considered. They may wish to have some say, which could affect cost. Unions in Canadian broadcasting are more militant than their American counterparts. It has been suggested that a representative of the major unions be invited to future conferences held by the Canadian Association of the Deaf.

The question of copyright has also been raised. CBC does not own all its productions but has only licensing arrangements for some. Both CBC and CTV have the right to translate into French and to edit to fit time slots; so the editing involved in the captioning process may not present a copyright problem.

It is generally felt that neither the attitude of the unions nor the matter of copyright is likely to present serious problems, but that both subjects should be looked into.

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