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ABSTRACT

This report describes an interactive cable television system to deliver social services to senior citizens in Reading, Pennsylvania. The first section examines the process through which the interactive system was established. The technological components of the system are described in the second section. This is followed by a brief review of the programing during the early months of the system's operation. The last two sections describe the design and administration of the survey research and the conceptual framework for examining the community impact. The data collection techniques developed to analyze costs and effectiveness of the system are then discussed. (CH)

The NYU-Reading Consortium

Progress Report

Test and Evaluation of Public Service Uses of Cable Television

Contents

Alternate Media Center,
School of the Arts,
New York University

Graduate School of
Public Administration,
New York University

87 West 3rd Street
New York, N.Y. 10012
(212) 598-7871/7872/7873

The City of Reading

Berks TV Cable Co.

Berks County Senior Citizens Council

Reading Housing Authority

c/o Berks TV Cable Co.
P.O. Box 107
Reading, Pennsylvania
19603 (215) 374-3065

Introduction
by Mitchell L. Moss

INTRODUCTION

In June 1974, the NYU-Reading Consortium was awarded a grant from the National Science Foundation to design a set of experiments that would test the costs and benefits of using interactive cable television to deliver social services and improve citizen-government interaction.

By December 1974, an interdisciplinary team from the Alternate Media Center at NYU's School of the Arts and the Graduate School of Public Administration at New York University formulated a research and implementation proposal that focused on the elderly population of Reading, Pennsylvania and the social agencies that serve them. This proposal was drawn up with the advice and cooperation of the Reading members of the Consortium: the ATC-Berks Cable TV Co., the City of Reading, the Reading Housing Authority, and the Berks County Senior Citizens Council.

In May 1975, the National Science Foundation awarded the NYU-Reading Consortium funding for the first phase of the project. In the spring of 1975, implementation and research efforts were initiated in Reading. This involved hiring and training local staff, selecting and installing equipment, and identifying and contacting various community organizations. Simultaneously, the design of evaluative instruments and procedures was undertaken by both the research team and social service agencies.

The system consists of three interconnected Neighborhood Communication Centers which are located in a senior-citizen service center and two senior-citizen housing projects. These centers are equipped with portable television cameras and monitors which permit two-way communication among the three centers. In addition, the homes of approximately 125 elderly citizens have special converters which allow them to view the cable programming over their own television sets and to participate by telephone.

This system is, in some aspects, a prototype for public uses of two-way cable television in an urban

community. The purpose of the project is threefold: 1) to design and install a two-way cable television system; 2) to determine the cost and effectiveness of using such a system to deliver social services, and 3) to assess the overall impact of this communications technology in an urban environment.

In January 1976, the National Science Foundation approved continuation of the project and the system was officially opened. By this time, many senior citizens, agency-users, and staff members had acquired skill and experience with the technology. The system has now been in operation for six months. It is therefore too early to present research findings here.

Programming over the system consists of daily interactive sessions which originate from the centers as well as from various remote locations via additional hook-up. They encompass a wide range of content areas including information on social services, citizen-government interaction, education, and entertainment. A number of public agencies, such as the County Board of Public Assistance, the Social Security District Office, and the Red Cross use the system to interact with senior citizens. Information on such federally-supported programs as Medicare, Medicaid, Food Stamps, and Supplemental Security Income is regularly provided over the system. In addition, programs have been developed to train agency personnel in specialized techniques that are directly related to the needs of senior citizens.

Research is presently being conducted to determine: 1) the cost effectiveness of using such a system for the delivery of social services; 2) the social impacts of the system on senior citizens and the community at large, and 3) the communication processes that are developed from this application of two-way cable television.

It is hoped that the results of this study will be of use to decision-makers at federal, state, and local levels of government. Moreover, the private sector will have access to the experience and knowledge gained from the implementation efforts. Further, the project can serve as a model of public-private cooperation which, hopefully, can enhance future applications of cable television.

This report covers the period from May 1975 through January 1976. It describes the establishment of the system, details the initial data-collection activities, and reviews the development of programming.

The first section examines the process through which the interactive system was established. A description of the technological components of the system is contained in the second section. This is followed by a brief review of the programming during the early months of the system's operation. The last two sections describe the design and administration of the survey research and the conceptual framework for examining the community impact; the data collection techniques which have been developed to analyze the costs and effectiveness of the system are then discussed.

This report highlights the changes and adaptations that have been made in the research and implementation design since the submission of the initial proposal. The information that is included emphasizes the complex set of issues that are involved in conducting such an experiment in a community that has an active population and a dynamic structure.

This is the first in a series of publications that will be issued periodically. They will describe and document the development of the system and encompass both the planned and unintended outcomes as they emerge.

Communication Research
by Ben Park

COMMUNICATION RESEARCH

The communication research attempts to integrate participant observation, daily data collection, and survey research in the Neighborhood Communication Center (NCC) system. The communication research effort is primarily directed toward observing and recording the behaviors of participants which take place during inter-NCC sessions as well as inside the NCCs before, during, and after interactive sessions.

What they observe is presented to the staff in regular discussions. These presentations consist of three types: first, confirmations that certain behaviors are productive; second, cautions against behaviors observed to be non-productive; third, recommendations for changes in the direction of productive behavior. Presentations to the staff are made in the context of regularly collected data on attendance, participation, subject areas, and interaction formats.

As elderly and agency participants assume roles and responsibilities in operation and management of the NCC system, those presentations tend to be relayed to these wider groups; in time, members of these groups will interact formally and directly with communication research personnel.

As of January 1, 1976, however, there had been little regular interaction via the NCC system. Activities had been restricted to an intensive period of interactive simulation by the staff (cadre) and to a number of informal system interactions which did involve some numbers of the elderly and relatively few agency personnel. This report, therefore, is confined largely to experiences of the cadre during simulations prior to the formal institution of regular interactive sessions.

It was initially planned that each NCC would be staffed by a full-time coordinator and two part-time technical aides, all of whom would be located in Reading. Their duties, as soon as the NCCs were opened to use by senior citizens and agency personnel, would be to train the latter in the use of the system. This meant training in operating cameras, switching audio and video, producing and editing videotape materials, as well as assisting the system's elderly and agency "clients" in planning and preparing for interactive sessions.

The three NCC coordinators and a full-time production assistant were employed June 16, 1975. Each cadre member has maintained a tracking sheet, as well as a diary of their activities. Cadre diaries, personal observation, correspondence and interviews have provided the data for this account.

The cadre's goals were: a) to introduce a communication system employing two-way interactive television (IATV) to elderly citizens and social service agency personnel; b) to assist these groups in identifying needs and wishes that could be resolved in IATV communication transactions and to engage in such transactions; c) to encourage their involvement in session preparation and system operation to further their ability to assume the cadre's tasks within eighteen months from introduction of the system.

The cadre was selected from local residents on the basis of several qualities: intelligence, patience, demonstrated abilities to work closely with groups of people and individuals, willingness to engage in a process which would develop its procedures in action and experience, and a desire to learn and impart that learning to others. Applicants were questioned about their attitudes toward older people; positive likings were sought and absence of negative preconceptions were noted. Previous experience with technology was not a criterion for selection, because it was decided that, although cadre would have to learn a great deal about operation and preventive maintenance of various types of equipment, they would not be required to function as electronics engineers, nor would prior television broadcast experience be relevant to their work in the context of two-way television; on the contrary, it was assumed that broadcast experience would pose a potential hindrance to their functioning in interactive television.

The Reading Consortium IATV system was planned as a model for systems which can provide interactive communications at neighborhood communication centers (NCCs) to which senior citizens have relatively easy access. NCCs were established in a high-rise apartment building for senior citizens and in a community building at the edge of a senior citizens' garden-apartment complex, both of which are managed by the Reading Housing Authority. A third NCC was located in the Berks County Senior Citizens Council's new multi-purpose center, using either or both a large meeting hall or a smaller informal room, depending on the nature of the interactive session; the two other NCCs were expandable within single areas.

In each case (except for the large meeting hall), NCCs were to be furnished and outfitted with comfortable chairs, occasional furniture, carpets and draperies to evoke perceptions such as sitting room, living room, or dining room. Cameras, monitors, microphones, small control panels, and some lighting equipment were to be in evidence, but it was arranged to provide comfortable seeing and hearing. The NCCs were not to look like television studios.

The system was to serve a diversity of purposes: to provide information on social services, assistance in understanding and filling out service applications and questionnaires, tax forms, and benefit claims; acquisition of skills, self-care, participation in local decision-making; education, self-development, physical exercise sessions, diet and nutrition information; recreation, entertainment, and to enhance overall information exchange among the elderly and service agencies.

Government and agency personnel, as well as local educators, could interact with the elderly in three locations simultaneously. Some sessions would involve only the elderly, as sources of information as well as entertainers or discussion leaders.

From June 16 through August 11, cadre were trained in operation of basic equipment. On August 12, the cadre was first exposed to and began to use interactive television. This introduction occupied each day for three weeks. In spite of prior reading and discussion of the nature of IATV and intensive training and experience in use and maintenance of technical equipment, the cadre found they began to understand the requirements, potentials, and constraints of the interactive television medium only when they participated in actual IATV transactions.

Preparatory Learning Experiences

The interactive system was not operational until the fall. Prior to that time, a full schedule of training occupied the cadre's attention. On June 16th the senior cadre member and the system coordinator began intensive training in operation and maintenance of portable videotape equipment as well as extensive discussions of the system's

rationale and anticipated consequences. A major point of discussion was the influence of broadcast television perceptions. Cadre recognized the need for developing language specific to interactive television (as opposed to one-way terms) in order to help eliminate preconceptions based on broadcast television among clients as well as cadre. Therefore, broadcast terms "program," "audience," and "producer" became "session," "participants," and "preparer."

By the end of the first week, cadre felt they needed less emphasis on the system's conceptual base and more on practical experience with equipment, reasoning that it was important for them to be competent with the equipment before undertaking the training of the system's earliest clients. Cadre also discussed the best ways to introduce the NCC equipment to clients (analogize with automobile and telephone; encourage people immediately to use the equipment, themselves) and the types of information best suited to television interaction.

Inasmuch as all of the equipment in the NCCs was to be used actively by the cadre (and later by clients), it was necessary not only to learn to operate the equipment, but increasingly as understanding progressed, to maintain and repair it. At this point, it became apparent that cadre needed to understand cable system functions and operations as well.

For the first six weeks, the four new cadre (NCC coordinators and production assistant) were trained in the use and maintenance of portable equipment, fabrication of cable connections, and use of camera switching equipment. Attention was paid to picture and sound capabilities as well as characteristics of zoom lenses and hand-held microphones. Cable engineers and the project's engineering consultant held seminars on: cable systems; synchronization of cameras for system switching: "studio" camera as distinguished from portable camera characteristics and operation; radio frequency distribution; sound systems; the internal workings of cameras and microphones; lenses, light, and resolution; television spectrum space.

All elements in the NCCs would inform interaction; thus it became necessary not only to understand principles of lighting and acoustics but also furniture groupings and their influence on interaction, as well as environmental factors related to the aged.

The training of technical aides was to be primarily the task of the NCC coordinators, each of whom would have two regular part-time aides and would share three rotating aides. The decision to hire nine technical aides rather than the six initially planned was taken when the System Coordinator and the Director of Implementation reasoned that, with two stationary cameras and one switching control panel per center, three trained people would be required to operate them until senior citizens could be trained and committed to taking over these functions. At the time (approximately July 7) that the decision was made, it was assumed that seniors would take over most of the technical aides' functions by the end of the first six months of operations (January 1 - June 30, 1976). On July 28, the aides began training. The curriculum for the aides was substantially what it had been for the NCC coordinators. Training of the aides started in a group setting but later moved to the separate NCCs, after the simulations discussed below, when the NCCs became operational.

The desirability of pre-operational simulated interactions was not perceived at the time the NCC system was planned. Rather, it was assumed that the introduction of cadre to interaction via the system would occur in September when the three NCCs were furnished, equipped, and interconnected via the Berks TV Cable Co. system's two trunks. This assumption was challenged when it became apparent that contamination of the first wave survey of experimental and control groups would result if senior citizens were made aware of the operations and purposes of the NCCs prior to completion of the survey. Specifically, this meant seniors could not be introduced to the fully-operational NCCs until October 1. This conflict between research and implementation objectives initially created concern. If interactions had to be delayed a month, problems might be encountered in training and session planning toward the commencement of regular operations on January 1, 1976. The problem was decided, however, on different grounds. The NCCs were not ready for occupancy until October 1!

By late June the idea of simulated interactions had taken root. These simulations would allow the cadre to attain competence with the system prior to introduction to the system's clients (as had been foreseen with regard to the technical equipment). Experience with equipment had demonstrated not only the necessity for routine preventive maintenance and thorough understanding of each item,

but also that understanding of equipment use in differing communication settings required considerable operating practice; it could be anticipated that the behaviors of cadre vis-a-vis the new uses of equipment in interaction would be affected similarly. In actual simulation practice, the cadre was to experience far more learning than had been anticipated originally.

By the time negotiations for simulation locations were completed, it had become apparent that the NCCs would not be ready by September 1. The location of the NCC in Kennedy Tower had to be changed from a basement room to a first-floor common room because both heat and air-conditioning in the former space became prohibitively costly. The Horizon Center could not be used until after October 2, due to building delays. Considerable work still was needed to refurnish the space in Hensler and to accomplish it within budget, the NCC cadre assigned to Hensler undertook to do all the work, including purchasing, moving and building.

Critical Learning Experience

The willingness of the Berks TV Cable Co. management and staff to set up and operate a separate three-point interactive system and the cooperation of St. Joseph's Hospital and Governor Mifflin High School officials were indispensable to enabling cadre to simulate interactive television sessions.

The simulated locations were organized to provide capacities similar to those which would be encountered at the NCCs. The Berks TV Cable Co. space was designated "Kennedy," Governor Mifflin School was "Hensler," and St. Joseph's Hospital was "Horizon Center." Each used the upstream cable channel and actual equipment assigned to its counterpart (although equipment for all three was identical except for lenses and microphones, which were being variously tested during the simulations). Boundaries of the actual locations were floor-marked; equipment and furniture were placed in relation to these boundaries; and lighting was kept to a level below 30 footcandles -- the average that would be used. Sound acoustics could not be simulated, but every effort was made to "deaden" the locations as much as possible.

The coordinators and technical aides assigned to particular NCCs were present at the centers simulating their own, while three of the aides rotated.

Once the simulations were underway, it was regular practice to disassemble and store all equipment after a session, with the aides reassembling it the following day under supervision of the coordinators. Aides and coordinators took turns at operating cameras, switching video and audio, and participating in the foreground of interactive sessions.

Simulations had to take into account factors which would obtain in the interactions from the actual NCCs, among which were:

1.) Participants at each location during any session might vary in number from a few (four or five) to sixty or more.

2.) Generally, each session would be chaired from one of the locations (in approximate rotation) and the chairing location would also be the "presenting" location, where experts or resource people would present material for discussion, and where demonstrations preceding discussion would take place.

During the simulations reported here that occurred between August 11 and August 29, as well as simulations subsequently observed which occurred between October 6 and November 21 via the NCC system, these aspects of the basic interaction pattern were taken into consideration. During the simulations however, only cadre (Consortium staff and consultants) were involved. Thus, the three to five participants at each location often arranged themselves in depth, simulating four or five rows of participants. Chairing locations were frequently but not always designated during the simulation period because open discussions tended to be the style best suited to work during the period.

During the first week six assumptions were observed to be informing the system planners' -- and thus the cadre's -- conceptions of interactive television and the ways it would be implemented in the NCC system. These are presented here and will be referred to subsequently.

Assumptions Relating to Broadcast: One Way Employment of Television Technology

It is important to note that these assumptions were often difficult for participants to recognize as related to one-way communications.

1. Each location would need two stationary cameras in order to a) cut between participants; b) cut between establishing shots and close-ups; c) cut between presenters and graphics, art work, etc.

2. Each location would thus require a special effects generator in order to accomplish these camera cuts.

3. Groups would interact with other groups.

4. Transmission of the person speaking would be the rule.

Assumptions Arising from Prior Experience of the System's Planners

In prior training of non-professionals to use portable videotape equipment and "demystifying" television technology, Alternate Media Center personnel had found that, after relatively brief periods of organization and training, ordinary people could not only produce creditable material but could also commit to ongoing organizational procedures which enabled programming on cable TV public access channels to proliferate and survive after training personnel had left the scene. This experience led to two further assumptions about the NCC system:

5. Volunteer senior and agency participants would learn to operate and maintain equipment as the cadre did and would replace them in performing these tasks.

6. Volunteer senior and agency participants would not only produce and organize interactive sessions but would also assist in management of the system in tasks such as records maintenance, public relations, volunteer enrollment, and overall session planning.

The first week of interaction from the simulated locations demonstrated all six assumptions. It also introduced a wide array of conceptual questions which the cadre had to consider.

We have chosen to report the following events under the categories in which they were considred by the cadre, to maintain an approximate chronology of the events within each category, and to indicate in various ways the degree of difficulty the cadre experienced in coming to grips with them and resolving them.

Cameras and Video

The first principle in structuring an IATV environment is that the interaction camera, which "sees" participants at other locations from the point of view of the participant(s) they are addressing, thus face-on, and the television monitor which shows people at other locations must constitute a unit with the lens of the camera as close as possible to the monitor, preferably directly above it.

Upon arrival at the simulated locations for the first morning of interaction, no camera had been placed less than three feet from the monitor; at all locations, two cameras were in place, the second much farther from the monitor, usually off to one side. Rudy Bretz, the IATV consultant noted that participants who were looking at the monitor in their center to see participants at other centers, saw them looking off far to one side or ninety degrees away, neither view conducive to a feeling of conversation with another. The necessity for proximity of camera and monitor was quickly understood as fundamental, but several further implications remained.

In order to reduce parallax to a minimum, Bretz explained that it was not sufficient to place the camera beside the monitor. Parallax is further reduced if the camera is placed directly above the midline of the monitor and somewhat to the rear: just enough above the monitor to be able to see the person nearest the monitor. Finally, the best solution may be to put the monitor on its back and place a black box containing a sheet of glass over it at a forty-five degree angle. This permits the camera to

"look" directly through the center of the mirrored image of the television screen, thus reducing parallax to near-zero. This method was later demonstrated at "Kennedy" in the Berks TV Cable Co. simulation.

Cadre were not in favor of the mirror method because it a) noticeably reduced picture, brightness (by 10 - 12%), and resolution, and, b) made camera operation quite difficult. As a result, the mirror method was reserved for possible future exploration since it did not seem to be a practical alternative.

Although there was some belief that "camera beside" gave as good a feeling of direct eye contact as "camera above," it was generally agreed the latter position was better. In addition, it was readily apparent that, facing two or more rows of participants in depth, the "above" position enabled seeing everyone, whereas "beside" could not obtain pictures of some whose lower faces were blocked by heads in front of them. Standard Bretford monitor carts in use place the center of a Setchell-Carlson 27 inch monitor 5 feet, 4 inches above floor level. "Side" camera lenses are at this height. "Above" camera lenses are at least 6 feet, 2 inches above floor level.

At this point, the question immediately arose, "How can senior citizens be expected to work with a camera so high off the floor? " from Assumption 5 (that senior citizens, as well as agency personnel, would take over operation of equipment). It was apparent that reaching around the front of the camera to operate zoom and focus controls was awkward enough, with the camera up against the monitor, when one stood on the floor. The spectre of elderly people standing on high boxes to perform difficult manipulations in the narrow space between camera and monitor led to further suggestions.

The first suggestion, from Bretz, was that the entire operation of the cameras could be remotely controlled: pan and tilt, as well as zoom and focus. This was rejected on three grounds, initially: a) that "state of the art" outboard remote control units are inherently clumsy; pan and tilt controls work on an x-y axis that, when taken together with zooming, requires a series of adjustments to keep the subject centered, and the movement is invariably staggered; b) that the kinesthetic satisfaction of moving the camera to see as one wishes to see is denied; c) that remote control units were too expensive for the experiment's budget.

Several of the participants, including cadre were aware that rear-mounted zoom and focus controls were available for certain lenses. The desirability of investigating purchase of such equipment was noted; the issue was ultimately resolved, and is discussed later.

At the same time that it became apparent that proper camera operation for IATV was more complex than had been anticipated, it also was becoming clear that good camera work required manual dexterity, as well as alertness and quick response to the dynamics of interaction. It appeared that camera operation in the NCC interactive setting would demand skilled work by people who would gain dexterity, "sense" and quick response with continuous practice. This challenged Assumption 5 (that clients would be able to take over operation of cameras and other equipment) and led to reassessment of staffing requirements and staff assignments.

During the first week's interaction, the decisions were taken that: a) cameras would be operated, if not exclusively, then for the greatest part of the time by technical aides; b) in addition to camera operation, it was likely that either an aide or coordinator would also operate sound-mixing equipment and camera-switching equipment; in the real-life experience of the interactions, these pieces of equipment also required experienced operation; c) in order to attract personnel and assure continuity in employment of the aides, there would be one full-time aide per center and one part-time aide, rather than three part-time aides in the category.

None of these decisions affected Assumption 6 (that seniors and agency personnel would plan and prepare sessions and give major assistance to system management). On the contrary, it became clear that Assumptions 5 and 6 were not interdependent as they had been thought to be, but mutually exclusive. From a practical point of view, Assumption 6 (planning, preparing, management) implied replacement by volunteer seniors and agency staff of system personnel at fairly high salary levels, whereas Assumption 5 (equipment operation) implied replacing personnel of the lowest salary levels. Rejecting Assumption 5 would enable cadre to concentrate on Assumption 6 -- encouraging and assisting the system's clients to understand and perform session and management tasks. Cadre could still train and supervise the performance of those clients who showed real interest in learning to operate equipment.

Each of the Centers was equipped with two stationary cameras from the beginning. Obviously, this implemented Assumption 1 (that two cameras would be needed in order to cut between shots of participants, cut between establishing shots and close-ups, and cut between presenters and graphics). Cadre insisted that two cameras were needed in order first to show a wide shot of the center's participants; then to cut to a close-up of the person speaking; then back to a wide shot while the first camera got a closeup of another person speaking; then back to a wide shot while the first camera got a closeup of another person speaking; then to cut to the closeup when it had been found and properly lined-up; and so on.

This stemmed largely from what cadre was used to -- television programming in controlled situations: where skilled directors choose precise moments to switch to shots carefully lined up by crews of professional camera operators with whom directors and technical controllers communicate constantly in a highly specialized language.

When the "television production" metaphor was pointed out to cadre, they were unable to accept it; they had, after all, made a great effort to avoid it. Gradually, they came to understand how pervasive the metaphor is, and to realize that what was before them was different from that metaphor in kind, rather than in degree.

The idea of two cameras died slowly. First, there was the lingering desire to keep the second camera distant from the monitor for "reaction shots." However, when a participant seen in such a shot began to talk to a participant at another location, "face on" orientation was lost. (To whom is he/she speaking? Certainly not to the person intended, according to the picture.) And with the camera off to one side, axis violations were common; a person was seen suddenly to be facing in the opposite direction from what was expected.

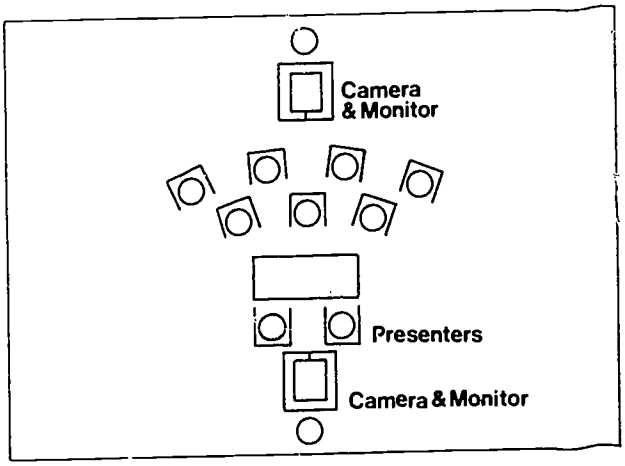
Still holding to the two-camera idea, both cameras were next placed in the "interactive position," as close as possible to the monitor. Here it was possible to intercut between wide shots and closeups. Three adverse consequences were noted: a) by the time a closeup was cut to, the subject had stopped speaking; b) wide shots, viewed from more than six or eight feet, did not permit ready identification of a person speaking, and were generally felt to be "boring;" c) in the absence of private line communication between the person operating the camera switcher

and the camera operators, the camera operators did not know when or if they could move to another shot.

By the end of the three weeks of simulation, it was established that one camera, in the "interactive position" would be the rule, but before it was confirmed, one final problem had to be resolved. How could one camera cover not only the participating interactors but also a presenter or persenters at a center?

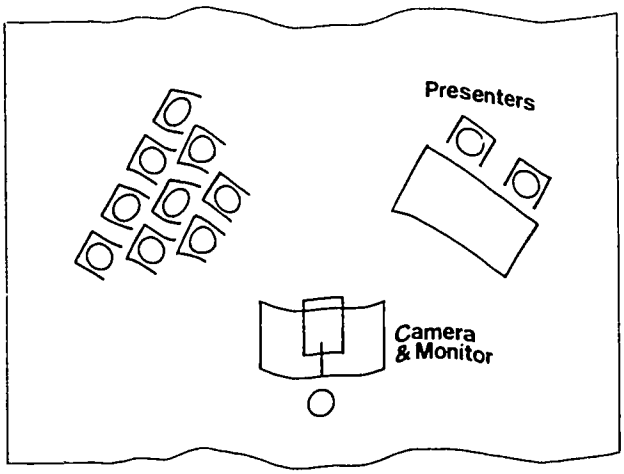
Certain types of purposive interactions could not be accomplished using only an open discussion format. A panel of experts would frequently be a desired format, as would demonstrations and classes with instructors who would want to show as well as tell. Format devices would be necessary to frame the context in which subject matter would be explicated before and during interactions. These presenting devices imply a major share of interaction between participants at all centers and the presenter or presenters. How to set up these presenters so they may both interact via the system with distant participants and face-to-face with the participants at the center where the presentation is taking place?

Before the two-camera metaphor had been challenged, it had been assumed that, at the "presenting center," one camera would be focused on presenter(s) and one on participants. Presenter(s) would face participants at the presenting center, in the manner of a conference or classroom. A camera behind participants would be focused on the presenter(s) and one behind the presenter(s) would be focused on the participants.



Each camera here sees not only what it is intended to see, but a camera and monitor, as well. One sees the presenter and a monitor with the picture of the presenter, or the picture of the presenter on a split-screen with someone else, and this now resonates on the shared downstream channel as a picture of a picture of a picture ....

If the camera-monitor units are placed so as not to see each other, then where does a presenter look? If, at the participants in the presenting center, the presenter is seen at the other centers looking away from them; if a presenter looks at the camera-monitor unit so as to interact with the distant participants, then she or he loses contact with in-person participants. With one camera, the problem was resolved.



Here, presenter(s) and participants at the presenting center are all oriented toward the camera and monitor. During presentations, presenters attend the camera-monitor unit, as do in-person participants, who see presentations via television, as distant participants see them, which is how they are meant to be seen. During interactions with distant participants, presenters and in-person participants orient to the monitor. When a presenter and a participant at the presenting center interact, the camera reports what is known by distant participants to be the case, that they are together in the same location and thus are seen looking toward each other (side-faces to camera). The single camera, panning from one to the other, confirms the expected perceptual experience. This perception is also the case when any two participants in the same center interact with each other, rather than with a distant participant.

It had been assumed (Assumption 4) that transmission of the person speaking would be the rule. This further implied that the picture on the monitor would be a single frame, not a split-screen. However, several participants in the simulations began early to object to seeing themselves as they were speaking. They wished to see the person they were addressing, as in face-to-face experience. Whose needs to implement, the speaker's or the rest of the participants'?

Switching to the person addressed satisfied the speaker, but frustrated most other participants most of the time. Two channels downstream would have solved the problem for both, with two monitors in each center - one to show the speaker, one the person addressed. But the NCC system is based on one channel downstream. The problem arises only when more than two locations are involved. If only two centers interact, there can be a direct feed from each to each. With three centers - a model for multi-center interaction - all 3 upstream signals must be fed to the head end for redistribution back to all three via one common downstream channel.

The problem was resolved, theoretically, by opting for a split-screen of speaker and addressee. Actually, a great deal of unanticipated technical work was necessary before the split-screen could be implemented. Split screen involves phase-locking all camera sources. This means compensating for minute time delays due to varying distances of centers from the head end. The consulting engineer devised a phase-lock system which works: split-screen of any two centers is now possible on the system.

When the technical problems in presenting split-screens were resolved, a simple protocol was established for split-screen phasing use. The presenting center would always occupy the left side of the screen, while the two other participating centers would alternate on the right. If the two other centers were to interact with each other, the center addressed would occupy left-screen, replacing the presenting center until the "other-center" reaction was completed, when it would resume on left-screen. Camera operators at all three centers would mark their camera monitors with a vertical line close to, or at, the center which was adjusted to a "true" center on the head-end's master monitor. All monitors need to be kept in center alignment with the monitor at the head-end, so that the intended half-frame is what actually is transmitted. A simple command from the head-end switcher, for example, "Hensler left" would mean that the camera operator at

Hensler was to place his subject in the left side of the screen.

Microphones and Sound

Sound levels presented an even more complex set of problems. When participants could not hear each other, frustration was instantly manifested. The difficulty was rarely distortion of sound, but rather insufficient sound levels. When audio gain was raised, the howl of feedback was introduced. In order to keep gain at a minimum and level at a maximum, participants had to hold microphones very close to their mouths. This was obviously not going to be desirable for actual system participants. The aim was to distribute three microphones in each center at locations easily accessible to participants; a certain amount of hand-passing of microphones might be tolerable, but not if speakers had to be constantly told to hold the microphone an inch from the mouth and speak up.

A number of variables had to be considered from the outset, which included the following:

1) Locations had to be made acoustically "dead" so that sound would reflect around the room and back to the microphone as little as possible. This meant not only adding draperies to the NCCs but also testing them for sound-reflectance, carpeting the NCCs, keeping cloths on tables, etc.

2) Microphones would have to be selected both for their inherent "high gain" characteristics as well as uni-directionality which limits sound pick-up to the speaker's voice without picking up the monitor loudspeaker or ambient reflections.

3) It was emphasized that all microphones except the one in use should be turned off. After rejecting the idea of switches on microphones, because they often would not be thrown or left thrown, cadre came to the conclusion that a person would have to be assigned at each center to operate a microphone-switching panel to accomplish the purpose.

4) The consulting engineer recommended purchase of feedback stabilizers for inclusion in equipment at each center. These were purchased at relatively low cost and installed immediately, resulting in a 30 - 50% increase in available gain. As of the time of this writing, microphone pick-up and sound levels at the NCC locations are satisfactory. Each day, however, sound-level checks are made before beginning sessions to balance the entire system's sound levels at maximum. The consulting engineer is designing a device which will automatically depress the level of the sound coming from the monitor loudspeaker whenever a microphone at its location is in use. The assumption is that greater volume is needed for hearing a distant speaker than when the speaker's voice is supplementing the transmitted sound in-person.

Light Levels and Lenses

Additional problems with monitors and picture quality were noted. Analysis of these began during the simulation period. For example, flat, poorly-resolved pictures were the rule, not the exception; further, this could not be attributed to a single factor. The consulting engineer advised cadre that the black and white pictures in the interactive system would never be quite as well resolved as the pictures one saw on an ordinary one-way channel, because of the two modulation-demodulation steps required for 2-way transmission.

However, it was his opinion, and that of the interactive consultant, that several variables could be adjusted to improve picture quality considerably, such as: light, lenses, monitor brightness and contrast, and setup of camera target, beam and focus. The lens questions were resolved before the simulation period was over. The remaining questions were to be resolved in further technical trials.

In order to get best picture quality to the camera tubes, cadre studied the variables involved with lenses under conditions of rather low light levels. It was known that many elderly people cannot tolerate the light levels necessary to operate lenses under optimum conditions. The light level chosen was 30 footcandles, evenly dispersed.

Furthermore, lights themselves could not be aimed from the direction of the camera to provide good facial illumination. Lights could not be on stands, because stands would interfere with mobility of the participants and block their views; also, they were potentially unsafe. Lights would have to be aimed from ceiling fixtures to the side, above, and behind participants. Room colors presented an added complexity. Ceilings should be white, for reflectivity, but walls and drapes should be of colors pleasing to the eye, which would appear as shades of medium gray in order to provide separation behind white hair and shiny bald heads. Also, drapery materials had to be sound absorbent.

The general question was: how to get the best pictures before the participants? But this involved a larger set of interacting variables (for example, gray scale and resolution of monitors, contrast and brightness settings on monitors, and sensitivity of picture tubes). Here, as indicated, consideration was limited to lenses.

Having discussed optimum light locations and levels, the cadre turned to the following variables of zoom lenses:

1) f-stop

2) focal length and zoom ration

3) depth of field

4) optical quality inherent in materials and construction. This last point, though crucial, was decided indirectly by budget. Lenses would have to cost less than a thousand dollars each (although best quality zoom lenses cost a great deal more).

The lowest f-stop marked on a lens indicates its widest opening. The wider the opening of the lens, the shallower the depth of field. A zoom lens is rated according to its range of focal lengths; a "10 to 50" lens means focal lengths from ten to fifty millimeters, for a zoom ratio of 1:5.

The cadre learned very quickly that, in many situations, lenses would have to be operated at or near their maximum openings. This meant that a lens with a best f-stop of 2.0 was inherently superior to one with a best f-stop of 2.8, but that the depth of field (the field of focus) would be shallower in the former when it was wide open.

The zoom ratio was important, first, to obtain closeups of people distant from the camera as well as those near the camera. If people were to be as near as eight feet and as distant as thirty feet, it became apparent that a ration of 1:5 would permit those in the rear to be seen only in a medium shot (waist to top of head). Cadre determined that a zoom ratio of 1:10 was needed in order to produce closeups both front and rear. However, a 1:10 ratio based on a zoom lens of focal lengths 10mm to 100mm "wasted" the shorter length, because anyone sitting eight feet away was too close. The shortest focal length that could be used for closeups of people in front was about 20mm, and people at 30 foot distance still were not seen in closeup. The optimum focal length spread at 1:10, therefore, would be 20 to 200mm.

Finally, in order to make it possible for cadre (as well as some senior citizens) to operate cameras in the high position (camera above monitor) that had been determined best both for minimum camera-monitor parallax and for seeing participants seated in depth, the lens should be operable from the rear of the camera.

The optimum lens requirements re-stated:

1) f-stop at 2.0 or better

2) focal lengths 20mm to 200mm (1:10)

3) rear lens controls (zoom and focus)

4) good optical quality

Equipment distributors were canvassed for a "C"-mount to match the GBC camera without need for further adaptors. "C"-mount is typical for the type of television camera used. No 20mm to 200mm lens with better than f2.8, even without rear controls was found in the price range (under $1,000 per lens). Finally, it was decided that a Tamron lens would best fit the requirements. It had a rear-mounted cable drive to a 14mm to 140mm, and an f1.9 lens. At first, it was thought that the large face-plate of the lens (3-inch diameter) might distract or threaten some of the participants. However, subsequent tests with groups of senior participants proved the problem non-existent, and the lenses were installed on the interactive cameras at all three NCC locations.

The question of "best lens" resolved, cadre moved ahead to resolve other variables affecting picture quality. Some of these, as well as other technical and system variables are covered under the next heading.

Equipment and System Protocols

From the beginning, cadre was aware that certain basic practices had to be uniform for all centers. The first examples of practice uniformity were related to checking-out the portable equipment to be sure it was both connected and functioning properly. It became apparent that a far more complex set of practices was necessary for the interactive equipment.

In order to set up monitors from the first day of simulations, cadre was instructed to turn to a regular off-air channel (6) and adjust contrast, brightness, and linearities for best picture. Picture quality in and from any location then, could be grossly judged against this point of reference.

Once lenses had been standardized to all centers, cameras were balanced on a uniform resolution chart. Differences among pictures from various centers were minimized by resorting to a procedure in which, center by center, camera operators were instructed from the head end to set target, beam, and focus. Once each center had gone through a routine which optimized its picture output, differences among those pictures could be identified and subjected to further study.

Similarly, sound output routines were standardized. All microphones at a center were opened to the same setting and subjected to uniform sound levels. The monitor speaker was opened to a standard setting. The center's master gain was then brought up to the level just under feedback. (It was observed that heat and humidity and size of group caused daily variations in sound level characteristics. Neither simulated locations nor actual NCCs could be considered as "controlled" environments.) Finally, master gain level was re-set, if necessary, as each microphone was checked, in turn.

Turn-Taking and Interruption Protocols

Senior staff and consultants had discussed various alternatives for interaction control from the outset. It was considered likely that overall chairpersons would "recognize" participants during sessions, that the chair would rotate among centers, and that different people would occupy it over time, and exercise different styles of control. It was also likely that each NCC would have some sort of sub-chairperson or gatekeeper who would see to it that turn-taking was fair and reasonable.

The following set of alternatives was drawn up so that the general chairperson could be aware that someone at another NCC wished to speak, ask a question, or interrupt.

1. Chair could ask each NCC, in turn, if anyone wished to speak. Head-end would switch to the center being asked, and either the gatekeeper or the person wishing to speak would respond.

2. A system of cue lights would inform the chair. Each NCC would be represented by a light on a panel before the chairperson. Lights would be activated by NCC gatekeepers.

3. Each NCC could switch itself into the "non-talking" side of a split screen at will.

4. Inasmuch as the audio circuit on the system was designed so that any center could be heard at any time, all one had to do was identify her/himself, the center, and ask to be recognized.

There were neither cue lights nor independent video switching controls available during simulations and, from the cadre's experience, it was unlikely that either would be implemented. A combination of alternatives 1 and 4 seemed not only natural but efficient. Participants behaved with ordinary conversational politeness most of the time; if it became necessary to control turn-taking, natural leadership asserted itself -- usually the System Coordinator. There was little difficulty in establishing the identity and location of a person by audio alone, and dialogue, question asking/answering proceeded with no apparent problems. Whether interactions would proceed with such facility when larger numbers of participants not so

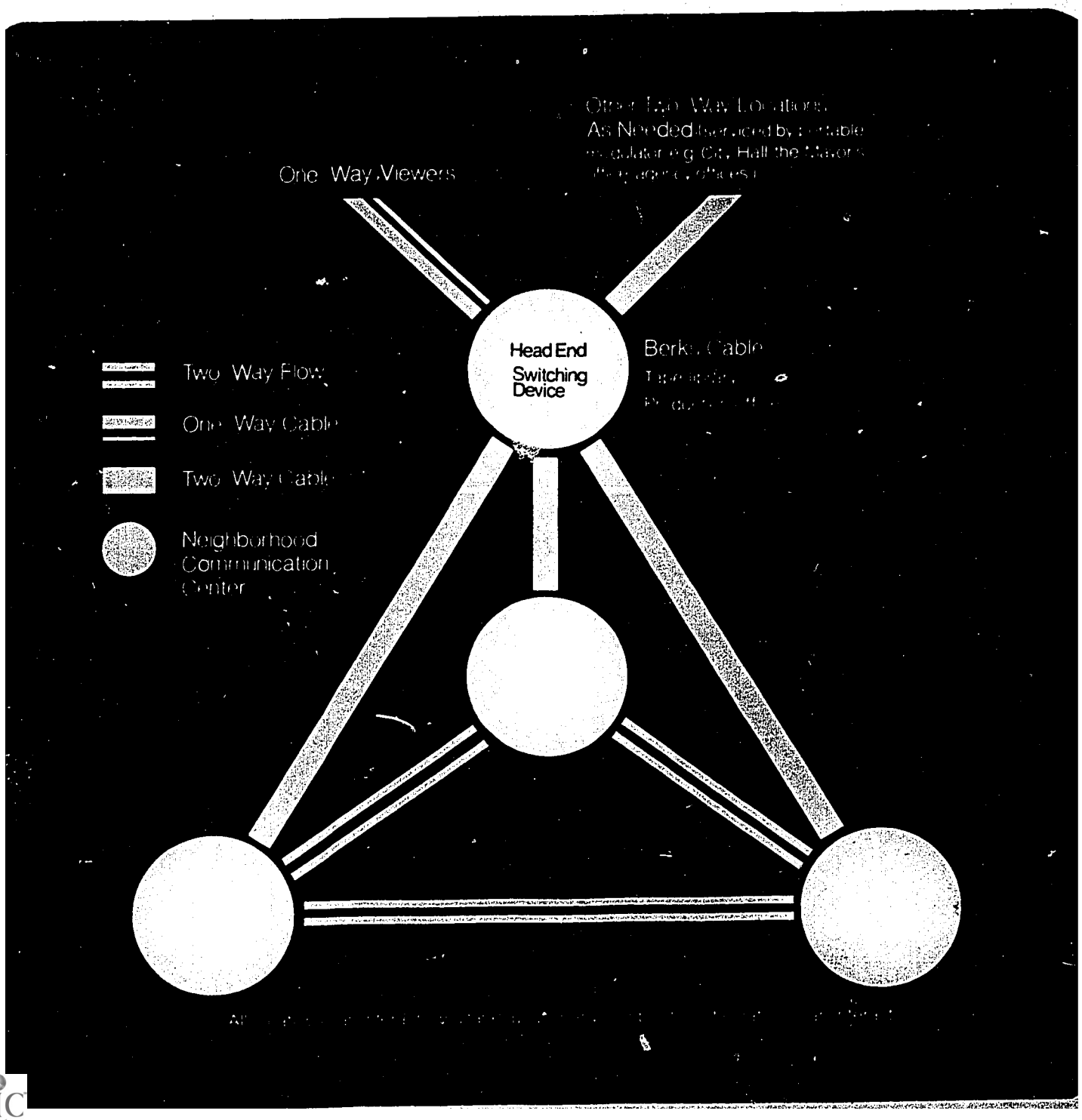
well-known to each other were interacting, was uncertain; but cadre and senior staff all felt that no particular technical devices (such as indicator lights or independent video controls) should be made part of the system until need for them was clear. The general consensus on this matter was that the least technological interface was best. The matter was therefore tabled until NCCs came into full operation.

Additional Observations and Comments

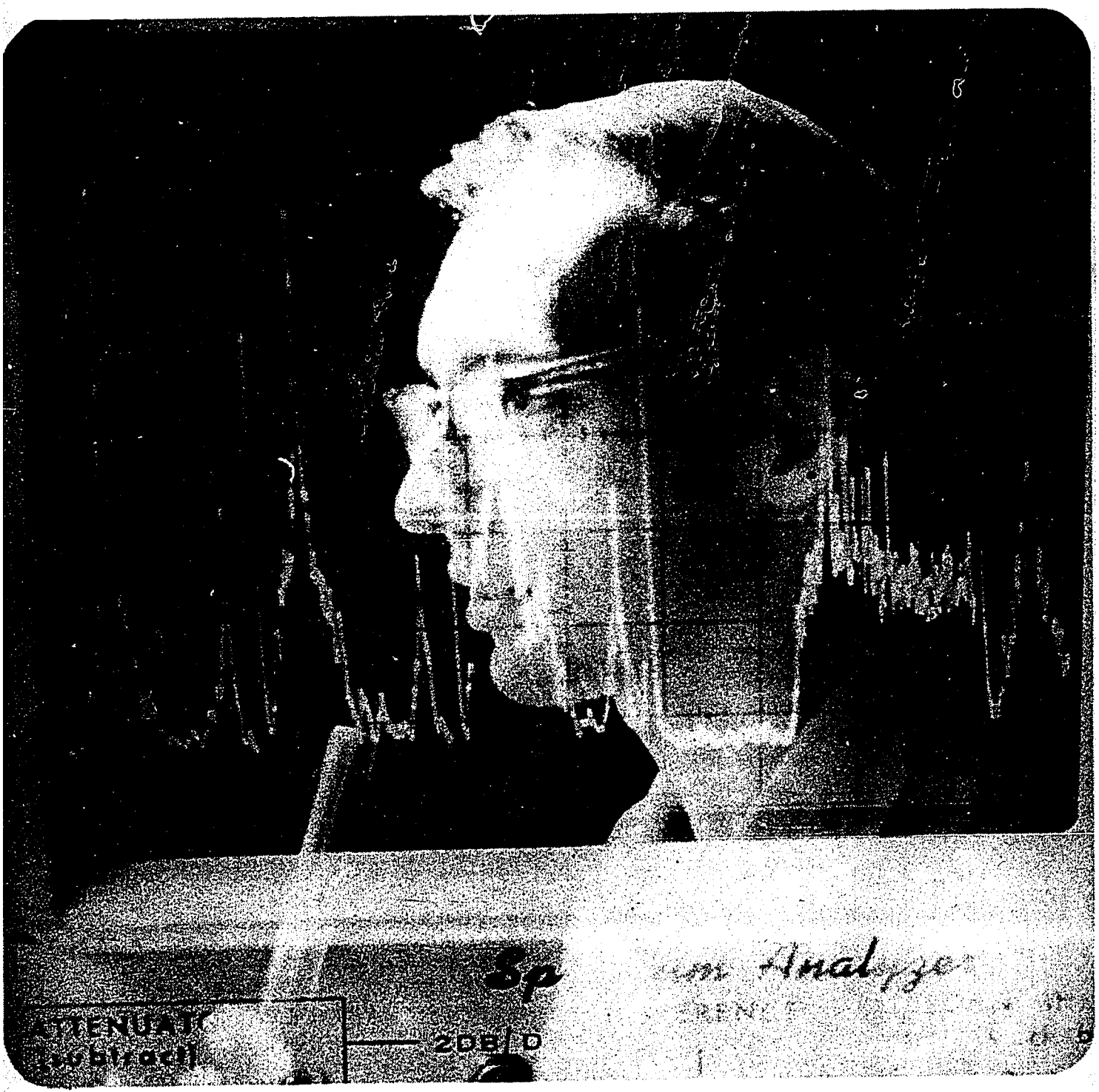
From the beginning of the simulations, interactions were conducted for specific purposes. In other words, cadre was not exposed to IATV merely to have the experience of seeing and hearing each other in the new medium. Each session had an agenda of questions to be resolved (How high could audio gain be ridden? How much coverage could be enabled by various lenses? What kinds of fabrics were both medium gray and sound absorbent? etc.). Questions related to sound and picture perceptions in IATV, ease of camera operation vs. camera positions best for interaction, turn-taking protocols, etc. tended to emerge in the context of use of the medium for more mundane business. Concerns requiring some examination of theory were not necessarily addressed directly; rather, they were identified and explicated in a context where people were pressed to make careful decisions and act on them. Theoretical concerns arose from experience, were carried to preliminary generalizations, and provided some bases for further logical categorizing.

The cadre was not made up of engineers or technicians, as has been noted. They did not approach IATV primarily to assure its technical "correctness." They were aware of the special perceptual and mobility problems of older people; thus, they gave primacy to their own confusions, difficulties of seeing or hearing, environmental factors, and perceptual biases (e.g. desire to see persons they were addressing, desire to see what was being talked about). Having experienced their concerns from a human point of view, they then set about seeking solutions -- some of which were technical solutions, some concerned the systems nature, and some involved reassessment of preconceptions.

Communication Flow in System



Technical Components of the NCC System
by Gary Schober



TECHNICAL COMPONENTS OF THE NCC SYSTEM

This section provides a detailed description of the bi-directional communications system that has been employed in this study. Three NCC locations have been equipped to transmit and receive audio and video signals to and from the head-end control point and other NCC locations. A typical inventory of NCC equipment consists of the following:

1. Cameras
2. Lens Compliment
3. Camera Mounting Assemblies
4. Switching and Synchronizing Equipment
5. Monitor and TV Receiving Equipment
6. Audio Transmitting and Receiving Equipment
7. RF Receiving and Transmitting Equipment

Cameras

There are two GBC CT-5000 cameras with companion viewfinder module in each NCC location. The cameras were chosen because they met the following requirements:

a) Performance - High resolution 650 lines at 8.5 MHz bandwidth
Low noise 50 db signal-to-noise ratio with FET video input

b) Reliability - Full solid state with ambient temperature range of 55 C. at up to 95% relative humidity

c) High Sensitivity - Providing useable picture at 1 footcandle with 10 steps of gray scale

d) 5,000 to 1 automatic light control

e) Self-contained and external sync. options.

f) Simplicity of operation eliminating conventional external camera control units (CCU)

g) Ability to externally drive with vertical and horizontal pulses for synchronized switching and effects

h) Mechanical vidicon focus provided to allow a wide range of standard "C" mount lenses and zoom optics

i) Ability to retrofit to solid state pick-up tube

j) Tally and intercom features available.

Lens Compliment

Each center is provided with one general purpose 25mm lens used in conjunction with graphics stand and a 10:1 f1:8 zoom lens with rear control assembly. The zoom lens provides a very adequate range of close-up and distant shots; it also provides excellent depth of field for audience shots due to its unusual speed. The rear control feature is a smooth operating bell crank arrangement for zoom action and is simple to use.

Camera Mounting Assemblies

Each camera is provided with a medium weight tripod and dolly assembly with counter-poised springloaded head. Since most programming that originates from the NCCs are single camera productions, on-line "dollying" seldom occurs. Great emphasis has been placed on eye contact, thereby requiring that the camera be positioned above the receiving monitor in a fixed position. This limitation is somewhat offset by the wide dynamic range of optics and automatic light control of the camera.

Switching and Synchronizing Equipment

A Sony SEG-1A Switcher/Fader-Special Effects Generator provides EIA RS 170 synchronizing signals to the camera (2:1 industrial sync.). These vertical and horizontal drive pulses are derived from a composite input video signal provided by an off-the-air TV receiver/monitor (Sony CVM 950U). This Genlock feature of the SEG 1A allows local synchronization of cameras in each NCC since each center receives the same Genlock source signal (Channel 8, Philadelphia). The SEG 1A is a tri-buss 4 input switcher capable of vertical interval switching of 4 synchronous composite sources. Additionally, 4 basic corner insert special effects are provided along with dissolve/super and fading features. A preview buss allows advanced registration of all takes. No tally or intercom features are provided on this device. Because of various propagation delays in the received "Genlock signal," a compensating circuit has been added to each SEG 1A to provide extended phase lock for precise head-end switching and wipes.

Monitor and TV Receiving Equipment

Each NCC is equipped with two large screen (23") Setchell Carlson monitor/receivers to display incoming video and audio signals. In situations where only small audiences are present, a single 23" receiver provides incoming display while outgoing video is shown on a 9" receiver. Another 9" Sony is provided for detection of the Channel 8 Genlock signal and provides line output monitoring functions. Each input signal to the Switcher/Fader is viewed on a 5" console monitor for previewing purposes (GBC MV 5 monitors). All monitoring devices at NCC locations are capable of producing 450 horizontal lines of resolution with ten shades of gray scale. It is important to note that this enhanced resolution capability is not realized due to other system restrictions.

Audio Transmitting and Receiving Equipment

Three varieties of microphones are utilized for audio pick-up at the NCCs:

a) Omni-directional microphones #EV 635 (Electrovoice)

b) Uni-directional microphones #RE 11 (Shure)

c) Lapel microphones #A34L (Shure).

Depending on the particular application, the use of specific microphones will differ. All microphone outputs are delivered to a 4-1 Shure Brothers M67 microphone mixer (low-Z, balanced feed). The mixer combines the multiple inputs from the microphones and delivers a single output which is fed to a Shure Brothers Feedback stabilizer. This device is used to provide variable decade attenuation of the audio signals. High and low pass filtering provided on the Feedback stabilizer allows removal of hum, noise and a reduction in feedback threshold with negligible compromise to audio intelligence. This band slicing technique is capable of improving the feedback to audio threshold by 3 db, however, it has been somewhat impractical due to the complexity of adjustments and the constantly changing acoustics of the NCC.

Audio that is received from the control point (head end) and other centers is reproduced by speaker amplifiers (internal) to the Setchell Carlson monitor receivers. Since all demodulated RF signals received at the head end contain the audio channel, this audio information is presented to a multiple input mixer (modified Shure Brothers M67), thereby allowing the mixed output to be fed to the downstream modulator (channel G) for distribution to all centers and remote converter locations. In this way, spontaneous audio transaction is possible since all centers are "live" throughout the system.

RF Receiving and Transmitting Equipment

Downstream signals transmitted from the head-end control point on channel G, 162-168 MHz, are converted to a low band VHF signal (Channel 3) by an Oak 4 Industries V 26 converter. This converted signal is fed to the RF input

of the Setchell Carlson 23" receiver. Combined audio and video signals originating at each NCC are fed to a low band Blonder Tongue #2930 TV modulator for transport to the head end. RF output amplitude is 1/4 of a volt (plus 54 dbmv) on Channels 3, 5 or 6.

A schedule three common talk intercom is connected between the three principal points of origination and the head-end antenna site for purpose of technical direction and production commentary. This intercom is used specifically in coordinating sound and video levels within the three originating centers and respectively the head-end antenna site. Future possibilities for this intercom will include encoded control signals for control functions such as video switching and mixing.

In addition to the internal studio capability within each center, battery operated portable camera and video tape recorders are provided at each location for purposes of recording and interviewing. The VTR's are 1/2 black and white (Sony Rover II's) with 1/2 hour record capacity. Programs recorded in the field are generally presented in "roll-in" fashion as part of a larger presentation from an on-line center. Up to 8 simultaneous transactions are possible on the system with the additional portable equipment.

The Transport System

Upstream signals (Channels 3, 5 and 6) originating at the NCCs are delivered to the head-end control point via a low band uni-directional trunk with a band pass of 5-108 MHz. Between 5 and 9 amplifiers boost the return signals to provide adequate level for head-end detection. All amplifiers are Kaiser Phoenician series maximum gain of 27 db and are spaced 22 db apart at Channel 13. Downstream channels are delivered via Kaiser Phoenician broad band amplifiers providing 5 low band, 40 FM, 7 high band and 2 mid-band channels to 33,000 subscribers and all NCC locations. Typical signal to noise is 43 db downstream.

The Head-End Equipment

All upstream channels are received at the head end for detection, selection and retransmission downstream to all participants on mid-band channel G (156-162 MHz). A detection of each NCC originated channel is accomplished through the demodulator of an 11" TV monitor. Each detected video signal is presented to an input of a SEG 1A Switcher/ Fader Special Effects generator identical to the units provided at each NCC location. Demodulated audio is delivered to a Shure Brothers M67 mixer/amplifier modified for line level input. The combined audio and selected/mixed video signals are fed to a Scientific Atlanta channel G mid-band modulator (model 6300) for downstream transmission.

Since the detected video signals presented at the head end are phase-locked to each other, precise switching and mixing is provided on the downstream channel by synchronizing the SEG 1A located at the head end with the same "Genlock Signal Source," (Channel 8, Philadelphia) as the originating NCC locations. Between 5 and 60 microseconds of delay of the Genlock signal is provided for the SEG 1A by an additional pulse delay circuitry to compensate for the distance between originating locations.

The video signal presented to the modulator is complimented by a Datavision character generator, model D 2400, used for titling and visual morning billboards. An optional audio cassette interface provides mass storage of alpha numeric characters on an audio cassette tape recorder. Since the composite output of the SEG 1A Switcher/ Fader Special Effects generator is RS 170, (2:1 industrial sync.), it does not contain equalizing pulses. Insertion of an Ampex AC 911 processing amplifier restores these missing synchronizing pulses to eliminate jitter reproduced on fast-time constant TV receivers.

The levels of the video signal transmitted at the head end are monitored by a Telemation Wave form monitor and audio VU meter built into the Shure M67 line mixer. All procedures and interactions are capable of being recorded on a JVC CR 6000 record/play video cassette machine. Additionally, this instrument is available for play-back of prerecorded programming to all channel G recipients.

Channel G Audience

Individual homes are equipped with a single channel crystal controlled mid-band converter capable of converting channel G to channel 2 on the VHF dial. This device has a single slide switch to provide either normal television or special viewing on channel G. The converter has a good dynamic range (plus or minus 12 db), and a noise figure of 9 db. Since the local oscillator is crystal controlled, stability is within .001% eliminating necessity for repeated fine tuning adjustments on TV set.

Modulation/Demodulation Limitations

In the television transmission system that is used in this country, the standard channel allocation of 6 MHz is shared between picture and sound carrier. The sound carrier is represented by an FM signal with a modulation index of 5 and a frequency deviation of + or - 75 KHz. This audio channel with appropriate FCC allocated guardbands consumes 1/2 MHz of the 6 MHz channel allocation. The visual component of the channel contains a vestigule sideband amplitude modulate carrier whose upper sideband extends 4.5 MHz above the carrier frequency which is positioned 1.25 MHz above the 6 MHz lower channel edge. The 1.25 MHz lower frequency spectrum is provided as a guardband. With a useable spectrum of 4.5 MHz for visual information, the maximum resolution capabilities of being transmitted is 360 lines (4.5 MHz x 80 lines/MHz).

Assuming no losses in the RF transmission system, i.e., differential phase, differential gain and rise time; the demodulation process further restricts the picture at the receive end. Bandwidth constraints of the IF amplifier in the TV receiver achieves selectivity at the cost of high frequency resolution and is further deteriorated by color subcarrier filtering. Since part of the transmitted signal is eliminated due to overscanning on the receiver to achieve a 3 to 4 aspect ration with good linearity the effective received resolution is further deteriorated to

a theoretical maximum of 325 lines. The signal transmitted from each NCC location is effectively processed twice in the above described manner and therefore represents an H resolution somewhat discounted from the theoretical resolution. Incidental noise caused by cross modulation and intermodulation directly add to further deteriorate the quality of the received picture. It is therefore reasonable to assume that maximum resolution capability of the system cannot exceed 300 lines and generally will be closer to 250 lines.

System Emulation

Consistently good pictures and sound have not been achieved from the NCC locations because of: a) equipment limitations and failures; b) improper operation, and 3) adverse conditions.

Due to the fixed nature of a camera, as opposed to the originally envisioned two camera NCC set up, additional constraints are placed on the individual who is operating the camera requiring some of the transitions from full to tight shots to be made from a perch above the display monitor. This camera position will occasionally cause "blushing" of the picture if the field of view is presented with an excessively bright object such as a ceiling light.

Since the ALC (automatic light control) in the camera responds to the peak luminance, i.e., the brightest or whitest component of video; shiny jewelry or unevenly lighted target areas result in flat and washed out pictures. Greater emphasis and training is needed at the NCC locations to ensure a consistently higher quality picture and better lighting.

The GBC CT 5000 Viewfinder cameras have an annoying intermittent hum problem caused by a ground-loop condition when utilizing the viewfinder. This deficiency has been corrected by insulating the rear half of the piggy-back viewfinder module on one camera unit and must be implemented on the remaining 5 units. Two vidicon tubes have had to be replaced due to focus blooming.

The Sony SEG 1A has consistently run hot causing an imbalance in the mixing amplifier buss evidenced by alleviated by ventilation thereby reducing crosstalk to a tolerable level. Regrettably, the design by Shintron Engineers of the SEG 1A does not allow balancing adjustments of this mixing amplifier. Balancing adjustments must be implemented to totally correct this deficiency. Since the switching busses of the SEG 1A are TTL input, limited noise immunity is provided internally; therefore, properly grounded connections are absolutely required to avoid intermittent switching. Since the mixing buss is additive in nature, all supers must be made with 50% AB relationship, otherwise, a nominal 1 volt output signal will be exceeded. Regrettably, 3 of the 5 SEG 1A's used in this project have a prototype, or experimental Genlock boards, apparently used in early design as evidenced by numerous circuit changes and "kluges" that are necessary to make them work.

This has caused various intermittent problems. One of these problems could be resolved by installing a waveform monitor or sampler at each center to refine adjustments, and maintain consistent video levels. In addition, various forms of video distortion have occurred due to improper AC power distribution. As a result, three wire-grounded recepticals should now be in use at all centers.

A modulator (Channel 3) has been corrected after numerous intermittences causing RF output level to shift drastically. The RF signal from the Hensler location consistently has RF "Birdies" caused by cable reflections or intermodulation products. No solution has yet been found to this problem. Occasional video flashes are caused by wind gusts on faulty cable connections and have not yet been completely flushed out. The "DXing" problem (really co-channel interference) caused by a signal operating on the same frequency leaking against the signal of choice occurs with reduced frequency since additional radio frequency shielding techniques have been employed at the head end. Occasional interference remains and generally originates at an NCC location. Additional work is required to eliminate cable reflections and intermittent sound and picture interference.

Audio feedback has been consistently the largest problem with interactions. To date, no one implementation has corrected this deficiency due to the number of variables

involved. At optimum, the volume reproduced at each center leaves a great deal to be desired and therefore, it seems likely that the only solution to increasing intelligibility is to implement a threshold activated gated attenuator. When activated by audio, this device would allow total (or reduced) cut-off of local speakers at originating center. Further experimentation should be made with audio compression to increase average talk power.

A peak limiting device might be employed to restrict maximum volume from each center thereby reducing possibly all feedback. A true feedback stabilizer might be employed to eliminate feedback by shifting the frequency of the interfering signal rather than attempting to eliminate it as in the case of the Shure Brothers feedback stabilizer. A CBS Volumax and/or Automax might be employed for fast volume regulation and long term volume drift respectively. A Burwhin gated noise filter might be successfully employed in eliminating frequency domain noise thereby improving intelligibility. Some testing and experimentation with these devices is required.

Increased use of directional microphones will enhance the possibility of greater volume and reduce chances for feedback. Auxiliary speakers should be implemented in centers having PA system capability or the means to provide wall column speakers.

The telephone intercom seems to be working properly except in situations where the camera person is unable to speak loudly enough to overcome background noise at the receiving point (the head end). A speaker amplifier should be bridged across the head set at the head end to allow constant hands-free monitoring of the intercom. This will be installed February 12, 1976. Segregation indicators are being designed and built to provide a means of identifying a location originating an overmodulated signal. This will allow the head-end operator to cure the deficiency and not create a situation where all centers upset the previous adjusted levels. This will be installed February 12, 1976.

Programming Activities
by Candace Greene

PROGRAMMING ACTIVITIES

Programming began officially on January 9, 1976. Prior to that date, various program formats were explored as staff, agency personnel, and senior participants became familiar with the operation of the interactive system.

Programming has developed over the past four months according to guidelines that were set out in the initial proposal:

1. To facilitate access of participants to outreach by service providers; information and referral; education and training; citizen-government interaction.

2. To improve participants' understanding of how they can improve their economic and human resources.

3. To encourage and facilitate participation by users in producing their own programming in cooperation with local service providers and people who represent resources in areas of user interest.

4. To elicit participation by the elderly in decisions affecting their lives.

5. To build a large group of active participants and home viewers; a regular viewing audience with regular viewing habits.

6. To develop long-term use of the system to be supported and maintained within the Reading community.

It was recognized from the outset that a group of neighborhood communication centers that were interconnected for two-way transactions and dedicated to the interests of the elderly could offer limitless programming possibilities. Therefore, two criteria were established to determine the scope of programming: the function should lend itself to performance on this system and others like it, and the subject matter should be considered important both in Reading and in urban areas generally.

Programming was initially scheduled to occur in a series of five stages. However, as the limitations which that time period imposed became evident, programming was

scheduled to extend, without break, over the thirty-month period of the experiment. Programming has originated from each of the Neighborhood Communication Centers and from remote locations, such as City Hall; it has been received in those places as well as in an increasing number of elderly people's residences.

In keeping with the interactive nature of the system, all participants are being trained to operate the system for their own use. This training includes: planning topics for sessions, researching program material, and preparing and producing sessions. The program schedule is open-ended to accommodate the additional programming that is being generated by participants as they become increasingly familiar with the system.

The concept of user-generated programming is based on the design for user-operation of the NCC system. If the participants are to undertake the responsibility for operating the system, it follows that they should be given every opportunity to use it for purposes that are important to them. The range of this user-generated programming extends from light entertainment to education in a variety of areas.

Regular programming occurs from 9:30 a.m. to 11:00 a.m., Monday through Friday. The program schedule that has emerged thus far can be broken down into three broad categories: regularly scheduled programs that appear at the same day and hour each week for varied time periods; events which occur once a month; and special programs which may be scheduled for periods during the afternoon as well as the regular morning hours. In addition, spot announcements of special events, or that serve as reminders, are being taped by participants and are interspersed during regular programming hours.

Many of the programs that have been developed cannot be as easily categorized on the basis of content because there is a high degree of integration among program categories such as information and referral and citizen-government interaction. However, the following programs have been established in the areas that were specified in the initial proposal.

Outreach by Service Agencies

YOUR MONEY AND YOU, which has appeared weekly since

January, includes information on the Direct Banking Option, services offered by the Berks County Senior Citizens Council, Supplemental Security Income, Food Stamps, Medicare, and Medicaid. Representatives from various agencies and organizations participate over the system by describing, explaining, and answering questions on specific services. The program includes illustrative graphics and detailed instructions concerning the services that are being described. Participants are given advance notice of the topic to be covered and information on materials, forms, etc. which they should bring with them.

Information and Referral

YOUR MONEY AND YOU, as well as ADVENTURES IN MATURITY, another regularly scheduled program, are the primary formats for information on transportation services that are available to the senior citizens in Reading, banking services, legal services, and where to obtain them, services provided by the Red Cross and the County Board of Public Assistance, etc. Hosted by Ann Farrell of the Berks County Senior Citizens Council and Anna Wingart from the Berks Chapter of the American Red Cross, specialists have often participated in discussions on such subjects as: volunteer organizations, home nursing, and dealing with simple emergencies.

Two new programs, ANNA'S ALLEY and AROUND BERKS COUNTY went on the system in April. They cover issues that are relevant to outreach by service providers and information and referral as well as more general program content. For example, a tour of the offices of the County Board of Public Assistance was conducted during one session of AROUND BERKS COUNTY.

Education and Training

RED CROSS FIRST AID TRAINING SESSIONS were delivered over the system on Wednesday afternoons from 1:30 until 4:30 p.m. for three months. Instruction on administering the new cardio-pulmonary resuscitation technique was delivered by a member of the Berks Chapter of the American Red Cross to Reading Housing Authority staff members as well as the Berks County Senior Citizens Council staff. GREAT CITIES OF THE ANCIENT WORLD, a part of the Continuing Education

Series of the Berks County Senior Citizens Council, was conducted over the system from January to March.

Three "oral-history" sessions were held via remote connection with local high school students in which senior citizens shared their recollections of past events with members of a social studies class. More of these sessions will be scheduled from time-to-time in the future.

Citizen-Government Interaction

A monthly meeting with the Mayor of Reading is held on the last Thursday of each month. The participants meet with the Mayor and members of his staff to discuss events and issues of local interest. Two new programs: INSIDE CITY HALL and MEET CITY COUNCIL began in April. Each week, a different member of the City Council meets with senior citizens for a discussion of municipal policies and programs. INSIDE CITY HALL, which preceeds the program with the council members, reports on the City Council meetings and provides a summary of local government activities. It was conceived by the Seniors for Action, a local organization.

TELL IT TO EBEN AND HERB, which also began in April, is hosted by two members of the Berks County Senior Citizens Council. It is a format for general discussion of local issues. In addition, an opinion poll is conducted each week on this program which includes a wide range of subjects such as attitudes toward social services and national events. Questions are composed by the senior citizen presenters who verify those that concern social services with a member of the research team.

Entertainment

Two formats that were introduced before the programming officially began have continued successfully. SCRAPBOOK is a vehicle through which seniors recall and exchange memories and events of the past. This has included such varied topics as: favorite cake recipes -- and a cake baking session over the system, life during World War I, and the theme songs from the big bands. SINGALONG, which has very high participation rates, is comprised primarily of hymns and requested songs, many of which come from the home viewers.

DANCING WITH BLAINE D and THE GOOD HUMOR MAN began in March. Appearing at a different center each week, Blaine D. provides instructions on dance steps. THE GOOD HUMOR MAN is hosted by Herb MacGregor from Berks County Senior Citizen Council. He tells funny stories and urges participants to tell them as well. A junior league puppet show, the Muhlenberg High School Jazz Chorus, and sessions on making special valentine greetings for the citizens who receive "Meals on Wheels" have been scheduled over the system at different times. Special programs of this nature will continue to appear on an informal basis.

Program Development

As anticipated, an increasing number of different programs has been introduced each month as both sets of users (the elderly participants and the social agencies) have become familiar with the system. A committee was formed during the early months of programming to facilitate the development of new program formats and to discuss methods for improving program participation. This group meets several times a month and receives feedback from the individual program committees that were formed at each of the centers. It will be chaired by a senior citizen as of September 1976. One of the decisions of the Program Committee was to produce a monthly program guide which listed regularly scheduled programs, special events, and a newsletter section which included information to supplement or enhance program content. After five months, this was replaced with weekly program listings, which are frequently followed up by fliers, and are produced primarily by seniors in Reading.

Some of the regular weekly programs that were introduced during the first months have been discontinued; others have been altered, expanded, or developed into new series. The basis on which these changes have been effected has been primarily the result of experience or feedback that has been acquired by the presenter. As a result, a series of seminars have been set up for the presenters to share their ideas and experiences with each other.

One of the first series to be developed, SCRAPBOOK, was scheduled from 10:00 a.m. to 10:20 a.m., each Monday during January and February. But, by March, Blaine Diefenderfer, a senior aide, realized that there was enough material being introduced in this segment to extend the weekly period to one hour.

In April, a series titled INSIDE CITY HALL was scheduled to go on the system on Thursday mornings from 9:30 to 10:00 a.m. A different member of the City Council was scheduled to discuss various aspects of the City Council meetings with senior citizens. A member of the Berks County

Senior Citizens Council's Action Committee then suggested that he attend the previous days' council meetings and present his impressions of what occurred from 9:20 to 9:30 a.m., prior to the council member's appearance.

LIVING LIBRARY, a series that was scheduled regularly during January and February, evolved into a monthly meeting called POET'S CORNER. It seemed that a surprising number of elderly participants were themselves poets and that they enjoyed reciting their own work over the system.

The way in which programming and the system itself has evolved can be illustrated by one of the special events that was scheduled on the system beginning in February and running through April. Every Wednesday, a representative from the Berks Chapter of the American Red Cross has used the system to train staff members from the Reading Housing Authority and the Berks County Senior Citizens Council to administer the cardio-pulmonary resuscitation technique. Not only did a significant number of elderly citizens attend these sessions; but the three hour time span presented a unique situation for the technical staff. A large crew of skilled people would have to be available to provide breaks for those who usually performed technical functions. The result was a regularly scheduled training session for seniors at Horizon Center who now operate the cameras for the Red Cross training sessions.

Finally, a sense of unity and identity among the senior participants at each NCC is developing. Seniors at two of the centers felt that the majority of programs were originating from one of the other centers. Therefore, a group was formed at one of these centers to develop a quiz program. This involved establishing a format, researching local events of interest from past issues of the newspaper, collecting old photographs to be identified, writing questions, etc. Two dry-runs were conducted during May and several revisions were made, based on these dry-runs, before the program appeared on the system in June. At the third center, several participants organized a regularly scheduled program entitled BULLETIN BOARD to inform senior citizens about forthcoming events of particular interest. In order to collect material for this program, the presenters contacted various organizations and agencies in Reading to notify them of the availability of this outlet for disseminating information about their activities and to obtain details about their regular functions.

During January there were five weekly series scheduled over the system. Two of these have been discontinued and one has been expanded. There were four special events scheduled at different times throughout the month. Of these, MEET THE MAYOR has continued each month via remote connection with City Hall. Attendance at this session has been high; the participants have been anxious to discuss such topics as

police protection and urban development with the Mayor and members of his staff. In February, there were the same number of weekly series and the same number of special events. ADVENTURES IN MATURITY, a regular weekly program, was comprised of meetings with a variety of specialists who discussed the subject of aging.

By March there were seven weekly series and six special events among which was a special session on Easter egg decoration, a concert, and a puppet show. YOUR MONEY AND YOU included advice and information on: Earned Income Forms, Rent Rebate, Medicare, and the Direct Banking Option. A "Name the Channel" contest was held during March. Participants from all of the centers, as well as the viewers who were equipped with converters in their homes, submitted names for the system.

On April 5, a panel of judges which included the former Mayor of Reading, a columnist from The Reading Times, and a member of the Berks County Senior Citizens Council selected five prize-winning names. First place was awarded for "The Tri-Channel," which is what the system was subsequently named. Five new programs were introduced on the system in April. Two of these are concerned with local politics. ANNA'S ALLEY, an interview program, includes visits with various individuals which are hosted by a senior presenter.

A game entitled SOUP'S ON was introduced over the system in May. Facts about nutrition were dispersed through this format to participants at all three centers. The response was so favorable that it was scheduled to go over the system again in June. Material on local Bicentennial activities was also presented in May and a representative from the American Cancer Society appeared on YOUR MONEY AND YOU.

It has become clear that the objectives that were originally set forth can be incorporated into a wide array of different program formats. Presentations devoted specifically to social or municipal services are by no means the only opportunity in which information can be highlighted, discussed, or presented. There is a growing cohesion and unity, not only among the individuals participating in the programming, but in the program content itself. In addition, senior citizen participation is increasing rapidly in the areas of program preparation, production, and presentation. In June, a part-time senior aide was employed to coordinate promotional activities in Reading which are intended to increase involvement by both sets of users.

Impact of the NCC System on Senior Citizens
by Louanne Kennedy

IMPACT OF THE NCC SYSTEM ON SENIOR CITIZENS

This section summarizes the work on: (1) the survey of the elderly in Reading; (2) the survey of non-respondents; and (3) the study of the impact of the Neighborhood Communication Center system on the community.

Research Design

The survey has been designed to assess the effects of the Neighborhood Communication Center (NCC) system on the elderly's (a) utilization of services; (b) attitudes and beliefs about themselves and the agencies and organizations with whom they might potentially interact; and (c) participation in Reading community affairs. Several methodologies have been employed to measure these effects, with primary reliance on the interview schedule in the "before" stage. A panel design is being used so that both before and after measurements are taken on the same samples.

Experimental groups are comprised of senior citizens who have varying degrees of access to an NCC, while control groups have little or no access to an NCC. The aim is to assess the increases that occur in the dependent variables (a, b, c above) as a result of the NCC system over a one-year period of operation. To assure that the observed increases have not been generated by other events, it will be necessary to compare increases in the dependent variables for those elderly populations that have easy access to an NCC (Experimental Group), with possible increases for those groups of the elderly population who do not have easy access to an NCC (Control Group).

The effects of the NCC system are examined in three contrasting residential sites: publicly-owned high-rise apartments that are available exclusively to the elderly; publicly-owned garden apartment projects where high concentrations of the elderly live near younger families in the same, or adjoining project; and private residential neighborhoods where senior citizens are dispersed among other age groups.

In the high-rise apartments (concentrated residence), access to the NCC, which is located in the residential building, is particularly easy; at the same time, the concentration of elderly residents enhances the existing communication lines to and among the elderly. By contrast, in the

open residential neighborhoods (dispersed residence), reaching the NCC requires movement over several city blocks, and the dispersion of the senior citizens makes them less accessible by conventional communication lines to agencies and fellow senior citizens. The garden apartment (semi-concentrated residence) occupies a middle position in terms of accessibility, although it falls closer to the position held by the concentrated residence than to the dispersed site.

In addition to the basic research design, the extending benefits of the NCC system will be evaluated for a group of elderly persons who do not attend any of the NCCs. A sample of elderly-person households, in two neighborhoods, has been equipped with home-video terminals, or converters, so that the capacity of one-way transmission for delivering any of the potential benefits of the NCC system can be determined.

Both of the neighborhoods are comprised of dispersed residences; one is located in close proximity to an NCC, the other is not. Those elderly residents who do not receive converters in these neighborhoods will serve as comparison groups. Any increase that occurs in the dependent variables for the converter-equipped group, over the course of one year, will be compared with the increases that may occur for the non-equipped group during the same time period.

As a result of these decisions the following seven comparison groups were identified: (1) Kennedy Towers with easy access to an NCC (the NCC is located in the community room); (2) Franklin, as the control group for this high rise project; (3) Hensler Homes, the semi-concentrated housing project with an NCC in the community room; (4) Oakbrook as the control group for this residental condition; (5) an area of dispersed residences surrounding the NCC at Horizon Center; (6) dispersed residences in an area that is designated Neighborhood 17 by the Reading Planning Commission, which has no access to an NCC, as the control group for (5); and, (7) additional samples of households in Neighborhood 17 and in the Horizon Center area, to be equipped with one-way converters.

Sampling and Interviewing

In September, 1976, National Analysts, Inc., a subcontractor employed to administer the survey, worked in

collaboration with the research staff in the final preparation of the questionnaire. Twelve interviewers were selected and a training program was designed for the first wave of the survey. National Analysts, Inc. also produced a manual which was used by the interviewers throughout the months that followed. The training program for interviewers emphasized those factors that were particularly relevant to the elderly: physical health and abilities, housing conditions, respondent attitudes to the interview, and the role of the interface relative or friend who may have been present at the interview which was a special feature of this design (see: Attachment A).

Each interviewer then conducted a practice interview with an elderly resident of a public garden-apartment project, which is adjacent to Hensler Homes, but not itself a sampling site. These interviews were then corrected and reviewed with the interviewers.

Samples of various housing projects were drawn from lists of residents which were obtained with the assistance of the Reading Housing Authority. Interviewing of respondents in the public-housing projects began on September 27 and terminated on December 2, 1975. Response rates for these projects are as follows (for a more detailed breakdown see: Attachment B).

Name of Project	Total Interviews Completed	% Response
Kennedy	117	93%
Franklin	47	98%
Hensler	89	96%
Oakbrook	85	83%

On November 3, the interviewers were given an orientation to the sampling process in the dispersed residential neighborhoods. The sampling procedure was to yield an area probability sample of the households in the designated areas that contained at least one person over the age of 62. Of these designated areas, one surrounds the Horizon Center: it is composed of certain portions of Neighborhoods 1, 7 and 8 as designated by the Reading Planning Commission. The next encompasses the eastern portion of Neighborhood 17, which does not have easy access to the Horizon Center or any of the other NCCs and was therefore designated a control area. The third area includes the western portion of

Neighborhood 17 where the sampled households were to receive home converters. A one-block wide buffer zone, which divided the eastern and western portions, was omitted from the study universe as were two outlying blocks estimated to contain only two, or no, households with elderly persons.

Names and addresses of the residents in each area were obtained from the Reading City Directory. Letters were sent to all residents of the neighborhoods, which indicated that a survey of elderly residents was being conducted and that, if eligible, they would be contacted.

Screening and interviewing began on November 5 when interviewers visited every household to determine the number and location of elderly residents in their designated segments (approximately one-block square). Interviews were conducted, or appointments for interviews to be conducted were made at this point, depending on the availability of the elderly resident. (Institutional homes, large rooming houses, and other dwelling units containing more than five unrelated individuals were excluded from the study population.)

According to the original sampling plan, new segments (square blocks) were to be designated and screened each week so that a random selection of segments could be obtained until the requisite number of interviews had been reached. However, all the segments in the two zones of Neighborhood 17 had been screened (except one set of segments in the eastern zone that form a buffer between the two zones) by the time that the requisite number of interviews had been reached.

Therefore, the randomness of the sample never became an issue. Screening proceeded radially outward from the NCC in the Horizon Center area (except when ecological barriers were encountered); it terminated when the requisite number of interviews had been reached so that the issue of randomness once again did not arise.

It is clear that a saturated sampling of segments has been yielded since the screened segments constitute, essentially, the universe of segments in each designated area. This, in part, is the result of a decision to sacrifice some degree of saturation in each segment so that the interviews which began on November 5 could be completed by December 4, which was considered to be an appropriate period of time.

In other words, the number of call backs that were

made, when an elderly person could not be interviewed on the first or second visit, was not as great as it otherwise might have been. This means, of course, that the achieved sample is somewhat biased toward those elderly persons who were ready to be interviewed on the first or second visit. On the other hand, a sufficient number of call-backs were made to complete the screening process: hence there is believed to be little bias on the lists of elderly persons that were generated, despite the fact that all of them were not interviewed.

Three hundred and fifty-eight interviews were completed. Of these, 117 were in the western (converter) zone of Neighborhood 17; 117 in the eastern (control) zone of Neighborhood 17, and 124 in the area surrounding Horizon Center. The overall response rate for all three areas was 63.4%. A summary of the screening rate, interview rate and non-response rate is attached (see: Attachment C).

The coding of the questionnaires began March 1. Compilation of the code book is nearing completion and preliminary data analysis is expected to begin shortly.

Converter Installation

As soon as the first wave of interviews was completed, the 117 respondents in the western zone of Neighborhood 17, who had been designated to receive converters, were contacted by letter and then by follow-up telephone call to arrange for the installation of equipment. The respondents were told that the converter would be attached to their TV set by a member of the technical staff at Berks TV Cable Co., and that there would be no charge for the cable during the year of the study. The response to these letters and phone calls was so poor (after 65 calls had been made fewer than half [25] agreed to have a converter installed) that the telephone follow-up technique was discontinued.

A new strategy was then employed. An elderly member of the Berks County Senior Citizens Club was hired to make door-to-door visits, accompanied by a member of the research staff, to the remaining respondents in the western portion of Neighborhood 17. This procedure was instituted to provide a more relaxed atmosphere in which the respondents could discuss the converter more comfortably. This proved to be a much more effective method; of the forty-seven households approached in this manner, twenty-eight agreed to accept the converter. (The five remaining persons who had

been interviewed in this area were out of town or otherwise inaccessible when the converter approach was made.)

The whole breakdown is presented in Table 1.

Since the number of respondents who accepted the converter in Neighborhood 17 west totalled only 53, converters were made available in the Horizon Center area as well, in an effort to increase the total number of converter-equipped homes to 100. Although this constitutes an extension of the research design (certain households would now have access to the Horizon NCC and would, additionally, be equipped for one-way viewing in the home) it permits measurement of the extent to which converters encourage, or discourage, physical attendance at a nearby NCC.

Of the 124 persons who had been interviewed in the Horizon Center area, the 72 who already subscribed to the commercial TV cable were approached first because cable subscribers had proven more ready to accept converters in Neighborhood 17 west. Within a two-week period, 55 of those respondents had agreed to accept a converter, therefore those respondents who did not subscribe to the cable were never approached (see: Table 1).

Supplementary Mini-Survey

One of the assumptions of the design is that participation at an NCC will be correlated with geographic access. In order to test this assumption, lists of the persons who participated in the NCC at Horizon Center were compiled over the two-week period between January 9 and January 23.

Of the 58 participants who were included, four gave no address, 13 live outside the Reading city limits, and one resides at Oakbrook (our garden apartment control area).

Of the remaining 40, none were in the original sample, none resided in Neighborhood 17, and only two were in the designated Horizon Center area population. (Nine of the 40 resided in the high-rise Episcopal House adjoining the Horizon Center, but such projects had, as noted, not been considered part of the eligible population.) This special sub-sample of 40 Horizon Center NCC participants is being interviewed by three Albright College students, under the direction of Professor Thomas Brogan. They participate in

his Urban Studies Seminar and have elected to conduct these interviews as their term project.

These interviews will be compared with the main survey respondents in the Horizon Center area to assess differences and similarities between the two groups. One of the primary objectives of this survey is to identify the self-selecting mechanisms that are employed by participants at Horizon Center and to discover how they may differ from the respondents in the main sample. For example, are they a more mobile, less socially isolated population? Do they differ on measures of socio-economic status?

Mini-Survey to Assess Reactions to the Programs

Since the system has now been in operation for a period of two months, it would be useful to provide feedback on program receptivity from the experimental group to the implementation team. A short form interview schedule has been developed to assess viewer attitudes to the system. (See: Attachment D.)

Telephone interviews of the converter-equipped group were initiated in April, and are nearly completed. Face-to-face interviews with sub-samples of the residents at Hensler and Kennedy will begin shortly. These interviews are designed not only to assess reactions to programming but also to determine why participation among residents follows the pattern that it does. Table 2 shows the participation of residents at Kennedy and Hensler.

Observations at NCCs

In addition to the mini-surveys, participant observations will be conducted to assess the internal organization ot the three NCCs in the following areas: (a) the role of staff; in particular, the special services that Coordinators perform for the elderly; (b) the effect of the physical design of each center as it assists or inhibits use of the communication system by the elderly, and (c) the relationship of the specific NCC site to the overall pattern of activity at Kennedy Towers, Hensler Homes and Horizon Center.

In addition to their technical activities, staff coordinators perform a variety of service functions for system users which has created special rapport between the elderly and the technical staff. Since the community rooms at the three NCCs vary considerably in design and attractiveness and, in one case, conflicts with usage by another group, it is important to take this into consideration in examining the overall organization of the NCC. It has also been observed that the community rooms at both Hensler and Kennedy are considered, by members of the projects, to "belong" to certain groups; that is, the historical use of the room has a differential effect on whether or not the elderly are willing to come to the room that is currently being used for the interactive system. By systematic identification of these effects, we hope to obtain a greater understanding of the factors which influence the use of an NCC.

A related area of investigation is the differences that have been observed among centers. For example, there is a tendency for the Horizon Center to play a predominant role at the point of origin for the programming. Horizon Center is the locus of the Berks County Senior Citizens Center which has an active, skilled, and highly organized membership. The communication patterns that have been established within Horizon Center provide a basis into which the interactive cable system is grafted. Preferences for certain types of programming vary by center, as do the number of participants and socio-economic status of the elderly.

Impact on the Community

It is anticipated that the NCC system will generate a wide range of social and political effects which are likely to reach far beyond the designated areas.

To assess the impact of the NCC system on the community at large, information has been gathered from four different data sources: (1) content analysis of Reading newspapers; (2) participant observation at Programming Board Meetings which are comprised of representatives from both the public and private sectors who meet once a month to plan the future management of the system; (3) participant observation at Berks TV Cable Co. In addition, (4) an informant interview schedule is being designed which will be administered to a number of agencies and organizations in Reading, regardless of whether they currently, or ever have, made use of the system.

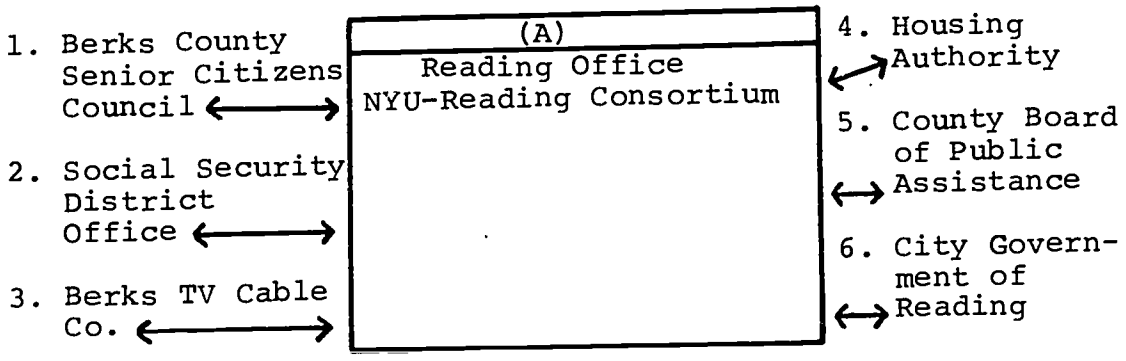
These data measures provide information on the social and economic effects of the NCC system on the overall community of Reading. It is entirely possible that these effects may be as significant as those that result from the service delivery applications which are measured through the survey. In order to determine the intended as well as the unintended consequences of the system, selected community events that occur in Reading are being monitored throughout the experimental period. In this manner, an assessment of the overall impact of the NCC system on the community-at-large can be made.

The general theoretical model for assessing the impact of the NCC system on the Reading community draws on the literature on interorganizational analysis. This approach designates an organization as the focal group for investigation. In this case, the focal organization is the NYU-Reading Consortium with offices in Reading.

The existence of the Consortium as an on-going structure requires continual legitimization from other organizations in Reading. As a result, the activities of pre-existing organizations, which fall within the sphere of interactive cable television for the elderly, must be considered in all decision-making processes. Therefore, the first objective was to identify those organizations and the factors that influence their participation in the system.

The following scheme was developed from a consideration of the relation of the individual consortium-member organizations to the Reading office and staff who serve as the focal group around whom all activities occur.

LEVEL I



The participation of the social service organiza-

tions has been assured from the outset. These organizations are primarily engaged in the delivery of services, i.e., the County Board of Public Assistance in the areas of food stamps and Medicaid and the Social Security District Office in the areas of Medicare and Supplemental Security Income. The participation of the Berks TV Cable Co. has been vital in terms of technical assistance and space; the Reading Housing Authority and the Berks County Senior Citizens Council provided valuable aid in reviewing the questionnaire and encouraging the elderly to participate. Personnel from the Social Security District Office and the County Board of Public Assistance have made information available for program content. The Reading City Government has also performed a variety of necessary functions within this framework.

The success of the Consortium depends largely on its ability to develop and maintain linkages with these organizations since they constitute an essential power base within the community. Therefore, the investigation of community impact will focus on how these organizations define their interests, how these interests are shaped in the course of the experiment, and finally, how their activities and attitudes -- toward both the elderly and themselves -- have been influenced.

Interorganizational analysis defines the community in terms of organizations as actors that comprise a social setting. Our actors then, on the first level, are the initial members of the Consortium. The methodological framework is to examine the relationships among these groups with particular emphasis on how decisions are made.

The field of active organizations is, however, not a static one. Additional organizations have been encouraged to participate by the Reading office or were independently motivated to request participation. As of February 5, 1976, the following public and private organizations have been contacted:

*American Bank & Trust Company
**American Red Cross
**Bank of Pennsylvania
Berks County Association of the Blind
**Berks Area Reading Transit - BARTA
*Berks County Board of Public Assistance
*Berks County Division of the American Heart Association
Berks County Earned Income Tax Bureau
*Berks County Mental Health and Retardation

**Berks County Senior Citizens Council
*Central Pennsylvania Legal Services
*Central Catholic High School
Family Guidance Center
F.I.S.H.
Jewish Community Center
*National Central Bank
**Reading Fire Department
*Reading Police Department
*Reading City Government (Mayor Kuzminski)
*Social Security Administration
*Young Men's Christian Association
*Young Women's Christian Association
Berks County Seniors for Action (Political Committee of the Berks County Affiliated Clubs)

In addition, the following list of organizations, which provide services to the elderly, but do not use the system, was comprised:

1. National Shut-In Day Society
2. Pennsylvania Senate Committee on Aging and Youth
3. Local Senior Citizen Groups
   a. West Reading
   b. Shoemakersville
   c. Sinking Spring
   d. Calvary Lutheran Church (Laureldale)
   e. Wernersville
   f. Golden Age Club of Berks County
4. Berks County Medical Society
   Pennsylvania Department of Health
   Reading Diabetes Association
   } conducting medical exams with stress on elderly
5. American Red Cross - Meals on Wheels Transportation Service
6. HEAD
7. VNA
8. Adult Development Activities Program Today (ADAPT) (for severely retarded and physically handicapped adults, sponsored by the Berks County Chapter for Retarded Citizens and United Cerebral Palsy)

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* = Organizations that have used the system.

** = Organizations that are predominant political actors in Reading (from content analysis of newspapers).

A content analysis of Reading newspapers was undertaken to isolate the significant groups in Reading that might, as a result of other activities that are related to the elderly, find the interactive system a useful vehicle for service provision.

A full census of all organizations in Reading was obtained and grouped under two headings: Active and Inactive. Organizations are considered to be active because they appear to be significant as a result of the content analysis. These groups are then noted for future interviews.

Work has begun on the formulation of an interview schedule for both groups (active and inactive with regard to the system) to assess 1) the basis for organizational involvement or non-involvement with the system; 2) the organizational characteristics that influence the receptivity to new technology and service delivery formats; and 3) the impact of NCC participation on organizational activities.

In this manner, we hope to discover the extent to which the cable system becomes the vehicle for managing and cablizing existing organizational activities. In addition, the capacity of the system to produce interaction and coalition between and among organizations which have not been previously linked to one another could be determined. Finally, an assessment of the intended, as well as the unintended consequences of the technology for the community-at-large could be produced.

Some of these effects have already been observed. For example, as a result of the Mayor's monthly use of the system, the elderly citizens and the government are brought together in a manner that would have been heretofore impossible. The continuation and development of this citizen/government interaction will be monitored through spot surveys of both elderly and the groups with whom they interact. In addition, the Visiting Nurse Association has used the NCC system to publicize the availability of free flu shots. By interviewing this group, we will discover whether or not they saved staff time, or reached a greater number of people.

The content analysis of the Reading newspapers, while assisting in locating the organizations that were discussed earlier, is not confined to that activity alone. A more general purpose is to establish baseline and continuing data on the interface of elderly with agencies, organizations and the political community.

The categories that are routinely coded in the content analysis of two daily Reading newspapers include: 1) political news; 2) agency data: specific information on federal, state and local agency issues. Particular targets are those concerned with Medicare, Medicaid, food stamps, the Housing Authority and the Police; 3) Elderly news, either social or issue-oriented; 4) monitoring of private-sector advertisements (banks, retail stores, etc.) addressed to either discounts or packages intended specifically for the elderly.

Since the relationship with Berks TV Cable Co. is of primary importance, we have also subjected their weekly program guides to content analysis. The purpose of this is to assess any changes in programming that occur as a result of the input from the interactive system. Interviews are conducted periodically with members of the Berks TV Cable Co. staff and the Consortium staff to provide qualitative material on the relationship between the two groups.

Two additional activities in which community/Consortium activity takes place is in the area of decision-making about programming and in over-all policy for the interactive system. Both of these activities are used as data on community involvement. Programming meetings take place weekly and are concerned with the determination of problems of interaction between the three centers, i.e., certain programs are viewed more positively by some NCCs than others.

The efforts here are directed toward encouraging participation by the elderly in determining program content and developing formats that encourage a more full participation at each of the NCCs. The research staff is concerned with these activities to the extent that representation of the views of the elderly as community consumers provides input to this decision-making.

The Policy Board, on the other hand, is concerned with the more long-range development of the interactive system in Reading. The main concern to date has been to determine not only what the aims of the system should be during the period of funding, but also to develop a constituency and support base that will enable the system to remain to Reading after the National Science Foundation funding has ceased.

Discussions and suggestions thus far include:

1) Alternative uses of the system, such as programs from the private-sector firms.

2) Identifying new organizations to participate in the NCC system.

3) Potential sources of funds to support the operation of the system.

The transition of the NCC system from an NSF-sponsored experiment to a community-supported project represents a major challenge and will be a significant indicator of the overall impact of the NCC system on Reading. A multiple research strategy is being employed to achieve the objectives of this study.

TABLE 1 CONVERTER RESPONSE

CONTACT	ACCEPTED	REJECTED	MAYBE (NOT REVISITED)	ACCEPTED LATER CANCELLED	INACCESSIBLE
Neighborhood 17 (N = 117)					
Phone	25 (21%)	24 (21%)	4 (3%)	11 (9%)	
					4 (3%)
Personal Visit	28 (24%)	18 (15%)	0	2 (2%)	
Neighborhoods 1, 7, 8 (N = 73 [on cable])					
Phone	--	--	--	--	
Personal Visit	47 (67%)	16 (22%)	0	4 (6%)	6 (8%)
TOTAL CONVERTERS (Both neighborhoods	100				

TABLE 2 NCC ATTENDANCE, FIRST TWO MONTHS

NCC ATTENDANCE Jan. 12 - March 12 (resident)	H E N S L E R # of residents attending; ONE TIME ONLY	1 - 2 TIMES	3 - 4 TIMES	5 OR MORE TIMES	K E N N E D Y # of residents attending (missing days). ONE TIME ONLY	1 - 2 TIMES	3 - 4 TIMES	5 OR MORE TIMES	TOTAL
MONDAY	-	1	-	-	- 10	7 15	4	-	12 25
TUESDAY	5 1*	6	1	2	10	31 10	6 1	3	64 12
WEDNESDAY	-	2 4	1	1	-	20 13	2 1	-	26 18
THURSDAY	2	3	2	4	-	18	2	-	31
FRIDAY	1	1	2	5	-	9	1	-	19
*subscripts indicate attendance at afternoon sessions	Total number of residents attending 22 Per cent of residents attending 22%				Total number of residents attending 72 Per cent of residents attending 48%				

IF MORE THAN ONE ADULT WAS PRESENT AT THE INTERVIEW CONTINUE, OTHERWISE SKIP TO Q. 21.

18. Other person(s) at interview participated:

49

A lot	1
Some	2
Very little	3
Not at all	4

19. In dealing with agencies does the other person(s) at interview:

50

Give some help	1
Give considerable help	2
Carry the ball vis-a-vis agencies (does it all)	3

20. Reason for other persons present at the interview:

51-52

21. Is there anything else you feel we should be aware of to understand this interview?

53-54

IN LOOKING OVER YOUR COMPLETED INTERVIEW MAKE SURE THAN ANY COMMENT OR INFORMATION GIVEN BY A PERSON OTHER THAN THE RESPONDENT IS IDENTIFIED BY A LETTER, FOR EXAMPLE: "H" FOR HUSBAND, "W" FOR WIFE, "N" FOR NEIGHBOR. RECORD HERE WHICH LETTER YOU USED FOR EACH PERSON AND MAKE SURE THE PERSONS ARE THE SAME AS YOU RECORDED IN Q.3.

Letter	Person's Name
_____	_____
_____	_____
_____	_____

ATTACHMENT B

PROJECT RESPONSE RATES

	K	F	H	O
Original List: TOTAL	100	50	102	100
Not home, in hospital, duplicate name, non-elderly	2	2	4	13
Mental/Physical Disability	7	0	5	7
Net Eligible	91	48	93	80
Refused	5	1	4	13
Completed Interviews	86	47	89	67
Completion Rate $\left(\frac{\text{Completed Interviews}}{\text{Net Eligible}}\right)$	95%	98%	96%	67%
Alternate List: TOTAL APPROACHED	39	--	--	25
Not home, in hospital, duplicate name, non-elderly	4	--	--	1
Mental/Physical Disability	0	--	--	2
Net Eligible	35	--	--	22
Refused	4	--	--	4
Completed Interviews	31	--	--	18
Completion Rate $\left(\frac{\text{Completed Interviews}}{\text{Net Eligible}}\right)$	89%	--	--	72%

K: Kennedy
F: Franklin
H: Hensler
O: Oakbrook

(continued....)

ATTACHMENT B

Page 2

PROJECT RESPONSE RATES

	K	F	H	O
Combined Lists: TOTAL	139	50	102	125
Not home, in hospital, duplicate name, non-elderly	6	2	4	14
Mental/Physical Disability	7	0	5	9
Net Eligible	126	48	93	102
Refused	9	1	4	17
Completed Interviews	117	47	89	85
Completion Rate $\left(\frac{\text{Completed Interviews}}{\text{Net Eligible}}\right)$	93%	98%	96%	83%

ATTACHMENT C

EXPERIMENT IN URBAN TELECOMMUNICATIONS

DATA COLLECTION REPORT

April, 1976

Prepared for:

THE NYU-READING CONSORTIUM
New York, New York

By:

National Analysts
Philadelphia, Pa. 19106

TABLE OF CONTENTS

I. OVERVIEW OF THE ASSIGNMENT

The unmet needs of the elderly in obtaining accurate, complete information regarding the programs and services available to them are well documented. In Reading, Pennsylvania, the NYU-Reading Consortium has initiated a project involving the use of interactive cable television programming in selected Neighborhood Communications Centers as a method of providing this type of information to elderly residents of public housing in Reading. The study is experimental in design, employing as control groups residents in matched areas which will not be involved in the communications project. In one year, a second wave of interviews on this panel study will collect data on knowledgeability of, reactions to, and utilization of services as a result of this project.

National Analysts was charged with the data collection responsibility for the survey of senior citizens. The purpose of the Wave 1 survey, conducted between September and December 1975 and discussed in this report, was to obtain information on the current service-seeking behavior, familial and community ties and political involvement of Reading's elderly population. These data will be compared to information collected in a year from the same respondents to provide one set of measures of the impact and effectiveness of the telecommunication experiment.

The survey was conducted in three phases:

- Phase I -- data collection from respondents in four public housing projects (List Sample)
- Phase II -- data collection from respondents in three open neighborhoods (quota within area probability, co-listed)
- Phase III -- survey of non-respondents to the previous data collection efforts

Table I depicts the specific data collection assignment; the locations of respondents and the number of interviews which were assigned. Results of these efforts are described in the following chapters.

Table I

Data Collection Assignment
Wave I: Fall/Winter 1975

Phase I: Data Collection in Public Housing Projects (9/75 - 11/75)

Project	Number of Interviews Assigned
Hensler Homes (garden-apartments)	102
Franklin Tower (high-rise apartments)	50
Kennedy Towers (high-rise apartments)	100
Oakbrook Homes (garden apartments)	100

Phase II: Data Collection in the Open Neighborhoods (11/75 - 12/75)

Project	Number of Interviews Assigned
Neighborhood 17 West of N. Front Street (experimental area)	115
Neighborhood 17 East of N. Front Street (control area)	115
Neighborhood 1, 7 and 8 near the New Horizon Center (quasi-experimental area)	115

Phase III: Survey of Non-Respondents (1/76-3/76)

II. PHASE I DATA COLLECTION: PROJECTS - 9/25/75 to 11/3/75

Of the senior citizen public housing projects in Reading, four were selected by the NYU - Reading Consortium for inclusion in the study. Two are high rise, concentrated housing (Franklin and Kennedy) and two are semi-concentrated garden apartments (Oakbrook and Hensler). These were paired for the purposes of the study, with Kennedy and Hensler selected to be sites for neighborhood communications centers, and Franklin and Oakbrook chosen to represent controlled conditions.

National Analysts was provided with lists of persons in each project to interview. In two projects (Kennedy and Oakbrook) names of alternates also were provided. The number of interviews originally assigned and the number of alternates are included in Table II.

Interviews were completed with 338 respondents for an overall completion rate of 81.1%. The completion rate from the original lists was slightly higher (82.1%) than that from the alternate lists (75.4%). The completion rate for each project from the original list ranged from a low of 67.0% (Oakbrook) to a high of 94.0% (Franklin). These results are shown in Table II.

Included among the completed interviews were a few respondents who could not be successfully interviewed without an interpreter. These were found to be individuals whose spoken command of English was insufficient to respond to our questions although their comprehension of the language qualified them as persons who could be expected to be affected by the telecommunications experiment and other sources of information regarding the availability of services. In these cases, interpreters were obtained and the interview conducted.

Non-respondents to the survey were repeatedly contacted to verify their incapacity for interview or to attempt to overcome a refusal. In many cases, our interviewers found that the listed respondent was too ill to participate in an hour long interview. Through our efforts, and through those of the NYU - Reading Consortium staff, members of the Housing Authority were contacted who verified the physiological incapacity of a number of respondents.

Table II

Results of Data Collection

Phase I: Projects - 9/25/75 to 11/3/75

	Original List			Alternate List			
Project	Interviews Obtained	Interviews Not Obtained	Total on List	Interviews Obtained	Interviews Not Obtained	Total Released to Field	Total Released to Field
Hensler	89 (87.3%)	13 (12.7%)	102	-	-	-	102
Kennedy	86 (86.0%)	14 (14.0%)	100	31 (79.5%)	8 (20.5%)	39[1]	139
Franklin	47 (94.0%)	3 (6.0%)	50	-	-	-	50
Oakbrook	67 (67.0%)	33 (33.0%)	100	18 (72.0%)	7 (28.0%)	25[2]	125
Total Obtained	289		82.1% of 352	49		76.6% of 64	81.3% of 416
Total Not Obtained		63[3]	17.9% of 352		15	23.4% of 64	18.7% of 416

[1]An additional 11 names from the Kennedy alternate list were not released to the field.

[2]Only 24 names were in the alternate list. However, it was decided to check the apartments of those from the original list of 100 who had moved out to see if there was a new occupant (not on either list) who was eligible for the study. This was done, and one interview was obtained through this procedure.

[3]In addition to respondents who refused to be interviewed, this figure includes those interviews not obtained due to the illness or deafness of the respondent and those not obtained because the respondent had moved.

There were also persons who refused to grant an interview. These individuals were personally revisited by at least one other interviewer in an attempt to overcome their reasons for refusal. Staff members of National Analysts made telephone inquiries in some cases to try to establish cooperation. Toward the end of the field period a list of non-respondents was turned over to the NYU - Reading Consortium for them to try to secure cooperation through the offices of the Housing Authority. These many attempts, singly and in combination, proved to be somewhat successful in increasing the response rate.

The interview completion rate for the original list sample in Oakbrook Homes is appreciably lower (67%) than that obtained in the other projects (87%, 86%, 94%). The reasons for this merit discussion. A total of fifteen of the individuals assigned to be interviewed could not be, due to the reasons listed on Table III below. Some had moved out of the project; others had died or were physically incapacitated for interview. Of the 85 persons remaining on the list, interviews were obtained with 67 (78.8%), while 15 (17.6%) refused to be interviewed. Two call report forms showing refusals and one completed interview were lost in the mails (3.6%).

The finding that persons on the assigned list were ineligible for actual interview due to these reasons was not unique to Oakbrook Homes. In that project, however, a higher proportion of assigned respondents were found to be unavailable.

Table III

Interviewing Results for Original List Sample in Phase I: Oakbrook Homes

Interviews Obtained	Interviews Not Obtained						Interviews Assigned
	Refused	Sick/Hospitalized/ Senile/Deaf	Died	Moved	Ineligible	Other*	
67	15	5	2	6	2	3	100

*This category includes 2 call report forms and one completed interview lost in the mails.

III. PHASE II DATA COLLECTION: OPEN NEIGHBORHOODS -- 11/5/75 to 12/4/75

Three neighborhood areas in Reading were selected by the NYU-Reading Consortium for the purposes of this study. Elderly households in the fifteen block area west of North Front Street and bounded by West Green, Weiser, Ritter and Marion were selected to receive the cable television convertors for the study period. Residents of neighborhoods 1, 7 and 8 surrounding the New Horizon Center would have that facility's Communications Center easily accessible to them. Households in the area west of North Front Street to Centre Avenue were scheduled to be the experimental controls.

National Analysts' assignment was to co-list households in all three areas. When, during the course of screening, an eligible household was found, the interviewer attempted to obtain an interview. For these purposes, each area was divided into segments and sufficient segments sent to the field to obtain the assigned quota of 115 interviews in each area. To be eligible, a household had to have a working television set and at least one resident member over the age of 62.

Over two thousand buildings were screened during this study phase, in which 564 households were found to contain occupants eligible for interview. Other structures were commercial in nature, vacant, or occupied by persons under the age of 62. Interviews were obtained in 63.5% of the eligible households. Table IV indicates the results of this survey phase.

Table IV

Results of Data Collection -- Phase II:
Open Neighborhoods

Results	Experimental NBHD 17 W. of N.Front	Control NBHD 17 E. of N.Front	Quasi-Experimental NBHDS 1,7,8 New Horizon Center Area	All Areas
D.U.s COMPLETED	598	510	1,098	2,206
Vacant	27	24	62	113
D.U.s OCCUPIED	571	486	1,036	2,093
D.U.s NOT SCREENED	68	24	360	452
No one home	63	24	348	435
Language barrier	5	-	3	8
Other	-	-	9	9
D.U.s SCREENED - NOT ELIGIBLE	322	299	456	1,077
No TV in household	1	5	-	6
No eligible respondent	321	294	456	1,071
D.U.s SCREENED - ELIGIBLE	181	163	220	564
Respondent refused	50	24	62	136
Other refusal	2	1	7	10
Respondent not home	1	1	2	4
Language barrier	2	3	-	5
Other	9	17	25	51
Completed Interviews	117	117	124	358

IV. SURVEY OF NON-RESPONDENTS

After the conclusion of Phase II data collection, the NYU-Reading Consortium decided to conduct a survey of the non-respondents to the previous survey phases. The purpose of this effort was to collect key bits of information about the non-respondents to compare with equivalent information about survey participants. The concern was that non-respondents may differ from other senior citizens in these locations in ways significant to the total experiment -- ways such as independence from social services, or greater dependence on family members, and so on.

With the NYU-Reading Consortium, National Analysts prepared a short questionnaire appropriate for a telephone survey. The same interviewers who had become experienced in the particular challenges of this study were engaged to conduct the survey.

A total of sixty-six respondents were to be contacted in the four projects. In the Phase I survey (Table II) an interview was not completed with 78 persons. However, it was decided not to attempt recontact with 12 of that number who represented respondents lost to the sample due to moves out of the projects or death. Of those project residents who were to be recontacted, interviews were obtained with 57.6% (38/66).

Similar adjustments were made to the lists of respondents to be contacted in the open neighborhoods. Those totals were corrected to delete non-dwelling units and include multiple households where they were found to exist (Table VI). Of the 214 persons to be interviewed, questionnaires were completed with 105, 49.1%.

Study results for the projects are summarized in Table V, and in Table VI for the open neighborhoods. Table VII shows the combined results of the first interviewing phase and the non-respondent survey in the open neighborhoods.

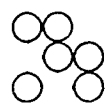


Table V

Results of Survey of Non-Respondents in Four Projects

	Persons to be Interviewed	Interviews Obtained		Interviews Not Obtained							
		N	%	Refused	Ineligible[1]	Incapable[2]	Could Not Contact[3]	Not at Home	Died[4]	Total N	Total %
Hensler	13	7	53.8	2	1	1	1	-	1	6	46.2
Kennedy	22	16	72.7	4	-	-	1	-	1	6	27.3
Oakbrook	29[5]	15	51.7	5	1	1	6	1	-	14	48.3
Franklin	2[5]	-	-	-	-	-	1	1	-	2	100
TOTAL	66	38	57.6	11	2	2	9	2	2	28	42.4

[1]Respondents found not to be senior citizens.

[2]Includes respondents who were ill, hospitalized, hard of hearing, etc.

[3]Telephone not listed, not in service.

[4]Persons found to have died between the initial interviewing phase and the survey of non-respondents (November 1975 - February 1976).

[5]The inconsistency between the number of interviews to be obtained in each project for the survey of non-respondents and the number of incomplete interviews in Table II (Oakbrook 40/29, Franklin 3/2) is purposeful. The 12 persons involved were deleted from the survey of non-respondents as they had moved or died after the lists were assembled but before the initial phase of interviewing (September - November 1975), or were otherwise lost to the sample.

Table VI

Results of Survey of Non-Respondents in Three Open Neighborhoods

	Persons to be Interviewed		Interviews Obtained		Interviews Not Obtained							
					Refused	Ineligible[1]	Incapable[2]	Could Not Contact[3]	Not at Home	Died	Total	
	A	B	N	%							N	%
Neighborhood 17 Experimental	64	66	31	47.0	20	8	-	3	4	-	35	53.0
Neighborhood 17 Control	46	45	21	46.7	6	2	-	16	-	-	24	53.3
New Horizon Center/Neighborhoods 1,7,8	96	103	53	51.5	16	11	-	22	1	-	50	48.5
TOTAL	206	214	105	49.1	42	21	-	41	5	-	109	50.9

[1] Respondents found not to be senior citizens.

[2] Includes respondents who were ill, hospitalized, hard of hearing, etc.

[3] Telephone not listed, not in service.

[A] Number of interviews not obtained from eligible households, Phase II.

[B] Actual number of eligible respondents to the survey of Phase II non-respondents. B is larger than A in Neighborhoods 1,7,8 and in the Neighborhood 17 - Experimental, as we occasionally found multiple households in what was thought to be a single dwelling unit. In Neighborhood 17 - Control, we found four call report forms had inadvertently been completed during Phase II for non-dwelling units, and these were subtracted from 46. However, three additional households were determined to exist within the screened establishments, for a net total of 45 interviews to be obtained.

Table VII

Results of Interviewing Efforts in the Open Neighborhoods

	Neighborhood 17-E	Neighborhood 17-C	Neighborhoods 1,7,8	Total
Eligible Households	181	163	220	564
- Adjustment for multiple D.U.s and non-D.U.s	+2	-1	+7	+8
- Adjustment for ineligible households	-8	-2	-11	-21
Total Adjusted Eligible Households	175	160	216	551
- Hour-long interviews	117	117	124	358
- 10-minute interviews	31	21	53	105
- Number and percent of non-respondents to both interviews	27 (15.4%)	22 (13.8%)	39 (18.1%)	88 (16.0%)
Overall Interview Completion Rate	84.6%	86.2%	81.9%	84.0%

ATTACHMENT D

Date_____

Time Started:_____

I.D.#_____

Male_____ Female _____

Hello _____. This is Martha Hirst from New York University. I'm calling to see how you feel about your CABLE TV converter, the one that receives the special channel.

1. When did you get your converter?

   December _____

   January _____

   February _____

   March _____

2. Have you watched anything on the special channel?

   Yes_____

   IF YES:

   About how often do you turn to the special channel? Would you say it is....

   _____Every day

   _____Every other day

   _____Less Than That (Specify)

   _____

   _____

   No_____

   IF NO:

   3. Could you tell me why you have not watched it?_____

   _____

   _____

   4. Is there a problem with the time that the programs are on, that is from 9-11

   Yes_____ No_____

   Why is that?_____

   _____

2A. Does anyone watch the special channel with you?

   Yes_____ No_____

   IF YES: Who is that?

   _____husband/wife
   _____children
   _____friends
   _____Other (Specify)

   _____

   IF OTHER THAN CHILDREN: Are they about your age? Yes____ No____

   IF YES: What would be a better time for you to watch?

   _____

   5. Do you receive the monthly program guide?

   Yes_____ No_____

6. What people do you think are mainly interested in the programming over the special channel?_____

_____

7. Are there any kinds of programs you'd like to see over the special channel?

For Example,

game shows?_____

exercise classes_____

more political information_____

anything else?_____

_____

8. About how many hours a day would you say you watch television?

_____hours.

8A. What times of the day do you usually watch TV?_____

_____

8B. What are your favorite daytime TV shows?_____

_____

_____

9. Do you ever have difficulty with the picture on the special channel?

Yes_____ No_____

10. Do you ever have difficulty with the sound on the special channel?

Yes_____ No_____

11. Do you ever have problems with the time that the programs are on?

Yes_____ No_____

11A. Would you say that 9-11 in the morning is a good time for you?

Yes_____ No_____

Why is that?_____

_____

11B. Have you ever watched the special channel in the afternoon?

Yes_____ No_____

12. Do you have any problems finding out what programs are going to be on the special channel?

Yes_____

IF YES:

Do you receive the monthly program guide?

Yes_____ No_____

No_____

IF NO:

How do you find out what's on the special channel? Would you say you find out from....

_____friends

_____special channel announcements

_____program guide

_____Other (Specify)

_____

13. What would you say are the best days for you to watch the special channel?

_____Monday

_____Tuesday

_____Wednesday

_____Thursday

_____Friday

14. Did you have the channel on this morning? (Note day of week.

Yes_____

IF YES: Do you recall what was on this morning?

_____

Did you watch the whole 2 hours?

Yes_____ No_____

IF NO: Which part did you watch?

_____

_____

Why did you watch that part?_____

_____

_____

No_____ _____

15. Did you have the channel on yesterday?

Yes_____ | No_____

IF YES: Did you watch the whole 2 hours?

Yes_____ | No_____

IF NO: Which part did you watch?

_____

_____

Why did you watch that Part?

_____

_____

16. I'd like to ask you about one program at a time. Have you ever watched the Singalong?

Yes_____ No_____

IF YES: Did you like it?

Yes_____ No_____

IF YES: What did you like about it? _____

_____

_____

17. Now I'd like to ask you about some other kinds of programming. Have you ever watched.....

Arts and Crafts? Yes_____ | No_____

IF YES: Did you like it?

Yes_____ No_____

Meet the Mayor? Yes_____ | No_____

IF YES: Did you like it?

Yes_____ No_____

Adventures in Maturity? Yes_____ | No_____

IF YES: Did you like it?

Yes_____ No_____

(continued....)

[QUESTION 17. CONTINUED]

Oral History with the high school students? Yes_____ No_____

IF YES: Did you like it?

Yes_____ No_____

Your Money and You? Yes _____ No_____

IF YES: Did you like it?

Yes____ No_____

IF YES TO [illegible] IN Q. 17:

18. Did these programs make any suggestions that you found useful?

Yes_____ No_____ Don't Know_____

19. Have you ever watched the program about the Social Security Direct Banking Option?

Yes_____ No_____ DK_____

IF YES: 19A. Did you find it made any useful suggestions?

Yes_____ No_____ DK_____

IF YES: 19B. Have you used any of these suggestions?

Yes_____ No_____

What did you do?_____

_____

20. Have you ever watched the program on Medicare forms?

Yes_____ No_____ DK_____

IF YES: 20A. Did you find it made any useful suggestions?

Yes_____ No_____ DK_____

IF YES: 20B. Have you used any of these suggestions?

Yes_____ No_____

What did you do?_____

_____

21. Have you ever watched the program on Social Security earnings reports?

Yes_____ No_____ DK_____

IF YES: 21A. Did you find it made any useful suggestions?

Yes_____ No_____ DK_____

IF YES: 21B. Have you used any of these suggestions?

Yes_____ No_____

What did you do?_____

_____

22. Have you ever watched the program on filling out rent rebate forms?

Yes_____ No_____ DK_____

IF YES: 22A. Did you find it made any useful suggestions?

Yes_____ No_____ DK_____

IF YES: 22B. Have you used any of these suggestions?

Yes_____ No_____

What did you do?_____

_____

23. Have you called the special channel?

Yes_____ No_____

IF YES: About how often have you done that?_____

_____

_____

24. Have you ever gone to Horizon Center or Kennedy Towers or Hensler Homes to see the programs while they're being made?

Yes_____ No_____

IF YES: Which centers have you gone to?_____

_____

How often have you done that?_____

_____

25. What people do you think are mainly interested in the programs over the special channel?_____

_____

_____

26. Are there any other kinds of programs you'd like to see over the special channel? For example:

game shows?_____

exercise classes?_____

more political information ?_____

Anything else? _____

_____

_____

27. I'd just like to ask you a few more questions.

About how many hours a day would you say you watch TV besides the special channel?_____hours.

28. What times of the day do you usually watch TV?_____

_____

_____

29. What are your favorite daytime TV shows?_____

_____

_____

Thank you for your help.

I appreciate your taking the time to talk with me.

Time Finished:_____

Cost Analysis of the NCC System
by Judith Fields

COST ANALYSIS OF THE NCC SYSTEM

This section reviews the progress of two studies during the first phase of the system's development: the study of the cost-effectiveness of delivering selected social services over the NCC system and the study of the costs of establishing and operating the system. A discussion of the various instruments that were developed, the problems that arose, and the solutions that were found is presented here. No attempt has been made to recount the conceptual framework or design of these two studies since they were described in the renewal proposal and have not been altered subsequently.

Cost Function

The first phase of the system's development began in June, 1975 and extended through December, 1975. During this period, three sets of data collection mechanisms were established. This process entailed the devising, implementing, and refining of instruments to track data on the costs of set-up and the variable costs associated with output (preparation and presentation of sessions).

The instruments that were devised, which are called logs, have been listed in Charts A and B. These charts also show the frequency with which data is collected, the specific data lists contained in each log, and the personnel responsible for maintaining them. Data collection was instituted in January, 1976.

The Development and Interpretation of Instruments

During the set-up period, costs were tracked through daily activity logs which were maintained by all personnel on the implementation staff. The logs listed all hours of staff time by coded area of activity, such as: administrative, planning, training, maintaining equipment, etc., for each workday.

In this manner, the aggregate manhours devoted to each of these functions during the set-up period were determined. Further breakdowns of activity and time have been made into the following categories: those associated with setting up the system as a whole and those associated with setting up each individual NCC. Therefore, it will be possible to analyze the trend during these 6 months in the amounts of staff time devoted to each function. We expect to delineate phases in the set-up period and to analyze the amounts of time needed to complete each. For example:

1) initial recruitment of personnel and establishing space and basic equipment

2) training personnel and establishing relations with community and agency-users

3) recruiting elderly participants and developing programming, etc.

Although many of these activities were carried out concurrently, some dominated in number of manhours assigned them during the first two months while others became dominant in the second and third two-month periods.

Several problems were encountered during the development and refinement of these personnel logs which involved the formation of a coded list that would be inclusive enough to cover all of the principal activities performed by the various members of the staff without becoming unwieldy. As a result, a process was set up for: 1) refining the original code list based on feedback from the staff and, 2) for appraising the logs on a continuing basis.

This was necessary because the staff positions and duties which had been formulated in the original proposal were estimates based on predictions of what would be involved in the establishment of the system. Therefore, the actual set-up of the system functioned simultaneously as a test of these estimates. And, as anticipated, there was some divergence between what had been planned and what was ultimately necessary. Thus, the major function of the activity logs was to measure and assess actual personnel time and activity requirements. Overall personnel time increases or decreases in areas such as: implementation staff size, vacations, sick leave, etc., are being tracked

in a monthly personnel memo. This instrument will be maintained for the duration of the experiment.

An inventory has been drawn up which includes the costs of all equipment which has been either purchased or leased. A monthly equipment log has also been established to track any additional equipment that is acquired; its cost; and used equipment which has been discarded, returned or replaced. This log also records any maintenance or repair of equipment that is provided by non-staff persons since repair of equipment by staff is already being recorded in the activity logs. This instrument will also be maintained for the full fourteen month period to come.

Another series of instruments has been developed to record the variable costs that are associated with programming over the system which includes:

- basic information about the preparation of each program segment
- time inputs and job descriptions of all persons engaged in the preparation of a segment (staff persons, elderly volunteers, and agency personnel)
- basic information about the presentation of each segment (date, number, hosting NCC, number of attendees, etc.)
- time inputs of all persons engaged in the presentation of a segment (staff persons, elderly volunteers, and agency personnel).

The individual activity logs maintained by staff for the set-up period have been replaced by segment preparation and presentation logs for the remainder of the experimental period. Only the Director of Implementation and System Coordinator will continue to keep activity logs. The major proportion of the time of all other members of the implementation team will be devoted to the preparation and presentation of segments. The balance of their time will be classed as ongoing maintenance of the system.

The number of hours each staff person devotes to the preparation and presentation of programming segments, as well as the number of segments prepared per week at

each center, will be varied during the course of the experiment. This is being done so that the approximate lower and upper bounds of basic number of manhours required to maintain the system (fixed monthly maintenance costs) can be established. It further provides an opportunity to examine the range of possible total hours of programming per week and per day that a crew of this size can be expected to produce. In addition, because all data on time inputs for program preparation and presentation is linked to the full set of other data on programs (who initiated them, when presented, format, technical requirements, attendees, etc.) it will be possible to examine all programming by a variety of characteristics to determine those kinds of programs that have similar input requirements and costs. A range of variable costs can thus be delineated and linked to program segments of different types, while many of the crucial variables to which production and presentation costs are sensitive, can be isolated.

A distinction must be made between those costs that flow from the fact that this system is a prototype and those costs that would accrue were the system to be replicated elsewhere. It is clear that a fair proportion of the manhours devoted to such activities as "general system planning" would be eliminated in a replication and certain personnel who were planned and budgeted for in this system would be found to be unnecessary. But in many cases the exact bounds are difficult to establish since it is likely that some amount of time would be necessary for system planning in establishing any such system.

We propose to: 1) set forth the actual costs experienced in setting up this system, 2) analyze the cost components in terms of the prototypic nature of our system and, 3) estimate some discount factor for costs associated with areas of activity where large amounts of time were devoted to learning and experimentation which, given the full range of data that had been collected in this setting, would not have to be repeated in a replication.

In devising the logs for variable costs, a substantial amount of time and energy was devoted to developing measures for activities and output, that were directed toward the preparation and presentation of segments, but whose structure had not been fully defined. This evolved into an ongoing process. In this case, instruments were

devised to cover all possible inputs into programming including: staff time, time of agency personnel, elderly volunteer time, equipment, space and other physical inputs. The instruments recording inputs are linked by serial number to all other characteristics of output. Since it was expected that a period of revision and debugging of these instruments would be necessary, the month of December was designated for this purpose. During that time, experience with the logs was acquired, feedback was analyzed, and revisions were made in an effort to decrease the number of errors that might occur when actual programming began in January. This is considered to have been worthwhile since data collection procedures have functioned very effectively to date.

Cost Effectiveness Study

The principal activity of the cost effectiveness study during the period from September to December 1975 was concentrated on establishing procedures and instruments for collecting data on the use of services at each of the following social service agencies: the Berks County Senior Citizens Council, the County Board of Public Assistance and the Social Security District Office. This proved to be a more complex and time-consuming undertaking than had been anticipated because the existing modes of data collection were either too limited or not structured in such a way as to produce the data that was required. Therefore, procedures and instruments had to be developed for two of the agencies for the collection of necessary data. A lengthy process of investigation and negotiation ensued to assure a minimum of additional manpower and disruption of normal agency function.

It was necessary to disaggregate gross data on the City of Reading or Berks County into relatively small geographic areas, i.e., boundaries of the experimental and control groups in order to discretely measure the uptake of the various services by elderly persons in the six experimental and control groups. Thus, a second problem arose because at both of the public agencies, and to a lesser degree at the Berks County Senior Citizen Council, the constraints that had been instituted to insure client

confidentiality prevented the agencies from releasing addresses of persons who used their services. Therefore, an elaborate coding system was designed so that agency personnel could disaggregate raw data, (i.e., name and address of applicants and recipients of their services) into smaller units for each of the experimental and control groups.

The actual data being collected, the sources, the instruments, and the frequency with which it is being collected are listed in Chart C.

Some of the data that was to be supplied by the local agencies in Reading was not available in any form. This includes aggregate figures for each of our coded areas on numbers of enrollees in Supplemental Security Income (SSI), Social Security, Medicaid and Medicare as well as the numbers of Medicaid and Medicare claims that are paid on a monthly basis to recipients in each of the designated areas. Therefore, an arrangement was made for the data to be supplied by the regional offices of Social Security in Philadelphia and the Pennsylvania State Blue Shield office in Harrisburg. Finally, since data on Medicaid claims is filed at both the local and state offices by address of vendor (doctor, hospital or pharmacy) and claim number of recipient only, the address of the recipient does not appear on the claim form. This meant that it would not be possible to select a monthly report on the number of claims paid to persons living in one of our experimental or control areas from data on Medicaid claims in Reading. As a result, the surveys of persons at the NCCs and the Wave II general survey were utilized to estimate the impact on numbers and frequency of Medicaid claims filed by individuals exposed to and not exposed to our system.

The procedures that have been instituted for data collection have been very effective (with the exception mentioned above) and all data set forth in the Renewal Proposal on the effectiveness of NCC programming on Medicaid, Medicare, Food Stamps, Direct Banking Option, Rent Rebate and Earnings Reports experiments will be collected on the people living in areas near an NCC and for comparison on the people living in the control areas without access to an NCC.

Comparability Studies

During the period from September to December 1975, efforts were initiated to obtain comparable data on other outreach efforts for Food Stamps, SSI, and the Direct Banking Option. Useful data has already been obtained on the SSI alert carried out under the auspices of the Red Cross in Reading in 1970. This includes figures on actual costs incurred by the Red Cross and close estimates of manhours (of effort by volunteers and others working on this outreach campaign) and numbers of persons reached, or seen, as well as the number who applied for and/or, received benefits at the agency. The cost and effectiveness of the Direct Banking Option experiment will be compared with the efforts made and effectiveness achieved by the banks and the Social Security District Office during the baseline period from October 1975 to January 1976. Data has been obtained on the publicity and outreach activities of the banks and agency prior to and during this period. Data has also been collected on the number of persons applying for Direct Banking Option, by area, during each week of the baseline period.

Baseline data has also been collected for the Berks County Senior Citizens Council programming experiments during the two-week period from January 1 to January 15, 1976. This is comprised of information on the use of the new BCSCC Horizon Center by a complete census of all persons utilizing or visiting the center: it includes the purpose of the visit as well. These data will be sorted so that aggregate daily figures on the patterns of center-use, by persons, in each of the control and experimental areas can be determined. These data will continue to be tracked for one week during each month of the experimental period to ascertain the impact of the BCSCC outreach programming. In addition to this full census, aggregated data will be produced on the numbers of persons visiting the Horizon Center and utilizing the various BCSCC facilities, by week, for the full period from December 1, 1975 to February 30, 1977.

The data gathered on attendance at BCSCC Horizon Center (as distinct from the NCC at Horizon Center), for January and March of 1976, indicates that the highest proportion of visitors comes from the open-housing experimental

area which surrounds Horizon Center (see: #1 on Chart D). All other experimental and control groups comprise a very low proportion of the population that visits the Horizon Center. This supports the original theory on which the use of this group (the people living around Horizon Center), as the experimental or "treatment" group for that NCC, was based. The actual data on attendance appears on Chart D.

The first BCSCC service delivery experiment, which was programmed over the system on January 28, concerned the Rent Rebate form. Data is being collected for a comparison of the costs (manhours and numbers of staff) and effectiveness (numbers of persons assisted with Rent Rebate form) of delivering this service over the system with the traditional method of service delivery. BCSCC staff will continue to visit several public housing buildings for the elderly and to perform this function in person, as they have in the past, since the elderly in these buildings do not have access to an NCC.

Programming

A major portion of the effort directed toward the cost effectiveness study has been associated with the implementation of the system during the early months of the experimental period. This involved the creation of a relationship between the agency personnel who will utilize the system to deliver services and the staff members who comprise the implementation team. A production researcher has been employed to facilitate this liaison. In addition to training this person, the agency people have been trained to utilize the system, and a series of formats for the social service programming are being developed, tested, and refined. The social service production researcher has also been assigned the task of collecting feedback on program content from elderly participants and agency users.

CHART A

DATA ON COSTS

FREQUENCY	BY	FROM	DATA	FORM
1. One each day cable is on from each NCC	Tech Aide at each NCC and Agency Data Clerk →	Time entries made by each person →	Name, job, time spent by each person working on presentation of a session at each NCC. Agency time input	NCC daily presentation log
2. One for each segment prepared	Tech Aide at NCC where prepared Agency Data Clerk →	Time entries made by each person →	Name, organization, time, job for each person preparing each segment Agency time input	Preparation team time inputs
3. One for each segment presented at each NCC	NCC Coordinator at NCC where segment is being presented		Serial # of segment Title of segment Presenting location of segment, Mode of segment Subject Area of segment Purpose of segment Presenting date of segment	Segment Report Log
4. One for each segment prepared	Tech Aide at NCC where segment is being prepared		Serial # of segment Title of segment Format of segment Presenters of segment	Segment Preparation Work Log

CHART B

DATA ON COSTS

FREQUENCY	BY	FROM	DATA	FORM
Monthly	Project Secretary	Attendance Records	Name, title, days absent or on leave, Δ status, Δ reg. hrs., of all persons on staff Additions to staff; date, title; reductions of staff, date, title	Monthly Personnel Log
Monthly	Project Secretary	Repair bills, invoices, tech. crew reports	New equipment purchased, # & cost, date; equipment discarded, returned or sold; equipment repaired & cost; equipment leased & terms	Monthly Equipment Log
Monthly	Production Researcher	Logs	Manhours, printing costs, etc. associated with any recruitment efforts	Reports on Recruitment
Weekly	Director of Implementation		Time spent by 8 coded areas of activity	Weekly Activity Report
Daily	System Coordinator		Report of week's activities narrative	Diary

CHART C

DATA ON EFFECTIVENESS

SOCIAL SECURITY

FREQUENCY	BY	FROM	DATA	FORM
Baseline 9/1/75-12/31/75	Agency Data Clerk	1199s on file	#s of persons signing up for direct banking option each month in each coded area	backlog tally sheet
Each week 1/1/76-6/30/76	"	1199s on file	# of persons signing up for D.B.O. each week by coded area	1199 weekly tally sheet
Each week 1/1/76-6/30/76	"	777 on file	#s of persons filing annual earnings reports by coded area in Dist. office - by mail over age 60.	777 tally sheet
Each Tuesday for each Monday 1/1/76-6/30/76	"	1490	# of persons filing Medicare claim forms in office by coded area for one day (Mon.) each week	Monday tally sheet
At outset 1/1/76 At conclusion 1/1/77	OASI in Philadelphia	Print out of all addresses of all Berks Co. beneficiaries	# of persons age 60 & over receiving OASI Medicare SSI for 8 coded areas	Print out from Phila Soc. Sec.
Each month 1/76-2/77	OASI in Philadelphia	Pa.Blue Shield at Harrisburg	# of Medicare claims paid to persons 60 & over in each of 8 coded areas	print out from Phila Soc. Sec.

CHART C cont'd

DATA ON EFFECTIVENESS

CO. BD. OF P.A.

FREQUENCY	BY	FROM	DATA	FORM
Monthly	Agency Data Clerk	PA-90 Regular unit on file	# of accepted food stamp applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Monthly	"	PA-90 Regular unit on file	# of rejected and no-show food stamp applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Baseline 10/75 - 12/75 by month	"	PA-90 Regular unit on file	# of accepted food stamp applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Baseline 10/75 - 12/75 by month	"	PA-90 Regular unit on file	# of rejected and no-show food stamp applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Monthly	"	PA-90 Regular unit on file	# of accepted Medicaid white applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Monthly	"	PA-90 Regular unit on file	# of rejected and no-show Medicaid white applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Baseline 10/75 - 12/75 by month	"	PA-90 Regular unit on file	# of accepted Medicaid white applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets
Baseline 10/75 - 12/75 by month	"	PA-90 Regular unit on file	# of rejected and no-show Medicaid white applicants over 65 by 8 coded areas	Co. Bd. of P.A. Tally sheets

CHART C cont'd

DATA ON EFFECTIVENESS

CO. BD. OF P.A.

FREQUENCY	BY	FROM	DATA	FORM
Monthly 5th working day of each month	Agency Data Clerk	PA-90 Medical unit from Medical Unit Clerk	# of accepted Medicaid green applicants over 65 aggregate only*	Co. Bd. of P.A. Tally sheets
Monthly	"	PA-90 Medical unit from Medical Unit Clerk	# of rejected and no-show Medicaid green applicants over 65	Co. Bd. of P.A. Tally sheets
Baseline 12/75 by month	"	PA-90 Medical Unit from Medical Unit Clerk	# of accepted Medicaid green applicants over 65 aggregate only	Co. Bd. of P.A. Tally sheets
Baseline 12/75 by month	"	PA-90 Medical Unit from Medical Unit Clerk	# of accepted Medicaid green applicants over 65 aggregate only	Co. Bd. of P.A. Tally sheets

* Data not available for coded areas because addresses on PA-90s are those of hospitals only.

CHART C cont'd

DATA ON EFFECTIVENESS

BCSCC

FREQUENCY	BY	FROM	DATA	FORM
Baseline 11/75 - 12/75 by month	Agency Data Clerk	Social Worker	Schedule for the Tuesday Prog.	Xerox of Social Worker's calendar
Monthly	--	--	BCSCC Newsletter	--
Weekly	Agency Data Clerk	Instructors	#s attending quilting, crafts, ceramics, art, bowling and swimming classes, congregate meals, health counseling and referral and bus trips	Class attendance check list
Baseline 12/75 weekly	"	Instructors	#s attending quilting, crafts, ceramics, art, bowling and swimming classes, congregate meals, health counseling and referral and bus trips	Class attendance check list
Weekly	"	Guest Book	Total # of guests # members # non-members # for NCC # for Community Service	Guest Book check list
Annual	"	F. Ruch on file	Annual Report to the Board of Directors	Xerox
Annual	"	F. Ruch on file	List of Golden Age Clubs, their locations and # of members	Xerox

CHART C cont'd

DATA ON EFFECTIVENESS

BCSCC

FREQUENCY	BY	FROM	DATA	FORM
Bi-Annual	Agency Data Clerk	BCSCC Membership File	List of Addresses of those who signed the attendance book for a two week period (to be coded by 8 areas)	List
Monthly	"	Caseworker	#s of new cases opened, service to old cases, applications pending and refused service	Caseworker summary sheets
Baseline 1/75-2/75-3/75 11/75-12/75	"	Caseworker	#s of new cases opened, service to old cases, applications pending and refused service	Caseworker summary sheets
Monthly	"	Social Worker	Tuesday program schedule	Xerox of Social Worker's calendar
Baseline 12/75 monthly	"	Guest Book	Total # of Guests # members # non-members # for NCC # for Community Service	Guest Book check list

CHART D

ATTENDANCE AT BCSCC HORIZON CENTER*

Period covered by data: 1/5/76 - 1/9/76; 1/12/76 - 1/16/76

	EXPERIMENTAL AREAS			CONTROL AREAS			CONVERTERS	OTHER PERSONS IN DOWNTOWN READING
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Date	New Horizon Open Neighborhood	Kennedy	Hensler	N.17 East	Franklin	Oakbrook	N.17 West	
1/5	25	0	1	7	0	0	2	111
1/6	39	2	1	4	1	2	4	196
1/7	28	1	0	2	0	1	1	70
1/8	9	0	0	0	0	0	1	33
1/9	24	4	2	1	1	2	1	101
1/12	18	2	2	2	0	1	2	65
1/13	65	3	1	4	1	2	3	246
1/14	16	0	0	4	0	1	4	96
1/15	12	0	1	2	0	1	0	54
1/16	23	1	0	1	0	1	4	84
TOTAL	259	13	8	27	3	11	22	1,056
Rank	1	4	6	2	7	5	3	
Pop. Elderly	987 est.	139	102	317	50	125	238	

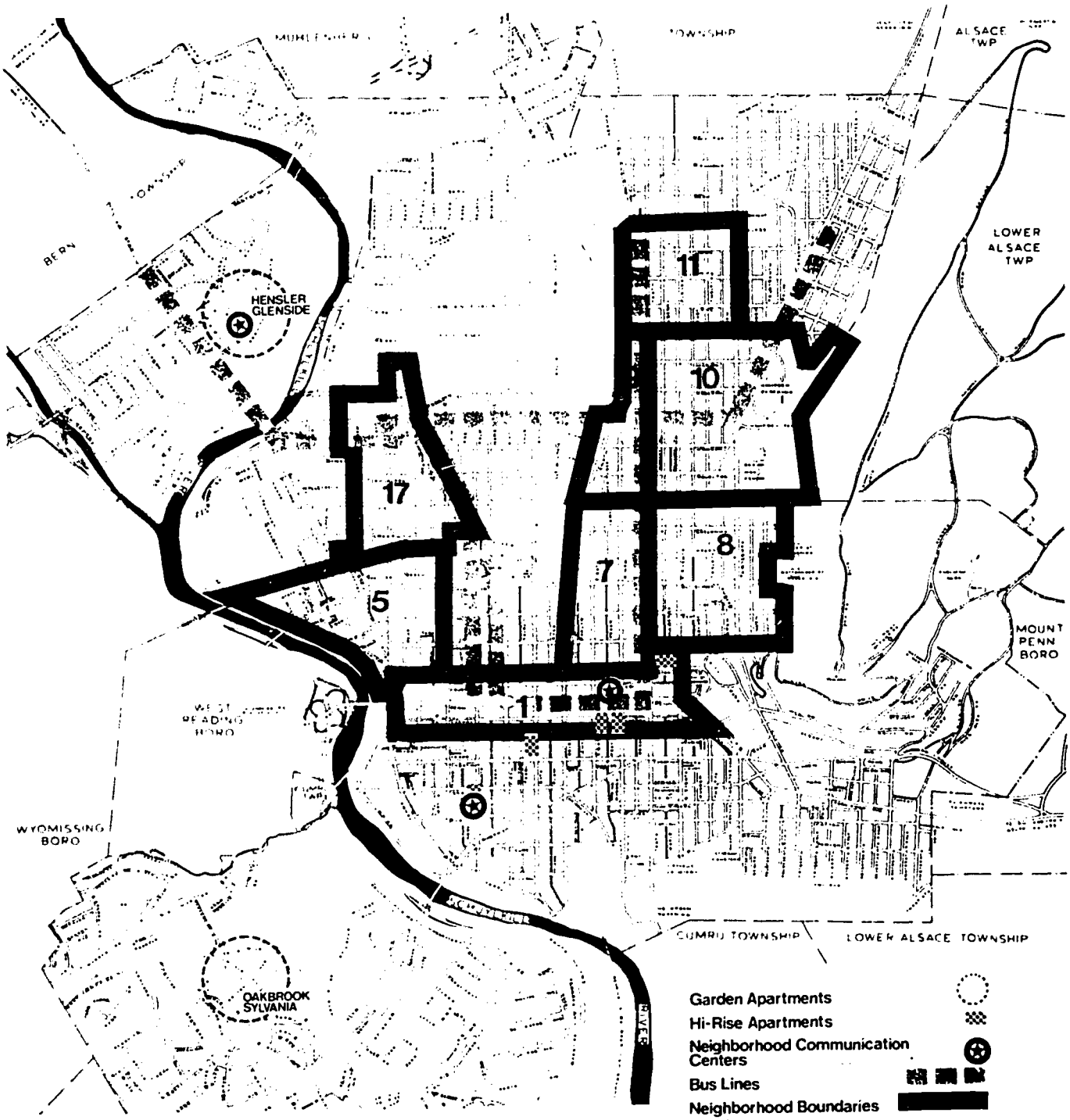
* These data are the total numbers of persons entering the BCSCC Center including those visiting the NCC there and those visiting for other purposes.

CHART D

Page 2

Period covered by data: 3/8/76 - 3/12/76

	EXPERIMENTAL AREAS			CONTROL AREAS			CONVERTERS	OTHER PERSONS IN DOWNTOWN READING
Date	(1) New Horizon Open Neighborhood	(2) Kennedy	(3) Hensler	(4) N.17 East	Franklin	Oakbrook	(7) N.17 West	(8)
3/8	18	1	1	6	0	0	2	84
3/9	37	1	0	2	0	1	2	113
3/10	20	1	0	3	0	2	0	86
3/11	22	0	0	2	0	2	1	66
3/12	20	1	2	3	1	1	2	56
TOTAL	117	4	3	16	1	6	6	405
Rank	1	4	5	2	6	3	3	
Proportion of Elderly Population	11.85%	2.8%	4.9%	.63%	12%	2.4%	1.26%	


ALSACE TWP
LOWER ALSACE TWP
BERN
HENSLER GLENSIDE
11
10
17
8
7
5
1
MOUNT PENN BORO
WEST READING BORO
WYOMISSING BORO
OAKBROOK SYLVANIA
CUMRU TOWNSHIP
LOWER ALSACE TOWNSHIP
Garden Apartments
Hi-Rise Apartments
Neighborhood Communication Centers
Bus Lines
Neighborhood Boundaries