NEW COMMUNICATIONS TECHNOLOGY IN NEW TOWN DEVELOPMENT (ROOSEVELT ISLAND)

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One of the numerous new communities across the country, Roosevelt Island provides 5000 New Town units within New York City, and is being developed by the Urban Development Corporation of New York State. This report offers a look at how we can begin to shape an integrated communications infra-structure based upon CATV technology.

Several examples of existing community based video applications are described which themselves could be suitably interfaced into local service for the Island. Other examples are mentioned that could be implemented if the resulting community determines that such uses would satisfy their programmatic needs.

Finally and most importantly, unresolved issues are highlighted. Perhaps the watchwords should be "enact no major constraints." For better or worse, this experience has been developed on the expedient principles of "ad hocracy". Time will tell.

The Roosevelt Island Development Corporation is considering the provision of a cable television network with sufficient capacity for two-way communication, and additionally use the system for burglar and fire detection. It is contemplated that the system would be used for community meetings, to communicate between the educational spaces and to provide a link to the hospitals from apartments of the handicapped and homebound.

A community information and referral center, composed of an Educational Exchange and a Communications Center is proposed to be located in the Town Center. It may not be practical to develop a full range of services, programs and offices needed for this number of residents--18,000--but the Center would make direct referrals and provide assistance to Island residents, much as in the demonstration of community information services to be demonstrated under a Federal grant by the Brooklyn Public Library at some 50 different neighborhood offices in its service area.

EDUCATIONAL PROGRAM

The proposals for the community educational system prepared for RIDC in 1970 (footnote 1) outlined a number of educational programs situated in a locationally dispersed but functionally integrated system that would require a high level of communications interaction, that potentially offers a formulation of standards for adoption by other new communities. These programs, which would be administered under the auspices of School Board District #2, are largely structured to respond to the growing educational needs of one-third of the population who are non-adult (6000).

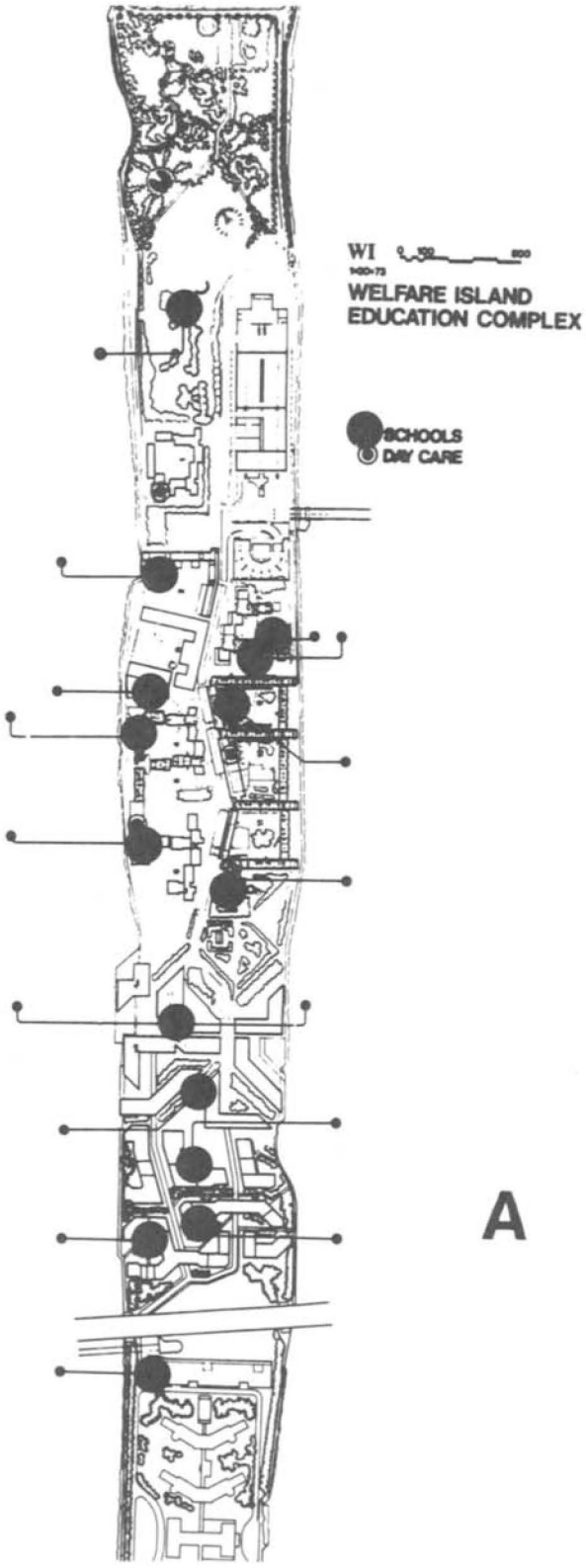
Since the idea of joint occupancy by educational and residential space has been pioneered by the Board of Education and the Educational Constructional Fund, with scattered sites woven into the residential component, intercommunications among educational spaces has become more important. On the Island, educational sites will be further dispersed among the residential and other functional locations within the community (figure A). Perhaps fifteen different locations will provide educational spaces, including the hospitals, library, police/fire station, theatres, stores and elsewhere. Certainly the cultural locations will be prime resources. The main educational facilities for older children in particular will be in seven major centers, each organized around a central concept, such as the arts, communications, economics and work, science and technology, behavioral science, environment and planning, and recreation. Two centers for high school programs will accomodate a Visual and Performing Arts program, and a Physical Science and Technology program. The former will include curricula in both the fine arts of dancing, music, drama, and film, but will also provide instruction and participation in the applied arts of the media, including film, television and video, audio, and graphics design. The Physical Science and Technology Center will share spaces for laboratory and studio use in electronics and telecommunications.

COMMUNITY CENTER

As proposed by this educational report, the nerve center for a sophisticated organism such as the community education system, must be the Communications Center. Unless communications between facilities and people are almost instantaneous, direct and accessible to all of the participants, the system will falter. In addition, the Education Exchange is to be a bank of information about the community which is available to all Island residents, and ideally would be a computerized information and learning system tying the entire school system and the community together through the common cable television and computer terminal network encompassing all of the Island and any of the residents who wish to participate. The CATV network distributes the educational "supermarket" of ideas and information among a cadre of inspired administrators, teachers and facilitators who--hopefully--will help make things happen for the participants.

The institutionalization of this function needs further definition if it is ever to take shape in the life of Roosevelt Island. But Robert Bartz finds that the technology of a "Community Exchange" (footnote 2) is easy to describe: "It links the individual, at a neighborhood center or even in the home, with public agencies and organizations which offer services, including information; it links him with sources of educational/entertainment/cultural programs, either live or upon request; and it links him or his interest group with other parties concerned with public matters (here the dialogue element becomes all-important. The links are quite generally two-way--that is one can send as well as receive. They are normally both visual and audio, and they are normally instantaneous. Overall this technology is well advanced, and it is also, for many applications close to economical. There are technical challenges which remain, but they are largely of only long-term significance.

"Community Exchanges can originate with a library, museums of the modern variety, and in other ways. These origins might or might not lead in particular situations to a specifically incorporated entity to manage the facility and its operation. The Community Exchange can be small and informal, or large and structured. Emphasis will vary widely. The economic, the training, and the health requirements of a typical community consisting largely of retired people are utterly different from the requirements of a young community which is heavily minority, and of very low income. Any one Community Exchange will reflect such differences in its genesis and growth; it must itself be an expression of the felt and perceived needs of the citizen. El Segundo, California will be unlike Dallas, which will be unlike Boston; there's a different and interesting story behind each of these communities for its promise as a setting for a Community Exchange."



CONSTRUCTION STANDARDS

The HUD environmental statement (footnote 3) reports that "the present Island telephone facilities are supplied by cable from Manhattan and reach the Island through conduits under the deck of the Queensborough Bridge in much the same manner as the electric power lines. The cables enter conduit risers attached to the west tower of the Bridge, which are routed into manholes at the base of the tower. The cables then run north and south to the extremities of the Island in conventional 12 duct terracotta conduit banks running under the westside of the Island. Fire alarm and other circuits are carried in cables in adjacent ducts in the same bank. Most of the present facilities will be removed.

"The proposed new system will consist of 12 duct conduit banks running under the new streets. The 4" ducts will be plastered and encased in concrete and placed on a reenforced concrete base to preserve alignment. Service ducts into building parcels will generally be 4" steel pipe. The duct system as presently designed will be capable of accomodating adequate police call and fire alarm systems over the entire Island and available for the Sterling franchisee to install a cable television system."

Subsequently, a statement of detailed recommendations was prepared by the telecommunications consulting firm of Malarkey, Taylor & Assoc (footnote 4). These recommendations centered around the principle of anticipating the real immediate and future communications needs, and of originally providing within the buildings themselves, sufficient horizontal and vertical ductwork to significantly minimize the incremental costs of enlarging capacity.

The substantive position of the report states: "The most important points, by far, are to provide adequate riser space to accommodate any conceivable future communications requirements. Riser space includes floor sleeves or installed conduit of adequate size, and the enclosed spaces should be designed to permit only authorized access to pull-boxes. We cannot overstate the importance of providing adequate floor sleeves and riser space to avoid the future necessity for breaking holes in concrete floors, or opening and repairing finished walls. The cost of unused riser space has to be so small compared to the cost of providing for it after the building is completed and occupied, that there can be no sound reason for not providing for any conceivable future communications riser requirement.

"We recommend that serious consideration be given to providing floor sleeves in addition to the minimum required, so that additional duct could be installed for unanticipated future needs. Nearly equal in importance is adequate horizontal wire-way for communications interconnection between buildings, and between each building and the Empire City duct system throughout Welfare Island and Manhattan. Although 4" interconnecting duct may seem excessive, repeated painful and costly experience indicates a high probability that its utility and value will be gratefully acknowledged in the future. It is so much less costly to install such ducts in new construction than to break holes in walls and excavate streets when the need arises, that failure to provide adequately for interconnection now must be considered imprudent, at best. Overproviding is far less costly than underproviding.

"We suggest that careful consideration be given to the probably future need for additional outlets within each apartment. At least 20% of all CATV subscribers now have two or more TV outlets per dwelling unit, merely for family convenience in viewing TV. When the predicted broadband communications services become available, we can certainly anticipate a demand for interactive terminals requiring additional outlets in the kitchen, den, student's room, etc. The demand is too ephemeral at this time to warrant additional outlets initially. But we strongly advise that a suitable plan be developed by which additional outlets can be reasonably installed in the future at most any location in the apartment."

Additional MT&A recommendations:

aa) basement connection panels.
a) one cable per riser for MATV.
b) one separate cable for each apartment for CATV.
c) suggested duplicate of the CATV system for strictly local, Roosevelt Island communication, allowing for future expansion.
d) up to six cables for each school or day care center--to provide for possible instructional uses of television, including camera origination in classrooms.
e) stores and office spaces should have the same facilities as apartments, since commercial applications of broadband communications may develop more rapidly than residential applications.

By closely scrutinizing and largely adopting these basic recommendations, the Roosevelt Island community will be able to keep pace with the rapidly developing telecommunications component of our society.

UNIVERSAL CATV WIRE-UP

However, the franchise operator, Sterling Manhattan, and the Roosevelt Island Development Corporation have not been able to negotiate an agreement for wiring the subscribing CATV apartments. RIDC wishes to provide a master antenna system (MATV) for all its residents within ductwork provided in the original construction. Sterling would rather utilize exterior cabling

that can be more easily maintained and policed for nonpaying taps. However, if the MATV system is provided, the economic inducement for subscribing to the Sterling CATV is greatly diminished. If on the other hand, Sterling were to agree to RIDC's proposed monthly contract rate of $3.50 per apartment ($17,500 for all 5000 units), it would monetarily correspond to an effective 58% penetration rate--which is much higher than their market success at present, with less cost and maintenance for internally constructed ductwork, obviating nonpaying taps, and without the severe competition of a universally provided MATV connection--and with the social utility of achieving universal wire-up for the transporting of all educational and community video communications to all apartments of all income levels.

APPLICATIONS

According to our knowledge of today's practical applications of cable communication, the following examples would have immediate applications in Roosevelt Island's cable communications system:

TELEMEDICAL

Mt Sinai Hospital has been operating a two-way fully interactive video telemedical consultation service with the Wagner Pediatric Clinic in East Harlem (figure B, footnote 5) serving 1300 children with medical consultation with pediatric specialists at Mt Sinai, assisted by staff nurses at the Clinic. It is important to note that this access to medical specialization is delivering a health care service that would not otherwise be available to children at the Clinic. This is one of the half dozen or so operating systems in the US which provide both the patient and the doctor with a fu-ly interactive, social consultation relationship. While the service occupies two channels of a separate dedicated cable installed for this purpose by TelePrompTer when their regular cable television net was installed, it is used in the typical closed-circuit fashion as separate trunk line uninterrupted by subscriber taps. This dual trunk feature is implicit in most institutional network capability as a multiple trunk cable shadow net (MT&A recommends six trunks for Roosevelt Island educational uses). Undoubtedly the present coordination of the planning of educational, cultural resources, medical, and other institutions who may share their use of various telecommunications modes will have an effect on future delivery of services and their costs.

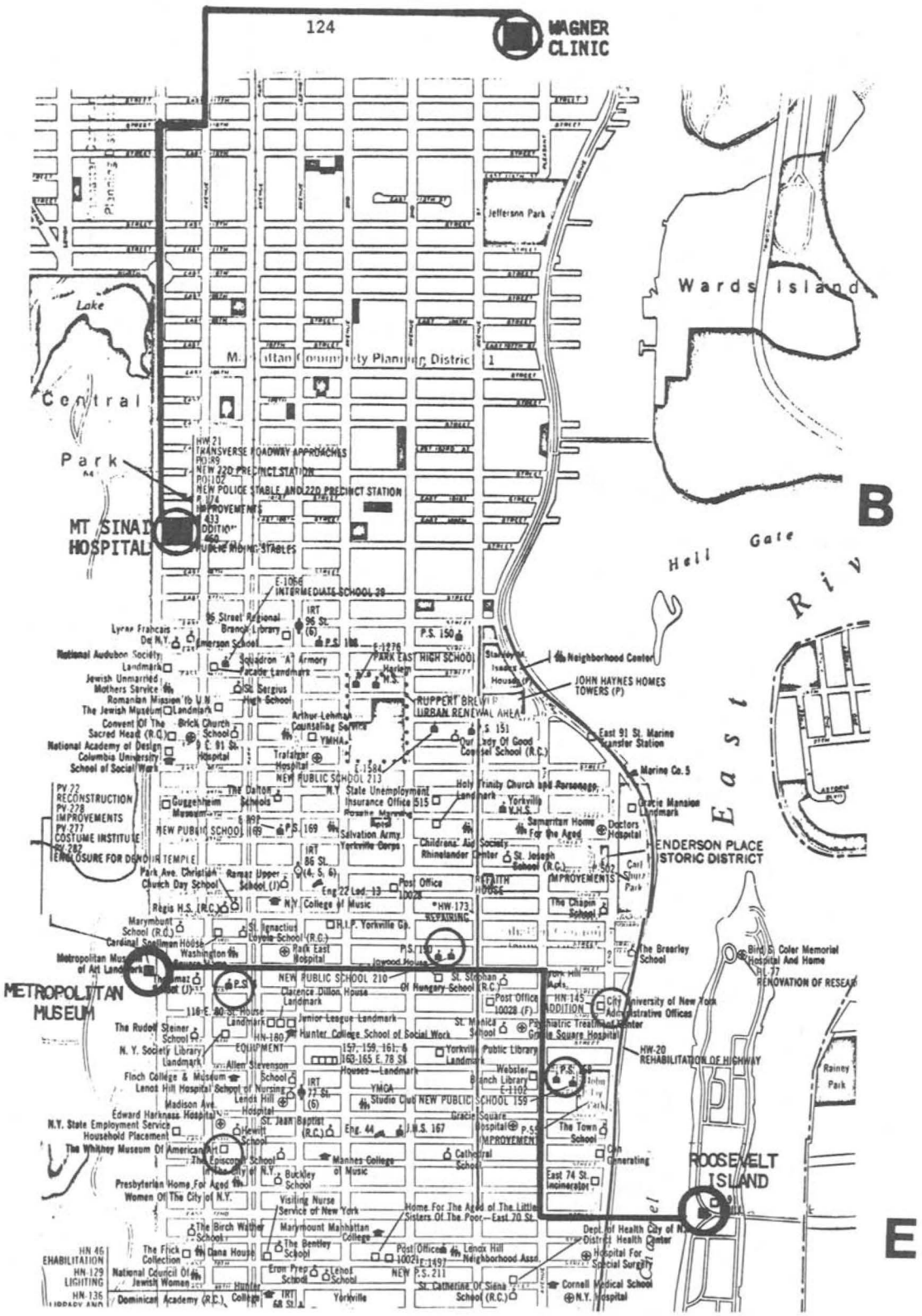
A utilization similar to the aforementioned Mt Sinai telemedical link is being proposed for another nearby area by the Northwest Queens Task Force for Health Services which would use a two-way video link between the Astoria Health Station and Elmhurst City Hospital as a demonstration for savings in time and cost on providing effective response to emergency medical needs. The Task Force reports (footnote 6) that: "...The manner in which emergency ambulances are used affects their ability to provide prompt life saving service to people in need of emergency care. ...By freeing nonurgent cases from the need to use emergency services, the emergency medical services can then respond to emergent cases more rapidly. ...We propose to demonstrate that effective quality health and medical care can be rendered by physician assistants and nurse practitioners in a community-based environment with proper medical supportive services via telecommunications links. ...Moreover, as more experience is gained from this project, information on cost and performance will serve to develop guidelines for establishing other mini-telemedical centers in New York City and other urban communities."

This demonstration would utilize a moderately inexpensive directional microwave link prepared for that purpose between the two facilities. A more elaborate, shared utilization might become more economical if several institutions that would be passed by an alternative cable link (figure C) were to coordinate their mutual telecommunications needs. It is noteworthy that one such major institution, LaGuardia Community College (which is developing a health/media program) is preparing an architectural study (footnote 7) of the former Army Pictorial Studio under a grant by the Educational Facilities Laboratory to determine the feasibility of renovation of this significant studio complex for multi-use purposes, including community media and CATV, by the College. It is also noteworthy that Mt Sinai Hospital is the back-up teaching hospital for Elmhurst City Hospital, and comprises the Mt Sinai School of Medicine of the City University, and thus a logical CUMBIN (City University Mutual Benefit Instructional Network--an interactive television network; reference 8) participant along with LaGuardia.

HUMANISTIC USES

The two municipal affiliated hospitals to remain on Roosevelt Island, Coler and Goldwater, with their community of 2000 immobile residents with chronic disabilities, present a striking challenge to any thoughtful utilization of the enormous potential capacities of broadband communications. Specialized health programming and uses suitable for wide cable distribution include channels with sign language and subtitles for the deaf, multiple audio channels of talking-book service for the blind, two-way video correspondence for the confined, and hospital life-support monitoring systems for separate residential quarters.

A surprising and rewarding result of the Overland Park, Kansas experiment of two-way interactive video between homebound children and their school class was the emotional stimulation and motivational reenforcement shared between the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WAGNER CLINIC
Jefferson Park
Wards Island
Lake
Central
Park
MT. SINAI HOSPITAL
B
Hell Gate
East River
METROPOLITAN MUSEUM
HENDERSON PLACE HISTORIC DISTRICT
ROOSEVELT ISLAND
E
Rainey Park
HW 21 TRANSVERSE ROADWAY APPROACHES
NEW 22D PRECINCT STATION
NEW POLICE STABLE AND 22D PRECINCT STATION
PV 22 RECONSTRUCTION
PV 278 IMPROVEMENTS
PV 277 COSTUME INSTITUTE
PV 282 ENCLOSURE FOR DENDUR TEMPLE
HW-173 RESURFACING
HW-145 ADDITION
HW-20 REHABILITATION OF HIGHWAY
HN 46 REHABILITATION
HN-129 LIGHTING
HN-136

children. Thus, it is clear that the opportunity to significantly improve the quality of life through the leverage of greatly enhanced communications for immobile residents should not be foregone without an intensive assessment of the means for implementing such programs via the cable communications system of Roosevelt Island

OFFICE VIDEO CONFERENCING

Advanced applications of video conferencing have been demonstrated by the Joint Unit for Planning Research in London (British Post Office sponsored), by the New Rural Society in Connecticut (HUD sponsored), and are being operated by the Metropolitan Regional Council in the New York tri-state area (NSF sponsored; figure D; footnote 9). For $14,000 per location, a simultaneous two-way audio/video teleconferencing can be established between the 200 employees of the Urban Development Corporation central offices, if they move to Roosevelt Island as planned, and their several regional offices in the New York Metropolitan area through the established and operating microwave network of the Metropolitan Regional Council. This network provides interconnected video conferencing among some 20-30 of the 600 governmental agencies in the NY/NJ/CT tri-state area.

For the forseeable future, MRC would be able to confirm the availability of at least one to possibly several hours per day for UDC internal video conferencing use. The normal switching capabilities of the MRC operating would provide the flexibility of Regional to & from Central, Regional to & from Regional, and likewise between participating MRC cities. A future link with Albany has been considered, providing UDC with potential access to its additional branch offices. With more elaboration and utilizing cable links, this operation could serve as a prototypical demonstration of a switched governmental communications channel among central offices, Borough headquarters, and satellite departments. Each additional microwave location would be another $14,000 for two b/w monitors, two cameras and one mixing console. No additional cost is necessary if the office is within line-of-sight of the World Trade Center (MRC) facility. Origination and terminal equipment can be user operated.

DELIVERY OF CULTURAL RESOURCES

The New York State Education Department has proposed a $338,500 demonstration of on-demand cultural resource video programming between the Metropolitan Museum of Art and School Board District #2 (footnote 10) that would provide 10 wired origination galleries at the Met with connections to 10 classrooms in separate schools with video reception and audio feedback. Color origination capability for any particular location, including other participating institutions, would start at $15,000, including all ancillary hardware. Classrooms would use an ordinary color TV receiver, a cable system connection and some audio feedback feature. A dedicated cable connection with 10+ channel capacity might run to an additional $100,000 at most, and serve a half dozen schools in the Met's vicinity, as well as extend to the new community school facilities on Roosevelt Island (figure E).

In addition, Lincoln Center, in close proximity to the Sterling cable system headend, has an education program in the performing arts of music, dance, opera, film and drama supported by the Board of Education which reaches 300,000 students in schools annually and hosts another 30,000 at the Center. Their Workshop intensively works with an additional 270 students. Through the reach of cable video and utilizing audio feedback participation, the feasibility of serving additional remote workshops on the Island could be explored.

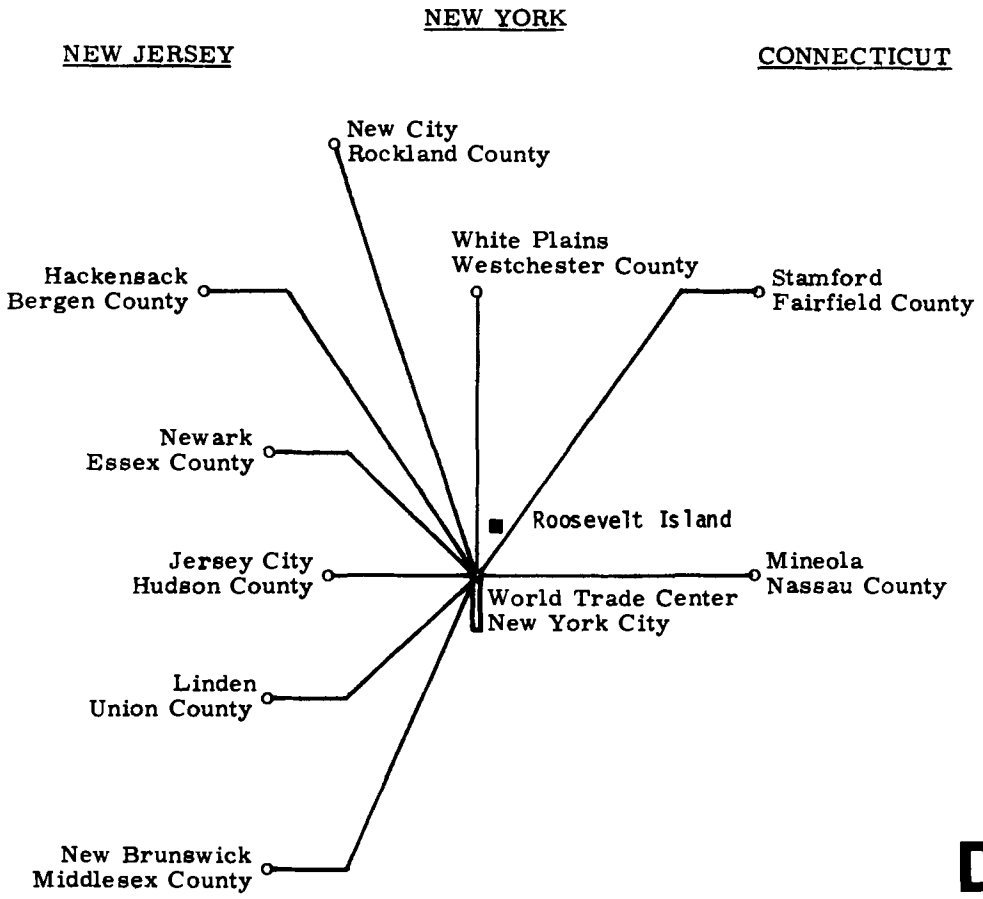
The efficiency of reaching many remote sites with their larger groups--containing more potential users--is clear. Perhaps of even greater relevance, exploratory considerations undertaken by NYS Commission on Cultural Resources indicate that the implications for economically enriching the lives of isolated individuals in hospitals (2000 on Roosevelt), prisons, and the homebound sick and elderly are obvious. However, the planning for trunk networking that would allow these user institutions to economically share headend access as well as provide additional capacity for intercommunication of resources among themselves is an important issue that is not currently being addressed. Even so, quite an array of private and public funding sources are active in this area of technology assessment, and the modest amounts of funds necessary are available, or are within marginal limits of conventional City budgetary considerations.

COMMUNITY EXCHANGE

A Community Exchange can be shaped around various components, such as an "Everything for Everybody" register, or the Island's own indigeious form of TICCIT, being used in Reston, and a CUIC: Citizens' Urban Information Center format such as being demonstrated by the Brooklyn Public Library under a Federal grant (footnote 11), and by the emerging national informations networks of NTIS, ERIC, Pandex, PLATO IV, and the NY Times--wherein the library component serves as the institutional agent for access to the information system and then economically redistributes the responses over its own cable channels, each with one video or 120 audio or 1000 digital display channel capacity, into the school or community facility or residence requesting them.

Brigitte Kenney of the Drexel University School of Library Science comments that the role of the library can become that of a community


ELMHURST HOSPITAL
Physicians Hospital
St. Michael's Cemetery
LAGUARDIA COLLEGE
Boulevard Hospital
Salvation Army
Sunnyside yard
Aviation H.S.
Queens Vocational H.S.
Astoria General Hospital
Astoria Medical Group
St. Demetrios School (R.C.)
Trinity Lutheran School
Municipal Parking Lot
Hallets Cove
Queens Plaza



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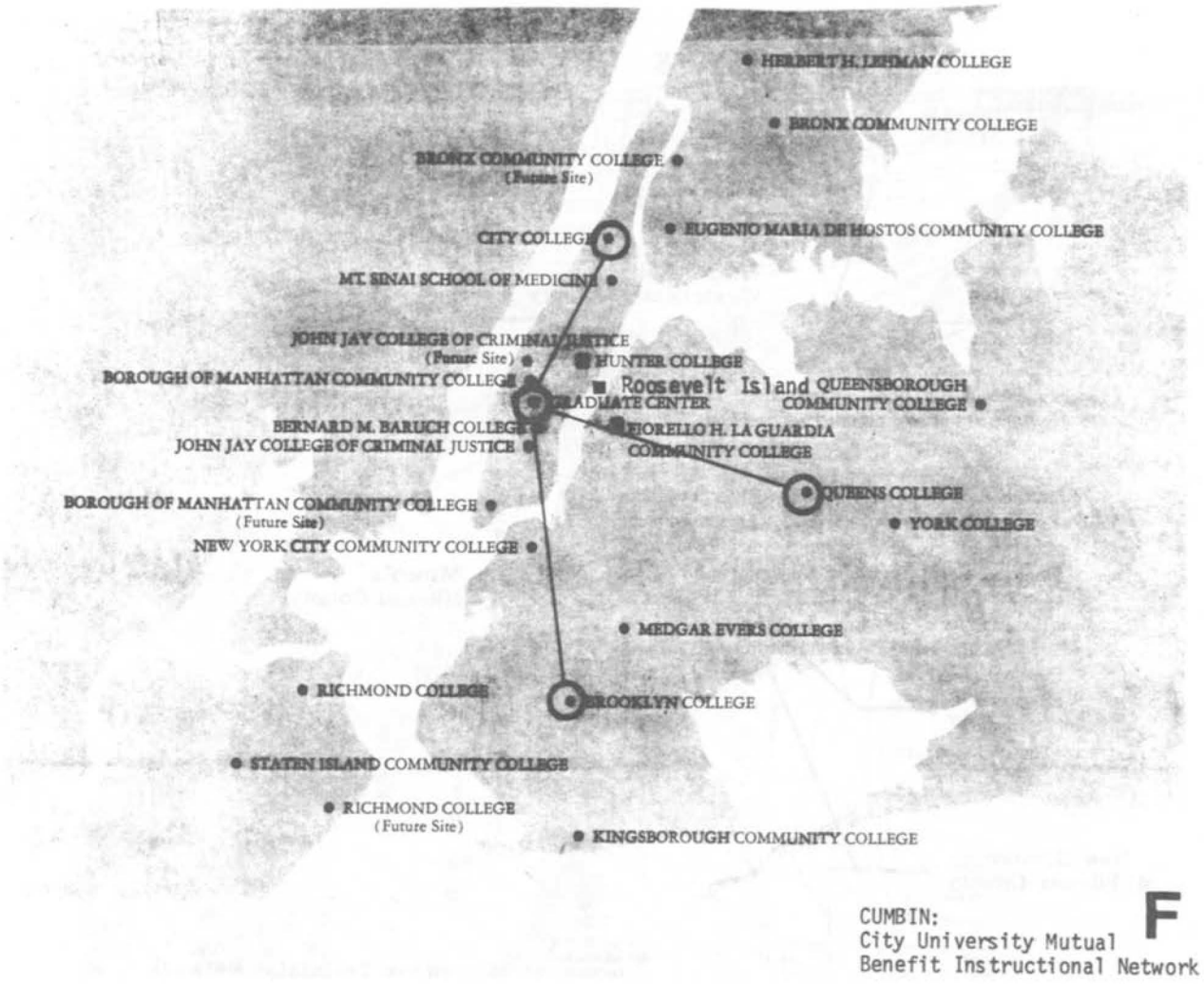
MRC-TV
Interactive Microwave Television Network
Stage One: Ten Sites

information catalyst by assuming a back-up function, an in-depth information service for other groups and agencies, which only the library can provide. "...The inevitable new structure can be envisioned as a series of specialized networks, each staffed by information mediators who know where answers to questions may be found and who can formulate both. It is a people oriented and people operated series of networks: telecommunications links, computers, and a vareity of terminals, including the home television set connected by cable to the network, are used to speed up the information delivery process and to send the information where it is needed--directly without passing through various levels of hierarchy. When this kind of information service develops, society might well feel the considerable impact of it. Information is power, and in our age of information overload, information must be effectively available to the people."

LEARNING SYSTEM

A learning system (footnote 12) presently being considered by another School District involves the use of 96 audio channels to be used by a language arts diagnostic center to screen 400 students at a time of the 26,000 in the District. It would be the first building block of a centralized instructional distribution system of supportive services for that School District's particular educational program, and which facilitates individualized review and evaluation of a student's performance. With the assistance of parallel programmed texts, this propietary system is intended to be particularly useful in determining the level of bi-lingual or non-readers.

The 96 audo channels are digitally multiplexed and modulated for a standard 6MHz video channel that can be carried over a school's internal MATV, and between schools over a properly dedicated channel of the CATV. Each of the 96 diagnostic program channels can

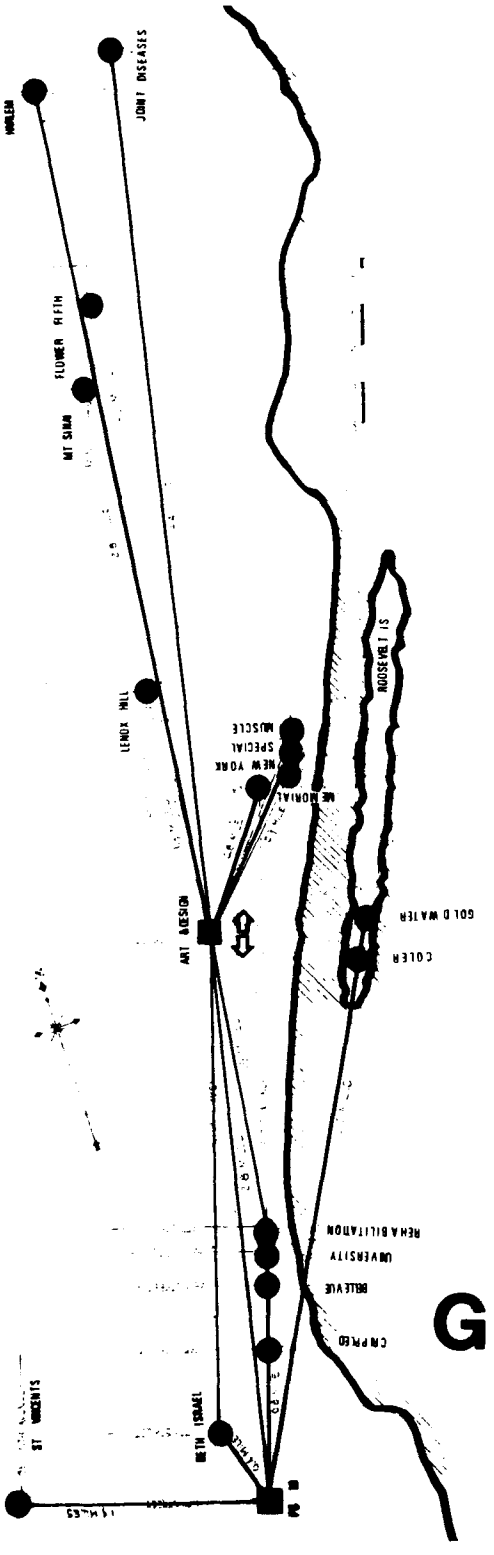


be selectively accessed by any remote terminal provided with a switch and earphones.

REMOTE WORK-STUDY

LaGuardia Community College, in adjacent Long Island City, will resubmit a grand application for telecommunications research (footnote 13), which seeks to evolve a model, whereby community colleges with work-study programs can participate in a consortia of educational institutions, community agencies, business and industry in applying telecommunications capability for a mutual exchange of information and resources, and deliver instruction and training for supportive and technical jobs where skilled people are in short supply. The research aims at development of a cooperative educational and human resources policy system--which is specifically addressed to the needs of urban ethnic, minority and special groups; it should also be applicable to instructional systems generally.

This model, taking advantage of the unique opportunities offered through LaGuardia's cooperative educational work-study program set in an industrial urban community, can result in applications which improve the imperfect linkage among the college's outreach to learners, feeder schools, families and employers; give the learners realistic preparation and experience for the job market; and facilitate training and placement services with feedback on the quality of work and training in progress, with the expectation that students learn more, become more career effective and be better integrated into the workworld. The model would build on alternative media approaches, with assessment of advantages and tradeoffs. It would design demonstration experiments between the College and cooperating organizations, using telecommunications channels now feasible in Northwest Queens (and Roosevelt Island), to test the objectives and to develop RFP guidelines in anticipation of 1977 broadband cable television availability in the Northwest Queens area of service.



PROPOSED:
HOSPITAL SCHOOLS
TELEVISION NETWORK

Parenthetically, a dedicated cable or directional microwave linkage between Hunter College and Roosevelt Island and LaGuardia College would give two-way access (with a new link from Hunter) to the City University's interactive video network (CUMBIN; figure F) at all three locations.

ISSUES

Generally, th educational establishment of Roosevelt Island, characterized by its scattered sites, can measurably benefit from the television feeds and the telecommunications paths for interchange, sharing, and utilization of mutually generated resources. By full utilization of these electronic pathways within the cable television system, the Community Exchange will, in large measure, be transported into every apartment and facility in the community, providing a new social plasma that will become more prevalent in our evolving society.

Specifically, in telecommunications planning there appear to be three fundamentals to be ascertained: capacity, format (media mix) and networking. However, more specifically, at the present state of considerations, the local Island issues of desired capacity for educational programmatic needs, provision of ductwork in the original construction, and universal CATV wireup are not sufficiently resolved to insure full realization of potential communication benefits.

Moreover, these items serve to further illustrate several of the generic issues in the City of the social benefit and economic considerations of universal wire-up in housing projects, and adoption of ductwork standards by HDA for new construction and renovation, and desired additional neighborhood cable capacity based upon local educational programmatic needs.

In addition, the issues of interfacing CUMBIN and other resources with the CATV networks will include the configuration of multiple trunk shadow networking, patterns of shared utilization with other institutions, quasi-public ownership and lease-back alternatives, capital budget reallocations, and revised locational considerations.

FOOTNOTES:

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2) COMMUNITY EXCHANGE, Robert Bartz, *Urban Telecommunications Forum*, March 1973.
3) DRAFT ENVIRONMENTAL STATEMENT OF PROPOSED NEW COMMUNITY OF "WELFARE ISLAND," Department of Housing and Urban Development, 1972
4) "WELFARE ISLAND" BROADBAND COMMUNICATIONS REPORT AND RECOMMENDATION, Malarkey, Taylor & Associates, 1972.

5) PEDIATRICS CARE VIA CATV, Edward Wallerstein et al, *Educational & Industrial Television*, July 1973.
6) AN ALTERNATIVE TO URBAN EMERGENCY MEDICAL CARE, Northwest Queens Task Force for Health Services, 1973.
7) ARCHITECTURAL FEASIBILITY OF MULTI-USE OF ARMY PICTORIAL STUDIO BY LAGUARDIA COMMUNITY COLLEGE, Mayers & Schiff, 1973.
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11) CUIC: CITIZENS' URBAN INFORMATION CENTER, Brooklyn Public Library, 1972.
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