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An Exploratory Assessment

May 1974

Program of Policy Studies in Science and Technology
The George Washington University
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by

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ABOUT THE AUTHOR

Fred B. Wood was born in Cambridge, Massachusetts, on September 18, 1945; grew up and attended public schools in Berkeley and San Jose, California; and received his college education at Oregon State University (B.S. in electrical engineering, 1967), Harvard University (M.B.A. in business administration, 1969), and The George Washington University (D.B.A. in management science and public administration, 1974), where he recently completed his doctoral dissertation research on "Telecommunications Technology for Congress: An Exploratory Assessment of Its Potential for Congressional-Constituent Communication."

Mr. Wood's professional experience has included short stints with the County Government of Santa Clara, Ca. (Sr. Engineering Trainee), Pacific Gas and Electric Co., San Francisco (Junior Engineer), and International Business Machines Corp., Armonk, N.Y. (Public Affairs Researcher); and a one-year term as Editor and Publisher of The HarBus News and Careers and the MBA at Harvard Business School, Boston.

At George Washington University, Mr. Wood has served as Graduate Teaching Fellow in Management Science, Assistant Professorial Lecturer, Guest Lecturer, and as Research Assistant to the Program of Policy Studies in Science and Technology, where he is currently a Research Associate. Mr. Wood has authored several articles and is a member of various professional associations.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The rationale for this research reflects mounting concern in three areas: the role of Congress in the American political system, the ability of congressmen to cope with changing citizen needs and increasingly complex social issues, and the potential of emergent telecommunications technology for helping (or hindering) the congressional-constituent communication process.

Based on interviews with Representatives and senior staff from a sample comprised of 40 House offices, the study reached the following conclusions:

Current Communication System

- Constituent communication is viewed as essential to the job of the congressman in his role as: a public official working to carry out important legislative and representative responsibilities; an ombudsman for constituents who need help; an overseer of federal programs and monitor of their effects on citizens; and a politician seeking to ensure re-election.

- Representatives currently make heavy use of a wide range of constituent communication channels, of which the following are perceived as most important: personal conversations and group meetings in the district; personal letters via the Washington office; telephone calls via Washington and district offices; district newspaper, radio, and television news coverage; and written questionnaires and reports to constituents.

- Many congressmen and staff emphasize that effective communication is becoming more difficult all the time. For example:

  * Longer House sessions and heavier Washington workloads are making it harder to find the time and energy to get back to the district.
  * Upward movement in district population, education, and federal programs with local impact are contributing to a rapidly rising volume of letters, phone calls, and visits from constituents.
  * Still, only a small minority of constituents ever communicate at all, with response to questionnaires averaging less than 10% and an attendance of 50 persons at public meetings in the district generally considered to be above average.
  * Access to the mass media and broadcast television in particular is subject to ever-tightening constraints, especially in major media markets (where competition for TV attention is intense and each district accounts for only a minor part of the total market) and in the smallest markets (where local TV coverage is very limited).
  * Lack of public confidence in Congress, limited constituent understanding of the legislative process, and information overload create additional problems in establishing an effective dialogue.

Potential for Emergent Telecommunications

- Emergent telecommunication is perceived in general as having the potential for helping congressmen overcome communication problems and better meet their varied public responsibilities, although emergent channels are not the only and perhaps not the most important part of an overall solution.

- Congressmen and staff in this sample perceive cable television and information retrieval as potentially the most useful emergent channels for constituent communication, the videoconference and teleconference as somewhat useful, and cable TV polling and the videophone as least useful.

  * Most frequently cited advantages are the potential to reach more people more effectively, significantly improve upon currently available channels, save time and energy of members and staff, and increase the level and quality of citizen participation and feedback.
  * Some of these channels are viewed as offering citizens improved means for learning about the Congress, acquiring more relevant information about the legislative process and specific issues, and communicating views and opinions to their congressmen on a more timely and informed basis.

- The interview survey also identified several possible problems or disadvantages in using emergent telecommunications. Mentioned most often are the possibility of:

  * Abuse and overuse--How can we ensure unbiased use, protection from information overload, privacy of privileged communication, and fair and balanced access?
  * People problems--Will there be adequate constituent understanding and interest?
  * Insufficient need--Do the emergent systems really offer a significant and needed improvement over current systems?
  * High cost--Will the emergent channels be cost-effective relative to existing channels and other competing priorities for funds?
  * Excessive time consumption--Can the emergent channels actually help members and staff use their time and energy more efficiently?
  * Limited acceptance--Are these channels consistent with the role and responsibilities of congressmen in the American political system; is the public ready to accept emergent channels?
  * Limited availability--When, if ever, will these channels become a reality?

Implications for Public Policy

- Some congressmen expressed concern that the use of emergent channels might further entrench incumbents. They note that:
  * The perquisites of office already give advantages to incumbents.
  * Incumbents are generally more newsworthy than potential challengers and are therefore likely to get additional media exposure.
  * Incumbents may also have advantages in acquiring campaign support and--very important when it comes to telecommunication--campaign funds.

In the view of several congressmen and staff in the present study, and of this researcher, a basic goal of emergent public policy should be to realize whatever long-range potential the emergent telecommunications may have for an improved political dialogue. Emergent policy should be concurrently geared toward:

* Assisting congressmen (and other public officials) in better meeting their legitimate communication needs.
* Achieving fair and balanced access to communication channels for all political participants, including incumbent office-holders, challengers, and representatives of constituent groups or interests (both public and private).

Of course, when and how the emergent telecommunications become available depends on a number of uncertain regulatory, institutional, and political factors, even assuming that conditions of technical feasibility and economic viability are met. And public policy on telecommunications can include, for example: technical standards; research and development support; controls on ownership and operation; and regulation of rates and usage for commercial, educational, governmental, public safety, personal, or political purposes, among others.

For the future, public policy will most likely have to be tailored to the characteristics and potential applications of specific emergent channels in order to ensure that the potential advantages or beneficial effects are maximized, and that the possible disadvantages or detrimental effects are minimized. Further research along the lines of this exploratory study will be of fundamental importance to the development of such public policy on emergent telecommunications.

At the minimum, an effort should be made to interpret and assess the data and analysis of this study in terms of possible advantages and disadvantages (beneficial and detrimental effects) of alternative political communication systems (and the requisite public policies) on at least four levels of society and along many specific dimensions:

* The time budget, financial budget, communication channels, information sources, and the political role, power, and security of the congressman.
* The time budget, financial budget, communication channels, information sources, and the political efficacy, competence, and participation of the constituent.
* The time budget, financial budget, communication channels, information sources, and the political role, effectiveness, and power of Congress as an institution.
* And political feedback, responsiveness, adaptability, opportunity, leadership, and change in the larger socio-political system.

ACKNOWLEDGMENTS

The basic idea for this study initially evolved about four years ago from a "Congressional Policy Decision Action Research Project" undertaken here at The George Washington University Program of Policy Studies in Science and Technology. While this Action Research project progressed only through the concept validation stage and did not continue in a formal sense after Spring 1970, I had served at that time as research assistant to the project director and have since continued my interest and involvement in the area of congressional information and communication systems.

In these last four years, my development and completion of this research benefited at one time or another from the assistance of many individuals who as a group are indicative of the interdisciplinary nature of the study: the chairman of my research advisory committee, Prof. Richard F. Ericson (Management/Systems Science); the Director of the Program of Policy Studies, Prof. Louis H. Mayo (Public Law/Technology Assessment); and Profs. Gordon L. Lippitt (Behavioral Sciences), Stephen R. Chitwood (Public Administration/Public Policy), John M. Logsdon (Political Science/Public Affairs), and Marvin M. Wofsey (Information Technology/Management Science), all on the faculty at The George Washington University.

Thanks go also to Robert L. Chartrand (Information Sciences Specialist at the Congressional Research Service); Vary Coates (Political Science/Technology Assessment), Charles Lamb (Political Science), and Ernest Weiss (Technology Assessment/Policy Analysis) of the Program of Policy Studies;

George E. Humphries (Technology Assessment); Fred B. Wood III (Computer-Communication Engineering/Systems Science); Steve and Emily Fishe; and Erica Wood (Public Law), all of whom have contributed ideas to and/or reviewed parts of the research manuscript.

As for the survey interview phase of the research, the level of participation for most congressmen and senior staff from the 40 offices in the sample far exceeded expectations, due in part to the assistance of Rep. Don Edwards (D-Cal) and his staff in pre-testing and facilitating my access and interview strategies. Since these participants are nowhere else acknowledged in this report, I want to take the opportunity here to express my appreciation to the following members and their staffs:

> Reps. Brock Adams (D-Wash), John B. Anderson (R-Ill), John Brademas (D-Ind), Garry Brown (R-Mich), Yvonne B. Burke (D-Cal), Bill Chappell D-Fla), James C. Cleveland (R-NH), William S. Cohen (R-Me), Barber B. Conable (R-NY), John C. Culver (D-Iowa), John W. Davis (D-Ga), William L. Dickinson (R-Ala), John N. Erlenborn (R-Ill), Donald M. Fraser (D-Minn), Thomas S. Foley (D-Wash), Gilbert Gude (R-Md), Augustus F. Hawkins (D-Cal), Wayne L. Hays (D-Ohio), H. John Heinz (R-Pa), Torbert H. MacDonald (D-Mass), Robert McClory (R-Ill), John Y. McCollister (R-Neb), William S. Moorhead (D-Pa), Charles A. Mosher (R-Ohio), John E. Moss (D-Cal), Jerry L. Pettis (R-Cal), Charles B. Rangel (D-NY), Ralph S. Regula (R-Ohio), Donald W. Riegle (D-Mich), Teno Roncalio (D-Wyo), Patricia Schroeder (D-Colo), Dick Shoup (R-Mont), B.F. Sisk (D-Cal), Alan Steelman (R-Tex), William A. Steiger (R-Wisc), Morris K. Udall (D-Ariz), Lionel Van Deerlin (D-Ca), Joe D. Waggonner (D-La), and Bob Wilson (R-Ca).

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The research responsibility and substance of course are mine alone.

Fred B. Wood IV
April 1974

I. INTRODUCTION

Not too many years ago, this research would have been considered "blue-sky," "way-out," "highly speculative," and "ignorant of political reality." But the times have indeed changed. Today, many of the problems of congressional-constituent communication are matters of widespread concern.

From the perspective of the congressman, a sample of such problems commonly includes the difficulty of getting access to and communicating with citizens,[1] and the resultant uncertainty regarding constituent opinion on the complex issues before Congress.[2] At the same time, many congressmen are concerned about the heavy burden of coping with a rapidly growing interaction volume (mail, phone calls, and visits) with constituents who, for example, are affected by federal programs and don't know where else to turn for help.[3]

Other recurrent problems involve time, staff, office space, and financial constraints which frustrate full response to constituent needs and interests,[4] and inadequate newspaper and television coverage of congressional activities.[5] Also important are concerns about the lack of citizen

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[1]Charles L. Clapp, The Congressman: His Work As He Sees It (Washington, D.C.: Brookings, 1963), p. 86.

[2]Ibid., p. 159

[3]Kenneth G. Olson, "The Service Function of the United States Congress," in Congress: The First Branch of Government, ed. Alfred de Grazia, (Garden City, N.Y.: Anchor Doubleday, 1967), p. 332.

[4]Ibid., p. 343-47.

[5]Donald G. Tacheron and Morris K. Udall, The Job of the Congressman: An Introduction to Service in the U.S. House of Representatives (Indianapolis, Ind.: Bobbs-Merrill, 1970), pp. 101-107.

understanding of and confidence in Congress in general, and the constituent's typically limited knowledge of the legislative process, poor identification of the congressman, and low awareness of his votes on the issues.[6]

The situation apparently looks a little different from the perspective of the constituent, but the problems are there just the same. These may include frustrated desires for meaningful participation in the political process due in part to very sketchy information about what their congressman is or is not doing,[7] or to unreliable information which is primarily oriented toward personal promotion and partisan persuasion.[8] More citizens perhaps now feel a greater need for consultation on legislation in response to changing social conditions,[9] but find it increasingly difficult to get the knowledge necessary for understanding these issues and forming intelligent opinions.[10]

The scientific community has yet a third perspective, one that has gone through a quite significant metamorphosis. From an initial "hands-off" position with regard to research on political implications of technology, recent years have seen an upsurge in what might be called "intelligent

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[6]John S. Saloma, Congress and the New Politics (Boston: Little-Brown, 1969), pp. 5-6; Roger H. Davidson, David M. Kovenock, and Michael K. O'Leary, Congress in Crisis: Politics and Congressional Reform (Belmont, Ca.: Wadsworth, 1966), p. 77. See also U.S., Senate, Committee on Government Operations, Subcommittee on Intergovernmental Operations, Confidence and Concern: Citizens View American Government, 93rd Congress, 1st Session (Washington, D.C.: Government Printing Office, December 3, 1973).

[7]Saloma, New Politics, p. 31. [8]Ibid., p. 177.

[9]Harold Sackman, Mass Information Utilities and Social Excellence (New York: Auerbach, 1971), p. 180.

[10]Yehezkel Dror, Design for Policy Sciences (New York: Elsevier, 1971), p. 127; Donald N. Michael, "Democratic Participation and Technological Planning," in Information Technology in a Democracy, ed. Alan F. Westin (Cambridge, Ma.: Harvard University Press, 1971), p. 291.

speculation" or "reasoned conjecture" on such things as, for example:

a. Whether or not the on-line voting and opinion polling capability of two-way cable television will bring power to the people or to those who might control the timing and wording of the information flow;[11]

b. Whether or not the citizen, assisted by the computer, will be able to acquire the information necessary for intelligent participation or will find such new sources of data to be largely irrelevent to the political process;[12]

c. Whether or not cable television and the computer together will permit more regular consultation among political leaders and constituents or will frustrate meaningful discussion and the achievement of consensus.[13]

And now the call has gone out for extensive scientific research and experimentation on the social and political potential of telecommunications. As the National Academy of Engineering's Panel on Telecommunications Research concluded in June 1973, the United States "is not doing so well. . . from the standpoint of exploitation of telecommunications technology in the public interest" because "the issues raised involve complex social, economic, political, legal, regulatory, and related problems" which go much further than the technology itself. The Panel's recommendation is for "interdisciplinary research and analysis" on the social, political, and other

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[11]Edwin B. Parker, "Planning Community Information Utilities," paper prepared for the Fall Joint Computer Conference, November 1971, pp. 4-5. See generally, Parker, Barry Boehm, and Harold Sackman, Community Information Utilities: Conference Summary (Santa Monica, Ca.: RAND Corp., 1972) and Parker, "Implications of New Information Technology," Public Opinion Quarterly 37 (Winter 1973-1974): 590-600.

[12]Michael, "Democratic Participation," p. 291; Sackman, Mass Information, p. 169; Heinz Eulau, "Some Potential Effects of the Information Utility on Political Decision-Makers and the Role of the Representative," in The Information Utility and Social Choice, eds. Harold Sackman and Norman Nie (Montvale, N.J.: AFIPS Press, 1970), p. 190.

[13]Herbert Goldhamer, The Social Effects of Communication Technology (Santa Monica, Ca.: RAND Corp., 1970), pp. 13-15; Duncan MacRae, "Some Political Choices in the Development of Communications Technology," in Information Utility, p. 207. Also see Ithiel de Sola Pool, Talking Back: Citizen Feedback and Cable Technology (Cambridge, Ma.: MIT Press, 1973).

implications of emergent telecommunications that, "when carried out competently and objectively, could provide the basis for policy determination in the public and national interest."[14]

This research on the potential of telecommunications for congressional-constituent communication anticipated and is responsive to the recommendation of the Panel. Underlying the present study are three important premises.

First, unlike earlier periods of technological change, in this Communication Era, society now has both better tools and greater opportunity to "direct the development of the technology to meet positive social goals, instead of becoming the beneficiary (or victim) of uncontrolled technological change."[15] The task is to develop a "humane technology," that is, "to marshal more of technology to the service of human purposes."[16]

Second, as the NAE Panel has recognized, to develop such a "humane technology" requires an interdisciplinary approach. "Bridges of genuinely interdisciplinary study" must be built to provide "the sound base of research and analysis. . . with which to design our communications future."[17] Social scientists need to work with communication engineers, not against them, "if

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[14]National Academy of Engineering, Panel on Telecommunications Research, Telecommunications Research in the United States and Selected Foreign Countries: A Preliminary Survey (Washington, D.C.: National Academy of Engineering, June 1973), in two parts Volume I: Summary, see p. 32, and Volume II: Individual Contributions, see p. 12.

[15]Edwin B. Parker and Donald A. Dunn, "Information Technology: Its Social Potential," Science 176 (30 June 1972): 1392.

[16]Amitai Etzioni, "Humane Technology," Science 179 (9 March 1973): editorial page.

[17]Douglas Cater, "Communications Policy Research: The Need for New Definitions," forward to Aspen Handbook on the Media, eds. William L. Rivers and William T. Slater (Palo Alto, Ca.: Aspen Program on Communications and Society, 1973), p. x; also see Cater, "A Communications Revolution?" Wall Street Journal, 6 August 1973, editorial page.

they wish to acquire a sound understanding of technological developments as a foundation for an imaginative construction and study of future social changes."[18] And engineers, for their part, need a sharpened awareness of the social context of technology.

Third, perhaps more so now than ever before, technological choices are closely interwoven with political choices and value judgments. Therefore participation of citizens and their representatives in the development, use, and regulation of telecommunications technology is necessary for the public interest to be served.[19] This process of "participatory technology" requires a number of forums--the professional community, executive agencies, courts, special interests, and the mass media--but depends especially on a public and a Congress which are both well-informed.[20]

Thus, the underlying theme of this research is to promote a humane and participatory telecommunications technology from an interdisciplinary perspective--a framework to be shared by citizens, businessmen, educators, scientists, and politicians alike--within which the implications of such technology for congressman and constituents (and for the political system in general) can be explored and better understood.[21]

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[18]Goldhamer, Social Effects, p. 28.

[19]James D. Carroll, "Participatory Technology," Science 171 (19 February 1971): 647-48.

[20]See Emilio Q. Daddario, "Technology and the Democratic Process," Technology Review, July/August 1971, p. 23; and C. West Churchman, Challenge To Reason (New York: McGraw-Hill, 1968), esp. chap. 5 on "The Role of the Well-Informed Public."

[21]See Max Ways, "Can Information Technology Be Managed," in Information Technology: Some Critical Implications for Decision-Makers, ed. Conference Board (New York: Conference Board, 1971), p. 4. Also see generally, George Gerbner, Larry P. Gross, and William H. Melody, eds., Communications Technology and Social Policy: Understanding the New "Cultural Revolution" (New York: Wiley-Interscience, 1973).

There are two explicit research objectives or questions which evolve from the general theme. The methodological objective is to develop an appropriate and effective exploratory approach for conducting research on emergent congressional-constituent communication systems.

And the substantive question asks: Given the current communication system and clearly specified emergent telecommunication channels, what is the potential future role for such emergent channels in the congressional-constituent communication process from the perspective of the congressman?

This report presents a summary[22] in Chapter II of the substantive research results. Chapter III reviews the implications of the research and summarizes the conclusions. Appendix A summarizes the methodological results. And Appendix B outlines a "representative time" approach to telecommunication access allocation.

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[22]The 374 page research manuscript on which this summary report was based is available as Frederick Bruce Wood, Telecommunications Technology for Congress: An Exploratory Assessment of Its Potential for Congressional-Constituent Communication (Ann Arbor, Mich.: University Microfilms, 1974), a doctoral dissertation in management science and public administration completed at The George Washington University, Washington, D.C.

II. SUMMARY OF SUBSTANTIVE RESEARCH RESULTS

This chapter includes an overview of the current state of the congressional-constituent communication system, describes the emergent telecommunication channels, and summarizes an assessment of the potential role for emergent channels as perceived by congressmen and staff. The overview and assessment are based on survey interview data from a stratified judgment sample comprised of 40 House offices, and therefore must be considered tentative and exploratory, as is explained in the methodological appendix.

A. Current State of the Communication Process

1. Face-to-face channels. Analysis of the interview data identified the communication channels perceived by senior congressional staff as currently important for the congressional-constituent communication process. These channels are listed in Figure One in rank order of relative importance.

Face-to-face contact in the district is perhaps the most important constituent communication channel for members of Congress. The face-to-face personal conversation, small group meeting, and large group meeting--when conducted in the district--rank first, second, and third respectively in overall relative importance. In sharp contrast, face-to-face contact in Washington is ranked much lower.

The relative importance of direct district contact reflects the fact that most constituents rarely, if ever, travel to Washington, and so the congressmen must visit them during periodic trips to the district. Also, most members maintain district offices and staff whose primary functions include

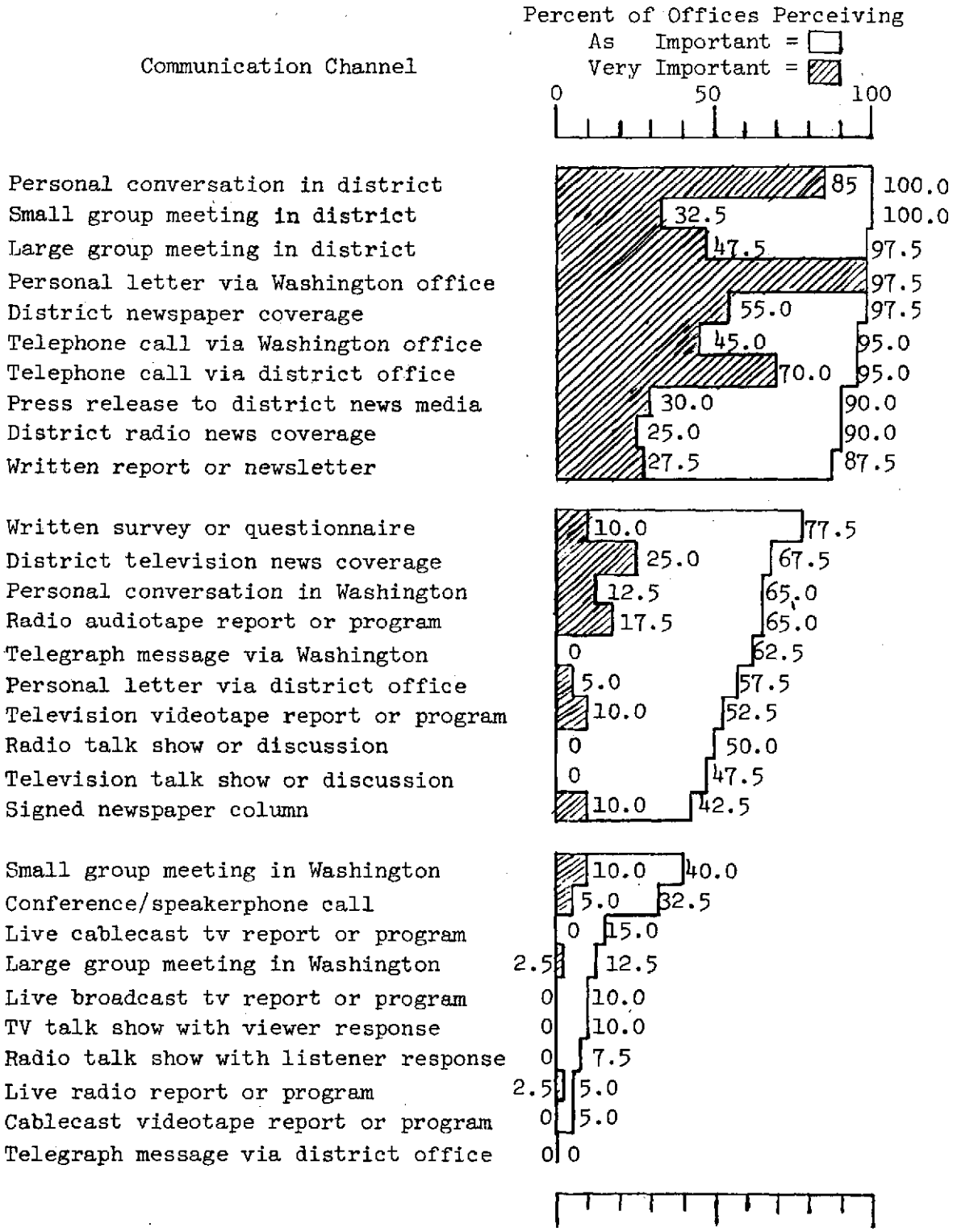
Figure One. Relative Perceived Importance of Constituent Communication Channels

Communication Channel	Very Important			Important = Very Important + Somewhat Important		
	N	%	R	N	%	R
Personal conversation in district	34	85.0	2	40	100.0	1
Small group meeting in district	13	32.5	7	40	100.0	2
Large group meeting in district	19	47.5	5	39	97.5	3
Personal letter via Washington office	39	97.5	1	39	97.5	4
District newspaper coverage	22	55.0	4	39	97.5	5
Telephone call via Washington office	18	45.0	6	38	95.0	6
Telephone call via district office	28	70.0	3	38	95.0	7
Press release to district news media	12	30.0	8	36	90.0	8
District radio news coverage	10	25.0	10	36	90.0	9
Written report or newsletter	11	27.5	9	35	87.5	10
Written survey or questionnaire	4	10.0	14	31	77.5	11
District television news coverage	10	25.0	11	27	67.5	12
Personal conversation in Washington	5	12.5	13	26	65.0	13
Radio audiotape report or program	7	17.5	12	26	65.0	14
Telegraph message via Washington	0	00.0	-	25	62.5	15
Personal letter via district office	2	5.0	18	23	57.5	16
Television videotape report or program	4	10.0	15	21	52.5	17
Radio talk show or discussion	0	00.0	-	20	50.0	18
Television talk show or discussion	0	00.0	-	19	47.5	19
Signed newspaper column	4	10.0	16	17	42.5	20
Small group meeting in Washington	4	10.0	17	16	40.0	21
Conference/speakerphone call	2	5.0	19	13	32.5	22
Live cablecast tv report or program	0	00.0	-	6	15.0	23
Large group meeting in Washington	1	2.5	20	5	12.5	24
Live broadcast tv report or program	0	00.0	-	4	10.0	25
TV talk show with viewer response	0	00.0	-	4	10.0	26
Radio talk show with listener response	0	00.0	-	3	7.5	27
Live radio report or program	1	2.5	21	2	5.0	28
Cablecast videotape report or program	0	00.0	-	2	5.0	29
Telegraph message via district office	0	00.0	-	0	00.0	30

Source: Interviews with 40 congressional offices.

Key: N and % = number and percent of congressional offices in the sample perceiving a channel as very important or important; R = relative rank of a channel among the 21 channels perceived as very important and the 29 channels perceived as important.

Figure One. Continued



keeping in close and continuous contact with constituents while the congressman is in Washington.

Depending on the district's distance from Washington, the average number of trips back to the district per month ranges from one or two for most Western States congressmen to four or more for many members from the Northeast. Members from the South, Great Lakes, and Central States regions usually make two or three trips per month. Regional norms seem to hold fairly well, except that some high seniority and politically secure members do return to the district less frequently, especially if they have heavy committee or leadership responsibilities. And on the other hand, congressmen from politically marginal districts are likely to visit the district somewhat more often than average.

When in the district, the pace and distribution of activity varies widely. Congressmen from active urban districts are likely to be on the go continuously with a tight schedule which might include meetings with community leaders and local government officials, public appearances at schools and business clubs, and visits with the local media representatives. In rural and mixed districts where the population is more widely dispersed, congressmen generally spend more time moving around the district from town to town, talking with people on the street, and holding public office hours.

2. Written or print channels. The personal letter via Washington is clearly the congressman's most important written channel of constituent communication and ranks fourth among all channels. Of somewhat less but still significant perceived importance are the report or newsletter which ranks tenth and the survey or questionnaire which ranks eleventh. Most congressmen receive several hundred letters a week from constituents, and a major problem is the

rising volume. Some offices report a 10-15% increase over last year, although data for the House as a whole suggest an annual rate of increase of about five percent.

Nonetheless, for most purposes, constituents are encouraged to write rather than call or visit, because experience seems to indicate that the act of putting one's ideas down on paper leads to a more articulate and better thought out communication. And many offices do keep at least an approximate count of the mail in order to monitor opinion, while recognizing that only a small minority of constituents (perhaps no more than 5-10%) ever write at all.

In order to cope with the mail situation, almost all offices use some kind of automatic typewriter or "robotype" to respond to form letters, petitions, organized interest group mail, and constituent opinion mail on big volume issues. This conserves time for those casework and legislative letters which require an individually drafted reply.

About three-quarters of the offices in the sample send out a survey or questionnaire on a regular basis to every household in the district using the postal patron privilege. But despite this wide use, only 10% of the sample offices perceived questionnaires to be "very important," frequently because the main purposes served are to get the name of the congressman before constituents and to give constituents something to respond to, with only secondary emphasis on actually getting a valid sampling of constituent views.

Most everyone seems to agree that questionnaires are quite vulnerable to bias both in the way questions are selected and written, and in the way the responses are interpreted. In addition, relatively few constituents ever complete and return their questionnaire. The average household response rate is 9.3%, with a mode and median of 10%, and a range of 2-20%. The average

response rate is somewhat higher for districts with Republican congressmen, 12%, as compared to 6.75% for Democratic districts, perhaps in part reflecting the more affluent and educated nature of Republican districts in this sample.

While congressmen send many other kinds of printed material to their constituents--Congressional Record reprints, government pamphlets, copies of speeches and bills, and assorted reports and newsletters--the report or newsletter is the only one of these viewed as important, ranking somewhere between the personal letter and questionnaire. Like most everything else, the quality and quantity of congressional newsletter varies dramatically. Some members place a high priority on trying to educate constituents about current issues and legislation. But more commonly, the newsletter serves to publicize the congressman's recent activities in Washington, present the member's views on current events and legislation, and identify the congressman with various constituent groups and individuals known in the district.

The average frequency in this sample is 4.45 newsletters per year, but with a mode and median of 2-3 per year. Usually one or two newsletters per year go to all postal patrons, with additional reports sent only to more selective mailing lists. There is some indication that the frequency of newsletters falls off with increasing seniority and political security.

3. News media channels. With the exception of letters, the face-to-face and written constituent communication channels have at least one characteristic in common--their use by the congressman is to a large extent under his own control. In contrast, use of news media channels requires at least a minimum amount of cooperation, interest, and initiative on the part of media reporters and editors. Because such media coverage is generally perceived as

important, congressmen make considerable effort to establish and maintain good media relations.

District newspaper coverage is ranked very high--fifth in overall importance--and is followed closely by press releases to the district media (which help facilitate media coverage in general) and radio news coverage, ranking eighth and ninth respectively. Somewhat surprisingly, television news coverage ranks only twelfth. And the signed newspaper column is the least important of news media channels. This ranking apparently reflects the feeling that congressmen have better access to and get more attention from the press, radio, and television in that order.

One explanation is that district newspapers are far better represented in Washington than are district radio and television. Most congressional districts do have one or more radio stations, but the initiative lies largely with the congressman, as evidenced by the increasing use of recorded telephone "beeper" calls direct from Washington to the local stations.

And access to broadcast television is clearly the most restricted, at least from the viewpoint of members whose districts are either in major media markets (where competition for television attention is intense and each congressional district accounts for only a small part of the total market) or in very minor media markets (where local television coverage is very limited or nonexistent). Perceived quality of television coverage tends to be higher when the district covers a large part of the relevant media market.

Where television coverage of congressmen is poor (in major urban areas and the rural areas), radio takes on special importance. And if in addition the district is not well-covered by major daily newspapers, then the signed newspaper column in the weekly or community newspaper takes on significance.

Of course, media news coverage also depends on a number of other factors like (a) the editorial and operational policies of media management, (b) the stature of the particular congressman in the community, (c) competition for coverage from other public office-holders, and (d) the receptivity of the particular member to use of the media.

4. Individual telecommunication channels. Whereas use of news media for constituent communication is basically a one-way mass process--one congressman to many constituents--and requires the cooperation of an intermediary (the newspaper, radio, or television station), individual telecommunication channels are typically used for two-way exchange between two individuals with the medium under their own control.

The standard telephone call is the most important of these telecommunication channels and ranks sixth overall--right up with the face-to-face district visit, personal letter, and newspaper coverage. Telephone calls via the district office are perceived as more important than calls direct to Washington. The telegraph ranks much lower (15th), primarily because telegrams are viewed as too costly and/or unreliable for most purposes. Conferencephone or speakerphone hook-ups rank 22nd in overall importance, and are used sporadically by about one-third of the offices in the sample to facilitate two-way small group interaction. But these group calls are often found to be less than satisfactory from a technical or visceral point-of-view.

The volume and destination of incoming constituent phone calls seems to be largely a function of distance. Congressmen with districts near Washington have a problem with heavy phone volume, in part because of low phone tolls. Constituents tend to call in on the spur of the moment, for example after reading a provocative article in the morning paper. When the district is further away,

constituent calls direct to Washington are less frequent but calls to the district office increase.

For inter-office communication (between Washington and district offices), in order to keep long distance charges down, almost all offices make some use of the Federal Telecommunications System (FTS) telephone service. About three-fourths of the offices have arranged for inward Wide Area Telephone Service (WATS) from the district to Washington. And for facsimile transmission of written material with a time value, 80% of the offices make at least occasional use of a telecopier.

The "hotline" phone arrangement whereby constituents can call Washington toll-free is limited for the most part to congressmen with rural districts and/or a personal predisposition for easy access and an open office. In most urban districts, the hotline is perceived as a costly, time-consuming, and inefficient channel of communication for messages which can generally be handled better in other ways.

5. Mass telecommunication channels. As a group, non-news mass telecommunication channels are not as important as other types of channels for constituent communication--except during election campaigns. Audio and videotapes rank 14th and 17th in overall importance; radio and television talk shows rank 18th and 19th. These four channels are used by about one-half of the offices in the sample, with the exception of audiotapes which are reported by 65% of the offices. The low-cost production of audio and videotapes is facilitated by use of the House Recording Studio, where charges to the congressman can run as little as 5-10% of the comparable commercial rates. For short radio tapes, Republican congressmen have available to them--at no charge--the recording service of the Republican Congressional Committee. Democrats have

no similar alternative, although the Democratic National Committee does have a "beeper" telephone recording service for statements of national interest.

Very few congressmen make use of paid-time for these audio and video tapes, primarily because of cost and convenience factors and because of the Federal Communications Commission (FCC) "equal time" and "fairness doctrine" regulations. Radio and television stations are wary of providing broadcast time, both for economic reasons and in order to avoid problems with the FCC regulations. Still, many congressmen are able to get some exposure through media use of their tapes in a bona fide news format, and through on-the-spot media coverage of their activities, when considered to be bona fide news events.

All other non-news mass telecommunication channels--live radio, live television, cable television (both live and taped), and radio and television talk shows with audience response--have relatively little perceived importance and are utilized to any significant extent by only a small fraction of congressmen.

With regard to cable television, while the House Recording Studio is now equipped for cable videotaping, only about 11-12% of all congressional districts have cable systems with viable program origination capability. And even where such capability is available, there is a question about whether the viewing audience is politically significant. In this sample, 15% of the offices reported current use of cable facilities for live or videotaped programming.

B. Emergent Telecommunication Channels

The technology analysis established that, based on the best secondary research currently available, the six emergent channels selected for study here are technically feasible now and will likely become economically viable within

a ten-year time frame. These configurations include the teleconference, videoconference, videophone, cable television, cable TV polling, and information retrieval.

Sketches of the emergent channels are shown in Figure Two as used in the interview methodology, and are described below from the point-of-view of the ultimate congressional or constituent user:

Teleconference. Closed circuit television link between congressman/staff in Washington and small or large groups of constituents at district locations (ie. community center, government building, or school). One-way video, but audience voice response capability via telephone is a standard option.

Videoconference. Two-way television link between congressman/staff in Washington and small groups of constituents at a district location (ie. community center, school, district office). Two-way audio-video. Permits simultaneous display of diagrams, charts, and other printed materials.

Videophone. Two-way audio-video phone link between congressman/staff in Washington office and district location (ie. a constituent at home or office, or a congressional staff person at the district office). Permits simultaneous display of textual and graphical material, and possible computer interface.

Cablecast television. One-way television link between congressman/staff and individual homes of constituents in district or subdivision thereof (ie. neighborhood, school district, or precinct). Distribution of programming is by local cable television. Origination may be live or videotaped either in Washington (with possible satellite/microwave interconnection) or at the cable system studio in or near the district.

Cable TV with polling. One-way cable television link, as above, but with added capability for constituents to respond to programming via a set of buttons or small keyboard. Permits preference or opinion polling of constituents by the congressman/staff, or vice versa.

Cable TV with information retrieval. Cable television with one-way audio-video link and provision for return digital response, as above, but with added capability for constituents to retrieve information on public issues, legislation, research studies, bill status, voting records, and so forth.

As intended, these six configurations are representative of important emergent channel characteristics and offer the prospect of new alternatives

Figure Two. Sketches of Future Congressional-Constituent Telecommunication Potential

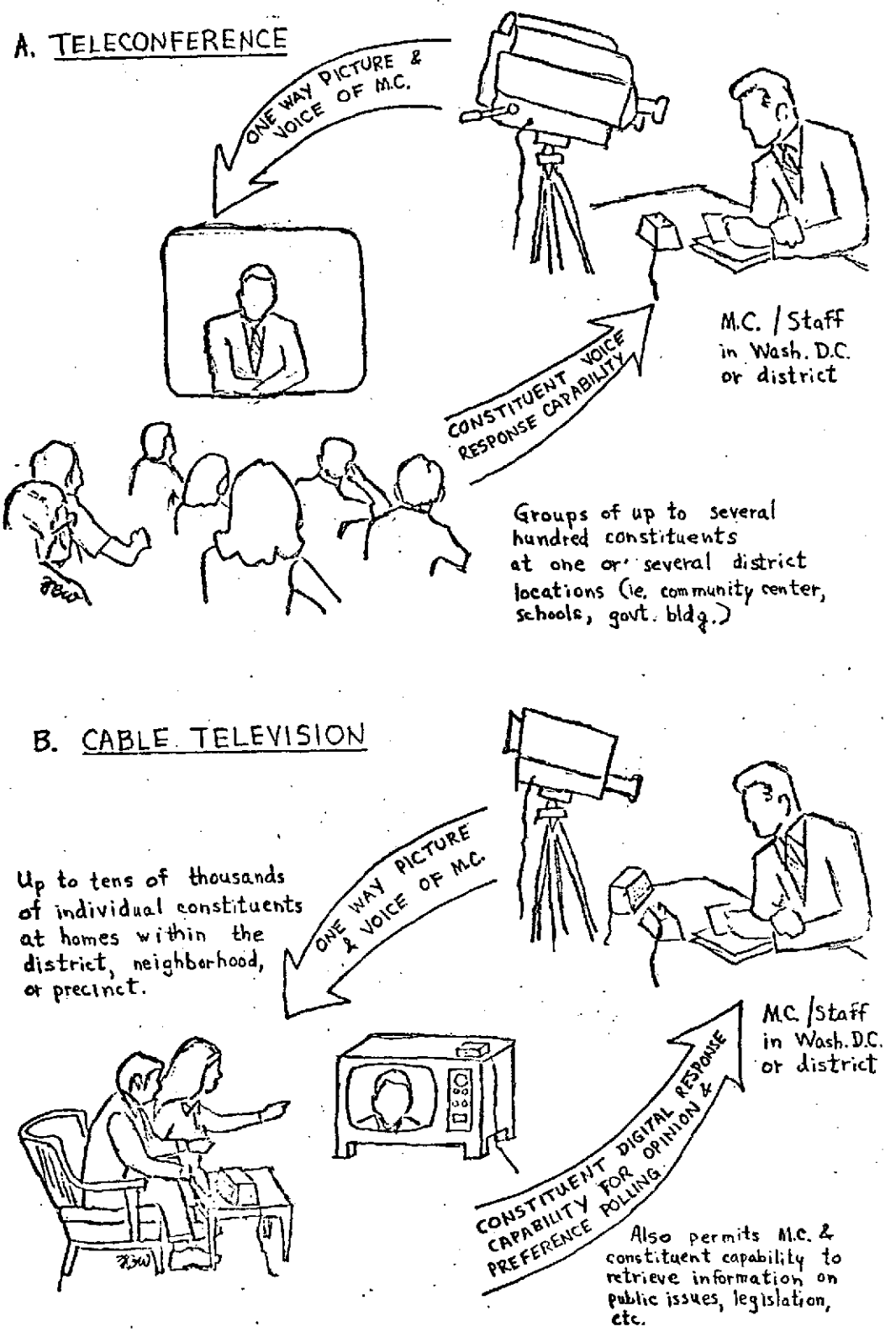
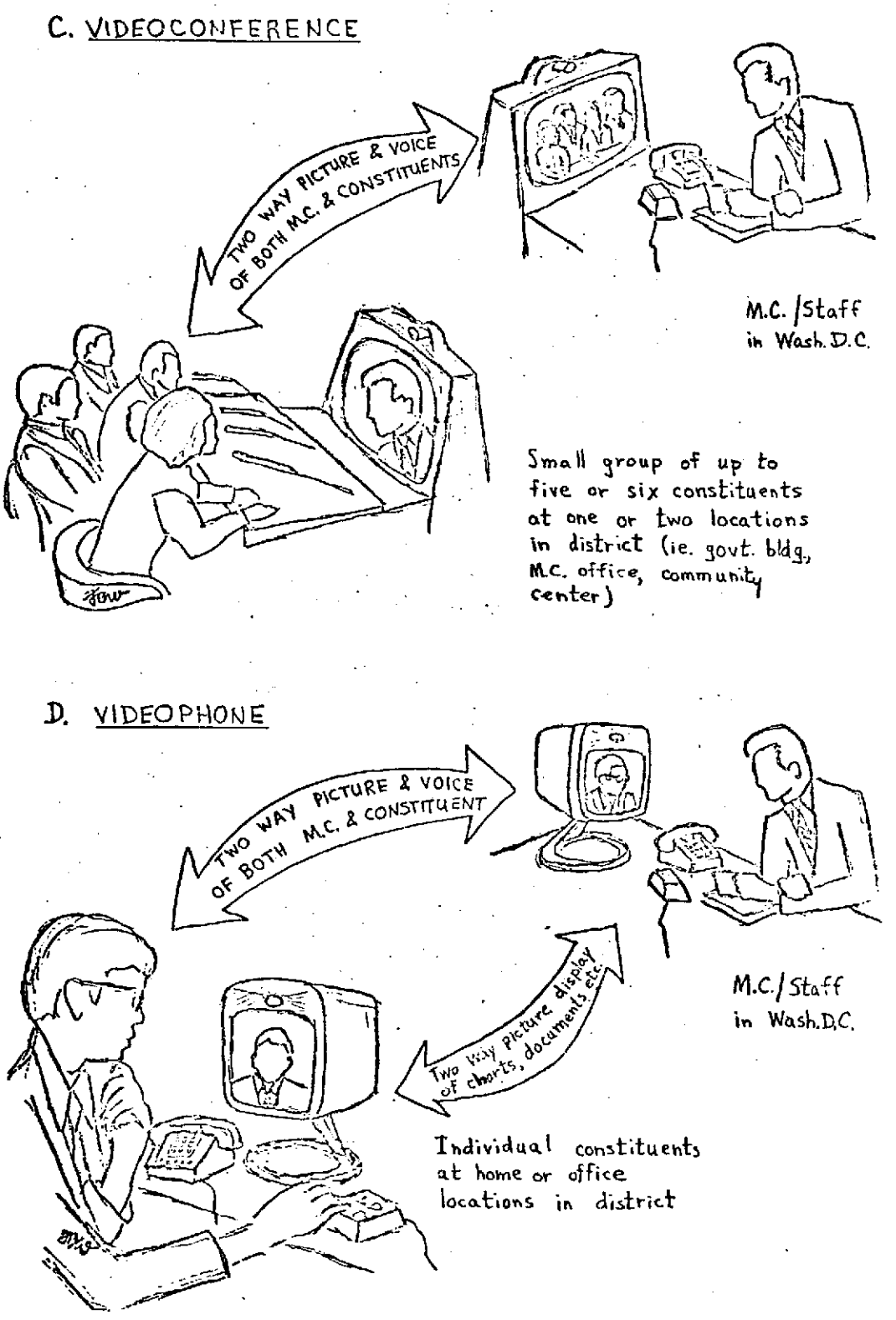


Figure Two. Continued



for (1) two-way audio-visual telecommunication at the one person-to-one, one-to-few, and few-to-few levels (videophone and videoconference), (2) one-way audio-visual telecommunication at the one-to-few and one-to-many levels with digital or audio response capability (teleconference and broadband cable television), and (3) retrieval and teleprocessing of stored or real-time information with multi-dimensional input/output capability (broadband cable television including cable TV polling and information retrieval).

While recognizing that the actual rates of development and penetration will vary by use and location, and depend in part on uncertain regulatory, institutional, and political factors, this research proceeded on the assumption that the specified emergent channels are likely to become available for potential use in the congressional-constituent communication process within ten years.

C. Potential Role for Emergent Telecommunications

1. Awareness of emergent channels. The level of congressional awareness and understanding of the emergent channel configurations was higher than initially anticipated. In discussing the teleconference and videoconference, congressmen and staff evidenced considerable awareness and understanding by frequent reference to related but already available constituent communication channels, including principally the speakerphone and conferencephone, with the television or radio talk show, closed circuit television, and the videotaped interview also receiving some mention.

Congressional awareness of cable television appeared to be based more on a general familiarity with broadcast television than specifically with cable, which in the most basic sense simply provides additional television channels at lower cost. Likewise, while only a few respondents made direct reference to

the AT&T Picturephone, the most publicized videophone in the United States, it was clear that congressman and staff easily grasped the basic concept. All offices of course make extensive use of the standard audio telephone, which the videophone extends into the visual dimension. However, most respondents did not grasp the more sophisticated uses of the videophone, such as for graphics display and information retrieval.

Congressman and staff had little difficulty understanding the basic idea of polling constituents via cable television sets in the home. The level of general awareness was high because many use written polls themselves and almost all are familiar with the use of professional public opinion polls.

Finally, congressional awareness and understanding of information retrieval appeared to be significantly enhanced by recent activities of the House Information Systems office and earlier studies carried out by what was then known as the Working Group on Automatic Data Processing for the House.[23] While discussing the potential of information retrieval for constituent communication, many respondents made specific reference to HIS, as well as to the community information center concept, computerized mailing, the Republican National Committee's computer system, plus miscellaneous references to computers for Congress.

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[23]For a discussion of the current status of HIS, see n. 30. On the earlier activities of the Working Group, see U.S., Congress, House, Committee on House Administration, First Progress Report of the Special Subcommittee on Electrical and Mechanical Office Equipment, 91st Congress, 1st Session, prepared by the Working Group on Automatic Data Processing for the House (Washington, D.C.: Government Printing Office, October 1969); Second Progress Report, 91st Congress, 2nd Session, October 1970; and Special Report on a Computerized Addressing and Mailing System for the House, 91st Congress, 2nd Session, December 1970. See generally Robert L. Chartrand, "Redimensioning Congressional Information Support," Jurimetrics 11 (June 1971): 165-178; and Bruce R. Hopkins, "Congressional Reform: Toward A Modern Congress," Notre Dame Lawyer 47 (February 1972): esp. 452-59.

2. Perceptions of overall potential usefulness. Analysis of the interview data on relative potential usefulness of the emergent channels--summarized in Figure Three--indicated that, as a group, the congressmen perceive cable television and information retrieval as the most useful configurations. The videoconference and teleconference rank closely behind. The videophone and cable TV polling are viewed as least useful.

By comparison, the senior staff (primarily administrative assistants) perceive information retrieval as clearly the most useful configuration. Cable television, teleconference, and videoconference rank lower but are still of significant perceived usefulness. Finally, as with the members, cable TV polling and the videophone rank as least useful.

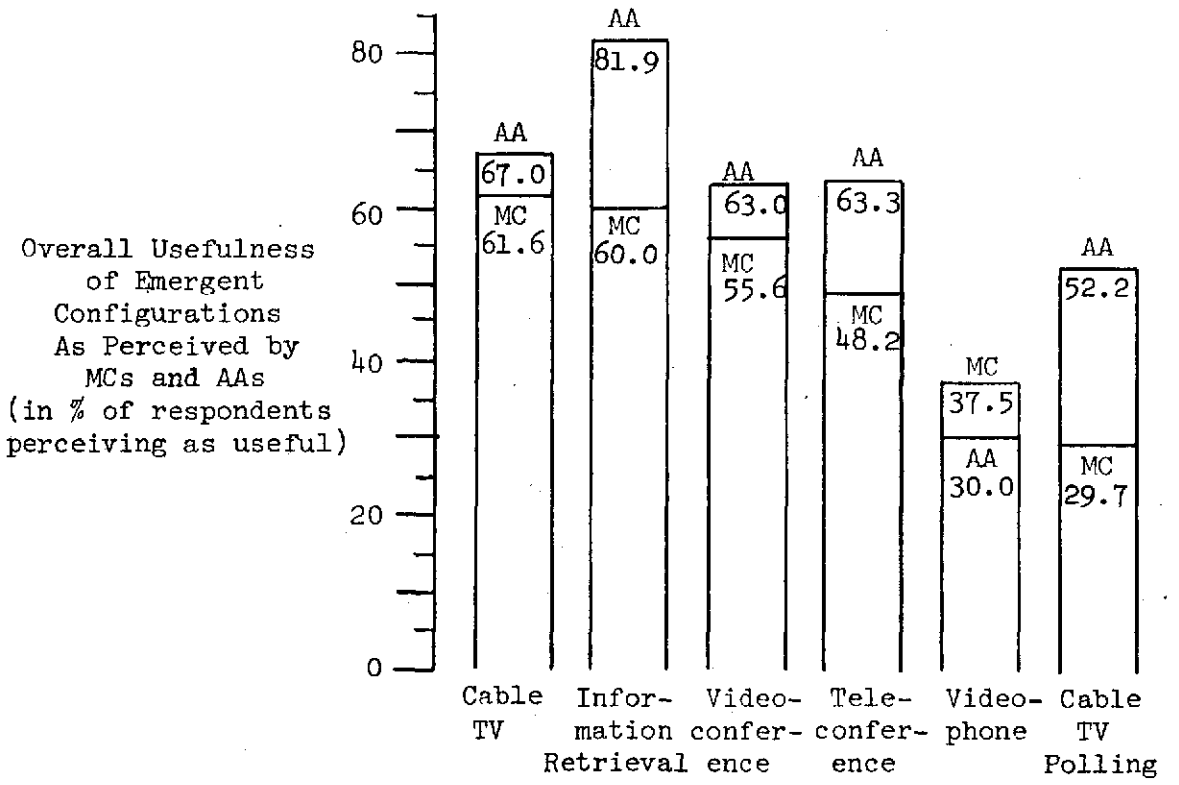
While these rankings of relative overall usefulness are similar for both congressmen and staff, the actual data reveal greater differences. First, except for the videophone, the staff as a group perceive the emergent configurations as potentially more useful than do the congressmen. The greatest discrepancies are for information retrieval, which 81.9% of the AAs as against 60% of the members perceive as useful, and for cable TV polling, which 52.5% of the AAs as compared with 29.7% of the congressmen view as useful.

Further evidence of these differences is revealed by the percent agreement scores for the member-AA pairs. Agreement by congressmen and staff from the same office is quite good on the usefulness of cable television, videoconference, and teleconference. But for cable TV polling and videophone, agreement is only fair. And for information retrieval, agreement is little better than fifty percent. However, regardless of some disagreement, the emergent channels--with the exception of the videophone and cable TV polling--are viewed as potentially useful by a significant sample proportion.

Figure Three. Overall Usefulness of Emergent Telecommunication Configurations As Perceived by Congressmen and Staff

Emergent Telecommunications Configuration	Overall Usefulness of Emergent Configurations						Percent Agreement for MC-AA Pairs
	As Perceived by MCs			As Perceived by AAs			
	N	%	R	N	%	R	
Teleconference	14	48.2	4	19	63.3	3	71.5
Cable Television	16	61.6	1	20	67.0	2	83.2
Videoconference	15	55.6	3	17	63.0	4	73.6
Videophone	9	37.5	5	6	30.0	6	63.6
Cable TV Polling	8	29.7	6	12	52.2	5	62.5
Information Retrieval	15	60.0	2	18	81.9	1	53.9

Key: N and % = number and percent of congressmen or staff perceiving an emergent configuration as very useful or useful; R = relative rank of a configuration in overall perceived usefulness.



Source: Interviews with 29 MCs and 33 AAs.

3. Perceptions of advantages and disadvantages. In addition to an indication of overall potential usefulness, the congressional interviews yielded a fairly specific identification of the possible advantages and disadvantages for each emergent channel.

In the case of cable television, the most useful emergent configuration, the potential advantages of reaching more people more effectively apparently outweigh concerns about audience size, access, and cost. For information retrieval, the key benefit is the provision of more timely and relevant information to both congressmen and constituents. This advantage seems to be partially offset by possible limitations stemming from internal House politics, adequacy of current systems, insufficient constituent understanding, and invasions of privacy or abuse of privileged information.

The most important beneficial effects of the videoconference appear to be the potential for increased communication with small groups, improvement over current audio-only systems, and time and energy savings for congressmen and staff. Significant disadvantages include people problems of getting a group together, preference for person-to-person contact, and problems of time, cost, and access.

Perceptions of the teleconference are similar except that, on the positive side, the potential seems greater for increased citizen communication (in this case with larger groups) and improved citizen participation. But on the negative side, concerns about inadequate constituent interest, cost, and losing the personal quality of communication seem to be intensified. This perhaps explains why the teleconference ranks lower than the videoconference in overall perceived usefulness.

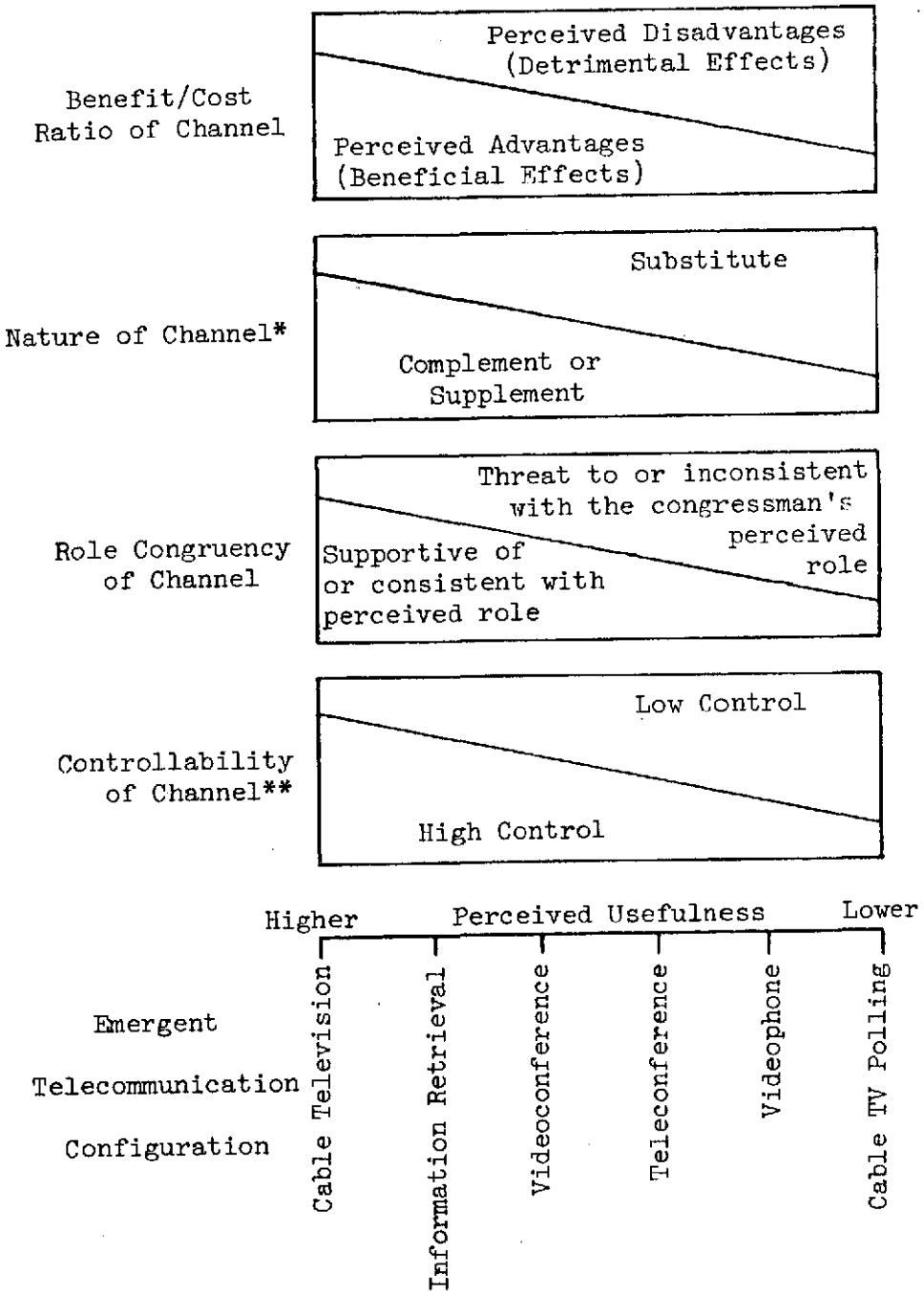
For the two lowest ranking configurations, the possible disadvantages outweigh advantages. In the case of the videophone, the potential for improvement over the standard phone and greater personal contact with constituents is only weakly recognized, while strong doubts prevail about time and cost effectiveness, availability and social acceptability, and in general whether or not the videophone really offers any significant advantage at all.

Perceptions about cable television polling are on balance even less favorable. While such polling is perceived as having the potential to increase citizen participation and feedback, the overriding fear is that cable polling might be subject to abuse or bias and pose a serious threat to the role of the congressman and the nature of the representative function in the American political system. There is considerable sentiment that current systems for opinion polling are adequate, or at least that cable polling is certainly not worth the risks involved.

4. Key dimensions underlying perceptions. Based on the foregoing analysis, there appear to be several key dimensions which underlie congressional perceptions of the potential role for emergent telecommunications. The results suggest that the use of a particular communication channel depends on an overall assessment by the congressman or staff person of the relative costs and benefits (including both objective technical-economic and the much more subjective behavioral-political costs and benefits) when compared against available options.

As illustrated in Figure Four, the overall assessment of emergent telecommunications by congressmen and staff seems to reflect a weighing of perceived advantages (beneficial effects) against perceived disadvantages

Figure Four. Key Dimensions Underlying Congressional Perceptions of the Potential Role for Emergent Telecommunications



*A substitute channel takes the place of, a complementary channel serves to fill out or complete, and a supplementary channel adds to or extends an existing channel.

**Refers to the degree of control over the channel in regard to personal involvement of the congressman and constraints on his time and/or activity.

(detrimental effects or limitations). Key dimensions which provide a continuum for this assessment appear to include the nature of the alternative channel (supplementary, complementary, or substitute), the role congruency of the channel (degree of support for or threat to the congressman's perceived role), and the controllability of the channel (degree of control over personal involvement and constraints on time and/or activity).

Obviously other factors like financial cost, access, possible abuse, and people problems all are important (and figure into the benefit/cost ratio for each channel), but the implication is that the three dimensions identified above (nature, role congruency, and controllability) are of the most fundamental importance. Thus, in this interpretation, cable television has the highest perceived usefulness because its ratio of perceived advantages to disadvantages is most favorable. Cable television is perceived as serving to complement or supplement the current constituent communication system, being congruent with the congressman's perceived role, permitting a high level of control over the member's personal involvement, and keeping constraints on his time and/or activity to a minimum. Likewise for information retrieval.

By contrast, the videophone and cable TV polling have the lowest perceived usefulness because the benefit/cost ratio is least favorable. These configurations are perceived as largely serving to substitute for current and already adequate channels, posing a significant threat to the congressman's perceived role, and offering relatively little control over the member's personal involvement with the resultant likelihood of additional constraints on his time and/or activity. The other emergent configurations--the teleconference and videoconference--fall somewhere in between cable television and cable TV polling, which seem to represent the two ends of the spectrum.

In summary, most members and staff apparently do not seek radical change in or substitutes for existing channels. But because of the importance of constituent communication to congressmen--both as politicians and public officials--and continuing problems relating thereto, many have favorable perceptions of new channels which complement or supplement existing channels and meet the further criteria of role congruency and personal control.

Of course, being perceived as useful is no guarantee in itself that an emergent telecommunications channel will actually be utilized. It is at this point that considerations such as technical feasibility, financial cost, possible abuse, and the wider political and policy implications come into play. This might be considered a second and third-level assessment of benefits and costs. And, to complicate matters further, these and the first-level assessment have many subjective value-laden components which vary from person to person. Not only do congressmen and staff persons differ widely among themselves as to the potential of emergent telecommunications in various contexts, there may well be even greater differences in other segments of society.

5. Emergent channel utilization. Analysis of the relationships between congressional perceptions of emergent channel potential and six member background variables indicated that only seniority is a significant variable. For four of the six channels, members with low seniority (1-2 terms) and high seniority (7+ terms) have much more favorable perceptions than members with medium seniority (3-6 terms). No consistent pattern emerges in the relationships between perceived potential and party or political philosophy, age of the member, and key participant or House leadership status.

Exploration of the relationships between perceptions and eleven district contextual variables indicated that congressmen with more favorable

perceptions tend to come from districts with a mixed degree of urbanization (rather than primarily urban or rural) and a relatively smaller media market size. No consistent pattern emerges for the relationships between perceptions and district geography (region, air distance from Washington, and population density), or the level of electoral competition.

The interview data are in addition interpreted as to channel utilization, that is, which channels are typically used for what types of messages. A comparison between actual utilization of current congressional-constituent communication channels and projected utilization of emergent channels indicates that the emergent channel utilization is likely to be relatively higher for four messages types: "Member/staff seeking constituent views," "Member/staff responding to constituent inquiries," "constituent seeking Member/staff views," and "constituent expressing constituent views."

Overall, the comparison indicates that the emergent channels will (a) provide significantly more opportunity for the exchange of views--on public issues and legislation--between congressmen and constituents, (b) provide relatively more possibility for constituent-initiated communication (although member-initiated channels will still predominate), (c) provide new alternatives for the exchange of views between congressmen and small and large groups, and (d) provide for the first time a means for the provision of public, political, and legislative information in digital and/or visual form to constituents on a widespread basis.

III. SUMMARY OF RESEARCH IMPLICATIONS AND CONCLUSIONS

A. Implications for Further Study

One of the important objectives of this exploratory research was to generate information which can be used as a basis for further inquiry and generally to identify new lines of investigation. Of course, any such endeavor reflects a basic value judgment that the area merits additional attention. Without question, research priorities should also include such areas as congressional organization and procedure, the committee and seniority systems, separation of powers and executive oversight, the election process and campaign finance, and congressional information and analytical support.

Any further research on emergent telecommunications for the House can logically move in one of two directions. If the results of this exploratory study are felt to need further confirmation, then a more definitive study based on a larger and probably random sample, or even a census, of the House membership seems justified. The key questions and dimensions identified in the present research can serve as the basis for development of the more refined research instruments needed for any additional effort.

Or, if the exploratory results are considered to be reasonably satisfactory, the follow-on research might be a pilot test or demonstration project with a judgmentally representative group of congressmen and staff, perhaps even the same sample. Such a pilot test could provide participants with an opportunity to actually experience and "get the feel of" the emergent telecommunications, rather than just react to pictures and sketches.

These experimental results would presumably have greater validity than the exploratory results, and at the minimum provide some basis for a fairly definitive confirmation or refutation. But in order to be fully realistic, such a project would logically have to include constituents. And this raises political and policy considerations which lead some to suggest that pilot projects might better be organized from the ground up (that is, by the constituents themselves).

This line of inquiry could also be extended to the Senate and to the institutional level of Congress, both of which received only a passing glance. For the Senate, very preliminary results in this study based on interviews with senior staff in ten Senate offices did seem to be generally consistent with the findings for the House. Overall usefulness was perceived as quite high for cable television, information retrieval, videoconference, and teleconference. In sharp contrast, overall perceived usefulness was very low for cable TV polling and the videophone, as was the case with the House perceptions. Preliminary results at the institutional level are discussed in the next section.

But the implications for further research clearly go beyond the Congress itself, the legislative branch of the federal government. The congressional-constituent focus of this study is really a subset of the more general governmental-citizen communication process which occurs on the state, metropolitan, and local levels as well as the federal level; and which involves the administrative, executive, and judicial branches of government as well as the legislative.

A productive project for the future might be to test the applicability of both the research methodology and the substantive results of this study to

other branches and levels of government.[24] In such future research, more attention should be given to the effects of alternative communication systems from the perspective of the people and the polity,[25] and, to the extent possible, from the viewpoint of general systems theory and cybernetics.[26]

An effort should be made to interpret the data and analysis of the present exploratory study in terms of possible advantages and disadvantages (beneficial and detrimental effects) of alternative communication systems on at least four levels of society and along fifteen specific dimensions: the time budget, financial budget, communication channels, information sources, political power, and political security of the congressman; the political information, competence, and participation of the constituency; the political information, effectiveness, and power of Congress as an institution; and political feedback, opportunity, and change in the larger socio-political system.

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[24]The role of the executive branch of the Federal Government in regard to emergent telecommunications was the subject of recently completed hearings held by U.S., Congress, House, Committee on Government Operations, Subcommittee on Foreign Operations and Government Information, Federal Information Systems and Plans--Federal Use and Development of Advanced Information Technology, Parts I and II, 93rd Congress, 1st Session (Washington, D.C.: Government Printing Office, 1973); Part III, 93rd Congress, 2nd Session, is forthcoming. Also see Clay T. Whitehead, "Government Communications Planning Program," Circular No. 12, Office of Telecommunications Policy, Executive Office of the President, Washington, D.C., October 12, 1973, and Report of the Interagency Audio-Visual Study Group, February 11, 1974.

[25]Several pilot studies are currently in progress on citizen and community use of emergent telecommunications. See Amitai Etzioni, "Minerva: An Electronic Town Hall," Policy Sciences 3 (December 1972): 457-74; Thomas B. Sheridan, "Progress Report of the MIT Community Dialogue Project," mimeographed, Cambridge, Ma., July 1973; and Stuart A. Umpleby, "Is Greater Participation in Planning Possible and Desireable?" Technological Forecasting and Social Change 4 (1972): 61-76. For background on citizen participation, see Sidney Verba and Norman Nie, Participation in America: Political Democracy (New York: Harper and Row, 1972).

[26]See, for example, James G. Miller, "Living Systems: The Organization," Behavioral Science 17 (January 1972), and Frederick Bernard Wood, Communication Theory in the Cause of Man 1 and 2 (1971, 1972) for further discussion.

B. Implications for Institutional Use[27]

Congress of course exists as an institution--with two houses, several caucuses and organizing groups, dozens of committees, and literally scores of subcommittees--as well as a collection of 535 individual congressmen. The inherent difficulties of covering a diverse and complex institution like Congress, coupled with the technical and economic limitations of the existing mass electronic media, in the past have limited media coverage to a relatively small portion of total congressional activity. Several congressmen and staff in this study believe that limited coverage has contributed to an incomplete, unrealistic, and perhaps even innaccurate public understanding of Congress as an institution, and has weakened the role of Congress relative to other branches of government.

Emergent telecommunications offer the prospect of additional channels at lower cost and with greater flexibility, which will make it possible to carry congressional activity to an extent simply not feasible over broadcast channels. For example, through the use of satellite and microwave interconnected educational and cable television systems, committee and subcommittee hearings and floor activity in both the House and Senate could be transmitted on a selected basis via live coverage, videotape, or even videocassette to regional locations around the country. Several possibilities are illustrated in Figure Five.

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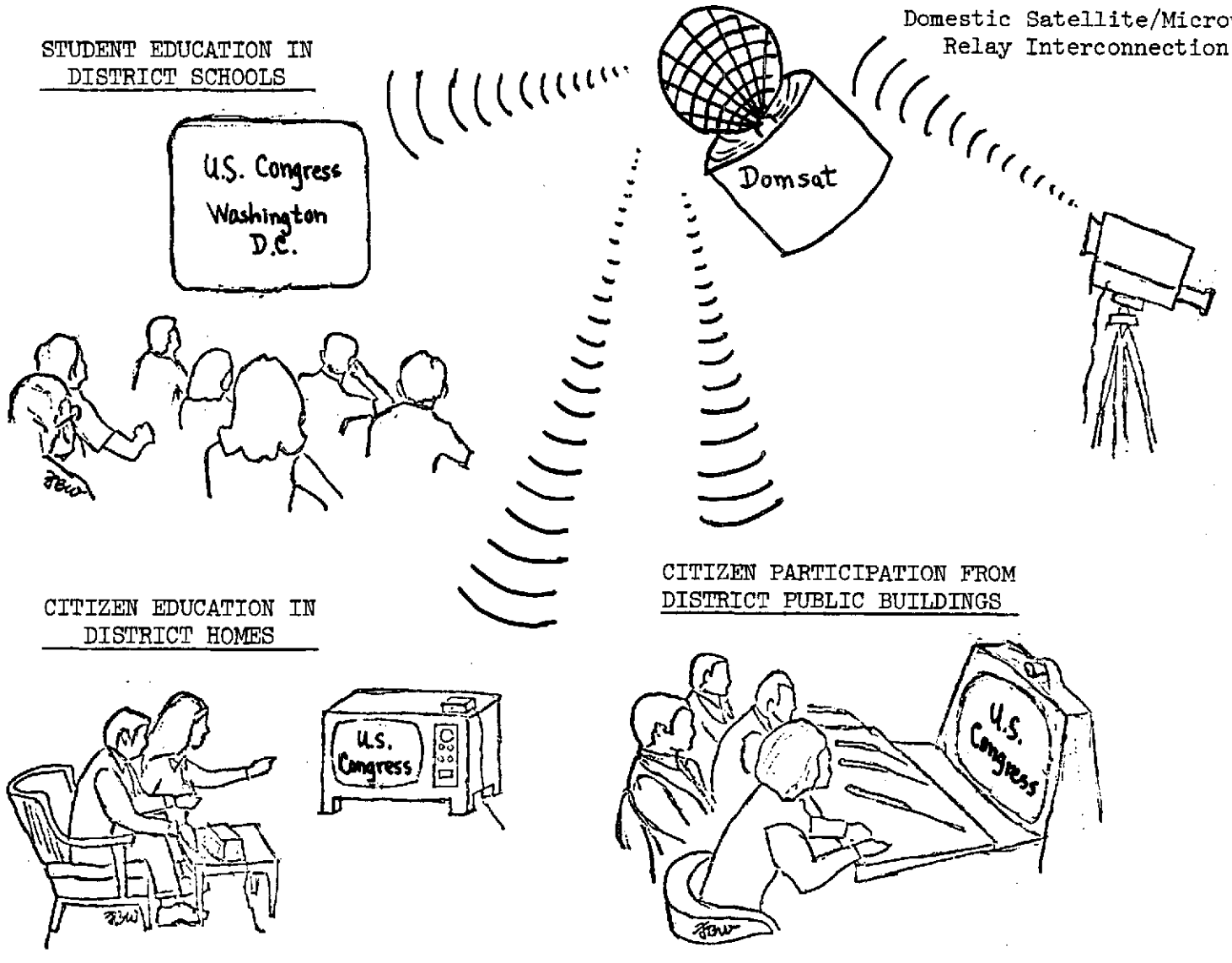
[27]This discussion is based largely on the statement of Frederick Bruce Wood, "Congress on the Cable: The Potential for Citizen Education and Participation," in U.S., Congress, Joint Committee on Congressional Operations, Congress and Mass Communication, Hearings, 93rd Congress, 2nd Session (Washington, D.C.: GPO, forthcoming). In early 1973, the Joint Committee initiated a study on how Congress as an institution can make more effective use of the mass media, and has recently completed hearings on this subject. See also U.S., Congress, Joint Committee, Congress and Mass Communication: An Institutional Perspective, a study conducted by John Stewart under contract with the Congressional Research Service, 93rd Congress, 2nd Session (Washington, D.C.: GPO, 1974).

Figure Five. Sketch of Future Congressional-Constituent Telecommunication Potential at the Institutional Level



Potential applications include student education, citizen education, and citizen participation. Schools might wish to incorporate such material into the academic curriculum, and perhaps thereby introduce a new dimension of reality into high school civics and college political science courses.

Three out of four public schools now have television sets and therefore the capability to receive congressional programming broadcast over nationally interconnected educational or public TV stations. Nine percent of schools have a closed circuit or instructional TV system which could be cable-connected. And about one-fourth of all public schools have videotape and cassette technology.[28] Up to now, use of telecommunications in political coursework has been largely limited to local government activity, but emergent systems could make congressional activity equally accessible.

Students might follow a particular bill through the entire legislative process or focus on the activities of a particular committee or subcommittee. When integrated into the teaching plan and coordinated with written and other instructional materials, the total experience would likely be more than the equivalent of a trip to Washington, with a substantial savings in time, energy, and money.

With such systems, congressional activities could also be transmitted to individual citizens in their homes, either by cable or via public broadcasting, and to libraries or other public buildings where interested citizens might meet on their own, in groups, or perhaps as part of adult education courses. Or the emergent channels could make it possible to hold more frequent

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[28]Polly Carpenter, Cable Television: Uses in Education (Santa Monica, Ca.: RAND Corp., 1973), esp. pp. 43-47; also see Meredith W. Watts and Ronald D. Hedlund, "Fostering Cognitive Learning Among Undergraduate Political Science Students: An Experiment Using the Television Medium," paper prepared for the 1973 APSA Annual Meeting, New Orleans, September 1973.

committee and subcommittee hearings at field locations, so as to enhance citizen access, while at the same time transmitting the proceedings live back to Washington so that interested members of Congress and staff can still follow the activity.

Also on the institutional level, it will soon be possible to economically interconnect the House information system, for example, with district offices and local cable television systems or community information centers. Members, staff, and constituents in both Washington and district locations could then have access to computerized retrieval of legislative information (like bill status, committee reports, and the congressional calendar) on a more timely and relevant basis.

The concept of HIS interconnection received substantial support among the congressmen and staff participating in this study. However, preference seems to be greater for community centers (like in schools or libraries) rather than home availability (via cable television) because of the belief that the center concept would (1) be more feasible financially, (2) deter frivolous use and abuse, (3) require some citizen initiative (and therefore at least a minimum level of interest), (4) provide interpretation and learning opportunities to ensure that the information is understood, and (5) perhaps serve as a telecommunications center as well.

No doubt other potentially useful institutional applications can be identified. But the basic point is that the emergent telecommunication channels might well serve to help better educate citizens--both student and adult--about the role and activities of Congress as an institution and help provide a foundation for more informed and constructive participation in public affairs. This potential should be a priority for further study.

C. Implications for Public Policy

The public policy implications of this or any other research which bears on political communication are of necessity complex, given the multi-faceted nature of the political process itself. The congressman wears several hats: that of a public official working to carry out important legislative and representative responsibilities in the political system; that of an ombudsman for constituents who need help; that of an overseer of federal programs and monitor of their effects on citizens; and that of a politician seeking to ensure re-election.

For most offices in this sample, constituent communication is viewed as essential to the job of the congressman. As the study has documented, members have available to them and make heavy use of a wide range of communication services: (1) postage-free (franked) letters, reports, and questionnaires to constituents; (2) stationery, staff, travel, telephone, telecopier, office space in Washington and the district, and various other services paid for with allowances from the public treasury, many of which are used primarily for constituent communication; and (3) access to low-cost facilities for recording audio and videotape reports to constituents via the mass media.

Nonetheless, despite the availability of these channels, many congressmen and staff emphasize that effective communication is becoming more difficult all the time. Emergent telecommunication is perceived as having the potential for helping congressmen overcome communication problems and better meet their varied public responsibilities. Faced with increasing social complexity and a rising volume and diversity of citizen demands, emergent channels can apparently assist Representatives in establishing more effective feed-forward, feedback, and dialogue with constituents.

On the other hand, some members have expressed concern that use of emergent telecommunications might further entrench incumbents and simply serve as just one more powerful political weapon. They note that the perquisites of office clearly give incumbents built-in advantages. In addition, incumbents generally are more newsworthy than potential challengers, and therefore are likely to get additional media exposure.[29]

In the view of several congressmen and staff in the present study, and of this researcher, a basic goal of emergent public policy should be to realize whatever long-range potential the emergent telecommunications may have for an improved political dialogue. Emergent policy should be concurrently geared toward: (1) assisting congressmen (and other public officials) in better meeting their legitimate communication needs; and (2) achieving fair and balanced access to communication channels for all political participants, including incumbent office-holders, challengers, and representatives of constituent groups and interests (both public and private). One innovative approach to access allocation--the concept of "representative time"--is discussed briefly in Appendix B.

Perhaps the most important potential of emergent telecommunications is to help promote a reaffirmation and positive reinforcement of basic political rights and responsibilities. Telecommunication already plays a major part in

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[29]Incumbents may also have advantages in acquiring party support, issue information, campaign workers, and--perhaps most important when it comes to telecommunications--campaign funds. See, for example, David A. Leuthold, Electioneering in a Democracy: Campaigns for Congress (New York: John Wiley, 1968); Robert J. Huckshorn and Robert C. Spencer, The Politics of Defeat: Campaigning for Congress (Cambridge, Ma.: MIT Press, 1971); David W. Adamany, Campaign Finance in America (North Scituate, Ma.: Duxbury Press, 1972); Common Cause, "Total Campaign Finances in the 1972 Congressional Race," mimeographed report, Washington, D.C., September 13, 1973; and U.S., Congress, Senate, Commerce Committee, Subcommittee on Communications, Federal Election Campaign Act of 1973, Hearings, 93rd Congress, 1st Session, "Report on Political Broadcasting and Cablecasting" (Washington, D.C.: Government Printing Office, 1973).

American political life, and effective exercise of these responsibilities and rights increasingly requires access to telecommunication forums.[30] In the unfolding Communication Era, new channels--like cable television, information retrieval, and the videoconference-- perhaps can provide the opportunity for improved access and help ensure that political communication will not be dominated by any particular individual, group, or organization at any level or in any sector of society.

Of course, as recognized earlier, when and how emergent telecommunications become available depends on a number of uncertain regulatory, institutional, and political factors, even assuming that conditions of technical feasibility and economic viability are met. And public policy on telecommunications can include many dimensions, such as: technical standards; research and development support; controls on ownership and operations; or regulations on rates and usage for commercial, educational, public safety, governmental, personal, or political purposes, among others.[31]

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[30]See, for example, Bernard Rubin, Political Television (Belmont, Ca.: Wadsworth, 1967); Robert MacNeil, The People Machine: The Influence of Television on American Politics (New York: Harper and Row, 1968); Herbert E. Alexander, "Communication and Politics: The Media and the Message," Duke Journal of Law and Contemporary Problems 34 (Spring 1969): 255-277; Harold A. Mendelsohn and Irving Crespi, Polls, Television and the New Politics (Scranton, Pa.: Chandler, 1970); Newton N. Minow, John Bartlow Martin, and Lee M. Mitchell, Presidential Television (New York: Basic, 1973); and Jerome A. Barron, Freedom of the Press for Whom? The Right of Access to the Mass Media (Bloomington, Ind.: Indiana University Press, 1973).

[31]For discussion of public policy on cable television, see the Sloan Commission on Cable Communications, On the Cable: The Television of Abundance (New York: McGraw-Hill, 1971); Martin H. Seiden, Cable Television U.S.A.: An Analysis of Governmental Policy (New York: Praeger, 1972); Steven R. Rivkin, Cable Television: A Guide to Federal Regulations (Santa Monica, Ca.: RAND Corp., March 1973); and U.S., Cabinet Committee on Cable Communications, Report to the President (Washington, D.C.: Office of Telecommunications Policy, Executive Office of the President, 1974).

For the future, public policy will most likely have to be tailored to the characteristics and potential applications of specific emergent telecommunication channels in order to ensure that basic rights are reinforced, that the potential advantages or beneficial effects are maximized, and that the possible disadvantages or detrimental effects are minimized. Further research along the lines suggested earlier will be of fundamental importance to the development of such public policy on emergent telecommunications.

C. In Conclusion: The Prospects for Emergent Telecommunication

While the benefits and costs of using emergent telecommunications to address problems of congressional-constituent communication cannot yet be predicted with complete confidence, this exploratory assessment does provide a clear picture of the range of possibilities from the perspective of the congressman.

Three of the emergent channels--cable television, information retrieval, and the videoconference--are perceived by more than half of the congressmen and staff in this sample as being potentially useful for constituent communication. Most frequently cited advantages are the potential to reach more people more effectively, significantly improve upon currently available channels, save time and energy of members and staff, and increase the level and quality of citizen participation and feedback. These channels are viewed as offering citizens improved means for learning about the Congress, acquiring more relevant information about the legislative process and specific issues, and communicating views and opinions to their congressmen on a more timely and informed basis.

The interview survey also identified several possible disadvantages or problems in using emergent telecommunications--especially for cable TV polling and the videophone. Mentioned most often are the possibility of: abuse and

overuse (How can we ensure unbiased use, protection from information overload, privacy of privileged communication, and fair and balanced access?); people problems (Is there adequate constituent understanding and interest?); insufficient need (Do the emergent systems really offer a significant and needed improvement over current systems?); high cost (Will the emergent channels be cost-effective relative to existing channels and other competing priorities for use of funds?); reduction in person-to-person contact (Will the human dimensions of politics be further eroded?); excessive time consumption (Can the emergent channels actually help members and staff use their time and energy more efficiently?); limited acceptance (Are these channels consistent with the role and responsibilities of congressmen in the American political system; is the public ready to accept emergent channels?); and limited availability (When, if ever, will these channels become a reality?).

Such an assessment has not heretofore been made in any systematic and scientific way, primarily because of (1) the lack of the requisite emergent telecommunication channels within a reasonable feasibility horizon, (2) inadequate familiarity with relevant concepts and technology on the part of members of Congress, and (3) uncertain and/or undesirable political power consequences at least in the eyes of researchers.[32]

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[32]See Kenneth Janda, "Future Improvements in Congressional Information Support," in Information Support, Program Budgeting and the Congress, ed. Robert L. Chartrand, Kenneth Janda, and Michael Hugo (New York: Spartan, 1968), pp. 47, 94; Janda, "Information Systems for Congress," in de Grazia, The First Branch, pp. 441-443; Saloma, New Politics, pp. 177, 230-231; Davidson, Congressional Reform, pp. 121, 166-167; and Frank Ryan, "Information Systems Support for the U.S. House of Representatives," in U.S., Congress, House, Select Committee on Committees, Working Papers on House Committee Organization and Operation, 93rd Congress, 1st Session (Washington, D.C.: Government Printing Office, June 1973).

As for (1), the feasibility horizon of several emergent telecommunication channels is now close enough, as identified through the technology analysis, to justify serious research on potential applications for congressional-constituent communication. With regard to (2), the familiarity of members of Congress with concepts and technology relevant to the potential use of emergent telecommunications has increased markedly in recent years, due in part to developments in several areas of congressional communication and information support, as documented through the survey interviewing.[33]

Finally, in the area of (3), based on the present study, the judgment of this researcher is that the political power consequences of such applications can now be identified and, if used as a basis for public education and appropriate public policy decisions, the potential of the emergent channels for serving the public interest and improving democratic political processes can be realized.

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[33]While this research focused on external communication and information systems, the internal use of such systems--broadly defined--is under study and/or development by the Congressional Research Service, General Accounting Office, Office of Technology Assessment, House Select Committee on Committees, Senate Subcommittee on Computer Services (of the Senate Rules and Administration Committee), and Joint Study Committee on Budget Control, as well as by the House Information Systems Office (of the House Administration Committee) and the Joint Committee on Congressional Operations which were mentioned earlier. See, for example, U.S., Congress, Joint Committee on Congressional Operations, Improving Fiscal and Budgetary Information for the Congress, House Report No. 92-1337, 92nd Congress, 2nd Session (Washington, D.C.: GPO, 1972), and Summary of Proceedings and Debate: A Pilot Study, Senate Report No. 93-294, 93rd Congress, 1st Session (Washington, D.C.: GPO, 1973); statements of Robert L. Chartrand, Kenneth W. Hunter, and Frank Ryan in U.S., Congress House, Select Committee, Working Papers; U.S., Congress, House, Committee on Science and Astronautics, Office of Technology Assessment: Background and Status, report prepared by the Congressional Research Service, Science Policy Division, 93rd Congress, 1st Session (Washington, D.C.: GPO, August 1973); John S. Saloma, "The Quiet Revolution: The Development of Information Technology in the U.S. Congress," a paper prepared for the APSA Study of Congress Conference, Washington, D.C., October 1973; and U.S., Congress, House, Select Committee on Committees, Committee Structure and Procedures of the House, working draft, 93rd Congress, 1st Session (Washington, D.C.: GPO, December 1973).

APPENDIX A

SUMMARY OF METHODOLOGICAL RESEARCH RESULTS

The methodological objective of this research was to develop an appropriate and effective exploratory approach for conducting research on emergent congressional-constituent communication systems. The results are summarized below.

A. Exploratory Methodology

The study utilized an exploratory or heuristic approach which sought not to test hypotheses but instead to systematically gather information about the real-world situation being investigated, discover significant variables, and generate ideas and exploratory findings for further research.[34] This approach employed a number of specific methodologies: interdisciplinary systems model-building (which served to integrate existing knowledge and conceptually guide all subsequent phases of the study); technology analysis

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[34]The literature on behavioral and systems research makes clear the distinction between exploratory or heuristic and hypothesis-testing research. See, for example, Richard F. Ericson, "Glossary for Management Cybernetics," July 1970, George Washington University, p. 13; Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, 1964), p. 388; W. Charles Redding, "Research Setting: Field Studies," in Methods of Research in Communication, ed. Philip Emmert and William D. Brooks (Boston: Houghton-Mifflin, 1970), pp. 116-17; William G. Scott and Terence R. Mitchell, Organization Theory: A Structural and Behavioral Analysis (Homewood, Ill.: Irwin-Dorsey, 1972), p. 321; Robert Boguslaw, The New Utopians: A Study of System Design and Social Change (Englewood Cliffs, N.J.: Prentice-Hall, 1965), p. 13; Van Court Hare, Systems Analysis: A Diagnostic Approach (New York: Harcourt, Brace and World, 1967), p. 17; Stafford Beer, Decision and Control: The Meaning of Operational Research and Management Cybernetics (New York: John Wiley, 1966), pp. 422-23; and Beer, Brain of the Firm: A Development in Management Cybernetics (New York: Herder and Herder, 1972), pp. 68-71.

(which identified and analyzed emergent telecommunication channels likely to be feasible within a ten-year time frame); a sample survey (which applied a stratified judgmental procedure to select congressional respondents); and semi-structured interviews (which utilized instruments with a pictorial and worksheet format to survey the attitudes and perceptions of congressmen and senior staff).

B. Model-Building Methodology

A congressional-constituent communication systems model played an important role throughout the study. The objectives of this model were to (1) draw on relevant information in any applicable scientific discipline or field of study and thus serve as a framework for the research and literature review, (2) relate such information together in a meaningful way so as to facilitate conceptualization and understanding of the communication system, (3) help identify key variables and relationships, and (4) serve as a conceptual guide for subsequent phases of the research.[35]

The basic structure of the model derived primarily from these sources of communication theory and research: Claude E. Shannon and Warren Weaver (telecommunications engineering and mathematics), Harold D. Lasswell and Richard L. Merritt (political science), and Irving L. Janis and Carl Hovland (social psychology).[36] The key model variables were specified as follows:

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[35]This conception of models and model-building is based primarily on Gordon L. Lippitt, Visualizing Change (Washington, D.C.: NTL Learning Resources Corp., 1973); Stafford Beer, Decision and Control, esp. chaps. 6 and 7, and Brain of the Firm, esp. chap. 6; Robert T. Golembiewski, William A. Welsh, and William J. Grotty, A Methodological Primer for Political Scientists (Chicago: Rand McNally, 1969), p. 427; and J. F. Schouten, "Behavior, Physiology and Models," in Communication: Concepts and Perspectives, ed. Lee Thayer (Washington, D.C.: Spartan, 1967), p. 181.

[36]Claude E. Shannon, "The Mathematical Theory of Communication," originally published in Bell System Technical Journal, July and October,

1. Background variables--the personal and political background characteristics and role predispositions of the communicators.

2. Contextual variables--the situational surroundings and political context of the communication.

3. Communication process variables--the range of variables within the communication process (WHY WHO says WHAT through which CHANNEL to WHOM with WHAT EFFECT variables). Three subsets of process variables are:

   a. Communication input variables--the motivation, sender, and message portion (the WHY WHO says WHAT) of the communication process.

   b. Communication channel variables--the media (or through which CHANNEL) stage of the process.

   c. Communication output variables--the receiver and impact stages (to WHOM with WHAT EFFECT) of the process.

4. Technology variables--the various configurations of current and emergent telecommunications technology.

5. Feedback variables--the loops or channels by which the communication output is fed back--directly or indirectly--to the input.[37]

In sum this model was based on the "systems theory of communication" --combining concepts from the mathematical, political, and social-psychological theories of communication. This approach is consistent with the view of Lee Thayer that "the smallest logically indivisible unit of analysis for the

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1948, and reprinted in Shannon and Warren Weaver, The Mathematical Theory of Communication (Urbana, Ill.: University of Illinois Press, 1949), pp. 4-5, 34; Harold D. Lasswell, "The Structure and Function of Communication in Society," originally published in The Communication of Ideas, ed. Lyman Bryson (New York: Institute for Religious Studies, 1948), and reprinted in The Process and Effects of Mass Communication, ed. Wilbur L. Schramm and Donald F. Roberts (Urbana, Ill.: University of Illinois Press, 1971), pp. 84-99; Lasswell, Politics: Who Gets What, When, How (New York: McGraw-Hill, 1936); Irving L. Janis and Carl I. Hovland, "An Overview of Persuasibility Research," originally published in Janis and Hovland, Personality and Persuasibility (New Haven: Yale University Press, 1959), and reprinted in Foundations of Communication Theory, ed. Kenneth K. Sereno and C. David Mortensen (New York: Harper and Row, 1970), pp. 222-33; and Richard L. Merritt, "The Representational Model in Cross-National Analysis," in Mathematical Applications in Political Science, ed. Joseph L. Bernd (Dallas: Southern Methodist University Press, 1966), pp. 44-45.

[37]See Karl W. Deutsch, The Nerves of Government: Models of Political Communication and Control (New York: Free Press, 1963); and David Easton, A Systems Analysis of Political Life (New York: John Wiley, 1965).

systematic and scientific study of communication. . . is the communication system."[38] The communication system in this research is the process by which a sender with certain purposes and predispositions transmits messages in a given context through selected channels to a receiver with certain effects.

As examples of how the complete model was developed using the general structure and key variables, the message and channel stages are described in some detail below. An accurate profile of the WHAT (or message) of congressional-constituent communication was drawn up by combining existing research results from Donald Tacheron and Morris Udall's handbook for freshman House members, John Saloma's congressional office workload survey, Kenneth Olson's analysis of congressional correspondence and casework, and David Kovenock's communication audit.[39] This profile of messages included:

1. General social issues--seeking or receiving constituent (or member) views, informing constituent (or member) of own views and action taken, seeking or receiving or providing information.

2. Specific legislation--same as above.

3. Casework and intervention--seeking or receiving requests for assistance, informing constituent (or member) of action taken, working with constituent (or member) to solve the problem.

4. District projects--same as above.

5. Employment, patronage, and miscellaneous--same as above.

6. Political campaigning and procedure--seeking or receiving support, assistance, and information from constituent (or member).

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[38]Lee Thayer, "Communication Systems," in The Relevance of General Systems Theory, ed. Ervin Laszlo (New York: Braziller, 1972), p. 110, underlining added.

[39]Tacheron and Udall, Job of the Congressman; findings of Saloma's survey are excerpted as "The Congressional Office Workload" on pp. 303-311; see generally Saloma, New Politics; Olson, "The Service Function;" and David Kovenock, "Influence in the U.S. House of Representatives: Some Preliminary Statistical Snapshots," paper prepared for the 1967 APSA Annual Meeting, Chicago, September 1967.

Likewise, the broadly focused Saloma research--combined with that of Dorothy Cronheim, Tacheron-Udall, Olson, Charles Clapp, Ralph Nader, and John Bibby and Roger Davidson--provided the basis for a comprehensive qualitative profile of the kinds of CHANNELS (or media) used for constituent communication:[40]

1. Face-to-face channels--personal conversation, small group meeting, and large group meeting in Washington or the district.

2. Written or print channels--personal letter via the Washington or district office; robotyped letter; survey or questionnaire; report or newsletter; and signed newspaper column.

3. News media channels--press release to district news media; district newspaper coverage; district radio news coverage; district television news coverage.

4. Individual telecommunication channels--telephone call via the Washington or district office; telegraph message; "hotline" telephone call via inward WATS; and conference or speaker phone call.

5. Mass telecommunication channels--live or taped broadcast radio, broadcast television, and cablecast television report or program; radio and television "talk show" or discussion, with or without audience response.

C. Technology Analysis Methodology

Turning to the technology analysis, the intent here was not to conduct a comprehensive technical-economic evaluation of all possible channels. Instead it was to identify those telecommunication technologies--and the associated channel configurations--which are most likely to have potential for congressional-constituent communication.

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[40]Saloma, "Workload;" Dorothy Hartt Cronheim, Congressmen and Their Communication Practices, doctoral dissertation in political science, Ohio State University, Columbus, 1957; Clapp, The Congressman; Tacheron and Udall, Job of the Congressman; Olson, "The Service Function;" Ralph Nader, Congress Project: Citizen's Look At Congress (Washington, D.C.: Grossman, 1972), individual profiles on incumbent congressmen running for re-election in 1972, about 6% of the 633 survey questions related to constituent communication; and John F. Bibby and Roger Davidson, On Capitol Hill: Studies in the Legislative Process (New York: Holt, Rinehart and Winston, 1967).

The objective was to identify a very limited and carefully selected number of representative emergent telecommunication channels with emphasis on what the user--the congressman, staff person, or constituent--will see, rather than on the technology itself. Accordingly, the analysis drew substantially from authoritative secondary sources based on telecommunications research already completed in the following areas, among others:[41]

1. Transmission technologies--electromagnetic spectrum, open wire pair, cable, microwave, laser/fiber optics, millimeter waveguide, satellite.

2. Reception technologies--radio, broadcast and cable television, wall size TV screen, videocassette, electronic video recording, holography.

3. Interface technologies--one-way origination: standard or solid-state TV camera, audiotape, videotape, film; two-way origination: telegraph, telephone, touchtone, picturephone, telefacsimile, interactive graphics, interactive television.

4. Teleprocessing technologies--remote access computer, time shared computer, minicomputer, programming language, communication computer, computer utility.

Various individual technologies were combined to create specific kinds of communication channels. Each kind of channel was then classified by communication mode (person-person, person-stored information, person-machine-stored information, person-machine-person, [person-machine]-[person-machine)], and by other channel characteristics such as communication level (one person-

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[41]Some examples are Walter S. Baer, Cable Television: Handbook for Decision-Making (Santa Monica, Ca.: RAND Corp., February 1973); Paul Baran, Potential Market Demand for Two-Way Information Services in the Home (Menlo Park, Ca.: Institute for the Future, December 1970); Edward M. Dickson, The Video Telephone: A New Era in Telecommunications (Ithaca, N.Y.: Cornell University Program on Science, Technology and Society, June 1973); Kas Kalba, ed., "The Cable Fable," special edition of Yale Review of Law and Social Action 2 (Spring 1972); James Martin, Future Developments in Telecommunications (Englewood Cliffs, N.J.: Prentice-Hall, 1971); National Academy of Engineering Committee on Telecommunications, Communications Technology for Urban Improvement (Washington, D.C.: NAE, June 1971); and Stanley Winkler, ed., Computer Communication: Impact and Implications (Washington, D.C.: First International Conference on Computer Communication, October 1972). Channel classification was based in part on Richard L. Meier, "Communications and Social Change," Behavioral Science 1 (January 1956): 43-58, and Noam Lemelshtrich, Design Analysis of A Home Terminal for Two Way Communications (New York: Center for Policy Research, February 1972).

to-one, one-to-few, few-to-few, one-to-many, many-to-one), direction (one-way or two-way), dimension (audio, visual, digital, or hard copy), technical feasibility, and economic viability.

Of course, there are many possible ways in which various transmission, reception, interface, and teleprocessing technologies can be combined to create different telecommunication channels. In fact, some channels could be configured from several different combinations of technology. For the purposes of this research, six specific channel configurations were selected as representative of important emergent channel characteristics: the teleconference, video-conference, videophone, cable TV, cable TV polling, and information retrieval.

A major difficulty, as with the model-building, was to sort out the needed information from the almost overwhelming amount of data. Because of the tight linkages between technical and economic factors, on the one hand, and regulatory, institutional, and political factors on the other, it is easy to get bogged down. To simplify the analysis, the regulatory and other factors were considered to be generally outside the scope of study.

D. Survey Research Methodology

While the survey research methodology followed basically a non-experimental exploratory field study approach using an interview survey of a judgment sample of congressional offices, the actual development was innovative in at least two respects. First, the interdisciplinary systems model-building perspective was used as a framework for construction of specific research questions, design of interview instruments, and structuring of the sample. Second, the principal instruments were designed through an iterative process of pre-testing which resulted in the elimination of the standard interview schedule or guide and adoption of a pictorial and graphic approach.

1. Member interview guide. Pre-testing of the member interview guide with a series of open-ended questions,[42] did not generate satisfactory data and proved especially deficient in establishing interviewee understanding of the emergent telecommunication alternatives. The final and ultimately successful form of the member interview guide was a set of sketches of future congressional-constituent telecommunications potential, as reproduced earlier in Figure Two.

This pictorial approach served to place the research within the frame of reference of the interviewees, without having to waste words and time or use any technological language. The response of congressmen was generally receptive to this interview approach, and seemed to confirm earlier findings that the journalistic or semi-structured approach is most effective for congressional interviewing.[43] Good rapport with members was readily established, and as a result, through a process of dialogue, the yield of useful and candid data was relatively high.

Use of pictures was also intended to help minimize problems of validity which may occur when interviewing about subjects unfamiliar to the interviewee, and problems of response bias reflecting in part the respondent's

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[42]Based on established procedures of interview guide design in, for example, Raymond L. Gorden, Interviewing: Strategy, Techniques, and Tactics (Homewood, Ill.: Dorsey, 1969); and Charles F. Cannel and Robert L. Kahn, "Research Methods: Interviewing," in Handbook of Social Psychology, ed. Gardner Lindzey and Elliot Aronson (Reading, Ma.: Addison-Wesley, 1968), pp. 526-595.

[43]Ralph K. Huitt and Robert L. Peabody, Congress: Two Decades of Analysis (New York: Harper and Row, 1969), pp. 28-34. See also Lewis Anthony Dexter, Elite and Specialized Interviewing (Evanston, Ill.: Northwestern University Press, 1970).

desire to please or perhaps disappoint the researcher.[44] The sketches provided a common focus of discussion, and in many interviews elicited a more or less "gut" response from the members. Congressmen were encouraged to give negative as well as positive reactions to the emergent channels, and to discuss possible problems as well as potential opportunities presented by these channels.

Of course, as with any research on perceptions of potential future use, the results can only be considered tentative. When ultimately faced with the real rather than just projected telecommunication alternatives, actual use may well differ from perceived use. A pilot demonstration or simulation of these future alternatives might be most desirable, although not feasible here. The sketches were designed to provide the next best approximation.

2. Staff interview guide. The member interview guide was also administered to all senior staff persons in the sample, but only after a detailed discussion with each staff person about the congressman's current constituent communication practices. The guide for this first part of the interview developed through several iterations and pre-tests into what is best described as a worksheet. Basically the worksheet provided an extensive list of constituent communication channels, along with various typical types of messages, as identified in the communication systems model-building. Staff persons were not asked to fill out the worksheet but only to use it as a discussion guide.

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[44] See discussion in William F. Mason, Urban Cable Systems (Washington, D.C.: MITRE Corp., May 1972), p. V-12; and testimony by Weston E. Vivian in U.S., Congress, House Committee on Government Operations, Federal Information Systems and Plans, Hearings, before the Subcommittee on Foreign Operations and Government Information, 93rd Congress, 1st Session (Washington, D.C.: Government Printing Office, April 1973), pp. 51-52.

3. Data collection procedure. In selecting the sample of congressional offices (members and senior staff persons) for actual data collection, three factors were considered: definition of the sample, size of the sample, and representativeness of the sample.[45] The population universe included the 435 House offices from the 50 states. In regard to sample size, it was chosen to be concurrently feasible in terms of available resources and adequate in terms of the research objectives. The exploratory nature of this study precluded the necessity for a statistically representative sample, but did require that the sample be judgmentally representative on specified key variables.

The initial sample size selected was 10% of the population universe (43 congressional offices), with an expectation that at least half and perhaps as many as three-quarters of the offices in the sample would participate. The actual participation rate exceeded the most optimistic expectation. Forty of the 43 offices agreed to participate, with only two declining due to lack of time and other priorities (involving House leadership activities) and one selected out for personal reasons.

The type of sampling procedure used in this research is most accurately called a stratified judgmental procedure.[46] The population universe was first

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[45]See Delbert C. Miller, Handbook of Research Design and Social Measurement (New York: David McKay, 1964), p. 46.

[46]See Russell L. Ackoff, The Design of Social Research (Chicago: University of Chicago Press, 1953), pp. 124-25; and William A. Spurr and Charles P. Bonini, Statistical Analysis for Business Decisions (Homewood, Ill.: Irwin, 1967), pp. 343-44. For a recent example of this sampling approach, see U.S. Congress, Senate, Committee on Rules and Administration, Automated Legislative Record Keeping for the Senate, a feasibility study by the Subcommittee on Computer Services, committee print, 92nd Congress, 2nd Session (Washington, D.C.: Government Printing Office, February 1972), pp. 257-65.

stratified three ways: by seniority (1-2 terms of service, 3-6 terms of service, or 7+ terms); by major political party (Democratic or Republican); and by geography (region, air distance from Washington, and population per square mile of the congressional district).

Following this initial stratification, the population cells were sampled on a judgment basis so that the total sample would approximate the population universe as closely as possible in terms of the party, seniority, and geography variables, while at the same time being judgmentally representative in terms of additional variables identified by the communication systems model and technology analysis. These additional variables included: (a) level of political competition in the congressional district (safe or competitive); (b) political orientation of the congressman (liberal, moderate, or conservative); (c) age of the member; (d) socioeconomic nature of the district (degree of urbanization, median income, median education, percent Negro population, percent male white collar, and media market size); (e) key participant status (known interest and/or leadership and/or committee membership in areas relating to the research focus); and (f) House leadership status.

Careful development of the interview instruments, coupled with an effective inside access strategy (using a congressional letter of introduction) and the inherent relevance of the research subject to the job of the congressman, resulted in the participation of 77.5% of the congressmen and 97.5% of the senior staff persons from the final sample of 40 offices.

APPENDIX B

A "REPRESENTATIVE TIME" APPROACH TO ACCESS ALLOCATION[47]

Any approach to the allocation of political access to communication media must be based on a value judgment of some sort, whether implicit or explicit. In the view of several congressmen and staff in the present study, and of this researcher, the basic goal during election campaigns should be to achieve fair and balanced access to communication channels for both incumbent office-holders and challengers. A minimum level of access should be guaranteed to all eligible and qualified candidates in order to achieve a reasonable balance of exposure between the incumbent and challengers, and to increase the flow of information to and dialogue with voters.[48]

To realize this goal with broadcast television, some have proposed the "voters' time" concept which would require television stations to make available specified amounts of time under clearly defined conditions for the purpose of political broadcasts by candidates for the House or Senate.[49]

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[47]This discussion is based largely on Frederick Bruce Wood, "Politics on the Cable: A Cybernetic Approach to Access Allocation," Communication Theory in the Cause of Man 3 (forthcoming).

[48]See the statement of Sig Mickelson, Director, Aspen Institute Project on Politics and the Media, in U.S., Congress, Senate, Committee on Commerce, Subcommittee on Communications, Federal Election Campaign Act of 1973, Hearings, 93rd Congress, 1st Session (Washington, D.C.: GPO, 1973), pp. 104-108.

[49]Voters' time has been proposed for presidential campaigns in The Twentieth Century Fund Commission on Campaign Costs in the Electronic Era, Voters' Time (New York: Twentieth Century Fund, 1969), and in a later Fund study by Minow, Martin, and Mitchell, Presidential Television. Reps. John Anderson and Morris Udall have made a similar proposal for congressional campaigns in U.S., Congress, House, Clean Elections Act of 1973, H.R. 7612, 93rd Congress, 1st Session, Title VI.

While "voters' time" has merit, this approach does not solve the problems inherent in the technical and economic limitations of broadcast TV, and has generated considerable opposition on this basis. In addition, the problems of eligibility, use, and especially allocation have proved difficult to resolve. The emergent telecommunication channels--such as cable television--make it possible to overcome the technical and economic limitations. And cybernetics[50] can help show how cable and other emergent channels could be used so as to improve the political campaign process.

Of course, full equality of access for every candidate, even if possible, might well be harmful. While opportunity for expression and right of access to communication forums are essential to democratic politics, the political communication system must also keep social stability in balance with social change. Unlimited political communication can lead to communication overload, distortion, and stress which in turn could have an adverse effect on the political system itself.

What follows below is an exploratory application of cybernetics for the allocation of cable television access time to congressional candidates so as to achieve an optimal balance between stability and change, incumbents and challengers, the "ins" and the "outs."[51] The idea proposed here is to move

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[50]Defined as the science of communication and control in both human and machine systems; also known as the science of organized social complexity. See, for example, Norbert Wiener, The Human Use of Human Beings: Cybernetics and Society (New York: Doubleday, 1954), and Charles R. Dechert, ed., The Social Impact of Cybernetics (New York: Simon and Schuster, 1966).

[51]The allocation methodology is based on the "modified thermodynamic imperative," a cybernetic hypothesis which suggests that the optimum balance between stability and change (order and freedom) in society can be achieved in part by maximizing the entropy of communication (known as negentropy). For extensive technical discussion, see Frederick Bernard Wood, Communication Theory in the Cause of Man 1 and 2 (1971, 1972).

from the present "equal time" rule,[52] which is clear-cut but tends to result in the provision of little or no time to political candidates and thereby restrict political communication, to the concept of "representative time."

Under a "representative time" provision, eligibility might be defined in terms of those legally qualified candidates who (1) represent a political party whose candidate placed first or second in the previous election, (2) represent a political party recording a specified percentage of the total vote in the previous election, (3) receive a designated level of support in voter opinion polls, or (4) gather a given number of voter signatures as evidence of an acceptable minimum level of support.[53]

Candidates qualifying under these eligibility rules might then be allocated free time according to specified formulas. For example, one-half of the total time available could be alloted on a major-minor-third party proportional basis to assure adequate exposure for candidates of the organized political entities. The other half of the time could be allocated on an individual probability basis to guarantee at least some exposure for independent candidates.

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[52]The "equal time" rule requires that TV stations afford equal broadcasting or cablecasting opportunity to all candidates for any particular public office. That is, the same amount of commercial time must be made available at the same price (or free, if public service time) to all candidates for the same public office. Due largely to technical and economic limitations of broadcast television, broadcast stations generally end up providing relatively little time. For discussion, see generally Minow, Presidential Television; U.S., Senate, Federal Election; and National Association of Broadcasters, Political Broadcast Catechism (Washington, D.C.: NAB, 1972). Statutory authority is Sec. 315 of the Communications Act of 1934, which empowers the Federal Communications Commission to administer the "equal time" provision.

[53]Criteria of eligibility derived from Michael J. Baker, "Constitutional Remedy for the High Cost of Broadcast and Newspaper Advertising in Political Campaigns," California Law Review 60 (September 1972): 1414; and U.S., House, Clean Elections, pp. 27-28.

As illustrated in Figure Six, allocation on a party proportional basis favors the established and majority political interests while allocation on an individual probability basis favors the independent and minority political interests. Thus the total combined allocation is intended to provide an equitable and efficient balance of representation between established-majority and independent-minority political expression and exposure.

In the example of Figure Six, 20 hours is the total "representative time" available over cable origination channels for a particular congressional general election campaign. One-half of the total--10 hours--is allocated among party candidates in direct proportion to each party's percentage of the total vote in the previous general election. Thus, major party candidate A receives five hours based on party A's 50% of the total vote, major party candidate B receives three hours based on a 30% vote, and so forth.[54]

The other 10 hours is allocated among all candidates--both party and independent--according to each individual's weighted probability of support as measured by voter opinion polls or number of voter signatures collected. The effect of the weighting factor is to partially offset the advantage accruing to major party candidates from the proportional allocation.

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[54]Formulas for the Figure Six allocation of cable access time are:
Total "representative time" allocated to each candidate = $T_i = v_i T_v + \bar{p}_i T_p$
where: v_i = percentage vote of candidate's party in last election
$T_v = aT$ = time available for party proportional allocation
where: T = total available cable access time
a = fraction allocated on a party proportional basis = 0.5
$v_i T_v$ = proportional time allocated to each party candidate
p_i = candidate's support probability as measured by polls or signatures
$T_p = (1-a)T$ = time available for weighted probability allocation
$\bar{p}_i$ = weighted probability = $\frac{p_i \log(p_i)}{\sum p_i \log(p_i)}$
$\bar{p}_i T_p$ = weighted probability time allocated to each legal candidate

Figure Six. Illustrative Allocation of Cable TV Access Time to Congressional Candidates

Candidate	Party Proportional Allocation		Individual Weighted Probability Allocation				Total Combined Allocation (in hours)
	Percentage Vote**	Hours Allocated	Support Probability*	Weighting Factor	Weighted Probability	Hours Allocated	
A. major party	50	5	0.45	0.518	0.269	2.69	7.69
B. major party	30	3	0.325	0.531	0.275	2.75	5.75
C. third party	15	1.5	0.10	0.332	0.172	1.72	3.22
D. minor party	5	0.5	0.08	0.292	0.151	1.51	2.01
E. independent	0	0	0.03	0.152	0.079	0.79	0.79
F. independent	0	0	0.01	0.066	0.034	0.34	0.34
G. independent	0	0	0.005	0.038	0.020	0.20	0.20
Totals	100.0	10.0	1.000	1.930	1.000	10.00	20.00

**Percentage vote of each candidate's party out of the total vote in the preceding election.

*Support probability measured by voter preference polls or the number of signatures collected by the candidate as a percentage of total registered voters.

Candidate	Party Proportional Allocation (in hours)	Individual Probability Allocation (in hours)	Total Combined Allocation (in hours)
A. major party	5	2.69	7.69
B. major party	3	2.75	5.75
C. third party	1.5	1.72	3.22
D. minor party	0.5	1.51	2.01
E. independent	0	0.79	0.79
F. independent	0	0.34	0.34
G. independent	0	0.20	0.20

Source: See n. 54(text) for allocation formulas; allocation methodology based on Frederick Bernard Wood, "The Use of Cybernetics to Solve An Employee Communication Problem," in Careers and the MBA, ed. Fred B. Wood (Boston: Harvard Business School, 1970), pp. 43-47, and "Allocation of Supplementary Public Exhibit Space By Negentropy of Membership Statistics," Communication Theory in the Cause of Man 1 (August/September 1970): 9-11.

Under the weighted probability allocation, minor party candidate D with an 8% level of support receives 1.51 hours, independent candidate E with only 3% support receives 0.79 hour, and so on. By comparison, major party candidate A with 45% support receives but 2.69 hours. Of course, when the proportional and weighted probability allocations are combined, in this example the two major party candidates together still get more than 65% of the total time available. But the net effect is to maintain a balance of representation which makes efficient use of the available time while guaranteeing an equitable allocation among majority, minority, and independent candidates.

A final aspect of "representative time" is the conditions of use. Use here should be restricted to formats which are "intended to promote rational discussion, illuminate campaign issues, and give the voter insights into the abilities and personal qualities of the candidates," and which avoid "excesses, deception, distortion, fraud, and exaggeration in campaign tactics."[55] It might even be reasonable to require that some portion of the total time be used in a debate format with opposing candidates and in a discussion format with community and news media representatives.

This approach to eligibility, allocation, and use would obviously be more complex to administer than the current "equal time" practice. But, as Figure Six and the foregoing discussion are intended to demonstrate, the concept of "representative time" can be hammered down into specific and workable terms which are likely to become increasingly feasible, either via the current or an expanded broadcast television system or when cable television achieves significant penetration into the political marketplace.

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[55]U.S., House, Clean Elections, pp. 20-24; Mickelson, p. 105.

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15. Supplementary Notes

16. Abstracts The author summarizes the results of an exploratory inquiry into the potential use of emergent telecommunications technology for communication between congressmen and their constituents. The study employed a number of specific methodologies: interdisciplinary systems model-building, technology analysis, a sample survey, and semi-structured interviews using sketches of the emergent channels.

Six telecommunication configurations were identified as representative of emergent channel characteristics: the teleconference, videoconference, videophone, cable television, cable TV polling, and information retrieval. Analysis of the interview data resulted in an overview of the current congressional-constituent communication system and an assessment of the potential for emergent telecommunications, as perceived by congressmen and senior staff from the 40 offices in the stratified judgment sample.

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