

COMMUNICATION AND INFORMATION SCIENCE

A series of monographs, treatises, and texts

Edited by

MELVIN J. VOIGT

University of California, San Diego

Editorial Board: Robert B. Arundale, University of Alaska, Walter S. Baer, Times-Mirror, Jörg Becker, Philipps-Universität Marburg, Erwin B. Bettinghaus, Michigan State University, Brenda Dervin, University of Washington, Nicholas R. Garnham, Polytechnic of Central London, George Gerbner, University of Pennsylvania, James D. Halloran, University of Leicester, Brigitte L. Kenney, Infocon, Inc., Manfred Kochen, University of Michigan, Robert G. Meadow, University of California, San Diego, Vincent Mosco, Queen's University, Kaarle Nordenstreng, University of Tampere, Ithiel de Sola Pool, Massachusetts Institute of Technology, Dieter Prokop, Frankfurt, Germany, Everett M. Rogers, Stanford University, Herbert I. Schiller, University of California, San Diego, Russell Shank, University of California, Los Angeles, Alfred G. Smith, University of Texas, Austin, Frederick Williams, University of Southern California.

William C. Adams • Television Coverage of the Middle East

William C. Adams • Television Coverage of International Affairs

William C. Adams • Television Coverage of the 1980 Presidential Campaign

Alan Baughcum and Gerald Faulhaber • Telecommunications Access and Public Policy

Mary B. Cassata and Thomas Skill • Life on Daytime Television

Hewitt D. Crane • The New Social Marketplace

Rhonda J. Crane • The Politics of International Standards

Herbert S. Dordick, Helen G. Bradley, and Burt Nanus • The Emerging Network Marketplace

Glen Fisher • American Communication in a Global Society

Oscar H. Gandy, Jr. • Beyond Agenda Setting

Oscar H. Gandy, Jr., Paul Espinosa, and Janusz A. Ordover • Proceedings from the Tenth

Annual Telecommunications Policy Research Conference

Edmund Glenn • Man and Mankind: Conflict and Communication Between Cultures

Gerald Goldhaber, Harry S. Dennis III, Gary M. Richetto, and Osmo A. Wiio • Information Strategies

Bradley S. Greenberg • Life on Television: Content Analyses of U.S. TV Drama

Bradley S. Greenberg, Michael Burgoon, Judee K. Burgoon, and Felipe Korzenny • Mexican Americans and the Mass Media

Cees J. Hamelink • Finance and Information: A Study of Converging Interests

Heather Hudson • When Telephones Reach the Village

Robert M. Landau, James H. Bair, and Jean Siegman • Emerging Office Systems

James Larson • Television's Window on the World

John Lawrence • The Electronic Scholar

John S. Lawrence and Bernard M. Timberg • Fair Use and Free Inquiry

Robert G. Meadow • Politics as Communication

William H. Melody, Liora R. Salter, and Paul Heyer • Culture, Communication, and Dependency:

Vincent Mosco • Broadcasting in the United States

Vincent Mosco • Policy Research in Telecommunications: Proceedings from the Eleventh Annual Telecommunications Policy Research Conference

Vincent Mosco • Pushbutton Fantasies

Kaarle Nordenstreng • The Mass Media Declaration of UNESCO

Kaarle Nordenstreng and Herbert I. Schiller • National Sovereignty and International Communication

Harry J. Otway and Malcolm Peltu • New Office Technology

Ithiel de Sola Pool • Forecasting the Telephone

Everett Rogers and Francis Balle • The Media Revolution in America and in Western Europe

Dan Schiller • Telematics and Government

Herbert I. Schiller • Information and the Crisis Economy

Herbert I. Schiller • Who Knows: Information in the Age of the Fortune 500

Jorge A. Schnitman • Film Industries in Latin America

Indu B. Singh • Telecommunications in the Year 2000

Jennifer Daryl Slack • Communication Technologies and Society

Dallas W. Smythe • Dependency Road

Sari Thomas • Studies in Mass Media and Technology, Volumes 1-3

Barry Truax • Acoustic Communication

Georgette Wang and Wimal Dissanayake • Continuity and Change in Communication Systems

Janet Wasko • Movies and Money

In Preparation:

William Dutton and Kenneth Kraemer • Modeling as Negotiating

Fred Fejes • Imperialism, Media, and the Good Neighbor

Howard H. Fredericks • Cuban-American Radio Wars

Kenneth Mackenzie • Organizational Design

Armand Mattelart and Hector Schmucler • Communication and Information Technologies

Keith R. Stamm • Newspaper Use and Community Ties

Robert S. Taylor • Value-Added Processes in Information Systems

Tran Van Dinh • Independence, Liberation, Revolution

The Media Revolution in America and in Western Europe

Volume II in the Paris–Stanford Series

Edited by

Everett M. Rogers
Stanford University

Francis Balle
Université de Paris II



Ablex Publishing Corporation
Norwood, New Jersey 07648

3348604-4 P



Copyright © 1985 by Ablex Publishing Corporation

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, microfilming, recording, or otherwise, without permission of the publisher.

Printed in the United States of America.

Library of Congress Cataloging in Publication Data
Main entry under title:

The Media revolution in America and in western Europe.

(Volume II in the Paris-Stanford series) (Communication and information science)

Bibliography: p.

Includes index.

1. Mass media—History. 2. Communication—Research. I. Rogers, Everett M. II. Balle, Francis. III. Series IV. Series: Communication and information science.

P90.M372 1983 001.51 84-21680

ISBN 0-89391-258-1

Ablex Publishing Corporation
355 Chestnut Street
Norwood, New Jersey 07648

1287/9362

Contents

Preface	ix
About the Contributors	xiii
Introduction to Communication Research in Europe and America	1

Part I:
***The Changing Nature of the Mass Media in Europe and
America*** · 19

Chapter 1	
European Mass Media in the 1980s	21
<i>Claude-Jean Bertrand and Miguel Urabayen</i>	

Chapter 2	
Mass Media in the United States in the 1980s	43
<i>Bradley S. Greenberg</i>	

Chapter 3	
The New Communication Technologies and the New Distribution of Roles	68
<i>Henry Breitrose</i>	

Chapter 4	
The Communication Revolution and Freedom of Expression Redefined	80
<i>Francis Balle</i>	

Part II:

The New Worlds of the Mass Media 93

Chapter 5

Preconceived Ideas about Mediated Information 95

Jacques Ellul

Chapter 6

The Impacts of New Communication Technologies 108

Everett M. Rogers and Arnold Picot

Chapter 7

First World Communication Technologies in Third World

Contexts 134

Bella Mody

Chapter 8

International Communication: A New Order? 150

Elie Abel

Chapter 9

Active Audiences in Europe: Public Participation in the

Media 165

Axel Gryspeerdt

Chapter 10

Television as Instrument of Cultural Identity: The Case of

Quebec 177

Denise Bombardier

Part III:

***European and American Approaches to Communication
Research 183***

Chapter 11

European–American Differences in Communication

Research 185

Jay Blumler

<i>Chapter 12</i>	
The Beginnings of Communication Study in the United States	200
<i>Wilbur Schramm</i>	
<i>Chapter 13</i>	
The Basic Concepts of Communication and Information	212
<i>Osmo Wiio</i>	
<i>Chapter 14</i>	
The Empirical and Critical Schools of Communication Research	219
<i>Everett M. Rogers</i>	
<i>Chapter 15</i>	
Communication Research: One Paradigm or Four?	236
<i>Karl Erik Rosengren</i>	
<i>Chapter 16</i>	
The Beginnings of Political Communication Research in the United States: Origins of the "Limited Effects" Model	267
<i>Steven H. Chaffee and John L. Hochheimer</i>	
<i>Chapter 17</i>	
Toward Integration of European and American Communication Research	297
<i>Everett M. Rogers and Francis Balle</i>	
<i>Appendix A:</i>	
Some Communication Research Centers in Europe	308
<i>Appendix B:</i>	
Some Major Centers for Communication Research in the U.S.	314
Name Index	317
Subject Index	323

Chapter 6

The Impact of New Communication Technologies¹

Everett M. Rogers
Stanford University

Arnold Picot
Universität Hannover

INTRODUCTION

The computer is the heart of the new communication technologies that are now beginning to have important social impacts in the home, the office, the school, and the factory. Here an American and a European scholar who have pioneered in communication research on the new technologies combine to synthesize some lessons learned about the acceptance and use of these new media, their positive and negative consequences, and the basic changes in the nature of communication research that are demanded. In many countries, communication scholars are turning to study new communication technologies; a theme of the present chapter is that very major reorientations will be forced in the predominantly linear effects-oriented studies of mass communication researchers in the past. More attention must be given, for example, to convergence models of communication because of the interactivity of the new media. Thus, it is argued: "The Information Revolution may cause a Communication Research Revolution." *E.M.R., F.B.*

We live in a society that is well into the early stages of experiencing an "Information Revolution" in which the *nature* of the individual household, the work organization, and society itself is undergoing a very major transformation (Forester, 1980; Warnecke and others, 1981).

1. Many countries (for example, Japan, the United States, Canada, and most of Western Europe) are becoming "information societies" (Nora and Minc, 1978; Schmoranz, 1980; Machlup and Kronwinkler, 1975; Picot, 1979), in which (a) more than half of the work force is engaged in occupations that mainly entail the processing of information (examples are a teacher, manager, secretary, computer programmer, or journalist), and (b) more than half of the GNP (gross national product) is from such in-

¹The present chapter originated during 1980–1981, when Professor Picot was a Visiting Scholar at Stanford University, where he collaborated with Professor Rogers in research on the impacts of electronic messaging systems. This chapter was then developed further during Rogers's visit to the Federal Republic of Germany, where he consulted on Picot's research projects on the impacts of office automation. Certain of the ideas in this chapter are also reported in Rice and Rogers (1983).

formation-processing work. Information is about to replace energy as the basic resource on which an economy runs. Microelectronic innovations of information-processing and transmission are the powerful forces driving the development of the information society (Rogers and Larsen, 1984).

2. At the organizational level, the very nature of work life may be changing, due to the impact of such new communication technologies as video- and computer conferencing, electronic messaging, word processing, telecopying, and electronic filing and retrieval. These technologies are presently at a very early stage of diffusion and adoption, but their potential impact may be considerable (Rogers, 1983b).

3. At the household level, new communication technologies like interactive television systems (representing a unique combination of computers, satellites, and cable television), videotex, home computers, and videotape recorders are being introduced. These innovations too are at a very early stage of acceptance, and some (like interactive television systems) are only at the stage of relatively small-scale experimentation by national governments and by private companies. In fact, the reality of use of these new technologies as disclosed by surveys of users, provides a sobering contrast with well-publicized accounts of their future potential. For example:

- The PRESTEL system has been available for 5 or 6 years in England, but has only about 10,000 subscribers today, many fewer than originally expected.
- The QUBE system in Columbus, Ohio, U.S., is used interactively only rarely by participating households (Chen, 1981); a similar experience has been reported with interactive TV systems in several other nations.
- Home videotape recorders are only used an average of about 12 minutes per day, and that mostly to record TV broadcasts for delayed viewing (these are results from a recent survey in Sweden). In the United States, Levy (1980) reported an average of about half an hour of video recorder watching per day.

At the heart of the new communication technologies being applied to society, work organizations, and the home, is the computer. And what is new about these computer applications is their small size and low cost, an advantage made possible by putting increased amounts of computer memory and computer control, on a semiconductor chip. The Information Revolution, is fundamentally, a Microcomputer Revolution. Together with other technical innovations, microelectronics technology increases the capacity of both crucial components of communication technology (Picot and Anders, 1983a and 1983b): (a) the technical network, which allows

for the telecommunication of signals, and (b) adequate end-user equipment, which allows for comfortable handling of complex telecommunication processes. Chips, digital data transport, fiber optic cable, and other new technical means enhance the quality, quantity, and speed of information traffic in technical communication networks. Microcomputer innovations enrich the end-users' terminals by facilitating access and handling, as well as by integrating this equipment with other functions of information processing (storage, retrieval, computing, printing, etc.).

SOCIAL IMPACTS OF NEW COMMUNICATION TECHNOLOGIES

As we face the potential, yet unfulfilled, of the new communication technologies, one might expect that social scientists in general and those specializing in communication behavior in particular, would play an important role in conducting policy-relevant investigations. But this has not occurred to date. As an eminent Finnish scholar stated:

The communication scholars could have been in the forefront of not only studies of new communication technologies but also in planning their applications. However, research has been both late and inadequate: many fine research opportunities have been lost forever. Research data have been replaced with personal opinions and normative value judgements. (Wiio, 1981)

But in very recent years, a small number of useful researches have been carried out that deal with certain aspects of the new communication technologies. There are an estimated 83 field experiments underway on videotex around the world, but many, especially in the U.S., are being conducted by private companies that will not allow scholars to gain access to their research results. Based on the authors' participation in several investigations, and our literature review of others, plus personal discussions with some of the researchers and practitioners involved, we wish to draw certain general lessons about the nature of the impacts of the new communication technologies. We will concentrate heavily, but not exclusively, on the new communication technologies being applied in the work organization.

Our discussion of impacts takes the form (a) of important research results or perspectives, and (b) of methodological problems and their partial and/or possible solution.

Channel Versus Content Studies

The general research question addressed by a very great deal of behavioral research on new communication technologies in the work organization is: "What are the effects of the new communication technol-

ogies?’’ This question is similar to the main direction of mass communication research in the United States and (less so) in Europe for the past 40 years, but with some very important differences. One such contrast is that the contemporary research concern is with the impact of a new type of communication *channels*. Although computer-based communication technologies are much more than just another communication channel—very often they are, at the same time, a tool for information-composition, searching, filing, and retrieval—many studies deal only with the channel effect, rather than with a particular type of message content (Short, Williams, and Christie, 1976; Johansen, Vallee, and Spangler, 1979; Christie, 1981). For example, we now study the effect of electronic messaging systems in the office, while various mass media researchers have studied the effect of TV violence on children. Both are effects studies, but they are quite different in the details of their research design and in their degree of specificity.

But clearly there are parallels in the general research designs used in past media effects studies, and in contemporary researches on the impact of new office (and home) technologies. This similarity is entirely understandable, but we are concerned that a too-close following of the intellectual paradigm of the past will limit the policy payoff of present research. Nevertheless, we begin by listing some of the important effects now being investigated in studies of new office technologies, and then suggest some additional possibilities.

Channel Use in Organizations

How does the introduction of new communication technologies in a work organization change the existing patterns of organizational communication?

A general issue here, of great importance, is to determine the magnitude of the consequences of the new technologies. Do they indeed cause a “revolution” in communication behavior? The early evidence on this point seems to be negative. The impacts are incremental, rather than revolutionary. For example Picot, Klingenberg, and Kränzle (1982) conclude from studies of the impact of new office automation technology in German organizations that new electronic text media (such as computer mail, telex, and computer conferencing) will mainly replace such older text media as mail and telex, which—in terms of number of contacts—play a minor role in organizational communication. These new media will replace oral channels only to the extent that oral communication is used for transmission of relatively simple information content. However, the proportion of that kind of oral channel use is not very high in organizations. The explanation for this finding is that much face-to-face communication is still considered necessary by organizational participants, mainly (a) for

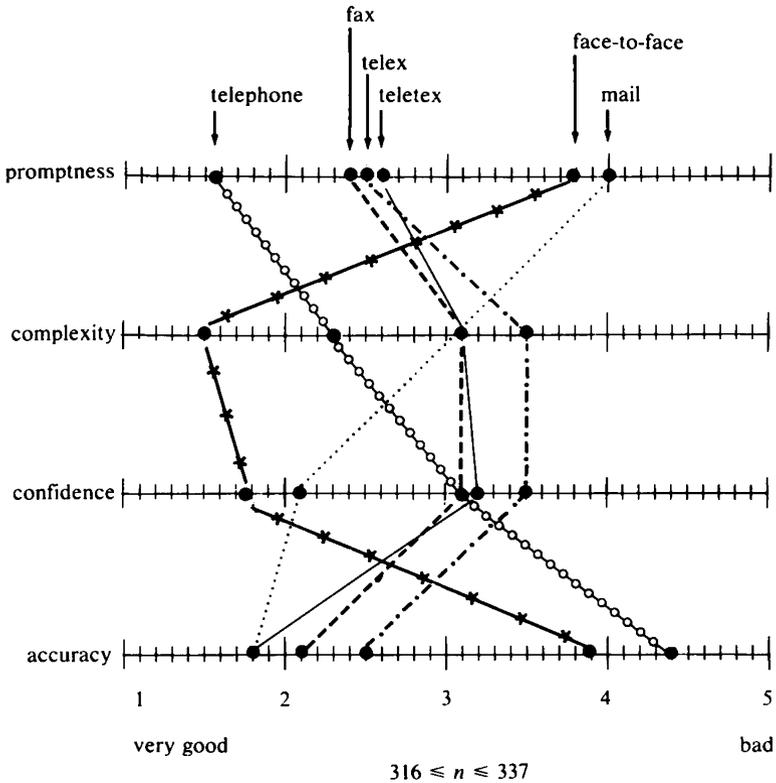


Figure 1. Task-Oriented Evaluation of Communication Channels in Organizations

its social relationship content, and (b) for the complex task-oriented, non-programmable information that it conveys.

Organizational hierarchies emerge because they are more economical for carrying out difficult information-exchanges associated with certain types of divisions of labor (Williamson, 1975 and 1980). This information-exchange demands a high symbolic and material communication capacity typically provided by oral (especially face-to-face) channels (Watzlawick, Beavin, and Jackson, 1967). The new media cannot serve as an equivalent substitute for the "social presence" that is crucial for the functioning of social relations and of unstructured information-exchange (Short, Williams, and Christie, 1976; Picot, Klingenberg, and Kränzle, 1982). Thus, new communication technology will facilitate various intraorganizational communication processes, but it will not wipe out the principal problems of information-exchange characteristic of organizations. On the other hand,

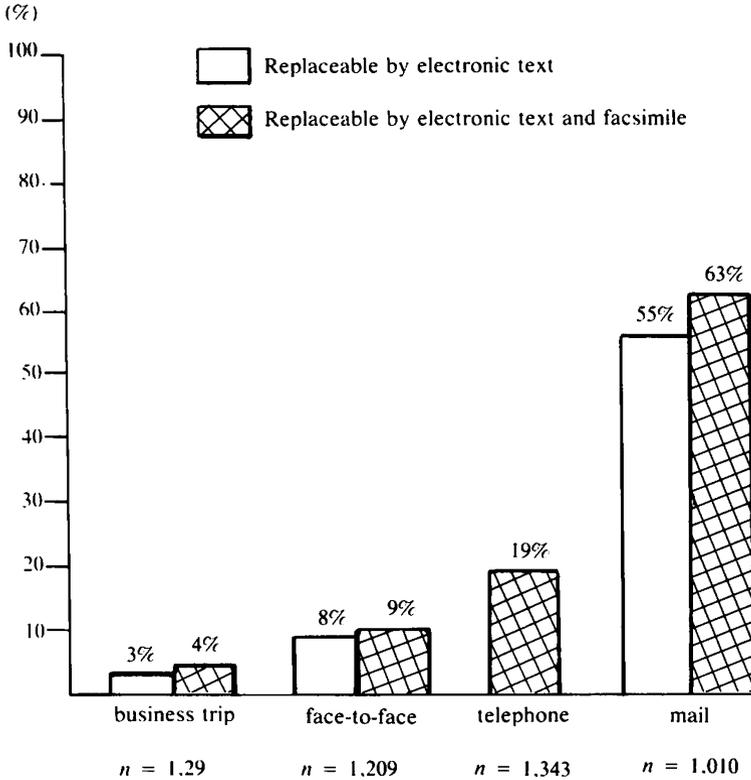


Figure 2. Amount of Potential Channel Substitution by the New Text-Oriented Technologies

the structure of external organizational communication, which to a greater part consists of standardized information-exchange, will be more greatly affected by the new text media.

The German research found four key problems to be overcome by organizational communication:

1. Managerial promptness,
2. Semantic complexity,
3. Interpersonal confidence, and
4. Administrative accuracy.

The suitability of six organizational communication channels for resolving these communication problems is shown in Figure 1. In terms of number of contacts and in terms of time consumed, the first three problems prevail

in organizational communication and the fourth is also of eminent importance for administrative functioning. This general assessment of the new communication technologies' suitability for organizational communication is reflected in Figure 2, which shows, on the basis of an empirical substitution analysis, the degree to which the new electronic text and facsimile media are perceived as capable of replacing business trips, face-to-face contact, telephone, and mail.

These conclusions are also generally supported by our findings from investigating the "Terminals for Managers" (TFM) electronic office messaging system at Stanford University (Rogers, Heath, and Moore, 1981). Highest use of TFM was by the accounting and finance officials of the university, who were mainly exchanging budgetary-type data; academic officials of the university used TFM much less, in part because more of their message content involved social relationships or complex task-oriented questions for which they preferred face-to-face (or telephone) channels.

The general issue here is what existing communication behavior the new communication technologies substitute for. Also important are such topics as expressed in the two research questions that follow.

Structural Changes and Organizational Communication

To what extent do the new office technologies support or subvert the organizational structure as it channels communication flows?

One of the anxieties expressed about the introduction of certain new technologies, such as electronic messaging, is that it will break down the constraining effect of the organization's structure on communicating behavior. Will a top executive be swamped with messages when all of the organization's employees are directly connected to the official by an electronic messaging system? Will the relative ease of sending "carbons" of messages lead to problems of information overload? Does removing the constraining effect of physical distance (and the effort required to communicate across it) between two individuals in an organization greatly increase the volume of messages that they exchange? Or will the new technologies, by enabling employees to work at home, increase physical barriers to face-to-face interaction among colleagues? To what extent will the role of "bosses" and secretaries be reversed by the new office technologies (as has been reported in some organizations, with the "boss" now doing his own typing/composing and the secretary moving into new office managing tasks)?

One of the general issues here is who communicates with whom, via what channels of communication, before and after the introduction of the new office technologies. This question is made to order for communication network analysis to answer (Rogers and Kincaid, 1981). But we

know of no such investigation that has been conducted to date. We ought to measure the impact of new communication technologies on the users' interpersonal networks, through a "pre-post" research design.

We stress the optional character of the new technologies: They offer a potential which can be used in either direction. New communication technology in organizations can provide individuals with more, better, and more relevant information, and thus enable them to become more autonomous decisionmakers. Thereby the organization's hierarchy can be flattened. On the other hand, these technologies can be used in a way that isolates people from each other and that tightens control by managers over office workers by demanding instantaneous feedback about current work progress. Thus, technology itself is neither good nor bad. Rather the way technology is used in a certain situation tells us much about an organization's climate, ideology, or problems.

As far as the geographical decentralization of work is concerned, we feel that the new technologies will allow homogeneous work groups and rather independent job-holders to locate their activities in remote places, perhaps far away from their mother organizations. Thereby organizational coordination shifts from a hierarchical pattern to a more decentralized mode involving a tendency towards office workers' compensation on the basis of measurable outputs. However, such teleworking will not represent a majority of office workers, as most office tasks are not programmable on a clear input/output-basis. Thus, most office jobs cannot be scattered, and have to remain concentrated in order to guarantee the unstructured interpersonal information-exchange which is necessary for most organizational problem-solving and control. A requisite for the successful build-up of social relationships and complex information-exchange, social presence cannot be satisfactorily replaced by telecommunications (Short, Williams, and Christie, 1976; Klingenberg and Kränzle, 1983; Brandt, 1983).

Office Productivity

How will the new technologies affect office productivity? Will the greatly-increased capital costs be offset by reduced labor costs gained through increased labor productivity? What problems (including management relationships with clerical unions) will accompany the reduction in the total office labor force that is likely to occur? To what degree will the quality of work life be improved through the reduction of repetitive, monotonous tasks like typing? Will employee stress of certain types be increased, such as by working on display terminals? Will the organization's capability of adaptation to change be improved?

A comprehensive economic evaluation of new communication technology is a most difficult task (1) because many of the assumed effects

are difficult to quantify, although they seem to be very important (for example, an improved information supply and increased flexibility), and (2) because the effects occur at different levels of observation (the individual, group, organization, and society). In order to overcome these difficulties, a multi-level framework has been developed which should guide evaluation discussions. Interestingly enough, that concept was independently and almost simultaneously proposed in Europe (Picot and others, 1979; Picot and Reichwald, 1979; Picot, 1979) and in the U.S. (Bair, 1979a and 1979b). It discerns costs and benefits at four levels of evaluation which have to be explored and taken into account before a proper decision can be made:

1. Isolated equipment efficiency;
2. Efficiency of a subsystem's throughput;
3. Efficiency of the organization; and
4. Social efficiency.

These concepts have served as a basis for empirical evaluation research (Picot and others, 1979; Bodem and others, 1983). Results show that the payoffs from new communication technology lie mainly in non-quantifiable performance, rather than in monetary cost calculations.

The difficulties in measuring the impacts of office automation on productivity may be one reason why the rate of adoption of the new office technologies seems to have slowed somewhat in very recent years. Organization leaders have to decide to adopt on faith, rather than hard evidence.

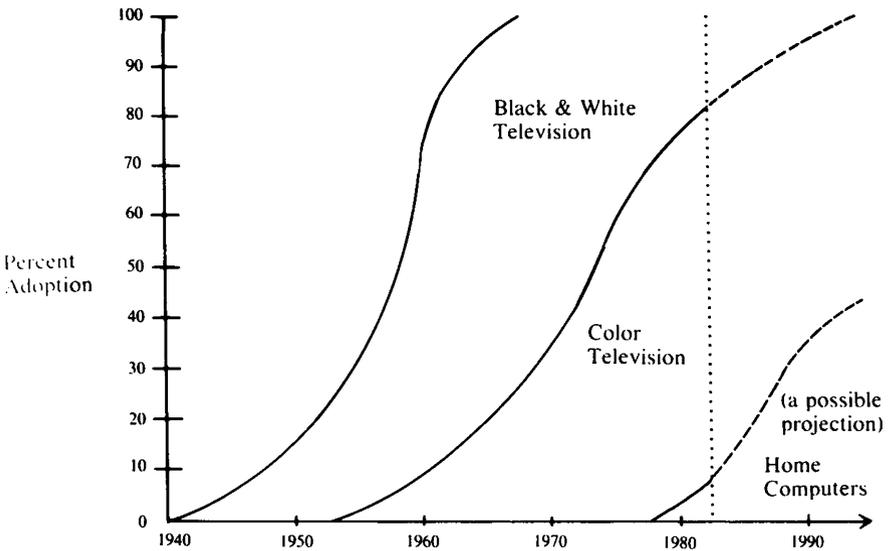
Equality

Do the new office technologies have greater effects (a) on certain individuals in an organization than on others, and (b) on certain organizations? Here we are looking at whether the technologies are information gap-widening or gap-narrowing. At issue is the degree of equality in the consequences of the new communication technologies.

One basic, and often implicit, assumption in this discussion is that technology-richness would trigger information-richness, i.e., that access to new information technology would provide a higher quality level of information. Although this assumption can be contested under certain circumstances, it seems acceptable in many others. The issue of equality is of central importance in the case of new communication technology in the household, where policymakers are concerned about whether this relatively expensive technology will widen the knowledge gap between the information-rich and the information-poor. Certain types of knowledge (that only certain individuals will possess) can be converted to political

power, in some cases. For example, a U.S. data-bank that can be accessed with a home computer and a telephone modem connection now provides daily voting records of national legislators, as well as the U.S. president's daily schedule. Such information might be useful to the politically-active citizen. Access to the German *Bildschirmtext* system grants a much higher level of market transparency in the banking, travel, or insurance industry than consumers can dispose of otherwise.

In the case of such past communication technologies as television, it seems that the new technology, in its process of diffusion, first widened knowledge gaps in society, but eventually closed them, when everyone adopted the innovation (Katzman, 1974). This first-widening/then-closing sequence occurs if the technology is widely adopted, and the temporary inequalities are less serious when the rate of diffusion is rapid (as with television in the U.S.). But what about an expensive communication technology like home computers that may never become a consumer item in all households (Figure 3)?



Note: At any particular point in time, a new communication technology has the effect of widening the knowledge gaps in society, because the first to adopt are the socioeconomic elites who are already the information-rich. But later, when everyone has adopted the technology, it again has an equalizing effect between the information-rich and the information-poor. But what about a technology like home computers that may not reach 100 per cent adoption?

Figure 3. Diffusion Curves for the Adoption of Three Household Communication Technologies

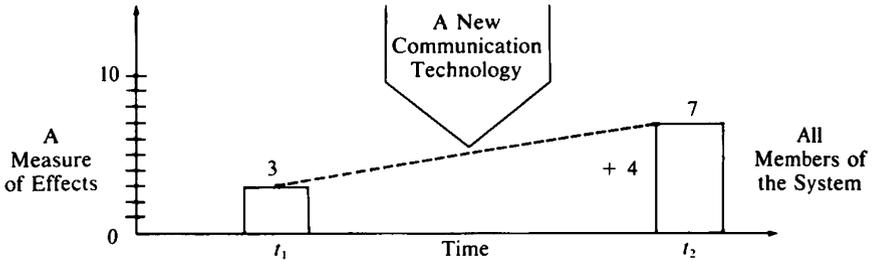
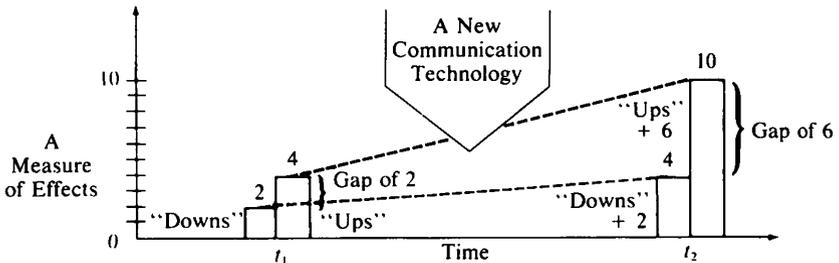


Figure 4a: The First Dimension of Communication Effects (for all members of the system) as an Average Increase of 4 Units, Measured as the Difference from t_1 to t_2



Note that the "Downs" are *absolutely* better off as a result of the new communication technology (+2), but they are *relatively* worse off (as the "Ups" gained +6). So the rich get richer (informationally) and the poor get less poor. (Source: Rogers, 1983a.)

Figure 4b. The Second Dimension of Communication Effects (which analyzes effects separately for "Downs" and "Ups") Indicates that the Effects Gap is Widened by the Introduction of a New Communication Technology

Is there a close parallel to the case of new office technologies? Figures 4a and 4b depict two dimensions of communication effects: (a) the first dimension, where we ask "What average or aggregate effect does a new communication technology have?" and (b) the second dimension, where the main research question is "Do certain individuals or systems experience a relatively greater effect of the new communication technology than do others?" Policy-makers are usually very interested in the equality dimension of new communication technology; they are concerned with the new technology's potential for creating a wider gap between the information-rich and the information-poor.

Such gap-widening often occurs (unless strategies are explicitly followed to prevent it) because:

1. The new communication technologies of home computers, teletext and videotex systems, videotape recorders, etc. in the home, and teleconferencing and electronic messaging in the office, are expensive. So only the socioeconomic elites can afford them. They adopt them first, and others can only follow slowly, if at all.
2. Because these new technologies are computer-based information tools, an individual must be a motivated information-searcher to use them (at least effectively). The information-rich are most likely to be the first adopters.
3. Those new communication technologies that support inter-individual communication require that potential communicators are equipped with compatible devices (electronic mail, picture phone, teletext, telecopy, computer conferencing, etc.) so that a relevant network can emerge. Such networks are much more rapidly created among the early adopting information-rich socioeconomic class than among other potential users. Thus, the information-rich get richer by networking. This argument can be applied to international, national, and organizational levels of investigation, as well as the individual.
4. The information-rich particularly want specialized information, which the new communication technologies are uniquely able to provide. Thus, they can increase their information advantage. An example of this point comes from an evaluation of *Bildschirmtext*, an interactive information system (videotex) now undergoing experimentation in Düsseldorf and Berlin. The several thousand accepters of this technology use the *Bildschirmtext* system to obtain specialized information about news, travel, banking, and to purchase catalog products.

ACCEPTANCE AND USE

A second major issue in research on new communication technologies is how they are accepted and used. In fact, this issue obviously precedes the issue of effects, in that effects only occur after acceptance. The acceptance issue has generally received less research attention than have the effects questions, at least to date, in the case of new office technologies.

Networks and the Critical Mass Problem

How does the networking nature of the new office technologies affect their acceptance and use? A general research paradigm of the diffusion of innovations (Rogers, 1983a) is directly applicable to studying acceptance

of new communication technologies, but of course with some very special twists. One particular aspect of many of the new office technologies is that they provide an improved means for connecting with other individuals (or organizations); thus these technologies essentially are "networking," not one-way "broadcasting" nor "stand-alone" technologies. This distinctive aspect affects the acceptance and use of the new interactive technologies. At one extreme consider the only individual in an organization who has an electronic messaging system; it is worthless to him as a means of communicating with his co-workers. As each additional individual gains access to this technology, its usefulness increases to each of the individuals already on the system. Another example: Consider the employee whose boss sends him a message via the new technology. Here the networking nature of the technology strongly encourages the individual to use the technology to respond.

More precisely the real diffusion take-off of a new communication technology heavily depends on a "critical mass" of individuals (or organizations) which must have adopted previously. Only if one can be sure that a majority of current addressees can be reached by a specific communication tool will one be willing to use it on a habitual basis. Thus the net benefit to an end-user of equipment for individual communication is influenced by the number of installations within his/her relevant group of reference. There is no exact formula available for calculation of the minimum level of the critical mass that is necessary for adoption to occur. However, a critical mass for a new communication technology must be higher, if:

- The relevant communication contacts to be carried out by the new technology are perceived as less important.
- The group of potential addressees who must be reached by the new technology is large and varied.
- The proportion of communication messages to be carried by the interactive technology is low compared to the total communication volume of a typical user.
- The new technology's use is not compatible with other information services that can serve as a substitute or a complement for that type of communication.
- The new interactive technology demands installation of a new physical network.

By thorough analysis and, if possible, influencing of these (above) determinants, the level of the critical mass can be roughly assessed and, perhaps, lowered. Reaching a critical mass, once it is assessed, can be accelerated by:

- Careful market segmentation and initial concentration on the relatively closed networks of potential user groups.
- A low price-strategy during market introduction.
- Decentralized installation of end-user equipment.

Such steps will facilitate purchases and terminal access; they will increase communication traffic and help create new experiences with the technology which in turn may trigger new adoptions. The history of the diffusion of the telephone illustrates these points.

During the first phases of diffusion, potential users and decision-makers might better adopt a wide, rather than a narrow, view of the adoption decision. Usually people interpret investment decisions as choices for or against adopting a stand-alone unit. The decision calculus asks, for instance, whether the cost per unit is lower when using the new machine compared to existing procedures.

If this decision rule is applied to interactive communication technology, the result may be unintended (Picot 1982). Figure 5 shows a network of information flows between four points (for example, departments in an organization) with the figures representing the average number of communication contacts per day suitable for electronic text communication. A cost analysis on the basis of investment costs and operating costs of the old and new equipment may show that production and mailing of 10 or more messages per day is necessary for an economically advantageous application of the new communication technology. Thus, according to traditional stand-alone decision-making, Departments A, C and D would purchase new equipment. However, A and C would not be able to secure these expected economic benefits, as part of their mail goes to B who decided not to adopt. Thus A and C can only achieve their return on investment in the new technology if B also adopts the new technology.

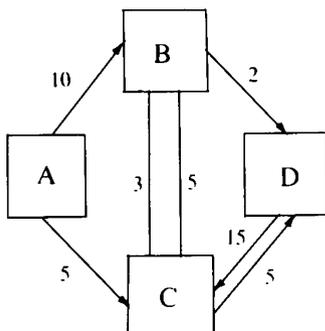


Figure 5. Information Flows in a Network (number of contacts per day suitable for electronic text communication)

Hence, B's adopting will create the critical mass for adoption by the others. This acceptance can be achieved through: (a) lowering the costs of the technology, (b) subsidies, or (c) shifting the responsibility of the adoption decision to a higher level such as an association of these organizations or the government.

The foregoing discussion suggests that *how* a new office technology is introduced may be at least as important as *what* the technology is.

Redesign and Implementation

How can the new office technologies be redesigned so as to become more acceptable and more useful?

This research question puts the behavioral scientist in the position of designer/redesigner of the communication technologies, along with the more familiar role (in the past) of evaluator of effects. In fact, the two roles seldom can be kept completely distinct in research on the new communication technologies (as we show later in this chapter).

Here a specific issue to be studied may be: What are the factors preventing acceptance/use of the new office technologies (such as computer fear, lack of typing ability, and concerns about the invasion of privacy)? The interface between the individual and the technology is crucial here, an issue that is far from completely understood in the case of the new office technologies.

Perhaps people have a basic desire to use the new technologies in their own unique ways, to be active shapers of the tools rather than just passive "acceptors." We feel this issue needs more attention than it has received to date; investigators often have overlooked the creative and individualized ways in which people use technological innovations (Rice and Rogers, 1980). Five individuals may adopt the same make and model of an office word-processor, but modify this tool to do five different tasks.

Redesign of technology also involves its organizational embedding. Implementation of new office communication technology may affect job characteristics, work relations, and organizational structure, often in a beneficial way. However, in order (a) to reduce fears and resistances from employees, (b) to mobilize motivation, redesign capabilities, and relevant knowledge about communication needs, and (c) in order to ensure later acceptance and cooperative use, a transparent, participatory planning and implementation strategy should be followed. Involvement of affected managers and office workers at an early stage in the discussion and implementation process is important for long-term success with office automation.

Naming The Technology

How important is the name of a new communication technology as a factor in its acceptance?

Market research on new products consistently shows that what an innovation is called has an influence on its acceptance. Obviously it is the potential users' perceptions of a new communication technology, including its name, that determines its rate of adoption. New communication technologies ought to be given names that are meaningful and understandable to the users. Instead, names are often given in a way that, while technically correct, may confuse potential users and turn them off. We ought to devote much more care than in the past to the name for a new communication technology.

"*Bildschirmtext*" is composed of three German words: "*Bild*" or picture, "*Schirm*" or screen, and "*Text*." An official in the Ministry of Posts and Telecommunication chose this name to stress that *Bildschirmtext* uses a TV set only as a screen, and not for broadcasting (as the frame-images are conveyed to the home by telephone line). This non-broadcasting aspect of *Bildschirmtext* is important to the Ministry for Posts and Telecommunication, which has responsibility for telephone services but not for TV broadcasting. This non-broadcasting nature of *Bildschirmtext* is also conveyed by its logo: a prominent symbol of a telephone, on a blue TV screen, with the name "*Bildschirmtext*" written underneath the telephone in computer text. Whether this name and symbol are appropriated for the system's users is not known, as the new service is still in the process of being introduced. One may doubt that the political distinction between a TV broadcasting and a telephone-channel technology is very important to the users, and in fact the system offers much more than just text on a screen.

The same emphasis on the telephone is found in the German Ministry of Posts and Telecommunication's most recent experiment with "BIG-FON" (pronounced "big phone"), *Breitbandiges Integriertes Glasfaser-FernmeldeOrtsNetz*. This broadband fiber optical experiment is now getting underway in six German cities. The acronym does not reveal the real nature of this new network technology, at least as it is likely to be perceived by users.

The "Green Thumb" system was originally named "Extele" by U.S. government officials, indicating the technology's role in providing extension service information at a distance (to farmers). But a U.S. senator's secretary began calling the system "Green Thumb," a name that stuck (to the dismay of the technologists who designed the system). Kentucky farmers (the users), however, reacted favorably to the name "Green Thumb." So, by accident instead of design, this new technology was given a name that seemed to help its acceptance. At least the name is unforgettable.

The French teletext system, officially called "ANTIOPE" (for "*L'Acquisition Numerique et Televisualisation d'Images*") after Antiope,

daughter of the king of Thebes in Greek mythology, is widely confused by the public with the French (and English) word "antelope."

The naming of new communication technologies is often done rather haphazardly, or, worse, by technologists without the benefit of formative evaluation to guide their choice of words that would be meaningful to the public. Understandably, such names then hinder acceptance of the new technologies by the public.

METHODOLOGICAL LESSONS

Figure 6 diagrams a somewhat typical research design for studying the impacts of a new communication technology. The main elements in the design are a sample of users of the new technology (perhaps at least 100 to 200) from whom data are gathered, often by means of personal interviews, both before (at t_1) and after (at t_2) the introduction of a new communication technology. So far, the design is the usual one for a field experiment, based on the kind of experimental design that behavioral scientists have taken from the classical physics of some years ago.

The distinctive aspect here is the possibility of obtaining "use-data" from the technology system itself, such as from computer records of an electronic messaging system or from an interactive television system (Rice and Rogers, 1983). The use-data indicate who uses the technology, how frequently, and for what purpose. Sometimes data are also gathered from

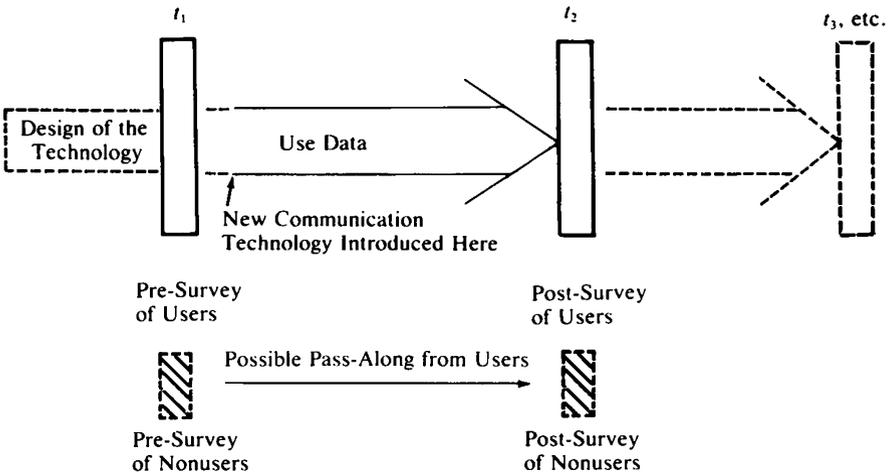


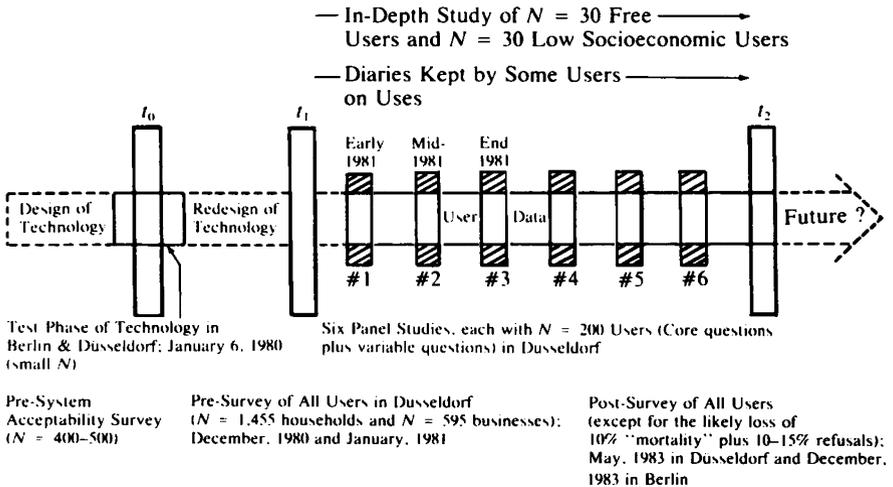
Figure 6. Diagram of a Usual Research Design for Studying the Impacts of a New Communication Technology.

a sample of non-users of the communication technology, who may have received pass-along information from users.

A number of methodological questions and problems accompany the usual experience with using this type of research design.

The evaluation researchers usually enter the research process too late to make their maximum contribution. Very seldom do the behavioral science researchers participate in designing the communication technology, where engineers and technologists usually dominate. Sometimes, there is no t_1 survey of future users (as in the 1981 Green Thumb Project by Stanford University). Then, the researchers must depend mainly on the users' perceived and remembered impacts of the communication technology (a rather unsatisfactory methodology for data-gathering).

But sometimes behavioral scientists are involved very early in the technology design process, as occurred in the *Bildschirmtext* Project in the Federal Republic of Germany (Figure 7). Here the evaluation researchers conducted an "acceptability" study of potential users of *Bildschirmtext*, and of the actual users in a short test phase of this interactive TV technology. The purpose of this formative evaluation research was to gain understandings of the future acceptance of *Bildschirmtext*, by



Note: Not shown here is a survey of the 800-900 private information-providers, who are mainly studied by the Kammerer Research Group (in Munich) at the Berlin location. The Düsseldorf users studies are mainly conducted by Infratest Media-Forschung (in Munich) under the direction of consultant Prof. Dr. Heiner Treinen of the Ruhr-University Bochum.

Figure 7. Diagram of the Evaluation Research Design for the *Bildschirmtext* System of the German Ministry of Posts and Telecommunications in Düsseldorf and Berlin

dealing with such questions as how many (and which) households would purchase the *Bildschirmtext* services, at what price, and how the technology should be designed/redesigned for user acceptance. A somewhat similar strategy was chosen for the planning, design, and implementation of the new office automation service in Germany (Picot and Reichwald, 1979).

Such acceptability studies of a new communication technology face many difficulties, stemming from the basic inadequacies of most available social science methods to predict future behavior. Nevertheless, acceptability studies represent one type of formative evaluation that at least involves behavioral scientists along with the technologists early in the process of designing the communication technology.

The computer-recorded use-data often cannot be matched with the pre/post survey data. There are many possible reasons for this problem, such as that each unit of the technology (such as a computer terminal) may be used by various individuals other than the individual that it is officially assigned to (such as the secretaries of the official users of the TFM system in the Stanford University study). There are also confidentiality problems of an ethical nature, which may prohibit analysis of the use-data because it cannot be matched with individual users. And there is the problem that the computer recording of use-data may be intrusive (and thus affect use of the system) if the users know that their use is being recorded.

Logistical and timing problems often interfere with execution of an ideal research design. Perhaps all of the intended users do not get their equipment at t_1 (Figure 6), or perhaps they are not trained to begin using the new technology at t_1 . Sometimes the technology is changed/modified/improved from t_1 to t_2 , perhaps due to feedback from an early evaluation research. Then exactly what technology system is being evaluated as to its impacts?

There is often no control group for comparison with the users, so it is impossible to remove the effects of other variables on use of the communication technology (Figure 7). The lack of a control group often occurs in studying a communication technology, such as when it is introduced in an entire organizational unit at the same time. It is difficult to do otherwise, given the network nature of interactive technologies (this is the critical mass). Perhaps another unit could be selected as a control group, if it matched fairly well. But even then, the random assignment of respondents to treatment and control groups is usually impossible. There are just so many problems involved in having a true control group in field

experimentation (Picot, 1975), that they are almost never utilized in evaluations of a new communication technology. As a consequence, such evaluations consistently overestimate a new technology's effects, because any extraneous effects that may exist are included as a disguised residual in the measured effect. This problem should not be forgotten when we analyze and report the research results of these studies.

Other means of control can be (and are) utilized in evaluating new communication technologies, such as multivariate statistical control. But such an evaluation design is weaker than an experiment because all of the variables to be controlled on must be measured; in an experimental design, all variables are controlled, whether measured or not.

Users of the new communication technology often are not representative of the population of future users, so the research results cannot be generalized. The issue of the generalizability of an experiment's results are illustrated by our respondents in the 1980–1981 TFM study, who were the top 110 administrators at Stanford University. Are they typical of the next 110 users of TFM at Stanford? Hardly. And how representative is Stanford University of other organizations that are expected to adopt TFM in the near future? Probably not very.

Another example of the generalizability problem while evaluating the impact of new communication technologies comes from the *Bildschirmtext* Project in Germany. The 1,455 household users of this interactive TV system in Düsseldorf were recruited through two campaigns aimed at recent purchasers of color TV sets (Figure 7). The 1,455 users probably tend to be socioeconomic elites, like the early adopters of most other innovations (the individuals in the left-hand tail of the S-shaped diffusion curves shown in Figure 3). One indication that the households volunteering to be participants in the *Bildschirmtext* Project were already information-rich is shown by the fact that about 25 per cent of these volunteers had home videotape recorders, compared to only 3 per cent of all German households at the time. The evaluation studies carried out in order to assess the impacts of office automation in Germany show similar biases; after intensive search, two large organizations were found for field experimental studies (they surely were among the pioneer adopters of any new office technology).

The general lesson that we are learning here is that individuals, families, and organizations that voluntarily participate in a communication technology experiment are very untypical of the population of potential users. Instead, the users in an experiment are usually typical of the early adopters of an innovation: information-rich and socioeconomically advantaged.

It is very difficult to avoid this threat to generalizability, even when

one tries. For example, in the Green Thumb Project in Kentucky, the 200 users of this free system (in 1981) were chosen by a local committee from the approximately 400–500 farmers who applied for a Green Thumb Box (in response to a mailed announcement from the local county extension agent to about 2,600 farmers in the two counties of study). The committee chose the 200 users so they were approximately representative of three categories of farm size (small, medium, and large-sized farmers). This selection procedure guaranteed a range of socioeconomic status among the 200 users, but it introduced another bias: The small-sized farmers who volunteered to participate tended to be untypical of all small farmers in the two counties in that they had a high degree of prior contact with their county extension agent (most small farmers do not have much extension contact). So the Green Thumb selection procedure guaranteed that small farmers were included in our study, but also tended to make these small farmer-users untypical of all small farmers. And a further problem: The Green Thumb system was free to the user in 1981 (thanks to the U.S. Department of Agriculture), but a fee was charged later for the Green Thumb service. Not many small farmers will use Green Thumb in the future. So again our small farmer-users in the 1981 study are a sample whose research results cannot be generalized to any future users.

The *Bildschirmtext* Project went to special pains to include lower socioeconomic status households in the Düsseldorf evaluation study. As Figure 7 shows, 30 users were recruited by offering free service (all other households paid a monthly fee of 5 *Deutschmarks*, or about \$2.50 (U.S.), plus any frame charges; many of the 150,000 frames are available at no charge, but others may cost from .001 to .99 *Deutschmarks* per viewing), and another small sample of 30 users were identified from among the lowest socioeconomic households to apply for the *Bildschirmtext* system. Both of these small samples were investigated via unstructured personal interviews, group interviews, and by telephone, and (according to the evaluation research group) these research results from the extremely information-poor were useful in redesigning the *Bildschirmtext* system.

The research strategy suggested by the *Bildschirmtext* Project is to concentrate certain data-gathering activities on “extreme groups”: households very low in socioeconomic status, for example, or the information-poor (and/or perhaps for contrast, a small sample of the information-rich, the socioeconomic elites, or the highest users). The strategy amounts to oversampling sub-audiences that are usually underrepresented by volunteer participants in the trial of a new communication technology. But with this oversampling strategy, the researcher does not have a random sample from a population of future users (and thus cannot utilize statistical inference as a basis for generalizability of the evaluation research results).

Quantitative research approaches, based on a notion of “variance research,” seldom can provide a satisfactory understanding of the behavioral change process through which a new communication technology has effects. Almost all research designs for evaluating the acceptance and effects of new communication technologies (a) are highly quantitative, and (b) follow a variance research approach (Figure 6). Usually these researches (a) measure a large number of variables, (b) with data gathered from a large sample of users, at least several hundred and perhaps several thousand (as in the *Bildschirmtext* evaluation, where German politicians in the national parliament influenced the Ministry of Posts and Telecommunications to design an evaluation of the technology with several thousand users in two locations). The assumption here is that a large sample of users will provide more precise research results about acceptance and impacts (as well as helping the communication technology pilot project move rapidly toward becoming a national program).

Variance research is a type of data-gathering and analysis that consists of determining the co-variances among a set of variables but not their time-order (Mohr, 1982). A pre/post design (Figure 6) heads an investigation toward using (a) “difference” statistics (like the t-test between means or analysis of variance) in his/her data-analysis, or (b) “correlational” statistics (like zero-order correlation, multiple correlation and regression, or partial correlation techniques) in which the researcher seeks to determine the correlates of a dependent variable, which often is either acceptance or use of the new communication technology.

Variance research alone usually cannot tell us much about the time-order of our variables of study, other than rather crudely (through the t_1 to t_2 differences in a variable), and seldom can provide a very complete understanding of the over-time process nature of the behavior change effects that are caused by the new communication technology. In this situation, a process research approach may be more appropriate.

Process research is a type of data-gathering and analysis that seeks to determine the time-ordered sequence of a set of events. Data-gathering methods for process research are often more qualitative in nature (like participant observation, the case study, and unstructured interviewing). A special advantage of such qualitative methods is that they allow the investigator (a) to identify unexpected variables, and (b) to study the wider context of the user system and of the new communication technology. For example, the *Bildschirmtext* evaluation involves qualitative data-gathering (a) via user diaries, and (b) from an in-depth study of 30 low-income users.

Process research is not necessarily qualitative. For instance, the *Bildschirmtext* evaluation includes quantitative data-gathering from the

six-stage panel of 200 users, in which a set of core variables are measured every four months or so (Figure 7). This panel strategy allows tracing user behavior changes over a number of time periods (this approach is highly intrusive in that the repeated data-gathering undoubtedly conditions the responses that are gathered, although with the large sample of *Bildschirmtext* users that are available, this intrusion may not be too serious).

Variance and process research are not necessarily in competition; a research design can include both approaches, with each providing a unique type of data. Most research designs for evaluating the impacts of new communication technology consist solely (or at least mainly) of quantitative data-gathering for variance research. That is certainly a mistake, in our opinion.

Evaluation researchers who study a new communication technology are presumably separate from the managers of the new technology system, but in practice they are usually almost co-designers (or co-redesigners) of the new communication technology. Conventional wisdom about evaluation research holds that the evaluators should be independent and separate from the system or program that they are evaluating. Politicians and other policy-makers often require such separation, so as to minimize possible pro-technology biases of the evaluation. For instance, U.S. Department of Agriculture officials required that the Green Thumb system be evaluated by other than the University of Kentucky (who operated the 1980–1981 Green Thumb Project in two Kentucky counties). And German government officials and politicians required that the Ministry of Posts and Telecommunications contract with external research groups for evaluation of the *Bildschirmtext* system. The independence of the evaluation researchers from the technologists who design and operate the technology system is thought to raise the credibility with which the research results are perceived. In many cases, such independence and separation may indeed create a healthy tension between the evaluators and the technologists, and lead to more reliable research findings about the technology's effects.

But the reality of the situation is usually that the evaluators and technologists must collaborate closely if an evaluation is to be conducted in an effective manner, and if the research findings are to be utilized to improve the communication technology through its redesign. Often this redesign occurs during the time period (t_1 to t_2 in Figure 6) in which the communication technology is being evaluated; the evaluators suggest needed improvements to the technologists, which may then be implemented. This sequence of events was partly the case in the German office automation studies.

Further, it does not seem so certain that the independence of evaluators and technologists is ideal, even in principle. It may be crucial for

both technologists and behavioral scientists to be involved jointly in a new communication technology; each has an important type of expertise to contribute to the new communication technology project. Perhaps it is realistic and advantageous for the technologists and behavioral scientists to be organized as one team of equals, rather than always insisting on their separate independence.

CONCLUSIONS AND DISCUSSIONS

At this crucial time, communication research can play a useful role in determining the impacts of the new technologies, so that government and private policies can be more soundly based upon empirical evidence. In order to play this crucial role, the nature of communication research must be quite different from past studies of the effects of the mass media; many of the new technologies are interactive, hence linear models of the communication process, based on the single act of communication, are inappropriate. Perhaps convergence models of communication, which conceive of human communication as the exchange of information among participants, are more valuable in investigating the new interactive communication systems (Rogers and Kincaid, 1981). Finally, due to the computer element that is part of the interactive technologies, a variety of new types of data can be utilized in impact studies. Investigations of the new communication technologies will thus change the methods and theories of communication research.

Thus the Information Revolution may cause a Communication Research Revolution.

REFERENCES

- James H. Bair (1979a), "Communication in the Office of the Future: Where the Real Pay-Off May Be," *Business Communication Review*, 1-2, 3-12.
- James H. Bair (1979b), "A Communications Perspective for Identifying Office Automation Payoffs," Paper presented at the Symposium on Automated Office System. New York University.
- Helmut Bodem, Peter Hauke, Bernd Lange, and Hans Zangl (1983), *Kommunikationstechnik und Wirtschaftlichkeit: Eine Analyse am Beispiel Teletex und Telefax*, Munich, Germany: CW-Publikationen.
- Stefan Brandt (1983), *Kommunikation und Räumliche Struktur von Bürotätigkeiten*, Dissertation, Hannover, Germany, Universität Hannover.
- Milton Chen (1981), *Site Visits to New Communication Technologies Used by Children: Videotext, Teletext, Interactive Cable, Personal Computers*, Stanford University, Stanford, CA: Institute for Communication Research, Report.
- Bruce Christie (1981), *Face to Face Communication*, New York: Wiley.

- Tom Forester (1980), *The Microelectronics Revolution*. New York: Oxford University Press, and Basil Blackwell.
- Robert Johansen, Jaques Vallee, and Kathleen Spangler (1979), *Electronic Meetings: Technical Alternatives and Social Choices*. Reading, MA: Addison-Wesley.
- Natan Katzman (1974), "The Impact of Communication Technology: Promises and Prospects," *Journal of Communication*, 24, 47-58.
- Heide Klingenberg and Hans-Peter Kränzle (1983), *Kommunikationstechnik und Nutzerverhalten: Die Wahl Zwischen Kommunikationsmitteln in Organisationen*. Munich, Germany: CW-Publikationen.
- Mark R. Levy (1980), "Home Video Recorders: A User Survey," *Journal of Communication*, 30, 23-27.
- Fritz Machlup and Trude Kronwinkler (1975), "Workers Who Produce Knowledge: A Steady Increase, 1900 to 1970," *Weltwirtschaftliches Archiv*, 111, 752-759.
- Lawrence B. Mohr (1982), *Explaining Organizational Behavior: The Limits and Possibilities of Theory and Research*. San Francisco: Jossey-Bass.
- Simon Nora and Alain Minc (1978), *L'informatization de la Société*. Paris, La Documentation Française, et Editions du Seuil; published as *The Computerization of Society: A Report to the President of France*. Cambridge, MA: MIT Press.
- Arnold Picot (1975), *Experimentelle Organisationsforschung: Methodische und Wissenschaftstheoretische Grundlagen*. Wiesbaden, Germany: Gabler.
- Arnold Picot (1979), "Rationalisierung im Verwaltungsbereich als Betriebswirtschaftliches Problem," *Zeitschrift für Betriebswirtschaft*, 49, 1145-1165.
- Arnold Picot (1982), "Neue Techniken der Bürokommunikation in Wirtschaftlicher und Organisatorischer Sicht," in *Europäischer Kongreß über Bürosysteme und Informations-Management: Proceedings*, Munich, Germany: CW-Publikationen.
- Arnold Picot and Wolfgang Anders (1983a), "Telekommunikationsnetze als Infrastruktur Neuerer Entwicklungen der Geschäftlichen Kommunikation," *Wirtschaftswissenschaftliches Studium*, 12, 183-189.
- Arnold Picot and Wolfgang Anders (1983b), "Telekommunikationsdienste für den Geschäftsbereich," *Wirtschaftswissenschaftliches Studium*, 12.
- Arnold Picot and Ralf Reichwald (1979), *Untersuchungen der Auswirkungen Neuer Kommunikationstechnologien im Büro auf Organisationsstruktur und Arbeitsinhalte, Phase 1: Entwicklung einer Untersuchungskonzeption*. Eggenstein-Leopoldshafen, Germany: Fachinformationszentrum Energie, Physik, Mathematik.
- Arnold Picot, Heide Klingenberg, and Hans-Peter Kränzle (1982), "Office Technology: A Report on Attitudes and Channel Selection from Field Studies in Germany," in Michael Burgoon (ed.), *Communication Yearbook 6*. Beverly Hills, CA: Sage.
- Arnold Picot, Ralf Reichwald, Hans Bodem, Peter Ramsauer, Roland Stolz, and Johann Zangl (1979), *Untersuchung zur Wirtschaftlichkeit der Schreibdienste in Obersten Bundesbehörden*. Munich. (To be published at Fachinformationszentrum Energie, Physik, Mathematik in Eggenstein-Leopoldshafen, Germany).
- Ronald E. Rice and Everett M. Rogers (1980), "Reinvention in the Innovation Process," *Knowledge: Creation; Diffusion; Utilization*, 1, 499-514.
- Ronald E. Rice and Everett M. Rogers (1983), "New Methods and New Data for the Study of New Media," Paper presented at the International Communication Association, Dallas, TX.
- Everett M. Rogers (1983a), *Diffusion of Innovations*. New York: Free Press.
- Everett M. Rogers (1983b), "The Impact of Information Systems on Organizations," Paper presented at the Harvard Colloquium on Information Systems, Boston, MA.
- Everett M. Rogers and D. Lawrence Kincaid (1981), *Communication Networks*. New York: Free Press.

- Everett M. Rogers and Judith K. Larsen (1984), *Silicon Valley Fever*, New York: Basic Books.
- Everett M. Rogers, S. Brice Heath, Jeffrey H. Moore, Carson Agnew, Arnold Picot, Ann Porteus, Donald Case, Jane Kingston, Jane Marcus, and Ronald E. Rice (1981), *Evaluation of the Terminals for Managers (TFM) Program*, Stanford University, Stanford, CA: Center for Information Technology.
- Ingo Schmoranz (1980), *Makroökonomische Analyse des Informationssektors*, Munich, Germany: Oldenbourg.
- John Short, Ederyn Williams, and Bruce Christie (1976), *The Social Psychology of Telecommunications*, London: Wiley.
- Hans-Jürgen Warnecke and others (1981), "Change of Technical, Organizational, and Social Structures brought about by Microelectronics," Paper presented at the Sixth International Conference on Production Research, Novi Sad, Yugoslavia.
- Paul Watzlawick, Janet H. Beavin, and Donald D. Jackson (1967), *Pragmatics of Human Communication*, New York: Norton.
- Osmo A. Wiio (1981), "Information Society and Communication Research," Paper presented at the Nordic Conference on Mass Communication Research, Reykjavik, Iceland.
- Oliver E. Williamson (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press.
- Oliver E. Williamson (1980), "The Organization of Work," *Journal of Economic Behavior and Organization*, 1, 5-38.

Name Index

A

Abel, Elie, xiii, 150, 163
Adorno, Theodor W., 193, 196, 220, 223–224, 234, 245
Agnew, Carson, 133
Ahluwalia, M., 145, 148
Alavi, Hamza, 145, 148
Albert, Pierre, 10
Allardt, E., 247, 262
Althusser, Louis, 246
Anders, Wolfgang, 109, 132
Anderson, James A., 295
Andrén, Gunnar, 251, 265
Andrews, F. M., 247, 262
Antola, Livia, 163
Arnheim, 205
Aron, Raymond, 83
Atwood, Erwin, 157, 164
Atwood, Rita, 292–293
Avery, Robert K., 229

B

Bailey, Kenneth D., 240, 262
Bair, James H., 116, 131
Balle, Francis, ix, xii, xiii, 1, 80, 291, 297
Ball-Rokeach, Sandra, 139, 148, 190, 197
Baran, Stanley J., 286, 294
Barber, James D., 277, 293
Barthes, Roland, 9
Bauer, Raymond A., 201, 246–247, 262
Baughman, James L., 192, 198
Bavelas, Alex, 205
Beal, George M., 201
Bean, Louis H., 275–276, 293
Beavin, Janet H., 112, 133
Bechtolt, Warren, 294
Becker, Lee B., 289, 295
Beltrán, Luis Ramiro, 222, 234
Bénéton, Ph., 248, 262
Bentler, P. M., 253–254, 262–263
Berelson, Bernard, 2–4, 16, 205, 267–270, 277–281, 283, 285, 287, 293, 295
Bergson, Henri, 87
Bertalanffy, Ludwig von, 213, 217

Bertrand, Claude-Jean, xiii, 19, 21, 32, 42
Blin, Bernard, 8
Block, Eva, 246, 249–250, 262
Block, Per, 249, 262
Blumler, Jay, xiii, 185–188, 191, 196–197, 220, 224, 227, 233–234, 237, 255, 262, 268, 289, 293
Bodem, Helmut, 116, 131–132
Bogart, Leo, 8, 16, 67
Bohlen, Joe M., 201
Bombardier, Denise, xiv, 166, 176–177
Bourdieu, Pierre, 9
Boulding, Kenneth, 201
Brandt, Stefan, 115, 131
Breitrose, Henry, xiv, 19, 68
Brinton, James, 208
Brooks, Tim, 67
Bruneau, Tom, 216–217
Burgoon, Judee K., 67
Burgoon, Michael, 67
Burrell, Gibson, 236–240, 242–243, 246, 255, 260–262
Bush, Chilton R., 201, 208

C

Campbell, Angus, 283–285, 293
Campbell, Donald T., 278, 293
Cantril, Hadley, 147–148, 201
Cantor, Muriel, 137
Capra, Fritjof, 138, 148
Carey, James W., 185, 187, 197, 229, 231, 234
Carlson, Anton, 202
Carter, Richard F., 288, 293, 296
Cartwright, D., 201, 205
Case, Donald, 133
Casey, 201
Cayrol, R., 197
Chaffee, Steven H., xiv, 2, 16, 191, 197, 267, 274, 279, 287, 289, 293–294
Chang, Tsan-Kuo, 296
Charters, W. W., 12, 16
Charnley, M. V., 244, 262
Chapan-Delmas, Jacques, 85

Chen, Milton, 109, 131
 Choe, Sun Yuel, 279, 293
 Christie, Bruce, 111–112, 115, 131, 133
 Chua, L. A., 247, 266
 Churchman, C. West, 213, 217
 Cioffi-Revilla, C., 245, 262
 Clarke, Arthur C., 162
 Clarke, J., 197
 Cohen, Stanley, 186, 197
 Cole, Richard R., 164, 266
 Coleman, James S., 205–206
 Colletti, Lucio, 246
 Collins, M. A., 197
 Collins, R., 237, 263
 Comstock, George, xiv, 209, 211
 Comte, Auguste, 1–2, 222
 Converse, Philip E., 293
 Cooley, Charles H., 201, 211
 Cotteret, Jean-Marie, xiii
 Critcher, C., 197
 Curran, Charles, 189, 197
 Curran, James M., 231, 234, 237, 263

D

Dalton, R. J., 254, 263
 Davis, Dennis K., 231, 234, 274, 277, 286, 294
 Debray, Regis, 10, 16
 DeFleur, Melvin L., 12, 16, 137, 139, 148, 190, 197, 285, 294
 Dembo, T., 205
 Dennis, Everette M., 285, 294
 Dervin, Brenda, 290, 292–294
 Deutsch, Karl W., 201
 Diamond, L., 247, 264
 Dietsch, Jean-Claude, 173, 176
 Dominick, Joseph R., 286, 294
 Doob, Leonard W., 202, 285, 295
 Dorfman, Ariel, 225–226, 234
 Duncan, O. D., 247, 263
 Duplessis, Maurice, 179
 Durkheim, Emile, 222

E

Easterlin, R. A., 247, 263
 Edelstein, Alex, 228, 244, 263
 Ehrenberg, A. S. C., 197
 Einstein, Albert, 100–101
 Elliott, Philip, 256, 263
 Ellul, Jacques, ix, xiv, 9, 16, 93, 95, 99, 101, 107
 Eulau, Heinz, 204, 291, 294
 Ettema, James S., 268, 294

Eyal, Chaim H., 199, 296
 Eymery, Gerard, xiii

F

Feldman, Jacob J., 288, 294
 Festinger, Leon, 201, 205
 Filipson, L., 199
 Fisher, M., 209, 211
 Fitchen, Richard, 237, 263
 Flodin, B., 258, 263
 Forester, Tom, 108, 132
 Fox, Anthony D., 188, 197
 Frazier, P. Jean, 221, 234
 Freud, Sigmund, 202
 Fromm, Erich, 223
 Fuller, J., 67

G

Gandy, Oscar H., 225, 234
 Gans, Herbert, 137
 García Márquez, Gabriel, 155
 Gaudet, Hazel, 295
 Gaziano, Cecillia, 221, 234
 Gerardin, Emile de, 82
 Gerbner, George, 190, 197, 237, 248–249, 254–255, 263
 Gide, André, 152
 Giovanni, David, 67
 Gitlin, Todd, 139, 148, 237, 263, 268, 294
 Golding, Peter, 149, 187, 190, 195, 197
 Goldmann, K., 246, 251, 263
 González-Casanova, Pablo, 144, 149
 Goodhart, G. J., 188, 197
 Gordon, A., 244, 263
 Graber, Doris, 199, 296
 Grapin, Jacqueline, 40
 Greenberg, Bradley S., xiv, 19, 43
 Griffith, B. C., 239, 266
 Groombridge, B., 170–171, 176
 Gross, Larry, 190, 197, 201
 Grünberg, Carl, 223
 Gryspeerdt, Axel, xv, 165, 172, 176
 Gurevitch, Michael, 187–188, 191, 197, 263

H

Habermas, Jürgen, 224–225, 227, 229, 234, 245
 Hall, Stuart, 186, 193, 197
 Halloran, James D., 232, 234, 244, 263
 Hamelink, Cees J., 232, 234
 Hardt, Hanno, 4, 16, 185, 197, 222, 224, 234
 Haring, John, 67

Harris, Louis, 276
 Harris, Phil, 158, 163
 Hauke, Peter, 131
 Hawkins, Robert, 289, 294
 Heath, S. Brice, 114, 133
 Hedinsson, E., 254–255, 258, 263
 Heeter, Carrie J., 43
 Heider, Fritz, 205
 Held, David, 224–225, 234
 Herzog, H., 205
 Hickey, Neil, 67
 Hicks, R. G., 244, 263
 Hilgard, Ernest, 202
 Himmelweit, Hilde T., ix, 12, 16
 Hinkle, Gisela J., 2, 16, 222, 234
 Hinkle, Roscoe E., 2, 16, 222, 234
 Hirsch, Paul M., 137, 248, 263
 Hobbs, Mike, 67
 Hochheimer, John, xv, 267, 281, 292, 294
 Höglund, L., 239, 263
 Horkheimer, Max, 220, 223–224, 234, 245
 Horn, J. L., 253–254, 263
 Hornik, Robert, 290, 294
 Hovland, Carl I., 3–4, 200–202, 204–205, 207, 209, 285, 294
 Huba, G. J., 254, 263
 Hughes, M., 248, 263
 Hull, Clark, 202
 Hutchins, Robert M., 202

I

Inglehart, R. F., 247, 262–263
 Ingram, Kay, 43
 Inkeles, Alex, 247, 264

J

Jackson, Donald D., 112, 133
 Jacobson, Thomas L., 294
 Jahoda, Marie, 203, 211
 Janis, Irving L., 205, 286, 295
 Janowitz, Morris, 204
 Jay, Martin, 220, 223–224, 235
 Jefferson, T., 197
 Johansen, Robert, 111, 132
 Johnson-Smaragdi, U., 258, 264
 Jones, Evelyn, 67
 Jöreskog, K. G., 253, 264

K

Katz, Elihu, 139, 149, 188, 190, 197–198, 201, 205–206, 255, 262, 268, 273, 286, 288, 293–294
 Katzman, Natan, xiv, 117, 132

Kayser, Jacques, 8, 10, 16
 Keller, Harold, 205
 Kelman, Herbert, 205
 Key, V. O., 204
 Keynes, John M., 202
 Kincaid, Lawrence D., 3, 16, 114, 131–132, 137, 149, 285, 290, 296
 Kingston, Jane, 133
 Kitt, Alice S., 248, 264
 Kittross, John M., 67
 Klapper, Joseph T., 186, 198, 205, 268, 270, 274, 287–288, 294
 Kline, F. Gerald, 295
 Klingenberg, Heide, 111–112, 115, 132
 Kluckhohn, C., 248, 264
 Knepel, H., 253–254, 264
 Koffka, Kurt, 202
 Köhler, Wolfgang, 202
 Kränzle, Hanz-Peter, 111–112, 115, 132
 Kraus, Sidney, 274, 277, 294
 Kroeber, A. L., 248, 264
 Kronwinkler, Trude, 108, 132
 Kuhn, Thomas, 102, 107

L

Lagerkranz, J., 246, 251, 263
 Lambert, Michel, 169, 176
 Lang, Gladys G. E., 244, 264
 Lang, Kurt, 185, 198, 220, 222, 231, 235, 244, 261, 264
 Lange, Bernd, 131
 Larsen, Judith K., 12–13, 16, 109, 133, 303, 307
 Lasswell, Harold, 3–4, 6, 8, 200–205, 220, 249, 264, 282, 285–286, 294
 Lateinturier, Ch., 24, 42
 Lazarsfeld, Paul F., 3–4, 6, 138–139, 149, 185, 198, 200–203, 205–207, 209, 211, 220, 222, 235, 267–281, 283–287, 289, 293–295
 LeDuc, Don R., 67
 Leites, N., 204
 Lemisch, Jesse, 291, 295
 Lenin, V. I., 72, 161
 Lerner, Daniel, 204
 Levin, Jack, 173, 176
 Levi-Strauss, Claude, 9, 16
 Levy, Mark R., 109, 132
 Levy, Philip H., 32, 42
 Lewin, Kurt, 3–4, 200–203, 205–206, 209, 222, 244
 Lewis, H. L., 264
 Lhoest, H., 173–174, 176

Lichter, S. R., 28, 42
 Lippman, Walter, 201, 211, 244, 264
 Lipsitt, L. P., 205
 Litman, Barry, 43
 Lloyd, Herbert M., 32, 42
 Lohmöller, J. B., 253–254, 264
 Lowenthal, Leo, 205, 223–224, 246, 264
 Lowery, Sheron, 12, 16
 Lubell, Samuel, 276
 Lumsdaine, Arthur A., 205, 286, 294–295
 Lyle, Jack, 12, 16

M

MacBride, Sean, 154, 163
 Maccoby, Nathan, 208, 286, 296
 Machlup, Fritz, 108, 132
 Maier, Norman, 205
 Marcus, Jane, 133
 Marcuse, Herbert, 223–224, 245
 Marquis, Don, 202
 Marsh, Earle, 67
 Martin, J. A., 254, 264
 Maslow, Abraham H., 147
 Masmoudi, Mustapha, 151, 163
 Mattelart, Armand, 225–226, 229, 234
 Marx, Karl, 90, 98, 102, 202
 McAnany, Emile E., 233, 235
 McArdle, J. J., 253–254, 263
 McCarthy, Thomas, 225, 235
 McClelland, David C., 264
 McCombs, Maxwell E., xiv, 192, 198–199, 289, 295–296
 McGuire, William J., 205, 286, 295
 McLeod, Jack M., 190, 198, 289, 295
 McLuhan, Marshall, xiii, 9, 89–90, 103, 154
 McLuskie, Ed, 225, 235
 McPhee, William, 293
 McQuail, Dennis, ix, 186, 198, 268, 289, 293
 Mendelsohn, Harold, 274, 289, 295
 Melischek, G., 248–249, 264
 Merriam, Charles, 202
 Merrill, John C., 150, 163
 Merritt, Richard L., 245, 262
 Merton, Robert K., 138, 149, 205, 248, 264, 269, 271, 275, 278, 295
 Merz, C., 244, 264
 Metropoulos, Effie, 67
 Meuche, Steve, 43
 Meyer, Timothy P., 292, 295
 Middleton, Sue, 195, 197

Miller, Arthur, 295
 Miller, Neil, 202
 Miller, Warren E., 287, 293, 295
 Milton, John, 81
 Minc, Alain, 108, 132
 Mino, Yuko, 274, 294
 Mody, Bella, xv, 134, 149
 Mohr, Lawrence B., 129, 132
 Moore, Jeffrey M., 114, 133
 Morehouse, Ward, 149
 Morgan, Gareth, 236–240, 242–243, 246, 255, 260–262
 Morin, Edgar, 9, 16, 167, 176
 Morley, David, 196, 198
 Mosco, Vincent, 229
 Mott, Frederick D., 201
 Mullins, Nicholas C., 253, 264
 Murdock, G., 149, 187, 190, 195, 197–198

N
 Nafziger, 201
 Namenwirth, J. Z., 249, 264
 Nettleford, Rex, 144, 149
 Newcomb, Theodore M., 201
 Nie, Norman H., 281–282, 295
 Nilan, Michael S., 294
 Nimmo, Daniel D., 237, 265, 270, 295
 Nnaemeka, T., 244, 265
 Noelle-Neumann, Elizabeth, ix, 187, 198
 Nora, Simon, 108, 132
 Nordenstreng, Kaarle, 161, 163, 187, 189, 198, 229
 Nowak, Kjell, 198, 251, 265

O

Ogburn, C., 247, 249, 265
 O'Keefe, Garrett J., 274, 289, 295
 Openheim, A. N., 12, 16
 Orwell, George, 81, 90
 Osgood, Charles E., 201, 208
 Owan, J., 244, 265

P

Packard, Vance, 287
 Page, Robert, 43
 Paisley, William, 3–5, 16, 190, 198, 200, 287, 289, 295–296, 306–307
 Papageorgis, Demetrios, 286, 295
 Park, Robert E., 1, 4, 202, 221
 Parker, Edwin B., 12, 16
 Patterson, Thomas E., 190, 198, 280, 295
 Parsons, Talcott, 248, 264

Passeron, C., 9
 Peterson, Theodore B., 82, 91
 Petrick, M., xiv
 Petrocik, John R., 295
 Pfister, Ed., 67
 Picot, Arnold, xv, 108–109, 111–112, 116, 121, 126–127, 132–133
 Pierce, John R., 201
 Pinch, Edward T., 156, 163
 Pingree, Suzanne, 294
 Pool, Ithiel de Sola, 12–13, 16, 201, 204, 228, 235, 288, 295
 Porteus, Ann, 133
 Poulantzas, Nicos, 246

R

Ramsauer, Peter, 132
 Rawls, John, 152
 Redfield, Robert, 202
 Reeves, Byron, 190, 192, 198, 284–285, 295
 Reichwald, Ralf, 116, 126, 132
 Reid, Stanley, 145, 149
 Reik, Theodor, 202
 Renoir, Jean, 71
 Reston, James, 160
 Rex, J., 237, 265
 Rhodes, Dale, 67
 Rice, Ronald E., 108, 122, 124, 132–133, 190, 198, 287, 296
 Rice, Stuart A., 275–276, 295–296
 Richards, Don, 67
 Richstad, J., 244, 265
 Righter, Rosemary, 152, 160, 164
 Riley, John W., 137, 149
 Riley, Matilda, 137, 149
 Ringet, Gabriel, 176
 Ritzer, G., 237, 265
 Roberts, B., 197
 Roberts, Donald, xiv, 286, 296
 Robinson, Edward G., 286
 Robinson, G. J., 244, 265
 Rodney, Walter, 141, 149
 Roe, Keith, 258, 263, 265
 Rogers, Carl R., 292, 296
 Rogers, Everett M., ix, xii, 1–3, 12–13, 16, 108–109, 114, 118–119, 122, 124, 131–133, 137, 149, 163, 185, 198, 201, 219, 235, 237, 265, 285, 290–291, 295–297, 303, 307
 Rokeach, Milton, 265
 Roper, Elmo, 276

Rosengren, Karl E., ix, xvi, 186–187, 198, 230, 235–236, 239, 244–245, 249–250, 256, 258, 264–265, 300
 Rossi, Peter H., 275, 277, 296
 Rosten, Leo, 204–206
 Rostow, Walter W., 148–149
 Rothman, F., 28, 42
 Rovan, Joseph, 8
 Rowe, Joseph, 67
 Russell, Bertrand, 202
 Ryan, Bryce, 201

S

Sandage, C. H., 208
 Sanders, Jerry, 12
 Sanders, Keith R., 237, 270, 295
 Sapir, Edward, 201
 Sauvy, Alfred, 7, 16, 135
 Scanlon, T. J., 244, 265
 Schaeffer, Pierre, 10
 Schiller, Dan, 142, 149
 Schiller, Herbert I., 222, 228, 232–233, 235
 Schmoranz, Ingo, 108, 133
 Short, John, 111–112, 115, 133, 237, 266
 Schramm, Wilbur, xvi, 4–5, 12, 16, 82, 91, 134–135, 139, 149, 157, 164, 200, 208, 211, 237, 266, 284, 286, 288, 296, 306–307
 Schudson, Michael, 268, 296
 Schulz, W., 244, 266
 Schyller, I., 199
 Sears, David O., 274, 296
 Servan-Schreiber, Jean-Jacques, 98, 107, 146, 149, 304
 Servan-Schreiber, Jean-Louis, 10–11, 17
 Shannon, Claude E., 3, 17, 138, 149, 201, 212, 215, 217, 222, 235
 Shaw, Donald L., 164, 266, 289, 295
 Sheffield, Fred D., 294
 Sheingold, Carl A., 272, 290, 292, 296
 Shuringa, T. M., 146, 149
 Siebert, Fred S., 82, 91, 208
 Siegel, Jonathan W., 291, 294
 Sigurd, Bengt, 198
 Simmel, Georg, 1–2
 Simon, Herbert, 204
 Sivard, Ruth Lever, 143, 149
 Small, H., 239, 266
 Smith, Anthony, 29, 42
 Smith, Brewster, 205
 Smith, Kim, 294
 Smith, R. F., 244, 266

Soffin, Stan, 43
 Sonesson, I., 258, 266
 Sörbom, D., 253, 264
 Sorokin, Pitirim, 247, 249, 266
 Spangler, Kathleen, 111, 132
 Sparkers, V. M., 244, 265
 Spates, James L., 173, 176
 Spence, Kenneth, 202
 Spirlet, Jean-Pierre, 169, 176
 Stanley, Julian C., 278, 293
 Stanton, Frank, 203, 271, 295
 Stouffer, Sam, 204, 207
 Stappers, J., 264
 Steinberg, Cobbett, 67
 Steiner, Gary, 268, 278, 293
 Sterling, Christopher H., 67
 Stevenson, Robert L., 157–158, 164, 243, 266
 Stewart, Frances, 134, 149
 Stipak, B., 247, 266
 Stoezel, Jean, 6, 8, 17
 Stokes, Donald E., 293
 Stolz, Roland, 132
 Swanson, D. L., 256, 266

T

Tankard, James W., 270, 296
 Tarde, Gabriel, 1–2
 Terrou, Fernand, 6, 8
 Thoveron, G., 197
 Thunberg, Anne-Marie, 186, 198
 Tichenor, Phillip, 192, 198
 Tipton, Leonard P., 293
 Toennies, Ferdinand, 222
 Toure, Sekou, 144
 Toussaint-Desmoulins, Nadine, 24, 42
 Traudt, Paul J., 295
 Treinen, Heiner, 125
 Truman, David, 204
 Tuchman, Gaye, 137, 190, 199, 268, 296
 Tunstall, Jeremy, 22, 42
 Tsang, Kuo-Jen, 296
 Tyron, E. B., 248, 266

U

Unger, Arthur, 67
 Urabayan, Miguel, xvi, 19, 21

V

Vallee, Jaques, 111, 132
 van Cuilenberg, J. J., 186, 198

Varis, Tapio, 163
 Verba, Sidney, 295
 Vermeersch, E., 248, 266
 Vince, P., 12, 16
 von Feilitzen, C., 188, 199
 von Neumann, John, 201
 Vuyenne, Bernard, 10

W

Wackman, Daniel B., 292, 296
 Wangermee, Robert, 173–174, 176
 Ward, L. Scott, 293
 Warnecke, Hans-Jurgen, 108, 133
 Wartella, Ellen, 284–285, 292, 295–296
 Wasko, Janet, 229
 Wasserman, I. M., 247, 266
 Watzlawick, Paul, 112, 133
 Weaver, David H., 192, 199, 287, 296
 Weaver, Warren, 3, 17, 138, 149, 212, 215, 217, 222, 235
 Weber, Max, 1, 2, 222
 Wedell, George, 139, 149
 Welles, Orson, 287
 Wertheimer, Max, 202
 White, H. D., 239, 266
 White, Robert W., 205, 282, 296
 Whitney, D., Charles, 268, 294
 Whitrow, G. J., 216, 218
 Whorf, B. L., 201
 Wiener, Norbert, 201, 213
 Wiio, Osmo, ix, xvi, 110, 133, 212, 216, 218
 Williams, Ederyn, 111–112, 115, 133
 Williams, Frederick, 12
 Williams, Raymond, 293, 296
 Williamson, Oliver E., 112, 133
 Willkie, Wendell, 277
 Windahl, S., 255–256, 258, 265–266
 Wirth, Louis, 202
 Wold, H., 253–254, 264
 Wollacott, J., 263
 Wundt, Wilhelm, 202

Y

Yerkes, Robert, 202
 Young, Jock, 186, 197

Z

Zangl, Hans, 131–132
 Zapf, W., 247, 266
 Zeisel, Hans, 203, 211
 Zimmerman, Betty, 154

SUBJECT INDEX

- A**
- active audiences: access to existing media by non-professionals, 168–171; public participation in the media, 165–176
 - advertising, 28–29, 98–99: agencies, 49; and the mass media, 95; expenditures in, 55; in U.S. newspapers, 46–47; in television, 55–56; sponsors, 104
 - age of television, 179–180
 - agenda-setting, 192, 195, 223, 289
 - aid dependence, 142–143
 - alternative research methods, 302
 - alternative television, 174
 - American commercial television, 54–57, 174
 - American doctrine of social responsibility of the media (*see* doctrine of social responsibility)
 - American electoral politics: changes in, 281–282
 - American empirical research (*see also* empirical school): diagnosis of, 191–193; role of communication in American society, 192
 - American First Amendment (*see also* First Amendment to the Constitution of the U. S.), 80–81
 - American social sciences: impact on European intellectual life, 187
 - Anglo-American liberalism and the concept of freedom, 82
 - ANTIOPE system in France (*see also* teletext systems), 22, 87, 123–124
 - artificial intelligence and the idea of “robotique,” 107
 - audience characteristics: in Europe, 165; newspapers readers (in the U.S.), 47–48; radio listeners, 51–53; TV viewers, 57, 59–60, 74
 - authoritarianism, 85
 - automated information systems, 49
- B**
- BBC (British Broadcasting Corporation), 22, 71, 86, 188–189
 - Big Four news agencies (*see* news agencies)
 - Bildschirmtext* project in Germany (*see also* German Ministry of Posts and Telecommunication), 123, 125–131
 - Brandt Commission, 142
 - broadcasting: and the American doctrine of social responsibility, 83; competition among European systems, 84; European trend to private, 84–85; hardware, 139; in Canada, 179; infra-red, 162; in the U.S., 85, 298; new forms of, 173–175; one-way, 120; satellites, 134, 227; traditional systems, 33–34
 - cable television: arrival of, 81; as an enterprise, 74; competition for, 66; definition of, 60, 72, 88; in Europe, 30, 33, 87, 174, 298; interactive, 14, 64, 109, 282; in the Third World, 227; in the U.S., 60–63, 298; over-the-air channels, 72; pay-per-view service, 74–75; program possibilities, 74; resemblance to magazines, 73; revenues of, 63, 75; systems, 68, 134–135
 - Canadian television, 177–178; High Council for Radio and Television, 86
 - capitalism, 82
 - CB radios, 105
 - ensorship: definition of, 104
 - Center for Advanced Study in the Behavioral Sciences at Stanford, 206
 - Center for Group Dynamics at MIT, 206
 - central processing unit (CPU), 215
 - Chicago School of Sociology, 221–223
 - CIDA (Canadian International Development Agency), 143
 - circulation of messages, 89

- classical technologies (*see also* old communication technologies), 148
- coaxial cable, 64, 72, 88
- commercial consumer studies, 207
- commercial radio, 49–52
- commercial television, 54–57, 298
- communal television, 174
- communication: Act of 1934, 51; and attitudes, 205; and culture, 236; and political influence, 290; convergence model of, 131, 290–291; definition of, 215–217; early studies on, 200–201; effects of, 8; infrastructure of, 145; in organizations, 112; networks, 88, 97, 103, 107, 110, 114, 119–122, 290; process of, 276; satellites, 162
- communication research: and policy-makers, 137; and the new media, 301–306; channel vs. content studies, 110–111; deterministic view of, 255; dominant paradigm of, 246, 251; empirical and critical schools of, 219–235; European and American approaches to, 1–17, 183–307; ferment of the field, 236, 300; founding fathers of, 3–4, 6–8, 200–205; from field to discipline, 4–5, 229; golden era of Lasswell's model, 8; institutionalization of, 5–6; intellectual division of, 301; methods of, 305; on national development, 148; on the news flow debate, 150, 156–159; paradigms of, 236–266; political criticism of, 9–11; programs of, 207–210; revolution in, 108, 131, 302; schools of thought in, 219–226; tradition, 241; voluntaristic view of, 255
- communication revolution (*see also* information revolution), 68–69, 80–91, 302, 306
- communication technologies: and the concept of global village, 89–90; components of, 109; computer-based, 111, 119, 304; context of, 136–140; critical and empirical views of, 227–228; development of, 28; in Third World contexts, 134–149; productivity of, 162–163
- communism, 286
- computers, 13, 76, 87, 135, 141, 214, 227; and children, 303; and control systems, 215; and layout terminals, 49; as the heart of new communication technologies, 108; as tools, 98; at home, 109; chips, 110; impact on work, 303–304; industries, 306; in the office, 109; networks, 146; personal, 66; power, 101–102; programming, 72; recorded data, 302; role in society, 304
- content analysis, 187, 203, 209; and the empirical and critical schools, 225–226; in election campaigns, 273–274, 285; quantitative approach to, 249
- CPB (Corporation for Public Broadcasting), 52–53, 58
- critical and empirical schools [*see also* (1) Frankfurt Institute for Social Research, and (2) empirical school]; hybrid merging of, 229–230; main research problems, 194–195; mutual misunderstandings, 231; research methods, 219–235; toward improved understanding of, 230–233; views of communication technology, 227–228
- cultural imperialism, 153, 231
- cultural indicators, 246–249, 250, 261; Swedish research on, 249–251; Vienna Symposium on, 249
- culture, 25, 248; and communication, 236; and other societal structures, 250; industrialization of, 90
- D**
- daily newspapers, 46–49, 80
- DANIDA (Danish International Development Agency), 143
- data-banks, 102, 117
- decision making: centers of, 140; and communication researchers, 137, 272
- deterministic and voluntaristic perspectives of mass communication, 257, 259–260
- developmental perspectives of the media, 292
- dialogue: possibility of, 104–106
- diffusion of communication technologies, 117–118; and the "critical mass" of individuals necessary for adoption, 120

Direct Broadcast Satellite (DBS),
14, 66

diversity of languages in Europe: impact
on media broadcasting, 30

doctrine of social responsibility,
82–83

E

education, 25; and income, 77; and infor-
mation seeking, 77

effects studies, 111, 131, 188, 195, 209,
212, 222, 231, 256–257, 260, 270;
analysis of, 268; limited effects
model, 267–296; political-marketing
research approach, 291; the hypo-
dermic needle model, 138

election campaigns, 273–275, 278

electronic media: European and American
consumption of, 23–24

electronic messaging systems in the office,
109, 111, 114, 124, 304

electronic text, 65–66; and facsimile me-
dia, 114; transmission of newsco-
pies, 48

empirical positivism, 221

empirical school, x, 183, 221–223, 299;
characteristics of, 219; differences
versus critical school, 227–228, 299–
300; geography of, 228–230; mem-
bers of, 229; terminology of, 220–
221; views of communication tech-
nology, 227–228

empiricism, 219, 223

entertainment, 25

European and American communication
research, 1–17, 267; approaches to,
183–307; differences between, 185–
199, 297–301; founding fathers of,
3–4, 6–8, 200–205; toward integra-
tion of, 297–307

European and American media: differences
between, 25–28; similarities be-
tween, 23–24

European daily newspapers, 40–41

Europeanization of the mass media, 21–22,
38–42

European mass communication research:
and Marxism, 187, 190; and the hol-
istic approach, 187; characteristics
of, 28–30, 186–190; diagnosis of,
193–196

evaluation research: and the new commu-
nication technologies, 125–128

evolution of the active media, 167

F

face-to-face communication, 111–112

factor analysis, 252

Fairness Doctrine, 52, 56, 61

fascism, 286

FCC (Federal Communications Commis-
sion), 51–52, 54–55, 56, 61, 63, 85–
86

feedback, 214

fiber optic cable, 14, 64, 72, 162, 298

field reporters and technological innova-
tions, 48

(*The Financial Times*), 38–41

First Amendment on freedom of the press,
7, 80–82

First World countries, 139; and informa-
tion agencies, 158–159; and the free
flow of information, 151; and the
mass media, 147; definition of, 135;
differences with Third World coun-
tries, 148

founding fathers of communication re-
search: in Europe, 6–8; in the U.S.,
3–4, 200–205, 207

Frankfurt Institute for Social Research
(Frankfurt school or critical school),
x, 90, 183; characteristics of, 219;
critical communication school, 223–
226, 232, 299; intellectual leaders of,
229; Marxist approach, 219–220,
223; perspective of, 246; second
generation of, 229; terminology of,
220–221; the critical paradigm, 194;
views of communication technology,
227–228

freedom of expression: and communication
revolution, 80–91; and despotic gov-
ernments, 81; and the First Amend-
ment to the American constitution,
81–82; and the new media, 87, 90–
91, 93; in Europe, 83; in the U.S.,
83; problematics of, 82–84; quest
for, 81, 82

freedom of information and national devel-
opment, 139

freedom of the press, 7, 32, 80–81; and the
doctrine of social responsibility, 82–

- freedom of the press (*continued*)
 83; and the Hutchins Commission, 83
- free flow of information, 151; as Western doctrine, 153
- French broadcasting system: changes in, 85–87
- French Declaration of Human Rights, 81–82
- French Public Opinion Institute (IFOP), 7
- French telecommunication services, 105
- Freudian psychology, 282
- functionalism, 219, 222–223
- future communication technologies (*see also* new communication technologies), 89–90
- G**
- general system theory, 212–214
- German Association for Journalism and Communication Research, 267
- German Ministry of Posts and Telecommunication, 123, 129–130; the *Bildschirmtext* project, 123, 125–131
- global village, 89, 103–104
- “Green Thumb” project in the U.S., 123, 125, 128, 130
- group communication, 203
- group identification, 285–286
- H**
- “hard” news, 46
- hardware, 66
- history of mass communication research, 80, 193, 200, 208
- home computers, 109, 119
- homogeneity: of human populations, 277–281; of media, 280; of times, 281, 292
- human communication, 96, 212; studies of, 139
- hypodermic needle model, 138, 284–287, 289
- I**
- identification: Freudian concept of, 282
- ideology: and dominance, 194–195
- ignoring the mass media effects, 284
- independent radio and television: in Europe, 167–168, 175
- industrial revolution, 80, 136
- industrial society: standardization of, 9
- information, 7, 12, 25; and communication, 96, 212–218; and power, 96–97; and news, 152; blocking, 100; definition of, 214–216; excess of, 95, 97, 99–100; flow of, 97–98; in a real village, 104; processing and transmission, 108–109, 135, 214, 217; quantitative and qualitative aspects of, 101–102; seeking, 272; systems, 214–216; the price of, 76–77; time and, 216; transmission of, 216
- information agencies (*see* news agencies)
- information flows: in a network, 121
- information-poor and information-rich, 77, 79, 99, 106, 116, 299, 303
- information revolution (*see also* communication revolution), ix, x, 13, 108–109, 131, 146, 302–303
- information society, 11–12, 89, 93, 100, 134–135, 145, 306; characteristics of, 108–109; impact of new information technologies on, 304–305
- Institute Français de Presse (the French Press Institute), 7
- interactive cable, 14, 64, 109, 298
- interactive communication technologies, 120–121, 131, 298, 301
- interactive systems: and newspapers production, 49
- interactive television systems, 109, 124
- interactive videotext, 87
- interactivity, 12–14, 68, 75–76, 78, 301–302
- intercommunication, 30
- International Association for Mass Communication Research (IAMCR), 228, 249, 267, 299
- International Commission for the Study of Communication Problems (MacBride Commission), 150, 154, 156, 160, 243; practical recommendations, 155; reactions to, 154–155
- international communication, 243; a new order?, 150–164
- International Communication Association (ICA), 228, 249, 267, 299
- International Herald Tribune*, 38–41
- internationalism of European media, 41–42
- International Monetary Fund (IMF), 142
- international news flow, 152, 244

international power politics and the military. 143
 International Telecommunications Union, 88
 interpersonal communication, 297, 300–301
 invisible college of communication researchers, 212

L

Latin American scholars, 222
 Lazarsfeld research tradition, 269–270, 277; contemporary influences on, 275–277; Erie county study, 271–273; historical shifts, 281–282; marketing orientation, 270–271, 288–289; theoretical goals and assumed homogeneities, 277–281
 learning theory, 285
 liberalism, 81–82, 85, 87
 limited-effects model, 285, 287, 288, 289, 290; origins of, 267–296
 linear model of communication effects, 3, 212, 222, 285, 291, 302
 linguistics, 9
 LISREL (Linear Structural Relations), 252–255, 261
 low power television (LP TV), 66

M

MacBride Commission (*see* International Commission for the Study of Communication Problems)
 magazines: in Europe, 41; in the U.S., 44
 magic bullet theory of communication, 138, 284–287, 289
 management information network, 141
 Marconi galaxy, 103
 Marxist communication analyses, 187, 190, 195; contemporary Mediterranean Marxism, 246; humanistic perspective, 238, 242, 245; objectivistic perspective, 246; orientation of, 219, 225; orthodox Marxism, 224
 mass communication (*see also* mass media), x, 71, 93, 107, 177, 212, 260, 300; and national development, 134–136; and political behavior, 287; and public opinion, 221; and the gap between information rich and information poor, 161; and the linear model,

138–139; and the possibility of feedback, 104–105; as a social process, 196; history of, 289–290; negative effects of, 223; person-oriented perspective, 292; study of ideological messages of, 246

massive media impact: general theory of, 287; “legacy of fear,” 285

mass media (*see also* mass communication): and authoritarian and liberal regimes, 22; and democracy, 106; and mass culture, 245; as agencies of social control, 190; as ideological apparatus, 246; audience characteristics, 90, 160; consumption, 23–24; content, 95, 101, 285; criticism of empirical research, 241–243; effects, 190–191, 280; Europeanization of, 21–22; European media, 22, 26, 165–176; homogeneity of, 280; impact on election campaigns, 272–275; in Europe and America, 19–91; in the U.S., 22, 43–67, 70; markets, 23; news, 236, 241–245, 260; role in society of, 225; system, 281; the Carnegie Commission, 85; the new worlds of, 93–183

massmediology, 8–9

mathematical theory of communication, 212, 215

media and society, 84

media diversity in Europe, 31

media environment of the American family, 43–46

media flows in Europe, 30

media panel: the Swedish program, 258–260

media regulation, 56

media revolution (*see also* information revolution), 302

media structures in Europe, 32–38

mediated information: preconceived ideas about, 95–107

microchips, 76

microcircuits, 72

microcomputers (*see also* new communication technologies), xiii, 13, 134, 305; and domestic industries in Third World countries, 147; experimental projects in education and health, 147, 303; in the Third World, 304;

- microcomputers (*continued*)
 revolution, 109; social impact of, 107, 110; technology, 298
- microelectronic innovations: at organizational level, 109–110; in the household, 109–110; in the Third World, 304
- middle-range theory, 266, 278, 280, 287
- modern information systems (*see also* new information technologies): and the dissociation of worlds from the individual, 103; and the spread of bad news, 100–101
- multinational corporations (*see* transnational corporations)
- multinational media, 30
- multiple-system operators (MSOs), 63
- multivariate statistical analyses, 252–260:
 model for social origins and effects of mass media use, 254; regression analysis, 277
- N**
- National Public Radio (NPR) system, 52
- nature of commercial television programs in the U.S., 56–57
- networking, 120; and interactive technologies, 126
- new communication technologies, xi, xii, 11–12, 30, 43, 71–73, 87, 95, 128, 134, 146, 150, 267, 301–302, 304; acceptance and use of, 119–124; and communication networks, 119; and freedom of expression, 81; and office productivity, 115–116; and policy-makers, 118; and the invasion of privacy, 77–78; and the joint involvement of technologists and behavioral scientists, 130–131; and the knowledge gap, 116–119; and the new distribution of roles, 68–79; and the research paradigm of the diffusion of innovations, 119–120; concerns about, 227–228; economic aspects of, 76–77; effects of, 110–111; for development in the Third World, 304; in Europe and the U.S., 298; in organizations, 111–119; in Third World contexts, 134–149, 162–163; introduction of, 111–114; naming the new technology, 122–124; perception of, 123; qualitative differences vs. old technologies, 78; rate of adoption of, 123; social impact of, 93, 108–133, 299; versus face-to-face channels, 111, 114
- new information industries: in Third World countries, 147–148
- new information technologies (*see* new communication technologies)
- new institutes and programs in communication, 207–210
- new media (*see also* new communication technologies), 13–16, 43, 80; and freedom of expression, 90–91; and non-professionals, 171–175; challenge to the established media, 166–167; improving the, 159–161; in Europe, 87–89, 165–166; light communication media, 167; of satellites, 298; positive and negative consequences of, 108
- new office technologies (*see also* office automation), 120–122; in Germany, 126–127, 130; redesign and implementation of, 122
- news agencies, 23, 31, 150–151, 153; and news flows, 156–157; profitability of, 156; the Big Four, 158–159
- news flows: content of, 157–158; proximity of, 157–158; research on, 289
- newspapers: and satellites, 149; audience, 47–48; circulation in the U.S., 46–47; ownership, 47; technological innovations, 48–49
- new television technologies (*see also* new communication technologies): electronic text, 65–66; interactive cable, 64; in the U.S., 63–66; optical fiber, 64; satellites, 64–65; videocassette/disc units, 65
- New World Information Order, 150, 152, 161–162
- O**
- office automation, 109; "bureautique," 107; consequences of, 302; impact of, 109, 111; in Germany, 126–127, 130
- Office de la Radio-Télévision Française (ORTF), 85
- old communication technologies, 68, 69–71, 89, 117; as one-way producer-driven technologies, 70–71; econom-

ic dimension, 71; qualitative differences versus new technologies, 78

opinion leaders, 272, 279

optic fiber cable, 64, 88, 110

organizational communication, 109, 111–119; and equality, 116–117; face-to-face communication, 109, 111–119; intraorganizational communication process, 121; and office productivity, 115–116; problems of information-exchange, 112–114; and structural changes, 114–115

P

paradigms of communication research: basic, 267; convergence, 300; dominant versus dissident, 240–241, 250, 252, 260, 275; methodologies, 245; typology, 238

participative television, 173–174

party identification, 282–283

path analysis, 255

Payne Fund studies, 12, 285

personal computers (*see also* microcomputers), 66

person-oriented perspective of communication, 292

planetary television, 88

PLS (Partial Least Squares), 252–255, 261

political behavior: and mass communication, 287; dynamics of, 272

political campaigns: exposure to, 276; information on, 281; marketing approach to, 270–271, 288–289; party identification, 282–283; the “enlightened” electorate, 281; via mass media, 286

political censorship: abolition of, 155

political communication research: beginning of, 203, 267–296; cognitive effects, 289; contemporary era, 287–289; contemporary influences on Lazarsfeld, 275–277; definition of, 268; Erie county study, 271–273; Lazarsfeld tradition, 269–270; marketing orientation, 268, 270–271, 288–289, 291; psychological explanations, 282–284; role of mass media in, 269–270; social theories of, 290; the Michigan tradition, 282–284

political democracy: capitalism and the development of, 82

political “telethon,” 288

politicization: of European media, 28; of media in French Canada, 180–181

positivism, 219; French, 222–223

pragmatism, 221

preconceived ideas, 95–106

press (*see also* freedom of the press): alternative, 173; audience participation in, 168–170; council, 32–38; establishment, 171–172; law, 32; parallel, 171–173

print media [*see also* (1) newspapers, and (2) press]: consumption in Europe, 31, 35–38

process research, 129–130

propaganda, 99–100; and effects studies, 285

Public Broadcasting Service (PBS), 58, 85

public opinion polling studies, 80, 106, 207

public radio in the U.S.: audience characteristics, 53; programming, 52–53

public television in the U.S., 58–60; audience characteristics, 59–60; budget, 59; programming, 59; support for, 58–59

psychology of “becoming,” 292

Q

QUBE system (*see also* interactive cable systems), 109, 306

R

radical perspective, 242; as dissident paradigm, 238–241

radio audience surveys: in the U.S., 207

Radio Canada, 177, 179, 181; and the idea of independence in Quebec, 182

Radio France, 85

radio in the U.S., 49–53; audience characteristics, 51; commercial radio, 49–52; format and content, 50–51; networks, 51; ownership, 52; penetration, 49; proliferation of radio stations, 50; public radio, 52–53

radio stations: in Third World countries, 135–136

radiotelephones, 135

relativity: of research data, 290–291; of research perspectives, 291–293

remote computer/typing terminals; reporters equipped with, 48

- research data/methods (*see also* communication research): contributions of evaluation research to, 125; on election campaigns, 188, 273–275; relativity of, 290–291
- revolution: communication, 68–69, 80–91, 302, 306; historical meaning of, 68–69; information, ix, x, 13, 108–109, 131, 146, 302–303
- S**
- satellites (*see also* new communication technologies), 42, 49, 64–65, 81, 87–90, 135; and national television systems in Third World countries, 147, 304; as communication networks, 88; distribution systems, 52; new media of, 289; the State-run Indian National Satellite (INSAT-1B), 146
- schools of thought: and research in sociology, 237; in communication research, 220–226; typology for, 238–242
- scientific study of communication, 138
- Second World countries: definition of, 135; and information agencies, 158–159; and the free flow of information, 151
- selective exposure, 274, 288
- semantic differential, 205
- semiconductor chip, 68, 71, 109, 141, 305
- semiology, 9
- Silicon Valley, 305
- soap operas, 56
- social indicators movement, 247, 248
- social responsibility of the media, 82–83, 91
- Société Française de Radiodiffusion (SOFIRAD), 86
- “soft” news, 46
- software, 66
- solipsism, 242
- spiral of silence theory, 187
- “stand alone” technologies, 120–121
- stimulus-response theory, 285
- syndication, 56
- T**
- telecommunications: industry, 306; process, 110
- telecomputer cables, 88
- teleconferencing, 109, 119
- teledistribution cables, 88
- “Télématique”/“téléinformatique” (telematic technologies), 87–89, 135
- telephone systems, 13, 103, 146; diffusion of, 121
- teleshopping, 68
- teletext, 14; and the ANTIOPE service, 22, 87–88, 119, 123–124
- television: advertising, 55–56; “à la carte,” 174; and human behavior, 209; as instrument of cultural identity (the case of Quebec), 177–182; and the promise of abundance, 73–74; audiences of, 57, 74; networks, 55; penetration, 54; politization effects of, 180–181; programming, 56–57; research companies in the U.S., 60
- teleworking, 115
- Telstar, 88
- terminals for managers (TFM), 114
- theories of the middle range, 269, 278, 280, 287
- theory of communication, 208
- Third World countries, 136, 181; and communication technologies, 146–148; and information agencies, 158–159; and the free flow of information, 151; and the MacBride report, 153–155; and the impact of new technologies, 135–140; and the two superpowers, 143; contexts of, 140–141; contextual differences with First World countries, 148; definition of, 135; demands for a balanced news flow, 150–151; environments, 138; external characteristics of, 141–143; internal characteristics of, 144–147; leaders of, 161; news problems, 160
- traditional media (*see also* old media), 29–30, 43
- transistor radios, 141
- transnational corporations, 141–143, 228, 230–231
- two-step flow, 274
- two-way communication systems (*see also* interactive systems), 75, 302
- U**
- UHF (ultra high frequency) channels, 54–56, 58, 66
- unequal trade relationships, 142

- UNESCO (United Nations Educational, Scientific, and Cultural Organization). 23, 139, 143, 150, 160; and the world communication order, 158; changing voting patterns in, 153–154; debate, 151–154, 157; Draft Declaration, 153–154; survey of world communications, 158
- UNICEF (United Nations International Children's Emergency Fund), 143
- USAID (United States Agency for International Development), 143
- U.S. communication scholars, 221–223
- uses and gratifications approach, 188, 255–257, 289; definition of, 256; radical and humanistic perspectives, 256
- U.S. mass media (*see also* mass media in the U.S.), 43, 45–46
- U.S. television: background, 54–55; commercial, 54–57; public, 58–60
- V**
- validity: "history" as a threat to, 278
- variance research, 129–130
- VHF (very high frequency) channels, 54–56, 58, 66
- videocassette/disc units, 14, 65, 78, 81, 87, 109, 119
- video display terminals: in newsrooms, 48
- video game industry, 303
- videography: in France, 87–88
- video newspapers, 49
- video-press programs: in Europe, 174
- videotape: production, 173
- videotex systems, 14, 22, 76, 87, 88, 109, 119, 298; interactive, 301
- violence profile, 248
- voluntaristic and deterministic perspectives, 257, 259–260
- W**
- (The) Wall Street Journal*: circulation in the U.S., 47; European edition, 41–42
- wire services, 23
- word processors, 109, 122, 304
- workaholism, 305
- World Bank, 145
- World Center for Computers and Human Resources, 147
- World Systems (*see also* First, Second, and Third World countries), 134–135, 236–237
- Y**
- Yale Program in Communication and Attitude Change, 204