Interactive Technologies:
The Potential for Solidarity in Local and Global
Networks

[Chapter 18 in *Communication Ethics and Global Change: National and International Perspectives*, Longman, 1989]

Exploring exactly what is meant in different situations by the concept of interaction is a high-priority task for communication scholars.'

Everett M. Rogers, 1986[1]

The eminent scholar Everett Rogers has commented that we are at an "epistemological turning point" in communication analysis. He adds: "Driving this epistemological revolution in communication science is the interactivity of the new communication technologies."[2]

The major practical impact we see immediately is that many technologies now enable and encourage communication between individuals, rather than communication from one source. This development fosters lateral patterns of interaction, with consequent weakening of hierarchies—a democratization of communication, since these lateral messages are harder to control.

This chapter uses technological interactivity as a framework for analysis. How does the variable of communication interactivity offer potential changes to relationships among individuals, small groups, and nations at large? Changes may foster human solidarity in local and global networks and thus must be a part of our ethics-in-communication reflections.

Interactive networks could offer a communication process empowering individuals and groups to deal with many ethical dilemmas of the Information Age such as: how to provide more equitable access to information technologies; information overload; privacy; and unemployment caused by technology. After some reflections concerning interactivity as a framework for analysis and research; these and other ethical issues are explored below.

Computers and Other Interactive Tools

Rogers calls computers the printing presses of the twenty-first century. This definition is especially appropriate when one reflects upon the bulletin board and electronic messaging capacity of computers. Instead, we often tend to focus on the data transfer role computers play.

Modern telecommunications began with two-way messages as a major goal; the telegraph and telephone introduced interactivity and played a key role in economic development throughout the world. In developing nations, probably the most significant communication technology is still the telephone, a key to economic development.

With the development of radio and television, which became mass media in a one-way mode, the message interaction on telephones became overshadowed in the mind of the public by the scintillation of media focusing largely on entertainment for mass audiences. This function continues, of course, as the audiences become global and increasingly homogenized.

The popular spread of the videocassette recorder, however, clearly showed the latent desire among people to do their own programming at a time of their own choice. VCRs penetrated more than 50 percent

of the homes in Australia, 40 percent in Canada, *52* percent in Japan, *25* percent in Sweden, 46 percent in the United Kingdom, 44 percent in Thailand, and 36 percent in Indonesia. In the Soviet Union "the machines are in great demand and cassette rental shops are open in major cities."[3] In nations where VCRs are not available in homes, the recorders do provide a technology for small-group interaction.

Other technological tools for interaction include telephone-recorded messages, audio cassettes, videodiscs, satellite and telephone and computer conferencing, videotext, teletext, interactive cable, and mobile radiotelephony. All these technologies offer "talk-back" capability to the user, permitting dialogue as a basis of communication.

Communication tools such as newspapers and television may have a mechanism allowing feedback (for example, letters to the editor), but these communication modes are not essentially dialogic.

Some of the above interactive technologies are widespread, some are under development and some, like the telegraph and telephone, have been in use for over a century. However, the growth of computer technology has focused our attention on interactivity as a key component in communication.

The high cost of mainframe computer power forced owners to create networks so that the mainframe data could be shared. As technology permitted "time-sharing" (wiring mainframes so that they could perform more than one task simultaneously), users could share computer time. Networks linking computers and their users have become a kind of "public commons," allowing user interaction. Miniaturization, decreased costs, and the growth of the microcomputer market have made computers the "special medium of interactive communication."[4]

As various communications tools became miniaturized and mobile, many kinds of technologies took on an interactive aspect. Satellite newsgathering, for example, permits more live interaction with the field in news broadcasts. And electronic meetings have forced researchers to study how human interaction in groups is altered when satellite, telephone, or computer conferencing replaces face-to-face meetings.

An Analytical Framework

Technological interactivity or linkages are usually called "networks," and the activity is defined as "networking." These terms offer a framework for analysis, with a focus on the interaction and the effects of this process on communication between individuals or among small or large groups. Communication analysis in the past has often focused on the effects of communication on the user, rather than on the communication process itself. Years ago Wilbur Schramm predicted: "Of all the potential contributions of information theory to mass communication, perhaps the most promising is the study of communication networks."[5]

Rogers describes the importance of interactive communications in the social structure.

> The essence of human behavior is the interaction through which one individual
> exchanges information with one or more other individuals.... As inter-personal
> communication flows become patterned over time, a communication structure
> (or network) emerges, which is relatively stable and predictive of future human
> behavior.[6]

In *Communication Networks: Toward a New Paradigm for Research,* Rogers and Kincaid speak of their convergence model of communication:

> One can only know how well someone else understands a situation if the
> other person also shares information, and vice versa. After several cycles
> of information-exchange, the participants may shift to a new topic of
> discussion. [This] model of the communication process ... reflects the

convergent nature of mutual understanding and the cyclical nature of information-exchange.[7]

They further state:

> The convergence model represents human communication as a dynamic, cyclical process over time, characterized by (I) mutual causation rather than one-way mechanistic causation, and emphasizing (2) the interdependent relationship of the participants, rather than a bias toward either the "source" or the "receiver" of "messages." Mutual understanding and mutual agreement are the primary goals of the communication process! [8]

Communication network analysis, according to Rogers and Kincaid, "describes the component linkages and their interrelationships in the interpersonal communication structure. A communication network consists of interconnected individuals who are linked by patterned flows of information."[9]

Rogers and Kincaid's analysis of empirical data from a highly successful grass-roots development program in the Republic of Korea's village of Oryu Li is of special significance to our discussion on global communication ethics. This project was based on "a strategy of mobilizing interpersonal networks through 28,000 mothers' clubs enrolling 750,000 members."[10] These groups, originally conceived as village-level organizations established to encourage family planning, later "ranged far beyond family planning into community development, money-making, and female equality."[11]

The authors note "the capacity to develop and manage communication networks is an important prerequisite for self-sustaining socio-economic development over time."[12] Such grass-roots, interactive communication and development is especially significant for women.

> If the poorest of the poor in the world were to be identified, the majority would certainly be women. They constitute one-half of the world population and one-third of the official labor force, perform nearly two-thirds of the hours worked, and receive only one-tenth of the world income and own less than one-hundredth of the world property. Out of 800 million people enumerated as illiterate in the world, two-thirds are women.'[13]

The analysis of the village of Oryu Li leads one to reflect on how technological innovations are diffused through networks. Typically, innovations are disseminated by diffusion agencies, like the U.S. Department of Agriculture extension services, which research and develop innovations and then dispense the technologies "down" to the public. Donald Schön of MIT has criticized this model of vertical diffusion and urges the government instead to support horizontal networks for information exchange about innovations.[14] Orya Li demonstrates such a horizontal network.

Theory and Applications of Interactive Technologies

Whereas radio, television, and film are usually linear, many aspects of network interactivity find expression in new media technologies that are two-way. This circumstance seems to call forth a new focus for communication analysts. Our thoughts need to focus on "communication-as-exchange."[15]

Rogers reminds us:

> Audience research by communication scholars shows that most
> individuals do not really pay much attention to the mass media,
> they do not learn much from them and they do not know
> much about the news of the world. In fact, most people
> just let the mass media sort of wash over them. Television
> has become a kind of video wallpaper; a large percentage
> of Americans passively watch their "least objectionable
> program," absorbing little of the message content.
> When asked to recall certain salient facts from a TV
> news broadcast within a few hours of viewing it, few can do so.[16]

If Rogers is right, interactive technologies, which demand individual involvement, may be the antidote. Teleconferences, for example, use interactive technologies to link three or more people in two or more separate locations. Video teleconferences provide video to a specially equipped conference room, simulating a face-to-face meeting. Audio conferencing connects a number of participants by telephone. Computer teleconferencing uses a computer system as a place where people may exchange messages. People are free to drop off and receive messages at their own convenience. Rogers reports that the electronic messaging system of the Hewlett-Packard Company carried 25 million messages per year among its 45,000 employees in many distant locations.'[17]

Interactive technologies like these require new research theories and methodologies, according to Rogers.[18] Emphasis can now be placed upon information-exchange relationships, rather than upon individuals as the unit of research analysis.

> Our definition of communication as convergence implies that
> the sharing of information creates and defines a
> relationship between two or more individuals. Thus,
> communication behavior itself should be studied
> as the dependent variable in communications research.
> Here a main research question is "Who is linked to whom?"[19]

In this convergence model, "Communication is the process in which participants create and share information with one another in order to reach a mutual understanding.[20] It may be that focusing on such shared information is a key component of negotiated cooperation.

Rogers and Kincaid cite a major advantage of the convergence model:

> Network analysis can display the communication structure
> of a system, a bigger picture of patterned flows of
> information-exchange.... This more macro-level research

is consistent with a convergence view of communication,
with the long-prevailing view of communication as process.[21]

Ethical Reflections

Many of the other chapters in this volume consider existing or emerging ethical issues in the mass media, including the press, television, and radio. These chapters deal often with the responsibility to tell the truth and other ethical dilemmas.

New telecommunications technologies, in addition, force one to view information as a product, a factor in the economies of nations in an Information Age. This economic dimension of new communication technologies ushers in an array of additional ethical questions. Listed below are several that need to be considered.

- Should one ensure equal access to information technologies, rather than encourage information elites?
- Should all potential technological wonders be developed?
- Should our public policies prepare for the unemployment and deskilling of jobs that may result from new technologies?
- How can individual privacy be protected?
- Should new technologies empower broad populations rather than being controlled by gatekeepers?

Writing in *The New York Times,* the economist Lester Thurow noted: "Ethical questions arise because we live in communities that function according to rules and laws that promote the long-run interests of the community. Ethics ... functions to allow a group of human beings to successfully live with each other."[22]

Anne Van der Meiden uses the term "responsism," saying "human beings in their ethical behavior respond to the appeals sent to them by other human beings."[23]

Clifford Christians mentions that two ethical imperatives of social justice are particularly relevant to home information utilities: "to each according to his essential needs and similar treatment for similar cases."[24]

Robert White suggests several guidelines:

> …viewing morality not simply as individual perfection but
> as part of a social context ... the concept of universal
> human values which are valid through history and
> across national, cultural lines respecting different
> political and cultural possibilities, but at the same time
> acknowledge some common goals.[25]

It is certainly true that there are gaps in equal access to communication technologies, and not exclusively gaps between First and Third World nations. At one time tt was reported that over 4 million households in Britain were without a telephone.[26]

Just as technologies interact, so do economies. The global economies intrude upon attempts to negotiate equal access to information tools. Financial factors playing major roles are the following:

- the impact of transnational corporations—large economic players with huge appetites for electronic technologies to meet their own communication-connection needs;[27]

- trade imbalances putting pressures on some nations to seek technology markets abroad—sometimes selling inappropriate hardware to developing nations;

- economic turmoil as privatization occurs in communication/information groups, with resulting deregulation of information utilities; and.

- the tendency, economically, for developed nations (and their banks) to sponsor megaprojects in developing countries rather than grassroots efforts that may be less spectacular but more effective.

In a volume entitled *The Myth of the Information Revolution,* Michael Traber notes:

> It has been estimated that about 90 percent of all data flow via
> satellite systems is intra-corporate, and about 50 percent of all
> *trans-border* data flow takes place within the communication
> networks of individual transnational corporations. Add to this
> the trans-border information flow of the military, and of diplomats,
> and you have a "closed sky," an "information implosion" rather than
> explosion.[28]

Traber noted that more than 80 percent of the world's international telephone traffic is conducted by Western industrialized countries. He concludes: "There is a need for a genuine rather than a phony revolution, a communication revolution from below."[29]

Another aspect of the information ethical dilemma was voiced by the French social philosopher Jacques Ellul, who warned we are "so beguiled by machine productivity that we almost unconsciously reconstruct all our social institutions on this model."[30] Ellul urges, instead, emphasis on "humans who would combine into new patterns not under '*la technique*'s tutelage, [a] reordered consciousness [which] would begin choking out today's monolithic structure – within communications as elsewhere."[31]

Part of our entrapment by new technologies is due to the information-overload problem. Information flows have been studied extensively in Japan and by Ithiel de Sola Pool in the United States. The Japanese public consumed 40 percent of the information available in 1960, but in 1975 they absorbed only 10 percent. The information supply had increased by 400 percent in the decade from 1960 to 1970. More than 70 percent of the information growth was traced to new technologies, including computers, television, and telephones.[32] Rogers notes "the average information ration of a nation seems to be highly related to how far a nation has progressed in becoming an Information Society."[33]

Pool found similar overload problems in the United States:

> From 1960 to 1977, the number of words made available
> to Americans (over the age of ten) through seventeen
> public media of communication grew at the rate of
> 8.9 percent per year, more than double the growth

rate of the gross domestic product. Words actually
attended to from these media grew at just 2.9 percent,
and per capita consumption of words grew only 1.2
percent per year.[34]

Pool noted: "more and more material exists, but limitations on time and energy are a controlling barrier to people's consumption of words.[35]

Ethical concerns relative to invasion of privacy are increased as computer data banks, computer banking, and shopping make it possible for others to retrieve private information stored. Computers can be used to reinforce existing authority patterns, while they can also decentralize and create independence of action.

If one steps back from specific ethical dilemmas to attempt a broader view of principles and guidelines, a number of issues emerge for further reflection:

- the lack of a systematic theory of communication/technology ethics, or an understanding of media in society;
- the obstacle provided by the multiplicity of ethical and philosophical traditions within nations and among the international community;
- the control of media by powerful economic and political interests;
- the tendency of some nations to establish ethical codes while other organizations (like the BBC) avoid them, developing, instead, a tradition of personal responsibility among communicators; and
- the commercial, for-profit basis of much communication technology which may dilute a focus on public responsibility, and the fact that many nations recycled to commercialized systems rather than staying with the model of public communications.

In the face of growing interactivity in information technologies and the widening gap between 'haves' and 'have-nots,' along with the ethical dilemma this poses, the decentralized model of group communication provides some interesting alternatives.

The term "group communication" refers to a process of mediated communication among people "when a group uses a media experience to uncover new insights about themselves and their relationship – to one another, to the social, political or economic condition."[36] Examples of this decentralized, local media include the rural press in Africa and India, community radio, the use of audiocassettes and xerography in Iran, even "thin line" communications. These communication tools reflect principles of group dynamics and the human potential movement.

Both group communication processes and tools target an audience, unlike mass communication. They are used "to stimulate expression in face-to-face encounters, to facilitate discussion, to expedite information sharing and group decision-making, to develop social consciousness."[37] In contrast, as White reminds us, some technologies, such as satellites, can "centralize information processes and social power."[38]

These reflections on the ethical challenges in an Information Age are certainly not exhaustive, nor do they propose gigantic solutions. Instead, they plead for a different perspective, one that utilizes the

interactive potential of new technologies in order to deal with these challenges:

- providing widespread access to technologies;
- dealing with economic imbalances and deskilling caused by technology;
- enhancing quality-of-life efforts such as privacy protection and information-overload solutions;
- encouraging more authentic communication by allowing feedback – to promote progress in understanding and in the communication process; and
- providing modes of public communication to offset the diluted sense of public responsibility found in for-profit telecommunication entities.
-

In all of these challenges, and in our communication research in the future, interactive/dialogic communication tools and processes will provide a worthy forum for our efforts.

References

1   Everett M. Rogers, *Communication Technology: The New Media in Society* (New York: The Free Press, 1986), p. 211.
2   Ibid., p. 194.
3   *Channels Field Guide*, 1987, pp. 23; London International Federation of Program and Videogram Statistics.
4   Rogers, *Communication Technology*, p. 37
5   Wilbur Schramm, "Information Theory and New Communication," *Journalism Quarterly*, 32 (Spring 1955): pp. 131-146.
6   Rogers, *Communication Technology*, p. 203
7   Everett M. Rogers and D. Lawrence Kincaid, *Communication Networks: Toward a New Paradigm for Research* (New York: The Free Press, 1981), pp. 64-65.
8   Ibid., p. 69
9   Ibid., p. 75
10   Ibid., p. xiii.
11   Ibid. p. 9
12   Ibid., p. 26.
13   Ibid., p. 26
14   Donald A. Schön, *Beyond the Stable State* (New York: Random House, 1971).
15   David K. Berlo, "Communication as Process: Review and Commentary," in *Communication Yearbook*, ed. Brent D. Ruben (New Brunswick, NJ: Transaction Books, 1977).
16   Rogers, *Communication Technology*, pp. 30-31.
17   Ibid., p. 51.
18   Ibid., p. 216.
19   Ibid., p. 207.
20   Ibid., p. 214.
21   Rogers and Kincaid, *Communication Networks*, p. 328
22   Lester C. Thurow, "Ethics Doesn't Start in the Business Schools," *New York Times*, 14 June 1987.
23   Anne Van der Meiden," Morality Beyond Scarcity: Ethical Aspects of the New Media," *Communication* 9:2 (1986): 182.
24   Clifford G. Christians and Leon Hammond,"Social Justice and a Communication Information Utility," *Communication* 9 (1986): 135.
25   Robert A. White, "Perspectives on Communication Research," *Communication Research Trends*, Spring 1980, p. 5.
26   Peter Golding and Graham Murdock, "Unequal Information: Access and Exclusion in the New Communications Marketplace," in *New Communication Technologies and the Public Interest*, ed. Marjorie Ferguson (London: Sage Publications, 1986), p. 79.
27   Herbert I. Schiller, *Who Knows: Information in the Age of the Fortune 500* (Norwood, NJ: Ablex, 1981).
28   Michael Traber, ed., *The Myth of the Information Revolution: Social and Ethical Implications of Communication Technology* (London: Sage Publications, Ltd., 1986), p. 3.
29   Ibid., p. 4.

30 Clifford G. Christians, "Jacques Ellul's Concern With the Amorality of Centemporary Communications," *Communications: International Journal of Communication Research*, 1977, p. 63.
31 Ibid., p. 76.
32 John E. Bowes, "Japan's Approach to an Information Society," *KEIO Communication Review* 2: pp. 29-49.