Comments on the Communication Revolution in the United States

Donald F Roberts

COMMUNICATION is a social process, the goal of which is to enable people to share meaning and, hopefully, understanding. Thus any change, revolutionary or evolutionary, in communication technology is interesting only insofar as it affects the social exchange of meaning. This paper suggests that we are witnessing not a revolution, but the leading edge of an evolution. It seems to be process of supplementation in which the new technologies operate in concert with the old.

1. Introduction

In the field of Communication in the United States a distinction exists between information and communication. Information is simply the raw material out of which something like meaning is constructed and shared through a process of communication. When one uses the term revolution in the field of Communication then one has to focus on communication technologies, not information.

The emphasis here is on the one hand on the rapid evolution in communication technologies in the United States and more important, about a few of the implications of this evolution for the way people behave.

Communication is a social process, the goal of which is to enable people to share meaning and, hopefully, understanding. Thus any change, revolutionary or evolutionary, in communication technology is interesting only insofar as it affects the social exchange of meaning. If information is not exchanged, if the flow is not in two or more directions, then the probability of sharing meaning and understanding rapidly decreases to zero. What is the communication revolution in the U.S.?

Don Roberts

2. Information Society

According to the popular press — news-papers, magazines, television specials, and especially advertisements for such things as personal computers, cable television, video recorders, interactive videodisc, and so forth — the "communication revolution" is new, is now, and is computer based. The revolution is described in terms of recent and dramatic changes in how information is stored, transmitted, and accessed (as opposed to received).

Now there is no doubt that a great many dramatic changes have occured in communication technology in the past 10 years. But I want to suggest that we are witnessing not a revolution, but the leading edge of an evolution. We are not seeing a process of substitution in which the new replaces the old.

Rather, it seems to be a process of supplementation in which the new operates in concert with the old, changing some functions, creating new ones, but not really replacing anything.

One thing that has become quite clear in the past 15 years is that the US is no longer an industrial society. That is, the industrial sector is no longer the economic engine that drives the country. Rather we have become what a number of scholars have labeled an *"information society."* This transformation was completed at least 30 years ago, and it began very near the turn of the century.

The US began to industrialize in the mid-1800's, and by the turn of the century it had changed from an agricultural society to an industrial society, one in which the largest part of the work force was employed in industrial jobs. At this time, very few people were employed in *information jobs.*

Figure 1 supplies a few definitions to explain that. These definitions, along with a good deal of the information about the new communication technologies, are taken from the manuscript of a proposed new book, *Communication Technology,* currently being written by Everett M. Rogers.

Rogers defines an information society as a nation in which a majority of the labor force is composed of information workers

Information Society: a nation in which a majority of the labor force is composed of information workers , and in which information is the most important element.

Information Worker: an individual whose main activity is producing, processing, or distributing information, and producing information technology.

Information: patterned matter-energy that affects the probabilities available to an individual making a decision.

(a) Lacks physical existence of its own; expressed in material form (e.g. ink on paper) or energy form (e.g. electrical impulses).

(b) Economically odd because one can sell it and still have it.

(Adapted from Everett M. Rogers, Communication Technology, in press)

**Figure 1: Welcome to the Information Society: Some Working Definitions**

and in which information is the most important element.

He defines information workers as those whose main activity is *producing, processing,* or *distributing* information, or producing information technology. Typical information occupations include teachers, scientists, journalists, secretaries, managers, consultants, computer programmers, and so on — people whose main activity is to write, teach, give or sell advice, give orders, or otherwise store and transmit information.

Now with that definition of *information jobs,* let us look at some figures relevant to the US labour force. In 1900 approximately 10% of the workers were engaged in information work, and this grew relatively slowly to about 25% in 1940.

But in the mid-1950's, when TV became a common household appliance, when the computer began to make itself known outside the scientific lab, and when the USSR launched Sputnik, the number of information workers took off.

You can see this in Figure 2, which shows the percentage of each of the four major labor force sectors employed in a given year. In 1800, the US was an agricultural society; information jobs accounted for 2/10 of 1 percent of the workers. In 1860, we became an industrial society in that the

5
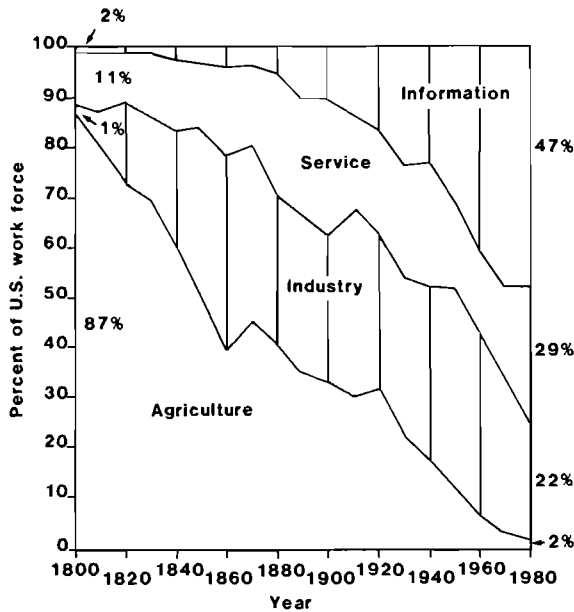
Figure 2: The Emergence of the Information Society
(Adapted from James Beneger, in press)

largest proportion of the work force was now engaged in industry, in producing products of one kind or another.

Between 1940 and 1960, we see the take-off point for the information sector. By 1960, 41% of our workers dealt with information; by 1980, it had become 47%. On the basis of these figures, we have to say that the USA became an information society by the mid-1950s.

Rogers finds that the best estimates available tell us that in 1985:

- 54% of the US *work force* are information workers;
- 63% of all equivalent *working days* in the US are devoted to information work;
- 67% of all *labour costs* are for information work;
- 70% of *work hours* in the US are devoted to information work.

By any of these measures, we are an information society. But note, the growth figure in that graph does not seem to chart a revolution. There are some historical discontinuities that seem abrupt (eg, the take-off in information jobs in the mid 1950's) but there is not an overthrow of preceding occupational categories, and certainly not an overthrow of other occupational products.

In the US we still grow a great many crops – exporting to most of the world, and we still manufacture a great many products, again exporting to much of the world. These functions co-exist with information functions. It seems to me that the process here is one more of supplementation than of substitution.

3. Media Society

Now what does this information society concept imply for the public? How do our neighbors or our families experience the new communication technologies?

Firstly, in the US we are clearly a media society. We spend a great deal of money and a great deal of time on communication media. For example, in 1977, US consumers spent *$38 million* on mass communications (TV, print, radio). We spent about *45 percent of all leisure dollars* on mass media of one type or another, and the figure may by now be significantly higher if the new technologies (which are not, strictly speaking, *mass* media), are included.

Almost half of all our citizens claim to read a newspaper every day, and almost all claim to read one a couple of times per week.

For all intents and purposes, every household has several radios (over 98%) and at least one TV set. Probably three-quarters of the population have multiple TV sets. Recent figures indicate the average TV set is on for 6 and 3/4 hours per day, and it is not unusual to find homes in which the set runs 12 to 14 hours per day.

Personal viewing varies, on average, from two to four hours per day depending on age, sex, education, race, geographical region, season, and so forth. *In short, the average American devotes between two and five hours per day to the traditional mass media.*

And now we are beginning to adopt the new communication technologies. Time for these will somehow have to be discovered. To some extent, it will be taken from other media, but probably not totally.

The following is a brief explanation of the communication technologies according to Rogers.

First, "new" refers to two dimensions:

1. their recency;
2. their potential to modify communication because of several new features, which are really ways of recombining old features or more traditional forms of communication.

There are three major categories of new features.

1. The new technologies tend to be *interactive* to a greater degree than older mass media. That is, they are media with interpersonal overtones. On the one hand, they can reach many more people than can face-to-face communication; on the other hand, the new technologies have the interactive implications of face-to-face communication.
2. The new communication technologies are *"demassified* media." That is, a special message can be delivered to or accessed by small segments of an audience, or even individuals within the larger audience. The implication of this is tremendous: it moves control of the information from the sender to the receiver (in traditional mass media research terms).
3. These new communication technologies are *asynchronous*. Their message can be sent immediately, but it can be either delivered or received at a time convenient for the intended receiver. This also implies a shift in control from sender to receiver. (In a sense, this may be less a new feature than the re-emergence of an old one. That is, the asynchronous attribute has always been characteristic of print – one can read a letter when it is received, or a week or year later – but has now also become a feature of the electronic media.)

The computer, of course, is at the heart of the new communication technologies. Firstly, because of its capacity to enable us to network and communicate with other individuals and with large data banks.

Secondly, because of its capacity to be connected to most of the other new media in ways that make them interactive, demassified, and asynchronous. Those other media include such things as cable TV, communication satellites, videocassette recorders, teletext, videotext, laser-read media such as CD—ROM and interactive videodiscs, and so forth.

Two dimensions on which we frequently classify communication media are (a) the size of the audience, and (b) the age of the information when it reaches the receiver (speed). Thus, for example, a telephone generally reaches an audience of one, and the information it provides is very young – say a few seconds at the most.

Conversely, a monthly magazine may reach an audience of millions, but the information is about a month old. If we follow this kind of classification procedure across all media, we arrive at something like Figure 3, which was originally prepared by the Ministry of Posts and Telecommunications in Japan.
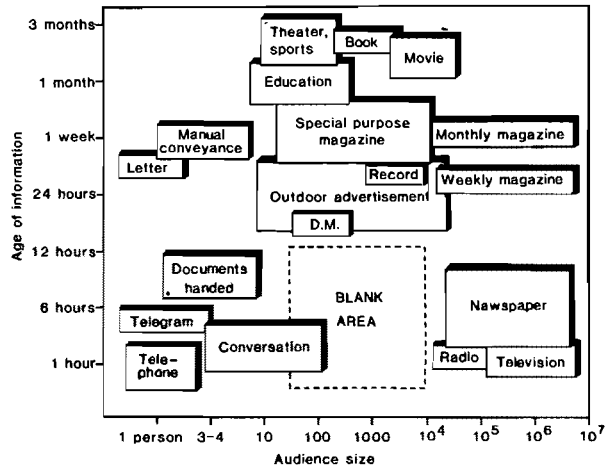

Figure 3: Classification of Communication Media by Size of Audience and "Age" of Information

Firstly look at what we usually think of as the major mass media, those located at the bottom right of the figure: radio, TV, and newspapers. As illustrated in Fig 3, their advantage is that they reach massive audiences very rapidly. Still near the bottom of the figure, but to the left, there are media that reach very small audiences, but that also do it rapidly – a telegram, a conversation, the telephone.

Immediately above these are small-audience media that work more slowly – the letter and manual conveyance. And finally in the upper right quadrant of the figure we find a collection of media that reach moderate (100 +) to very large (one

7

million +) audiences relatively slowly, requiring a few days, a few months, or even a few years.

What is particularly interesting about this figure is the section labeled "blank area" and encompassed by a broken line. This is the area where we could place media that can reach audiences ranging in size from twenty to, say, one million, and that can reach them relatively rapidly.

This is the area that locates special audiences, the ones that marketers, or social change agents, or teachers would really like to reach. And by now it should be obvious that this is where I think the new communication technologies belong.

A personal computer hooked into a local area network, for example, makes it efficient to deliver a specific message to an audience as small as 50 or 100, and simultaneously to make it possible to deliver a slightly different message to a different 50 or 100 or, with the aid of a modem and satellite hookup, 1,000,000.

Similarly, a cable TV system makes it feasible to program for small, special audiences as opposed to the mass audience – to really target messages, and in the same vein to provide specialised data banks for self-defined audiences. It is also important to note that with each of these media, the information can be quite young.

That is, they work very rapidly – if the receiver (not the source) wants it that way. But because they are asynchronous media, the audiences can also choose to delay receipt of the information.

This also seems to me to illustrate supplementation, not substitution. I see no evidence that we will give up the old media because of these new ones. We have not given up print because of radio and film; we have not given up radio and film because of TV.

Rather, we tend to reassign functions. For example, we found new uses for print media and assigned some of their old tasks to radio and television. I think the same is happening with the emergence of the new communication technologies.

Media and the Child

A proliferation of new communication technologies implies several things for society and social organization.

Firstly, there is clearly a great deal more information *available* to people by virtue of the fact that there are so many channels that can be accessed. Simply on the basis of probability, then, more channels mean more voices, mean more messages, mean more *different* interpretations of reality.

And all this means a greater chance that the public will have the option of being exposed to differing views, which increases the chances of calls for changes on one dimension or another.

Now any single source may not – usually does not – like this situation. What parent wants to be contradicted in what he tells his child? What politician wants her opponents views aired? What industrialist wants her competitor's products publicised? But in spite of such objections, I suspect that access to such multiple viewpoints makes for a much stronger citizenry.

But not without cost – the cost of change.

Eric Hoffer, in a fascinating book called *The Ordeal of Change* (Hoffer, 1963) argued convincingly that any change is an ordeal. I'd like to give one example of how communication technology engendered change that should strike home with all of you who are parents – and make clear why change can be talked about as an ordeal.

One way to think about childhood is in terms of a parental information monopoly. That is, young children are dependent on others for information about their world, and in the early years, parents are in a position to control most of that information.

Put another way, parents are highly effective gatekeepers, exerting almost monopolistic control over the nature and amount of information reaching their children.

Moreover, the potency of the parental information monopoly is magnified because parents also control most of the tangible rewards and punishments available to the child, eventually taking on reinforcing pro-

perties themselves, and because information mediated by parents reaches children when, struggling toward a conception of the world and lacking a backlog of experience, they are most open to new information.

In general, the combination of the child's information dependence and the parents' gatekeeping role exerts a conserving influence on the social and cultural patterns children adopt.

If we assume that children's interpretation of any message is always a funtion of information received and organised at an earlier time, then parents not only provide children with their initial definitions of the world, but also the frame of reference within which later definitions — those from other sources — will be processed.

Further, if we assume that most parents define (both by action and by explicit statement) reality to their children in terms of the roles and norms prevailing in society, then it is not surprising that the outcomes of the socialization process are so infrequently revolutionary.

This is not to say that changes do not occur, however. The parental information monopoly is never absolute, and it becomes less so as children grow older and encounter more and more information sources outside the immediate family.

As sources of socially mediated information increase, so too does the probability that children will encounter new and different interpretations of reality.

But historically at least, exposure to new information sources was gradual, depending on the developing ability of the child to move from her own back yard, to the end of the block, to the local school, to the other side of the town and so on.

Moreover, in the not too distant past, each subsequent source of information encountered did not dramatically diverge from those already encountered. Neighborhoods, local schools, even the other side of town, were more likely to be similar to than different from the child's immediate environment, and similarity rather than difference probably also characterised the information and definitions encountered at each more distant location.

Thus, while each succeeding generation of children has always questioned and ultimately modified some of the standards of their parents, the changes tended to be evolutionary, not revolutionary.

For today's child, however, the picture is changing. The new communication technologies, especially the pictorial media to which they have early access, enable children to experience vicariously the world far beyond their own backyard.

The new media allow them to confront systems of norms and rules very different from those espoused not only by their families, but also by their local communities.

The new communication technologies expose even very young children to information in far greater quantities and of far greater variety than that available at first hand. And as sources increase, so too does the probability of discrepancies in interpretations of reality, the probability of "difficult" questions posed by children, and, of course, the probability that children ultimately will adopt rules and norms quite different from those espoused by their parents.

The implication of all this is that as more and more new communication technologies emerge, changes in social norms will occur more rapidly. To the extent that there is a proliferation of information sources available to the child, parents exert less control over the immediate definitions of reality adopted by their children, hence over the ways in which subsequent information will be processed.

And this undermining of the parental information monopoly means that they have less and less control over how each succeeding generation defines the world. As any parent knows, this kind of intergenerational change is quite difficult to accept, and very likely to become an ordeal.

Secondly, it seems that multiple voices created by the new technologies imply a change in the criteria for credibility, and an increase in the vulnerability of credibility. Once, and perhaps even today in a few societies, credibility was invested in the position or role: if parent, then credible; if

priest, then credible; if president, then credible.

But more channels and more voices bring differing interpretation of reality. These, in turn, lead to public awareness that there are multiple interpretations of the world and to attempts by one set of voices or one part of the public to counteract this awareness by trying to silence other voices.

When these two things (that is, awareness of multiple interpretations and awareness of attempts to conceal such multiplicity) are combined, credibility is undermined. Once a human is aware of multiple interpretations, which new channels almost guarantee, then the silencing of any one, for any reason, under any guise, implies something to hide.

This seems to be a lesson from the American experience. A historical study could be conducted in the US that would show that in every instance in which anyone has attempted to control the free flow of different interpretations of reality and that attempt has become known (which occurs more often the more communication channels you have), then the institution attempting to impose retraints has lost credibility, *never to regain it*. For example, the credibility that Richard Nixon cost the US presidency has not been and probably will not be regained in my lifetime.

And the real cost has been paid not by that institution, but by society and by the successive generations of that society, simply because people have more and more come to believe that you can't believe anyone.

The new communication technologies, and the multiple channels they offer, imply that this kind of thing will happen at a greater rate the more controls are attempted.

Finally, the shift of control from source to receiver compounds the arguments put forward in the previous paragraphs. Someone once said that "information is power." That means that control over how information is distributed and structured is power. That is, power resides not so much in the information one has, as in the information one has that one's opponents or subjects do not have, or in control over the interpretation imposed on the information they do have.

It has been described how the new technologies (1) enable the storage of vast numbers of messages, (2) enable any one with access to a channel (and that is rapidly becoming most people) to create messages aimed at small, often scattered audiences, and (3) provide the opportunity for anyone to access (receive) any message at his or her own convenience.

We may be approaching a time in which citizens can choose what to hear and what not to hear, and when, and how. That choice can't be controlled. As you change control over access to information from source to receiver, *you change the location of power in society*, hence the form of society and the dynamics of change in society. That's what the change from source control to receiver control may be doing.

5. Conclusion

Each and every discipline can create many frameworks which serve as a way to view how humans behave. One *communication* perspective (but certainly not the only one) that is intriguing, derives from thinking about new communication technologies, and about what happens to social organization as a function of the access a citizenry has to information and interpretations of information.

It seems that each new communication technology, beginning with the invention of writing and continuing right on through the computer, can be seen as a way of making more (hence different) interpretations of reality available to more people.

This shift from source to receiver control can be viewed as a means of extending social and even political enfranchisement. Each communication technology has increased the number of voices, which increased the number of interpretations of any given issue or event, which increased the probability and rate (and perhaps magnitude) of change. And perhaps that is the one constant from a communication point of view... change.

Increased diversity of voices, then, means

increased change. Once people know there are multiple voices, they know there are multiple interpretation of the world. And you cannot take that awareness back, not even from a five-year-old.

The problem, then, becomes not how to control information in order to impede or to slow change. Technology has made that impossible. Rather it is how to use communication — *the full exchange of information*, the sharing of meaning — in order to shape and guide change.

And perhaps most important, how to use it in order to reduce the fear of change that seems almost generic in man. (Our behaviour really does demonstrate that we believe that what we don't know is certain to hurt us, hence to be avoided, but history also shows that this belief is frequently incorrect).

And here is the irony in all this. On the one hand it has been communication and the technologies we have invented to facilitate communication that have put us in this position. They have created a situation in which the only constant in society seems to be change, a condition that has always engendered fear in man.

But on the other hand, this same communication and those same communication technologies are the only means we have with which to deal with change, with ordeal of change.

It seems that to do anything to attempt to impede the role of communication, to impede exchange and sharing of meaning, is first, futile, and second, courting disaster. In short, the only way to deal with the change that is the result of what might be called "unfetterable" communication is through "unfettered" communication.

References

Beniger, James R., (in press) *The Control Revolution: Technological and Economic Origins of the Information Society.* Cambridge, Massachusetts: Harvard University Press.

Hoffer, Eric, (1963) *The Ordeal of Change.* New York: Harper & Row.

Rogers, Everett M., (in press) *Communication Technology.* New York: Free Press.