

# **INFORMATION AND BEHAVIOR**

## **Volume 2**

*Edited by*

**Brent D. Ruben**



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# 1

## Telling Stories in the Information Age

George Gerbner

*The concept of information, divorced from social and cultural contexts and functions, is misleading and potentially mischievous. The purpose of this article is to sketch a framework in which the concept and its functions can be illuminated. The isolation of the concept from the symbolic processes in which it is inevitably imbedded reduces the human capacity for action, which is itself behavior seen in a symbolic context. Communication is interaction through messages. Culture is a system of messages that cultivates and regulates social relationships. Information plays a complex and distinctive part in that system. The communicational view of human evolution traces the development of languages and cultures as the most distinctive feature of our species. The most comprehensive view of human communicational ability is summed up in the words story-telling. We do not experience most aspects of reality directly; stories of all kinds provide most useful information and animate the human imagination. An analysis of functions can distinguish three historical epochs and three types of story-functions. The article traces these and concludes that "more and better information about behavior is self-defeating except as related to that process . . ."*

*Information* is a weasel word. So is *behavior*. They are equivocal and often deliberately oblique and ambiguous. I am not arguing against their use altogether but against their use as central concepts in isolation from their cultural contexts. When so used, without reference to the larger frameworks they fit and serve, they tend to fragment thought, obscure things, and disorient their users.

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What follows is an attempt to sketch a view of the communication process and its structural characteristics as the context in which the terms information and behavior can be used more meaningfully.

##### **Acting Human**

All matter "behaves" (think of molecules and atoms, entropy and energy) but only humans act. The source of the capacity for action is an environment of symbols—things that signify other things—in which behavior takes on human meaning. Action is behavior interpreted in symbolic contexts. Our language loads the word with special significance.

"A piece of the action" used to mean cutting in a partner on your bet. Now it is the sex "act" or violence or some other usually male-oriented demonstration of winning women or glory or money (or all). The "scene of the action" can be Wall Street, a horse race, a bar, or a ring. When a general sends his men "into action," we know they are not picking flowers. The Buick ad used to sell "a car that's loaded with action"—presumably not just automotive. An "activist" is not just a lively person. Your choice of food in the cafeteria is "consumer behavior." Your attempt to change the cafeteria is "consumer action."

Action reflects not only consciousness of wholes rather than only parts, but also the capacity to create alternatives rather than only react to them. If that capacity is impaired, the ability to act human is also in doubt. Anything that fragments, atomizes, and distracts attention from the broadest symbolic processes and structures, instead of using them as the framework for studying the human relevance of communication, is likely to reduce the capacity to act.

##### **Consumers' Choice**

Not long ago, a story goes, a sealed bottle drifted to our shores. There was a manuscript inside the bottle. It turned out to be a report from one of our communication researchers sent to survey the cultural habits, program preferences, and market potentials of a far-away land. The people of this land appear to be the proud possessors of a flourishing information society, much like our own, with but one slight difference: they practice cannibalism.

The term itself is never used in the story, but euphemisms such as "free enterprise," and "market economy" are very much in vogue. Information about the subject fills the "Home" and "Finance" sections of every newspaper and is piped into computerized information centers of more affluent subscribers. The study of behavior in its most observable and even digesta-

ble aspects dominates every curriculum. The highest-rated television program is "People Are Yummy." The all-time best seller has long been a book entitled *How to Serve Your Fellow Man*. (Recently amended to . . . *and Woman*.)

The inhabitants of this thriving market are puzzled to hear that some countries have so little regard for people that they would not consider eating them, no matter how well prepared. It is noted with some astonishment that nations considering themselves democratic do not allow free and open discussion on the subject.

They say (according to the report), that their system of chefs and balances is obviously the only truly pluralistic political system. Why, some of our best friends—say conservatives and liberals alike—believe in exactly opposite methods of preparation. So we clash, and argue, and carefully digest the matter. We let our recipes compete for popular flavor. And we let the chips fall where they may—through free elections, of course. Our standard of living is high. Supply and demand are never far out of balance. Hunger, needless to say, is unknown in the land. Few are so misguided as to think of subverting this happy order of things.

This is where the manuscript breaks off. I can only assume that its author has been integrated into that attractive, sophisticated, information-rich society, focused upon unrelated bits of behavior, giving its citizens only the consumers' choice, which is to select the ways in which they are led to the market. The only action our former colleague could perform was a belated but touching gesture of humanity: to cast a descriptive account upon the waters. But he could not examine, expose, and challenge the invisible symbolic structures that give behavior its ultimate human relevance.

### Becoming Human

Every age is an information age,<sup>1</sup> but ours is one in which a special "hot line" is needed to make sure that if a bit of information triggers an act that incinerates humankind, the act is not accidental but on purpose. It is high time, then, to trace the development of the communicative ability and its humanizing characteristics and sketch the context in which information and behavior can take on larger meanings.

Communication is interaction through messages. Messages are formally-coded symbolic or representational patterns of some shared significance in a culture. Culture itself may be conceived as a system of messages that cultivates and regulates social relationships. Information-directed behavior processes occur in many forms of life and social systems. But it is in human society and culture that information processes, transformed as communications, play a most complex and distinctive part.

The simplest organisms take energy from their immediate surroundings. They need little information except for what is contained in a fixed hereditary code. When the local source of life-giving energy dries up, they perish. Higher organisms use specialized senses to receive and brains to store information. They can reach out, search a wider area, pick up signals from a distance, accumulate impressions over time, relate to each other, assume different roles, and engage in behavior based on some sharing of learned significance. But of all forms of life we know, only humans act primarily through the manipulation of complex symbol systems. Messages and images, rather than the threats and gratifications of the moment, animate human thought and imagination. Even the satisfaction of the most basic needs for food, love and shelter engenders, for humans, elaborate and compelling symbolic experiences. Show me one other animal that paints pictures, plays chess, conducts an orchestra or recites the Bible and I will concede that information processing behavior is on a continuum with human communication. Until then, however, I will consider communication to have taken a different evolutionary route and role.

The last million years ended an era or perhaps 200 times that long during which a relatively mild climate covered long stretches of land from the Arctic Circle through what is now the Sahara Desert to the Antarctic. Arboreal existence in lush forests freed the forward limbs of some groups of mammals from having to carry the burden of the body and shaped them into strong, sure delicate instruments. A subsequent descent to the ground further enabled the forearm to explore, create and manipulate. Much of human evolution is compressed in the word *comprehend*: it stems from the expression "grasp with the forehand." Exceptionally deft manipulation required an exceptionally large and complex control system—the brain. The ability to grasp with the hand and with the mind literally developed "hand-in-hand."

The last million years robbed pre-humans of their "paradise." Invasions of glaciers, great floods, and geologic convulsions scattered the roving bands into all parts of the globe. The featherless and furless but warm-blooded hominoids were hard-pressed to develop their unique resources of collaboration and community through communication.

Only the hominoid brain could regulate the body, respond to changes in the immediate surroundings, and still retain the capacity and stability to hold a complex image long enough to reflect on it. This ability to integrate symbolic structures into frameworks of knowledge and to make them available in novel combinations was the prerequisite for human consciousness and communication. In its broadest "humanizing" sense, communication, then, is a source and extension of imagination in forms that can be learned and shared. It is the production, perception, and grasp of messages bearing



human notions of what is, what is important, what is right, and what is related to what.

The Paleolithic hunters who survived the last glaciation appear to have succeeded in building the symbolic foundations for culture: the naming of things, visual representation, coherent organization of messages; and the ability to instruct, celebrate, reflect upon and pass on accumulated lore and imagery. Even the most primitive people known have languages; create shapes, forms, and images for symbolic and representational uses; perform elaborate rituals; observe intricate kinship systems; confront the world through entertaining fantasies and myths; and conduct the affairs of the tribe or society through communication. Recorded and widely transported systems of communication now enable us to bridge vast reaches of space, time, and status and to cultivate values of collective survival—or to plunge into spasms of distinctively human mass destruction.

Having set the stage, it is time now to bring on the act and to tell our story. Indeed, story is the best word I can find to designate the key feature and most distinctive characteristic of human communication. More than any other, *Homo sapiens* is the story-telling animal. Unlike any other, *Homo sapiens* lives in a world erected, experienced, and conducted largely through many forms and modes of story-telling.

So let us, for the moment, suspend our customary classification of genres, types, modes, or whatever specialized communications are called. These classifications are recent historical inventions that may be useful for certain purposes but not for the functional distinctions usually attributed to them. All communications cultivate the terms on which they can be understood and shared. The simple statement “this is a chair” evokes a time, place and culture as much as the referent object itself. The act of naming or labeling takes its significance from the larger symbolic context woven mainly by the stories we tell.

### Telling Stories

All animals learn from experience. Humans also learn *how to experience*. We have such consciousness of existence as we ourselves provide for in our communications. Human reason confronts realities on terms culture makes available. We are the stories we tell.

From towering constructions of mythology to factual descriptions and instructions, stories create, embody, illuminate, and embroider a selective and synthetic pattern of meaning that gives life its sense of direction and purpose. Our arts, sciences, religions, laws and politics consist mainly of stories we tell and internalize—or impose. That process weaves the seam-

less web of human cultures defining the world and guiding its social relationships.

Stories are symbolic structures that tell us what things are, how they work, and what to do (or not to do) about them. Stories also relate the teller to the person to whom the tale is told. Fairy tales, funny stories, absurd stories, histories, and those accounts not commonly thought of as stories that are told in classrooms, churches, courtrooms, election and sales campaigns, business and professional meetings, during work and play and celebration in books and all other media—all relate teller and told in certain ways. A scary story tends to concentrate power in the teller; a sales pitch or plea for help in the one addressed. Whatever else they do, stories confirm authority and distribute power in many different ways. Story-telling shapes human reality and the social order.

For the longest time in human history, stories were told face to face, memorized as rituals and mythologies, and incorporated in religions. Laboriously inscribed manuscripts conferred sacred power to their interpreters. As a sixteenth-century Mexican source put it (in Elliott, 1984, p. 30):

Those who observe the codices,  
those who recite them.  
Those who noisily turn the pages of  
illustrated manuscripts.  
Those who have possession of the  
black and red ink and that which is pictured;  
they lead us, they guide us, they tell  
us the way.

### *The Printing Press*

The first major transformation was the industrial. The first machine was the printing press. That made possible the mass production of symbols, signs, and stories. The first manufactured product was the printed book. It broke the ritual, and with it the magic power of the oral interpreter, the priest, or others ministering by the spoken word. It paved the way for the Reformation and for further transformations to come. It ushered in the era of modern mass publics—loose aggregations of people who never meet and yet share some consciousness in common. The process by which they come to share and to become members of these far-flung aggregations called publics is, of course, the process of publication.

Publication extends the face-to-face community. Printed stories are movable packages of consciousness that can be taken—often smuggled—across hitherto impenetrable or closely guarded boundaries of time, space,

language, religion, and status. The book lifts people from their traditional moorings as the industrial revolution uproots them from their communities and cultures. The book can be given to all who can read (a new class) to interpret without necessary dependence on the ministrations and interpretations of their local chiefs and priests.

Meanwhile people engage in long and costly struggles—some still going on—to tell stories and thus shape their reality from their own points of view. The struggle is necessary for the formation of new identities and interests as the industrial age breaks the community into conflicting classes, mixes together religious and ethnic groups, and restructures the process of humanization heretofore confined by geography and relative stability.

The way to achieve some control over the newly differentiating consciousness in a situation of unprecedented mobility and flux is to gain the right to select and publish stories (and thus create publics) stemming from different conceptions of reality existing in the same society. Notions of individuality and of class consciousness are both rooted in the print era. Most of our assumptions about human development and governance stem from the print era. The publication of different types of stories creates and cultivates mass publics—those loose aggregates of people who share some consciousness without ever meeting face-to-face—necessary for self-government and much of economic, educational, religious, and cultural life in the print-industrial epoch. The industrialization of story-telling makes socialization and public-formation an industrial product shaped by the prevailing system of symbol mass production.

### *Telecommunication*

Next comes the second industrial transformation. We enter the telecommunications era. Its mainstream is television, superimposed upon and reorganizing print-based culture. Television has its own unique characteristics. It is a centralized ritual, distant, pervasive, and yet seemingly personal and face-to-face. It turns out and disseminates a limited number of stories designed to the specifications of a few marketing formulas, but for all the people. It functions more like a tribal religion in the electronic era than like the media that preceded it.

Most viewers watch television relatively non-selectively—by the clock, not by the program. They watch whatever is on at a particular time, and do not choose as they do books or magazines or going to movies.

The essence of a centralized and licensed ritual like television is that it exposes far-flung and otherwise heterogeneous communities to a common system of story-telling. This tends to blur the traditional distinctions of sex,

age, region, class and other interests, blend them into a more coherent conception of reality, and bend them to the institutional interests of television as the chief cultural arm of industrial societies.

Our research has called this process *mainstreaming* and has begun to explore its dynamics (Gerbner, Gross, Morgan, & Signorielli, 1986). What we are learning about the process challenges many of our print-based assumptions about democratic government, education, socialization, and even the survival value of human cultures.

### What Stories Do

The humanization of *Homo sapiens* starts with fairy tales and children's stories (today mostly television cartoons) depicting human situations and presenting casts of characters acting on problems and coming to resolutions. Many such stories have to be told and their significance absorbed before "facts" begin to have meaning and norms and values are integrated into one's framework of knowledge.

There are three general functions that are likely to be performed by three types of stories. (These are not necessarily distinct or mutually exclusive; they are idealized types presented here more for purposes of analysis than of strict classification.) The three functions are as follows: (1) stories of how things work (drama and fiction which makes the all-important but invisible relationships in life visible and understandable); (2) stories of what things are (facts, expositions, descriptions); and (3) stories of what to do about them (stories of choice and value such as sermons, instructions, and commercials). Let us describe each one.

#### *Stories About How Things Work*

First are the stories of *how things work*. They make visible or conceivable the otherwise hidden relationships that are building blocks of human imagination and understanding. By showing whole people acting in total situations, coming to grips with certain difficulties and problems and either succeeding or failing, they depict complex causality and the dynamics we must understand to have some notion of how things work.

Two types of "ficticity" performs the function of conveying a sense of how things work. "Fiction by invention," as in novels and plays, enables the storyteller to create the "facts" in order to demonstrate how things work. "Fiction by selection," as in a documentary or biography or history, obliges the storyteller to find and weave actual events into a story that reveals some larger framework of dynamics and purpose. In any case, stories about how things work (for most people, drama and fiction) estab-

lish a symbolic structure within which more fragmented and isolated bits of information become credible and meaningful. You don't have to believe the "facts" of Little Red Riding Hood to accept the notion that big bad "wolves" may victimize old women and trick little girls—a lesson in sex roles, fear, and power—and to begin your socialization as a man, as a woman, and as a consumer of crime and rape stories.

### *Stories About What Things Are*

The second kind of story is about *what things are*. These purport to convey information referring to some presumably independently ascertainable event called "fact." However, they carry no meaning except in the symbolic structure created and cultivated by the first kind of storytelling—about how things work. Facts have to serve some purpose in that synthetic context before we accept them as meaningful. Used in isolation they distract and conceal more than they reveal. The legends of old and the news of today compose highly selective and tightly scripted scenarios that serve specific interests, purposes, and social functions. That framework involves values and motivations; it affects what will be selected as fact and when, where, how, and why; it tends by and large to cultivate a given set of priorities, and neutralize or counter threats to subvert it. The full use of the human capacity for reflection and action, based on consciousness of the process of communication itself, involves, of course, the critical use of stories that illuminate how other stories work in building that set of often unexamined assumptions.

### *Action Stories*

The third type of story moves us into *action*. These are stories that clinch the accumulated and often implicit lessons of the first two. It is as if to say, "If this is how things work and this is what they are, here is what to do about them." Their principal functions are to motivate, energize, and mobilize. Sermons, cautionary tales, exhortations, instructions, and advertisements are examples of stories of the third kind. They typically present a valued person or purpose or both, and offer a product, service, candidate, institution or action purported to help attain or enhance those values. The lesson of fictitious Little Red Riding Hoods and their realistic sequels in everyday news and entertainment not only teach lessons of fear, dependence, and power, but also give added impetus to selling burglar alarms, supporting law-and-order candidates, and acting in other ways to adjust to a structure of power and to the anxieties stemming from it.

### Conclusion

No society and fully-socialized person can be self-directing in ignorance of the cultural process shaping human notions of how things work, what things are, and what to do about them. More and better information about behavior is self-defeating except as related to that process and used to move us from the consumer's choice to action.

### Note

1. The much-touted observation that half or more of the jobs in the United States deal with information-related services should not be interpreted to mean that information is more abundant or important than ever before. What it means, if anything (as definitions of information are obviously debatable), is that information is becoming a commodity and that its production and exchange occupies a larger and more specialized sector of the labor force.

### References

- Elliott, J.H. (1984). [Review of Conrad, G.W. & Demarest, A.A. *Religion and Empire: The dynamics of Aztec and Inca expansionism.*] *New York Review of Books*, July 19, p. 30.
- Gerbner, G.; Gross, L.; Morgan, M.; and Signorielli, N. "Living with Television: The Dynamics of the Cultivation Process." In Jennings Bryant and Dolf Zillman (eds.), *Perspectives on Media Effects*. Hillsdale, NJ: Lawrence Erlbaum Assoc., Inc., 1986.