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ship between two major systems of human communication – the mass media system and the school system – viewing the two as the informal and the formal educational agencies of industrial culture.

When the last invasion of glaciers began to recede, Homo Sapiens emerged from the Ice Age a pretty accomplished craftsman, artist, scientist, socialite, and communicator. His distant past in damp tropical forests had shaped his forearms into strong, delicate instruments and left them free from carrying the burden of the body. Exceptionally deft manipulation developed literally hand-in-hand with an exceptionally large and complex control system, the human brain. A hundred million years of evolution is compressed in the word "to comprehend." It stems from the expression "to grasp with the forehand."

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The more immediate past had put Homo Sapiens to his severest test, at least until today. Huddled in cold valleys, flooded during the warm spells, he was hard-pressed to develop resources of collaboration, community, and communication. In surviving, Homo Sapiens transformed himself into what we recognize—a human.

Collaboration, community, and communication made our kinds of men and women out of members of the species. Communication infuses the other humanizing processes with our most unique capabilities: non-instinctive social organization, art, science and technology.

Speech, chant, song, dance, and the shaping of forms, images, and stories arose from the needs of living and working together. Rhythm was a pace-setter, a system of measurement, a way of easing the monotony of carving wood, of chipping stone, of the long march. Man the artist helped all to share and to bear the hardships of work. Then he came forth to represent, to recreate, to conjure up and to celebrate that great truth. His art made the truths of the tribe, its way of work, and its way of looking at life, believable and compelling.

From the taming of fire to the sowing of seeds man had learned not only the arts of making truths more believable and compelling but also something of the vital significance of making beliefs truer. Man reached out, got burned, and, instead of fleeing in panic, he contemplated an abstract proposition: Which end of a burning stick could be seized with impunity? He was a scientist.

Organized communication of pertinent fact and value – ritual, education, symbolic re-creation of the varieties, limitations and potentials of the human condition – this was, and is, popular culture. It is a source and instrument of social power. Responsibility for its system of organization, for the purpose and nature of its controls, and for the quality and structure of its freedoms, is administrative responsibility. Man the organizer combines the process of government with those of art and science as key functions in communications.

What about technology? Technology is a term of a different order. It is to be judged by the criteria of the others rather than by any criterion of its own. Unlike art, science, and even government, technology is the direct and immediate intervention into the everyday affairs of man. As science is the penetration of the mind into human necessities of existence, technology is the changing of these necessities. Its fruits are all around us. They transform the qualities of life and the uses of the mind. Technology means *change*. It is a most revolutionary and ambivalent force in history. Uncritical or indiscriminate technology is as scientific as slashing around with a scalpel. Science limits technology at the same time it feeds and directs it. The sharp cutting edge of technology is slanted in the direction of our scientific beliefs and values only if its operation in one realm of necessities does not conflict with what we know about another set of human necessities.

The concept of technology vaults us across a span of thousands of years. For the vast majority of mankind, the chief glory of those years is the building of the foundations of world societies resting not on bent-over human backs and frayed human nerves but on the uses of non-human and super-human energy. This is the only major qualitative change in living man has known since he learned to raise food from the earth rather than only to pluck it from the wilderness.

For two-thirds of mankind, much of it living in our own back-yard, this change of the ages is only a hope. But not a vain hope. They are driven to supreme sacrifices to bring it off. Some are determined to reach their goal in less time than we did, to reach it by roads and shortcuts *they* see fit, and nothing but bombs can stop them. Barring that act of genocide, the roads taken today will lead in the next century to a world as different from ours as ours is from the world of the Pharaohs'.

There are certain requirements inherent in the logic of industrial technology. These are universal imperatives applicable to all roads to the new transformation. Success in meeting these imperatives will largely determine the power of national or supra-national units to exist as relatively independent and self-governing entities.

The first imperative is the accumulation of massive capital investment. It is the saving rather than spending or wasting of all forms of human and natural energy, the turning of this energy, through technology, into providing the essentials of a human life for all. This requirement places a special burden of development and accommodation on a country which mines 50 per cent of the world's resources to collect 40 per cent of the world's income for 6 per cent of the world's population.

The second imperative is sizeable organization, and the consequent necessity for planning and for the orderly allocation of resources. Industrial society is urban society, planned society, and organized society, whether the organizing is done in public or in private. Industrial man is "the organization man" whether he takes the posture of conformity or rebellion, whether he behaves as a self-styled individualist or a responsibly self-directing individual. The logic of highly organized life should, on the whole, require and produce greater personal responsibility than any other form of life; the consequences of personal judgement and action are much more far-reaching.

The third imperative has to do with the popular culture of society revolutionized through technology. By popular culture I still mean the organized social communication of pertinent fact and value.

The social communication system of industrial culture comes to bear a double burden. One is the requirement for the cultivation of skill, intelligence, and personal responsibility on a t
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sonal responsibility on a totally unprecedented scale. This is the full meaning of the demand for "high level manpower." The degrees of incompetence, incomprehension, and immorality tolerably diminish in geometric proportion as increasingly tightly-knit world societies bid for ever higher stakes.

The second burden is the necessity for free and imaginative exploration of the meanings and opportunities inherent in a life of continuous change. It is the need to help man shape the forces of his own transformation. There is perhaps a third cultural burden related to this one; but let me save that till the end.

The humanizing processes of collaboration, community and communication shift to a high technological gear in industrial society. Man is — or should be — at the wheel. The communications functions of art, science and administration must map his territory and help chart his course.

There are many roads to the industrial transformation. Each road confronts the imperatives in its own way. Our path is the one blazed by the once revolutionary middle class, somewhat deflected from its original course by the once counter-revolutionary intellectual. (I am using these terms merely to symbolize certain characteristic ways of dealing with the imperatives of technological change.)

The conceptual discovery which made the middle class an agent and prime-mover of industrial revolutions was the idea of the market as automatic pilot. Progress along this road was to be self-regulating. The imperatives of capital accumulation, mechanization, organization, and acculturation were to be met through a system of balances inherent in the structure of markets. The market was to govern best when it was governed least. Art and science were to be pursued for their own sake, and yield such fruits as technology could put to efficient and gratifying use in the markets.

For the intellectual, attached to aristocracy and clergy, this was a pretty vulgar and revolting development indeed — at least until it provided *him* with a market to offset the loss of the old patronage. Once a part of the new system, yet having no investment in it beyond his personal talents, he could observe it more objectively. In a world of unprecedented accumulation of riches and enlightenment, and the technical means to share it, deprivation and ignorance could no longer be considered natural. Indeed, all such social degradation is manufactured by the system that provides the means for its abolition. The automatic pilot has a built-in bias. The ride is on a roller coaster. That government is best which governs best. The now revolutionary intellectual was to harness all the humanizing processes of collaboration, community, communication, the functions of art, science, technology, rapid mass training and cultural harmonizing for a hard-driving industrial program along a straight and narrow path. Damn the markets; full speed ahead.

The two cultural offsprings of the industrial revolution grew up side-by-side, playing, as it were, an intricate game of chess. The two siblings are the system of formal secular public education, the schools, and the system of informal secular public education, the mass media.

The mass media system is the direct descendent of technology, mass production, and mass markets. It was ideally suited to the demands of industrial culture, to its need for rapid, standardized reproduction and distribution of commodities to heterogeneous, anonymous, mass audiences too large to interact face-to-face.

Formal education needed more prodding. It is not so easily mechanized, not so cheaply organized, not so readily standardized and not so handily merchandised. But as the paths to industrial transformation

crossed and at times even merged before parting again, the cultural imperatives of the road emerged with increasing clarity.

The Founding Fathers tried to protect the integrity of both systems of popular culture from the main threat *they* knew: strong central government. The press by Constitutional commission and education by Constitutional omission escaped centralized public development and control. But although exempt from the laws of the Republic, the mass media were subject to the laws of industrial development from which they sprang. These laws required organization, concentration, mechanization, and control – if not public, then private. By comparison, public schools remained the last folk institution of industrial society.

During the so-called marketing revolution of the 1950's we began to spend more time on mass-produced communications than on paid work, or school, or play, or anything else except sleep (and the "late show" cut into that, too). Television alone demanded one-fifth of the average American's waking life. Comic books sold one billion copies a year at a cost of a 100 million dollars – four times the budget of public libraries, and more than the cost of the book supply for primary and secondary schools. Almost 50 million people still went to movies each week, and the same number stayed home and watched them on TV each *night* – 400 million exposures a week.

Our thirst for information grew likewise. Yet Sputnik came as a surprise. We had been swamped by an avalanche of communications geared to the demands of markets, insulating us from some relevant realities of the day. The "human interest story" – ironically enough – is some cute foible of the race, like the AP wirephoto of last February 16, a heartwarming picture story of boys and girls joined in merry laughter, bearing the caption: "Best kind of bonfire – It's easy to see why these kids are enjoying the fire – the burning building is their school."

It was, in more ways than one. Dollar-for-dollar schools kept up with the mass media. But because of the inherent nature and structure of the formal education system, schools got much less mileage out of their dollar. Major educational responsibility remained relegated to political subdivisions which had less to do with social, economic or even political life than in any other country on earth. What had been designed as protection became invitation to sabotage. Thirty million Americans were on the move each year, but we persisted in the illusion that education in some places costs 2½ times less than in others. All in all 1 in 9 youths examined by the Armed Forces failed minimum literacy tests. But in one area of seven states 1 out of 3 failed and two-thirds were ruled out for skilled work or advanced training. While television was made available free and equal to all, and while all broadcasting tripled its revenues, our only massive national effort in higher education – the GI bill – came to an end. College degrees declined by one-fourth of the total awarded in the first four years of the decade. Each year a hundred thousand college caliber youth did not go to college for financial reasons. Higher education never got 40 per cent of the top fourth of our high school graduates.

Perhaps in retrospect we shall smile indulgently at the antics of an age in which we could put the Royal Laotian Army on the federal payroll (with dubious results), but considered it interference in the affairs of a state to do the same for the teachers of New Orleans.

True, the typical American school was a bright, cheerful, happy place compared to schools in many lands. A sympathetic visitor from England noted that they were "unmistakably faced with a custodial . . . problem that is unfamiliar in other countries. The difficulty is not
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*King, Edmund J., Other Schools a
Methuan & Co., 1958, p. 115

tries. The difficulty is not that of getting boys and girls ready . . . so that they can help with the national housekeeping; it might be somewhat unkindly described as that of keeping young Americans happily and rather profitably occupied as long as possible before getting them ready . . . Criticisms of . . . slow progress . . . underestimate the interplay of economic and scholastic considerations."*

Despite that interplay, we were somewhat dismayed to find that half of our high schools did not offer a foreign language, a quarter did not teach physics, chemistry, or geometry. Math and science subjects took up nearly 40 per cent of the time of every Soviet pupil of the middle school, we were told. Adding to our dismay was the discovery that the Russians were graduating three times as many engineers and two and one-half times as many doctors as we were, and, furthermore, that our supply of engineers and doctors was enough to satisfy the market, even if not the need, for their services. Symptomatic of the situation was that of all professional shortages, the teacher shortage was the most acute, and the supply dwindling in relation to need. One-fifth of our college graduates went into teaching. The Russians returned half of their graduates to teaching every year. Sputnik went into orbit. A rocket hit the moon. There was much talk about a "gap." You might find the gap in the U.N. Statistical Yearbooks for those years. Our education budget was two-tenths of our military budget. The Soviet education budget was seven-tenths of their military budget. The gap is in the ways of meeting the imperatives of the new world industrial transformation.

We had indeed been outflanked. The mass media appeared increasingly to take over democratic national responsibilities for illuminating the realities of today and setting the agenda for our life of tomorrow.

How did they fulfill that responsibility? As well as could be expected, perhaps even better. Being free from public control but lacking guarantees of public support in using that freedom, the mass media must, on the whole, merchandise such gratifications as can be profitably cultivated under the circumstances. And the circumstances did not particularly favor the use of mass communications to meet the cultural imperatives of our age.

The agenda of life's business as seen through the window of the mass media is pretty clouded. Only systematic study can lift the blinders each of us wears as a matter of choice, temperament, or habit. So let me mention two areas of concern in which we have scratched the surface, and which have a direct relation to preparing young people for the life they will live tomorrow. One might be called a success story; the other perhaps a course in failure.

A now classic study of biographies in popular magazines* traced the remarkable growth of attention devoted to personal success stories in the first half of the twentieth century. But even more remarkable were the changes in the *kinds* of personalities that symbolized success. Before World War I, three-fourths of these models of achievement came from political life, industry, and the professions. Forty years later the "idols of production," gave way to the "idols of consumption." Aside from the political figures, nine out of ten of the latter-day celebrities' chief claim to fame was stardom in the world of the mass media and of the markets they serve.

The celebrity cult is not a simple affair. Matt Dillon outdraws the election returns. Several TV stars are more familiar to a test panel of 2,000 viewers than a President of the United

*King, Edmund J., Other Schools and Ours, London: Methuan & Co., 1958, p. 115

*Lowenthal, Leo "Biographies in Popular Magazines," in *Reader in Public Opinion and Communication,* edited by Bernard Berelson and Morris Janowitz, Glencoe, Ill.: The Free Press, 1950

States who does not or cannot become a TV star himself. About one out of four magazines on the newsstands can be classified into the fan-romance category. Half of the lives immortalized on "This Is Your Life," 76 per cent of those personalized on "Person to Person," and 69 per cent of those interviewed on "The Mike Wallace Interview" came from entertainment and the mass media. Such celebrities account for over 40 per cent of all paper back biographies in print. The size of the Hollywood press corps just about equals the combined memberships of the education writers' and science writers' associations. *McCall's* much publicized list of the most exciting reading of our time features such famous authors of non-books as Zsa Zsa Gabor, Fred Astaire, Arlene Francis, Keenan Wynn, Jack Paar, Art Linkletter, and Marilyn Monroe. (*This* must have been the last straw for Arthur Miller!) Even as good a series as "Reading Out Loud," by Westinghouse and the American Library Association finds it necessary to enlist "fifteen of the nation's most prominent people" to popularize reading, people who turn out to be two writers, one businessman, three political figures, eight stars, and one TV teacher.

Yes, the TV teacher. Since Sam Levenson quit being a school guidance advisor and became a comedian, he lectures to 150 PTAs a year on child guidance, and employs a staff of two to answer letters asking for advice. Charles Van Doren lectures to no one.

Patrick D. Hazard of the University of Pennsylvania (who collected most of the figures) commented that our "society depends for its continued viability on a bewildering proliferation of exacting roles for which arduous preparation of intellect and imagination is demanded. Yet the media system, largely to facilitate its function as a marketing agency, has made the entertainer in our culture vastly more visible than he has any right to be. This inevitably means that occupational roles and activities much more crucial to the proper functioning of a free society are less noticeable, even invisible. Teenage idols, television and motion picture stars, sports champions, and media-created celebrities crowd out the scientist, educator, legislator, and artist from the vision of the great majority of our people."*

Now I am as kindly and even warmly disposed as any man towards the charms of my erstwhile compatriot Zsa Zsa Gabor, or ex-partner in intellectual enterprise Marilyn Monroe. I don't even begrudge a little visibility here and there. What chills me is the idea of a checkmated culture. Some people are worried about our alleged failure to communicate to young people. I am afraid we communicate too well. Some people are alarmed about our "beatniks" and "youth problems." So am I; but secretly I am heartened to see some of our messages unacceptable to so many.

And now the study in failure. There is one basic ingredient to any formula for attracting young people into teaching. That is to stop doing what keeps them away. Raising salaries is a necessary but not a sufficient condition. The one thing all young people want is to grow up. We have not made that easy. For to grow up means to know the score, to do things that really matter, to be taken seriously. Nothing saps self-respect as much as to encounter in one's culture one's professional image placed high on a pedestal perhaps, but in stature smaller than life. You can fight about a paycheck, or even sulk about it in a perfectly soul-satisfying way. But who can fight or sulk about the lovable Mr. Boynton?

We know that by-and-large the teach-

*Hazard, Patrick D., "The Entertainer as Hero: The Burden of an Anti-Intellectual Tradition," unpublished paper, read at the Association for Education in Journalism Convention at Pennsylvania State University, August, 1960.

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*Foff, Arthur, "The Teach
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York: Harpers, 1956, p. 2

**Schwartz, Jack, "The Po
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er in literature is too often either an inhibited, sexless prune (with apologies to Dr. Dichter and the prune industry), or, as an early study on the subject put it "stooped, gaunt, and gray with weariness. His suit has the shine of shabby gentility and hangs loose from his under-nourished frame."* That is, unless class is out and memory rings the school bell, when we say a tearful "Good Morning" to the wonderful, "The Terrible Miss Dove," or bid a nostalgic "Goodbye, Mr. Chips."

But perhaps memory fails us. So we did a study of 81 American movies produced since 1950, portraying teachers in leading or supporting parts. And this is what we found.**

The presence of an educator tips the odds 3 to 1 in favor of the movie being a comedy, and 2 to 1 in favor of its being a standard love story. Movies without teachers are more likely to fall into the action-adventure category by a margin of 12 to 1, and into the category of Westerns by 21 to 1. Since most movies involve love, and since love has a peculiar affinity to humanity, a look at love and the teacher will give us a good measure of his human stature.

His opportunities for love were virtually unlimited. Although male teachers outnumber female teachers (this is not surprising in the predominantly male world of the mass media) six out of 10 male and nine out of 10 female teachers were unmarried at the beginning of the picture. Alas, most of them were unmarried also at the end of the picture.

Not that they didn't try. They just didn't try hard enough. With so many unmarried teachers running around, it was inevitable that some would run into recognizable pedagogues of the opposite sex, and vice versa. The clash, five times out of six, had the shattering impact of a popgun.

With all the happy endings, the teacher's chances of success in love with *anybody* were 50-50. The most common conditions of success in love were (1) that the teacher find a partner without college education, and (2) that the teacher leave the teaching profession. The typical pattern has her quitting a New England high school and a biology teacher fiance to "find herself" and a *man* in New York. Or it has him leaving a dull musical chair at a Western college, along with a straight-laced professor girl friend, to be taught something about music, and love, in Tin Pan Alley.

With such a pattern of romantic success among screen pedagogues, what need be said about failure? Failure in love permitted the teacher to remain fully dedicated to the profession. Blindness to the mature emotional needs of others allowed the others to escape into the stronger, warmer arms of less educated more human creatures.

Enough of love among popular cultural symbols of the education process. On a somewhat more sordid side, we also noted the pattern of the pretty young teacher suspected of carrying on with a precocious high school gorilla. All ends happily when we find out that he only tried to rape her. You couldn't blame her, though, for being somewhat miffed at all this, or her more dynamic male colleague for leaving a field of endeavor where for a while he risked being beaten to pulp every time he turned his back.

The film teacher leaving the profession usually goes to greener pastures. Are there any others? Actually, the still youthful teacher going into another specific occupation knows what it takes to do things that really matter. Five times out of six, he becomes an entertainer.

*Foff, Arthur, "The Teacher as Hero," in Arthur Foff and Jean Grambs, ed., *Readings in Education*, New York: Harpers, 1956, p. 21

**Schwartz, Jack, "The Portrayal of Educators in Motion Pictures, 1950-58," *The Journ. of Educ. Sociology* 34:82-90, Oct. 1960.

Semanticists have unwittingly done us a disfavor. Key terms and concepts *should* be fighting words, like technology, with a sharp cutting edge slanted in the direction of our values. I think it was Florence Nightingale who once said that whatever hospitals do, they should not make people sick. Semmelweiss enraged eminent medical practitioners only a hundred years ago with the simple request that they wash the hands that poke inside other people's bodies. Freud was looking forward to the time when "culture will not crush anyone any more." Commenting on the uses of his inventions, Lee De Forest asked, "What have you done with my child?"

So forgive me for not being fair to the bookkeeper's trade, for not balancing all the great *humanizing* functions splendidly performed in our industrial culture with all the dreams that hurt. I am now engaged in a study of the portrayal of teachers and schools in all media of more than half dozen countries. I know there is much on the credit side of the ledger: probably enough to give us a soothing, static sense of equilibrium.

But there is no equilibrium. The once solid ground of supremacy in peace and war buckles under our feet. Electric organs play their canned music in temples and in honky-tonks. The shrieks of the joy-ride still resound and mingle with wails from the chamber of horrors. Former targets rise to take aim. It is the end of a whole shooting match. New signs erected in some scattered workshops read "Under new management. Check your guns outside. *Man* at *work!*"

There is no equilibrium. The fruit ripens in the forest, birds fatten on it, and scatter the seeds of its destruction. The soil receives the seed. Moisture, minerals, and sunshine turn them into forces of construction.

We are going into a difficult fall and winter. Our basic problems and perplexities do not stem from temporary aberration or accidental neglect. They are rooted in structural characteristics of middle class society. So is our pride and joy: the most privileged life for the most people ever to inhabit a country of man. Ripe is the fruit along our road toward the imperatives of tomorrow. And so is the worm in the apple.

The revolutionary example of our own dynamic techniques transforms the world – but not to our own image. We can take it, or leave it, or blow it to smithereens. We're well-equipped to blow it. We're too privileged to leave it. But are we prepared to take it?

We can take it and survive, again, through transformation. In glancing at the past, and at *The Future as History*, Robert L. Heilbroner notes that in our society technological progress and penetration "are not facets of human life which we normally subject to 'history-making' decisions. In general we allow these aspects of history to follow their autonomous course . . . Thus we limit our idea of what is possible in history by excluding from our control the forces of history themselves." It is true, he points out, that "the exercise of such historic control is fraught with risk. *But so is the exercise of non-control.*" (His italics.) And he writes:

". . . Until the avoidable evils of society have been redressed or at least made the target of the wholehearted effort of the organized human community, it is not only premature but presumptuous to talk of the 'dignity of the individual.' The ugly, obvious, and terrible wounds of mankind must be dressed and allowed to heal before we can begin to know the capacities, much less enlarge the vision, of the human race as a whole.

"In the present state of world history the transformations which are everywhere at work are performing this massive and crude surgery . . ."

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And: "There is needed a broad and compassionate comprehension of the history-shaking transformations now in mid-career, of their combined work of demolition and construction, of the hope they embody and the price they will extract. Only from such a sense of historic understanding can come the strength to pass through the gauntlet with an integrity of mind and spirit.

"What is tragically characteristic of our lives today is an absence of just such understanding. . . ."

This comprehension, this new reach of the grasp of our hands and our brain, is the third cultural burden of the imperatives and the logic of the changing world. The twin systems of education in industrial culture can join hands and use technology to that end. But technology means change, and the direction of change requires some institutional remodeling to bring the forces of human history under more responsible human control. There is no other way to survival – and to evolution – in industrial culture. The teacher of tomorrow must have the tools and the support of society to become a full-fledged participant in popular culture, and to grow in stature as big as life – even if not on a pedestal. The old game is up. There is little time to wait for historians of tomorrow to tell us what we should have done today. The humanities need not fear the teaching machine or electronic media any more than they had to fear the original instrument of programmed learning which they also opposed – the book. Not if the teacher of tomorrow, in the classroom or on the screen or on the air, can combine the historic humanizing functions of communication – art, science, and administration – to make our beliefs truer, our truths more believable, and our knowledge freer. Anyway, *these* are the dreams that heal.

PRESENTATIONS OF NEW TEACHING AND LEARNING DEVICES AT THE EVENING SESSION OF THE SYMPOSIUM

Western Design Division, U. S. Industries, Inc., Santa Barbara, California
Dr. Joseph A. Tucker

Teaching Machines Incorporated, Albuquerque, New Mexico ... *D. E. Cornell*

Rheem Califone Corporation, Hollywood, California ... *Charles Klein*

Harcourt, Brace & World, New York, New York ... *Bruce Harlow*

Science Research Associates, Chicago, Illinois ... *Ken Seaman*

Eastman Kodak Company, Rochester, New York ... *Ade Ter Loew*