

SOCIETY BY DESIGN

II

IT sounds strange to talk of honest and dishonest houses. After all, houses are neutral, material objects, aren't they? Yet if a house is larger than we can build and care for with our own efforts, it may be regarded as violent, exploitive architecture. The larger and more complex the house we build and maintain beyond our basic needs, the more the house becomes a time-consuming luxury, requiring effort that could be focused on areas of greater need. Balance in this, as in all things, takes judgment. Some put in a disproportionate amount of time on their hair (one thing I have never been accused of), some do this for their car, some for their tennis stroke, and some of us are inclined to spend excessive time on our houses.

Until there is a decent balance of basic necessities for all people, we are duty bound not to waste time and energy on peripheral things. The modern Yurt has been designed as part of the quest for a non-violent architecture—a shelter which people can take part in building for themselves. For this to be possible, it must be simple, take relatively little time to build, be esthetically pleasing, low in cost, and easily cleaned and maintained. There will not be one form of structure alone that will answer the needs of all people. Climate, occupation, and taste vary too greatly for this. We need experimentation with many designs using many different materials. And we need to design without having material gain in view, but with having the best non-violent architecture possible.

Most of us enjoy having fine things. How we define "fine" is going to affect greatly whether we live lives of quiet exploitation or of fairness. Having a fine house can be a matter of status, of competition, of expense and exploitation—or it

can mean having the best house for you and your needs, that you design and build, one that is fine because it is simple. Having fine things does not have to mean expensive ones. The quality of "fine" comes from knowledge as much or more than from expense. Having one of the finest pancake-turners in the world is possible for anyone who finds out what makes a good pancake-turner. Money does not enter in. If you put many such small elements together, then you will have one of the finest possible homes.

The concept of social design implies change—the building or shaping of something. The end-product of a better world will be as much a result of the process of seeking it as it is the result of the specific design ideas of the seekers. Imagine what would happen if three hundred million people were concerned with building a better world! This would be a social revolution such as has never been conceived. The key difference would be people coming to the realization that it is *their* world: that it can be changed, that they can, should, and must have a role in redesigning it. This means that designing will become like reading and writing, eating and sleeping—normal for everyone.

Unless design becomes the mental property—activity—of all, we will continue to be exploited by the designers for commercial interests. An aware public cannot be sold shoddy goods—including nuclear power plants that do not fit the environment, tableware that is hard to wash because of "floral" designs, school programs that do not lead to growth, wars intended to save us from our "enemies." We are greatly manipulated by design. Machine production has been a boon in providing many needed things at a lower cost, but unless we are alert we'll let the machine start

teaching us design. For example, the machine can be used to create any design chair we like, but commercial interests can make more chairs (and more money) if the simplest design (for the machine) is chosen for production, and then we end up surrounded by furniture designed to fit the needs of the machine. An example is the commercial slatback chair with turned legs and rungs and a woven bottom. This chair has been made by machine for so long that it has become the norm for its type. But the person who wants to make such a chair by hand rarely questions the need for a lathe. The chair needs no lathe, the "rounds" do not need to be round, or turned. All the parts can be shaped with a knife, an axe, a draw knife. Production has so controlled the design that we now have a difficult time imagining how the design might differ if the chair were hand made. (See *Making a Chair from a Tree*, 1978, by John Alexander.)

Once or twice a week, I go forty minutes by canoe to get supplies. Some think it strange that I don't use a motor and do the trip in fifteen or twenty minutes. I enjoy the paddle. It is one of the most relaxing and thought-provoking times of the week. I can not only see an osprey flying, I can hear it. The exercise feels good. I have no argument with the use of motors—they are just not applicable in all situations. They are not a better way to move about, just another way. As I write I can hear the deep throb of a lobster boat coming to haul traps in the bay. Like the chain saw, it makes good sense in the right situation. To tend five traps with a power boat is a bit ridiculous. To tend four hundred, it's a necessity.

We need to design and select tools to fit our needs and we need to select and design a technology to fit society as a potter chooses a glaze. In many cases the technology that was designed for mass production does not fit the homestead. Agribusiness techniques are not needed in the home garden. A table saw is not a necessity for making a cedar chest. (And I'll be

damned if I need an electric can-opener for anything.)

Not only do we need to simplify in order to be able to share more of the things the world needs, but we need to distribute power, authority, and freedom as well. The more decentralized we become, the more opportunity will there be for individual decision-making. The more we are crowded together, the more autonomy we are obliged to give up. Centralization of decision-making thus causes an important kind of deprivation.

The world crisis is such that we need to seek out key areas on which to focus our attention. Keys work like catalysts; a small amount of effort brings a large result. We need to locate, define, and isolate areas wherein a small initial effort will cause a large amount of positive social change. It is seeking ways to help society branch out in new directions. A society that has reached the point of sustaining itself is like the satellite that finally gets into orbit, or like a youth who leaves home and begins to earn his own way. When we reach social maturity, our society will do its own thinking and designing, no longer delegating that role. Meanwhile, in our social prejudice, our nationalisms, our violation of minds in schools, and the twisting of bodies and minds in industry and warfare, we have proof that the thinking of our "managers" is inadequate for having a fully productive, happy world.

If experts seem low-rated here, my apologies. Experts are needed as never before, but only by full development of our people will we find the raw material for developing better experts. And a word is due an ancient kind of expert, the sages. Often their knowledge is of a general nature, with perspective over time. They have much wisdom to share. One contribution they make is encouragement. Support from those who have gone before provides a special sort of sustenance. In searching for a solid footing from which to approach the task of social design, my life is

greatly indebted to the encouragement and example of several both wise and old.

Inspiration is as important a need as knowledge. I have long admired certain communities for their design of a common life. The Shakers and Doukhobors in particular. But chiefly I value them for their stimulus to go further. So those who guide us, who inspire us, having gone our way before, are now partners with us in building a better world. Any success we have is theirs as well as ours. To copy or imitate them should be only the beginning—the apprentice stage of life. It is fine to think, What would a Shaker do? What would Scott Nearing have said? What would Gandhi have thought? These are good exercises for the mind, a check on ideas and contemplated actions, valuable so long as we do not follow anyone blindly. We should use the wise as advisers, not masters. Yet only by standing on their shoulders can we be partners in building a better world.

Down through the ages we have been gaining in knowledge, each generation standing on the shoulders of those who have gone before; and we have been coming closer and closer to a launching into self-sustaining flight. We are not wiser, we are not better, we are not stronger than our predecessors, but we have the potential for constructing a successful society because we have their accumulated knowledge and wisdom to build upon. The accumulation has been in human understanding as well as in technical knowledge—a vast treasure house making our inheritance. Can we think of this treasure as the fuel for the fire of truth? May we now be reaching the kindling point for the treasure? With the creative ability of the minds of people now living, coupled with the wisdom developed over centuries, we may create a self-sustaining flame of human happiness and growth. The prejudice and hatred that lead to war belong to the mixed-up adolescence of mankind. A mature society, like a mature human being, will recognize the tremendous advantages that cooperative effort has over competition.

For many, the knowledge of a Jesus, a Lao tse, a Buddha, a Gandhi is complete and unassailable. But we do them and their vision of a better society a disservice when we follow them rather than taking what they have taught and using it to build upon as we strive toward our goal. When we merely follow another, in effect we take one more potentially creative mind out of service—our own. We tie up a natural resource just as much as when we put away money in the mattress. We need not more disciples but more apprentices—the chief difference being that an apprentice is in a following position only temporarily and is expected to go on and work independently of the master. The wise apprentice realizes that the master is always a part of him, that within him is a partnership of himself and the master craftsman, and of all the other masters that came before. The apprentice knows that he is a master in a state of becoming, that as a responsible craftsman he must seek to improve upon the knowledge that has been entrusted to him, and to go further. Not that he is better than those who were before—he is a part, an extension of them—the latest bud on the living tree. If he does not reach up to the sun, and down into the soil for nourishment, to help the tree grow further, he has not been faithful to the trust.

It is always easier to take the words of a Jesus, a Gandhi, a Marx, or a Confucius as constituting Holy Writ. It means less reading, less study, less thought, less conflict, less independent searching, and it means less growth toward maturity as well. Learning to walk requires some stumbling and falling. We have had in this century a number of brilliant minds, flowers on the tree of human knowledge. Eric Fromm is an example. Carl Rogers is another, and Abraham Maslow still another. These people were not followers. They brought new knowledge, deep-rooted in the wisdom of the past, from many sources. We need such knowledge brought forward from the past, collected, studied, experimented with and blended together with modern knowledge for the creation of a new culture. Cultural blending has been an

operating force in human affairs since one tribe first met with another.

Learning from one another is natural. Each group of people in the world is a repository of folk knowledge which is their inheritance from previous generations. This knowledge is a valuable resource of humanity. Whether it be knowledge of child-care, gardening, human relations, or tool design, this knowledge needs to be collected and studied for its value in blending with other knowledge from other cultures. Folk wisdom is rare and unique knowledge, vitally necessary as we work at building a new world. And it is of double value when it is learned from a living culture. Besides the value of what we learn from them, there is the value to them of feeling that their way of life has something to contribute to the larger society, to humanity as a whole. There is even a triple value, since when we learn from what others have to teach we grow in respect for them, increasing the interdependency of all human beings.

There are many kinds of seeds in us. Usually we think in terms of genetic inheritance. I like to think in terms of cultural parentage—of intellectual inheritances—ideas and values that have been bequeathed to us. Perhaps it is good to ask ourselves: "Who are my brothers and my sisters?"

My house has its origins in the steppes of Asia. My felt boots came by way of Finland from Asian shepherds. My cucumbers came from Egypt, my lilacs from Persia, my boat from Norway, and my canoe is American Indian. My crooked knife for paddle-making is Bering coast Eskimo, my ax is nineteenth-century Maine design, and my pick-up is twentieth-century Detroit. The list is long. The more our knowledge increases the greater becomes the awareness of our indebtedness to others. We *are* a cultural blend. So why not recognize it and deliberately make use of the possibilities it offers for a richer life, be it in medicine, agriculture, child-care, architecture, and a host of other areas?

We do not need to ape other cultures. It is only through sensitive selection that we can design a culture that fits our needs. Sitting on the floor may be no more than a fad (for Westerners). There is something to be said for the simplicity of sitting on a chair or bench; you spend less energy getting up and down. The floor is usually the coldest part of the room, so raised beds and chairs make sense in a chilly climate. Inflated seal skins make excellent boat rollers for an Eskimo, but they deteriorate rapidly where it is warm, so we use their idea for all our terrain vehicles, but substitute rubber for seal skin—a cultural blend.

If it should be true that folk wisdom is our basic wealth, the chief insurance of a culture, then we are nearly bankrupt. This knowledge is disappearing at an accelerating rate, as the products of local crafts are replaced by factory-made goods—goods not designed with an eye to the improvement of human life, but made for profit. We need to be collecting as many examples as possible of the old knowledge and skill, before they are forgotten and lost forever.

A bonus that comes from learning from another culture is the perspective it reveals. Learning to plant a garden from a Mexican village family provides insight and perspective for creative thought that has various advantages over obtaining the same information by reading a book. The atmosphere of living and working in the village may suggest new ways of using this knowledge on the spot. If we delegate such tasks of learning, we should be sure to select observant and sympathetic researchers, since their inputs of thinking may make the knowledge gathered many times more useful. We need, in short, to "capitalize" on this sort of insight.

It helps my thinking to imagine society as an extension of myself—as my social body. Anything I do to harm that body does harm to me. My neighbor's poverty is mine—his need is my impoverishment. From this viewpoint, all prejudice, all violence, all hatred that I send out

into the world, returns to me. John Donne crystallized this for us all by saying—

. . . any man's death diminishes me, because I am involved in Mankind; and therefore never send to know for whom the bell tolls; it tolls for thee.

Have you ever known someone who, after cutting a finger or developing a blister, said: "Oh, it's nothing—just my finger"? Yet the finger is part of the whole body and through that finger the whole body is hurt—the function of the entire organism impaired. The whole organism assumes responsibility for healing the hurt. As the finger is an extension of the physical body, so we as individuals are extensions of the social body. Whatever we do affects the social body, just as what other individual members do affects us. The effects may not be visible for some time, as with a teredo worm boring in a ship's bottom. Yet the effect is no less real for being unseen at the start. The ship still sinks, however small the individual holes.

For me, one of the attributes of maturity is that, as we reach that stage, we act as though whatever happens to society happens to us. We will no longer feel good when we hear of the devaluation of the pound, the franc, the peso. We, too, will feel the financial loss of the people in other countries, knowing the suffering it brings. The waste of lives and minds through poverty is my business and yours. When a crime is committed, it is some part of our social body that commits the crime. Eugene Debs phrased it well in saying,

Years ago I began to recognize my kinship with all living beings, and I made up my mind that I was not one whit better than the meanest on earth. I said then, and I say now that while there is a lower class I am in it; while there is a criminal element, I am of it; while there is a soul in prison, I am not free.

We are so ready with prejudicial terms that hide from us our right and need to know what is happening to our social body. War in Nigeria? It is our body that suffers there. Starvation in Bangladesh? It is our children who hunger. A riot in a distant city?—That is our city—our heads

being broken. Unemployment, welfare checks, slum conditions—all are ills of our body. If a small part of the social body that I identify with locally is to stay healthy, I must work to see that the whole is healthy.

We have been taught that selfishness is bad—in general a good and necessary rule. Yet this attitude may be out of harmony with the conception of the social body. When we see the social body as an extension of ourselves, narrow selfishness drop away. Through enlightened selfishness I recognize my neighbor's need as mine. It is narrow, crabbed, ignorant selfishness that hurts both others and ourselves.

As a society, we condemn selfishness as too great a concern for one's own being. Perhaps the difficulty is not with selfishness, since it is normal for an organism to be concerned with its own welfare, but rather short-sighted or unenlightened selfishness that supposes its well-being can be had at the expense of others. What we need is not less enlightened selfishness, but less narrow selfishness. We need selfishness that's enlightened—enlightened to the point where we see that our welfare is inextricably entwined and intermingled with the welfare of all. The wonderful Swiss pacifist, Pierre Ceresole, put it this way:

You say, isn't it sad that a diamond, when seen to its essence, is nothing but common carbon. I say, isn't it wonderful that common carbon, in its most developed form, is the finest of diamonds.

You say, "Isn't it sad that altruism, when seen in its basic structure, is nothing but base selfishness?" I say, "Isn't it marvelous that base selfishness, in its most enlightened form, is the purest of altruism?"

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REVIEW

BLAKE, WAR, AND REVENGE

IT would be difficult to find a better book as the basis for reflection on the role played by art in human life than David Erdman's *The Illuminated Blake* (Anchor Books, 1974), Of 416 pages, presenting "All of William Blake's illuminated works with a plate-by-plate commentary." Erdman is soaked in Blake, feels free to wonder about his intentions, and exercises his own imagination in appropriate (daring) ways. Only a little exposure to Blake's drawings (engravings) prepares the reader for the provocations of Erdman's notes; he says in his long introduction:

In short, Blake's text frequently incorporates images of delineation and coloring while his illustrations frequently incorporate images of thinking and writing. As a poet he keeps a constant eye on his own shadow or spectre—at first a harpist or piper whose musical notes materialize as clusters of flying birds—or ripening grapes—promptly depicted by the painter, not dropping his quill but seizing an etching or engraving tool in his other hand. . . .

To say that Blake was able, as author and printer, to keep all aspects of the production of his works under his own control is to reduce to an easy formula (the Urizenic triumph) the most difficult—and endless—struggle of his life, the effort to seize the symmetries that confronted him at every step, to create simultaneously and harmoniously in words, birds lines, colors, a living city of Art that would resurrect us from our graves to meet the Savior in the air. Hands, tools, liquids, light, color were very real beings in Blake's furnace—and in Nebuchadnezzar's or Urizen's. As compared to the writer whose efforts shape thoughts and images into words to be set by journeyman printers, Blake felt the advantage and the responsibility of a process that allowed words to grow into vines and fruit and human forms, or into caves and forests and beasts of prey or comfort; into emblematic dramas or visions in human form, into sons and daughters shaking their bright fiery wings. In Plate 37 of *Jerusalem* we see the giant Albion bent over in melancholy, with a scroll across his lap which he is not reading, Blake's audience gone to sleep. But we see the Gulliver-sized William Blake sitting on the free coil of the scroll and busy with pen in hand inscribing a warning against melancholy for Albion when he does awake.

The audience sleeps! This is the second source of the pain of every artist. The life and nourishment of the artist consists in being understood, yet his audience remains indifferent, asleep. Blake had a greater power to awaken than most artists, yet his contemporaries called him mad.

The first source of pain for the artist is his inability to set down his vision as he feels it. The craft of the poet is to make words break out of their confinement to conjure a flow of meaning that overcomes the stubby chopping up that language imposes on thought; even the most lyrical flights but caricature their wordless originals. So Blake would make words "grow into vines and fruit and human forms, or into caves and forests." But he understood that the splendor of the finite is a tribute to the infinite and he abhorred a fuzziness of line. In order "To hold Infinity in the palm of your hand," one must know the magical power of precise limits. You put it there with its opposite, always the cipher of the uncontainable. The artist is the failing translator of the ineffable, the recorder of the incommunicable, doomed as Prometheus was doomed, yet knowing in his heart of the distant time when he will be free. If you want to know a little of the greatness of Blake, consider the list of his lovers—ours but happenstance and woefully incomplete but better than none: Yeats, Bronowski, Frye, Goddard, not to leave out his various devoted publishers, who print him with care again and again. No one devotes himself to Blake without being immeasurably enriched—and *improved*. In *Blake's Humanism* (1968), John Beer takes from Pasternak's *Dr. Zhivago* a passage on Blake to conclude his volume:

. . . he mourned that distant summer . . . when the revolution had been a god come down to earth from heaven, the god of that summer when everyone had gone mad in his own way, and when everyone's life existed in its own right and not as an illustration to a thesis in support of a higher policy.

As he scribbled his odds and ends, he made a note reaffirming his belief that art always serves

beauty, and beauty is the joy of possessing form, and form is the key to organic life since no living thing can exist without it, so that every work of art, including tragedy, witnesses to the joy of existence.

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A history book that came out last year is *The Pursuit of Power* (University of Chicago Press, \$20.00), by William H. McNeill, who teaches history. We asked for the book because the title suggested that it was a study of the motives of men who seek power—a subject difficult but necessary to understand. Well, it turned out that the book is about the weapons of war, especially since A.D. 1000—not something we find either necessary or engrossing. But since we requested the book we felt obligated to read and say something about it. This was not without reward.

Beginning his account long before the year 1000, Professor McNeill explains why ancient wars were confined by geography and in duration. Armies require food. Sargon of Akkad (2250 B.C.) used a large military force to pillage all Mesopotamia, but its needs set limits to his campaigns.

A perpetual following of 54,000 men no doubt gave the great conqueror an assured superiority over any local rival; hence his thirty-four victorious campaigns. But to keep such a force in being also required annual campaigning, devastating one fertile landscape after another in order to keep the soldiers in victuals. Costs to the population at large were obviously very great. Indeed, Sargon's armies can well be compared to the ravages of an epidemic disease that kills off a significant proportion of the host population yet by its very passage confers an immunity lasting for several years. Sargon's armies did the same, since the diminished productivity of the land that resulted from such plundering made it impractical for an army of similar size to pass that way again until such time as population and the area under cultivation had been restored.

Xerxes, when he invaded Greece (480-479 B.C.), was able to do much better since his empire included lands on the way and he located supplies along the route of his march. But when a number of Greek cities resisted him, he had to send a lot

of his soldiers home because he couldn't feed the entire army throughout a winter. This was one reason, the author tells us, why Xerxes couldn't conquer the Greeks. Other empires had to conform to similar limits, as in the case of China. When Chinese expeditions for conquest went beyond the Yangtze, they had to win fast or retire. If they encountered effective local resistance, "their armies met the same fate as Xerxes' did in Greece. Vietnam owes its historical independence to this fact."

Xerxes, it is interesting to remember, was Iranian, and in his time he protected his frontiers from raiders by paying border guards to repel horsemen from the steppes. Equally curious is a note on the influence of Mohammed centuries later. "The power of Islam," Prof. McNeill says, "was never more tellingly demonstrated than in Iran, where the conversion of rural cavalrymen to the new faith involved their abandonment of the military style of life that had for centuries provided an effective safeguard against steppe raiding."

Another item: in the eleventh century, China was a big producer of iron and steel. "A single order for 19,000 tons of iron to make currency pieces, and a mention of two government arsenals in which 32,000 suits of armor were produced each year, give a glimpse of the scale of government operations in K'ai-feng."

That's about enough for now; actually, we are not eager to get to the twentieth century and nuclear weapons, and haven't read that far, but will report further later, if it seems advisable. Meanwhile, if you want read about the economy and technology of killing one another by the million, Prof. McNeill has set practically all of it down.

COMMENTARY **THE BEST REVENGE**

THERE are various techniques and punishments for deviation in the practice of thought control. In Geneva under Calvin's rule in the sixteenth century they included monthly inspections of all households during which the investigators looked for forbidden books and counted petticoats to see if they were as numerous as modesty required. Offenders were told what they must do. In Cambodia, however, during recent years, any kind of intellectual came under Pol Pot's ban. We found this item in the Spring *Yale Review* in an account of a visit to a Cambodian refugee camp in Thailand, near the border, by Roger Rosenblatt. He went there to talk to the children, and, introducing what he learned from them, he says:

The policies of the Khmer Rouge included the execution of all Cambodian intellectuals. The definition of an intellectual was quite flexible. It included dancers, artists, the readers of books. Under Pol Pot it was a capital offense to wear eyeglasses since they signified that one might be able to read.

A ten-year-old boy Rosenblatt "interviewed" was parentless, his father killed by a firing squad because he was a doctor, while his mother starved to death. He asked the child:

"Do you feel your parents' spirit inside you now?"

"Yes, it talks to me. It tells me I must gain knowledge and get a job."

"Does your spirit still tell you to take revenge?"

"Yes," solemnly.

"So, will you go back to Cambodia one day and fight the Khmer Rouge?"

"No. That is not what I mean by revenge. To me revenge means that I must make the most of my life."

Other children said the same. Another boy told Rosenblatt: "Revenge is to make a man better than before." Two more children defined revenge "either as self-improvement or as working to instill virtue in others." The writer wonders:

What the children meant by revenge might be that revenge is a self-healing act, a purification into compassion and wisdom, as Buddhism itself prescribes. Revenge is to be taken against fate, against a whole world of incomprehensible evil. Living well, in a moral sense, is the best revenge.

If Cambodian children can embody this spirit, so can the rest of us. Never mind what some geneticists say about the hostility locked in our genes.

CHILDREN

. . . and Ourselves

ONE CHEER FOR COMPUTERS

ONE of the things that we—and this includes educators, or most of them—have difficulty in understanding and coping with is the effect on the way we think of far-reaching innovations, discoveries, or similar changes. A modern way of remarking this is to say that we are victims of our know-how. A familiar contrast that serves as illustration is that while the ancient Chinese invented gun powder, they used it only for fireworks, while Western man, when he found out how to make explosives, perfected the skill of killing people with it. Copernicus, Galileo and Newton—to take another illustration—gave us the "laws of motion," which before long led to the making of a variety of machines, but we were so impressed by what machines could do that we decided that the whole universe is a machine, of which we are perhaps egotistical but nevertheless only unimportant parts. The modern uses of mathematics have been enormously fruitful, yet one of the greatest contributors to these uses, Albert Einstein, said at the end of his life that if he had known what application modern nations would make of his theory—nuclear weapons—he would have torn up his famous paper after writing it in 1905.

Why do we become the creatures of our creations? A book that sets out to answer this question, with much value for the reader, is *Mind-Storms* (Basic Books, 1980, now available in a Harper paperback) by Seymour Papert. The subtitle is "Children, Computers, and Powerful Ideas." Prof. Papert, who teaches Mathematics at the Massachusetts Institute of Technology, and is also a professor of education, spent years in collaboration with Jean Piaget, studying how children learn, and after that went to M.I.T., "an urban world of cybernetics and computers." He believed, he says, that this "new world of machines could provide a perspective that might

lead to solutions to problems that had eluded us in the old world of children." His book is the fruit of his realization of this hope. We recommend it to all who are concerned about the present frantic attempt to provide the young with "computer literacy." What does he think about this? He says:

This phrase is often taken as meaning knowing how to program, or knowing about the varied uses made of computers. But true computer literacy is not just knowing how to make use of computers and computational ideas. It is knowing when it is appropriate to do so.

This book will not reduce the fears of a number of parents about the misuse of computers and its distorting effects on the human mind. The author shares those fears. He is nonetheless able to show what *might* be a genuinely educational use of computers. They can, he thinks, objectivize certain heretofore obscure learning processes, related to the findings of Piaget. The result is to make us more self-conscious of how we learn, and therefore more personally "in charge" of our learning. (One may still hope, however, that someone will discover and show how this may be done as effectively without using those expensive machines.)

We cannot, in the space available, outline his method of using computers with children. Too much explanation, with plenty of examples, is needed for this; but we can give some samples of the author's intelligence and reasoning, as persuasion that his book is worth reading. The following is his recognition of the inevitability of getting things "wrong" before we get them "right." In conventional education only being "right" matters, and this, he holds, is a great mistake—a neglect and denial of the actual learning process, which leads to an artificial conception of knowledge.

Our educational system rejects the "false theories" of children, thereby rejecting the way children really learn. And it also rejects discoveries that point to the importance of the false-theory learning path. Piaget has shown that children hold

false theories as a necessary part of the process of learning to think. The unorthodox theories of young children are not deficiencies or cognitive gaps, they serve as ways of flexing cognitive muscles, of developing and working through the necessary skills needed for more orthodox theorizing. Educators distort Piaget's message by seeing his contribution as revealing that children hold false beliefs which they, the educators, must overcome. This makes Piaget-in-the-schools a Piaget backward—backward because children are being force-fed "correct theories" before they are ready to invent them. And backward because Piaget's work puts into question the idea that the "correct" theory is superior as a learning strategy.

Another comment might be made. We look at the general "mind-sets" of the past, period after period, as a succession of sets of widely believed errors—the Ptolemaic astronomy is one example among many. But what of the present? Do we think that our "correct" theories are really climactic accuracy and truth? Actually, learning respect for what have seemed plausible or even implausible errors is equivalent to having respect for ourselves, since we are still in that same condition. What ground for great confidence have we, in our present theories, since we have made such a mess of our world?

Prof. Papert looks at the "errors" characteristic of children's thinking:

Piaget asked preschool children, "What makes the wind?" Very few said, "I don't know." Most children gave their own personal theories, such as, "The trees make the wind by waving their branches." This theory, although wrong, gives good evidence for highly developed skill in theory building. It can be tested against empirical fact. Indeed there is a strong correlation between the presence of wind and the waving of tree branches. And children can perform an experiment that makes their causal connection quite plausible. When they wave their hands near their faces, they make a very noticeable breeze. Children can imagine this effect multiplied when the waving object is not a small hand but a giant tree, and when not one but many giant trees are waving. So, the trees of a dense forest should be a truly powerful wind generator.

What do we say to a child who has made such a beautiful theory? "That's great thinking, Johnny, but the theory is wrong" constitutes a put-down that will

convince most children that making one's own theories is futile. So, rather than stifling the children's creativity, the solution is to create an intellectual environment less dominated than the school's by the criteria of true and false.

It seems worth recalling here what Lewis Thomas said about medical research (in *The Youngest Science*):

In real life, research is dependent on the human capacity for making predictions that are wrong, and on the even more human gift of bouncing back to try again. This is the way the work goes. The predictions, especially the really important ones that turn out, from time to time, to be correct, are our guesses. Error is the mode. . . . A successful child is one who has learned so thoroughly about his own fallibility that he can never forget it, all the rest of his life.

Papert is in favor of encouraging "informally learned, powerful intuitive ideas," rather than discouraging them, as happens so often in school. He speaks of the cases in which it appears that "intuition cannot be trusted," saying—

In these situations we need to improve our intuition, to debug it, but the pressure on us is to abandon intuition and rely on equations instead. Usually when a student in this plight goes to the physics teacher saying, "I think the gyroscope should fall instead of standing upright," the teacher responds by writing an equation to *prove* that the thing stands upright. But that is not what the student needed. He already *knew* that it would stay upright, and this knowledge hurt by conflicting with intuition. By *proving* that it will stand upright the teacher rubs salt in the wound but does nothing to heal it. What the student needs is something quite different: better understanding of himself, not of the gyroscope. He wants to know why his intuition gave him a wrong expectation. He needs to know how to work on his intuitions in order to change them.

This book explores Prof. Papert's way of helping students to do this—for themselves.

FRONTIERS

The Weave of American Life

WHAT is the American heritage? An answer could go on for pages, but if we had to name only one book as a source, we would pick *The Great Meadow*, a novel on the settling of Kentucky, by Elizabeth Madox Roberts. One should, of course, also know something about Tom Paine, and for this, besides his own writings, Bernard Bailyn's essay on Paine's *Common Sense* (in *Fundamental Testaments of the American Revolution*, published at a nominal price by the Library of Congress, 1973) is the best brief discussion we know. Then would come Thoreau, Emerson, and Whitman, and after that, historical material by Lewis Mumford, and finally Wendell Berry's *Unsettling of America* (Sierra Club paperback).

But something important has been left out—everything that is covered by the term "Latin America." Two experiences shaped this realization. One is an almost daily occurrence—taking a walk on the streets of Los Angeles, where the Mexican presence, with tawny skin, lilting speech, and even an heroic aspect in the struggle of Cesar Chavez in the agricultural plains and valleys of California—is increasingly in evidence. After all, this state was once Mexican territory, bearing the ineffaceable mark of the colonists from the South. The rest of us are only colonists from the East, and before that from Europe.

The other experience which drove this lesson home was a reading of Carlos Fuentes' address before a commencement audience at Harvard University. He had two subjects: our foreign policy, which he criticized, firmly but in a friendly voice, and the Latin American heritage. There is a sense in which this is our heritage, too; the countries to the south, like the bilingual culture of Canada, are part of America, part of our heritage. All together they make our hemisphere, and as we relate and blend, we become one. The text of Mr. Fuentes' address is profoundly instructive:

The United States is the only major power of the West that was born beyond the Middle Ages, modern at birth. As part of the fortress of the Counter-Reformation, Latin America has had to do constant battle with the past. We did not acquire freedom of speech, freedom of belief, freedom of enterprise as our birthrights as you did. We have had to fight desperately for them. The complexity of the cultural struggle underlying our political and economic struggles has to do with unresolved tensions, sometimes as old as the conflict between pantheism and monotheism, or as recent as the conflict between tradition and modernity. This is our cultural baggage, both heavy and rich.

The issues we are dealing with, behind the headlines, are very old. They are finally being aired today, but they originated in colonial, sometimes in pre-Conquest, situations, and they are embedded in the culture of Iberian Catholicism and its emphasis on dogma and hierarchy—an intellectual inclination that sometimes drives us from one church to another in search of refuge and certitude. They are bedeviled by patrimonial confusions between private and public rights and forms of sanctified corruption that include nepotism, whim and the irrational economic decisions made by the head of the clan, untrammelled by checks and balances. The issues have to do with the traditions of paternalistic surrender to the caudillo, the profound faith in ideas over facts, the strength of elitism and the weakness of civil societies—with the struggles between theocracy and political institutions, and between centralism and local government.

Since independence in the 1820s we have been obsessed with catching up with the Joneses: the West. We created countries legal in appearance but which disguised the real countries abiding—or festering—behind constitutional facades. Latin America has tried to find solutions to its old problems by exhausting the successive ideologies of the West: liberalism, positivism and Marxism. Today, we are on the verge of transcending this dilemma by recasting it as an opportunity, at last, to be ourselves—societies neither new nor old, but simply, authentically, Latin American, as we sort out, in the excessive glare of instant communications or in the eternal dusk of our isolated villages, the benefits and disadvantages of a tradition that now seems richer and more acceptable than it did one hundred years of solitude ago. . . .

The real struggle for Latin America is then, as always, a struggle with ourselves. We must solve it by ourselves. Nobody else can truly know it: we are

living through our family quarrels. We must assimilate this conflicted past. Sometimes we must do it—as has occurred in Mexico, Cuba, El Salvador and Nicaragua—through violent means. We need time and culture. We also need patience. Both ours and yours.

How does this help? Well, it makes you want to know more. And it makes you wonder if there is an essayist in the United States who could put together so compactly illuminating an account of our own historical struggles.

Wanting to know more, in this case about Mexico—where Mr. Fuentes lives and writes—we got out the books we have on the subject. First there is *Mexico and Its Heritage* (Century, 1928) by Ernest Gruening—"old" but good. Gruening asks in his preface: Why are there revolutions in Mexico? Are the troubles there political, economic, or racial? Why is there continuous friction between the U.S. and Mexico?

He found no answer in published material, but did find clues, he says, in Mexico's past, starting before the discovery of America. It is, he says, a truism that every nation is a derivative of its past, but in most countries the past has been left remotely behind: not so in Mexico. "Continuity is the marrow of Mexican history beneath changing surface events." So we followed his counsel, recalling two books we have, both by Miguel León-Portilla, both published by the University of Oklahoma Press: *Aztec Thought and Culture: A Study of the Ancient Natuatl Mind* (1963) and *Pre-Columbian Literatures of Mexico* (1969). These books have *thrilling* things in them about the beauty and philosophic subtlety of pre-Columbian thought, poetry, and song. The sense of American heritage grows.

Next we turned to *Lázaro Cárdenas, Mexican Democrat* (1952) by William Cameron Townsend—the story of Mexico's Abraham Lincoln. The level of his policy is disclosed by an incident in 1937: He was visiting in Yucatan when word came from the capital that some prominent lawyers, now in jail, had been plotting against his

regime. He telegraphed: "Suspend all action against group of accused plotters at once. Refrain from even citing them for testimony because the government feels that its institutions cannot be endangered by any acts of sedition."

Earlier, as a general under Calles as president, Cárdenas was placed in command of troops to put down a rural revolt against the government's severe anti-clerical measures. Led by a brave priest, the *cristeros* (partisans of Christ) withstood all attacks in the hills of Michoacan. Cárdenas adopted a new strategy. Townsend relates:

As soon as he had captured a few of the *cristeros* he gave them good rifles in place of the old muzzle loaders they had been using, and told them to return to their homes and use their new guns and ammunition, not for shooting people but for hunting game. The surprised men returned to their headquarters and told their story to the priest commander. The latter, utterly confounded, said he would like to meet the man who had followed such strange procedure. . . . The campaign was thus won without casualties to either side, and without leaving coals of bitterness to smoulder in the breasts of the vanquished.

Two good travel books on Mexico are *Viva Mexico!* (University of Illinois paperback, 1964) and *Stages in a Journey* (Profile Press, 1983) by Ross Parmenter. We should add, finally, the essays on Mexican life and thought by Octavio Paz, distinguished Mexican poet, in *The Labyrinth of Solitude* (Grove Press, 1961), especially the first essay, on the *Pachuco* youth in Los Angeles, of that time—an extraordinary study—part of our heritage.