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THE SYMPTOMS OF FUTURE SHOCK ARE WITH US NOW. THIS BOOK CAN HELP US SURVIVE OUR COLLISION WITH TOMORROW.

J.K. Bozman

# Future Shock

by

# Alvin Toffler

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# Future Shock

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# Alvin Toffler


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PRINTED IN THE UNITED STATES OF AMERICA

For Sam, Rose, Heidi and Karen,
My closest links with time . . .

# CONTENTS

# INTRODUCTION

This is a book about what happens to people when they are overwhelmed by change. It is about the ways in which we adapt—or fail to adapt—to the future.

Much has been written about the future. Yet, for the most part, books about the world to come sound a harsh metallic note. These pages, by contrast, concern themselves with the "soft" or human side of tomorrow. Moreover, they concern themselves with the steps by which we are likely to reach tomorrow. They deal with common, everyday matters—the products we buy and discard, the places we leave behind, the corporations we inhabit, the people who pass at an ever faster clip through our lives. The future of friendship and family life is probed. Strange new subcultures and life styles are investigated, along with an array of other subjects from politics and playgrounds to skydiving and sex.

What joins all these—in the book as in life—is the roaring current of change, a current so powerful today that it overturns institutions, shifts our values and shrivels our roots. Change is the process by which the future invades our lives, and it is important to look at it closely, not merely from the grand perspectives of history, but also from the vantage point of the living, breathing individuals who experience it.

The acceleration of change in our time is, itself, an elemental force. This accelerative thrust has personal and psychological, as well as sociological, consequences. In the pages ahead, these effects of acceleration are, for the first time, systematically explored. The book argues forcefully, I hope, that, unless man quickly learns to control the rate of change in his personal affairs as well as in society at large, we are doomed to a massive adaptational breakdown.

In 1965, in an article in *Horizon,* I coined the term "future shock" to describe the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time Fascinated by this concept, I spent the next five years visiting scores of universities, research centers, laboratories, and government agencies, reading countless articles and scientific papers and interviewing literally hundreds of experts on different aspects of change, coping behavior, and the future. Nobel prizewinners, hippies, psychiatrists, physicians, businessmen. professional futurists, philosophers, and educators gave voice to their concern over change, their anxieties about adaptation, their fears about the future. I came away from this experience with two disturbing convictions.

First, it became clear that future shock is no longer a distantly potential danger, but a real sickness from which increasingly large numbers already suffer. This psycho-biological condition can be described in medical and psychiatric terms. It is the disease of change

Second, I gradually came to be appalled by how little is actually known about adaptivity, either by those who call for and create vast changes in our society, or by those who supposedly prepare us to cope with those changes. Earnest intellectuals talk bravely about "educating for change" or "preparing people for the future." But we know virtually nothing about how to do it. In the most rapidly changing environment to which man has ever been exposed, we

remain pitifully ignorant of how the human animal copes.

Our psychologists and politicians alike are puzzled by the seemingly irrational resistance to change exhibited by certain individuals and groups. The corporation head who wants to reorganize a department, the educator who wants to introduce a new teaching method, the mayor who wants to achieve peaceful integration of the races in his city—all, at one time or another, face this blind resistance. Yet we know little about its sources. By the same token, why do some men hunger, even rage for change, doing all in their power to create it, while others flee from it? I not only found no ready answers to such questions, but discovered that we lack even an adequate theory of adaptation, without which it is extremely unlikely that we will ever find the answers.

The purpose of this book, therefore, is to help us come to terms with the future—to help us cope more effectively with both personal and social change by deepening our understanding of how men respond to it. Toward this end, it puts forward a broad new theory of adaptation.

It also calls attention to an important, though often overlooked, distinction. Almost invariably, research into the effects of change concentrate on the destinations toward which change carries us, rather than the speed of the journey. In this book, I try to show that the *rate* of change has implications quite apart from, and sometimes more important than, the *directions* of change. No attempt to understand adaptivity can succeed until this fact is grasped. Any attempt to define the "content" of change must include the consequences of pace itself as part of that content.

William Ogburn, with his celebrated theory of cultural lag, pointed out how social stresses arise out of the uneven rates of change in different sectors of society. The concept of future shock—and the theory of adaptation that derives from it—strongly suggests that there must be balance, not merely between rates of

change in different sectors, but between the pace of environmental change and the limited pace of human response. For future shock grows out of the increasing lag between the two.

The book is intended to do more than present a theory, however. It is also intended to demonstrate a method. Previously, men studied the past to shed light on the present. I have turned the time-mirror around, convinced that a coherent image of the future can also shower us with valuable insights into today. We shall find it increasingly difficult to understand our personal and public problems without making use of the future as an intellectual tool. In the pages ahead, I deliberately exploit this tool to show what it can do.

Finally, and by no means least important, the book sets out to change the reader in a subtle yet significant sense. For reasons that will become clear in the pages that follow, successful coping with rapid change will require most of us to adopt a new stance toward the future, a new sensitive awareness of the role it plays in the present. This book is designed to increase the future-consciousness of its reader. The degree to which the reader, after finishing the book, finds himself thinking about, speculating about, or trying to anticipate future events, will provide one measure of its effectiveness.

With these ends stated, several reservations are in order. One has to do with the perishability of fact. Every seasoned reporter has had the experience of working on a fast-breaking story that changes its shape and meaning even before his words are put down on paper. Today the whole world is a fast-breaking story. It is inevitable, therefore, in a book written over the course of several years, that some of its facts will have been superseded between the time of research and writing and the time of publication. Professors identified with University A move, in the interim, to University B. Politicians identified with Position X shift, in the meantime, to Position Y.

While a conscientious effort has been made during

writing to update *Future Shock*, some of the facts presented are no doubt already obsolete. (This, of course, is true of many books, although authors don't like to talk about it.) The obsolescence of data has a special significance here, however, serving as it does to verify the book's own thesis about the rapidity of change. Writers have a harder and harder time keeping up with reality. We have not yet learned to conceive, research, write and publish in "real time." Readers, therefore, must concern themselves more and more with general theme, rather than detail.

Another reservation has to do with the verb "will." No serious futurist deals in "predictions." These are left for television oracles and newspaper astrologers. No one even faintly familiar with the complexities of forecasting lays claim to absolute knowledge of tomorrow. In those deliciously ironic words purported to be a Chinese proverb: "To prophesy is extremely difficult—especially with respect to the future."

This means that every statement about the future ought, by rights, be accompanied by a string of qualifiers—ifs, ands, buts, and on the other hands. Yet to enter every appropriate qualification in a book of this kind would be to bury the reader under an avalanche of maybes. Rather than do this, I have taken the liberty of speaking firmly, without hesitation, trusting that the intelligent reader will understand the stylistic problem. The word "will" should always be read as though it were preceded by "probably" or "in my opinion." Similarly, all dates applied to future events need to be taken with a grain of judgment.

The inability to speak with precision and certainty about the future, however, is no excuse for silence. Where "hard data" are available, of course, they ought to be taken into account. But where they are lacking, the responsible writer—even the scientist—has both a right and an obligation to rely on other kinds of evidence, including impressionistic or anecdotal data and the opinions of well-informed people. I have done so throughout and offer no apology for it.

In dealing with the future, at least for the purpose at hand, it is more important to be imaginative and insightful than to be one hundred percent "right." Theories do not have to be "right" to be enormously useful. Even error has its uses. The maps of the world drawn by the medieval cartographers were so hopelessly inaccurate, so filled with factual error, that they elicit condescending smiles today when almost the entire surface of the earth has been charted. Yet the great explorers could never have discovered the New World without them. Nor could the better, more accurate maps of today been drawn until men, working with the limited evidence available to them, set down on paper their bold conceptions of worlds they had never seen.

We who explore the future are like those ancient mapmakers, and it is in this spirit that the concept of future shock and the theory of the adaptive range are presented here—not as final word, but as a first approximation of the new realities, filled with danger and promise, created by the accelerative thrust.

# Part One:

# THE DEATH OF PERMANENCE

# Chapter 1

## THE 800TH LIFETIME

In the three short decades between now and the twenty-first century, millions of ordinary, psychologically normal people will face an abrupt collision with the future. Citizens of the world's richest and most technologically advanced nations, many of them will find it increasingly painful to keep up with the incessant demand for change that characterizes our time. For them, the future will have arrived too soon.

This book is about change and how we adapt to it. It is about those who seem to thrive on change, who crest its waves joyfully, as well as those multitudes of others who resist it or seek flight from it. It is about our capacity to adapt. It is about the future and the shock that its arrival brings.

Western society for the past 300 years has been caught up in a fire storm of change. This storm, far from abating, now appears to be gathering force. Change sweeps through the highly industrialized countries with waves of ever accelerating speed and unprecedented impact. It spawns in its wake all sorts of curious social flora—from psychedelic churches and "free universities" to science cities in the Arctic and wife-swap clubs in California.

It breeds odd personalities, too: children who at twelve are no longer childlike; adults who at fifty are

children of twelve. There are rich men who playact poverty, computer programmers who turn on with LSD. There are anarchists who, beneath their dirty denim shirts, are outrageous conformists, and conformists who, beneath their button-down collars, are outrageous anarchists. There are married priests and atheist ministers and Jewish Zen Buddhists. We have pop . . . and op . . . and *art cinétique* . . . There are Playboy Clubs and homosexual movie theaters . . . amphetamines and tranquilizers . . . anger, affluence, and oblivion. Much oblivion.

Is there some way to explain so strange a scene without recourse to the jargon of psychoanalysis or the murky clichés of existentialism? A strange new society is apparently erupting in our midst. Is there a way to understand it, to shape its development? How can we come to terms with it?

Much that now strikes us as incomprehensible would be far less so if we took a fresh look at the racing rate of change that makes reality seem, sometimes, like a kaleidoscope run wild. For the acceleration of change does not merely buffet industries or nations. It is a concrete force that reaches deep into our personal lives, compels us to act out new roles, and confronts us with the danger of a new and powerfully upsetting psychological disease. This new disease can be called "future shock," and a knowledge of its sources and symptoms helps explain many things that otherwise defy rational analysis.

## THE UNPREPARED VISITOR

The parallel term "culture shock" has already begun to creep into the popular vocabulary. Culture shock is the effect that immersion in a strange culture has on the unprepared visitor. Peace Corps volunteers suffer from it in Borneo or Brazil. Marco Polo probably suffered from it in Cathay. Culture shock is what happens when a traveler suddenly finds himself in a

place where yes may mean no, where a "fixed price" is negotiable, where to be kept waiting in an outer office is no cause for insult, where laughter may signify anger. It is what happens when the familiar psychological cues that help an individual to function in society are suddenly withdrawn and replaced by new ones that are strange or incomprehensible.

The culture shock phenomenon accounts for much of the bewilderment, frustration, and disorientation that plagues Americans in their dealings with other societies. It causes a breakdown in communication, a misreading of reality, an inability to cope. Yet culture shock is relatively mild in comparison with the much more serious malady, future shock. Future shock is the dizzying disorientation brought on by the premature arrival of the future. It may well be the most important disease of tomorrow.

Future shock will not be found in *Index Medicus* or in any listing of psychological abnormalities. Yet, unless intelligent steps are taken to combat it, millions of human beings will find themselves increasingly disoriented, progressively incompetent to deal rationally with their environments. The malaise, mass neurosis, irrationality, and free-floating violence already apparent in contemporary life are merely a foretaste of what may lie ahead unless we come to understand and treat this disease.

Future shock is a time phenomenon, a product of the greatly accelerated rate of change in society. It arises from the superimposition of a new culture on an old one. It is culture shock in one's own society. But its impact is far worse. For most Peace Corps men, in fact most travelers, have the comforting knowledge that the culture they left behind will be there to return to. The victim of future shock does not.

Take an individual out of his own culture and set him down suddenly in an environment sharply different from his own, with a different set of cues to react to—different conceptions of time, space, work, love, religion, sex, and everything else—then cut him off

from any hope of retreat to a more familiar social landscape, and the dislocation he suffers is doubly severe. Moreover, if this new culture is itself in constant turmoil, and if—worse yet—its values are incessantly changing, the sense of disorientation will be still further intensified. Given few clues as to what kind of behavior is rational under the radically new circumstances, the victim may well become a hazard to himself and others.

Now imagine not merely an individual but an entire society, an entire generation—including its weakest, least intelligent, and most irrational members—suddenly transported into this new world. The result is mass disorientation, future shock on a grand scale.

This is the prospect that man now faces. Change is avalanching upon our heads and most people are grotesquely unprepared to cope with it.

## BREAK WITH THE PAST

Is all this exaggerated? I think not. It has become a cliché to say that what we are now living through is a "second industrial revolution." This phrase is supposed to impress us with the speed and profundity of the change around us. But in addition to being platitudinous, it is misleading. For what is occurring now is, in all likelihood, bigger, deeper, and more important than the industrial revolution. Indeed, a growing body of reputable opinion asserts that the present movement represents nothing less than the second great divide in human history, comparable in magnitude only with that first great break in historic continuity, the shift from barbarism to civilization.

This idea crops up with increasing frequency in the writings of scientists and technologists. Sir George Thomson, the British physicist and Nobel prizewinner, suggests in *The Foreseeable Future* that the nearest historic parallel with today is not the industrial revolution but rather the "invention of agriculture in the

neolithic age." John Diebold, the American automation expert, warns that "the effects of the technological revolution we are now living through will be deeper than any social change we have experienced before." Sir Leon Bagrit, the British computer manufacturer, insists that automation by itself represents "the greatest change in the whole history of mankind."

Nor are the men of science and technology alone in these views. Sir Herbert Read, the philosopher of art, tells us that we are living through "a revolution so fundamental that we must search many past centuries for a parallel. Possibly the only comparable change is the one that took place between the Old and the New Stone Age . . ." And Kurt W. Marek, who under the name C. W. Ceram is best-known as the author of *Gods, Graves and Scholars,* observes that "we, in the twentieth century, are concluding an era of mankind five thousand years in length . . . We are not, as Spengler supposed, in the situation of Rome at the beginning of the Christian West, but in that of the year 3000 B.C. We open our eyes like prehistoric man, we see a world totally new."

One of the most striking statements of this theme has come from Kenneth Boulding, an eminent economist and imaginative social thinker. In justifying his view that the present moment represents a crucial turning point in human history, Boulding observes that "as far as many statistical series related to activities of mankind are concerned, the date that divides human history into two equal parts is well within living memory." In effect, our century represents The Great Median Strip running down the center of human history. Thus he asserts, "The world of today . . . is as different from the world in which I was born as that world was from Julius Caesar's. I was born in the middle of human history, to date, roughly. Almost as much has happened since I was born as happened before."

This startling statement can be illustrated in a number of ways. It has been observed, for example, that

if the last 50,000 years of man's existence were divided into lifetimes of approximately sixty-two years each, there have been about 800 such lifetimes. Of these 800, fully 650 were spent in caves.

Only during the last seventy lifetimes has it been possible to communicate effectively from one lifetime to another—as writing made it possible to do. Only during the last six lifetimes did masses of men ever see a printed word. Only during the last four has it been possible to measure time with any precision. Only in the last two has anyone anywhere used an electric motor. And the overwhelming majority of all the material goods we use in daily life today have been developed within the present, the 800th, lifetime.

This 800th lifetime marks a sharp break with all past human experience because during this lifetime man's relationship to resources has reversed itself. This is most evident in the field of economic development. Within a single lifetime, agriculture, the original basis of civilization, has lost its dominance in nation after nation. Today in a dozen major countries agriculture employs fewer than 15 percent of the economically active population. In the United States, whose farms feed 200,000,000 Americans plus the equivalent of another 160,000,000 people around the world, this figure is already below 6 percent and it is still shrinking rapidly.

Moreover, if agriculture is the first stage of economic development and industrialism the second, we can now see that still another stage—the third—has suddenly been reached. In about 1956 the United States became the first major power in which more than 50 percent of the non-farm labor force ceased to wear the blue collar of factory or manual labor. Blue collar workers were outnumbered by those in the so-called white-collar occupations—in retail trade, administration, communications, research, education, and other service categories. Within the same lifetime a society for the first time in human history not only threw off the yoke of agriculture, but managed within

a few brief decades to throw off the yoke of manual labor as well. The world's first service economy had been born.

Since then, one after another of the technologically advanced countries have moved in the same direction. Today, in those nations in which agriculture is down to the 15 percent level or below, white collars already outnumber blue in Sweden, Britain, Belgium, Canada, and the Netherlands. Ten thousand years for agriculture. A century or two for industrialism. And now, opening before us—super-industrialism.

Jean Fourastié, the French planner and social philosopher, has declared that "Nothing will be less industrial than the civilization born of the industrial revolution." The significance of this staggering fact has yet to be digested. Perhaps U Thant, Secretary General of the United Nations, came closest to summarizing the meaning of the shift to super-industrialism when he declared that "The central stupendous truth about developed economies today is that they can have—in anything but the shortest run—the kind and scale of resources they decide to have. . . . It is no longer resources that limit decisions. It is the decision that makes the resources. This is the fundamental revolutionary change—perhaps the most revolutionary man has ever known." This monumental reversal has taken place in the 800th lifetime.

This lifetime is also different from all others because of the astonishing expansion of the scale and scope of change. Clearly, there have been other lifetimes in which epochal upheavals occurred. Wars, plagues, earthquakes, and famine rocked many an earlier social order. But these shocks and upheavals were contained within the borders of one or a group of adjacent societies. It took generations, even centuries, for their impact to spread beyond these borders.

In our lifetime the boundaries have burst. Today the network of social ties is so tightly woven that the consequences of contemporary events radiate instantaneously around the world. A war in Vietnam alters basic

political alignments in Peking, Moscow, and Washington, touches off protests in Stockholm, affects financial transactions in Zurich, triggers secret diplomatic moves in Algiers.

Indeed, not only do *contemporary* events radiate instantaneously—now we can be said to be feeling the impact of all *past* events in a new way. For the past is doubling back on us. We are caught in what might be called a "'time skip."

An event that affected only a handful of people at the time of its occurrence in the past can have large-scale consequences today. The Peloponnesian War, for example, was little more than a skirmish by modern standards. While Athens, Sparta and several nearby city-states battled, the population of the rest of the globe remained largely unaware of and undisturbed by the war. The Zapotec Indians living in Mexico at the time were wholly untouched by it. The ancient Japanese felt none of its impact.

Yet the Peloponnesian War deeply altered the future course of Greek history. By changing the movement of men, the geographical distribution of genes, values, and ideas, it affected later events in Rome, and, through Rome, all Europe. Today's Europeans are to some small degree different people because that conflict occurred.

In turn, in the tightly wired world of today, these Europeans influence Mexicans and Japanese alike. Whatever trace of impact the Peloponnesian War left on the genetic structure, the ideas, and the values of today's Europeans is now exported by them to all parts of the world. Thus today's Mexicans and Japanese feel the distant, twice-removed impact of that war even though their ancestors, alive during its occurrence, did not. In this way, the events of the past, skipping as it were over generations and centuries, rise up to haunt and change us today.

When we think not merely of the Peloponnesian War but of the building of the Great Wall of China, the Black Plague, the battle of the Bantu against the

Hamites—indeed, of all the events of the past—the cumulative implications of the time-skip principle take on weight. Whatever happened to some men in the past affects virtually all men today. This was not always true. In short, all history is catching up with us, and this very difference, paradoxically, underscores our break with the past. Thus the scope of change is fundamentally altered. Across space and through time, change has a power and reach in this, the 800th lifetime, that it never did before.

But the final, qualitative difference between this and all previous lifetimes is the one most easily overlooked. For we have not merely extended the scope and scale of change, we have radically altered its pace. We have in our time released a totally new social force—a stream of change so accelerated that it influences our sense of time, revolutionizes the tempo of daily life, and affects the very way we "feel" the world around us. We no longer "feel" life as men did in the past. And this is the ultimate difference, the distinction that separates the truly contemporary man from all others. For this acceleration lies behind the impermanence—the transience—that penetrates and tinctures our consciousness, radically affecting the way we relate to other people, to things, to the entire universe of ideas, art and values.

To understand what is happening to us as we move into the age of super-industrialism, we must analyze the processes of acceleration and confront the concept of transience. If acceleration is a new social force, transience is its psychological counterpart, and without an understanding of the role it plays in contemporary human behavior, all our theories of personality, all our psychology, must remain pre-modern. Psychology without the concept of transience cannot take account of precisely those phenomena that are peculiarly contemporary.

By changing our relationship to the resources that surround us, by violently expanding the scope of change, and, most crucially, by accelerating its pace,

we have broken irretrievably with the past. We have cut ourselves off from the old ways of thinking, of feeling, of adapting. We have set the stage for a completely new society and we are now racing toward it. This is the crux of the 800th lifetime. And it is this that calls into question man's capacity for adaptation—how will he fare in this new society? Can he adapt to its imperatives? And if not, can he alter these imperatives?

Before even attempting to answer such questions, we must focus on the twin forces of acceleration and transience. We must learn how they alter the texture of existence, hammering our lives and psyches into new and unfamiliar shapes. We must understand how —and why—they confront us, for the first time, with the explosive potential of future shock.

# Chapter 2

# THE ACCELERATIVE THRUST

Early in March, 1967, in eastern Canada, an eleven-year-old child died of old age.

Ricky Gallant was only eleven years old chronologically, but he suffered from an odd disease called progeria—advanced aging—and he exhibited many of the characteristics of a ninety-year-old person. The symptoms of progeria are senility, hardened arteries, baldness, slack, and wrinkled skin. In effect, Ricky was an old man when he died, a long lifetime of biological change having been packed into his eleven short years.

Cases of progeria are extremely rare. Yet in a metaphorical sense the high technology societies all suffer from this peculiar ailment. They are not growing old or senile. But they *are* experiencing super-normal rates of change.

Many of us have a vague "feeling" that things are moving faster. Doctors and executives alike complain that they cannot keep up with the latest developments in their fields. Hardly a meeting or conference takes place today without some ritualistic oratory about "the challenge of change." Among many there is an uneasy mood—a suspicion that change is out of control.

Not everyone, however, shares this anxiety. Millions

sleepwalk their way through their lives as if nothing had changed since the 1930's, and as if nothing ever will. Living in what is certainly one of the most exciting periods in human history, they attempt to withdraw from it, to block it out, as if it were possible to make it go away by ignoring it. They seek a "separate peace," a diplomatic immunity from change.

One sees them everywhere: Old people, resigned to living out their years, attempting to avoid, at any cost, the intrusions of the new. Already-old people of thirty-five and forty-five, nervous about student riots, sex, LSD, or miniskirts, feverishly attempting to persuade themselves that, after all, youth was always rebellious, and that what is happening today is no different from the past. Even among the young we find an incomprehension of change: students so ignorant of the past that they see nothing unusal about the present.

The disturbing fact is that the vast majority of people, including educated and otherwise sophisticated people, find the idea of change so threatening that they attempt to deny its existence. Even many people who understand intellectually that change is accelerating, have not internalized that knowledge, do not take this critical social fact into account in planning their own personal lives.

## TIME AND CHANGE

How do we *know* that change is accelerating? There is, after all, no absolute way to measure change. In the awesome complexity of the universe, even within any given society, a virtually infinite number of streams of change occur simultaneously. All "things" —from the tiniest virus to the greatest galaxy—are, in reality, not things at all, but processes. There is no static point, no nirvana-like un-change, against which to measure change. Change is, therefore, necessarily relative.

It is also uneven. If all processes occurred at the

same speed, or even if they accelerated or decelerated in unison, it would be impossible to observe change. The future, however, invades the present at differing speeds. Thus it becomes possible to compare the speed of different processes as they unfold. We know, for example, that compared with the biological evolution of the species, cultural and social evolution is extremely rapid. We know that some societies transform themselves technologically or economically more rapidly than others. We also know that different sectors within the same society exhibit different rates of change—the disparity that William Ogburn labeled "cultural lag." It is precisely the unevenness of change that makes it measurable.

We need, however, a yardstick that makes it possible to compare highly diverse processes, and this yardstick is time. Without time, change has no meaning. And without change, time would stop. Time can be conceived as the intervals during which events occur. Just as money permits us to place a value on both apples and oranges, time permits us to compare unlike processes. When we say that it takes three years to build a dam, we are really saying it takes three times as long as it takes the earth to circle the sun or 31,000,000 times as long as it takes to sharpen a pencil. Time is the currency of exchange that makes it possible to compare the rates at which very different processes play themselves out.

Given the unevenness of change and armed with this yardstick, we still face exhausting difficulties in measuring change. When we speak of the rate of change, we refer to the number of events crowded into an arbitrarily fixed interval of time. Thus we need to define the "events." We need to select our intervals with precision. We need to be careful about the conclusions we draw from the differences we observe. Moreover, in the measurement of change, we are today far more advanced with respect to physical processes than social processes. We know far better, for example, how to measure the rate at which blood

flows through the body than the rate at which a rumor flows through society.

Even with all these qualifications, however, there is widespread agreement, reaching from historians and archaeologists all across the spectrum to scientists, sociologists, economists and psychologists, that, many social processes are speeding up—strikingly, even spectacularly.

## SUBTERRANEAN CITIES

Painting with the broadest of brush strokes, biologist Julian Huxley informs us that "The tempo of human evolution during recorded history is at least 100,000 times as rapid as that of pre-human evolution." Inventions or improvements of a magnitude that took perhaps 50,000 years to accomplish during the early Paleolithic era were, he says, "run through in a mere millennium toward its close; and with the advent of settled civilization, the unit of change soon became reduced to the century." The rate of change, accelerating throughout the past 5000 years, has become, in his words, "particularly noticeable during the past 300 years."

C. P. Snow, the novelist and scientist, also comments on the new visibility of change. "Until this century . . ." he writes, social change was "so slow, that it would pass unnoticed in one person's lifetime. That is no longer so. The rate of change has increased so much that our imagination can't keep up." Indeed, says social psychologist Warren Bennis, the throttle has been pushed so far forward in recent years that "No exaggeration, no hyperbole, no outrage can realistically describe the extent and pace of change. . . . In fact, only the exaggerations appear to be true."

What changes justify such super-charged language? Let us look at a few—change in the process by which man forms cities, for example. We are now undergoing the most extensive and rapid urbanization the world

has ever seen. In 1850 only four cities on the face of the earth had a population of 1,000,000 or more. By 1900 the number had increased to nineteen. But by 1960, there were 141, and today world urban population is rocketing upward at a rate of 6.5 percent per year, according to Edgar de Vries and J. P. Thysse of the Institute of Social Science in The Hague. This single stark statistic means a doubling of the earth's urban population within eleven years.

One way to grasp the meaning of change on so phenomenal a scale is to imagine what would happen if all existing cities, instead of expanding, retained their present size. If this were so, in order to accommodate the new urban millions we would have to build a duplicate city for each of the hundreds that already dot the globe. A new Tokyo, a new Hamburg, a new Rome and Rangoon—and all within eleven years. (This explains why French urban planners are sketching subterranean cities—stores, museums, warehouses and factories to be built under the earth, and why a Japanese architect has blueprinted a city to be built on stilts out over the ocean.)

The same accelerative tendency is instantly apparent in man's consumption of energy. Dr. Homi Bhabha, the late Indian atomic scientist who chaired the first International Conference on the Peaceful Uses of Atomic Energy, once analyzed this trend. "To illustrate," he said, "let us use the letter 'Q' to stand for the energy derived from burning some 33,000 million tons of coal. In the eighteen and one half centuries after Christ, the total energy consumed averaged less than one half Q per century. But by 1850, the rate had risen to one Q per century. Today, the rate is about ten Q per century." This means, roughly speaking, that half of all the energy consumed by man in the past 2,000 years has been consumed in the last one hundred.

Also dramatically evident is the acceleration of economic growth in the nations now racing toward super-industrialism. Despite the fact that they start

from a large industrial base, the annual percentage increases in production in these countries are formidable. And the rate of increase is itself increasing.

In France, for example, in the twenty-nine years between 1910 and the outbreak of the second world war, industrial production rose only 5 percent. Yet between 1948 and 1965, in only seventeen years, it increased by roughly 220 percent. Today growth rates of from 5 to 10 percent per year are not uncommon among the most industrialized nations. There are ups and downs, of course. But the direction of change has been unmistakable.

Thus for the twenty-one countries belonging to the Organization for Economic Cooperation and Development—by and large, the "have" nations—the average annual rate of increase in gross national product in the years 1960–1968 ran between 4.5 and 5.0 percent. The United States grew at a rate of 4.5 percent, and Japan led the rest with annual increases averaging 9.8 percent.

What such numbers imply is nothing less revolutionary than a doubling of the total output of goods and services in the advanced societies about every fifteen years—and the doubling times are shrinking. This means, generally speaking, that the child reaching teen age in any of these societies is literally surrounded by twice as much of everything newly man-made as his parents were at the time he was an infant. It means that by the time today's teen-ager reaches age thirty, perhaps earlier, a second doubling will have occurred. Within a seventy-year lifetime, perhaps five such doublings will take place—meaning, since the increases are compounded, that by the time the individual reaches old age the society around him will be producing thirty-two times as much as when he was born.

Such changes in the ratio between old and new have, as we shall show, an electric impact on the habits, beliefs, and self-image of millions. Never in

previous history has this ratio been transformed so radically in so brief a flick of time.

## THE TECHNOLOGICAL ENGINE

Behind such prodigious economic facts lies that great, growling engine of change—technology. This is not to say that technology is the only source of change in society. Social upheavals can be touched off by a change in the chemical composition of the atmosphere, by alterations in climate, by changes in fertility, and many other factors. Yet technology is indisputably a major force behind the accelerative thrust.

To most people, the term technology conjures up images of smoky steel mills or clanking machines. Perhaps the classic symbol of technology is still the assembly line created by Henry Ford half a century ago and made into a potent social icon by Charlie Chaplin in *Modern Times*. This symbol, however, has always been inadequate, indeed, misleading, for technology has always been more than factories and machines. The invention of the horse collar in the middle ages led to major changes in agricultural methods and was as much a technological advance as the invention of the Bessemer furnace centuries later. Moreover, technology includes techniques, as well as the machines that may or may not be necessary to apply them. It includes ways to make chemical reactions occur, ways to breed fish, plant forests, light theaters, count votes or teach history.

The old symbols of technology are even more misleading today, when the most advanced technological processes are carried out far from assembly lines or open hearths. Indeed, in electronics, in space technology, in most of the new industries, relative silence and clean surroundings are characteristic—even sometimes essential. And the assembly line—the organization of armies of men to carry out simple repetitive functions—is an anachronism. It is time for our sym-

bols of technology to change—to catch up with the quickening changes in technology, itself.

This acceleration is frequently dramatized by a thumbnail account of the progress in transportation. It has been pointed out, for example, that in 6000 B.C. the fastest transportation available to man over long distances was the camel caravan, averaging eight miles per hour. It was not until about 1600 B.C. when the chariot was invented that the maximum speed was raised to roughly twenty miles per hour.

So impressive was this invention, so difficult was it to exceed this speed limit, that nearly 3,500 years later, when the first mail coach began operating in England in 1784, it averaged a mere ten mph. The first steam locomotive, introduced in 1825, could muster a top speed of only thirteen mph, and the great sailing ships of the time labored along at less than half that speed. It was probably not until the 1880's that man, with the help of a more advanced steam locomotive, managed to reach a speed of one hundred mph. It took the human race millions of years to attain that record.

It took only fifty-eight years, however, to quadruple the limit, so that by 1938 airborne man was cracking the 400-mph line. It took a mere twenty-year flick of time to double the limit again. And by the 1960's rocket planes approached speeds of 4000 mph, and men in space capsules were circling the earth at 18,000 mph. Plotted on a graph, the line representing progress in the past generation would leap vertically off the page.

Whether we examine distances traveled, altitudes reached, minerals mined, or explosive power harnessed, the same accelerative trend is obvious. The pattern, here and in a thousand other statistical series, is absolutely clear and unmistakable. Millennia or centuries go by, and then, in our own times, a sudden bursting of the limits, a fantastic spurt forward.

The reason for this is that technology feeds on itself. Technology makes more technology possible, as we can see if we look for a moment at the process of

innovation. Technological innovation consists of three stages, linked together into a self-reinforcing cycle. First, there is the creative, feasible idea. Second, its practical application. Third, its diffusion through society.

The process is completed, the loop closed, when the diffusion of technology embodying the new idea, in turn, helps generate new creative ideas. Today there is evidence that the time between each of the steps in this cycle has been shortened.

Thus it is not merely true, as frequently noted, that 90 percent of all the scientists who ever lived are now alive, and that new scientific discoveries are being made every day. These new ideas are put to work much more quickly than ever before. The time between original concept and practical use has been radically reduced. This is a striking difference between ourselves and our ancestors. Appollonius of Perga discovered conic sections, but it was 2000 years before they were applied to engineering problems. It was literally centuries between the time Paracelsus discovered that ether could be used as an anaesthetic and the time it began to be used for that purpose.

Even in more recent times the same pattern of delay was present. In 1836 a machine was invented that mowed, threshed, tied straw into sheaves and poured grain into sacks. This machine was itself based on technology at least twenty years old at the time. Yet it was not until a century later, in the 1930's, that such a combine was actually marketed. The first English patent for a typewriter was issued in 1714. But a century and a half elapsed before typewriters became commercially available. A full century passed between the time Nicholas Appert discovered how to can food and the time canning became important in the food industry.

Today such delays between idea and application are almost unthinkable. It is not that we are more eager or less lazy than our ancestors, but we have, with the passage of time, invented all sorts of social

devices to hasten the process. Thus we find that the time between the first and second stages of the innovative cycle—between idea and application—has been cut radically. Frank Lynn, for example, in studying twenty major innovations, such as frozen food, antibiotics, integrated circuits and synthetic leather, found that since the beginning of this century more than sixty percent has been slashed from the average time needed for a major scientific discovery to be translated into a useful technological form. Today a vast and growing research and development industry is consciously working to reduce the lag still further.

But if it takes less time to bring a new idea to the marketplace, it also takes less time for it to sweep through the society. Thus the interval between the second and third stages of the cycle—between application and diffusion—has likewise been sliced, and the pace of diffusion is rising with astonishing speed. This is borne out by the history of several familiar household appliances. Robert B. Young at the Stanford Research Institute has studied the span of time between the first commercial appearance of a new electrical appliance and the time the industry manufacturing it reaches peak production of the item.

Young found that for a group of appliances introduced in the United States before 1920—including the vacuum cleaner, the electric range, and the refrigerator—the average span between introduction and peak production was thirty-four years. But for a group that appeared in the 1939–1959 period—including the electric frying pan, television, and washer-dryer combination—the span was only eight years. The lag had shrunk by more than 76 percent. "The post-war group," Young declared, "demonstrated vividly the rapidly accelerating nature of the modern cycle."

The stepped-up pace of invention, exploitation, and diffusion, in turn, accelerates the whole cycle still further. For new machines or techniques are not merely a product, but a source, of fresh creative ideas.

Each new machine or technique, in a sense, changes

all existing machines and techniques, by permitting us to put them together into new combinations. The number of possible combinations rises exponentially as the number of new machines or techniques rises arithmetically. Indeed, each new combination may, itself, be regarded as a new super-machine.

The computer, for example, made possible a sophisticated space effort. Linked with sensing devices, communications equipment, and power sources, the computer became part of a configuration that in aggregate forms a single new super-machine—a machine for reaching into and probing outer space. But for machines or techniques to be combined in new ways, they have to be altered, adapted, refined or otherwise changed. So that the very effort to integrate machines into super-machines compels us to make still further technological innovations.

It is vital to understand, moreover, that technological innovation does not merely combine and recombine machines and techniques. Important new machines do more than suggest or compel changes in other machines—they suggest novel solutions to social, philosophical, even personal problems. They alter man's total intellectual environment—the way he thinks and looks at the world.

We all learn from our environment, scanning it constantly—though perhaps unconsciously—for models to emulate. These models are not only other people. They are, increasingly, machines. By their presence, we are subtly conditioned to think along certain lines. It has been observed, for example, that the clock came along before the Newtonian image of the world as a great clock-like mechanism, a philosophical notion that has had the utmost impact on man's intellectual development. Implied in this image of the cosmos as a great clock were ideas about cause and effect and about the importance of external, as against internal, stimuli, that shape the everyday behavior of all of us today. The clock also affected our conception of time so that the idea that a day is divided into twenty-four

equal segments of sixty minutes each has become almost literally a part of us.

Recently, the computer has touched off a storm of fresh ideas about man as an interacting part of larger systems, about his physiology, the way he learns, the way he remembers, the way he makes decisions. Virtually every intellectual discipline from political science to family psychology has been hit by a wave of imaginative hypotheses triggered by the invention and diffusion of the computer—and its full impact has not yet struck. And so the innovative cycle, feeding on itself, speeds up.

If technology, however, is to be regarded as a great engine, a mighty accelerator, then knowledge must be regarded as its fuel. And we thus come to the crux of the accelerative process in society, for the engine is being fed a richer and richer fuel every day.

## KNOWLEDGE AS FUEL

The rate at which man has been storing up useful knowledge about himself and the universe has been spiraling upward for 10,000 years. The rate took a sharp upward leap with the invention of writing, but even so it remained painfully slow over centuries of time. The next great leap forward in knowledge-acquisition did not occur until the invention of movable type in the fifteenth century by Gutenberg and others. Prior to 1500, by the most optimistic estimates, Europe was producing books at a rate of 1000 titles per year. This means, give or take a bit, that it would take a full century to produce a library of 100,000 titles. By 1950, four and a half centuries later, the rate had accelerated so sharply that Europe was producing 120,000 titles a year. What once took a century now took only ten months. By 1960, a single decade later, the rate had made another significant jump, so that a century's work could be completed in seven and a half months. And, by the mid-sixties, the output of

books on a world scale, Europe included, approached the prodigious figure of 1000 titles per *day*.

One can hardly argue that every book is a net gain for the advancement of knowledge. Nevertheless, we find that the accelerative curve in book publication does, in fact, crudely parallel the rate at which man discovered new knowledge. For example, prior to Gutenberg only 11 chemical elements were known. Antimony, the 12th, was discovered at about the time he was working on his invention. It was fully 200 years since the 11th, arsenic, had been discovered. Had the same rate of discovery continued, we would by now have added only two or three additional elements to the periodic table since Gutenberg. Instead, in the 450 years after his time, some seventy additional elements were discovered. And since 1900 we have been isolating the remaining elements not at a rate of one every two centuries, but of one every three years.

Furthermore, there is reason to believe that the rate is still rising sharply. Today, for example, the number of scientific journals and articles is doubling, like industrial production in the advanced countries, about every fifteen years, and according to biochemist Philip Siekevitz, "what has been learned in the last three decades about the nature of living beings dwarfs in extent of knowledge any comparable period of scientific discovery in the history of mankind." Today the United States government alone generates 100,000 reports each year, plus 450,000 articles, books and papers. On a worldwide basis, scientific and technical literature mounts at a rate of some 60,000,000 pages a year.

The computer burst upon the scene around 1950. With its unprecedented power for analysis and dissemination of extremely varied kinds of data in unbelievable quantities and at mind-staggering speeds, it has become a major force behind the latest acceleration in knowledge-acquisition. Combined with other increasingly powerful analytical tools for observing the

invisible universe around us, it has raised the rate of knowledge-acquisition to dumbfounding speeds.

Francis Bacon told us that "Knowledge . . . is power." This can now be translated into contemporary terms. In our social setting, "Knowledge is change"—and accelerating knowledge-acquisition, fueling the great engine of technology, means accelerating change.

## THE FLOW OF SITUATIONS

Discovery. Application. Impact. Discovery. We see here a chain reaction of change, a long, sharply rising curve of acceleration in human social development. This accelerative thrust has now reached a level at which it can no longer, by any stretch of the imagination, be regarded as "normal." The normal institutions of industrial society can no longer contain it, and its impact is shaking up all our social institutions. Acceleration is one of the most important and least understood of all social forces.

This, however, is only half the story. For the speed-up of change is a psychological force as well. Although it has been almost totally ignored by psychology, the rising rate of change in the world around us disturbs our inner equilibrium, altering the very way in which we experience life. Acceleration without translates into acceleration within.

This can be illustrated, though in a highly oversimplified fashion, if we think of an individual life as a great channel through which experience flows. This flow of experience consists—or is conceived of consisting—of innumerable "situations." Acceleration of change in the surrounding society drastically alters the flow of situations through this channel.

There is no neat definition of a situation, yet we would find it impossible to cope with experience if we did not mentally cut it up into these manageable units. Moreover, while the boundary lines between

situations may be indistinct, every situation has a certain "wholeness" about it, a certain integration.

Every situation also has certain identifiable components. These include "things"—a physical setting of natural or man-made objects. Every situation occurs in a "place"—a location or arena within which the action occurs. (It is not accidental that the Latin root "*situ*" means place.) Every social situation also has, by definition, a cast of characters—people. Situations also involve a location in the organizational network of society and a context of ideas or information. Any situation can be analyzed in terms of these five components.

But situations also involve a separate dimension which, because it cuts across all the others, is frequently overlooked. This is duration—the span of time over which the situation occurs. Two situations alike in all other respects are not the same at all if one lasts longer than another. For time enters into the mix in a crucial way, changing the meaning or content of situations. Just as the funeral march played at too high a speed becomes a merry tinkle of sounds, so a situation that is dragged out has a distinctly different flavor or meaning than one that strikes us in staccato fashion, erupting suddenly and subsiding as quickly.

Here, then, is the first delicate point at which the accelerative thrust in the larger society crashes up against the ordinary daily experience of the contemporary individual. For the acceleration of change, as we shall show, shortens the duration of many situations. This not only drastically alters their "flavor," but hastens their passage through the experiential channel. Compared with life in a less rapidly changing society, more situations now flow through the channel in any given interval of time—and this implies profound changes in human psychology.

For while we tend to focus on only one situation at a time, the increased rate at which situations flow past us vastly complicates the entire structure of life,

multiplying the number of roles we must play and the number of choices we are forced to make. This, in turn, accounts for the choking sense of complexity about contemporary life.

Moreover, the speeded-up flow-through of situations demands much more work from the complex focusing mechanisms by which we shift our attention from one situation to another. There is more switching back and forth, less time for extended, peaceful attention to one problem or situation at a time. This is what lies behind the vague feeling noted earlier that "Things are moving faster." They are. Around us. And through us.

There is, however, still another, even more powerfully significant way in which the acceleration of change in society increases the difficulty of coping with life. This stems from the fantastic intrusion of novelty, newness into our existence. Each situation is unique. But situations often resemble one another. This, in fact, is what makes it possible to learn from experience. If each situation were wholly novel, without some resemblance to previously experienced situations, our ability to cope would be hopelessly crippled.

The acceleration of change, however, radically alters the balance between novel and familiar situations. Rising rates of change thus compel us not merely to cope with a faster flow, but with more and more situations to which previous personal experience does not apply. And the psychological implications of this simple fact, which we shall explore later in this book, are nothing short of explosive.

"When things start changing outside, you are going to have a parallel change taking place inside," says Christopher Wright of the Institute for the Study of Science in Human Affairs. The nature of these inner changes is so profound, however, that, as the accelerative thrust picks up speed, it will test our ability to live within the parameters that have until now defined man and society. In the words of psycho-

analyst Erik Erikson, "In our society at present, the 'natural course of events' is precisely that the rate of change should continue to accelerate up to the as-yet-unreached limits of human and institutional adaptability."

To survive, to avert what we have termed future shock, the individual must become infinitely more adaptable and capable than ever before. He must search out totally new ways to anchor himself, for all the old roots—religion, nation, community, family, or profession—are now shaking under the hurricane impact of the accelerative thrust. Before he can do so, however, he must understand in greater detail how the effects of acceleration penetrate his personal life, creep into his behavior and alter the quality of existence. He must, in other words, understand transience.

# Chapter 3

## THE PACE OF LIFE

His picture was, until recently, everywhere: on television, on posters that stared out at one in airports and railroad stations, on leaflets, matchbooks and magazines. He was an inspired creation of Madison Avenue—a fictional character with whom millions could subconsciously identify. Young and clean-cut, he carried an attaché case, glanced at his watch, and looked like an ordinary businessman scurrying to his next appointment. He had, however, an enormous protuberance on his back. For sticking out from between his shoulder blades was a great, butterfly-shaped key of the type used to wind up mechanical toys. The text that accompanied his picture urged keyed-up executives to "unwind"—to slow down—at the Sheraton Hotels. This wound-up man-on-the-go was, and still is, a potent symbol of the people of the future, millions of whom feel just as driven and hurried as if they, too, had a huge key in the back.

The average individual knows little and cares less about the cycle of technological innovation or the relationship between knowledge-acquisition and the rate of change. He is, on the other hand, keenly aware of the pace of his own life—whatever that pace may be.

The pace of life is frequently commented on by

ordinary people. Yet, oddly enough, it has received almost no attention from either psychologists or sociologists. This is a gaping inadequacy in the behavioral sciences, for the pace of life profoundly influences behavior, evoking strong and contrasting reactions from different people.

It is, in fact, not too much to say that the pace of life draws a line through humanity, dividing us into camps, triggering bitter misunderstanding between parent and child, between Madison Avenue and Main Street, between men and women, between American and European, between East and West.

## PEOPLE OF THE FUTURE

The inhabitants of the earth are divided not only by race, nation, religion or ideology, but also, in a sense, by their position in time. Examining the present populations of the globe, we find a tiny group who still live, hunting and food-foraging, as men did millennia ago. Others, the vast majority of mankind, depend not on bear-hunting or berry-picking, but on agriculture. They live, in many respects, as their ancestors did centuries ago. These two groups taken together compose perhaps 70 percent of all living human beings. They are the people of the past.

By contrast, somewhat more than 25 percent of the earth's population can be found in the industrialized societies. They lead modern lives. They are products of the first half of the twentieth century, molded by mechanization and mass education, brought up with lingering memories of their own country's agricultural past. They are, in effect, the people of the present.

The remaining two or three percent of the world's population, however, are no longer people of either the past or present. For within the main centers of technological and cultural change, in Santa Monica, California and Cambridge, Massachusetts, in New

York and London and Tokyo, are millions of men and women who can already be said to be living the way of life of the future. Trendmakers often without being aware of it, they live today as millions more will live tomorrow. And while they account for only a few percent of the global population today, they already form an international nation of the future in our midst. They are the advance agents of man, the earliest citizens of the world-wide super-industrial society now in the throes of birth.

What makes them different from the rest of mankind? Certainly, they are richer, better educated, more mobile than the majority of the human race. They also live longer. But what specifically marks the people of the future is the fact that they are already caught up in a new, stepped-up pace of life. They "live faster" than the people around them.

Some people are deeply attracted to this highly accelerated pace of life—going far out of their way to bring it about and feeling anxious, tense or uncomfortable when the pace slows. They want desperately to be "where the action is." (Indeed, some hardly care what the action is, so long as it occurs at a suitably rapid clip.) James A. Wilson has found, for example, that the attraction for a fast pace of life is one of the hidden motivating forces behind the much publicized "brain-drain"—the mass migration of European scientists to the United States and Canada. After studying 517 English scientists and engineers who migrated, Wilson concluded that it was not higher salaries or better research facilities alone, but also the quicker tempo that lured them. The migrants, he writes, "are not put off by what they indicate as the 'faster pace' of North America; if anything, they appear to *prefer* this pace to others." Similarly, a white veteran of the civil rights movement in Mississippi reports: "People who are used to a speeded-up urban life . . . can't take it for long in the rural South. That's why people are always driving somewhere for no particular reason. Traveling is the

drug of The Movement." Seemingly aimless, this driving about is a compensation mechanism. Understanding the powerful attraction that a certain pace of life can exert on the individual helps explain much otherwise inexplicable or "aimless" behavior.

But if some people thrive on the new, rapid pace, others are fiercely repelled by it and go to extreme lengths to "get off the merry-go-round," as they put it. To engage at all with the emergent super-industrial society means to engage with a faster moving world than ever before. They prefer to disengage, to idle at their own speed. It is not by chance that a musical entitled *Stop the World—I Want to Get Off* was a smash hit in London and New York a few seasons ago.

The quietism and search for new ways to "opt out" or "cop out" that characterizes certain (though not all) hippies may be less motivated by their loudly expressed aversion for the values of a technological civilization than by an unconscious effort to escape from a pace of life that many find intolerable. It is no coincidence that they describe society as a "rat-race"—a term that refers quite specifically to pacing.

Older people are even more likely to react strongly against any further acceleration of change. There is a solid mathematical basis for the observation that age often correlates with conservatism: time passes more swiftly for the old.

When a fifty-year-old father tells his fifteen-year-old son that he will have to wait two years before he can have a car of his own, that interval of 730 days represents a mere 4 percent of the father's lifetime to date. It represents over 13 percent of the boy's lifetime. It is hardly strange that to the boy the delay seems three or four times longer than to the father. Similarly, two hours in the life of a four-year-old may be the felt equivalent of twelve hours in the life of her twenty-four-year-old mother. Asking the child to wait two hours for a piece of candy may be

the equivalent of asking the mother to wait fourteen hours for a cup of coffee.

There may be a biological basis as well, for such differences in subjective response to time. "With advancing age," writes psychologist John Cohen of the University of Manchester, "the calendar years seem progressively to shrink. In restrospect every year seems shorter than the year just completed, possibly as a result of the gradual slowing down of metabolic processes." In relation to the slowdown of their own biological rhythms, the world would appear to be moving faster to older people, even if it were not.

Whatever the reasons, any acceleration of change that has the effect of crowding more situations into the experiential channel in a given interval is magnified in the perception of the older person. As the rate of change in society speeds up, more and more older people feel the difference keenly. They, too, become dropouts, withdrawing into a private environment, cutting off as many contacts as possible with the fast-moving outside world, and, finally, vegetating until death. We may never solve the psychological problems of the aged until we find the means —through biochemistry or re-education—to alter their time sense, or to provide structured enclaves for them in which the pace of life is controlled, and even, perhaps, regulated according to a "sliding scale" calendar that reflects their own subjective perception of time.

Much otherwise incomprehensible conflict—between generations, between parents and children, between husbands and wives—can be traced to differential responses to the acceleration of the pace of life. The same is true of clashes between cultures.

Each culture has its own characteristic pace. F. M. Esfandiary, the Iranian novelist and essayist, tells of a collision between two different pacing systems when German engineers in the pre-World War II period were helping to construct a railroad in his country. Iranians and Middle Easterners generally

take a far more relaxed attitude toward time than Americans or Western Europeans. When Iranian work crews consistently showed up for work ten minutes late, the Germans, themselves super-punctual and always in a hurry, fired them in droves. Iranian engineers had a difficult time persuading them that by Middle Eastern standards the workers were being heroically punctual, and that if the firings continued there would soon be no one left to do the work but women and children.

This indifference to time can be maddening to those who are fast-paced and clock-conscious. Thus Italians from Milan or Turin, the industrial cities of the North, look down upon the relatively slow-paced Sicilians, whose lives are still geared to the slower rhythms of agriculture. Swedes from Stockholm or Göteborg feel the same way about Laplanders. Americans speak with derision of Mexicans for whom *mañana* is soon enough. In the United States itself, Northerners regard Southerners as slow-moving, and middle-class Negroes condemn working-class Negroes just up from the South for operating on "C.P.T."—Colored People's Time. In contrast, by comparison with almost anyone else, white Americans and Canadians are regarded as hustling, fast-moving go-getters.

Populations sometimes actively resist a change of pace. This explains the pathological antagonism toward what many regard as the "Americanization" of Europe. The new technology on which super-industrialism is based, much of it blue-printed in American research laboratories, brings with it an inevitable acceleration of change in society and a concomitant speed-up of the pace of individual life as well. While anti-American orators single out computers or Coca-Cola for their barbs, their real objection may well be to the invasion of Europe by an alien time sense. America, as the spearhead of super-industrialism, represents a new, quicker, and very much unwanted tempo.

Precisely this issue is symbolized by the angry outcry that has greeted the recent introduction of American-style drugstores in Paris. To many Frenchmen, their existence is infuriating evidence of a sinister "cultural imperialism" on the part of the United States. It is hard for Americans to understand so passionate a response to a perfectly innocent soda fountain. What explains it is the fact that at Le Drugstore the thirsty Frenchman gulps a hasty milkshake instead of lingering for an hour or two over an aperitif at an outdoor bistro. It is worth noticing that, as the new technology has spread in recent years, some 30,000 bistros have padlocked their doors for good, victims, in the words of *Time* magazine, of a "short-order culture." (Indeed, it may well be that the widespread European dislike for *Time*, itself, is not entirely political, but stems unconsciously from the connotation of its title. *Time*, with its brevity and breathless style, exports more than the American Way of Life. It embodies and exports the American Pace of Life.)

## DURATIONAL EXPECTANCY

To understand why acceleration in the pace of life may prove disruptive and uncomfortable, it is important to grasp the idea of "durational expectancies."

Man's perception of time is closely linked with his internal rhythms. But his responses to time are culturally conditioned. Part of this conditioning consists of building up within the child a series of expectations about the duration of events, processes or relationships. Indeed, one of the most important forms of knowledge that we impart to a child is a knowledge of how long things last. This knowledge is taught in subtle, informal and often unconscious ways. Yet without a rich set of socially appropriate du-

rational expectancies, no individual could function successfully.

From infancy on the child learns, for example, that when Daddy leaves for work in the morning, it means that he will not return for many hours. (If he does, something is wrong; the schedule is askew. The child senses this. Even the family dog—having also learned a set of durational expectancies—is aware of the break in routine.) The child soon learns that "mealtime" is neither a one-minute nor a five-hour affair, but that it ordinarily lasts from fifteen minutes to an hour. He learns that going to a movie lasts two to four hours, but that a visit with the pediatrician seldom lasts more than one. He learns that the school day ordinarily lasts six hours. He learns that a relationship with a teacher ordinarily extends over a school year, but that his relationship with his grandparents is supposed to be of much longer duration. Indeed, some relationships are supposed to last a lifetime. In adult behavior, virtually all we do, from mailing an envelope to making love, is premised upon certain spoken or unspoken assumptions about duration.

It is these durational expectancies, different in each society but learned early and deeply ingrained, that are shaken up when the pace of life is altered.

This explains a crucial difference between those who suffer acutely from the accelerated pace of life and those who seem rather to thrive on it. Unless an individual has adjusted his durational expectancies to take account of continuing acceleration, he is likely to suppose that two situations, similar in other respects, will also be similar in duration. Yet the accelerative thrust implies that at least certain kinds of situations will be compressed in time.

The individual who has internalized the principle of acceleration—who understands in his bones as well as his brain that things are moving faster in the world around him—makes an automatic, unconscious compensation for the compression of time. Anticipating

that situations will endure less long, he is less frequently caught off guard and jolted than the person whose durational expectancies are frozen, the person who does not routinely anticipate a frequent shortening in the duration of situations.

In short, the pace of life must be regarded as something more than a colloquial phrase, a source of jokes, sighs, complaints or ethnic put-downs. It is a crucially important psychological variable that has been all but ignored. During past eras, when change in the outer society was slow, men could, and did, remain unaware of this variable. Throughout one's entire lifetime the pace might vary little. The accelerative thrust, however, alters this drastically. For it is precisely through a step-up in the pace of life that the increased speed of broad scientific, technological and social change makes itself felt in the life of the individual. A great deal of human behavior is motivated by attraction or antagonism toward the pace of life enforced on the individual by the society or group within which he is embedded. Failure to grasp this principle lies behind the dangerous incapacity of education and psychology to prepare people for fruitful roles in a super-industrial society.

## THE CONCEPT OF TRANSIENCE

Much of our theorizing about social and psychological change presents a valid picture of man in relatively static societies—but a distorted and incomplete picture of the truly contemporary man. It misses a critical difference between the men of the past or present and the men of the future. This difference is summed up in the word "transience."

The concept of transience provides a long-missing link between sociological theories of change and the psychology of individual human beings. Integrating both, it permits us to analyze the problems of high-speed change in a new way. And, as we shall see, it

gives us a method—crude but powerful—to measure inferentially the rate of situation flow.

Transience is the new "temporariness" in everyday life. It results in a mood, a feeling of impermanence. Philosophers and theologians, of course, have always been aware that man is ephemeral. In this grand sense, transience has always been a part of life. But today the feeling of impermanence is more acute and intimate. Thus Edward Albee's character, Jerry, in *The Zoo Story,* characterizes himself as a "permanent transient." And critic Harold Clurman, commenting on Albee, writes: "None of us occupy abodes of safety —true homes. We are all the same 'people in all the rooming houses everywhere,' desperately and savagely trying to effect soul-satisfying connections with our neighbors." We are, in fact, all citizens of the Age of Transience.

It is, however, not only our relationships with people that seem increasingly fragile or impermanent. If we divide up man's experience of the world outside himself, we can identify certain classes of relationships. Thus, in addition to his links with other people, we may speak of the individual's relationship with things. We can single out for examination his relationships with places. We can analyze his ties to the institutional or organizational environment around him. We can even study his relationship to certain ideas or to the information flow in society.

These five relationships—plus time—form the fabric of social experience. This is why, as suggested earlier, things, places, people, organizations and ideas are the basic components of all situations. It is the individual's distinctive relationship to each of these components that structures the situation.

And it is precisely these relationships that, as acceleration occurs in society, become foreshortened, telescoped in time. Relationships that once endured for long spans of time now have shorter life expectancies. It is this abbreviation, this compression, that gives rise

to the almost tangible feeling that we live, rootless and uncertain, among shifting dunes.

Transience, indeed, can be defined quite specifically in terms of the rate at which our relationships turn over. While it may be difficult to prove that situations, as such, take less time to pass through our experience than before, it is possible to break them down into their components, and to measure the rate at which these components move into and out of our lives—to measure, in other words, the duration of relationships.

It will help us understand the concept of transience if we think in terms of the idea of "turnover." In a grocery store, for example, milk turns over more rapidly than, say, canned asparagus. It is sold and replaced more rapidly. The "through-put" is faster. The alert businessman knows the turnover rate for each of the items he sells, and the general rate for the entire store. He knows, in fact, that his turnover rate is a key indicator of the health of the enterprise.

We can, by analogy, think of transience as the rate of turnover of the different kinds of relationships in an individual's life. Moreover, each of us can be characterized in terms of this rate. For some, life is marked by a much slower rate of turnover than for others. The people of the past and present lead lives of relatively "low transience"—their relationships tend to be long-lasting. But the people of the future live in a condition of "high transience"—a condition in which the duration of relationships is cut short, the through-put of relationships extremely rapid. In their lives, things, places, people, ideas, and organizational structures all get "used up" more quickly.

This affects immensely the way they experience reality, their sense of commitment, and their ability—or inability—to cope. It is this fast through-put, combined with increasing newness and complexity in the environment, that strains the capacity to adapt and creates the danger of future shock.

If we can show that our relationships with the outer world are, in fact, growing more and more transient,

we have powerful evidence for the assumption that the flow of situations is speeding up. And we have an incisive new way of looking at ourselves and others. Let us, therefore, explore life in a high transience society.

# Part Two:

# TRANSIENCE

# Chapter 4

# THINGS: THE THROW-AWAY SOCIETY

"Barbie," a twelve-inch plastic teen-ager, is the best-known and best-selling doll in history. Since its introduction in 1959, the Barbie doll population of the world has grown to 12,000,000—more than the human population of Los Angeles or London or Paris. Little girls adore Barbie because she is highly realistic and eminently dress-upable. Mattel, Inc., makers of Barbie, also sells a complete wardrobe for her, including clothes for ordinary daytime wear, clothes for formal party wear, clothes for swimming and skiing.

Recently Mattel announced a new improved Barbie doll. The new version has a slimmer figure, "real" eyelashes, and a twist-and-turn waist that makes her more humanoid than ever. Moreover, Mattel announced that, for the first time, any young lady wishing to purchase a new Barbie would receive a trade-in allowance for her old one.

What Mattel did not announce was that by trading in her old doll for a technologically improved model, the little girl of today, citizen of tomorrow's super-industrial world, would learn a fundamental lesson about the new society: that man's relationships with *things* are increasingly temporary.

The ocean of man-made physical objects that surrounds us is set within a larger ocean of natural

objects. But increasingly, it is the technologically produced environment that matters for the individual. The texture of plastic or concrete, the iridescent glisten of an automobile under a streetlight, the staggering vision of a cityscape seen from the window of a jet—these are the intimate realities of his existence. Man-made things enter into and color his consciousness. Their number is expanding with explosive force, both absolutely and relative to the natural environment. This will be even more true in super-industrial society than it is today.

Anti-materialists tend to deride the importance of "things." Yet things are highly significant, not merely because of their functional utility, but also because of their psychological impact. We develop relationships with things. Things affect our sense of continuity or discontinuity. They play a role in the structure of situations and the foreshortening of our relationships with things accelerates the pace of life.

Moreover, our attitudes toward things reflect basic value judgments. Nothing could be more dramatic than the difference between the new breed of little girls who cheerfully turn in their Barbies for the new improved model and those who, like their mothers and grandmothers before them, clutch lingeringly and lovingly to the same doll until it disintegrates from sheer age. In this difference lies the contrast between past and future, between societies based on permanence, and the new, fast-forming society based on transience.

## THE PAPER WEDDING GOWN

That man-thing relationships are growing more and more temporary may be illustrated by examining the culture surrounding the little girl who trades in her doll. This child soon learns that Barbie dolls are by no means the only physical objects that pass into and out of her young life at a rapid clip. Diapers, bibs,

paper napkins, Kleenex, towels, non-returnable soda bottles—all are used up quickly in her home and ruthlessly eliminated. Corn muffins come in baking tins that are thrown away after one use. Spinach is encased in plastic sacks that can be dropped into a pan of boiling water for heating, and then thrown away. TV dinners are cooked and often served on throw-away trays. Her home is a large processing machine through which objects flow, entering and leaving, at a faster and faster rate of speed. From birth on, she is inextricably embedded in a throw-away culture.

The idea of using a product once or for a brief period and then replacing it, runs counter to the grain of societies or individuals steeped in a heritage of poverty. Not long ago Uriel Rone, a market researcher for the French advertising agency Publicis, told me: "The French housewife is not used to disposable products. She likes to keep things, even old things, rather than throw them away. We represented one company that wanted to introduce a kind of plastic throw-away curtain. We did a marketing study for them and found the resistance too strong." This resistance, however, is dying all over the developed world.

Thus a writer, Edward Maze, has pointed out that many Americans visiting Sweden in the early 1950's were astounded by its cleanliness. "We were almost awed by the fact that there were no beer and soft drink bottles by the roadsides, as, much to our shame, there were in America. But by the 1960's, lo and behold, bottles were suddenly blooming along Swedish highways . . . What happened? Sweden had become a buy, use and throw-away society, following the American pattern." In Japan today throw-away tissues are so universal that cloth handkerchiefs are regarded as old fashioned, not to say unsanitary. In England for sixpence one may buy a "Dentamatic throw-away toothbrush" which comes already coated with toothpaste for its one-time use. And even in France, dis-

posable cigarette lighters are commonplace. From cardboard milk containers to the rockets that power space vehicles, products created for short-term or one-time use are becoming more numerous and crucial to our way of life.

The recent introduction of paper and quasi-paper clothing carried the trend toward disposability a step further. Fashionable boutiques and working-class clothing stores have sprouted whole departments devoted to gaily colored and imaginatively designed paper apparel. Fashion magazines display breathtakingly sumptuous gowns, coats, pajamas, even wedding dresses made of paper. The bride pictured in one of these wears a long white train of lace-like paper that, the caption writer notes, will make "great kitchen curtains" after the ceremony.

Paper clothes are particularly suitable for children. Writes one fashion expert: "Little girls will soon be able to spill ice cream, draw pictures and make cutouts on their clothes while their mothers smile benignly at their creativity." And for adults who want to express their own creativity, there is even a "paint-yourself-dress" complete with brushes. Price: $2.00.

Price, of course, is a critical factor behind the paper explosion. Thus a department store features simple A-line dresses made of what it calls "devil-may-care cellulose fiber and nylon." At $1.29 each, it is almost cheaper for the consumer to buy and discard a new one than to send an ordinary dress to the cleaners. Soon it will be. But more than economics is involved, for the extension of the throw-away culture has important psychological consequences.

We develop a throw-away mentality to match our throw-away products. This mentality produces, among other things, a set of radically altered values with respect to property. But the spread of disposability through the society also implies decreased durations in man-thing relationships. Instead of being linked with a single object over a relatively long span of time,

we are linked for brief periods with the succession of objects that supplant it.

### THE MISSING SUPERMARKET

The shift toward transience is even manifest in architecture—precisely that part of the physical environment that in the past contributed mostly heavily to man's sense of permanence. The child who trades in her Barbie doll cannot but also recognize the transience of buildings and other large structures that surround her. We raze landmarks. We tear down whole streets and cities and put new ones up at a mind-numbing rate.

"The average age of dwellings has steadily declined," writes E. F. Carter of the Stanford Research Institute, "from being virtually infinite in the days of caves to . . . approximately a hundred years for houses built in United States colonial days, to about forty years at present." And Michael Wood, an English writer comments: The American ". . . made his world yesterday, and he knows exactly how fragile, how shifting it is. Buildings in New York literally disappear overnight, and the face of a city can change completely in a year."

Novelist Louis Auchincloss complains angrily that "The horror of living in New York is living in a city without a history . . . All eight of my great-grandparents lived in the city . . . and only one of the houses they lived in . . . is still standing. That's what I mean by the vanishing past." Less patrician New Yorkers, whose ancestors landed in America more recently, arriving there from the barrios of Puerto Rico, the villages of Eastern Europe or the plantations of the South, might voice their feelings quite differently. Yet the "vanishing past" is a real phenomenon, and it is likely to become far more widespread, engulfing even many of the history-drenched cities of Europe.

Buckminster Fuller, the designer-philosopher, once described New York as a "continual evolutionary process of evacuations, demolitions, removals, temporarily vacant lots, new installations and repeat. This process is identical in principle to the annual rotation of crops in farm acreage—plowing, planting the new seed, harvesting, plowing under, and putting in another type of crop . . . Most people look upon the building operations blocking New York's streets . . . as temporary annoyances, soon to disappear in a static peace. They still think of permanence as normal, a hangover from the Newtonian view of the universe. But those who have lived in and with New York since the beginning of the century have literally experienced living with Einsteinian relativity."

That children, in fact, internalize this "Einsteinian relativity" was brought home to me forcibly by a personal experience. Some time ago my wife sent my daughter, then twelve, to a supermarket a few blocks from our Manhattan apartment. Our little girl had been there only once or twice before. Half an hour later she returned perplexed. "It must have been torn down," she said, "I couldn't find it." It hadn't been. New to the neighborhood, Karen had merely looked on the wrong block. But she is a child of the Age of Transience, and her immediate assumption—that the building had been razed and replaced—was a natural one for a twelve-year-old growing up in the United States at this time. Such an idea would probably never have occurred to a child faced with a similar predicament even half a century ago. The physical environment was far more durable, our links with it less transient.

## THE ECONOMICS OF IMPERMANENCE

In the past, permanence was the ideal. Whether engaged in handcrafting a pair of boots or in constructing a cathedral, all man's creative and productive

energies went toward maximizing the durability of the product. Man built to last. He had to. As long as the society around him was relatively unchanging each object had clearly defined functions, and economic logic dictated the policy of permanence. Even if they had to be repaired now and then, the boots that cost fifty dollars and lasted ten years were less expensive than those that cost ten dollars and lasted only a year.

As the general rate of change in society accelerates, however, the economics of permanence are—and must be—replaced by the economics of transience.

First, advancing technology tends to lower the costs of manufacture much more rapidly than the costs of repair work. The one is automated, the other remains largely a handcraft operation. This means that it often becomes cheaper to replace than to repair. It is economically sensible to build cheap, unrepairable, throw-away objects, even though they may not last as long as repairable objects.

Second, advancing technology makes it possible to improve the object as time goes by. The second-generation computer is better than the first, and the third is better than the second. Since we can anticipate further technological advance, more improvements coming at ever shorter intervals, it often makes hard economic sense to build for the short term rather than the long. David Lewis, an architect and city planner with Urban Design Associates in Pittsburgh, tells of certain apartment houses in Miami that are torn down after only ten years of existence. Improved air conditioning systems in newer buildings hurt the rentability of these "old" buildings. All things considered, it becomes cheaper to tear down the ten-year-old buildings than to modify them.

Third, as change accelerates and reaches into more and more remote corners of the society, uncertainty about future needs increases. Recognizing the inevitability of change, but unsure as to the demands it will impose on us, we hesitate to commit large resources for rigidly fixed objects intended to serve unchanging

purposes. Avoiding commitment to fixed forms and functions, we build for short-term use or, alternatively, attempt to make the product itself adaptable. We "play it cool" technologically.

The rise of disposability—the spread of the throw-away culture—is a response to these powerful pressures. As change accelerates and complexities multiply, we can expect to see further extensions of the principle of disposability, further curtailment of man's relationships with things.

### THE PORTABLE PLAYGROUND

There are other responses besides disposability that also lead to the same psychological effect. For example, we are now witnessing the wholesale creation of objects designed to serve a series of short-term purposes instead of a single one. These are not throw-away items. They are usually too big and expensive to discard. But they are so constructed that they may be dismantled, if necessary, and relocated after each use.

Thus the board of education of Los Angeles has decided that fully 25 percent of that city's classrooms will, in the future, be temporary structures that can be moved around as needed. Every major United States school district today uses some temporary classrooms. More are on the way. Indeed, temporary classrooms are to the school construction industry what paper dresses are to the clothing industry—a foretaste of the future.

The purpose of temporary classrooms is to help school systems cope with rapidly shifting population densities. But temporary classrooms, like disposable clothes, imply man-thing relationships of shorter duration than in the past. Thus the temporary classroom teaches something even in the absence of a teacher. Like the Barbie doll, it provides the child with a vivid lesson in the impermanence of her surroundings. No sooner does the child internalize a thorough knowledge

of the classroom—the way it fits into the surrounding architecture, the way the desks feel on a hot day, the way sound reverberates in it, all the subtle smells and textures that individualize any structure and lend it reality—than the structure itself may be physically removed from her environment to serve other children in another place.

Nor are mobile classrooms a purely American phenomenon. In England, architect Cedric Price has designed what he calls a "thinkbelt"—an entirely mobile university intended to serve 20,000 students in North Staffordshire. "It will," he says, "rely on temporary buildings rather than permanent ones." It will make "great use of mobile and variable physical enclosures"—classrooms, for example, built inside railroad cars so that they may be shunted anywhere along the four-mile campus.

Geodesic domes to house expositions, air-inflated plastic bubbles for use as command posts or construction headquarters, a whole array of pick-up-and-move temporary structures are flowing from the drawing boards of engineers and architects. In New York City, the Department of Parks has decided to build twelve "portable playgrounds"—small, temporary playgrounds to be installed on vacant city lots until other uses are found for the land, at which time the playgrounds can be dismounted and moved elsewhere. There was a time when a playground was a reasonably permanent fixture in a neighborhood, when one's children and even, perhaps, one's children's children might, each in their turn, experience it in roughly the same way. Super-industrial playgrounds, however, refuse to stay put. They are temporary by design.

## THE MODULAR "FUN PALACE"

The reduction in the duration of man-thing relationships brought about by the proliferation of throw-away items and temporary structures is further intensified

by the rapid spread of "modularism." Modularism may be defined as the attempt to lend whole structures greater permanence at the cost of making their sub-structures less permanent. Thus Cedric Price's "thinkbelt" plan proposes that faculty and student apartments consist of pressed-steel modules that can be hoisted by crane and plugged into building frames. The frames become the only relatively permanent parts of the structure. The apartment modules can be shifted around as needed, or even, in theory, completely discarded and replaced.

It needs to be emphasized here that the distinction between disposability and mobility is, from the point of view of the duration of relationships, a thin one. Even when modules are not discarded, but merely rearranged, the result is a new configuration, a new entity. It is as if one physical structure had, in reality, been discarded and a new one created, even though some or all of the components remain the same.

Even many supposedly "permanent" buildings today are constructed on a modular plan so that interior walls and partitions may be shifted at will to form new enclosure patterns inside. The mobile partition, indeed, might well serve as a symbol of the transient society. One scarcely ever enters a large office today without tripping over a crew of workers busily moving desks and rearranging interior space by reorganizing the partitions. In Sweden a new triumph of modularism has recently been achieved: in a model apartment house in Uppsala *all* walls and closets are movable. The tenant needs only a screwdriver to transform his living space completely, to create, in effect, a new apartment.

Sometimes, however, modularity is directly combined with disposability. The simple, ubiquitous ballpoint pen provides an example. The original goosequill pen had a long life expectancy. Barring accident, it lasted a long time and could be resharpened (i.e., repaired) from time to time to extend its life. The fountain pen, however, was a great technological ad-

vance because it gave the user mobility. It provided a writing tool that carried its own inkwell, thus vastly increasing its range of usefulness. The invention of the ball point consolidated and extended this advance. It provided a pen that carried its own ink supply, but that, in addition, was so cheap it could be thrown away when empty. The first truly disposable pen-and-ink combination had been created.

We have, however, not yet outgrown the psychological attitudes that accompany scarcity. Thus there are still many people today who feel a twinge of guilt at discarding even a spent ball-point pen. The response of the pen industry to this psychological reality was the creation of a ball-point pen built on the modular principle—an outer frame that the user could keep, and an inner ink module or cartridge that he could throw away and replace. By making the ink cartridge expendable, the whole structure is given extended life at the expense of the sub-structure.

There are, however, more parts than wholes. And whether he is shifting them around to create new wholes or discarding and replacing them, the user experiences a more rapid through-put of things through his life, a generalized decline in the average duration of his relationship with things. The result is a new fluidity, mobility and transience.

One of the most extreme examples of architecture designed to embody these principles was the plan put forward by the English theatrical producer Joan Littlewood with the help of Frank Newby, a structural engineer, Gordon Pask, a systems consultant, and Cedric Price, the "thinkbelt" architect.

Miss Littlewood wanted a theater in which versatility might be maximized, in which she might present anything from an ordinary play to a political rally, from a performance of dance to a wrestling match—preferably all at the same time. She wanted, as the critic Reyner Banham has put it, a "zone of total probability." The result was a fantastic plan for "The Fun Palace," otherwise known as the "First Giant

Space Mobile in the World." The plan calls not for a multi-purpose building, but for what is, in effect, a larger than life-sized Erector Set, a collection of modular parts that can be hung together in an almost infinite variety of ways. More or less "permanent" vertical towers house various services—such as toilets and electronic control units—and are topped by gantry cranes that lift the modules into position and assemble them to form any temporary configuration desired. After an evening's entertainment, the cranes come out, disassemble the auditoria, exhibition halls and restaurants, and store them away.

Here is the way Reyner Banham describes it: ". . . the Fun Palace is a piece of ten-year-expendable urban equipment . . . Day by day this giant neo-Futurist machine will stir and reshuffle its movable parts—walls and floors, ramps and walks, steerable escalators, seating and roofing, stages and movie screens, lighting and sound systems—sometimes with only a small part walled in, but with the public poking about the exposed walks and stairs, pressing buttons to make things happen themselves.

"This, when it happens (and it is on the cards that it will, somewhere, soon) will be indeterminacy raised to a new power: no permanent monumental interior space or heroic silhouette against the sky will survive for posterity . . . For the only permanently visible elements of the Fun Palace will be the 'life-support' structure on which the transient architecture will be parasitic."

Proponents of what has become known as "plug-in" or "clip-on" architecture have designed whole cities based on the idea of "transient architecture." Extending the concepts on which the Fun Palace plan is based, they propose the construction of different types of modules which would be assigned different life expectancies. Thus the core of a "building" might be engineered to last twenty-five years, while the plug-in room modules are built to last only three years. Letting their imaginations roam still further, they have con-

jured up mobile skyscrapers that rest not on fixed foundations but on gigantic "ground effect" machines or hovercraft. The ultimate is an entire urban agglomeration freed of fixed position, floating on a cushion of air, powered by nuclear energy, and changing its inner shape even more rapidly than New York does today.

Whether or not precisely these visions become reality, the fact is that society is moving in this direction. The extension of the throw-away culture, the creation of more and more temporary structures, the spread of modularism are proceeding apace, and they all conspire toward the same psychological end: the ephemeralization of man's links with the things that surround him.

## THE RENTAL REVOLUTION

Still another development is drastically altering the man-thing nexus: the rental revolution. The spread of rentalism, a characteristic of societies rocketing toward super-industrialism, is intimately connected with all the tendencies described above. The link between Hertz cars, disposable diapers, and Joan Littlewood's "Fun Palace," may seem obscure at first glance, but closer inspection reveals strong inner similarities. For rentalism, too, intensifies transience.

During the depression, when millions were jobless and homeless, the yearning for a home of one's own was one of the most powerful economic motivations in capitalist societies. In the United States today the desire for home ownership is still strong, but ever since the end of World War II the percentage of new housing devoted to rental apartments has been soaring. As late as 1955 apartments accounted for only 8 percent of new housing starts. By 1961 it reached 24 percent. By 1969, for the first time in the United States, more building permits were being issued for apartment construction than for private homes. Apart-

ment living, for a variety of reasons, is "in." It is particularly in among young people who, in the words of MIT Professor Burnham Kelly, want "minimum-involvement housing."

Minimum involvement is precisely what the user of a throw-away product gets for his money. It is also what temporary structures and modular components foster. Commitments to apartments are, almost by definition, shorter term commitments than those made by a homeowner to his home. The trend toward residential renting thus underscores the tendency toward ever-briefer relationships with the physical environment.*

More striking than this, however, has been the recent upsurge of rental activity in fields in which it was all but unknown in the past. David Riesman has written: "People are fond of their cars; they like to talk about them—something that comes out very clearly in interviews—but their affection for any one in particular rarely reaches enough intensity to become long-term." This is reflected in the fact that the average car owner in the United States keeps his automobile only three and a half years; many of the more affluent trade in their automobiles every year or two. In turn, this accounts for the existence of a twenty-billion-dollar used car business in the United States. It was the automotive industry that first succeeded in destroying the traditional notion that a major purchase had to be a permanent commitment. The annual model changeover, high-powered advertising, backed by the industry's willingness to offer trade-in allowances, made the purchase of a new (or new used)

* It might be noted that millions of American home "owners," having purchased a home with a down payment of 10 percent or less, are actually no more than surrogate owners for banks and other lending institutions. For these families, the monthly check to the bank is no different from the rent check to the landlord. Their ownership is essentially metaphorical, and since they lack a strong financial stake in their property, they also frequently lack the homeowner's strong psychological commitment to it.

car a relatively frequent occurrence in the life of the average American male. In effect, it shortened the interval between purchases, thereby shortening the duration of the relationship between an owner and any one vehicle.

In recent years, however, a spectacular new force has emerged to challenge many of the most deeply ingrained patterns of the automotive industry. This is the auto rental business. Today in the United States millions of motorists rent automobiles from time to time for periods of a few hours up to several months. Many big-city dwellers, especially in New York where parking is a nightmare, refuse to own a car, preferring to rent one for weekend trips to the country, or even for in-town trips that are inconvenient by public transit. Autos today can be rented with a minimum of red tape at almost any US airport, railroad station or hotel.

Moreover, Americans have carried the rental habit abroad with them. Nearly half a million of them rent cars while overseas each year. This figure is expected to rise to nearly a million by 1975, and the big American rental companies, operating now in some fifty countries around the globe, are beginning to run into foreign competitors. Simultaneously, European motorists are beginning to emulate the Americans. A cartoon in *Paris Match* shows a creature from outer space standing next to his flying saucer and asking a gendarme where he can rent an auto. The idea is catching on.

The rise of auto rentals, meanwhile, has been paralleled by the emergence in the United States of a new kind of general store—one which sells nothing but rents everything. There are now some 9000 such stores in the United States with an annual rental volume on the order of one billion dollars and a growth rate of from 10 to 20 percent per year. Virtually 50 percent of these stores were not in business five years ago. Today, there is scarcely a product that cannot be

rented, from ladders and lawn equipment to mink coats and originals Rouaults.

In Los Angeles, rental firms provide live shrubs and trees for real estate developers who wish to landscape model homes temporarily. "Plants enhance —rent living plants," says the sign on the side of a truck in San Francisco. In Philadelphia one may rent shirts. Elsewhere, Americans now rent everything from gowns, crutches, jewels, TV sets, camping equipment, air conditioners, wheelchairs, linens, skis, tape recorders, champagne fountains, and silverware. A West Coast men's club rented a human skeleton for a demonstration, and an ad in the *Wall Street Journal* even urges: "Rent-a-Cow."

Not long ago the Swedish women's magazine *Svensk Damtidning* ran a five-part series about the world of 1985. Among other things, it suggested that by then "we will sleep in built-in sleeping furniture with buttons for when we eat breakfast or read, or else we will rent a bed at the same place that we rent the table and the paintings and the washing machine."

Impatient Americans are not waiting for 1985. Indeed, one of the most significant aspects of the booming rental business is the rise of furniture rental. Some manufacturers and many rental firms will now furnish entire small apartments for as little as twenty to fifty dollars per month, down to the drapes, rugs and ashtrays. "You arrive in town in the morning," says one airline stewardess, "and by evening you've got a swinging pad." Says a Canadian transferred to New York: "It's new, it's colorful, and I don't have to worry about carting it all over the world when I'm transferred."

William James once wrote that "lives based on having are less free than lives based either on doing or on being." The rise of rentalism is a move away from lives based on having and it reflects the increase in doing and being. If the people of the future live faster than the people of the past, they must also be far more flexible. They are like broken field runners—

and it is hard to sidestep a tackle when loaded down with possessions. They want the advantage of affluence and the latest that technology has to offer, but not the responsibility that has, until now, accompanied the accumulation of possessions. They recognize that to survive among the uncertainties of rapid change they must learn to travel light.

Whatever its broader effects, however, rentalism shortens still further the duration of the relationships between man and the things that he uses. This is made clear by asking a simple question: How many cars—rented, borrowed or owned—pass through the hands of the average American male in a lifetime? The answer for car owners might be in the range of twenty to fifty. For active car renters, however, the figure might run as high as 200 or more. While the buyer's average relationship with a particular vehicle extends over many months or years, the renter's average link with any one particular car is extremely short-lived.

Renting has the net effect of multiplying the number of people with successive relationships to the same object, and thus reducing, on average, the duration of such relationships. When we extend this principle to a very wide range of products, it becomes clear that the rise of rentalism parallels and reinforces the impact of throw-away items, temporary structures and modularism.

## TEMPORARY NEEDS

It is important here to turn for a moment to the notion of obsolescence. For the fear of product obsolescence drives businessmen to innovation at the same time that it impels the consumer toward rented, disposable or temporary products. The very idea of obsolescence is disturbing to people bred on the ideal of permanence, and it is particularly upsetting when thought to be planned. Planned obsolescence has been the target of so much recent social criticism that the un-

wary reader might be led to regard it as the primary or even exclusive cause of the trend toward shorter relational durations.

There is no doubt that some businessmen conspire to shorten the useful life of their products in order to guarantee replacement sales. There is, similarly, no doubt that many of the annual model changes with which American (and other) consumers are increasingly familiar are not technologically substantive. Detroit's autos today deliver no more mileage per gallon of gasoline than they did ten model changes back, and the oil companies, for all the additives about which they boast, still put a turtle, not a tiger, in the tank. Moreover, it is incontestable that Madison Avenue frequently exaggerates the importance of new features and encourages consumers to dispose of partially worn-out goods to make way for the new.

It is therefore true that the consumer is sometimes caught in a carefully engineered trap—an old product whose death has been deliberately hastened by its manufacturer, and the simultaneous appearance of a "new improved" model advertised as the latest heaven-sent triumph of advanced technology.

Nevertheless, these reasons by themselves cannot begin to account for the fantastic rate of turnover of the products in our lives. Rapid obsolescence is an integral part of the entire accelerative process—a process involving not merely the life span of spark-plugs, but of whole societies. Bound up with the rise of science and the speed-up in the acquisition of knowledge, this historic process can hardly be attributed to the evil design of a few contemporary hucksters.

Clearly, obsolescence occurs with or without "planning." With respect to things, obsolescence occurs under three conditions. It occurs when a product literally deteriorates to the point at which it can no longer fulfill its functions—bearings burn out, fabrics tear, pipes rust. Assuming the same functions still need to be performed for the consumer, the failure of a

product to perform these functions marks the point at which its replacement is required. This is obsolescence due to functional failure.

Obsolescence also occurs when some new product arrives on the scene to perform these functions more effectively than the old product could. The new antibiotics do a more effective job of curing infection than the old. The new computers are infinitely faster and cheaper to operate than the antique models of the early 1960's. This is obsolescence due to substantive technological advance.

But obsolescence also occurs when the needs of the consumer change, when the functions to be performed by the product are themselves altered. These needs are not as simply described as the critics of planned obsolescence sometimes assume. An object, whether a car or a can opener, may be evaluated along many different parameters. A car, for example, is more than a conveyance. It is an expression of the personality of the user, a symbol of status, a source of that pleasure associated with speed, a source of a wide variety of sensory stimuli—tactile, olfactory, visual, etc. The satisfaction a consumer gains from such factors may, depending upon his values, outweigh the satisfaction he might receive from improved gas consumption or pickup power.

The traditional notion that each object has a single easily definable function clashes with all that we now know about human psychology, about the role of values in decision-making, and with ordinary common sense as well. All products are multi-functional.

An excellent illustration of this occurred not long ago when I watched a little boy purchase half a dozen pink erasers at a little stationery store. Curious as to why he wanted so many of them, I picked one up for closer examination. "Do they erase well?" I asked the boy. "I don't know," he said, "but they sure smell good!" And, indeed, they did. They had been heavily perfumed by the Japanese manufacturer perhaps to mask an unpleasant chemical odor. In short, the needs

filled by products vary by purchaser and through time.

In a society of scarcity, needs are relatively universal and unchanging because they are starkly related to the "gut" functions. As affluence rises, however, human needs become less directly linked to biological survival and more highly individuated. Moreover, in a society caught up in complex, high-speed change, the needs of the individual—which arise out of his interaction with the external environment—also change at relatively high speed. The more rapidly changing the society, the more temporary the needs. Given the general affluence of the new society, he can indulge many of these short-term needs.

Often, without even having a clear idea of what needs he wants served, the consumer has a vague feeling that he wants a change. Advertising encourages and capitalizes on this feeling, but it can hardly be credited with having created it single-handedly. The tendency toward shorter relational durations is thus built more deeply into the social structure than arguments over planned obsolescence or the manipulative effectiveness of Madison Avenue would suggest.

The rapidity with which consumers' needs shift is reflected in the alacrity with which buyers abandon product and brand loyalty. If Assistant Attorney General Donald F. Turner, a leading critic of advertising, is correct, one of the primary purposes of advertising is to create "durable preferences." If so, it is failing, for brand-switching is so frequent and common that it has become, in the words of one food industry publication, "one of the national advertiser's major headaches."

Many brands drop out of existence. Among brands that continue to exist there is a continual reshuffling of position. According to Henry M. Schachte, "In almost no major consumer goods category . . . is there a brand on top today which held that position ten years ago." Thus among ten leading American cigarettes, only one, Pall Mall, maintained in 1966 the same share of

the market that it held in 1956. Camels plunged from 18 to 9 percent of the market; Lucky Strike declined even more sharply, from 14 to 6 percent. Other brands moved up, with Salem, for example, rising from 1 to 9 percent. Additional fluctuations have occurred since this survey.

However insignificant these shifts may be from the long-run view of the historian, this continual shuffling and reshuffling, influenced but not independently controlled by advertising, introduces into the short-run, everyday life of the individual a dazzling dynamism. It heightens still further the sense of speed, turmoil and impermanence in society.

## THE FAD MACHINE

Fast-shifting preferences, flowing out of and interacting with high-speed technological change, not only lead to frequent changes in the popularity of products and brands, but also shorten the life cycle of products. Automation expert John Diebold never wearies of pointing out to businessmen that they must begin to think in terms of shorter life spans for their goods. Smith Brothers' Cough Drops, Calumet Baking Soda and Ivory Soap, have become American institutions by virtue of their long reign in the market place. In the days ahead, he suggests, few products will enjoy such longevity. Every consumer has had the experience of going to the supermarket or department store to replace some item, only to find that he cannot locate the same brand or product. In 1966 some 7000 new products turned up in American supermarkets. Fully 55 percent of all the items now sold there did not exist ten years ago. And of the products available then, 42 percent have faded away altogether. Each year the process repeats itself in more extreme form. Thus 1968 saw 9,500 new items in the consumer packaged-goods field alone, with only one in five meeting its sales target. A silent but rapid attrition

kills off the old, and new products sweep in like a tide.

"Products that used to sell for twenty-five years," writes economist Robert Theobald, "now often count on no more than five. In the volatile pharmaceutical and electronic fields the period is often as short as six months." As the pace of change accelerates further, corporations may create new products knowing full well that they will remain on the market for only a matter of a few weeks.

Here, too, the present already provides us with a foretaste of the future. It lies in an unexpected quarter: the fads now sweeping over the high technology societies in wave after wave. In the past few years alone, in the United States, Western Europe and Japan, we have witnessed the sudden rise or collapse in popularity of "Bardot hairdos," the "Cleopatra look," James Bond, and Batman, not to speak of Tiffany lampshades, Super-Balls, iron crosses, pop sunglasses, badges and buttons with protest slogans or pornographic jokes, posters of Allen Ginsberg or Humphrey Bogart, false eyelashes, and innumerable other gimcracks and oddities that reflect—are tuned into—the rapidly changing pop culture.

Backed by mass media promotion and sophisticated marketing, such fads now explode on the scene virtually overnight—and vanish just as quickly. Sophisticates in the fad business prepare in advance for shorter and shorter product life cycles. Thus, there is in San Gabriel, California, a company entitled, with a kind of cornball relish, Wham-O Manufacturing Company. Wham-O specializes in fad products, having introduced the hula hoop in the fifties and the so-called Super-Ball more recently. The latter—a high-bouncing rubber ball—quickly became so popular with adults as well as children that astonished visitors saw several of them bouncing merrily on the floor of the Pacific Coast Stock Exchange. Wall Street executives gave them away to friends and one high broadcasting official complained that "All our executives are out in the halls with their Super-Balls." Wham-O, and other

companies like it, however, are not disconcerted when sudden death overtakes their product; they anticipate it. They are specialists in the design and manufacture of "temporary" products.

The fact that fads are generated artificially, to a large extent, merely underscores their significance. Even engineered fads are not new to history. But never before have they come fleeting across the consciousness in such rapid-fire profusion, and never has there been such smooth coordination between those who originate the fad, mass media eager to popularize it, and companies geared for its instantaneous exploitation.

A well-oiled machinery for the creation and diffusion of fads is now an entrenched part of the modern economy. Its methods will increasingly be adopted by others as they recognize the inevitability of the ever-shorter product cycle. The line between "fad" and ordinary product will progressively blur. We are moving swiftly into the era of the temporary product, made by temporary methods, to serve temporary needs.

The turnover of things in our lives thus grows even more frenetic. We face a rising flood of throw-away items, impermanent architecture, mobile and modular products, rented goods and commodities designed for almost instant death. From all these directions, strong pressures converge toward the same end: the inescapable ephemeralization of the man-thing relationship.

The foreshortening of our ties with the physical environment, the stepped-up turnover of things, however, is only a small part of a much larger context. Let us, therefore, press ahead in our exploration of life in high transience society.

# Chapter 5

# PLACES: THE NEW NOMADS

Every Friday afternoon at 4:30, a tall, graying Wall Street executive named Bruce Robe stuffs a mass of papers into his black leather briefcase, takes his coat off the rack outside his office, and departs. The routine has been the same for more than three years. First, he rides the elevator twenty-nine floors down to street level. Next he strides for ten minutes through crowded streets to the Wall Street Heliport. There he boards a helicopter which deposits him, eight minutes later, at John F. Kennedy Airport. Transferring to a Trans-World Airlines jet, he settles down for supper, as the giant craft swings out over the Atlantic, then banks and heads west. One hour and ten minutes later, barring delay, he steps briskly out of the terminal building at the airport in Columbus, Ohio, and enters a waiting automobile. In thirty more minutes he reaches his destination: he is home.

Four nights a week Robe lives at a hotel in Manhattan. The other three he spends with his wife and children in Columbus, 500 miles away. Claiming the best of two worlds, a job in the frenetic financial center of America and a family life in the comparatively tranquil Midwest countryside, he shuttles back and forth some 50,000 miles a year.

The Robe case is unusual—but not that unusual. In

California, ranch owners fly as much as 120 miles every morning from their homes on the Pacific Coast or in the San Bernardino Valley to visit their ranches in the Imperial Valley, and then fly back home again at night. One Pennsylvania teen-ager, son of a peripatetic engineer, jets regularly to an orthodontist in Frankfurt, Germany. A University of Chicago philosopher, Dr. Richard McKeon, commuted 1000 miles each way once a week for an entire semester in order to teach a series of classes at the New School for Social Research in New York. A young San Franciscoan and his girlfriend in Honolulu see each other every weekend, taking turns at crossing 2000 miles of Pacific Ocean. And at least one New England matron regularly swoops down on New York to visit her hairdresser.

Never in history has distance meant less. Never have man's relationships with place been more numerous, fragile and temporary. Throughout the advanced technological societies, and particularly among those I have characterized as "the people of the future," commuting, traveling, and regularly relocating one's family have become second nature. Figuratively, we "use up" places and dispose of them in much the same that we dispose of Kleenex or beer cans. We are witnessing a historic decline in the significance of place to human life. We are breeding a new race of nomads, and few suspect quite how massive, widespread and significant their migrations are.

## THE 3,000,000-MILE CLUB

In 1914, according to Buckminster Fuller, the typical American averaged about 1,640 miles per year of total travel, counting some 1,300 miles of just plain everyday walking to and fro. This meant that he traveled only about 340 miles per year with the aid of horse or mechanical means. Using this 1,640 figure as a base, it is possible to estimate that the average American

of that period moved a total of 88,560 miles in his lifetime.* Today, by contrast, the average American car owner drives 10,000 miles per year—and he lives longer than his father or grandfather. "At sixty-nine years of age," wrote Fuller a few years ago, ". . . I am one of a class of several million human beings who, in their lifetimes, have each covered 3,000,000 miles or more"—more than thirty times the total lifetime travel of the 1914 American.

The aggregate figures are staggering. In 1967, for instance, 108,000,000 Americans took 360,000,000 trips involving an overnight stay more than 100 miles from home. These trips alone accounted for 312,000,000,000 passenger miles.

Even if we ignore the introduction of fleets of jumbo jets, trucks, cars, trains, subways and the like, our social investment in mobility is astonishing. Paved roads and streets have been added to the American landscape at the incredible rate of more than 200 miles per day, every single day for at least the last twenty years. This adds up to 75,000 miles of new streets and roads every year, enough to girdle the globe three times. While United States population increased during this period by 38.5 percent, street and road mileage shot up 100 percent. Viewed another way, the figures are even more dramatic: passenger miles traveled within the United States have been increasing at a rate six times faster than population for at least twenty-five years.

This revolutionary step-up in per capita movement through space is paralleled, to greater or lesser degree, throughout the most technological nations. Anyone who has watched the rush hour traffic pileup on the once peaceful Strandvëg in Stockholm cannot help but be jolted by the sight. In Rotterdam and Amsterdam, streets built as recently as five years ago are

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* This is based on a life expectancy of 54 years. Actual life expectancy for white males in the United States in 1920 was 54.1 years.

already horribly jammed: the number of automobiles has multiplied faster than anyone then thought possible.

In addition to the increase in everyday movement between one's home and various other nearby points, there is also a phenomenal increase in business and vacation travel involving overnight stays away from home. Nearly 1,500,000 Germans will vacation in Spain this summer, and hundreds of thousands more will populate beaches in Holland and Italy. Sweden annually welcomes more than 1,200,000 visitors from non-Scandinavian nations. More than a million foreigners visit the United States, while roughly 4,000,000 Americans travel overseas each year. A writer in *Le Figaro* justifiably refers to "gigantic human exchanges."

This busy movement of men back and forth over the landscape (and sometimes under it) is one of the identifying characteristics of super-industrial society. By contrast, pre-industrial nations seem congealed, frozen, their populations profoundly attached to a single place. Transportation expert Wilfred Owen talks about the "gap between the immobile and the mobile nations." He points out that for Latin America, Africa and Asia to reach the same ratio of road mileage to area that now prevails in the European Economic Community, they would have to pave some 40,000,000 miles of road. This contrast has profound economic consequences, but it also has subtle, largely overlooked cultural and psychological consequences. For migrants, travelers and nomads are not the same kind of people as those who stay put in one place.

## FLAMENCO IN SWEDEN

Perhaps the most psychologically significant kind of movement that an individual can make is geographical relocation of his home. This dramatic form of geographical mobility is also strikingly evident in the United States and the other advanced nations. Speak-

ing of the United States, Peter Drucker has said: "The largest migration in our history began during World War II; and it has continued ever since with undiminished momentum." And political scientist Daniel Elazar describes the great masses of Americans who "have begun to move from place to place within each [urban] belt . . . preserving a nomadic way of life that is urban without being permanently attached to any particular city . . ."

Between March 1967 and March 1968—in a single year—36,600,000 Americans (not counting children less than one year old) changed their place of residence. This is more than the total population of Cambodia, Ghana, Guatemala, Honduras, Iraq, Israel, Mongolia, Nicaragua and Tunisia combined. It is as if the entire population of all these countries had suddenly been relocated. And movement on this massive scale occurs every year in the United States. In each year since 1948 one out of five Americans changed his address, picking up his children, some household effects, and starting life anew at a fresh place. Even the great migrations of history, the Mongol hordes, the westward movement of Europeans in the nineteenth century, seem puny by statistical comparison.

While this high rate of geographical mobility in the United States is probably unmatched anywhere in the world (available statistics, unfortunately, are spotty), even in the more tradition-bound of the advanced countries the age-old ties between man and place are being shattered. Thus the *New Society*, a social science journal published in London, reports that "The English are a more mobile race than perhaps they thought . . . No less than 11 percent of all the people in England and Wales in 1961 had lived in their present usual residence less than a year . . . In certain parts of England, in fact, it appears that the migratory movements are nothing less than frenetic. In Kensington over 25 percent had lived in their homes less than a year, in Hampstead 20 percent, in Chelsea 19 percent." And Anne Lapping, in another issue of the same

journal, states that "new houseowners expect to move house many more times than their parents. The average life of a mortgage is eight to nine years . . ." This is only slightly different than in the United States.

In France, a continuing housing shortage contrives to slow down internal mobility, but even there a study by demographer Guy Pourcher suggests that each year 8 to 10 percent of all Frenchmen shift homes. In Sweden, Germany, Italy and the Netherlands, the rate of domestic migration appears to be on the rise. And all Europe is experiencing a wave of international mass migration unlike anything since the disruptions of World War II. Economic prosperity in Northern Europe has created widespread labor shortages (except in England) and has attracted masses of unemployed agricultural workers from the Mediterranean and Middle Eastern countries.

They come by the thousands from Algeria, Spain, Portugal, Yugoslavia and Turkey. Every Friday afternoon 1000 Turkish workers in Istanbul clamber aboard a train heading north toward the promised lands. The cavernous rail terminal in Munich has become a debarkation point for many of them, and Munich now has its own Turkish-language newspaper. In Cologne, at the huge Ford factory, fully one-quarter of the workers are Turks. Other foreigners have fanned out through Switzerland, France, England, Denmark and as far north as Sweden. Not long ago, in the twelfth-century town of Pangbourne in England, my wife and I were served by Spanish waiters. And in Stockholm we visited the Vivel, a downtown restaurant that has become a meeting place for transplanted Spaniards who hunger for flamenco music with their dinner. There were no Swedes present; with the exception of a few Algerians and ourselves, everyone spoke Spanish. It was no surprise therefore to find that Swedish sociologists today are torn by debate over whether foreign worker populations should be assimilated into Swedish culture or encouraged to retain their own cultural traditions—precisely the same "melting pot"

argument that excited American social scientists during the great period of open immigration in the United States.

## MIGRATION TO THE FUTURE

There are, however, important differences between the kind of people who are on the move in the United States and those caught up in the European migrations. In Europe most of the new mobility can be attributed to the continuing transition from agriculture to industry; from the past to the present, as it were. Only a small part is as yet associated with the transition from industrialism to super-industrialism. In the United States, by contrast, the continuing redistribution of population is no longer primarily caused by the decline of agricultural employment. It grows, instead, out of the spread of automation and the new way of life associated with super-industrial society, the way of life of the future.

This becomes plain if we look at who is doing the moving in the United States. It is true that some technologically backward and disadvantaged groups, such as urban Negroes, are characterized by high rates of geographical mobility, usually within the same neighborhood or county. But these groups form only a relatively small slice of the total population, and it would be a serious mistake to assume that high rates of geographical mobility correlate only with poverty, unemployment or ignorance. In fact, we find that men with at least one year of college education (an ever increasing group) move more, and further, than those without. Thus we find that the professional and technical populations are among the most mobile of all Americans. And we find an increasing number of affluent executives who move far and frequently. (It is a house joke among executives of the International Business Machine Corporation that IBM stands for "I've Been Moved.") In the emerging super-industrial-

ism it is precisely these groups—professional, technical and managerial—who increase in both absolute number and as a proportion of the total work force. They also give the society its characteristic flavor, as the denim-clad factory worker did in the past.

Just as millions of poverty-stricken and unemployed rural workers are flowing from the agricultural past into the industrial present in Europe, so thousands of European scientists, engineers and technicians are flowing into the United States and Canada, the most super-industrial of nations. In West Germany, Professor Rudolf Mossbauer, a Nobel prizewinner in physics, announces that he is thinking of migrating to America because of disagreements over administrative and budgetary policies at home. Europe's political ministers, worried over the "technology gap," have looked on helplessly as Westinghouse, Allied Chemical, Douglas Aircraft, General Dynamics and other major American corporations sent talent scouts to London or Stockholm to lure away everyone from astrophysicists to turbine engineers.

But there is a simultaneous "brain-drain" inside the United States, with thousands of scientists and engineers moving back and forth like particles in an atom. There are, in fact, well recognized patterns of movement. Two major streams, one from the North and the other from the South, both converge in California and the other Pacific Coast states, with a way station at Denver. Another major stream flows up from the South toward Chicago and Cambridge, Princeton and Long Island. A counter-stream carries men back to the space and electronics industries in Florida.

A typical young space engineer of my acquaintance quit his job with RCA at Princeton to go to work for General Electric. The house he had purchased only two years before was sold; his family moved into a rented house just outside Philadelphia, while a new one was built for them. They will move into this new house—the fourth in about five years—provided he is

not transferred or offered a better job elsewhere. And all the time, California beckons.

There is a less obvious geographical pattern to the movement of management men, but, if anything, the turnover is heavier. A decade ago William Whyte, in *The Organization Man,* declared that "The man who leaves home is not the exception in American society but the key to it. Almost by definition, the organization man is a man who left home and . . . kept on going." His characterization, correct then, is even truer today. The *Wall Street Journal* refers to "corporate gypsies" in an article headlined "How Executive Family Adapts to Incessant Moving About Country." It describes the life of M. E. Jacobson, an executive with the Montgomery Ward retail chain. He and his wife, both forty-six at the time the story appeared, had moved twenty-eight times in twenty-six years of married life. "I almost feel like we're just camping," his wife tells her visitors. While their case is atypical, thousands like them move on the average of once every two years, and their numbers multiply. This is true not merely because corporate needs are constantly shifting, but also because top management regards frequent relocation of its potential successors as a necessary step in their training.

This moving of executives from house to house as if they were life-size chessmen on a continent-sized board has led one psychologist to propose facetiously a money-saving system called "The Modular Family." Under this scheme, the executive not only leaves his house behind, but his family as well. The company then finds him a matching family (personality characteristics carefully selected to duplicate those of the wife and children left behind) at the new site. Some other itinerant executive then "plugs into" the family left behind. No one appears to have taken the idea seriously—yet.

In addition to the large groups of professionals, technicians and executives who engage in a constant round of "musical homes," there are many other pecu-

liarly mobile groupings in the society. A large military establishment includes tens of thousands of families who, peacetime and wartime, move again and again. "I'm not decorating any more houses," snaps the wife of an army colonel with irony in her voice: "The curtains never fit from one house to the next and the rug is always the wrong size or color. From now on I'm decorating my car." Tens of thousands of skilled construction workers add to the flow. On another level are the more than 750,000 students attending colleges away from their home state, plus the hundreds of thousands more who are away from home but still within their home state. For millions, and particularly for the "people of the future," home is where you find it.

### SUICIDES AND HITCH-HIKERS

Such tidal movements of human beings produce all sorts of seldom-noticed side effects. Businesses that mail direct to the customer's home spend uncounted dollars keeping their address lists up to date. The same is true of telephone companies. Of the 885,000 listings in the Washington, D. C., telephone book in 1969, over half were different from the year before. Similarly, organizations and associations have a difficult time knowing where their members are. Within a single recent year fully one-third of the members of the National Society for Programmed Instruction, an organization of educational researchers, changed their addresses. Even friends have trouble keeping up with each other's whereabouts. One can sympathize with the plaint of poor Count Lanfranco Rasponi, who laments that travel and movement have destroyed "society." There is no social season any more, he says, because nobody is anywhere at the same time—except, of course, nobodies. The good Count has been quoted as saying: "Before this, if you wanted twenty for dinner, you'd have to ask forty—but now you first ask 200."

Despite such inconveniences, the overthrow of the tyranny of geography opens a form of freedom that proves exhilarating to millions. Speed, movement and even relocation carry positive connotations for many. This accounts for the psychological attachment that Americans and Europeans display toward automobiles —the technological incarnation of spatial freedom. Motivational researcher Ernest Dichter has unburdened himself of abundant Freudian nonsense in his time, but he is shrewdly insightful when he suggests that the auto is the "most powerful tool for mastery" available to the ordinary Western man. "The automobile has become the modern symbol of initiation. The license of the sixteen-year-old is a valid admission to adult society."

In the affluent nations, he writes, "most people have enough to eat and are reasonably well housed. Having achieved this thousand-year-old dream of humanity, they now reach out for further satisfactions. They want to travel, discover, be at least physically independent. The automobile is the mobile symbol of mobility . . ." In fact, the last thing that any family wishes to surrender, when hardpressed by financial hardship, is the automobile, and the worst punishment an American parent can mete out to a teen-ager is to "ground" him—i.e., deprive him of the use of an automobile.

Young girls in the United States, when asked what they regard as important about a boy, immediately list a car. Sixty-seven percent of those interviewed in a recent survey said a car is "essential," and a nineteen-year-old boy, Alfred Uranga of Albuquerque, N. M., confirmed gloomily that "If a guy doesn't have a car, he doesn't have a girl." Just how deep this passion for automobility runs among the youth is tragically illustrated by the suicide of a seventeen-year-old Wisconsin boy, William Nebel, who was "grounded" by his father after his driver's license was suspended for speeding. Before putting a .22 caliber rifle bullet in his brain, the boy penned a note that

ended, "Without a license, I don't have my car, job or social life. So I think that it is better to end it all right now." It is clear that millions of young people all over the technological world agree with the poet Marinetti who, more than half a century ago, shouted: "A roaring racing car . . . is more beautiful than the Winged Victory."

Freedom from fixed social position is linked so closely with freedom from fixed geographical position, that when super-industrial man feels socially constricted his first impulse is to relocate. This idea seldom occurs to the peasant raised in his village or the coalminer toiling away in the black deeps. "A lot of problems are solved by migration. Go. Travel!" said a student of mine before rushing off to join the Peace Corps. But movement becomes a positive value in its own right, an assertion of freedom, not merely a response to or escape from outside pressures. A survey of 539 subscribers to *Redbook* magazine sought to determine why their addresses had changed in the previous year. Along with such reasons as "family grew too big for old home" or "pleasanter surroundings" fully ten percent checked off "just wanted a change."

An extreme manifestation of this urge to move is found among the female hitch-hikers who are beginning to form a recognizable sociological category of their own. Thus a young Catholic girl in England gives up her job selling advertising space for a magazine and goes off with a friend intending to hitchhike to Turkey. In Hamburg the girls split up. The first girl, Jackie, cruises the Greek Islands, reaches Istanbul, and at length returns to England, where she takes a job with another magazine. She stays only long enough to finance another trip. After that she comes back and works as a waitress, rejecting promotion to hostess on grounds that "I don't expect to be in England very long." At twenty-three Jackie is a confirmed hitchhiker, thumbing her way indefatigably all over Europe with a gas pistol in her rucksack, returning to England for six or eight months, then starting out again. Ruth,

twenty-eight, has been living this way for years, her longest stay in any one place having been three years. Hitchhiking as a way of life, she says, is fine because while it is possible to meet people, "you don't get too involved."

Teen-age girls in particular—perhaps eager to escape restrictive home environments—are passionately keen travelers. A survey of girls who read *Seventeen*, for example, showed that 40.2 percent took one or more "major" trips during the summer before the survey. Sixty-nine percent of these trips carried the girl outside her home state, and nine percent took her abroad. But the itch to travel begins long before the teen years. Thus when Beth, the daughter of a New York psychiatrist, learned that a friend of her's had visited Europe, her tearful response was: "I'm nine years old already and I've never been to Europe!"

This positive attitude toward movement is reflected in survey findings that Americans tend to admire travelers. Thus researchers at the University of Michigan have found that respondents frequently term travelers "lucky" or "happy." To travel is to gain status, which explains why so many American travelers keep ragged airline tags on their luggage or attaché cases long after their return from a trip. One wag has suggested that someone set up a business washing and ironing old airline tags for status-conscious travelers.

Moving one's household, on the other hand, is a cause for commiseration rather than congratulations. Everyone makes ritual comments about the hardships of moving. Yet the fact is that those who have moved once are much more likely to move again than those who have never moved. The French sociologist Alain Touraine explains that "having already made one change and being less attached to the community, they are the readier to move again . . ." And a British trade-union official, R. Clark, not long ago told an international manpower conference that mobility might well be a habit formed in student days. He pointed out that those who spent their college years away from

home move in less restricted circles than uneducated and more home-bound manual workers. Not only do these college people move more in later life, but he suggested, they pass on to their children attitudes that facilitate mobility. While for many worker families relocation is a dreaded necessity, a consequence of unemployment or other hardships, for the middle and upper classes moving is most often associated with the extension of the good life. For them, traveling is a joy, and moving out usually means moving up.

In short, throughout the nations in transition to super-industrialism, among the people of the future, movement is a way of life, a liberation from the constrictions of the past, a step into the still more affluent future.

### THE MOURNFUL MOVERS

Dramatically different attitudes, however, are evinced by the "immobiles." It is not only the agricultural villager in India or Iran who remains fixed in one place for most or all of his life. The same is true of millions of blue-collar workers, particularly those in backward industries. As technological change roars through the advanced economies, outmoding whole industries and creating new ones almost overnight, millions of unskilled and semiskilled workers find themselves compelled to relocate. The economy demands mobility, and most Western governments—notably Sweden, Norway, Denmark, and the United States—spend large sums to encourage workers to retrain for new jobs and leave their homes in pursuit of them. For coalminers in Appalachia or textile workers in the French provinces, however, this proves to be excruciatingly painful. Even for big-city workers uprooted by urban renewal and relocated quite near to their former homes, the disruption is often agonizing.

"It is quite precise to speak of their reactions," says

Dr. Marc Fried of the Center for Community Studies, Massachusetts General Hospital, "as expressions of *grief*. These are manifest in the feelings of painful loss, the continued longing, the general depressive tone, frequent symptoms of psychological or social or somatic distress . . . the sense of helplessness, the occasional expressions of both direct and displaced anger, and tendencies to idealize the lost place." The responses, he declares, are "strikingly similar to mourning for a lost person."

Sociologist Monique Viot, of the French Ministry of Social Affairs, says: "The French are very attached to their geographical backgrounds. For jobs even thirty or forty kilometers away they are reluctant—extremely reluctant—to move. The unions call such moves 'deportations.' "

Even some educated and affluent movers show signs of distress when they are called upon to relocate. The author Clifton Fadiman, telling of his move from a restful Connecticut town to Los Angeles, reports that he was shortly "felled by a shotgun burst of odd physical and mental ailments . . . In the course of six months my illness got straightened out. The neurologist . . . diagnosed my trouble as 'culture shock' . . ." For relocation of one's home, even under the most favorable circumstances, entails a series of difficult psychological readjustments.

In a famous study of a Canadian suburb they call Crestwood Heights, sociologists J. R. Seeley, R. A. Sim, and E. W. Loosley, state: "The rapidity with which the transition has to be accomplished, and the depth to which change must penetrate the personality are such as to call for the greatest flexibility of behavior and stability of personality. Ideology, speech sometimes, food habits, and preferences in décor must be made over with relative suddenness and in the absence of unmistakable clues as to the behavior to be adopted."

The steps by which people make such adjustments have been mapped out by psychiatrist James S. Ty-

hurst of the University of British Columbia. "In field studies of individuals following immigration," he says, "a fairly consistent pattern can . . . be defined. Initially, the person is concerned with the immediate present, with an attempt to find work, make money, and find shelter. These features are often accompanied by restlessness and increased psychomotor activity . . ."

As the person's sense of strangeness or incongruity in the new surroundings grows, a second phase, "psychological arrival," takes place. "Characteristic of this are increasing anxiety and depression; increasing self-preoccupation, often with somatic preoccupations and somatic symptoms; general withdrawal from the society in contrast to previous activity; and some degree of hostility and suspicion. The sense of difference and helplessness becomes increasingly intense and the period is characterized by marked discomfort and turmoil. This period of more or less disturbance may last for . . . one to several months."

Only then does the third phase begin. This takes the form of relative adjustment to the new surroundings, a settling in, or else, in extreme cases, "the development of more severe disturbances manifested by more intense disorders of mood, the development of abnormal mental content and breaks with reality." Some people, in short, never do adjust adequately.

## THE HOMING INSTINCT

Even when they do, however, they are no longer the same as before, for any relocation, of necessity, destroys a complex web-work of old relationships and establishes a set of new ones. It is this disruption that, especially if repeated more than once, breeds the "loss of commitment" that many writers have noted among the high mobiles. The man on the move is ordinarily in too much of a hurry to put down roots in any one place. Thus an airline executive is quoted as saying he avoids involvement in the political life of his com-

munity because "in a few years I won't even be living here. You plant a tree and you never see it grow."

This non-involvement or, at best, limited participation, has been sharply criticized by those who see in it a menace to the traditional ideal of grass-roots democracy. They overlook, however, an important reality: the possibility that those who refuse to involve themselves deeply in community affairs may be showing greater moral responsibility than those who do—and then move away. The movers boost a tax rate—but avoid paying the piper because they are no longer there. They help defeat a school bond issue—and leave the children of others to suffer the consequences. Does it not make more sense, is it not more responsible, to disqualify oneself in advance? Yet if one does withdraw from participation, refusing to join organizations, refusing to establish close ties with neighbors, refusing, in short, to commit oneself, what happens to the community and the self? Can individuals or society survive without commitment?

Commitment takes many forms. One of these is attachment to place. We can understand the significance of mobility only if we first recognize the centrality of fixed place in the psychological architecture of traditional man. This centrality is reflected in our culture in innumerable ways. Indeed, civilization, itself, began with agriculture—which meant settlement, an end, at last, to the dreary treks and migrations of the paleolithic nomad. The very word "rootedness" to which we pay so much attention today is agricultural in origin. The precivilized nomad listening to a discussion of "roots" would scarcely have understood the concept.

The notion of roots is taken to mean a fixed place, a permanently anchored "home." In a harsh, hungry and dangerous world, home, even when no more than a hovel, came to be regarded as the ultimate retreat, rooted in the earth, handed down from generation to generation, one's link with both nature and the past. The immobility of home was taken for granted, and

literature overflows with reverent references to the importance of home. "Seek home for rest, For home is best" are lines from *Instructions to Housewifery,* a sixteenth-century manual by Thomas Tusser, and there are dozens of what one might, at the risk of a terrible pun, call "home-ilies" embedded in the culture. "A man's home is his castle . . ." "There's no place like home . . ." "Home, sweet home . . ." The syrupy glorification of home reached, perhaps, a climax in nineteenth-century England at precisely the time that industrialism was uprooting the rural folk and converting them into urban masses. Thomas Hood, the poet of the poor, tells us that "each heart is whispering, Home, Home at last . . ." and Tennyson paints a classically cloying picture of

> An English home—gray twilight poured
> On dewy pastures, dewy trees,
> Softer than sleep—all things in order stored,
> A haunt of ancient peace.

In a world churned by the industrial revolution, and in which all things were decidedly *not* "in order stored," home was the anchorage, the fixed point in the storm. If nothing else, at least *it* could be counted upon to stay in one place. Alas, this was poetry, not reality, and it could not hold back the forces that were to tear man loose from fixed location.

## THE DEMISE OF GEOGRAPHY

The nomad of the past moved through blizzards and parching heat, always pursued by hunger, but he carried with him his buffalo-hide tent, his family *and* the rest of his tribe. He carried his social setting with him, and, as often as not, the physical structure that he called home. In contrast, the new nomads of today leave the physical structure behind. (It becomes an entry in the tables showing the turnover rate for

things in their lives.) And they leave all but their family, the most immediate social setting, behind.

The downgrading of the importance of place, the decline in commitment to it, is expressed in scores of ways. A recent example was the decision of Ivy League colleges in the United States to de-emphasize geographical considerations in their admissions policies. These elite colleges traditionally applied geographical criteria to applicants, deliberately favoring boys from homes located far from their campuses, in the hopes of assembling a highly diversified student body. Between the 1930's and the 1950's, for example, Harvard cut in half the percentage of its students from homes in New England and New York. Today, says an official of the university, "We're pulling back on this geographical distribution thing."

Place, it is now recognized, is no longer a primary source of diversity. Differences between people no longer correlate closely with geographical background. The address on the application form may be purely temporary anyway. Many people no longer stay in one place long enough to acquire distinctive regional or local characteristics. Says the dean of admissions at Yale: "Of course, we still send our recruiting people to out-of-the-way places like Nevada, but there's really as much diversity in taking Harlem, Park Avenue and Queens." According to this official, Yale has virtually dropped geography altogether as a consideration in selection. And his counterpart at Princeton reports: "It is not the place they're from, really, but rather some sense of a different background that we're looking for."

Mobility has stirred the pot so thoroughly that the important differences between people are no longer strongly place-related. So far has the decline in commitment to place gone, according to Prof. John Dyckman of the University of Pennsylvania, that "Allegiance to a city or state is even now weaker for many than allegiance to a corporation, a profession, or a

voluntary association." Thus it might be said that commitments are shifting from place-related social structures (city, state, nation or neighborhood) to those (corporation, profession, friendship network) that are themselves mobile, fluid, and, for all practical purposes, place-less.

Commitment, however, appears to correlate with duration of relationship. Armed with a culturally conditioned set of durational expectancies, we have all learned to invest with emotional content those relationships that appear to us to be "permanent" or relatively long-lasting, while withholding emotion, as much as possible, from short-term relationships. There are, of course, exceptions; the swift summer romance is one. But, in general, across a broad variety of relationships, the correlation holds. The declining commitment to place is thus related not to mobility per se, but to a concomitant of mobility—the shorter duration of place relationships.

In seventy major United States cities, for example, including New York, average residence in one place is less than four years. Contrast this with the lifelong residence in one place characteristic of the rural villager. Moreover, residential relocation is critical in determining the duration of many other place relationships, so that when an individual terminates his relationship with a home, he usually also terminates his relationship with all kinds of "satellite" places in the neighborhood. He changes his supermarket, gas station, bus stop and barbershop, thus cutting short a series of other place relationships along with the home relationship. Across the board, therefore, we not only experience more places in the course of a lifetime, but, on average, maintain our link with each place for a shorter and shorter interval.

Thus we begin to see more clearly how the accelerative thrust in society affects the individual. For this telescoping of man's relationships with place precisely parallels the truncation of his relationship with things.

In both cases, the individual is forced to make and break his ties more rapidly. In both cases, the level of transience rises. In both cases, he experiences a quickening of the pace of life.

# Chapter 6

## PEOPLE: THE MODULAR MAN

Each spring an immense lemming-like migration begins all over the Eastern United States. Singly and in groups, burdened with sleeping bags, blankets and bathing suits, some 15,000 American college students toss aside their texts and follow a highly accurate homing instinct that leads them to the sun-bleached shoreline of Fort Lauderdale, Florida. There, for approximately a week, this teeming, milling mass of sun and sex worshippers swims, sleeps, flirts, guzzles beer, sprawls and brawls in the sands. At the end of this period the bikini-clad girls and their bronzed admirers pack their kits and join in a mass exodus. Anyone near the booth set up by the resort city to welcome this rambunctious army can now hear the loudspeaker booming: "Car with two can take rider as far as Atlanta . . . Need ride to Washington . . . Leaving at 10:00 for Louisville . . ." In a few hours nothing is left of the great "beach-and-booze party" except butts and beer cans in the sand, and about $1.5 million in the cash registers of local merchants —who regard this annual invasion as a tainted blessing that threatens public sanity while it underwrites private profit.

What attracts the young people is more than an irrepressible passion for sunshine. Nor is it mere sex,

a commodity available in other places as well. Rather, it is a sense of freedom without responsibility. In the words of a nineteen-year-old New York co-ed who made her way to the festivities recently: "You're not worried about what you do or say here because, frankly, you'll never see these people again."

What the Fort Lauderdale rite supplies is a transient agglomeration of people that makes possible a great diversity of temporary interpersonal relationships. And it is precisely this—temporariness—that increasingly characterizes human relations as we move further toward super-industrialism. For just as things and places flow through our lives at a faster clip, so, too, do people.

## THE COST OF "INVOLVEMENT"

Urbanism—the city dweller's way of life—has preoccupied sociology since the turn of the century. Max Weber pointed out the obvious fact that people in cities cannot know all their neighbors as intimately as it was possible for them to do in small communities. Georg Simmel carried this idea one step further when he declared, rather quaintly, that if the urban individual reacted emotionally to each and every person with whom he came into contact, or cluttered his mind with information about them, he would be "completely atomized internally and would fall into an unthinkable mental condition."

Louis Wirth, in turn, noted the fragmented nature of urban relationships. "Characteristically, urbanites meet one another in highly segmental roles . . ." he wrote. "Their dependence upon others is confined to a highly fractionalized aspect of the other's round of activity." Rather than becoming deeply involved with the total personality of every individual we meet, he explained, we necessarily maintain superficial and partial contact with some. We are interested only in the efficiency of the shoe salesman in meeting our

needs: we couldn't care less that his wife is an alcoholic.

What this means is that we form limited involvement relationships with most of the people around us. Consciously or not, we define our relationships with most people in functional terms. So long as we do not become involved with the shoe salesman's problems at home, or his more general hopes, dreams and frustrations, he is, for us, fully interchangeable with any other salesman of equal competence. In effect, we have applied the modular principle to human relationships. We have created the disposable person: Modular Man.

Rather than entangling ourselves with the whole man, we plug into a module of his personality. Each personality can be imagined as a unique configuration of thousands of such modules. Thus no whole person is interchangeable with any other. But certain modules are. Since we are seeking only to buy a pair of shoes, and not the friendship, love or hate of the salesman, it is not necessary for us to tap into or engage with all the other modules that form his personality. Our relationship is safely limited. There is limited liability on both sides. The relationship entails certain accepted forms of behavior and communication. Both sides understand, consciously or otherwise, the limitations and laws. Difficulties arise only when one or another party oversteps the tacitly understood limits, when he attempts to connect up with some module not relevant to the function at hand.

Today a vast sociological and psychological literature is devoted to the alienation presumed to flow from this fragmentation of relationships. Much of the rhetoric of existentialism and the student revolt decries this fragmentation. It is said that we are not sufficiently "involved" with our fellow man. Millions of young people go about seeking "total involvement."

Before leaping to the popular conclusion that modularization is all bad, however, it might be well

to look more closely at the matter. Theologian Harvey Cox, echoing Simmel, has pointed out that in an urban environment the attempt to "involve" oneself fully with everyone can lead only to self-destruction and emotional emptiness. Urban man, he writes, "must have more or less impersonal relationships with most of the people with whom he comes in contact precisely in order to choose certain friendships to nourish and cultivate . . . His life represents a point touched by dozens of systems and hundreds of people. His capacity to know some of them better necessitates his minimizing the depth of his relationship to many others. Listening to the postman gossip becomes for the urban man an act of sheer graciousness, since he probably has no interest in the people the postman wants to talk about."

Moreover, before lamenting modularization, it is necessary to ask ourselves whether we really would prefer to return to the traditional condition of man in which each individual presumably related to the whole personality of a few people rather than to the personality modules of many. Traditional man has been so sentimentalized, so cloyingly romanticized, that we frequently overlook the consequences of such a return. The very same writers who lament fragmentation also demand freedom—yet overlook the unfreedom of people bound together in totalistic relationships. For any relationship implies mutual demands and expectations. The more intimately involved a relationship, the greater the pressure the parties exert on one another to fulfill these expectations. The tighter and more totalistic the relationship, the more modules, so to speak, are brought into play, and the more numerous are the demands we make.

In a modular relationship, the demands are strictly bounded. So long as the shoe salesman performs his rather limited service for us, thereby fulfilling our rather limited expectations, we do not insist that he believe in our God, or that he be tidy at home, or share our political values, or enjoy the same kind of

food or music that we do. We leave him free in all other matters—as he leaves us free to be atheist or Jew, heterosexual or homosexual, John Bircher or Communist. This is not true of the total relationship and cannot be. To a certain point, fragmentation and freedom go together.

All of us seem to need some totalistic relationships in our lives. But to decry the fact that we cannot have *only* such relationships is nonsense. And to prefer a society in which the individual has holistic relationships with a few, *rather than* modular retionships with many, is to wish for a return to the imprisonment of the past—a past when individuals may have been more tightly bound to one another, but when they were also more tightly regimented by social conventions, sexual mores, political and religious restrictions.

This is not to say that modular relationships entail no risks or that this is the best of all possible worlds. There are, in fact, profound risks in the situation, as we shall attempt to show. Until now, however, the entire public and professional discussion of these issues has been badly out of focus. For it has overlooked a critical dimension of all interpersonal relationships: their duration.

## THE DURATION OF HUMAN RELATIONSHIPS

Sociologists like Wirth have referred in passing to the transitory nature of human ties in urban society. But they have made no systematic effort to relate the shorter duration of human ties to shorter durations in other kinds of relationships. Nor have they attempted to document the progressive decline in these durations. Until we analyze the temporal character of human bonds, we will completely misunderstand the move toward super-industrialism.

For one thing, the decline in the *average* duration of human relationships is a likely corollary of the in-

crease in the number of such relationships. The average urban individual today probably comes into contact with more people in a week than the feudal villager did in a year, perhaps even a lifetime. The villager's ties with other people no doubt included some transient relationships, but most of the people he knew were the same throughout his life. The urban man may have a core group of people with whom his interactions are sustained over long periods of time, but he also interacts with hundreds, perhaps thousands of people whom he may see only once or twice and who then vanish into anonymity.

All of us approach human relationships, as we approach other kinds of relationships, with a set of built-in durational expectancies. We expect that certain kinds of relationships will endure longer than others. It is, in fact, possible to classify relationships with other people in terms of their expected duration. These vary, of course, from culture to culture and from person to person. Nevertheless, throughout wide sectors of the population of the advanced technological societies something like the following order is typical:

*Long-duration relationships.* We expect ties with our immediate family, and to a lesser extent with other kin, to extend throughout the lifetimes of the people involved. This expectation is by no means always fulfilled, as rising divorce rates and family break-ups indicate. Nevertheless, we still theoretically marry "until death do us part" and the social ideal is a lifetime relationship. Whether this is a proper or realistic expectation in a society of high transience is debatable. The fact remains, however, that family links are expected to be long term, if not lifelong, and considerable guilt attaches to the person who breaks off such a relationship.

*Medium-duration relationships.* Four classes of relationships fall within this category. Roughly in order of descending durational expectancies, these are relationships with friends, neighbors, job associates, and

co-members of churches, clubs and other voluntary organizations.

Friendships are traditionally supposed to survive almost, if not quite, as long as family ties. The culture places high value on "old friends" and a certain amount of blame attaches to dropping a friendship. One type of friendship relationship, however, acquaintanceship, is recognized as less durable.

Neighbor relationships are no longer regarded as long-term commitments—the rate of geographical turnover is too high. They are expected to last as long as the individual remains in a single location, an interval that is growing shorter and shorter on average. Breaking off with a neighbor may involve other difficulties, but it carries no great burden of guilt.

On-the-job relationships frequently overlap friendships, and less often, neighbor relationships. Traditionally, particularly among white-collar, professional and technical people, job relationships were supposed to last a relatively long time. This expectation, however, is also changing rapidly, as we shall see.

Co-membership relationships—links with people in church or civic organizations, political parties and the like—sometimes flower into friendship, but until that happens such individual associations are regarded as more perishable than either friendships, ties with neighbors or fellow workers.

*Short-duration relationships.* Most, though not all, service relationships fall into this category. These involve sales clerks, delivery people, gas station attendants, milkmen, barbers, hairdressers, etc. The turnover among these is relatively rapid and little or no shame attaches to the person who terminates such a relationship. Exceptions to the service patterns are professionals such as physicians, lawyers and accountants, with whom relationships are expected to be somewhat more enduring.

This categorization is hardly airtight. Most of us can cite some "service" relationship that has lasted longer than some friendship, job or neighbor rela-

tionship. Moreover, most of us can cite a number of quite long-lasting relationships in our own lives—perhaps we have been going to the same doctor for years or have maintained extremely close ties with a college friend. Such cases are hardly unusual, but they are relatively few in number in our lives. They are like long-stemmed flowers towering above a field of grass in which each blade represents a short-term relationship, a transient contact. It is the very durability of these ties that makes them noticeable. Such exceptions do not invalidate the rule. They do not change the key fact that, across the board, the *average* interpersonal relationship in our life is shorter and shorter in duration.

## THE HURRY-UP WELCOME

Continuing urbanization is merely one of a number of pressures driving us toward greater "temporariness" in our human relationships. Urbanization, as suggested earlier, brings great masses of people into close proximity, thereby increasing the actual number of contacts made. This process is, however, strongly reinforced by the rising geographical mobility described in the last chapter. Geographical mobility not only speeds up the flow of places through our lives, but the flow of people as well.

The increase in travel brings with it a sharp increase in the number of transient, casual relationships with fellow passengers, with hotel clerks, taxi drivers, airline reservation people, with porters, maids, waiters, with colleagues and friends of friends, with customs officials, travel agents and countless others. The greater the mobility of the individual, the greater the number of brief, face-to-face encounters, human contacts, each one a relationship of sorts, fragmentary and, above all, compressed in time. (Such contacts appear natural and unimportant to us. We seldom stop to consider how few of the sixty-six billion hu-

man beings who preceded us on the planet ever experienced this high rate of transience in their human relationships.)

If travel increases the number of contacts—largely with service people of one sort or another—residential relocation also steps up the through-put of people in our lives. Moving leads to the termination of relationships in almost all categories. The young submarine engineer who is transferred from his job in the Navy Yard at Mare Island, California, to the installation at Newport News, Virginia, takes only his most immediate family with him. He leaves behind parents and in-laws, neighbors, service and tradespeople, as well as his associates on the job, and others. He cuts short his ties. In settling down in the new community, he, his wife and child must initiate a whole cluster of new (and once more temporary) relationships.

Here is how one young wife, a veteran of eleven moves in the past seventeen years, describes the process: "When you live in a neighborhood you watch a series of changes take place. One day a new mailman delivers the mail. A few weeks later the girl at the check-out counter at the supermarket disappears and a new one takes her place. Next thing you know, the mechanic at the gas station is replaced. Meanwhile, a neighbor moves out next door and a new family moves in. These changes are taking place all the time, but they are gradual. When you move, you break all these ties at once, and you have to start all over again. You have to find a new pediatrician, a new dentist, a new car mechanic who won't cheat you, and you quit all your organizations and start over again." It is the simultaneous rupture of a whole range of existing relationships that makes relocation psychologically taxing for many.

The more frequently this cycle repeats itself, of course, in the life of the individual, the shorter the duration of the relationships involved. Among significant sectors of the population this process is now occurring so rapidly that it is drastically altering tra-

ditional notions of time with respect to human relationships. "At a cocktail party on Frogtown Road the other night," reads a story in *The New York Times,* "the talk got around to how long those at the party had lived in New Canaan. To nobody's surprise, it developed that the couple of longest residence had been there five years." In slower moving times and places, five years constituted little more than a breaking-in period for a family moved to a new community. It took that long to be "accepted." Today the breaking-in-period must be highly compressed in time.

Thus we have in many American suburbs a commercial "Welcome Wagon" service that accelerates the process by introducing newcomers to the chief stores and agencies in the community. A paid Welcome Wagon employee—usually a middle-aged lady—visits the newcomers, answers questions about the community, and leaves behind brochures and, sometimes, inexpensive gift certificates redeemable at local stores. Since it affects only relationships in the service category and is, actually, little more than a form of advertising, the Welcome Wagon's integrative impact is superficial.

The process of linking up with new neighbors and friends is, however, often quite effectively accelerated by the presence of certain people—usually divorced or single older women—who play the role of informal "integrator" in the community. Such people are found in many established suburbs and housing developments. Their function has been described by urban sociologist Robert Gutman of Rutgers University, who notes that while the integrator herself is frequently isolated from the mainstream of social life in the community, she derives pleasure from serving as a "bridge" for newcomers. She takes the initiative by inviting them to parties and other gatherings. The newcomers are duly flattered that an "oldtime" resident—in many communities "oldtime" means two years—is willing to invite them. The newcomers, alas,

quickly learn that the integrator is herself an "outsider" whereupon, more often than not, they promptly disassociate themselves from her.

"Fortunately for the integrator," Gutman says, "by the time he or she managed to introduce the newcomer to the community and the newcomer in turn had gone on to abandon the integrator, there were new arrivals in the settlement to whom the integrator could once again proffer the hand of friendship."

Other people in the community also help speed the process of relationship formation. Thus, in developments, Gutman says, "Respondents reported that the real estate agents introduced them to neighbors before they had taken possession. In some cases, wives were called on by other wives in the neighborhood, sometimes individually and sometimes in groups. Neighboring wives, or husbands, encountered each other casually, while out gardening and cleaning up the yard or in tending children. And, of course, there were the usual meetings brought about by the children, who themselves often were the first to establish contact with the human population of the new environment."

Local organizations also play an important part in helping the individual integrate quickly into the community. This is more likely to be true among suburban homeowners than among housing development residents. Churches, political parties and women's organizations provide many of the human relationships that the newcomers seek. According to Gutman, "Sometimes a neighbor would inform the newcomer about the existence of the voluntary association, and might even take the newcomer to his first meeting; but even in these cases it was up to the migrant himself to find his own primary group within the association."

The knowledge that no move is final, that somewhere along the road the nomads will once more gather up their belongings and migrate, works against the development of relationships that are more than

modular, and it means that if relationships are to be struck up at all, they had better be whipped into life quickly.

If, however, the breaking-in period is compressed in time, the leave-taking—the breaking-out—is also telescoped. This is particularly true of service relationships which, being unidimensional, can be both initiated and terminated with dispatch. "They come and they go," says the manager of a suburban food store. "You miss them one day and then you learn they've moved to Dallas." "Washington, D. C., retailers seldom have a chance to build long, enduring relationships with customers," observes a writer in *Business Week.* "Different faces all the time," says a conductor on the New Haven commuter line.

Even babies soon become aware of the transience of human ties. The "nanny" of the past has given way to the baby-sitter service which sends out a different person each time to mind the children. And the same trend toward time-truncated relationships is reflected in the demise of the family doctor. The late lamented family doctor, the general practitioner, did not have the refined narrow expertise of the specialist, but he did, at least, have the advantage of being able to observe the same patient almost from cradle to coffin. Today the patient doesn't stay put. Instead of enjoying a long-term relationship with a single physician, he flits back and forth between a variety of specialists, changing these relationships each time he relocates to a new community. Even within any single relationship, the contacts become shorter and shorter as well. Thus the authors of *Crestwood Heights,* discussing the interaction of experts and laymen, refer to "the short duration of any one exposure to each other . . . The nature of their contact,which is in turn a function of busy, time-pressed lives on both sides, means that any message must be collapsed into a very brief communiqué, and that there must not be too many of these . . ." The impact that this fragmentation and contraction of patient-doctor rela-

tionships has on health care ought to be more seriously explored.

### FRIENDSHIPS IN THE FUTURE

Each time the family moves, it also tends to slough off a certain number of just plain friends and acquaintances. Left behind, they are eventually all but forgotten. Separation does not end all relationships. We maintain contact with, perhaps, one or two friends from the old location, and we tend to keep in sporadic touch with relatives. But with each move there is a deadly attrition. At first there is an eager flurry of letters back and forth. There may be occasional visits or telephone calls. But gradually these decrease in frequency. Finally, they stop coming. Says a typical English suburbanite after leaving London: "You can't forget it [London]. Not with all your family living there and that. We still got friends living in Plumstead and Eltham. We used to go back every weekend. But you can't keep that up."

John Barth has captured the sense of turnover among friendships in a passage from his novel *The Floating Opera:* "Our friends float past; we become involved with them; they float on, and we must rely on hearsay or lose track of them completely; they float back again, and we must either renew our friendship—catch up to date—or find that they and we don't comprehend each other any more." The only fault in this is its unspoken suggestion that the current upon which friendships bob and float is lazy and meandering. The current today is picking up speed. Friendship increasingly resembles a canoe shooting the rapids of the river of change. "Pretty soon," says Professor Eli Ginzberg of Columbia University, an expert on manpower mobility, "we're all going to be metropolitan-type people in this country without ties or commitments to long time friends and neighbors."

In a brilliant paper on "Friendships in the Future,"

psychologist Courtney Tall suggests that "Stability based on close relationships with a few people will be ineffective, due to the high mobility, wide interest range, and varying capacity for adaptation and change found among the members of a highly automated society . . . Individuals will develop the ability to form close 'buddy-type' relationships on the basis of common interests or sub-group affiliations, and to easily leave these friendships, moving either to another location and joining a similar interest group or to another interest group within the same location . . . Interests will change rapidly . . .

"This ability to form and then to drop, or lower to the level of acquaintanceship, close relationships quickly, coupled with increased mobility, will result in any given individual forming many more friendships than is possible for most in the present . . . Friendship patterns of the majority in the future will provide for many satisfactions, while substituting many close relationships of shorter durability for the few long-term friendships formed in the past."

### MONDAY-TO-FRIDAY FRIENDS

One reason to believe that the trend toward temporary relationships will continue is the impact of new technology on occupations. Even if the push toward megalopolis stopped and people froze in their geographical tracks, there would still be a sharp increase in the number, and decrease in the duration of relationships as a consequence of job changes. For the introduction of advanced technology, whether we call it automation or not, is necessarily accompanied by drastic changes in the types of skills and personalities required by the economy.

Specialization increases the number of different occupations. At the same time, technological innovation reduces the life expectancy of any given occupation. "The emergence and decline of occupations

will be so rapid," says economist Norman Anon, an expert in manpower problems, "that people will always be uncertain in them." The profession of airline flight engineer, he notes, emerged and then began to die out within a brief period of fifteen years.

A look at the "help wanted" pages of any major newspaper brings home the fact that new occupations are increasing at a mind-dazzling rate. Systems analyst, console operator, coder, tape librarian, tape handler, are only a few of those connected with computer operations. Information retrieval, optical scanning, thin-film technology all require new kinds of expertise, while old occupations lose importance or vanish altogether. When *Fortune* magazine in the mid-1960's surveyed 1,003 young executives employed by major American corporations, it found that fully one out of three held a job that simply had not existed until he stepped into it. Another large group held positions that had been filled by only one incumbent before them. Even when the name of the occupation stays the same, the content of the work is frequently transformed, and the people filling the jobs change.

Job turnover, however, is not merely a direct consequence of technological change. It also reflects the mergers and acquisitions that occur as industries everywhere frantically organize and reorganize themselves to adapt to the fast-changing environment, to keep up with myriad shifts in consumer preferences. Many other complex pressures also combine to stir the occupational mix incessantly. Thus a recent survey by the US Department of Labor revealed that the 71,000,000 persons in the American labor force had held their current jobs an average of 4.2 years. This compared with 4.6 years only three years earlier, a decline in duration of nearly 9 percent.

"Under conditions prevailing at the beginning of the 1960's," states another Labor Department report, "the average twenty-year-old man in the work force could be expected to change jobs about six or seven

times." Thus instead of thinking in terms of a "career" the citizen of super-industrial society will think in terms of "serial careers."

Today, for manpower accounting purposes, men are classified according to their present jobs. A worker is a "machine operator" or a "sales clerk" or a "computer programmer." This system, born in a less dynamic period, is no longer adequate, according to many manpower experts. Efforts are now being made to characterize each worker not merely in terms of the present job held, but in terms of the particular "trajectory" that his career has followed. Each man's trajectory or career line will differ, but certain types of trajectories will recur. When asked "What do you *do*?" the super-industrial man will label himself not in terms of his present (transient) job, but in terms of his trajectory type, the overall pattern of his work life. Such labels are more appropriate to the super-industrial job market than the static descriptions used at present, which take no account of what the individual has done in the past, or of what he may be qualified to do in the future.

The high rate of job turnover now evident in the United States is also increasingly characteristic of Western European countries. In England, turnover in manufacturing industries runs an estimated 30 to 40 percent per year. In France about 20 percent of the total labor force is involved in job changes each year, and this figure, according to Monique Viot, is on the rise. In Sweden, according to Olof Gustafsson, director of the Swedish Manufacturing Association, "we count on an average turnover of 25 to 30 percent per year in the labor force . . . Probably the labor turnover in many places now reaches 35 to 40 percent."

Whether or not the statistically measurable rate of job turnover is rising, however, makes little difference, for the measurable changes are only part of the story. The statistics take no account of changes of job within the same company or plant, or shifts from one department to another. A. K. Rice of the Tavistock

Institute in London asserts that "Transfers from one department to another would appear to have the effect of the beginning of a 'new life' within the factory." The overall statistics on job turnover, by failing to take such changes into account, seriously underestimate the amount of shifting around that is actually taking place—each shift bringing with it the termination of old, and the initiation of new, human relationships.

Any change in job entails a certain amount of stress. The individual must strip himself of old habits, old ways of coping, and learn new ways of doing things. Even when the work task itself is similar, the environment in which it takes place is different. And just as is the case with moving to a new community, the newcomer is under pressure to form new relationships at high speed. Here, too, the process is accelerated by people who play the role of informal integrator. Here, too, the individual seeks out human relationships by joining organizations—usually informal and clique-like, rather than part of the company's table of organization. Here, too, the knowledge that no job is truly "permanent" means that the relationships formed are conditional, modular and, by most definitions, temporary.

## RECRUITS AND DEFECTORS

In our discussion of geographical mobility we found that some individuals and groups are more mobile than others. With respect to occupational mobility, too, we find that some individuals or groups make more job changes than others. In a very crude sense, it is fair to say that people who are geographically mobile are quite likely to be occupationally mobile as well. Thus we once more find high turnover rates among some of the least affluent, least skilled groups in society. Exposed to the worst shocks and buffetings

of an economy that demands educated, increasingly skilled workers, the poor bounce from job to job like a pinball between bumpers. They are the last hired and the first fired.

Throughout the middle range of education and affluence, we find people who, while certainly more mobile than agricultural populations, are nonetheless, relatively stable. And then, just as before, we find inordinately high and rising rates of turnover among those groups most characteristic of the future—the scientists and engineers, the highly educated professionals and technicians, the executives and managers.

Thus a recent study reveals that job turnover rates for scientists and engineers in the research and development industry in the United States are approximately twice as high as for the rest of American industry. The reason is easy to detect. This is precisely the speartip of technological change—the point at which the obsolescence of knowledge is most rapid. At Westinghouse, for example, it is believed that the so-called "half-life" of a graduate engineer is only ten years—meaning that fully one half of what he has learned will be outdated within a decade.

High turnover also characterizes the mass communications industries, especially advertising. A recent survey of 450 American advertising men found that 70 percent had changed their jobs within the last two years. Reflecting the rapid changes in consumer preferences, in art and copy styles, and in product lines, the same musical chairs game is played in England. There the circulation of personnel from one agency to another has occasioned cries of alarm within the industry, and many agencies refuse to list an employee as a regular until he has served for a full year.

But perhaps the most dramatic change has overtaken the ranks of management, once well insulated from the jolts of fate that afflicted the less fortunate. "For the first time in our history," says Dr. Harold Leavitt, professor of industrial administration and psychology, "obsolescence seems to be an imminent

problem for management because for the first time, the relative advantage of experience over knowledge seems to be rapidly decreasing." Because it takes longer to train for modern management and the training itself becomes obsolete in a decade or so, as it does with engineers, Leavitt suggests that in the future "we may have to start planning careers that move downward instead of upward through time . . . Perhaps a man should reach his peak of responsibility very early in his career and then expect to be moved downward or outward into simpler, more relaxing, kinds of jobs."

Whether upward, downward or sideways, the future holds more, not less, turnover in jobs. This realization is already reflected in the altered attitudes of those doing the hiring. "I used to be concerned whenever I saw a résumé with several jobs in it," admits an official of the Celanese Corporation. "I would be afraid that the guy was a job-hopper or an opportunist. But I'm not concerned anymore. What I want to know is why he made each move. Even five or six jobs over twenty years could be a plus . . . In fact, if I had two equally qualified men, I'd take the man who moved a couple of times for valid reasons over the man who stayed in the same place. Why? I'd know he's adaptable." The director of executive personnel for International Telephone and Telegraph, Dr. Frank McCabe, says: "The more successful you are in attracting the comers, the higher your potential turnover rate is. The comers are movers."

The rising rate of turnover in the executive job market follows peculiar patterns of its own. Thus *Fortune* magazine reports: "The defection of a key executive starts not only a sequence of job changes in its own right but usually a series of collateral movements. When the boss moves, he is often flooded by requests from his immediate subordinates who want to go along; if he doesn't take them, they immediately begin to put out other feelers." No wonder a Stanford Research Institute report on the work

environment of the year 1975 predicts that: "At upper white-collar levels, a great amount of turbulence and churning about is foreseen . . . the managerial work environment will be both unsettled and unsettling."

Behind all this job jockeying lies not merely the engine of technological innovation, but also the new affluence, which opens new opportunities and at the same time raises expectations for psychological self-fulfillment. "The man who came up thirty years ago," says the vice president of industrial relations for Philco, a subsidiary of the Ford Motor Company, "believed in hanging on to any job until he knew where he was going. But men today seem to feel there's another job right down the pike." And, for most, there is.

Not infrequently the new job involves not merely a new employer, a new location, and a new set of work associates, but a whole new way of life. Thus the "serial career" pattern is evidenced by the growing number of people who, once assured of reasonable comfort by the affluent economy, decide to make a full 180-degree turn in their career line at a time of life when others merely look forward to retirement. We learn of a real estate lawyer who leaves his firm to study social science. An advertising agency copy supervisor, after twenty-five years on Madison Avenue, concludes that "The phony glamour became stale and boring. I simply had to get away from it." She becomes a librarian. A sales executive in Long Island and an engineer in Illinois leave their jobs to become manual-training teachers. A top interior decorator goes back to school and takes a job with the poverty program.

### RENT-A-PERSON

Each job change implies a step-up of the rate at which people pass through our lives, and as the rate of turnover increases, the duration of relationships

declines. This is strikingly manifest in the rise to prominence of temporary help services—the human equivalent of the rental revolution. In the United States today nearly one out of every 100 workers is at some time during the year employed by a so-called "temporary help service" which, in turn, rents him or her out to industry to fill temporary needs.

Today some 500 temporary help agencies provide industry with an estimated 750,000 short-term workers ranging from secretaries and receptionists, to defense engineers. When the Lycoming Division of Avco Corporation needed 150 design engineers for hurry-up government contracts, it obtained them from a number of rental services. Instead of taking months to recruit them, it was able to assemble a complete staff in short order. Temporary employees have been used in political campaigns to man telephones and mimeograph machines. They have been called in for emergency duty in printing plants, hospitals and factories. They have been used in public relations activities. (In Orlando, Florida, temporaries were hired to give away dollar bills at a shopping center in an attempt to win publicity for the center.) More prosaically, tens of thousands of them fill routine office-work assignments to help the regular staff of large companies through peak-load periods. And one rental company, the Arthur Treacher Service System, advertises that it will rent maids, chauffeurs, butlers, cooks, handymen, babysitters, practical nurses, plumbers, electricians and other home service people. "Like Hertz and Avis rent cars" it adds.

The rental of temporary employees for temporary needs is, like the rental of physical objects, spreading all over the industrialized world. Manpower, Incorporated, the largest of the temporary help services, opened its operation in France in 1956. Since then it has doubled in size each year, and there are now some 250 such agencies in France.

Those employed by temporary help services express a variety of reasons for preferring this type of

work. Says Hoke Hargett, an electromechanical engineer, "Every job I'm on is a crash job, and when the pressure is immense, I work better." In eight years, he has served in eleven different companies, meeting and then leaving behind hundreds of coworkers. For some skilled personnel organized job-hopping actually provides more job security than is available to supposedly permanent employees in highly volatile industries. In the defense industries sudden cut-backs and layoffs are so common, that the "permanent" employee is likely to find himself thrown on the street without much warning. The temporary help engineer simply moves off to another assignment when his project is completed.

More important for most temporary help workers is the fact that they can call their own turns. They can work very much when and where they wish. And for some it is a conscious way to broaden their circle of social contacts. One young mother, forced to move to a new city when her husband was transferred, found herself lonely during the long hours when her two children were away at school. Signing up with a temporary help service, she has worked eight or nine months a year since then and, by shifting from one company to another, has made contact with a large number of people from among whom she could select a few as friends.

### HOW TO LOSE FRIENDS . . .

Rising rates of occupational turnover and the spread of rentalism into employment relationships will further increase the tempo at which human relationships are formed and forgotten. This speedup, however, affects different groups in society in different ways. Thus, in general, working-class individuals tend to live closer to, and depend more on their relatives than do middle- and upper-class groups. In the words of psychiatrist Leonard Duhl, "Their ties of kinship

mean more to them, and with less money available distance is more of a handicap." Working-class people are generally less adept at the business of coping with temporary relationships. They take longer to establish ties and are more reluctant to let them go. Not surprisingly, this is reflected in a greater reluctance to move or change jobs. They go when they have to, but seldom from choice.

In contrast, psychiatrist Duhl points out, "The professional, academic and upper-managerial class [in the United States] is bound by interest ties across wide physical spaces and indeed can be said to have more functional relationships. Mobile individuals, easily duplicable relationships, and ties to interest problems depict this group."

What is involved in increasing the through-put of people in one's life are the abilities not only to make ties but to break them, not only to affiliate but to disaffiliate. Those who seem most capable of this adaptive skill are also among the most richly rewarded in society. Seymour Lipset and Reinhard Bendix in *Social Mobility in Industrial Society* declare that "the socially mobile among business leaders show an unusual capacity to break away from those who are liabilities and form relationships with those who can help them."

They support the findings of sociologist Lloyd Warner who suggests that "The most important component of the personalities of successful corporate managers and owners is that, their deep emotional identifications with their families of birth being dissolved, they no longer are closely intermeshed with the past, and, therefore, are capable of relating themselves easily to the present and future. They are people who have literally and spiritually left home . . . They can relate and disrelate themselves to others easily."

And again, in *Big Business Leaders in America,* a study he conducted with James Abegglen, Warner writes: "Before all, these are men on the move. They

left their homes, and all that this implies. They have left behind a standard of living, level of income, and style of life to adopt a way of living entirely different from that into which they were born. The mobile man first of all leaves the physical setting of his birth. This includes the house he lived in, the neighborhood he knew, and in many cases even the city, state and region in which he was born.

"This physical departure is only a small part of the total process of leaving that the mobile man must undergo. He must leave behind people as well as places. The friends of earlier years must be left, for acquaintances of the lower-status past are incompatible with the successful present. Often the church of his birth is left, along with the clubs and cliques of his family and of his youth. But most important of all, and this is the great problem of the man on the move, he must, to some degree, leave his father, mother, brothers, and sisters, along with the other human relationships of his past."

This so, it is not so startling to read in a business magazine a cooly detached guide for the newly promoted executive and his wife. It advises that he break with old friends and subordinates gradually, in order to minimize resentment. He is told to "find logical excuses for not joining the group at coffee breaks or lunch." Similarly, "Miss the department bowling or card sessions, occasionally at first, then more frequently." Invitations to the home of a subordinate may be accepted, but not reciprocated, except in the form of an invitation to a whole group of subordinates at once. After a while all such interaction should cease.

Wives are a special problem, we are informed, because they "don't understand the protocol of office organization." The successful man is advised to be patient with his wife, who may adhere to old relationships longer than he does. But, as one executive puts it, "a wife can be downright dangerous if she insists on keeping close friendships with the wives of

her husband's subordinates. Her friendships will rub off on him, color his judgment about the people under him, jeopardize his job." Moreover, one personnel man points out, "When parents drift away from former friends, kids go too."

## HOW MANY FRIENDS?

These matter-of-fact instructions on how to dis-relate send a chill down the spine of those raised on the traditional notion that friendships are for the long haul. But before accusing the business world of undue ruthlessness, it is important to recognize that precisely this pattern is employed, often beneath a veil of hypocritical regrets, in other strata of society as well. The professor who is promoted to dean, the military officer, the engineer who becomes a project leader, frequently play the same social game. Moreover, it is predictable that something like this pattern will soon extend far beyond the world of work and formal organization. For if friendship is based on shared interests or aptitudes, friendship relationships are bound to change when interests change—even when distinctions of social class are not involved. And in a society caught in the throes of the most rapid change in history, it would be astonishing if the interests of individuals did not also change kaleidoscopically.

Indeed, much of the social activity of individuals today can be described as search behavior—a relentless process of social discovery in which one seeks out new friends to replace those who are either no longer present or who no longer share the same interests. This turnover impels people, and especially educated people, toward cities and into temporary employment patterns. For the identification of people who share the same interests and aptitudes on the basis of which friendship may blossom is no simple procedure in a society in which specialization grows apace. The in-

crease in specialization is present not merely in professional and work spheres, but even in leisure time pursuits. Seldom has any society offered so wide a range of acceptable and readily available leisure time activities. The greater the diversity available in both work and leisure, the greater the specialization, and the more difficult it is to find just the right friends.

Thus it has been estimated by Professor Sargant Florence in Britain that a minimum population of 1,000,000 is needed to provide a professional worker today with twenty interesting friends. The woman who sought temporary work as a strategy for finding friends was highly intelligent. By increasing the number of different people with whom she was thrown into work contact, she increased the mathematical probability of finding a few who share her interests and aptitudes.

We select our friends out of a very large pool of acquaintanceships. A study by Michael Gurevitch at the Massachusetts Institute of Technology asked a varied group to keep track of all the different people with whom they came in contact in a one hundred-day period. On average, each one listed some 500 names. Social psychologist Stanley Milgram, who has conducted a number of fascinating experiments dealing with communication through acquaintanceship networks, speaks of each American having a pool of acquaintanceships ranging from 500 to 2,500.

Actually, however, most people have far fewer friends than the twenty suggested by Professor Florence, and perhaps his definition was less restrictive than that employed in everyday use. A study of thirty-nine married middle-class couples in Lincoln, Nebraska, asked them to list their friends. The purpose was to determine whether husbands or wives are more influential in selecting friends for the family. The study showed that the average couple listed approximately seven "friendship units"—such a unit being either an individual or a married couple. This suggests that the number of individuals listed as

friends by the average couple ranged from seven to fourteen. Of these, a considerable number were non-local, and the fact that wives seemed to list more non-local friends than their husbands suggests that they are less willing than their husbands to slough off a friendship after a move. Men, in short, seem to be more skilled at breaking off relationships than women.

### TRAINING CHILDREN FOR TURNOVER

Today, however, training for disaffiliation or disrelating begins early. Indeed, this may well represent one of the major differences between the generations. For school children today are exposed to extremely high rates of turnover in their classrooms. According to the Educational Facilities Laboratories, Incorporated, an off-shoot of the Ford Foundation, "It is not unusual for city schools to have a turnover of more than half their student body in one school year." This phenomenal rate cannot but have some effect on the children.

William Whyte in *The Organization Man* pointed out that the impact of such mobility "is as severe on the teachers as on the children themselves, for the teachers are thereby robbed of a good bit of the feeling of achievement they get from watching the children develop." Today, however, the problem is compounded by the high rate of turnover among teachers too. This is true not only in the United States but elsewhere as well. Thus a report on England asserts: "Today it is not uncommon, even in grammar schools, for a child to be taught one subject by two or three different teachers in the course of one year. With teacher loyalty to the school so low, the loyalty of children cannot be summoned either. If a high proportion of teachers are preparing to move on to a better job, a better district, there will be less care, concern and commitment on their part." We can only

speculate about the overall influence of this on the lives of the children.

A recent study of high school students by Harry R. Moore of the University of Denver indicated that the test scores of children who had moved across state or county lines from one to ten times were not substantially different from those of children who had not. But there was a definite tendency for the more nomadic children to avoid participation in the voluntary side of school life—clubs, sports, student government and other extra-curricular activities. It is as though they wished, where possible, to avoid new human ties that might only have to be broken again before long—as if they wished, in short, to slow down the flow-through of people in their lives.

How fast should children—or adults for that matter—be expected to make and break human relationships? Perhaps there is some optimum rate that we exceed at our peril? Nobody knows. However, if to this picture of declining durations we add the factor of diversity—the recognition that each new human relationship requires a different pattern of behavior from us—one thing becomes starkly clear: to be able to make these increasingly numerous and rapid on-off clicks in our interpersonal lives we must be able to operate at a level of adaptability never before asked of human beings.

Combine this with the accelerated through-put of places and things, as well as people, and we begin to glimpse the complexity of the coping behavior that we demand of people today. Certainly, the logical end of the direction in which we are now traveling is a society based on a system of temporary encounters, and a distinctly new morality founded on the belief, so succinctly expressed by the co-ed in Fort Lauderdale, that "frankly, you'll never see these people again." It would be absurd to assume that the future holds nothing more than a straight-line projection of present trends, that we must necessarily reach that

ultimate degree of transience in human relations. But it is not absurd to recognize the direction in which we are moving.

Until now most of us have operated on the assumption that temporary relationships are superficial relationships, that only long-enduring ties can flower into real interpersonal involvement. Perhaps this assumption is false. Perhaps it is possible for holistic, non-modular relationships, to flower rapidly in a high transience society. It may prove possible to accelerate the formation of relationships, and to speed up the process of "involvement" as well. In the meantime, however, a haunting question remains:

"Is Fort Lauderdale the future?"

We have so far seen that with respect to all three of the tangible components of situations—people, places and things—the rate of turnover is rising. It is time now to look at those intangibles that are equally important in shaping experience, the information we use and the organizational frameworks within which we live.

# Chapter 7

# ORGANIZATIONS: THE COMING AD-HOCRACY

One of the most persistent myths about the future envisions man as a helpless cog in some vast organizational machine. In this nightmarish projection, each man is frozen into a narrow, unchanging niche in a rabbit-warren bureaucracy. The walls of this niche squeeze the individuality out of him, smash his personality, and compel him, in effect, to conform or die. Since organizations appear to be growing larger and more powerful all the time, the future, according to this view, threatens to turn us all into that most contemptible of creatures, spineless and faceless, the organization man.

It is difficult to overestimate the force with which this pessimistic prophecy grips the popular mind, especially among young people. Hammered into their heads by a stream of movies, plays and books, fed by a prestigious line of authors from Kafka and Orwell to Whyte, Marcuse and Ellul, the fear of bureaucracy permeates their thought. In the United States everyone "knows" that it is just such faceless bureaucrats who invent all-digit telephone numbers, who send out cards marked "do not fold, spindle or mutilate," who ruthlessly dehumanize students, and whom you cannot fight at City Hall. The fear of being swal-

lowed up by this mechanized beast drives executives to orgies of self-examination and students to paroxysms of protest.

What makes the entire subject so emotional is the fact that organization is an inescapable part of all our lives. Like his links with things, places and people, man's organizational relationships are basic situational components. Just as every act in a man's life occurs in some definite geographical place, so does it also occur in an organizational place, a particular location in the invisible geography of human organization.

Thus, if the orthodox social critics are correct in predicting a regimented, super-bureaucratized future, we should already be mounting the barricades, punching random holes in our IBM cards, taking every opportunity to wreck the machinery of organization. If, however, we set our conceptual clichés aside and turn instead to the facts, we discover that bureaucracy, the very system that is supposed to crush us all under its weight, is itself groaning with change.

The kinds of organizations these critics project unthinkingly into the future are precisely those least likely to dominate tomorrow. For we are witnessing not the triumph, but the breakdown of bureaucracy. We are, in fact, witnessing the arrival of a new organizational system that will increasingly challenge, and ultimately supplant bureaucracy. This is the organization of the future. I call it "Ad-hocracy."

Man will encounter plenty of difficulty in adapting to this new style organization. But instead of being trapped in some unchanging, personality-smashing niche, man will find himself liberated, a stranger in a new free-form world of kinetic organizations. In this alien landscape, his position will be constantly changing, fluid, and varied. And his organizational ties, like his ties with things, places and people, will turn over at a frenetic and ever-accelerating rate.

## CATHOLICS, CLIQUES AND COFFEE BREAKS

Before we can grasp the meaning of this odd term, Ad-hocracy, we need to recognize that not all organizations are bureaucracies. There are alternative ways of organizing people. Bureaucracy, as Max Weber pointed out, did not become the dominant mode of human organization in the West until the arrival of industrialism.

This is not the place for a detailed description of all the characteristics of bureaucracy, but it is important for us to note three basic facts. First, in this particular system of organization, the individual has traditionally occupied a sharply defined slot in a division of labor. Second, he fit into a vertical hierarchy, a chain of command running from the boss down to the lowliest menial. Third, his organizational relationships, as Weber emphasized, tended toward permanence.

Each individual, therefore, filled a precisely positioned slot, a fixed position in a more or less fixed environment. He knew exactly where his department ended and the next began; the lines between organizations and their sub-structures were anchored firmly in place. In joining an organization, the individual accepted a set of fixed obligations in return for a specified set of rewards. These obligations and rewards remained the same over relatively long spans of time. The individual thus stepped into a comparatively permanent web of relationships—not merely with other people (who also tended to remain in their slots for a long time)—but with the organizational framework, the structure, itself.

Some of these structures are more durable than others. The Catholic Church is a steel frame that has lasted for 2000 years, with some of its internal substructures virtually unchanged for centuries at a time. In contrast, the Nazi Party of Germany managed to

bathe Europe in blood, yet it existed as a formal organization for less than a quarter of a century.

In turn, just as organizations endure for longer or shorter periods, so, too, does an individual's relationship with any specific organizational structure. Thus man's tie to a particular department, division, political party, regiment, club, or other such unit has a beginning and an end in time. The same is true of his membership in informal organizations—cliques, factions, coffee-break groups and the like. His tie begins when he assumes the obligations of membership by joining or being conscripted into an organization. His tie ends when he quits or is discharged from it—or when the organization, itself, ceases to be.

This is what happens, of course, when an organization disbands formally. It happens when the members simply lose interest and stop coming around. But the organization can "cease to be" in another sense, too. An organization, after all, is nothing more than a collection of human objectives, expectations, and obligations. It is, in other words, a structure of roles filled by humans. And when a reorganization sharply alters this structure by redefining or redistributing these roles, we can say that the old organization has died and a new one has sprung up to take its place. This is true even if it retains the old name and has the same members as before. The rearrangement of roles creates a new structure exactly as the rearrangement of mobile walls in a building converts *it* into a new structure.

A relationship between a person and an organization, therefore, is broken either by his departure from it, or by its dissolution, or by its transformation through reorganization. When the latter—reorganization—happens, the individual, in effect, severs his links with the old, familiar, but now no longer extant structure, and assumes a relationship to the new one that supersedes it.

Today there is mounting evidence that the duration of man's organizational relationships is shrinking, that

these relationships are turning over at a faster and faster rate. And we shall see that several powerful forces, including this seemingly simple fact, doom bureaucracy to destruction.

## THE ORGANIZATIONAL UPHEAVAL

There was a time when a table of organization—sometimes familiarly known as a "T/O"—showed a neatly arrayed series of boxes, each indicating an officer and the organizational sub-units for which he was responsible. Every bureaucracy of any size, whether a corporation, a university or a government agency, had its own T/O, providing its managers with a detailed map of the organizational geography. Once drawn, such a map became a fixed part of the organization's rule book, remaining in use for years at a time. Today, organizational lines are changing so frequently that a three-month-old table is often regarded as an historic artifact, something like the Dead Sea Scrolls.

Organizations now change their internal shape with a frequency—and sometime a rashness—that makes the head swim. Titles change from week to week. Jobs are transformed. Responsibilities shift. Vast organizational structures are taken apart, bolted together again in new forms, then rearranged again. Departments and divisions spring up overnight only to vanish in another, and yet another, reorganization.

In part, this frenzied reshuffling arises from the tide of mergers and "de-mergers" now sweeping through industry in the United States and Western Europe. The late sixties saw a tremendous rolling wave of acquisitions, the growth of giant conglomerates and diversified corporate monsters. The seventies may witness an equally powerful wave of divestitures and, later, reacquisitions, as companies attempt to consolidate and digest their new subsidiaries, then trade off troublesome components. Between 1967 and 1969 the Questor Corporation (formerly Dunhill International,

Incorporated) bought eight companies and sold off five. Scores of other corporations have similar stories to tell. According to management consultant Alan J. Zakon, "there will be a great deal more spinning off of pieces." As the consumer marketplace churns and changes, companies will be forced constantly to reposition themselves in it.

Internal reorganizations almost inevitably follow such corporate swaps, but they may arise for a variety of other reasons as well. Within a recent three-year period fully sixty-six of the 100 largest industrial companies in the United States publicly reported major organizational shake-ups. Actually, this was only the visible tip of the proverbial iceberg. Many more reorganizations occur than are ever reported. Most companies try to avoid publicity when overhauling their organization. Moreover, constant small and partial reorganizations occur at the departmental or divisional level or below, and are regarded as too small or unimportant to report.

"My own observation as a consultant," says D. R. Daniel, an official of McKinsey & Company, a large management consulting firm, "is that one major restructuring every two years is probably a conservative estimate of the current rate of organizational change among the largest industrial corporations. Our firm has conducted over 200 organization studies for domestic corporate clients in the past year, and organization problems are an even larger part of our practice outside the United States." What's more, he adds, there are no signs of a leveling off. If anything, the frequency of organizational upheavals is increasing.

These changes, moreover, are increasingly far-reaching in power and scope. Says Professor L. E. Greiner of the Harvard Graduate School of Business Administration: "Whereas only a few years ago the target of organization change was limited to a small work group or a single department . . . the focus is now converging on the organization as a whole, reaching out to include many divisions and levels at once, and even

the top managers themselves." He refers to "revolutionary attempts" to transform organization "at all levels of management."

If the once-fixed table of organization won't hold still in industry, much the same is increasingly true of the great government agencies as well. There is scarcely an important department or ministry in the governments of the technological nations that has not undergone successive organizational change in recent years. In the United States during the forty-year span from 1913 to 1953, despite depression, war and other social upheavals, not a single new cabinet-level department was added to the government. Yet in 1953 Congress created the Department of Health, Education and Welfare. In 1965 it established the Department of Housing and Urban Development. In 1967 it set up the Department of Transportation (thus consolidating activities formerly carried out in thirty different agencies,) and, at about the same time, the President called for a merger of the departments of Labor and Commerce.

Such changes within the structure of government are only the most conspicuous, for organizational tremors are similarly felt in all the agencies down below. Indeed, internal redesign has become a byword in Washington. In 1965 when John Gardner became Secretary of Health, Education and Welfare, a top-to-bottom reorganization shook that department. Agencies, bureaus and offices were realigned at a rate that left veteran employees in a state of mental exhaustion. (During the height of this reshuffling, one official, who happens to be a friend of mine, used to leave a note behind for her husband each morning when she left for work. The note consisted of her telephone number for *that* day. So rapid were the changes that she could not keep a telephone number long enough for it to be listed in the departmental directory.) Mr. Gardner's successors continued tinkering with organization, and by 1969, Robert Finch, after eleven months in office, was pressing for yet another major overhaul,

having concluded in the meantime that the department was virtually unmanageable in the form in which he found it.

In *Self-Renewal,* an influential little book written before he entered the government, Gardner asserted that: "The farsighted administrator . . . reorganizes to break down calcified organizational lines. He shifts personnel . . . He redefines jobs to break them out of rigid categories." Elsewhere Gardner referred to the "crises of organization" in government and suggested that, in both the public and private sectors, "Most organizations have a structure that was designed to solve problems that no longer exist." The "self-renewing" organization, he defined as one that constantly changes its structure in response to changing needs.

Gardner's message amounts to a call for permanent revolution in organizational life, and more and more sophisticated managers are recognizing that in a world of accelerating change reorganization is, and must be, an on-going process, rather than a traumatic once-in-a-lifetime affair. This recognition is spreading outside the corporations and government agencies as well. Thus *The New York Times,* on the same day that it reports on proposed mergers in the plastics, plywood and paper industries, describes a major administrative upheaval at the British Broadcasting Corporation, a thorough renovation of the structure of Columbia University, and even a complete reorganization of that most conservative of institutions, the Metropolitan Museum of Art in New York. What is involved in all this activity is not a casual tendency but a historic movement. Organizational change—self-renewal, as Gardner puts it—is a necessary, an unavoidable response to the acceleration of change.

For the individual within these organizations, change creates a wholly new climate and a new set of problems. The turnover of organizational designs means that the individual's relationship to any one structure (with its implied set of obligations and rewards) is truncated, shortened in time. With each

change, he must reorient himself. Today the average individual is frequently reassigned, shuffled about from one sub-structure to another. But even if he remains in the same department, he often finds that the department, itself, has been shifted on some fast-changing table of organization, so that his position in the overall maze is no longer the same.

The result is that man's organizational relationships today tend to change at a faster pace than ever before. The average relationship is less permanent, more temporary, than ever before.

### THE NEW AD-HOCRACY

The high rate of turnover is most dramatically symbolized by the rapid rise of what executives call "project" or "task-force" management. Here teams are assembled to solve specific short-term problems. Then, exactly like the mobile playgrounds, they are disassembled and their human components reassigned. Sometimes these teams are thrown together to serve only for a few days. Sometimes they are intended to last a few years. But unlike the functional departments or divisions of a traditional bureaucratic organization, which are presumed to be permanent, the project or task-force team is temporary by design.

When Lockheed Aircraft Corporation won a controversial contract to build fifty-eight giant C-5A military air transports, it created a whole new 11,000-man organization specifically for that purpose. To complete the multi-billion-dollar job, Lockheed had to coordinate the work not only of its own people, but of hundreds of subcontracting firms. In all, 6000 companies are involved in producing the more than 120,000 parts needed for each of these enormous airplanes. The Lockheed project organization created for this purpose has its own management and its own complex internal structure.

The first of the C-5A's rolled out of the shop exactly

on schedule in March, 1969, twenty-nine months after award of the contract. The last of the fifty-eight transports was due to be delivered two years later. This meant that the entire imposing organization created for this job had a planned life span of five years. What we see here is nothing less than the creation of a disposable division—the organizational equivalent of paper dresses or throw-away tissues.

Project organization is widespread in the aerospace industries. When a leading manufacturer set out to win a certain large contract from the National Aeronautics and Space Agency, it assembled a team of approximately one hundred people borrowed from various functional divisions of the company. The project team worked for about a year and a half to gather data and analyze the job even before the government formally requested bids. When the time came to prepare a formal bid—a "proposal," as it is known in the industry —the "pre-proposal project team" was dissolved and its members sent back to their functional divisions. A new team was brought into being to write the actual proposal.

Proposal-writing teams often work together for a few weeks. Once the proposal is submitted, however, the proposal team is also disbanded. When the contract is won (if it is), new teams are successively established for development, and, ultimately, production of the goods required. Some individuals may move along with the job, joining each successive project team. Typically, however, people are brought in to work on only one or a few stages of the job.

While this form of organization is widely identified with aerospace companies, it is increasingly employed in more traditional industries as well. It is used when the task to be accomplished is non-routine, when it is, in effect, a one-time proposition.

"In just a few years," says *Business Week*, "the project manager has become commonplace." Indeed, project management has, itself, become recognized as a specialized executive art, and there is a small, but

growing band of managers, both in the United States and Europe, who move from project to project, company to company, never settling down to run routine or long-term operations. Books on project and task-force management are beginning to appear. And the United States Air Force Systems Command at Dayton, Ohio, runs a school to train executives for project management.

Task forces and other *ad hoc* groups are now proliferating throughout the government and business bureaucracies, both in the United States and abroad. Transient teams, whose members come together to solve a specific problem and then separate, are particularly characteristic of science and help account for the kinetic quality of the scientific community. Its members are constantly on the move, organizationally, if not geographically.

George Kozmetsky, co-founder of Teledyne, Incorporated, and now dean of the school of business at the University of Texas, distinguishes between "routine" and "non-routine" organizations. The latter grapple most frequently with one-of-a-kind problems. He cites statistics to show that the non-routine sector, in which he brackets government and many of the advanced technology companies, is growing so fast that it will employ 65 percent of the total United States work force by the year 2001. Organizations in this sector are precisely the ones that rely most heavily on transient teams and task forces.

Clearly, there is nothing new about the idea of assembling a group to work toward the solution of a specific problem, then dismantling it when the task is completed. What is new is the frequency with which organizations must resort to such temporary arrangements. The seemingly permanent structures of many large organizations, often *because* they resist change, are now heavily infiltrated with these transient cells.

On the surface, the rise of temporary organization may seem insignificant. Yet this mode of operation plays havoc with the traditional conception of organi-

zation as consisting of more or less permanent structures. Throw-away organizations, *ad hoc* teams or committees, do not necessarily replace permanent functional structures, but they change them beyond recognition, draining them of both people and power. Today while functional divisions continue to exist, more and more project teams, task forces and similar organizational structures spring up in their midst, then disappear. And people, instead of filling fixed slots in the functional organization, move back and forth at a high rate of speed. They often retain their functional "home base" but are detached repeatedly to serve as temporary team members.

We shall shortly see that this process, repeated often enough, alters the loyalties of the people involved; shakes up lines of authority; and accelerates the rate at which individuals are forced to adapt to organizational change. For the moment, however, it is important to recognize that the rise of *ad hoc* organization is a direct effect of the speed-up of change in society as a whole.

So long as a society is relatively stable and unchanging, the problems it presents to men tend to be routine and predictable. Organizations in such an environment can be relatively permanent. But when change is accelerated, more and more novel first-time problems arise, and traditional forms of organization prove inadequate to the new conditions. They can no longer cope. As long as this is so, says Dr. Donald A. Schon, president of the Organization for Social and Technical Innovation, we need to create "self-destroying organizations . . . lots of autonomous, semi-attached units which can be spun off, destroyed, sold bye-bye, when the need for them has disappeared."

Traditional functional organization structures, created to meet predictable, non-novel conditions, prove incapable of responding effectively to radical changes in the environment. Thus temporary role structures are created as the whole organization struggles to preserve

itself and keep growing. The process is exactly analogous to the trend toward modularism in architecture. We earlier defined modularism as the attempt to lend greater durability to a whole structure by shortening the life span of its components. This applies to organization as well, and it helps explain the rise of short-lived or throw-away, organization components.

As acceleration continues, organizational redesign becomes a continuing function. According to management consultant Bernard Muller-Thym, the new technology, combined with advanced management techniques, creates a totally new situation. "What is now within our grasp," he says, "is a kind of productive capability that is alive with intelligence, alive with information, so that at its maximum it is completely flexible; one could completely reorganize the plant from hour to hour if one wished to do so." And what is true of the plant is increasingly true of the organization as a whole.

In short, the organizational geography of super-industrial society can be expected to become increasingly kinetic, filled with turbulence and change. The more rapidly the environment changes, the shorter the life span of organization forms. In administrative structure, just as in architectural structure, we are moving from long-enduring to temporary forms, from permanence to transience. We are moving from bureaucracy to Ad-hocracy.

In this way, the accelerative thrust translates itself into organization. Permanence, one of the identifying characteristics of bureaucracy, is undermined, and we are driven to a relentless conclusion: man's ties with the invisible geography of organization turn over more and more rapidly, exactly as do his relationships with things, places, and the human beings who people these ever-changing organizational structures. Just as the new nomads migrate from place to place, man increasingly migrates from organizational structure to organizational structure.

## THE COLLAPSE OF HIERARCHY

Something else is happening, too: a revolutionary shift in power relationships. Not only are large organizations forced both to change their internal structure and to create temporary units, but they are also finding it increasingly difficult to maintain their traditional chains-of-command.

It would be pollyannish to suggest that workers in industry or government today truly "participate" in the management of their enterprises—either in capitalist or, for that matter, in socialist and communist countries. Yet there is evidence that bureaucratic hierarchies, separating those who "make decisions" from those who merely carry them out, are being altered, side-stepped or broken.

This process is noticeable in industry where, according to Professor William H. Read of the Graduate School of Business at McGill University, "irresistible pressures" are battering hierarchical arrangements. "The central, crucial and important business of organizations," he declares, "is increasingly shifting from up and down to 'sideways.'" What is involved in such a shift is a virtual revolution in organizational structure—and human relations. For people communicating "sideways"—i.e., to others at approximately the same level of organization—behave differently, operate under very different pressures, than those who must communicate up and down a hierarchy.

To illustrate, let us look at a typical work setting in which a traditional bureaucratic hierarchy operates. While still a young man I worked for a couple of years as a millwright's helper in a foundry. Here, in a great dark cavern of a building, thousands of men labored to produce automobile crankcase castings. The scene was Dantesque—smoke and soot smeared our faces, black dirt covered the floors and filled the air, the pungent, choking smell of sulphur and burnt sand

seared our nostrils. Overhead a creaking conveyor carried red hot castings and dripped hot sand on the men below. There were flashes of molten iron, the yellow flares of fires, and a lunatic cacophony of noises: men shouting, chains rattling, pug mills hammering, compressed air shrieking.

To a stranger the scene appeared chaotic. But those inside knew that everything was carefully organized. Bureaucratic order prevailed. Men did the same job over and over again. Rules governed every situation. And each man knew exactly where he stood in a vertical hierarchy that reached from the lowest-paid core paster up to the unseen "they" who populated the executive suites in another building.

In the immense shed where we worked, something was always going wrong. A bearing would burn out, a belt snap or a gear break. Whenever this happened in a section, work would screech to a halt, and frantic messages would begin to flow up and down the hierarchy. The worker nearest the breakdown would notify his foreman. He, in turn, would tell the production supervisor. The production supervisor would send word to the maintenance supervisor. The maintenance supervisor would dispatch a crew to repair the damage.

Information in this system is passed by the worker "upward" through the foreman to the production supervisor. The production supervisor carries it "sideways" to a man occupying a niche at approximately the same level in the hierarchy (the maintenance supervisor), who, in turn, passes it "downward" to the millwrights who actually get things going again. The information thus must move a total of four steps up and down the vertical ladder plus one step sideways before repairs can begin.

This system is premised on the unspoken assumption that the dirty, sweaty men down below cannot make sound decisions. Only those higher in the hierarchy are to be trusted with judgment or discretion. Officials at the top make the decisions; men at the bottom carry

them out. One group represents the brains of the organization; the other, the hands.

This typically bureaucratic arrangement is ideally suited to solving routine problems at a moderate pace. But when things speed up, or the problems cease to be routine, chaos often breaks loose. It is easy to see why.

First, the acceleration of the pace of life (and especially the speed-up of production brought about by automation) means that every minute of "down time" costs more in lost output than ever before. Delay is increasingly costly. Information must flow faster than ever before. At the same time, rapid change, by increasing the number of novel, unexpected problems, increases the amount of information needed. It takes more information to cope with a novel problem than one we have solved a dozen or a hundred times before. It is this combined demand for *more* information at *faster* speeds that is now undermining the great vertical hierarchies so typical of bureaucracy.

A radical speed-up could have been effected in the foundry described above simply by allowing the worker to report the breakdown directly to the maintenance supervisor or even to a maintenance crew, instead of passing the news along through his foreman and production supervisor. At least one and perhaps two steps could have been cut from the four-step communication process in this way—a saving of from 25 to 50 percent. Significantly, the steps that might be eliminated are the up-and-down steps, the vertical ones.

Today such savings are feverishly sought by managers fighting to keep up with change. Shortcuts that by-pass the hierarchy are increasingly employed in thousands of factories, offices, laboratories, even in the military. The cumulative result of such small changes is a massive shift from vertical to lateral communication systems. The intended result is speedier communication. This leveling process, however, represents a major blow to the once-sacred bureaucratic

hierarchy, and it punches a jagged hole in the "brain and hand" analogy. For as the vertical chain of command is increasingly by-passed, we find "hands" beginning to make decisions, too. When the worker by-passes his foreman or supervisor and calls in a repair team, he makes a decision that in the past was reserved for these "higher ups."

This silent but significant deterioration of hierarchy, now occurring in the executive suite as well as at the ground level of the factory floor, is intensified by the arrival on the scene of hordes of experts—specialists in vital fields so narrow that often the men on top have difficulty understanding them. Increasingly, managers have to rely on the judgment of these experts. Solid state physicists, computer programmers, systems designers, operation researchers, engineering specialists—such men are assuming a new decision-making function. At one time, they merely consulted with executives who reserved unto themselves the right to make managerial decisions. Today, the managers are losing their monopoly on decision-making.

More and more, says Professor Read of McGill, the "specialists do not fit neatly together into a chain-of-command system" and "cannot wait for their expert advice to be approved at a higher level." With no time for decisions to wend their leisurely way up and down the hierarchy, "advisors" stop merely advising and begin to make decisions themselves. Often they do this in direct consultation with the workers and ground-level technicians.

As a result, says Frank Metzger, director of personnel planning for International Telephone and Telegraph Corporation, "You no longer have the strict allegiance to hierarchy. You may have five or six different levels of the hierarchy represented in one meeting. You try to forget about salary level and hierarchy, and organize to get the job done."

Such facts, according to Professor Read, "represent a staggering change in thinking, action, and decision-making in organizations." Quite possibly, he

declares, "the only truly effective methods for preventing, or coping with, problems of coordination and communication in our changing technology will be found in new arrangements of people and tasks, in arrangements which sharply break with the bureaucratic tradition."

It will be a long time before the last bureaucratic hierarchy is obliterated. For bureaucracies are well suited to tasks that require masses of moderately educated men to perform routine operations, and, no doubt, some such operations will continue to be performed by men in the future. Yet it is precisely such tasks that the computer and automated equipment do far better than men. It is clear that in super-industrial society many such tasks will be performed by great self-regulating systems of machines, doing away with the need for bureaucratic organization. Far from fastening the grip of bureaucracy on civilization more tightly than before, automation leads to its overthrow.

As machines take over routine tasks and the accelerative thrust increases the amount of novelty in the environment, more and more of the energy of society (and its organizations) must turn toward the solution of non-routine problems. This requires a degree of imagination and creativity that bureaucracy, with its man-in-a-slot organization, its permanent structures, and its hierarchies, is not well equipped to provide. Thus it is not surprising to find that wherever organizations today are caught up in the stream of technological or social change, wherever research and development is important, wherever men must cope with first-time problems, the decline of bureaucratic forms is most pronounced. In these frontier organizations a new system of human relations is springing up.

To live, organizations must cast off those bureaucratic practices that immobilize them, making them less sensitive and less rapidly responsive to change. The result, according to Joseph A. Raffaele, Professor of Economics at Drexel Institute of Technology, is that we are moving toward a "working society of

technical co-equals" in which the "line of demarcation between the leader and the led has become fuzzy."

Super-industrial Man, rather than occupying a permanent, cleanly-defined slot and performing mindless routine tasks in response to orders from above, finds increasingly that he must assume decision-making responsibility—and must do so within a kaleidoscopically changing organization structure built upon highly transient human relationships. Whatever else might be said, this is *not* the old, familiar Weberian bureaucracy at which so many of our novelists and social critics are still, belatedly, hurling their rusty javelins.

### BEYOND BUREAUCRACY

If it was Max Weber who first defined bureaucracy and predicted its triumph, Warren Bennis may go down in sociological textbooks as the man who first convincingly predicted its demise and sketched the outlines of the organizations that are springing up to replace it. At precisely the moment when the outcry against bureaucracy was reaching its peak of shrillness on American campuses and elsewhere, Bennis, a social psychologist and professor of industrial management, predicted flatly that "in the next twenty-five to fifty years" we will all "participate in the end of bureaucracy." He urged us to begin looking "beyond bureaucracy."

Thus Bennis argues that "while various proponents of 'good human relations' have been fighting bureaucracy on humanistic grounds and for Christian values, bureaucracy seems most likely to founder on its inability to adapt to rapid change . . .

"Bureaucracy," he says, "thrives in a highly competitive undifferentiated and stable environment, such as the climate of its youth, the Industrial Revolution. A pyramidal structure of authority, with power concentrated in the hands of a few . . . was, and is, an eminently suitable social arrangement for routinized

tasks. However, the environment has changed in just those ways which make the mechanism most problematic. Stability has vanished."

Each age produces a form of organization appropriate to its own tempo. During the long epoch of agricultural civilization, societies were marked by low transience. Delays in communication and transportation slowed the rate at which information moved. The pace of individual life was comparatively slow. And organizations were seldom called upon to make what we would regard as high-speed decisions.

The age of industrialism brought a quickened tempo to both individual and organizational life. Indeed, it was precisely for this reason that bureaucratic forms were needed. For all that they seem lumbering and inefficient to us, they were, on the average, capable of making better decisions faster than the loose and ramshackle organizations that preceded them. With all the rules codified, with a set of fixed principles indicating how to deal with various work problems, the flow of decisions could be accelerated to keep up with the faster pace of life brought by industrialism.

Weber was keen enough to notice this, and he pointed out that "The extraordinary increase in the speed by which public announcements, as well as economic and political facts are transmitted exerts a steady and sharp pressure in the direction of speeding up the tempo of administrative reaction . . ." He was mistaken, however, when he said "The optimum of such reaction time is normally attained only by a strictly bureaucratic organization." For it is now clear that the acceleration of change has reached so rapid a pace that even bureaucracy can no longer keep up. Information surges through society so rapidly, drastic changes in technology come so quickly that newer, even more instantly responsive forms of organization must characterize the future.

What, then, will be the characteristics of the organizations of super-industrial society? "The key word," says Bennis, "will be 'temporary'; there will be adap-

tive, rapidly changing *temporary systems.*" Problems will be solved by task forces composed of "relative strangers who represent a set of diverse professional skills."

Executives and managers in this system will function as coordinators between the various transient work teams. They will be skilled in understanding the jargon of different groups of specialists, and they will communicate across groups, translating and interpreting the language of one into the language of another. People in this system will, according to Bennis, "be differentiated not vertically, according to rank and role, but flexibly and functionally, according to skill and professional training."

Because of the high rate of movement back and forth from one transient team to another, he continues, "There will . . . be a reduced commitment to work groups . . . While skills in human interaction will become more important, due to the growing needs for collaboration in complex tasks, there will be a concomitant reduction in group cohesiveness . . . People will have to learn to develop quick and intense relationships on the job, and learn to bear the loss of more enduring work relationships."

This then is a picture of the coming Ad-hocracy, the fast-moving, information-rich, kinetic organization of the future, filled with transient cells and extremely mobile individuals. From this sketch, moreover, it is possible to deduce some of the characteristics of the human beings who will populate these new organizations—and who, to some extent, are already to be found in the prototype organizations of today. What emerges is dramatically different from the stereotype of the organization man. For just as the acceleration of change and increased novelty in the environment demand a new form of organization, they demand, too, a new kind of man.

Three of the outstanding characteristics of bureaucracy were, as we have seen, permanence, hierarchy,

and a division of labor. These characteristics molded the human beings who manned the organizations.

Permanence—the recognition that the link between man and organization would endure through time—brought with it a commitment to the organization. The longer the man stayed within its embrace, the more he saw his past as an investment in the organization, the more he saw his personal future as dependent upon that of the organization. Longevity bred loyalty. In work organizations, this natural tendency was powerfully reinforced by the knowledge that termination of one's links with the organization very often meant a loss of the means of economic survival. In a world wracked by scarcity for the many, a job was precious. The bureaucrat was thus immobile and deeply oriented toward economic security. To keep his job, he willingly subordinated his own interests and convictions to those of the organization.

Power-laden hierarchies, through which authority flowed, wielded the whip by which the individual was held in line. Knowing that his relationship with the organization would be relatively permanent (or at least hoping that it would be) the organization man looked within for approval. Rewards and punishments came down the hierarchy to the individual, so that the individual, habitually looking upward at the next rung of the hierarchical ladder, became conditioned to subservience. Thus: the wishy-washy organization man—the man without personal convictions (or without the courage to make them evident). It paid to conform.

Finally, the organization man needed to understand his place in the scheme of things; he occupied a well-defined niche, performed actions that were also well-defined by the rules of the organization, and he was judged by the precision with which he followed the book. Faced by relatively routine problems, he was encouraged to seek routine answers. Unorthodoxy, creativity, venturesomeness were discouraged, for they

interfered with the predictability required by the organization of its component parts.

The embryonic Ad-hocracies of today demand a radically different constellation of human characteristics. In place of permanence, we find transience—high mobility between organizations, never-ending reorganizations within them, and a constant generation and decay of temporary work groupings. Not surprisingly, we witness a decline in old-fashioned "loyalty" to the organization and its sub-structures.

Writing about young executives in American industry today, Walter Guzzardi, Jr., declares: "The agreements between modern man and modern organization are not like the laws of the Medes and the Persians. They were not made to stand forever . . . The man periodically examines his own attitude toward the organization, and gauges its attitude toward him. If he doesn't like what he sees, he tries to change it. If he can't change it, he moves." Says executive recruiter George Peck: "The number of top executives with their résumés in their desk drawer is amazing."

The old loyalty felt by the organization man appears to be going up in smoke. In its place we are watching the rise of professional loyalty. In all of the techno-societies there is a relentless increase in the number of professional, technical and other specialists. In the United States between 1950 and 1969 alone, their number has more than doubled and this class continues to grow more rapidly than any other group in the work force. Instead of operating as individual, entrepreneurial free lancers, millions of engineers, scientists, psychologists, accountants and other professionals have entered the ranks of organization. What has happened as a result is a neat dialectical reversal. Veblen wrote about the industrialization of the professional. Today we are observing the professionalization of industry.

Thus John Gardner declares: "The loyalty of the professional man is to his profession and not to the organization that may house him at any given moment.

Compare the chemist or electronics engineer in a local plant with the non-professional executives in the same plant. The men the chemist thinks of as his colleagues are not those who occupy neighboring offices, but his fellow professionals wherever they may be throughout the country, even throughout the world. Because of his fraternal ties with widely dispersed contemporaries, he himself is highly mobile. But even if he stays in one place his loyalty to the local organization is rarely of the same quality as that of the true organization man. He never quite believes in it.

"The rise of the professions means that modern large-scale organization has been heavily infiltrated by men who have an entirely different concept of what organization is about . . ." In effect, these men are "outsiders" working within the system.

At the same time, the term "profession" is itself taking on new meaning. Just as the vertical hierarchies of bureaucracy break down under the combined impact of new technology, new knowledge, and social change, so too, do the horizontal hierarchies that have until now divided human knowledge. The old boundaries between specialties are collapsing. Men increasingly find that the novel problems thrust at them can be solved only by reaching beyond narrow disciplines.

The traditional bureaucrat put electrical engineers in one compartment and psychologists in another. Indeed, engineers and psychologists in their own professional organizations assumed an airtight distinction between their spheres of knowledge and competence. Today, however, in the aerospace industry, in education, and in other fields, engineers and psychologists are frequently thrown together in transient teams. New organizations reflecting these sometimes exotic intellectual mergers are springing up all around the basic professions, so that we begin to find sub-groupings of bio-mathematicians, psycho-pharmacologists, engineer-librarians and computer-musicians. Distinctions between the disciplines do not disappear; but they

become finer, more porous, and there is a constant reshuffling process.

In this situation, even professional loyalties turn into short-term commitments, and the work itself, the task to be done, the problem to be solved, begins to elicit the kind of commitment hitherto reserved for the organization. Professional specialists, according to Bennis, "seemingly derive their rewards from inward standards of excellence, from their professional societies, and from the intrinsic satisfaction of their task. In fact, they are committed to the task, not the job; to their standards, not their boss. And because they have degrees, they travel. They are not good 'company men'; they are uncommitted except to the challenging environments where they can 'play with problems.'"

These men of the future already man some of the Ad-hocracies that exist today. There is excitement and creativity in the computer industry, in educational technology, in the application of systems techniques to urban problems, in the new oceanography industry, in government agencies concerned with environmental health, and elsewhere. In each of these fields, more representative of the future than the past, there is a new venturesome spirit which stands in total contrast to the security-minded orthodoxy and conformity associated with the organization man.

The new spirit in these transient organizations is closer to that of the entrepreneur than the organization man. The free-swinging entrepreneur who started up vast enterprises unafraid of defeat or adverse opinion, is a folk hero of industrialism, particularly in the United States. Pareto labeled the entrepreneurs "adventurous souls, hungry for novelty . . . not at all alarmed at change."

It is conventional wisdom to assert that the age of the entrepreneur is dead, and that in his place there now stand only organization men or bureaucrats. Yet what is happening today is a resurgence of entrepreneurialism within the heart of large organizations. The

secret behind this reversal is the new transience and the death of economic insecurity for large masses of educated men. With the rise of affluence has come a new willingness to take risks. Men are willing to risk failure because they cannot believe they will ever starve. Thus says Charles Elwell, director of industrial relations for Hunt Foods: "Executives look at themselves as individual entrepreneurs who are selling their knowledge and skills." Indeed, as Max Ways has pointed out in *Fortune:* "The professional man in management has a powerful base of independence—perhaps a firmer base than the small businessman ever had in his property rights."

Thus we find the emergence of a new kind of organization man—a man who, despite his many affiliations, remains basically uncommitted to any organization. He is willing to employ his skills and creative energies to solve problems with equipment provided by the organization, and within temporary groups established by it. But he does so only so long as the problems interest *him.* He is committed to his own career, his own self-fulfillment.

It is no accident, in light of the above, that the term "associate" seems suddenly to have become extremely popular in large organizations. We now have "associate marketing directors" and "research associates," and even government agencies are filled with "associate directors" and "associate administrators." The word associate implies co-equal, rather than subordinate, and its spreading use accurately reflects the shift from vertical and hierarchical arrangements to the new, more lateral, communication patterns.

Where the organization man was subservient to the organization, Associative Man is almost insouciant toward it. Where the organization man was immobilized by concern for economic security, Associative Man increasingly takes it for granted. Where the organization man was fearful of risk, Associative Man welcomes it (knowing that in an affluent and fast-changing society even failure is transient). Where the

organization man was hierarchy-conscious, seeking status and prestige within the organization, Associative Man seeks it without. Where the organization man filled a predetermined slot, Associative Man moves from slot to slot in a complex pattern that is largely self-motivated. Where the organization man dedicated himself to the solution of routine problems according to well-defined rules, avoiding any show of unorthodoxy or creativity, Associative Man, faced by novel problems, is encouraged to innovate. Where the organization man had to subordinate his own individuality to "play ball on the team," Associative Man recognizes that the team, itself, is transient. He may subordinate his individuality for a while, under conditions of his own choosing; but it is never a permanent submergence.

In all this, Associative Man bears with him a secret knowledge: the very temporariness of his relationships with organization frees him from many of the bonds that constricted his predecessor. Transience, in this sense, is liberating.

Yet there is another side of the coin, and he knows this, as well. For the turnover of relationships with formal organizational structures brings with it an increased turnover of informal organization and a faster through-put of people as well. Each change brings with it a need for new learning. He must learn the rules of the game. But the rules keep changing. The introduction of Ad-hocracy increases the adaptability of organizations; but it strains the adaptability of men. Thus Tom Burns, after a study of the British electronics industry, finds a disturbing contrast between managers in stable organizational structures and those who find themselves where change is most rapid. Frequent adaptation, he reports, "happened at the cost of personal satisfaction and adjustment. The difference in the personal tension of people in the top management positions and those of the same age who had reached a similar position in a more stable situation was marked." And Bennis declares: "Coping with

rapid change, living in the temporary work systems, setting up (in quick-step time) meaningful relations —and then breaking them—all augur social strains and psychological tensions."

It is possible that for many people, in their organizational relationships as in other spheres, the future is arriving too soon. For the individual, the move toward Ad-hocracy means a sharp acceleration in the turnover of organizational relationships in his life. Thus another piece falls into place in our study of high-transience society. It becomes clear that acceleration telescopes our ties with organization in much the same way that it truncates our relationships with things, places and people. The increased turnover of all these relationships places a heavy adaptive burden on individuals reared and educated for life in a slower-paced social system.

It is here that the danger of future shock lies. This danger, as we shall now see, is intensified by the impact of the accelerative thrust in the realm of information.

# Chapter 8

## INFORMATION: THE KINETIC IMAGE

In a society in which instant food, instant education and even instant cities are everyday phenomena, no product is more swiftly fabricated or more ruthlessly destroyed than the instant celebrity. Nations advancing toward super-industrialism sharply step up their output of these "psycho-economic" products. Instant celebrities burst upon the consciousness of millions like an image-bomb—which is exactly what they are.

Within less than one year from the time a Cockney girl-child nicknamed "Twiggy" took her first modelling job, millions of human beings around the globe stored mental images of her in their brain. A dewy-eyed blonde with minimal mammaries and pipestem legs, Twiggy exploded into celebrityhood in 1967. Her winsome face and malnourished figure suddenly appeared on the covers of magazines in Britain, America, France, Italy and other countries. Overnight, Twiggy eyelashes, mannikins, perfumes and clothes began to gush from the fad mills. Critics pontificated about her social significance. Newsmen accorded her the kind of coverage normally reserved for a peace treaty or a papal election.

By now, however, our stored mental images of Twiggy have been largely erased. She has all but vanished from public view. Reality has confirmed her

own shrewd estimate that "I may not be around here for another six months." For images, too, have become increasingly transient—and not only the images of models, athletes or entertainers. Not long ago I asked a highly intelligent teenager whether she and her classmates had any heroes. I said, "Do you regard John Glenn, for example, as a hero?" (Glenn being, lest the reader has forgotten, the first American astronaut to orbit in space.) The child's response was revealing. "No," she said, "he's too old."

At first I thought she regarded a man in his forties as being too old to be a hero. Soon I realized this was mistaken. What she meant was that Glenn's exploits had taken place too long ago to be of interest. (John H. Glenn's history-making flight occurred in February, 1962.) Today Glenn has receded from the foreground of public attention. In effect, his image has decayed.

Twiggy, the Beatles, John Glenn, Billie Sol Estes, Bob Dylan, Jack Ruby, Norman Mailer, Eichmann, Jean-Paul Sartre, Georgi Malenkov, Jacqueline Kennedy—thousands of "personalities" parade across the stage of contemporary history. Real people, magnified and projected by the mass media, they are stored as images in the minds of millions of people who have never met them, never spoken to them, never seen them "in person." They take on a reality almost as (and sometimes even more) intense than that of many people with whom we do have "in-person" relationships.

We form relationships with these "vicarious people," just as we do with friends, neighbors and colleagues. And just as the through-put of real, in-person people in our lives is increasing, and the duration of our average relationship with them decreasing, the same is true of our ties with the vicarious people who populate our minds.

Their rate of flow-through is influenced by the real rate of change in the world. Thus, in politics, for example, we find that the British prime ministership

has been turning over since 1922 at a rate some 13 percent faster than in the base period 1721–1922. In sports, the heavyweight boxing championship now changes hands twice as fast as it did during our father's youth.* Events, moving faster, constantly throw new personalities into the charmed circle of celebrityhood, and old images in the mind decay to make way for the new.

The same might be said for the fictional characters spewed out from the pages of books, from television screens, theaters, movies and magazines. No previous generation in history has had so many fictional characters flung at it. Commenting on the mass media, historian Marshall Fishwick wryly declares: "We may not even get used to Super-Hero, Captain Nice and Mr. Terrific before they fly off our television screens forever."

These vicarious people, both live and fictional, play a significant role in our lives, providing models for behavior, acting out for us various roles and situations from which we draw conclusions about our own lives. We deduce lessons from their activities, consciously or not. We learn from their triumphs and tribulations. They make it possible for us to "try on" various roles or life styles without suffering the consequences that might attend such experiments in real life. The accelerated flow-through of vicarious people cannot but contribute to the instability of personality patterns among many real people who have difficulty in finding a suitable life style.

These vicarious people, however, are not independent of one another. They perform their roles in a vast, complexly organized "public drama" which is, in the words of sociologist Orrin Klapp, author of a

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* Between 1882 and 1932, there were ten new world heavyweight boxing champions, each holding the crown an average of 5 years. Between 1932 and 1951, there were 7 champions, each with an average tenure of 3.2 years. From 1951 to 1967, when the World Boxing Association declared the title vacant, 7 men held the championship for an average of 2.3 years each.

fascinating book called *Symbolic Leaders,* largely a product of the new communications technology. This public drama, in which celebrities upstage and replace celebrities at an accelerating rate, has the effect, according to Klapp, of making leadership "more unstable than it would be otherwise. Contretemps, upsets, follies, contests, scandals, make a feast of entertainment or a spinning political roulette wheel. Fads come and go at a dizzying pace . . . A country like the United States has an open public drama, in which new faces appear daily, there is always a contest to steal the show, and almost anything can happen and often does." What we are observing, says Klapp, is a "rapid turnover of symbolic leaders."

This can be extended, however, into a far more powerful statement: what is happening is not merely a turnover of real people or even fictional characters, but a more rapid turnover of the images and image-structures in our brains. Our relationships with these images of reality, upon which we base our behavior, are growing, on average, more and more transient. The entire knowledge system in society is undergoing violent upheaval. The very concepts and codes in terms of which we think are turning over at a furious and accelerating pace. We are increasing the rate at which we must form and forget our images of reality.

## TWIGGY AND THE K-MESONS

Every person carries within his head a mental model of the world—a subjective representation of external reality. This model consists of tens upon tens of thousands of images. These may be as simple as a mental picture of clouds scudding across the sky. Or they may be abstract inferences about the way things are organized in society. We may think of this mental model as a fantastic internal warehouse, an image emporium in which we store our inner portraits of Twiggy, Charles De Gaulle or Cassius Clay, along

with such sweeping propositions as "Man is basically good" or "God is dead."

Any person's mental model will contain some images that approximate reality closely, along with others that are distorted or inaccurate. But for the person to function, even to survive, the model must bear some overall resemblance to reality. As V. Gordon Childe has written in *Society and Knowledge*, "Every reproduction of the external world, constructed and used as a guide to action by an historical society, must in some degree correspond to that reality. Otherwise the society could not have maintained itself; its members, if acting in accordance with totally untrue propositions, would not have succeeded in making even the simplest tools and in securing therewith food and shelter from the external world."

No man's model of reality is a purely personal product. While some of his images are based on first-hand observation, an increasing proportion of them today are based on messages beamed to us by the mass media and the people around us. Thus the degree of accuracy in his model to some extent reflects the general level of knowledge in society. And as experience and scientific research pump more refined and accurate knowledge into society, new concepts, new ways of thinking, supersede, contradict, and render obsolete older ideas and world views.

If society itself were standing still, there might be little pressure on the individual to update his own supply of images, to bring them in line with the latest knowledge available in the society. So long as the society in which he is embedded is stable or slowly changing, the images on which he bases his behavior can also change slowly. But to function in a fast-changing society, to cope with swift and complex change, the individual must turn over his own stock of images at a rate that in some way correlates with the pace of change. His model must be updated. To the degree that it lags, his responses to change become inappropriate; he becomes increasingly thwarted, in-

effective. Thus there is intense pressure on the individual to keep up with the generalized pace.

Today change is so swift and relentless in the techno-societies that yesterday's truths suddenly become today's fictions, and the most highly skilled and intelligent members of society admit difficulty in keeping up with the deluge of new knowledge—even in extremely narrow fields.

"You can't possibly keep in touch with all you want to," complains Dr. Rudolph Stohler, a zoologist at the University of California at Berkeley. "I spend 25 percent to 50 percent of my working time trying to keep up with what's going on," says Dr. I. E. Wallen, chief of oceanography at the Smithsonian Institution in Washington. Dr. Emilio Segre, a Nobel prizewinner in physics, declares: "On K-mesons alone, to wade through all the papers is an impossibility." And another oceanographer, Dr. Arthur Stump, admits: "I don't really know the answer unless we declare a moratorium on publications for ten years."

New knowledge either extends or outmodes the old. In either case it compels those for whom it is relevant to reorganize their store of images. It forces them to relearn today what they thought they knew yesterday. Thus Lord James, vice-chancellor of the University of York, says, "I took my first degree in chemistry at Oxford in 1931." Looking at the questions asked in chemistry exams at Oxford today, he continues, "I realize that not only can I not do them, but that I never *could* have done them, since at least two-thirds of the questions involve knowledge that simply did not exist when I graduated." And Dr. Robert Hilliard, the top educational broadcasting specialist for the Federal Communications Commission, presses the point further: "At the rate at which knowledge is growing, by the time the child born today graduates from college, the amount of knowledge in the world will be four times as great. By the time that same child is fifty years old, it will be thirty-two times as great, and 97 percent of everything known in the

world will have been learned since the time he was born."

Granting that definitions of "knowledge" are vague and that such statistics are necessarily hazardous, there still can be no question that the rising tide of new knowledge forces us into ever-narrower specialization and drives us to revise our inner images of reality at ever-faster rates. Nor does this refer merely to abstruse scientific information about physical particles or genetic structure. It applies with equal force to various categories of knowledge that closely affect the everyday life of millions.

## THE FREUDIAN WAVE

Much new knowledge is admittedly remote from the immediate interests of the ordinary man in the street. He is not intrigued or impressed by the fact that a noble gas like xenon can form compounds—something that until recently most chemists swore was impossible. While even this knowledge may have an impact on him when it is embodied in new technology, until then, he can afford to ignore it. A good bit of new knowledge, on the other hand, is directly related to his immediate concerns, his job, his politics, his family life, even his sexual behavior.

A poignant example is the dilemma that parents find themselves in today as a consequence of successive radical changes in the image of the child in society and in our theories of childrearing.

At the turn of the century in the United States, for example, the dominant theory reflected the prevailing scientific belief in the primacy of heredity in determining behavior. Mothers who had never heard of Darwin or Spencer raised their babies in ways consistent with the world views of these thinkers. Vulgarized and simplified, passed from person to person, these world views were reflected in the conviction of millions of

ordinary people that "bad children are a result of bad stock," that "crime is hereditary," etc.

In the early decades of the century, these attitudes fell back before the advance of environmentalism. The belief that environment shapes personality, and that the early years are the most important, created a new image of the child. The work of Watson and Pavlov began to creep into the public ken. Mothers reflected the new behaviorism, refusing to feed infants on demand, refusing to pick them up when they cried, weaning them early to avoid prolonged dependency.

A study by Martha Wolfenstein has compared the advice offered parents in seven successive editions of *Infant Care,* a handbook issued by the United States Children's Bureau between 1914 and 1951. She found distinct shifts in the preferred methods for dealing with weaning, thumb-sucking, masturbation, bowel and bladder training. It is clear from this study that by the late thirties still another image of the child had gained ascendancy. Freudian concepts swept in like a wave and revolutionized childrearing practices. Suddenly, mothers began to hear about "the rights of infants" and the need for "oral gratification." Permissiveness became the order of the day.

Parenthetically, at the same time that Freudian images of the child were altering the behavior of parents in Dayton, Dubuque and Dallas, the image of the psychoanalyst changed, too. Psychoanalysts became culture heroes. Movies, television scripts, novels and magazine stories represented them as wise and sympathetic souls, wonder-workers capable of remaking damaged personalities. From the appearance of the movie *Spellbound* in 1945, through the late fifties, the analyst was painted in largely positive terms by the mass media.

By the mid-sixties, however, he had already turned into a comical creature. Peter Sellers in *What's New Pussycat?* played a psychoanalyst much crazier than most of his patients, and "psychoanalyst jokes" began to circulate not merely among New York and Cali-

fornia sophisticates, but through the population at large, helped along by the same mass media that created the myth of the analyst in the first place.

This sharp reversal in the public image of the psychoanalyst (the public image being no more than the weighted aggregate of private images in the society) reflected changes in research as well. For evidence was piling up that psychoanalytic therapy did not live up to the claims made for it, and new knowledge in the behavioral sciences, and particularly in psychopharmacology, made many Freudian therapeutic measures seem quaintly archaic. At the same time, there was a great burst of research in the field of learning theory, and a new swing in childrearing, this time toward a kind of neo-behaviorism, got under way.

At each stage of this development a widely held set of images was attacked by a set of counter-images. Individuals holding one set were assailed by reports, articles, documentaries, and advice from authorities, friends, relatives and even casual acquaintances who accepted conflicting views. The same mother, turning to the same authorities at two different times in the course of raising her child, would receive, in effect, somewhat different advice based on different inferences about reality. While for the people of the past, childrearing patterns remained stable for centuries at a time, for the people of the present and the future, it has, like so many other fields, become an arena in which successive waves of images, many of them generated by scientific research, do battle.

In this way, new knowledge alters old. The mass media instantly and persuasively disseminate new images, and ordinary individuals, seeking help in coping with an ever more complex social environment, attempt to keep up. At the same time, events—as distinct from research as such—also batter our old image structures. Racing swiftly past our attention screen, they wash out old images and generate new ones. After the freedom rides and the riots in black

ghettos only the pathological could hang on to the long-cherished notion that blacks are "happy children" content with their poverty. After the Israeli blitz victory over the Arabs in 1967, how many still cling to the image of the Jew as a cheek-turning pacifist or a battlefield coward?

In education, in politics, in economic theory, in medicine, in international affairs, wave after wave of new images penetrate our defenses, shake up our mental models of reality. The result of this image bombardment is the accelerated decay of old images, a faster intellectual through-put, and a new, profound sense of the impermanence of knowledge, itself.

## A BLIZZARD OF BEST SELLERS

This impermanence is reflected in society in many subtle ways. A single dramatic example is the impact of the knowledge explosion on that classic knowledge-container, the book.

As knowledge has become more plentiful and less permanent, we have witnessed the virtual disappearance of the solid old durable leather binding, replaced at first by cloth and later by paper covers. The book itself, like much of the information it holds, has become more transient.

A decade ago, communications systems designer Sol Cornberg, a radical prophet in the field of library technology, declared that reading would soon cease to be a primary form of information intake. "Reading and writing," he suggested, "will become obsolete skills." (Ironically, Mr. Cornberg's wife is a novelist.)

Whether or not he is correct, one fact is plain: the incredible expansion of knowledge implies that each book (alas, this one included) contains a progressively smaller fraction of all that is known. And the paperback revolution, by making inexpensive editions available everywhere, lessens the scarcity value of the book at precisely the very moment that the increas-

ingly rapid obsolescence of knowledge lessens its long-term informational value. Thus, in the United States a paperback appears simultaneously on more than 100,000 newsstands, only to be swept away by another tidal wave of publications delivered a mere thirty days later. The book thus approaches the transience of the monthly magazine. Indeed, many books are no more than "one-shot" magazines.

At the same time, the public's span of interest in a book—even a very popular book—is shrinking. Thus, for example, the life span of best sellers on *The New York Times* list is rapidly declining. There are marked irregularities from year to year, and some books manage to buck the tide. Nevertheless, if we examine the first four years for which full data on the subject is available, 1953–1956, and compare this with a similar period one decade later, 1963–1966, we find that the average best seller in the earlier period remained on the list a full 18.8 weeks. A decade later this had shrunk to 15.7 weeks. Within a ten-year-period, the life expectancy of the average best seller had shrunk by nearly one-sixth.

We can understand such trends only if we grasp the elemental underlying truth. We are witnessing an historic process that will inevitably change man's psyche. For across the board, from cosmetics to cosmology, from Twiggy-type trivia to the triumphant facts of technology, our inner images of reality, responding to the acceleration of change outside ourselves, are becoming shorter-lived, more temporary. We are creating and using up ideas and images at a faster and faster pace. Knowledge, like people, places, things and organizational forms, is becoming disposable.

## THE ENGINEERED MESSAGE

If our inner images of reality appear to be turning over more and more rapidly, one reason may well be an increase in the rate at which image-laden messages

are being hurled at our senses. Little effort has been made to investigate this scientifically, but there is evidence that we are increasing the exposure of the individual to image-bearing stimuli.

To understand why, we need first to examine the basic sources of imagery. Where do the thousands of images filed in our mental model come from? The external environment showers stimuli upon us. Signals originating outside ourselves—sound waves, light, etc. —strike our sensory organs. Once perceived, these signals are converted, through a still mysterious process, into symbols of reality, into images.

These incoming signals are of several types. Some might be called *uncoded.* Thus, for example, a man walks along a street and notices a leaf whipped along the sidewalk by the wind. He perceives this event through his sensory apparatus. He hears a rustling sound. He sees movement and greenness. He feels the wind. From these sensory perceptions he somehow forms a mental image. We can refer to these sensory signals as a message. But the message was not, in any ordinary sense of the term, man-made. It was not designed by anyone to communicate anything, and the man's understanding of it does not depend directly on a social code—a set of socially agreed-upon signs and definitions. We are all surrounded by and participate in such events. When they occur within range of our senses, we may pick up uncoded messages from them and convert these messages into mental images. In fact, some proportion of the images in every individual's mental model are derived from such uncoded messages.

But we also receive *coded* messages from outside ourselves. Coded messages are any which depend upon social convention for their meaning. All languages, whether based on words or gestures, drumbeats or dancesteps, hieroglyphs, pictographs or the arrangement of knots in a string, are codes. All messages conveyed by means of such languages are coded.

We may speculate with some safety that as societies

have grown larger and more complex, proliferating codes for the transmission of images from person to person, the ratio of uncoded messages received by the ordinary person has declined in favor of coded messages. We may guess, in other words, that today more of our imagery derives from man-made messages than from personal observation of raw, "uncoded" events.

Furthermore, we can discern a subtle but significant shift in the type of coded messages as well. For the illiterate villager in an agricultural society of the past, most of the incoming messages were what might be called casual or "do-it-yourself" communications. The peasant might engage in ordinary household conversation, banter, cracker-barrel or tavern talk, griping, complaining, boasting, baby talk, (and, in the same sense, animal talk), etc. This determined the nature of most of the coded messages he received, and one characteristic of this sort of communication is its loose, unstructured, garrulous or unedited quality.

Compare this message input with the kind of coded messages received by the ordinary citizen of the present-day industrial society. In addition to all of the above, he also receives messages—mainly from the mass media—that have been artfully fashioned by communications experts. He listens to the news; he watches carefully scripted plays, telecasts, movies; he hears much more music (a highly disciplined form of communication); he hears frequent speeches. Above all, he does something his peasant ancestor could not do: He reads—thousands of words every day, all of them carefully edited in advance.

The industrial revolution, bringing with it the enormous elaboration of the mass media, thus alters radically the nature of the messages received by the ordinary individual. In addition to receiving uncoded messages from the environment, and coded but casual messages from the people around him, the individual now begins to receive a growing number of coded but pre-engineered messages as well.

These engineered messages differ from the casual

or do-it-yourself product in one crucial respect: Instead of being loose or carelessly framed, the engineered product tends to be tighter, more condensed, less redundant. It is highly purposive, preprocessed to eliminate unnecessary repetition, consciously designed to maximize informational content. It is, as communications theorists say, "information-rich."

This highly significant but often overlooked fact can be observed by anyone who takes the trouble to compare a tape recorded sample of 500 words of ordinary household conversation (i.e., coded, but casual) with 500 words of newspaper text or movie dialogue (also coded, but engineered). Casual conversation tends to be filled with repetition and pauses. Ideas are repeated several times, often in identical words, but if not, then varied only slightly.

In contrast, the 500 words of newspaper copy or movie dialogue are carefully pre-edited, streamlined. They convey relatively non-repetitive ideas. They tend to be more grammatically accurate than ordinary conversation and, if presented orally, they tend to be enunciated more clearly. Waste material has been trimmed away. Editor, writer, director—everyone involved in the production of the engineered message—fights to "keep the story moving" or to produce "fast-paced action." It is no accident that books, movies, television plays, are so frequently advertised as "high-speed adventure," "fast-reading," or "breathless." No publisher or movie producer would dare advertise his work as "repetitive" or "redundant."

Thus, as radio, television, newspapers, magazines and novels sweep through society, as the proportion of engineered messages received by the individual rises (and the proportion of uncoded and coded casual messages correspondingly declines), we witness a profound change: a steady speed-up in the average pace at which image-producing messages are presented to the individual. The sea of coded information that surrounds him begins to beat at his senses with new urgency.

This helps account for the sense of hurry in everyday affairs. But if industrialism is marked by a communication's speed-up, the transition to super-industrialism is marked by intense efforts to accelerate the process even further. The waves of coded information turn into violent breakers and come at a faster and faster clip, pounding at us, seeking entry, as it were, to our nervous system.

### MOZART ON THE RUN

In the United States today the median time spent by adults reading newspapers is fifty-two minutes per day. The same person who commits nearly an hour to newspapers also spends time reading magazines, books, signs, billboards, recipes, instructions, labels on cans, advertising on the back of breakfast food boxes, etc. Surrounded by print, he "ingests" between 10,000 and 20,000 edited words per day of the several times that many to which he is exposed. The same person also probably spends an hour and a quarter per day listening to the radio—more if he owns an FM receiver. If he listens to news, commercials, commentary or other such programs, he will, during this period, hear about 11,000 pre-processed words. He also spends several hours watching television—add another 10,000 words or so, plus a sequence of carefully arranged, highly purposive visuals.*

Nothing, indeed, is quite so purposive as advertising, and today the average American adult is assaulted by a minimum of 560 advertising messages each day. Of the 560 to which he is exposed, however, he only notices seventy-six. In effect, he blocks out 484 adver-

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* This is not to suggest that only words and pictures convey or evoke images. Music, too, sets the internal image machinery working, although the images produced may be completely non-verbal.

tising messages a day to preserve his attention for other matters.

All this represents the press of engineered messages against his senses. And the pressure is rising. In an effort to transmit even richer image-producing messages at an even faster rate, communications people, artists and others consciously work to make each instant of exposure to the mass media carry a heavier informational and emotional freight.

Thus we see the widespread and increasing use of symbolism for compacting information. Today advertising men, in a deliberate attempt to cram more messages into the individual's mind within a given moment of time, make increasing use of the symbolic techniques of the arts. Consider the "tiger" that is allegedly put in one's tank. Here a single word transmits to the audience a distinct visual image that has been associated since childhood with power, speed, and force. The pages of advertising trade magazines like *Printer's Ink* are filled with sophisticated technical articles about the use of verbal and visual symbolism to accelerate image-flow. Indeed, today many artists might learn new image-accelerating techniques from the advertising men.

If the ad men, who must pay for each split second of time on radio or television, and who fight for the reader's fleeting attention in magazines and newspapers, are busy trying to communicate maximum imagery in minimum time, there is evidence, too, that at least some members of the public want to increase the rate at which they can receive messages and process images. This explains the phenomenal success of speed-reading courses among college students, business executives, politicians and others. One leading speed-reading school claims it can increase almost anyone's input speed three times, and some readers report the ability to read literally tens of thousands of words per minute—a claim roundly disputed by many reading experts. Whether or not such speeds are possible, the clear fact is that the rate of communication

is accelerating. Busy people wage a desperate battle each day to plow through as much information as possible. Speed-reading presumably helps them do this.

The impulse toward acceleration in communications is, however, by no means limited to advertising or to the printed word. A desire to maximize message content in minimum time explains, for example, the experiments conducted by psychologists at the American Institutes for Research who played taped lectures at faster than normal speeds and then tested the comprehension of listeners. Their purpose: to discover whether students would learn more if lecturers talked faster.

The same intent to accelerate information flow explains the recent obsession with split-screen and multi-screen movies. At the Montreal World's Fair, viewers in pavilion after pavilion were confronted not with a traditional movie screen on which ordered visual images appear in sequence, but with two, three, or five screens, each of them hurling messages at the viewer at the same time. On these, several stories play themselves out at the same time, demanding of the viewer the ability to accept many more messages simultaneously than any movie-goer in the past, or else to censor out, or block, certain messages to keep the rate of message-input, or image-stimulation, within reasonable limits.

The author of an article in *Life*, entitled "A Film Revolution to Blitz Man's Mind," accurately describes the experience in these words: "Having to look at six images at the same time, having to watch in twenty minutes the equivalent of a full length movie, excites and crams the mind." Elsewhere he suggests that another multi-screen film "by putting more into a moment, condenses time."

Even in music the same accelerative thrust is increasingly evident. A conference of composers and computer specialists held in San Francisco not long ago was informed that for several centuries music has

been undergoing "an increase in the amount of auditory information transmitted during a given interval of time," and there is evidence also that musicians today play the music of Mozart, Bach and Haydn at a faster tempo than that at which the same music was performed at the time it was composed. We are getting Mozart on the run.

## THE SEMI-LITERATE SHAKESPEARE

If our images of reality are changing more rapidly, and the machinery of image-transmission is being speeded up, a parallel change is altering the very codes we use. For language, too, is convulsing. According to lexicographer Stuart Berg Flexner, senior editor of the *Random House Dictionary of the English Language*, "The words we use are changing faster today—and not merely on the slang level, but on every level. The rapidity with which words come and go is vastly accelerated. This seems to be true not only of English, but of French, Russian and Japanese as well."

Flexner illustrated this with the arresting suggestion that, of the estimated 450,000 "usable" words in the English language today, only perhaps 250,000 would be comprehensible to William Shakespeare. Were Shakespeare suddenly to materialize in London or New York today, he would be able to understand, on the average, only five out of every nine words in our vocabulary. The Bard would be a semi-literate.

This implies that if the language had the same number of words in Shakespeare's time as it does today, at least 200,000 words—perhaps several times that many—have dropped out and been replaced in the intervening four centuries. Moreover, Flexner conjectures that a full third of this turnover has occurred within the last fifty years alone. This, if correct, would mean that words are now dropping out of the language and being replaced at a rate at least

three times faster than during the base period 1564 to 1914.

This high turnover rate reflects changes in things, processes, and qualities in the environment. Some new words come directly from the world of consumer products and technology. Thus, for example, words like "fast-back," "wash-and-wear" or flashcube" were all propelled into the language by advertising in recent years. Other words come from the headlines. "Sit-in" and "swim-in" are recent products of the civil rights movement; "teach-in" a product of the campaign against the Vietnam war; "be-in" and "love-in" products of the hippie subculture. The LSD cult has brought with it a profusion of new words—"acid-head," "psychedelic," etc.

At the level of slang, the turnover rate is so rapid that it has forced dictionary makers to change their criteria for word inclusion. "In 1954," says Flexner, "when I started work on the *Dictionary of American Slang*, I would not consider a word for inclusion unless I could find three uses of the word over a five-year period. Today such a criterion would be impossible. Language, like art, is increasingly becoming a fad proposition. The slang terms 'fab' and 'gear,' for example, didn't last a single year. They entered the teen-age vocabulary in about 1966; by 1967 they were out. You cannot use a time criterion for slang any more."

One fact contributing to the rapid introduction and obsolescence of words is the incredible speed with which a new word can be injected into wide usage. In the late 1950's and early sixties one could actually trace the way in which certain scholarly jargon words such as "rubric" or "subsumed" were picked up from academic journals, used in small-circulation periodicals like the *New York Review of Books* or *Commentary*, then adopted by *Esquire* with its then circulation of 800,000 to 1,000,000, and finally diffused through the larger society by *Time*, *Newsweek* and the larger mass magazines. Today the process has

been telescoped. The editors of mass magazines no longer pick up vocabulary from the intermediate intellectual publications alone; they, too, lift directly from the scholarly press in their hurry to be "on top of things."

When Susan Sontag disinterred the word "camp" and used it as the basis of an essay in *Partisan Review* in the fall of 1964, *Time* waited only a few weeks before devoting an article to the word and its rejuvenator. Within a matter of a few additional weeks, the term was cropping up in newspapers and other mass media. Today the word has virtually dropped out of usage. "Teenybopper" is another word that came and went with blinding speed.

A more significant example of language turnover can be seen in the sudden shift of meaning associated with the ethnic term "black." For years, dark-skinned Americans regarded the term as racist. Liberal whites dutifully taught their children to use the term "Negro" and to capitalize the "N." Shortly after Stokely Carmichael proclaimed the doctrine of Black Power in Greenwood, Mississippi in June, 1966, however, "black" became a term of pride among both blacks and whites in the movement for racial justice. Caught off guard, liberal whites went through a period of confusion, uncertain as to whether to use Negro or black. Black was quickly legitimated when the mass media adopted the new meaning. Within a few months, black was "in," Negro "out."

Even faster cases of diffusion are on record. "The Beatles," says lexicographer Flexner, "at the height of their fame could make up any word they like, slip it into a record, and within a month it would be part of the language. At one time perhaps no more than fifty people in NASA used the word 'A-OK.' But when an astronaut used it during a televised flight, the word became part of the language in a single day. The same has been true of other space terms, too—lik 'sputnik' or 'all systems go.'"

As new words sweep in, old words vanish. A pic-

ture of a nude girl nowadays is no longer a "pin-up" or a "cheesecake shot," but a "playmate." "Hep" has given way to "hip"; "hipster" to "hippie." "Go-go" rushed eagerly into the language at breakneck speed, but it is already gone-gone among those who are truly "with it."

The turnover of language would even appear to involve non-verbal forms of communication as well. We have slang gestures, just as we have slang words —thumbs up or down, thumb to nose, the "shame on you" gesture used by children, the hand moving across the neck to suggest a throat-slitting. Professionals who watch the development of the gestural language suggest that it, too, may be changing more rapidly.

Some gestures that were regarded as semi-obscene have become somewhat more acceptable as sexual values have changed in the society. Others that were used only by a few have achieved wider usage. An example of diffusion, Flexner observes, is the wider use today of that gesture of contempt and defiance —the fist raised and screwed about. The invasion of Italian movies that hit the United States in the fifties and sixties probably contributed to this. Similarly, the upraised finger—the "up yours" gesture—appears to be gaining greater respectability and currency than it once had. At the same time, other gestures have virtually vanished or been endowed with radically changed meaning. The circle formed by the thumb and forefinger to suggest that all goes well appears to be fading out; Churchill's "V for Victory" sign is now used by protesters to signify something emphatically different: "peace" *not* "victory."

There was a time when a man learned the language of his society and made use of it, with little change, throughout his lifetime. His "relationship" with each learned word or gesture was durable. Today, to an astonishing degree, it is not.

## ART: CUBISTS AND KINETICISTS

Art, like gesture, is a form of non-verbal expression and a prime channel for the transmission of images. Here the evidences of ephemeralization are, if anything, even more pronounced. If we regard each school of art as though it were a word-based language, we are witnessing the successive replacement not of words, but of whole languages at once. In the past one rarely saw a fundamental change in an art style within a man's lifetime. A style or school endured, as a rule, for generations at a time. Today the pace of turnover in art is vision-blurring—the viewer scarcely has time to "see" a school develop, to learn its language, so to speak, before it vanishes.

Bursting on the scene in the last quarter of the nineteenth century, Impressionism was only the first of a sequence of shattering changes. It came at a time when industrialism was beginning its climactic forward surge, bringing with it a notable step-up in the tempo of everyday life. "It is above all the furious speed of [technological] development and the way the pace is forced that seems pathological, particularly when compared with the rate of progress in earlier periods in the history of art and culture," writes the art historian Arnold Hauser in describing the turnover of art styles. "For the rapid development of technology not only accelerates the change of fashion, but also the shifting emphases in the criteria of aesthetic taste. . . . The continual and increasingly rapid replacement of old articles in everyday use by new ones . . . readjusts the speed at which philosophical and artistic revaluations occur . . ."

If we roughly date the Impressionist interval from 1875 to 1910, we see a period of dominance lasting approximately thirty-five years. Since then no school or style, from Futurism to Fauvism, from Cubism to Surrealism, has dominated the scene for even that

long. One after another, styles supplant one another. The most enduring twentieth-century school, Abstract Expressionism, held sway for at most twenty years, from 1940 to 1960, then to be followed by a wild succession—"Pop" lasting perhaps five years, "Op" managing to grip the public's attention for two or three years, then the emergence, appropriately enough, of "Kinetic Art" whose very *raison d'être* is transience.

This phantasmagoric turnover is evident not merely in New York or San Francisco, but in Paris, in Rome, in Stockholm and London—wherever painters are found. Thus Robert Hughes writes in the *New Society*: "Hailing the new painters is now one of the annual sports in England . . . The enthusiasm for discovering a new direction in English art once a year has become a mania—an euphoric, almost hysterical belief in renewal." Indeed, he suggests, the expectation that each year will bring a new mode and a new crop of artists is "a significant parody of what is, in itself, a parodical situation—the accelerated turnover in the avant-garde today."

If schools of art may be likened to languages, then individual works of art may be compared to words. If we make this transposition, we find in art a process exactly analogous to that now occurring in the verbal language. Here, too, "words"—i.e., individual works of art—are coming into use and then dropping out of the vocabulary at heightened speeds. Individual works flash across our consciousness in galleries or in the pages of mass magazines; the next time we look they are gone. Sometimes the work itself quite literally disappears—many are collages or constructions built of fragile materials that simply fall apart after a short time.

Much of the confusion in the art world today arises from the failure of the cultural establishment to recognize, once and for all, that elitism and permanence are dead—so, at least, contends John McHale, the imaginative Scot, half artist/half social scientist, who

heads the Center for Integrative Studies, State University of New York at Binghamton. In a forceful essay entitled *The Plastic Parthenon*, McHale points out that "traditional canons of literary and artistic judgment . . . tend to place high value on permanence, uniqueness and the enduring universal value of chosen artifacts." Such aesthetic standards, he argues, were appropriate enough in a world of handcrafted goods and relatively small taste-making elites. These same standards, however, "in no way enable one to relate adequately to our present situation in which astronomical numbers of artifacts are mass produced, circulated and consumed. These may be identical, or only marginally different. In varying degree, they are expendable, replaceable, and lack any unique 'value' or intrinsic 'truth.' "

Today's artists, McHale suggests, neither work for a tiny elite nor take seriously the idea that permanence is a virtue. The future of art, he says, "seems no longer to lie with the creation of enduring masterworks." Rather, artists work for the short term. McHale concludes that: "Accelerated changes in the human condition require an array of symbolic images of man which will match up to the requirements of constant change, fleeting impression and a high rate of obsolescence." We need, he says, "a replaceable, expendable series of ikons."

One may quarrel with McHale's contention that transience in art is desirable. Perhaps the flight from permanence is a tactical error. It can even be argued that our artists are employing homeopathic magic, behaving like primitives who, awed by a force they do not comprehend, attempt to exert control over it by simple-mindedly imitating it. But whatever one's attitude toward contemporary art, transience remains an implacable fact, a social and historic tendency so central to our times that it cannot be ignored. And it is clear that artists are reacting to it.

The impulse toward transience in art explains the whole development of that most transient of art

works, the "happening." Allan Kaprow, who is often credited with originating the happening, has explicitly suggested its relationship to the throw-away culture within which we live. The happening, according to its proponents, is ideally performed once and once only. The happening is the Kleenex tissue of art.

This so, kinetic art can be considered the aesthetic embodiment of modularism. Kinetic sculptures or constructions crawl, whistle, whine, swing, twitch, rock or pulsate, their lights blinking, their magnetic tapes whirling, their plastic, steel, glass and copper components arranging and rearranging themselves into evanescent patterns within a given, though sometimes concealed, framework. Here the wiring and connections tend to be the least transient part of the structure, just as the gantry cranes and service towers in Joan Littlewood's Fun Palace are designed to outlive any particular arrangement of the modular components. The intent of the kinetic work, however, is to create maximum variability and maximum transience. Jean Clay has pointed out that in a traditional work of art "the relationship of parts to a whole had been decided forever." In kinetic art, he says, the "balance of forms is in flux."

Many artists are working with engineers and scientists today, in the hope of exploiting the latest technical processes for their own purpose, the symbolization of the accelerative thrust in society. "Speed," writes Francastel, the French art critic, "has become something undreamt-of, and constant movement every man's intimate experience." Art reflects this new reality.

Thus we find artists from France, England, the United States, Scotland, Sweden, Israel and elsewhere creating kinetic images. Their creed is perhaps best expressed by Yaacov Agam, an Israeli kineticist, who says: "We are different from what we were three moments ago, and in three minutes more, we will again be different . . . I try to give this approach a plastic expression by creating a visual form

that doesn't exist. The image appears and disappears, but nothing is retained."

The final culmination of such efforts, of course, is the creation of those new and quite real "fun palaces" —so-called total environment nightclubs in which the fun-seeker plunges into a space in which lights, colors and sounds change their patterns constantly. In effect, the patron steps inside a work of kinetic art. Here again the framework, the building itself, is only the longest lasting part of the whole, while its interior is designed to produce transient combinations of sensory in-puts. Whether one regards this as fun or not depends on the individual, perhaps; but the overall direction of such movements is clear. In art, as in language, we are racing toward impermanence. Man's relationships with symbolic imagery are growing more and more temporary.

## THE NEURAL INVESTMENT

Events speed past us, compelling us to reassess our assumptions—our previous formed images of reality. Research topples older conceptions of man and nature. Ideas come and go at a frenetic rate. (A rate, that, in science at least, has been estimated to be twenty to one hundred times faster than a mere century ago.) Image-laden messages hammer at our senses. Meanwhile, language and art, the codes through which we transfer image-bearing messages to one another, are themselves turning over more rapidly.

All this cannot—and does not—leave us unchanged. It accelerates the rate at which the individual must process his imagery if he is to adapt successfully to the churning environment. Nobody really knows how we convert signals from outside into images within. Yet psychology and the information sciences cast some light on what happens once the image is born.

They suggest, to begin with, that the mental model

is organized into many highly complex image-structures, and that new images are, in effect, filed away in these structures according to several classificatory principles. A newly generated image is filed away with other images pertaining to the same subject matter. Smaller and more limited inferences are ranged under larger and more inclusive generalizations. The image is checked out for its consistency with those already in file. (There is evidence of the existence of a specific neural mechanism that carries out this consistency-checking procedure.) We make a decision, with respect to the image, as to whether it is closely relevant to our goals, or whether, instead, it is remote and hence, for us, unimportant. Each image is also evaluated—is it "good" or "bad" for us? Finally, whatever else we do with the new image, we also judge its truth. We decide just how much faith to place in it. Is it an accurate reflection of reality? Can it be believed? Can we base action on it?

A new image that clearly fits somewhere into a subject matter slot, and which is consistent with images already stored there, gives us little difficulty. But if, as happens increasingly, the image is ambiguous, if it is inconsistent, or, worse yet, if it flies in the face of our previous inferences, the mental model has to be forcibly revised. Large numbers of images may have to be reclassified, shuffled, changed again until a suitable integration is found. Sometimes whole groups of image-structures have to be torn down and rebuilt. In extreme cases, the basic shape of the whole model has to be drastically overhauled.

Thus the mental model must be seen not as a static library of images, but as a living entity, tightly charged with energy and activity. It is not a "given" that we passively receive from outside. Rather, it is something we actively construct and reconstruct from moment to moment. Restlessly scanning the outer world with our senses, probing for information relevant to our needs and desires, we engage in a constant process of rearrangement and updating.

At any given instant, innumerable images are decaying, dropping into the black immensity of the forgotten. Others are entering the system, being processed and filed. At the same time, we are retrieving images, "using them," and returning them to file, perhaps in a different place. We are constantly comparing images, associating them, cross-referencing them in new ways, and repositioning them. This is what is meant by the term "mental activity." And like muscular activity, it is a form of work. It requires high energy to keep the system operating.

Change, roaring through society, widens the gap between what we believe and what really is, between the existing images and the reality they are supposed to reflect. When this gap is only moderate, we can cope more or less rationally with change, we can react sanely to new conditions, we have a grip on reality. When this gap grows too wide, however, we find ourselves increasingly unable to cope, we respond inappropriately, we become ineffectual, withdraw or simply panic. At the final extreme, when the gap grows too wide, we suffer psychosis—or even death.

To maintain our adaptive balance, to keep the gap within manageable proportions, we struggle to refresh our imagery, to keep it up-to-date, to relearn reality. Thus the accelerative thrust outside us finds a corresponding speed-up in the adapting individual. Our image-processing mechanisms, whatever they may be, are driven to operate at higher and higher speeds.

This has consequences that have been as yet largely overlooked. For when we classify an image, any image, we make a definite, perhaps even measurable, energy-investment in a specific organizational pattern in the brain. Learning requires energy; and relearning requires even more. "All the researches on learning," writes Harold D. Lasswell of Yale, "seem to confirm the view that 'energies' are bound in support of past learning, and that new energies are essential to

unbind the old . . ." At the neurological level, he continues, "Any established system appears to include exceedingly intricate arrangements of cell material, electrical charges and chemical elements. At any cross section in time . . . the somatic structure represents a tremendous investment of fixed forms and potentials . . ." What this means in brief is very simple: there are costs involved in relearning—or, in our terminology, reclassifying imagery.

In all the talk about the need for continuing education, in all the popular discussions of retraining, there is an assumption that man's potentials for re-education are unlimited. This is, at best, an assumption, not a fact, and it is an assumption that needs close and scientific scrutiny. The process of image formation and classification is, in the end, a physical process, dependent upon finite characteristics of nerve cells and body chemicals. In the neural system as now constituted there are, in all likelihood, inherent limits to the amount and speed of image processing that the individual can accomplish. How fast and how continuously can the individual revise his inner images before he smashes up against these limits?

Nobody knows. It may well be that the limits stretch so far beyond present needs, that such gloomy speculations are unjustified. Yet one salient fact commands attention: by speeding up change in the outer world, we compel the individual to relearn his environment at every moment. This, in itself, places a new demand on the nervous system. The people of the past, adapting to comparatively stable environments, maintained longer-lasting ties with their own inner conceptions of "the-way-things-are." We, moving into high-transience society, are forced to truncate these relationships. Just as we must make and break our relationships with things, places, people and organizations at an ever more rapid pace, so, too, must we turn over our conceptions of reality, our mental images of the world at shorter and shorter intervals.

Transience, then, the forcible abbreviation of man's

relationships, is not merely a condition of the external world. It has its shadow within us as well. New discoveries, new technologies, new social arrangements in the external world erupt into our lives in the form of increased turnover rates—shorter and shorter relational durations. They force a faster and faster pace of daily life. They demand a new level of adaptability. And they set the stage for that potentially devastating social illness—future shock.

# Part Three:

# NOVELTY

# Chapter 9

# THE SCIENTIFIC TRAJECTORY

We are creating a new society. Not a changed society. Not an extended, larger-than-life version of our present society. But a new society.

This simple premise has not yet begun to tincture our consciousness. Yet unless we understand this, we shall destroy ourselves in trying to cope with tomorrow.

A revolution shatters institutions and power relationships. This is precisely what is happening today in all the high-technology nations. Students in Berlin and New York, in Turin and Tokyo, capture their deans and chancellors, bring great clanking education factories to a grinding halt, and even threaten to topple governments. Police stand aside in the ghettos of New York, Washington and Chicago as ancient property laws are openly violated. Sexual standards are overthrown. Great cities are paralyzed by strikes, power failures, riots. International power alliances are shaken. Financial and political leaders secretly tremble—not out of fear that communist (or capitalist) revolutionaries will oust them, but that the entire system is somehow flying out of control.

These are indisputable signs of a sick social structure, a society that can no longer perform even its most basic functions in the accustomed ways. It

is a society caught in the agony of revolutionary change. In the 1920's and 1930's, communists used to speak of the "general crisis of capitalism." It is now clear that they were thinking small. What is occurring now is not a crisis of capitalism, but of industrial society itself, regardless of its political form. We are simultaneously experiencing a youth revolution, a sexual revolution, a racial revolution, a colonial revolution, an economic revolution, and the most rapid and deep-going technological revolution in history. We are living through the general crisis of industrialism. In a word, we are in the midst of the super-industrial revolution.

If failure to grasp this fact impairs one's ability to understand the present, it also leads otherwise intelligent men into total stupidity when they talk about the future. It encourages them to think in simple-minded straight lines. Seeing evidence of bureaucracy today, they naïvely assume there will be *more* bureaucracy tomorrow. Such linear projections characterize most of what is said or written about the future. And it causes us to worry about precisely the wrong things.

One needs imagination to confront a revolution. For revolution does not move in straight lines alone. It jerks, twists and backtracks. It arrives in the form of quantum jumps and dialectical reversals. Only by accepting the premise that we are racing toward a wholly new stage of eco-technological development—the super-industrial stage—can we make sense of our era. Only by accepting the revolutionary premise can we free our imaginations to grapple with the future.

Revolution implies novelty. It sends a flood of newness into the lives of countless individuals, confronting them with unfamiliar institutions and first-time situations. Reaching deep into our personal lives, the enormous changes ahead will transform traditional family structures and sexual attitudes. They will smash conventional relationships between old and young. They will overthrow our values with respect

to money and success. They will alter work, play and education beyond recognition. And they will do all this in a context of spectacular, elegant, yet frightening scientific advance.

If transience is the first key to understanding the new society, therefore, novelty is the second. The future will unfold as an unending succession of bizarre incidents, sensational discoveries, implausible conflicts, and wildly novel dilemmas. This means that many members of the super-industrial society will never "feel at home" in it. Like the voyager who takes up residence in an alien country, only to find, once adjusted, that he must move on to another, and yet another, we shall come to feel like "strangers in a strange land."

The super-industrial revolution can erase hunger, disease, ignorance and brutality. Moreover, despite the pessimistic prophecies of the straight-line thinkers, super-industrialism will not restrict man, will not crush him into bleak and painful uniformity. In contrast, it will radiate new opportunities for personal growth, adventure and delight. It will be vividly colorful and amazingly open to individuality. The problem is not whether man can survive regimentation and standardization. The problem, as we shall see, is whether he can survive freedom.

Yet for all this, man has never truly inhabited a novelty-filled environment before. Having to live at an accelerating pace is one thing when life situations are more or less familiar. Having to do so when faced by unfamiliar, strange or unprecedented situations is distinctly another. By unleashing the forces of novelty, we slam men up against the non-routine, the unpredicted. And, by so doing, we escalate the problems of adaptation to a new and dangerous level. For transience and novelty are an explosive mix.

If all this seems doubtful, let us contemplate some of the novelties that lie in store for us. Combining rational intelligence with all the imagination we can command, let us project ourselves forcefully into the

future. In doing so, let us not fear occasional error—the imagination is only free when fear of error is temporarily laid aside. Moreover, in thinking about the future, it is better to err on the side of daring, than the side of caution.

One sees why the moment one begins listening to the men who are even now creating that future. Listen, as they describe some of the developments waiting to burst from their laboratories and factories.

### THE NEW ATLANTIS

"Within fifty years," says Dr. F. N. Spiess, head of the Marine Physical Laboratory of the Scripps Institution of Oceanography, "man will move onto and into the sea—occupying it and exploiting it as an integral part of his use of this planet for recreation, minerals, food, waste disposal, military and transportation operations, and, as populations grow, for actual living space."

More than two-thirds of the planet's surface is covered with ocean—and of this submerged terrain a bare five percent is well mapped. However, this underwater land is known to be rich with oil, gas, coal, diamonds, sulphur, cobalt, uranium, tin, phosphates and other minerals. It teems with fish and plant life.

These immense riches are about to be fought over and exploited on a staggering scale. Today in the United States alone more than 600 companies, including such giants as Standard Oil and Union Carbide, are readying themselves for a monumental competitive struggle under the seas.

The race will intensify year by year—with far-reaching impacts on society. Who "owns" the bottom of the ocean and the marine life that covers it? As ocean mining becomes feasible and economically advantageous, we can expect the resource balance among nations to shift. The Japanese already extract

10,000,000 tons of coal each year from underwater mines; tin is already being ocean-mined by Malaysia, Indonesia and Thailand. Before long nations may go to war over patches of ocean bottom. We may also find sharp changes in the rate of industrialization of what are now resource-poor nations.

Technologically, novel industries will rise to process the output of the oceans. Others will produce sophisticated and highly expensive tools for working the sea—deep-diving research craft, rescue submarines, electronic fish-herding equipment and the like. The rate of obsolescence in these fields will be swift. The competitive struggle will spur ever accelerating innovation.

Culturally, we can expect new words to stream rapidly into the language. "Aqua-culture"—the term for scientific cultivation of the ocean's food resources—will take its place alongside "Agriculture." "Water," itself a term freighted with symbolic and emotional associations, will take on wholly new connotations. Along with a new vocabulary will come new symbols in poetry, painting, film and the other arts. Representations of oceanic life forms will find their way into graphic and industrial design. Fashions will reflect dependence on the ocean. New textiles, new plastics and other materials will be discovered. New drugs will be found to cure illness or alter mental states.

Most important, increased reliance on the oceans for food will alter the nutrition of millions—a change that, itself, carries significant unknowns in its wake. What happens to the energy level of people, to their desire for achievement, not to speak of their biochemistry, their average height and weight, their rate of maturation, their life span, their characteristic diseases, even their psychological responses, when their society shifts from a reliance on agri- to aquaculture?

The opening of the sea may also bring with it a new frontier spirit—a way of life that offers adventure,

danger, quick riches or fame to the initial explorers. Later, as man begins to colonize the continental shelves, and perhaps even the deeper reaches, the pioneers may well be followed by settlers who build artificial cities beneath the waves—work cities, science cities, medical cities, and play cities, complete with hospitals, hotels and homes.

If all this sounds too far off, it is sobering to note that Dr. Walter L. Robb, a scientist at General Electric, has already kept a hamster alive under water by enclosing it in a box that is, in effect, an artificial gill—a synthetic membrane that extracts air from the surrounding water while keeping the water out. Such membranes formed the top, bottom and two sides of a box in which the hamster was submerged in water. Without the gill, the animal would have suffocated. With it, it was able to breathe under water. Such membranes, G.E. claims, may some day furnish air for the occupants of underwater experimental stations. They might eventually be built into the walls of undersea apartment houses, hotels and other structures, or even—who knows?—into the human body itself.

Indeed, the old science fiction speculations about men with surgically implanted gills no longer seem quite so impossibly far-fetched as they once did. We may create (perhaps even breed) specialists for ocean work, men and women who are not only mentally, but physically equipped for work, play, love and sex under the sea. Even if we do not resort to such dramatic measures in our haste to conquer the underwater frontier, it seems likely that the opening of the oceans will generate not merely new professional specialties, but new life styles, new ocean-oriented subcultures, and perhaps even new religious sects or mystical cults to celebrate the seas.

One need not push speculation so far, however, to recognize that the novel environments to which man will be exposed will, of necessity, bring with them altered perceptions, new sensations, new sensitivities

to color and form, new ways of thinking and feeling. Moreover, the invasion of the sea, the first wave of which we shall witness long before the arrival of A.D. 2000, is only one of a series of closely tied scientific-technological trends that are now racing forward —all of them crammed with novel social and psychological implications.

## SUNLIGHT AND PERSONALITY

The conquest of the oceans links up directly with the advance toward accurate weather prediction and, ultimately, climate control. What we call weather is largely a consequence of the interaction of sun, air and ocean. By monitoring ocean currents, salinity and other factors, by placing weather-watch satellites in the skies, we will greatly increase our ability to forecast weather accurately. According to Dr. Walter Orr Roberts, past president of the American Association for the Advancement of Science, "We foresee bringing the entire globe under continuous weather observation by the mid-1970's—and at reasonable cost. And we envision, from this, vastly improved forecasting of storms, freezes, droughts, smog episodes—with attendant opportunities to avert disaster. But we can also see lurking in the beyond-knowledge of today an awesome potential weapon of war—the deliberate manipulation of weather for the benefit of the few and the powerful, to the detriment of the enemy, and perhaps of the bystanders as well."

In a science fiction story entitled *The Weather Man,* Theodore L. Thomas depicts a world in which the central political institution is a "Weather Council." In it, representatives of the various nations hammer out weather policy and control peoples by adjusting climate, imposing a drought here or a storm there to enforce their edicts. We may still be a long way from having such carefully calibrated control. But there is no question that the day is past when

man simply had to take whatever heaven deigned to give in the way of weather. In the blunt words of the American Meteorological Society: "Weather modification today is a reality."

This represents one of the turning points in history and provides man with a weapon that could radically affect agriculture, transportation, communication, recreation. Unless wielded with extreme care, however, the gift of weather control can prove man's undoing. The earth's weather system is an integrated whole; a minute change at one point can touch off massive consequences elsewhere. Even without aggressive intent, there is danger that attempts to control a drought on one continent could trigger a tornado on another.

Moreover, the unknown socio-psychological consequences of weather manipulation could be enormous. Millions of us, for example, hunger for sunshine, as our mass migrations to Florida, California or the Mediterranean coast indicate. We may well be able to produce sunshine—or a facsimile of it—at will. The National Aeronautics and Space Administration is studying the concept of a giant orbiting space mirror capable of reflecting the sun's light downward on night-shrouded parts of the earth. A NASA official, George E. Mueller, has testified before Congress that the United States will have the capacity to launch huge sun-reflecting satellites by mid-1970. (By extension, it should not be impossible to loft satellites that would block out sunlight over preselected regions, plunging them into at least semi-darkness.)

The present natural light-dark cycle is tied to human biological rhythms in ways that are, as yet, unexplored. One can easily imagine the use of orbiting sun-mirrors to alter the hours of light for agricultural, industrial or even psychological reasons. For example, the introduction of longer days into Scandinavia could have a strong influence on the culture and personality types now characteristic of that region. To

put the matter only half-facetiously, what happens to Ingmar Bergman's brooding art when Stockholm's brooding darkness is lifted? Could *The Seventh Seal* or *Winter Light* have been conceived in another climate?

The increasing ability to alter weather, the development of new energy sources, new materials (some of them almost surrealistic in their properties), new transportation means, new foods (not only from the sea, but from huge hydroponic food-growing factories)—all these only begin to hint at the nature of the accelerating changes that lie ahead.

## THE VOICE OF THE DOLPHIN

In *War With the Newts,* Karel Capek's marvelous but little-known novel, man brings about the destruction of civilization through his attempt to domesticate a variety of salamander. Today, among other things, man is learning to exploit animals and fish in ways that would have made Capek smile wryly. Trained pigeons are used to identify and eliminate defective pills from drug factory assembly lines. In the Ukraine, Soviet scientists employ a particular species of fish to clear the algae off the filters in pumping stations. Dolphins have been trained to carry tools to "aquanauts" submerged off the coast of California, and to ward off sharks who approach the work zone. Others have been trained to ram submerged mines, thereby detonating them and committing suicide on man's behalf—a use that provoked a slight furor over inter-species ethics.

Research into communication between man and the dolphin may prove to be extremely useful if, and when, man makes contact with extra-terrestrial life—a possibility that many reputable astronomers regard as almost inevitable. In the meantime, dolphin research is yielding new data on the ways in which man's sensory apparatus differs from that of other

animals. It suggests some of the outer limits within which the human organism operates—feelings, moods, perceptions not available to man because of his own biological make-up can be at least analyzed or described.

Existing animal species, however, are by no means all we have to work with. A number of writers have suggested that new animal forms be bred for specialized purposes. Sir George Thomson notes that "with advancing knowledge of genetics very large modifications in the wild species can no doubt be made." Arthur Clarke has written about the possibility that we can "increase the intelligence of our domestic animals, or evolve wholly new ones with much higher I.Q.'s than any existing now." We are also developing the capacity to control animal behavior by remote control. Dr. José M. R. Delgado, in a series of experiments terrifying in their human potential, implanted electrodes in the skull of a bull. Waving a red cape, Delgado provoked the animal to charge. Then, with a signal emitted from a tiny hand-held radio transmitter, he made the beast turn aside in mid-lunge and trot docilely away.

Whether we grow specialized animals to serve us or develop household robots depends in part on the uneven race between the life sciences and the physical sciences. It may be cheaper to make machines for our purposes, than to raise and train animals. Yet the biological sciences are developing so rapidly that the balance may well tip within our lifetimes. Indeed, the day may even come when we begin to grow our machines.

### THE BIOLOGICAL FACTORY

Raising and training animals may be expensive, but what happens when we go down the evolutionary scale to the level of bacteria, viruses and other microorganisms? Here we can harness life in its primitive

forms just as we once harnessed the horse. Today a new science based on this principle is rapidly emerging and it promises to change the very nature of industry as we know it.

"Our ancestors domesticated various plant and animal species in the prehistoric past," says biochemist Marvin J. Johnson of the University of Wisconsin. But "microorganisms were not domesticated until very recently, primarily because man did not know of their existence." Today he does, and they are already used in the large-scale production of vitamins, enzymes, antibiotics, citric acid and other useful compounds. By the year 2000, if the pressure for food continues to intensify, biologists will be growing microorganisms for use as animal feed and, eventually, human food.

At Uppsala University in Sweden, I had the opportunity to discuss this with Arne Tiselius, the Nobel prizewinning biochemist who is now president of the Nobel Foundation itself. "Is it conceivable," I asked, "that one day we shall create, in effect, biological machines—systems that can be used for productive purposes and will be composed not of plastic or metal parts, but of living organisms?" His answer was roundabout, but unequivocal: "We are already there. The great future of industry will come from biology. In fact, one of the most striking things about the tremendous technological development of Japan since the war has been not only its shipbuilding, but its microbiology. Japan is now the greatest power in the world in industry based on microbiology . . . Much of their food and food industry is based on processes in which bacteria are used. Now they produce all sorts of useful things—amino acids, for example. In Sweden everybody now talks about the need to strengthen our position in microbiology.

"You see, one need not think in terms of bacteria and viruses alone . . . The industrial processes, in general, are based on man-made processes. You make steel by a reduction of iron ore with coal. Think of

the plastic industries, artificial products made originally from petroleum. Yet it is remarkable that even today, with the tremendous development of chemistry and chemical technology, there is no single foodstuff produced industrially which can compete with what the farmers grow.

"In this field, and in a great many fields, nature is far superior to man, even to the most advanced chemical engineers and researchers. Now what is the consequence of that? When we gradually get to know how nature makes these things, and when we can imitate nature, we will have processes of an entirely new kind. These will form the basis for industries of a new kind—a sort of bio-technical factory, a biological technology.

"The green plants make starch with the aid of carbon dioxide from the atmosphere and the sun. This is an extremely efficient machine . . . The green leaf is a marvelous machine. We know a great deal more about it today than two or three years ago. But not enough to imitate it yet. There are many such 'machines' in nature." Such processes, Tiselius continued, will be put to work. Rather than trying to synthesize products chemically, we will, in effect, grow them to specification.

One might even conceive of biological components in machines—in computers, for example. "It is quite obvious," Tiselius continued, "that computers so far are just bad imitations of our brains. Once we learn more about how the brain acts, I would be surprised if we could not construct a sort of biological computer . . . Such a computer might have electronic components modeled after biological components in the real brain. And at some distant point in the future it is conceivable that biological elements themselves might be parts of the machine." Precisely such ideas have led Jean Fourastié, the French economist and planner, to state flatly: "Man is on the path toward integrating living tissue in the processes of physical mechanisms . . . We shall have in the near future

machines constituted at one and the same time of metal and of living substances . . ." In the light of this, he says, "The human body itself takes on new meaning"

## THE PRE-DESIGNED BODY

Like the geography of the planet, the human body has until now represented a fixed point in human experience, a "given." Today we are fast approaching the day when the body can no longer be regarded as fixed. Man will be able, within a reasonably short period, to redesign not merely individual bodies, but the entire human race.

In 1962 Drs. J. D. Watson and F. H. C. Crick received the Nobel prize for describing the DNA molecule. Since then advances in genetics have come tripping over one another at a rapid pace. Molecular biology is now about to explode from the laboratories. New genetic knowledge will permit us to tinker with human heredity and manipulate the genes to create altogether new versions of man.

One of the more fantastic possibilities is that man will be able to make biological carbon copies of himself. Through a process known as "cloning" it will be possible to grow from the nucleus of an adult cell a new organism that has the same genetic characteristics of the person contributing the cell nucleus. The resultant human "copy" would start life with a genetic endowment identical to that of the donor, although cultural differences might thereafter alter the personality or physical development of the clone.

Cloning would make it possible for people to see themselves born anew, to fill the world with twins of themselves. Cloning would, among other things, provide us with solid empirical evidence to help us resolve, once and for all, the ancient controversy over "nature *vs.* nurture" or "heredity *vs.* environment." The solution of this problem, through the determina-

tion of the role played by each, would be one of the great milestones of human intellectual development. Whole libraries of philosophical speculation could, by a single stroke, be rendered irrelevant. An answer to this question would open the way for speedy, qualitative advances in psychology, moral philosophy and a dozen other fields.

But cloning could also create undreamed of complications for the race. There is a certain charm to the idea of Albert Einstein bequeathing copies of himself to posterity. But what of Adolf Hitler? Should there be laws to regulate cloning? Nobel Laureate Joshua Lederberg, a scientist who takes his social responsibility very seriously, believes it conceivable that those most likely to replicate themselves will be those who are most narcissistic, and that the clones they produce will also be narcissists.

Even if narcissism, however, is culturally rather than biologically transmitted, there are other eerie difficulties. Thus Lederberg raises a question as to whether human cloning, if permitted, might not "go critical." "I use that phrase," he told me, "in almost exactly the same sense that is involved in nuclear energy. It *will* go critical if there is a sufficient positive advantage to doing so . . . This has to do with whether the efficiency of communication, particularly along educational lines, is increased as between identical genotypes or not. The similarity of neurological hardware might make it easier for identical copies to transmit technical and other insights from one generation to the next."

How close is cloning? "It has already been done in amphibia," says Lederberg, "and somebody may be doing it right now with mammals. It wouldn't surprise me if it comes out any day now. When someone will have the courage to try it in a man, I haven't the foggiest idea. But I put the time scale on that anywhere from zero to fifteen years from now. Within fifteen years."

During those same fifteen years scientists will also

learn how the various organs of the body develop, and they will, no doubt, begin to experiment with various means of modifying them. Says Lederberg: "Things like the size of the brain and certain sensory qualities of the brain are going to be brought under direct developmental control . . . I think this is very near."

It is important for laymen to understand that Lederberg is by no means a lone worrier in the scientific community. His fears about the biological revolution are shared by many of his colleagues. The ethical, moral and political questions raised by the new biology simply boggle the mind. Who shall live and who shall die? What is man? Who shall control research into these fields? How shall new findings be applied? Might we not unleash horrors for which man is totally unprepared? In the opinion of many of the world's leading scientists the clock is ticking for a "biological Hiroshima."

Imagine, for example, the implications of biological breakthroughs in what might be termed "birth technology." Dr. E. S. E. Hafez, an internationally respected biologist at Washington State University, has publicly suggested, on the basis of his own astonishing work on reproduction, that within a mere ten to fifteen years a woman will be able to buy a tiny frozen embryo, take it to her doctor, have it implanted in her uterus, carry it for nine months, and then give birth to it as though it had been conceived in her own body. The embryo would, in effect, be sold with a guarantee that the resultant baby would be free of genetic defect. The purchaser would also be told in advance the color of the baby's eyes and hair, its sex, its probable size at maturity and its probable IQ.

Indeed, it will be possible at some point to do away with the female uterus altogether. Babies will be conceived, nurtured and raised to maturity outside the human body. It is clearly only a matter of years before the work begun by Dr. Daniele Petrucci

in Bologna and other scientists in the United States and the Soviet Union, makes it possible for women to have babies without the discomfort of pregnancy.

The potential applications of such discoveries raise memories of *Brave New World* and *Astounding Science Fiction.* Thus Dr. Hafez, in a sweep of his imagination, suggests that fertilized human eggs might be useful in the colonization of the planets. Instead of shipping adults to Mars, we could ship a shoebox full of such cells and grow them into an entire city-size population of humans. "When you consider how much it costs in fuel to lift every pound off the launch pad," Dr. Hafez observes, "why send full-grown men and women aboard space ships? Instead, why not ship tiny embryos, in the care of a competent biologist . . . We miniaturize other spacecraft components. Why not the passengers?"

Long before such developments occur in outer space, however, the impact of the new birth technology will strike home on earth, splintering our traditional notions of sexuality, motherhood, love, child-rearing, and education. Discussions about the future of the family that deal only with The Pill overlook the biological witches' brew now seething in the laboratories. The moral and emotional choices that will confront us in the coming decades are mind-staggering.

A fierce controversy is already raging today among biologists over the problems and ethical issues arising out of eugenics. Should we try to breed a better race? If so, exactly what is "better?" And who is to decide? Such questions are not entirely new. Yet the techniques soon to be available smash the traditional limits of the argument. We can now imagine remaking the human race not as a farmer slowly and laboriously "breeds up" his herd, but as an artist might, employing a brilliant range of unfamiliar colors, shapes and forms.

Not far from Route 80, outside the little town of Hazard, Kentucky, is a place picturesquely known as

Valley of Troublesome Creek. In this tiny backwoods community lives a family whose members, for generations, have been marked by a strange anomaly: blue skin. According to Dr. Madison Cawein of the University of Kentucky College of Medicine, who tracked the family down and traced its story, the blue-skinned people seem perfectly normal in other respects. Their unusual color is caused by a rare enzyme deficiency that has been passed from one generation to the next.

Given our new, fast-accumulating knowledge of genetics, we shall be able to breed whole new races of blue people—or, for that matter, green, purple or orange. In a world still suffering from the moral lesion of racism, this is a thought to be conjured with. Should we strive for a world in which all people share the same skin color? If we want that, we shall no doubt have the technical means for bringing it about. Or should we, instead, work toward even greater diversity than now exists? What happens to the entire concept of race? To standards of physical beauty? To notions of superiority or inferiority?

We are hurtling toward the time when we will be able to breed both super- and sub-races. As Theodore J. Gordon put it in *The Future*, "Given the ability to tailor the race, I wonder if we would "create all men equal,' or would we choose to manufacture apartheid? Might the races of the future be: a superior group, the DNA controllers; the humble servants; special athletes for the 'games'; research scientists with 200 IQ and diminutive bodies . . ." We shall have the power to produce races of morons or of mathematical savants.

We shall also be able to breed babies with supernormal vision or hearing, supernormal ability to detect changes in odor, or supernormal muscular or musical skills. We will be able to create sexual superathletes, girls with super-mammaries (and perhaps more or less than the standard two), and countless

other varieties of the previously monomorphic human being.

Ultimately, the problems are not scientific or technical, but ethical and political. Choice—and the criteria for choice—will be critical. The eminent science fiction author William Tenn once mused about the possibilities of genetic manipulation and the difficulties of choice. "Assuming hopefully for the moment that no dictator, self-righteous planning board or omnipotent black box is going to make genetic selections for the coming generation, then who or what is? Not parents, certainly . . ." he said, "they'll take the problem to their friendly neighborhood Certified Gene Architect.

"It seems inevitable to me that there will also be competitive schools of genetic architecture . . . the Functionalists will persuade parents to produce babies fitted for the present needs of society; the Futurists will suggest children who will have a niche in the culture as it will have evolved in twenty years; the Romantics will insist that each child be bred with at least one outstanding talent; and the Naturalists will advise the production of individuals so balanced genetically as to be in almost perfect equilibrium . . . Human body styles, like human clothing styles, will become *outré*, or *à la mode* as the genetic *couturiers* who designed them come into and out of vogue."

Buried behind this tongue-in-cheek are serious issues, made more profound by the immensity of the possibilities—some of them so grotesque that they appear to leap at us from the canvases of Hieronymus Bosch. Mention was made earlier of the idea of breeding men with gills or implanting gills in them for efficiency in underwater environments. At a meeting of world renowned biologists in London, J. B. S. Haldane began to expatiate about the possibility of creating new, far-out forms of man for space exploration. "The most obvious abnormalities in extra-terrestrial environments," Haldane observed, "are differences

in gravitation, temperature, air pressure, air composition, and radiation . . . Clearly a gibbon is better preadapted than a man for life in a low gravitational field, such as that of a space ship, an asteroid, or perhaps even the moon. A platyrrhine with a prehensile tail is even more so. Gene grafting may make it possible to incorporate such features into the human stocks."

While the scientists at this meeting devoted much of their attention to the moral consequences and perils of the biological revolution, no one challenged Haldane's suggestion that we shall someday make men with tails if we want them. Indeed, Lederberg merely observed that there might well be non-genetic ways to accomplish the same ends more easily. "We are going to modify man experimentally through physiological and embryological alterations, and by the substitution of machines for his parts," Lederberg declared. "If we want a man without legs, we don't have to breed him, we can chop them off; if we want a man with a tail, we will find a way of grafting it on to him."

At another meeting of scientists and scholars, Dr. Robert Sinsheimer, a Caltech biophysicist, put the challenge squarely:

"How will you choose to intervene in the ancient designs of nature for man? Would you like to control the sex of your offspring? It will be as you wish. Would you like your son to be six feet tall—seven feet? Eight feet? What troubles you?—allergy, obesity, arthritic pain? These will be easily handled. For cancer, diabetes, phenylketonuria there will be genetic therapy. The appropriate DNA will be provided in the appropriate dose. Viral and microbial disease will be easily met. Even the timeless patterns of growth and maturity and aging will be subject to our design. We know of no intrinsic limits to the life span. How long would you like to live?"

Lest his audience mistake him, Sinsheimer asked: "Do these projections sound like LSD fantasies, or

the view in a distorted mirror? None transcends the potential of what we now know. They may not be developed in the way one might now anticipate, but they *are* feasible, they *can* be brought to reality, and sooner rather than later."

Not only *can* such wonders be brought to reality, but the odds are they *will.* Despite profound ethical questions about whether they *should,* the fact remains that scientific curiosity is, itself, one of the most powerful driving forces in our society. In the words of Dr. Rollin D. Hotchkiss of the Rockefeller Institute: "Many of us feel instinctive revulsion at the hazards of meddling with the finely balanced and far-reaching systems that make an individual what he is. Yet I believe it will surely be done or attempted. The pathway will be built from a combination of altruism, private profit and ignorance." To this list, worse yet, he might have added political conflict and bland unconcern. Thus Dr. A. Neyfakh, chief of the research laboratory of the Institute of Development Biology of the Soviet Academy of Sciences, predicts with a frightening lack of anxiety that the world will soon witness a genetic equivalent of the arms race. He bases his argument on the notion that the capitalist powers are engaged in a "struggle for brains." To make up for the brain drain, one or another of the "reactionary governments" will be "compelled" to employ genetic engineering to increase its output of geniuses and gifted individuals. Since this will occur "regardless of their intention," an international genetics race is inevitable. And this being so, he implies, the Soviet Union ought to be ready to jump the gun.

Criticized by the Soviet philosopher A. Petropavlovsky for his seeming willingness, even enthusiasm, to participate in such a race, Neyfakh shrugged aside the horrors that might be unleashed by hasty application of the new biology, replying merely that the advance of science is, and ought to be, unstoppable. If Neyfakh's political logic leaves something to be

desired, his appeal to cold war passions as a justification for genetic tinkering is terrifying.

In short, it is safe to say that, unless specific counter-measures are taken, if something *can* be done, someone, somewhere *will* do it. The nature of what can and will be done exceeds anything that man is as yet psychologically or morally prepared to live with.

## THE TRANSIENT ORGAN

We steadfastly refuse to face such facts. We avoid them by stubbornly refusing to recognize the speed of change. It makes us feel better to defer the future. Even those closest to the cutting edge of scientific research can scarcely believe the reality. Even they routinely underestimate the speed at which the future is breaking on our shores. Thus Dr. Richard J. Cleveland, speaking before a conference of organ transplant specialists, announced in January, 1967, that the first human heart transplant operation will occur "within five years." Yet before the same year was out Dr. Christiaan Barnard had operated on a fifty-five-year-old grocer named Louis Washkansky, and a staccato sequence of heart transplant operations exploded like a string of firecrackers into the world's awareness. In the meantime, success rates are rising steadily in kidney transplants. Successful liver, pancreas and ovary transplants are also reported.

Such accelerating medical advances must compel profound changes in our ways of thinking, as well as our way of caring for the sick. Startling new legal, ethical and philosophical issues arise. What, for instance, is death? Does death occur when the heart stops beating, as we have traditionally believed? Or does it occur when the brain stops functioning? Hospitals are becoming more and more familiar with cases of patients kept alive through advanced medical techniques, but doomed to exist as unconscious

vegetables. What are the ethics of condemning such a person to death to obtain a healthy organ needed for transplant to save the life of a person with a better prognosis?

Lacking guidelines or precedents, we flounder over the moral and legal questions. Ghoulish rumors race through the medical community. *The New York Times* and *Komsomolskaya Pravda* both speculate about the possibility of "future murder rings supplying healthy organs for black-market surgeons whose patients are unwilling to wait until natural sources have supplied the heart or liver or pancreas they need." In Washington, the National Academy of Sciences, backed by a grant from the Russell Sage Foundation, begins a study of social policy issues springing from advances in the life sciences. At Stanford, a symposium, also funded by Russell Sage, examines methods for setting up transplant organ banks, the economics of an organ market, and evidences of class or racial discrimination in organ availability.

The possibility of cannibalizing bodies or corpses for usable transplant organs, grisly as it is, will serve to accelerate further the pace of change by lending urgency to research in the field of artificial organs—plastic or electronic substitutes for the heart or liver or spleen. (Eventually, even these may be made unnecessary when we learn how to regenerate damaged organs or severed limbs, growing new ones as the lizard now grows a tail.)

The drive to develop spare parts for failing human bodies will be stepped up as demand intensifies. The development of an economical artificial heart, Professor Lederberg says, "is only a few transient failures away." Professor R. M. Kenedi of the bio-engineering group at the University of Strathclyde in Glasgow believes that "by 1984, artificial replacements for tissues and organs may well have become commonplace." For some organs, this date is, in fact, conservative. Already more than 13,000 cardiac patients in the United States—including a Supreme Court

justice—are alive because they carry, stitched into their chest cavity, a tiny "pacemaker"—a device that sends pulses of electricity to activate the heart.*

Another 10,000 pioneers are already equipped with artificial heart valves made of dacron mesh. Implantable hearing aids, artificial kidneys, arteries, hip joints, lungs, eye sockets and other parts are all in various stages of early development. We shall, before many decades are past, implant tiny, aspirin-sized sensors in the body to monitor blood pressure, pulse, respiration and other functions, and tiny transmitters to emit a signal when something goes wrong. Such signals will feed into giant diagnostic computer centers upon which the medicine of the future will be based. Some of us will also carry a tiny platinum plate and a dime-sized "stimulator" attached to the spine. By turning a midget "radio" on and off we will be able to activate the stimulator and kill pain. Initial work on these pain-control mechanisms is already under way at the Case Institute of Technology. Push-button pain killers are already being used by certain cardiac patients.

Such developments will lead to vast new bio-engineering industries, chains of medical-electronic repair stations, new technical professions and a reorganization of the entire health system. They will change life expectancy, shatter insurance company life tables, and bring about important shifts in the

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* At a major Midwest hospital not long ago a patient appeared at the emergency room in the middle of the night. He was hiccupping violently, sixty times a minute. The patient, it turned out, was an early pacemaker wearer. A fast-thinking resident realized what had happened: a pacemaker wire, instead of stimulating the heart, had broken loose and become lodged in the diaphragm. Its jolts of electricity were causing the hiccupping. Acting swiftly, the resident inserted a needle into the patient's chest near the pacemaker, ran a wire out from the needle and grounded it to the hospital plumbing. The hiccupping stopped, giving doctors a chance to operate and reposition the faulty wire. A foretaste of tomorrow's medicine?

human outlook. Surgery will be less frightening to the average individual; implantation routine. The human body will come to be seen as modular. Through application of the modular principle—preservation of the whole through systematic replacement of transient components—we may add two or three decades to the average life span of the population. Unless, however, we develop far more advanced understanding of the brain than we now have, this could lead to one of the greatest ironies in history. Sir George Pickering, Regius professor of medicine at Oxford, has warned that unless we watch out, "those with senile brains will form an ever increasing fraction of the inhabitants of the earth. I find this," he added rather unnecessarily, "a terrifying prospect." Just such terrifying prospects will drive us toward more accelerated research into the brain—which, in turn, will generate still further radical changes in the society.

Today we struggle to make heart valves or artificial plumbing that imitate the original they are designed to replace. We strive for functional equivalence. Once we have mastered the basic problems, however, we shall not merely install plastic aortas in people because their original aorta is about to fail. We shall install specially-designed parts that are *better* than the original, and then we shall move on to install parts that provide the user with capabilities that were absent in the first place. Just as genetic engineering holds out the promise of producing "super-people," so, too, does organ technology suggest the possibility of track stars with extra-capacity lungs or hearts; sculptors with a neural device that intensifies sensitivity to texture; lovers with sex-intensifying neural machinery. In short, we shall no longer implant merely to save a life, but to enhance it—to make possible the achievement of moods, states, conditions or ecstasies that are presently beyond us.

Under these circumstances, what happens to our age-old definitions of "human-ness?" How will it feel to be part protoplasm and part transistor? Exactly what

possibilities will it open? What limitations will it place on work, play, sex, intellectual or aesthetic responses? What happens to the mind when the body is changed? Questions like these cannot be long deferred, for advanced fusions of man and machine—called "Cyborgs"—are closer than most people suspect.

## THE CYBORGS AMONG US

Today the man with a pacemaker or a plastic aorta is still recognizably a man. The inanimate part of his body is still relatively unimportant in terms of his personality and consciousness. But as the proportion of machine components rises, what happens to his awareness of self, his inner experience? If we assume that the brain is the seat of consciousness and intelligence, and that no other part of the body affects personality or self very much, then it is possible to conceive of a disembodied brain—a brain without arms, legs, spinal cord or other equipment—as a self, a personality, an embodiment of awareness. It may then become possible to combine the human brain with a whole set of artificial sensors, receptors and effectors, and to call *that* tangle of wires and plastic a human being.

All this may seem to resemble medieval speculation about the number of angels who can pirouette on a pinhead, yet the first small steps toward some form of man-machine symbiosis are already being taken. Moreover, they are being taken not by a lone mad scientist, but by thousands of highly trained engineers, mathematicians, biologists, surgeons, chemists, neurologists and communications specialists.

Dr. W. G. Walter's mechanical "tortoises" are machines that behave as though they had been psychologically conditioned. These tortoises were early specimens of a growing breed of robots ranging from the "Perceptron" which could learn (and even gen-

eralize) to the more recent "Wanderer," a robot capable of exploring an area, building up in its memory an "image" of the terrain, and able even to indulge in certain operations comparable, at least in some respects, to "contemplative speculation" and "fantasy." Experiments by Ross Ashby, H. D. Block, Frank Rosenblatt and others demonstrate that machines can learn from their mistakes, improve their performance, and, in certain limited kinds of learning, outstrip human students. Says Block, professor of Applied Mathematics at Cornell University: "I don't think there's a task you can name that a machine can't do—in principle. If you can define a task and a human can do it, then a machine can, at least in theory, also do it. The converse, however, is not true." Intelligence and creativity, it would appear, are not a human monopoly.

Despite setbacks and difficulties, the roboteers are moving forward. Recently they enjoyed a collective laugh at the expense of one of the leading critics of the robot-builders, a former RAND Corporation computer specialist named Hubert L. Dreyfus. Arguing that computers would never be able to match human intelligence, Dreyfus wrote a lengthy paper heaping vitriolic scorn on those who disagreed with him. Among other things, he declared, "No chess program can play even amateur chess." In context, he appeared to be saying that none ever would. Less than two years later, a graduate student at MIT, Richard Greenblatt, wrote a chess-playing computer program, challenged Dreyfus to a match, and had the immense satisfaction of watching the computer annihilate Dreyfus to the cheers of the "artificial intelligence" researchers.

In a quite different field of robotology there is progress, too. Technicians at Disneyland have created extremely life-like computer-controlled humanoids capable of moving their arms and legs, grimacing, smiling, glowering, simulating fear, joy and a wide range of other emotions. Built of clear plastic that,

according to one reporter, "does everything but bleed," the robots chase girls, play music, fire pistols, and so closely resemble human forms that visitors routinely shriek with fear, flinch and otherwise react as though they were dealing with real human beings. The purposes to which these robots are put may seem trivial, but the technology on which they are based is highly sophisticated. It depends heavily on knowledge acquired from the space program—and this knowledge is accumulating rapidly.

There appears to be no reason, in principle, why we cannot go forward from these present primitive and trivial robots to build humanoid machines capable of extremely varied behavior, capable even of "human" error and seemingly random choice—in short, to make them behaviorally indistinguishable from humans except by means of highly sophisticated or elaborate tests. At that point we shall face the novel sensation of trying to determine whether the smiling, assured humanoid behind the airline reservation counter is a pretty girl or a carefully wired robot.*

The likelihood, of course, is that she will be both.

The thrust toward some form of man-machine symbiosis is furthered by our increasing ingenuity in communicating with machines. A great deal of much-publicized work is being done to facilitate the interaction of men and computers. But quite apart from this, Russian and American scientists have both been experimenting with the placement or implantation

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* This raises a number of half-amusing, half-serious problems about the relationships between men and machines, including emotional and even sexual relationships. Professor Block at Cornell speculates that man-machine sexual relationships may not be too far distant. Pointing out that men often develop emotional attachments to the machines they use, he suggests that we shall have to give attention to the "ethical" questions arising from our treatment of "these mechanical objects of our affection and passion." A serious inquiry into these issues is to be found in an article by Roland Puccetti in the British *Journal of the Philosophy of Science,* 18 (1967) 39–51.

of detectors that pick up signals from the nerve ends at the stub of an amputated limb. These signals are then amplified and used to activate an artificial limb, thereby making a machine directly and sensitively responsive to the nervous system of a human being. The human need not "think out" his desires; even involuntary impulses are transmittable. The responsive behavior of the machine is as automatic as the behavior of ones' own hand, eye or leg.

In *Flight to Arras*, Antoine de Saint-Exupéry, novelist, poet and pioneer aviator, described buckling himself into the seat of a fighter plane during World War II. "All this complication of oxygen tubes, heating equipment; these speaking tubes that form the 'intercom' running between the members of the crew. This mask through which I breathe. I am attached to the plane by a rubber tube as indispensable as an umbilical cord. Organs have been added to my being, and they seem to intervene between me and my heart . . ." We have come far since those distant days. Space biology is marching irresistibly toward the day when the astronaut will not merely be buckled into his capsule, but become a part of it in the full symbiotic sense of the phrase.

One aim is to make the craft itself a wholly self-sufficient universe, in which algae is grown for food, water is recovered from body waste, air is recycled to purge it of the ammonia entering the atmosphere from urine, etc. In this totally enclosed fully regenerative world, the human being becomes an integral part of an on-going micro-ecological process whirling through the vastnesses of space. Thus Theodore Gordon, author of *The Future* and himself a leading space engineer, writes: "Perhaps it would be simpler to provide life support in the form of machines that plug into the astronaut. He could be fed intravenously using a liquid food compactly stored in a remote pressurized tank. Perhaps direct processing of body liquid wastes, and conversion to water, could be accomplished by a new type of artificial kidney built

in as part of the spaceship. Perhaps sleep could be induced electronically . . . to lower his metabolism . . ." *Und so weiter.* One after another, the body functions of the human become interwoven with, dependent on, and part of, the machine functions of the capsule.

The ultimate extension of such work, however, is not necessarily to be found in the outer reaches of space; it may well become a common part of everyday life here on the mother planet. This is the direct link-up of the human brain—stripped of its supporting physical structures—with the computer. Indeed, it may be that the biological component of the supercomputers of the future may be massed human brains. The possibility of enhancing human (and machine) intelligence by linking them together organically opens enormous and exciting probabilities, so exciting that Dr. R. M. Page, director of the Naval Research Laboratory in Washington, has publicly discussed the feasibility of a system in which human thoughts are fed automatically into the storage unit of a computer to form the basis for machine decision-making. Participants in a RAND Corporation study conducted several years ago were asked when this development might occur. Answers ranged from as soon as 1990 to "never." But the median date given was 2020—well within the lifetime of today's teen-agers.

In the meantime, research from countless sources contributes toward the eventual symbiosis. In one of the most fascinating, frightening and intellectually provocative experiments ever recorded, Professor Robert White, director of neurosurgery at the Metropolitan General Hospital in Cleveland, has given evidence that the brain *can* be isolated from its body and kept alive after the "death" of the rest of the organism. The experiment, described in a brilliant article by Oriana Fallaci, saw a team of neurosurgeons cut the brain out of a rhesus monkey, discard the body, then hook the brain's carotid arteries up to

another monkey, whose blood then continued to bathe the disembodied organ, keeping it alive.

Said one of the members of the medical team, Dr. Leo Massopust, a neurophysiologist: "The brain activity is largely better than when the brain had a body . . . No doubt about it. I even suspect that without his senses, he can think more quickly. What kind of thinking, I don't know. I guess he is primarily a memory, a repository for information stored when he had his flesh; he cannot develop further because he no longer has the nourishment of experience. Yet this, too, is a new experience."

The brain survived for five hours. It could have lasted much longer, had it served the purposes of research. Professor White has successfully kept other brains alive for days, using machinery, rather than a living monkey, to keep the brain washed with blood. "I don't think we have reached the stage," he told Miss Fallaci, "where you can turn men into robots, obedient sheep. Yet . . . it could happen, it isn't impossible. If you consider that we can transfer the head of a man onto the trunk of another man, if you consider that we can isolate the brain of a man and make it work without its body . . . To me, there is no longer any gap between science fiction and science . . . We could keep Einstein's brain alive and make it function normally."

Not only, Professor White implies, can we transfer the head of one man to the shoulders of another, not only can we keep a head or a brain "alive" and functioning, but it can all be done, with "existing techniques." Indeed, he declares, "The Japanese will be the first to [keep an isolated human head alive]. I will not, because I haven't resolved as yet this dilemma: Is it right or not?" A devout Catholic, Dr. White is deeply troubled by the philosophical and moral implications of his work.

As the brain surgeons and the neurologists probe further, as the bio-engineers and the mathematicians, the communications experts and robot-builders be-

come more sophisticated, as the space men and their capsules grow closer and closer to one another, as machines begin to embody biological components and men come bristling with sensors and mechanical organs, the ultimate symbiosis approaches. The work converges. Yet the greatest marvel of all is not organ transplantation or symbiosis or underwater engineering. It is not technology, nor science itself.

The greatest and most dangerous marvel of all is the complacent past-orientation of the race, its unwillingness to confront the reality of acceleration. Thus man moves swiftly into an unexplored universe, into a totally new stage of eco-technological development, firmly convinced that "human nature is eternal" or that "stability will return." He stumbles into the most violent revolution in human history muttering, in the words of one famous, though myopic sociologist, that "the processes of modernization . . . have been more or less 'completed.'" He simply refuses to imagine the future.

## THE DENIAL OF CHANGE

In 1865 a newspaper editor told his readers that "Well-informed people know that it is impossible to transmit the voice over wires and that, were it possible to do so, the thing would be of no practical value." Barely a decade later, the telephone erupted from Mr. Bell's laboratory and changed the world.

On the very day that the Wright brothers took wing, newspapers refused to report the event because their sober, solid, feet-on-the-ground editors simply could not bring themselves to believe it had happened. After all, a famous American astronomer, Simon Newcomb, had not long before assured the world that "No possible combination of known substances, known forms of machinery and known forms of force, can be united in a practical machine by which man shall fly long distances."

Not long after this, another expert announced publicly that it was "nothing less than feeblemindedness to expect anything to come of the horseless carriage movement." Six years later the one-millionth Ford rolled off an assembly line. And then there was the great Rutherford, himself, the discoverer of the atom, who said in 1933 that the energy in the atom's nucleus would never be released. Nine years later: the first chain reaction.

Again and again the human brain—including the first class scientific brain—has blinded itself to the novel possibilities of the future, has narrowed its field of concern to gain momentary reassurance, only to be rudely shaken by the accelerative thrust.

This is not to imply that *all* the scientific or technological advances so far discussed will necessarily materialize. Still less does it imply that they will all occur between now and the turn of the century. Some will, no doubt, die a-borning. Some may represent blind alleys. Others will succeed in the lab, but turn out to be impractical for one reason or another. Yet all this is unimportant. For even if none of these developments occur, others, perhaps even more unsettling, will.

We have scarcely touched on the computer revolution and the far-ramifying changes that must follow in its churning wake. We have barely mentioned the implications of the thrust into outer space, an adventure that could, before the new millennium arrives, change all our lives and attitudes in radical and as yet unpredicted ways. (What would happen if an astronaut or space vehicle returned to earth contaminated with some fast-multiplying, death-dealing microorganism?) We have said nothing about the laser, the holograph, the powerful new instruments of personal and mass communication, the new technologies of crime and espionage, new forms of transport and construction, the developing horror of chemical and bacteriological warfare techniques, the radiant promise of

solar energy, the coming discovery of life in a test tube, the startling new tools and techniques for education, and an endless list of other fields in which high-impact changes lie just ahead.

In the coming decades, advances in all these fields will fire off like a series of rockets carrying us out of the past, plunging us deeper into the new society. Nor will this new society quickly settle into a steady state. It, too, will quiver and crack and roar as it suffers jolt after jolt of high-energy change. For the individual who wishes to live in his time, to be a part of the future, the super-industrial revolution offers no surcease from change. It offers no return to the familiar past. It offers only the highly combustible mixture of transience and novelty.

This massive injection of speed and novelty into the fabric of society will force us not merely to cope more rapidly with familiar situations, events and moral dilemmas, but to cope at a progressively faster rate with situations that are, for us, decidedly unfamiliar, "first-time" situations, strange, irregular, unpredictable.

This will significantly alter the balance that prevails in any society between the familiar and unfamiliar elements in the daily life of its people, between the routine and non-routine, the predictable and the unpredictable. The relationship between these two kinds of daily-life elements can be called the "novelty ratio" of the society, and as the level of newness or novelty rises, less and less of life appears subject to our routine forms of coping behavior. More and more, there is a growing weariness and wariness, a pall of pessimism, a decline in our sense of mastery. More and more, the environment comes to seem chaotic, beyond human control.

Thus two great social forces converge: the relentless movement toward transience is reinforced and made more potentially dangerous by a rise in the novelty ratio. Nor, as we shall next see, is this novelty

to be found solely in the technological arrangements of the society-to-be. In its social arrangements, too, we can anticipate the unprecedented, the unfamiliar, the bizarre.

# Chapter 10

# THE EXPERIENCE MAKERS

The year 2000 is closer to us in time than the great depression, yet the world's economists, traumatized by that historic disaster, remain frozen in the attitudes of the past. Economists, even those who talk the language of revolution, are peculiarly conservative creatures. If it were possible to pry from their brains their collective image of the economy of, say, the year 2025, it would look very much like that of 1970—only more so.

Conditioned to think in straight lines, economists have great difficulty imagining alternatives to communism and capitalism. They see in the growth of large-scale organization nothing more than a linear expansion of old-fashioned bureaucracy. They see technological advance as a simple, non-revolutionary extension of the known. Born of scarcity, trained to think in terms of limited resources, they can hardly conceive of a society in which man's basic material wants have been satisfied.

One reason for their lack of imagination is that when they think about technological advance, they concentrate solely on the *means* of economic activity. Yet the super-industrial revolution challenges the ends as well. It threatens to alter not merely the "how" of produc-

tion but the "why." It will, in short, transform the very purposes of economic activity.

Before such an upheaval, even the most sophisticated tools of today's economists are helpless. Input-output tables, econometric models—the whole paraphernalia of analysis that economists employ simply do not come to grips with the external forces—political, social and ethical—that will transform economic life in the decades before us. What does "productivity" or "efficiency" mean in a society that places a high value on psychic fulfillment? What happens to an economy when, as is likely, the entire concept of property is reduced to meaninglessness? How are economies likely to be affected by the rise of supra-national planning, taxing and regulatory agencies or by a kind of dialectical return to "cottage industry" based on the most advanced cybernetic technologies? Most important, what happens when "no growth" replaces "growth" as an economic objective, when GNP ceases to be the holy grail?

Only by stepping outside the framework of orthodox economic thought and examining these possibilities can we begin to prepare for tomorrow. And among these, none is more central than the shift in values that is likely to accompany the super-industrial revolution.

Under conditions of scarcity, men struggle to meet their immediate material needs. Today under more affluent conditions, we are reorganizing the economy to deal with a new level of human needs. From a system designed to provide material satisfaction, we are rapidly creating an economy geared to the provision of psychic gratification. This process of "psychologization," one of the central themes of the super-industrial revolution, has been all but overlooked by the economists. Yet it will result in a novel, surprise-filled economy unlike any man has ever experienced. The issues raised by it will reduce the great conflict of the twentieth century, the conflict between capitalism and communism, to comparative insignifi-

cance. For these issues sweep far beyond economic or political dogma. They involve, as we shall see, nothing less than sanity, the human organism's ability to distinguish illusion from reality.

## THE PSYCHIC CAKE-MIX

Much excitement has accompanied the discovery that once a techno-society reaches a certain stage of industrial development, it begins to shift energies into the production of services, as distinct from goods. Many experts see in the services the wave of the future. They suggest that manufacturing will soon be outstripped by service activity in all the industrial nations —a prophecy already on its way toward fulfillment.

What the economists, however, have not done, is to ask the obvious question. Where does the economy go next? After the services, what?

The high technology nations must, in coming years, direct vast resources to rehabilitating their physical environment and improving what has come to be called "the quality of life." The fight against pollution, aesthetic blight, crowding, noise and dirt will clearly absorb tremendous energies. But, in addition to the provision of these public goods, we can also anticipate a subtle change in the character of production for private use.

The very excitement aroused by the mushrooming growth of the service sector has diverted professional attention from another shift that will deeply affect both goods *and* services in the future. It is this shift that will lead to the next forward movement of the economy, the growth of a strange new sector based on what can only be called the "experience industries." For the key to the post-service economy lies in the psychologization of all production, beginning with manufacture.

One of the curious facts about production in all the techno-societies today, and especially the United

States, is that goods are increasingly designed to yield psychological "extras" for the consumer. The manufacturer adds a "psychic load" to his basic product, and the consumer gladly pays for this intangible benefit.

A classic example is the case of the appliance or auto manufacturer who adds buttons, knobs or dials to the control panel or dashboard, even when these have seemingly no significance. The manufacturer has learned that increasing the number of gadgets, up to a point, gives the operator of the machine the sense of controlling a more complex device, and hence a feeling of increased mastery. This psychological payoff is designed into the product.

Conversely, pains are taken not to deprive the consumer of an existing psychological benefit. Thus a large American food company proudly launched a labor-saving, add-water-only cake mix. The company was amazed when women rejected the product in favor of mixes that require extra labor—the addition of an egg along with the water. By inserting powdered egg in the factory, the company had oversimplified the task of the housewife, depriving her of the sense of creatively participating in the cake-baking process. The powdered egg was hastily eliminated, and women went happily back to cracking their own eggs. Once again a product was modified to provide a psychic benefit.

Examples like these can be multiplied endlessly in almost any major industry, from soap and cigarettes to dishwashers and diet colas. According to Dr. Emanuel Demby, president of Motivational Programmers, Incorporated, a research firm employed in the United States and Europe by such blue-chip corporations as General Electric, Caltex and IBM, "The engineering of psychological factors into manufactured goods will be a hallmark of production in the future—not only in consumer goods, but in industrial hardware.

"Even the big cranes and derricks built today em-

body this principle. Their cabs are streamlined, slick, like something out of the twenty-first century. Caterpillar, International Harvester, Ferguson—all of them. Why? These mechanical monsters don't dig better or hoist better because the cab is aesthetically improved. But the contractor who buys them likes it better. The men who work on them like it better. The contractor's customers like it better. So even the manufacturers of earthmoving equipment begin to pay attention to non-utilitarian—i.e., psychological—factors."

Beyond this, Demby asserts, manufacturers are devoting more attention to reducing tensions that accompany the use of certain products. Manufacturers of sanitary napkins, for example, know that women have a fear of stopping up the toilet when disposing of them. "A new product has been developed," he says, "that instantly dissolves on contact with water. It doesn't perform its basic function any better. But it relieves some of the anxiety that went with it. This is psychological engineering if ever there was any!"

Affluent consumers are willing and able to pay for such niceties. As disposable income rises, they become progressively less concerned with price, progressively more insistent on what they call "quality." For many products quality can still be measured in the traditional terms of workmanship, durability and materials. But for a fast-growing class of products, such differences are virtually undetectable. Blindfolded, the consumer cannot distinguish Brand A from Brand B. Nevertheless, she often argues fiercely that one is superior to another.

This paradox vanishes once the psychic component of production is taken into account. For even when they are otherwise identical, there are likely to be marked psychological differences between one product and another. Advertisers strive to stamp each product with its own distinct image. These images are functional: they fill a need on the part of the consumer. The need is psychological, however, rather than utilitarian in the ordinary sense. Thus we find that

the term "quality" increasingly refers to the ambience, the status associations—in effect, the psychological connotations of the product.

As more and more of the basic material needs of the consumer are met, it is strongly predictable that even more economic energy will be directed at meeting the consumer's subtle, varied and quite personal needs for beauty, prestige, individuation, and sensory delight. The manufacturing sector will channel ever greater resources into the conscious design of psychological distinctions and gratifications. The psychic component of goods production will assume increasing importance.

## "SERVING WENCHES" IN THE SKY

This, however, is only the first step toward the psychologization of the economy. The next step will be the expansion of the psychic component of the services.

Here, again, we are already moving in the predictable direction, as a glance at air travel demonstrates. Once flying was simply a matter of getting from here to there. Before long, the airlines began to compete on the basis of pretty stewardesses, food, luxurious surroundings, and in-flight movies. Trans-World Airlines recently carried this process one step further by offering what it called "foreign accent" flights between major American cities.

The TWA passenger may now choose a jet on which the food, the music, the magazines, the movies, and the stewardess' miniskirt are all French. He may choose a "Roman" flight on which the girls wear togas. He may opt for a "Manhattan Penthouse" flight. Or he may select the "Olde English" flight on which the girls are called "serving wenches" and the decor supposedly suggests that of an English pub.

It is clear that TWA is no longer selling transportation, as such, but a carefully designed psychological

package as well. We can expect the airlines before long to make use of lights and multi-media projections to create total, but temporary, environments providing the passenger with something approaching a theatrical experience.

The experience may, in fact, soon go beyond theater. British Overseas Airways Corporation recently pointed a wavering finger at the future when it announced a plan to provide unmarried American male passengers with "scientifically chosen" blind dates in London. In the event the computer-selected date failed to show up, an alternate would be provided. Moreover, a party would be arranged to which "several additional Londoners of both sexes of varying ages" would be invited so that the traveler, who would also be given a tour of discothèques and restaurants, would under no circumstances be alone. The program, called "The Beautiful Singles of London," was abruptly called off when the government-owned airline came under Parliamentary criticism. Nevertheless, we can anticipate further colorful attempts to paint a psychic coating on many consumer service fields, including retailing.

Anyone who has strolled through Newport Center, an incredibly lavish new shopping plaza in Newport Beach, California, cannot fail to be impressed by the attention paid by its designers to aesthetic and psychological factors. Tall white arches and columns outlined against a blue sky, fountains, statues, carefully planned illumination, a pop art playground, and an enormous Japanese wind-bell are all used to create a mood of casual elegance for the shopper. It is not merely the affluence of the surroundings, but their programmed pleasantness that makes shopping there a quite memorable experience. One can anticipate fantastic variations and elaborations of the same principles in the planning of retail stores in the future. We shall go far beyond any "functional" necessity, turning the service, whether it is shopping, dining, or having one's hair cut, into a pre-fabricated experience.

We shall watch movies or listen to chamber music

as we have our hair cut, and the mechanical bowl that fits over the skull of a woman in the beauty parlor will do more than simply dry her hair. By directing electronic waves to her brain, it may, quite literally, tickle her fancy.

Bankers and brokers, real estate and insurance companies will employ the most carefully chosen decor, music, closed circuit color television, engineered tastes and smells, along with the most advanced mixed-media equipment to heighten (or neutralize) the psychological charge that accompanies even the most routine transaction. No important service will be offered to the consumer before it has been analyzed by teams of behavioral engineers to improve its psychic loading.

## EXPERIENTIAL INDUSTRIES

Reaching beyond these simple elaborations of the present, we shall also witness a revolutionary expansion of certain industries whose sole output consists not of manufactured goods, nor even of ordinary services, but of pre-programmed "experiences." The experience industry could turn out to be one of the pillars of super-industrialism, the very foundation, in fact, of the post-service economy.

As rising affluence and transience ruthlessly undercut the old urge to possess, consumers begin to collect experiences as consciously and passionately as they once collected things. Today, as the airline example suggests, experiences are sold as an adjunct to some more traditional service. The experience is, so to speak, the frosting on the cake. As we advance into the future, however, more and more experiences will be sold strictly on their own merits, exactly as if they *were* things.

Precisely this is beginning to happen, in fact. This accounts for the high growth rate visible in certain industries that have always been, at least partly, engaged in the production of experiences for their own

sake. The arts are a good example. Much of the "culture industry" is devoted to the creation or staging of specialized psychological experiences. Today we find art-based "experience industries" booming in virtually all the techno-societies. The same is true of recreation, mass entertainment, education, and certain psychiatric services, all of which participate in what might be called experiential production.

When Club Méditerranée sells a package holiday that takes a young French secretary to Tahiti or Israel for a week or two of sun and sex, it is manufacturing an experience for her quite as carefully and systematically as Renault manufactures cars. Its advertisements underscore the point. Thus a two-page spread in *The New York Times Magazine* begins with the headline: "Take 300 men and women. Strand them on an exotic island. And strip them of every social pressure." Based in France, Club Méditerranée now operates thirty-four vacation "villages" all over the world.

Similarly, when the Esalen Institute in Big Sur, California, offers weekend seminars in "body-awareness" and "non-verbal communication," at seventy dollars per person, or five-day workshops at $180, it promises not simply to teach, but to plunge its affluent customers into "joyous" new interpersonal experiences —a phrase some readers take to mean adventures with sex or LSD. Group therapy and sensitivity training sessions are packaged experiences. So are certain classes. Thus, going to an Arthur Murray or Fred Astaire studio to learn the latest dance step may provide the student with a skill that will bring enjoyment in the future, but it also provides a pleasurable here-and-now experience for the lonely bachelor or spinster. The learning experience, itself, is a major attraction for the customer.

All these, however, provide only the palest clue as to the nature of the experience industry of the future and the great psychological corporations, or psychcorps, that will dominate it.

### SIMULATED ENVIRONMENTS

One important class of experiential products will be based on simulated environments that offer the customer a taste of adventure, danger, sexual titillation or other pleasure without risk to his real life or reputation. Thus computer experts, roboteers, designers, historians, and museum specialists will join to create experiential enclaves that reproduce, as skillfully as sophisticated technology will permit, the splendor of ancient Rome, the pomp of Queen Elizabeth's court, the "sexoticism" of an eighteenth-century Japanese geisha house, and the like. Customers entering these pleasure domes will leave their everyday clothes (and cares) behind, don costumes, and run through a planned sequence of activities intended to provide them with a first-hand taste of what the original—i.e., unsimulated—reality must have felt like. They will be invited, in effect, to live in the past or perhaps even in the future.

Production of such experiences is closer than one might think. It is clearly foreshadowed in the participatory techniques now being pioneered in the arts. Thus "happenings" in which the members of the audience take part may be regarded as a first stumbling step toward these simulations of the future. The same is true of more formal works as well. When *Dionysus in 69* was performed in New York, a critic summed up the theories of its playwright, Richard Schechner, in the following words. "Theater has traditionally said to an audience, 'Sit down and I'll tell you a story.' Why can't it also say, 'Stand up and we'll play a game?'" Schechner's work, based loosely on Euripides, says precisely this, and the audience is literally invited to join in dancing to celebrate the rites of Dionysus.

Artists also have begun to create whole "environments"—works of art into which the audience may actually walk, and inside which things happen. In

Sweden the Moderna Museet has exhibited an immense papier-mâché lady called "Hon" ("She"), into whose innards the audience entered via a vaginal portal. Once inside, there were ramps, stairways, flashing lights, odd sounds, and something called a "bottle smashing machine." Dozens of museums and galleries around the United States and Europe now display such "environments." *Time* magazine's art critic suggests that their intention is to bombard the spectator with "wacky sights, weirdo sounds and otherworldly sensations, ranging from the feeling of weightlessness to hopped-up, psychedelic hallucinations." The artists who produce these are really "experiential engineers."

In a deceptively shabby storefront on a Lower Manhattan street lined with factories and warehouses, I visited Cerebrum, an "electronic studio of participation" where, for an hourly fee, guests are admitted into a startling white, high-ceilinged room. There they strip off their clothing, don semi-transparent robes, and sprawl comfortably on richly padded white platforms. Attractive male and female "guides," similarly nude under their veils, offer each guest a stereophonic headset, a see-through mask, and, from time to time, balloons, kaleidoscopes, tambourines, plastic pillows, mirrors, pieces of crystal, marshmallows, slides and slide projectors. Folk and rock music, interspersed with snatches of television commercials, street noises and a lecture by or about Marshall McLuhan fill the ears. As the music grows more excited, guests and guides begin to dance on the platforms and the carpeted white walkways that connect them. Bubbles drift down from machines in the ceiling. Hostesses float through, spraying a variety of fragrances into the air. Lights change color and random images wrap themselves around the walls, guests and guides. The mood shifts from cool at first to warm, friendly, and mildly erotic.

Still primitive both artistically and technologically, Cerebrum is a pale forerunner of the "$25,000,000

'super' Environmental Entertainment Complex" its builders enthusiastically talk of creating some day. Whatever their artistic merit, experiments such as these point to far more sophisticated enclave-building in the future. Today's young artists and environmental entrepreneurs are performing research and development for the psych-corps of tomorrow.

## LIVE ENVIRONMENTS

Knowledge gained for this research will permit the construction of fantastic simulations. But it will also lead to complex live environments that subject the customer to significant risks and rewards. The African safari today is a colorless example. Future experience designers will, for example, create gambling casinos in which the customer plays not for money, but for experiential payoffs—a date with a lovely and willing lady if he wins, perhaps a day in solitary confinement if he loses. As the stakes rise, more imaginative payoffs and punishments will be designed.

A loser may have to serve (by voluntary pre-agreement) as a "slave" to a winner for several days. A winner may be rewarded by ten free minutes of electronic pleasure-probing of his brain. A player may risk flogging or its psychological equivalent—participation in a day-long session during which winners are permitted to work off their aggressions and hostilities by sneering, shouting at, reviling, or otherwise attacking the ego of the loser.

High rollers may play to win a free heart or lung transplant at some later date, should it prove to be necessary. Losers may have to forego a kidney. Such payoffs and punishments may be escalated in intensity and varied endlessly. Experiential designers will study the pages of Krafft-Ebing or the Marquis de Sade for ideas. Only imagination, technological capability, and the constraints of a generally relaxed morality limit the possibilities. Experiential gambling cities will rise

to overshadow Las Vegas or Deauville, combining in a single place some of the features of Disneyland, the World's Fair, Cape Kennedy, the Mayo Clinic, and the honky-tonks of Macao.*

Once again, present-day developments foreshadow the future. Thus certain American television programs, such as *The Dating Game*, already pay players off in experiential rewards, as does the contest recently discussed in the Swedish Parliament. In this contest, a pornographic magazine awarded one of its readers a week in Majorca with one of its "topless" models. A Conservative M.P. challenged the propriety of such goings-on. Presumably, he felt better when he was assured by the Finance Minister, Gunnar Sträng, that the transaction was taxable.

Simulated and non-simulated experiences will also be combined in ways that will sharply challenge man's grasp of reality. In Ray Bradbury's vivid novel, *Fahrenheit 451*, suburban couples desperately save their money to enable them to buy three-wall or four-wall video sets that permit them to enter into a kind of televised psycho-drama. They become actor-participants in soap operas that continue for weeks or months. Their participation in these stories is highly involving. We are, in fact, beginning to move toward the actual development of such "interactive" films with the help of advanced communications technology. The combination of simulations and "reals" will vastly multiply the number and variety of experiential products.

But the great psych-corps of tomorrow will not only sell individual, discrete experiences. They will offer sequences of experiences so organized that their very juxtaposition with one another will contribute color, harmony or contrast to lives that lack these qualities. Beauty, excitement, danger or delicious sen-

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* For a brilliant and provocative insight into experiential gambling and its philosophical implications, see "The Lottery in Babylon," by Jorge Luis Borges, the Argentinian philosopher-essayist. This short work is found in Borges' collection entitled *Labyrinths*.

suality will be programmed to enhance one another. By offering such experiential chains or sequences, the psych-corps (working closely, no doubt, with community mental health centers) will provide partial frameworks for those whose lives are otherwise too chaotic and unstructured. In effect, they will say: "Let us plan (part of) your life for you." In the transient, change-filled world of tomorrow, that proposition will find many eager takers.

The packaged experiences offered in the future will reach far beyond the imagination of the average consumer, filling the environment with endless novelties. Companies will vie with one another to create the most outlandish, most gratifying experiences. Indeed, some of these experiences—as in the case of topless Swedish models—will even reach beyond tomorrow's broadened boundaries of social acceptability. They may be offered to the public covertly by unlicensed, underground psych-corps. This will simply add the thrill of "illicitude" to the experience itself.

(One very old experiential industry has traditionally operated covertly: prostitution. Many other illegal activities also fit within the experience industry. For the most part, however, all these reveal a paucity of imagination and a lack of technical resources that will be remedied in the future. They are trivial compared with the possibilities in a society that will, by the year 2000 or sooner, be armed with robots, advanced computers, personality-altering drugs, brain-stimulating pleasure probes, and similar technological goodies.)

The diversity of novel experiences arrayed before the consumer will be the work of experience-designers, who will be drawn from the ranks of the most creative people in the society. The working motto of this profession will be: "If you can't serve it up real, find a vicarious substitute. If you're good, the customer will never know the difference!" This implied blurring of the line between the real and the unreal will confront the society with serious problems, but it will not prevent or even slow the emergence of the "psyche-service

industries" and "psych-corps." Great globe-girdling syndicates will create super-Disneylands of a variety, scale, scope, and emotional power that is hard for us to imagine.

We can thus sketch the dim outlines of the super-industrial economy, the post-service economy of the future. Agriculture and the manufacture of goods will have become economic backwaters, employing fewer and fewer people. Highly automated, the making and growing of goods will be relatively simple. The design of new goods and the process of coating them with stronger, brighter, more emotion-packed psychological connotations, however, will challenge the ingenuity of tomorrow's best and most resourceful entrepreneurs.

The service sector, as defined today, will be vastly enlarged, and once more the design of psychological rewards will occupy a growing percentage of corporate time, energy and money. Investment services, such as mutual funds, for example, may introduce elements of experiential gambling to provide both additional excitement and non-economic payoffs to their shareholders. Insurance companies may offer not merely to pay death benefits, but to care for the widow or widower for several months after bereavement, providing nurses, psychological counseling and other assistance. Based on banks of detailed data about their customers, they may offer a computerized mating service to help the survivor locate a new life partner. Services, in short, will be greatly elaborated. Attention will be paid to the psychological overtones of every step or component of the product.

Finally, we shall watch the irresistible growth of companies already in the experiential field, and the formation of entirely new enterprises, both profit and non-profit, to design, package and distribute planned or programmed experiences. The arts will expand, becoming as Ruskin or Morris might have said, the handmaiden of industry. Psych-corps and other businesses will employ actors, directors, musicians and designers in large numbers. Recreational industries will

grow, as the whole nature of leisure is redefined in experiential terms. Education, already exploding in size, will become one of the key experience industries as it begins to employ experiential techniques to convey both knowledge and values to students. The communications and computer industries will find in experiential production a major market for their machines and for their soft-ware as well. In short, those industries that in one way or another associate themselves with behavioral technology, those industries that transcend the production of tangible goods and traditional services, will expand most rapidly. Eventually, the experience-makers will form a basic—if not the basic—sector of the economy. The process of psychologization will be complete.

## THE ECONOMICS OF SANITY

The essence of tomorrow's economy, declares the Stanford Research Institute in a report by its Long Range Planning Service, will be an "emphasis upon the inner as well as the material needs of individuals and groups." This new emphasis, SRI suggests, will arise not merely from the demands of the consumer, but from the very need of the economy to survive. "In a nation where all essential material needs can be filled by perhaps no more than three-fourths or even half of the productive capacity, a basic adjustment is required to keep the economy healthy."

It is this convergence of pressures—from the consumer and from those who wish to keep the economy growing—that will propel the techno-societies toward the experiential production of the future.

The movement in this direction can be delayed. The poverty-stricken masses of the world may not stand idly by as the world's favored few traverse the path toward psychological self-indulgence. There is something morally repellent about one group seeking to gratify itself psychologically, pursuing novel and rari-

fied pleasures, while the majority of mankind lives in wretchedness or starvation. The techno-societies could defer the arrival of experientialism, could maintain a more conventional economy for a time by maximizing traditional production, shifting resources to environmental quality control, and then launching absolutely massive anti-poverty and foreign aid programs.

By creaming off "excess" productivity and, in effect, giving it away, the factories can be kept running, the agricultural surpluses used up, and the society can continue to focus on the satisfaction of material wants. A fifty-year campaign to erase hunger from the world, for example, would not only make excellent moral sense, but would buy the techno-societies badly needed time for an easier transition to the economy of the future.

Such a pause might give us time to contemplate the philosophical and psychological impact of experiential production. If consumers can no longer distinguish clearly between the real and the simulated, if whole stretches of one's life may be commercially programmed, we enter into a set of psycho-economic problems of breathtaking complexity. These problems challenge our most fundamental beliefs, not merely about democracy or economics, but about the very nature of rationality and sanity.

One of the great unasked questions of our time has to do with the balance between vicarious and non-vicarious experience in our lives. No previous generation has been exposed to one-tenth the amount of vicarious experiences that we lavish on ourselves and our children today, and no one, anywhere, has any real idea about the impact of this monumental shift on personality. Our children mature physically more rapidly than we did. The age of first menstruation continues to drop four to six months every decade. The population grows taller sooner. It is clear that many of our young people, products of television and instant access to oceans of information, also become precocious intellectually. But what happens to emo-

tional development as the ratio of vicarious experience to "real" experience rises? Does the step-up of vicariousness contribute to emotional maturity? Or does it, in fact, retard it?

And what, then, happens when an economy in search of a new purpose, seriously begins to enter into the production of experiences for their own sake, experiences that blur the distinction between the vicarious and the non-vicarious, the simulated and the real? One of the definitions of sanity, itself, is the ability to tell real from unreal. Shall we need a new definition?

We must begin to reflect on these problems, for unless we do—and perhaps even *if* we do—service will in the end triumph over manufacture, and experiential production over service. The growth of the experiential sector might just be an inevitable consequence of affluence. For the satisfaction of man's elemental material needs opens the way for new, more sophisticated gratifications. We are moving from a "gut" economy to a "psyche" economy because there is only so much gut to be satisfied.

Beyond this, we are also moving swiftly in the direction of a society in which objects, things, physical constructs, are increasingly transient. Not merely man's relationships with them, but the very things themselves. It may be that experiences are the only products which, once bought by the consumer, cannot be taken away from him, cannot be disposed of like non-returnable soda pop bottles or nicked razor blades.

For the ancient Japanese nobility every flower, every serving bowl or obi, was freighted with surplus meaning; each carried a heavy load of coded symbolism and ritual significance. The movement toward the psychologization of manufactured goods takes us in this direction; but it collides with the powerful thrust toward transience that makes the objects themselves so perishable. Thus we shall find it easier to adorn our services with symbolic significance than our products. And, in the end, we shall pass beyond the service economy, beyond the imagination of today's econ-

omists; we shall become the first culture in history to employ high technology to manufacture that most transient, yet lasting of products: the human experience.

# Chapter 11

# THE FRACTURED FAMILY

The flood of novelty about to crash down upon us will spread from universities and research centers to factories and offices, from the marketplace and mass media into our social relationships, from the community into the home. Penetrating deep into our private lives, it will place absolutely unprecedented strains on the family itself.

The family has been called the "giant shock absorber" of society—the place to which the bruised and battered individual returns after doing battle with the world, the one stable point in an increasingly flux-filled environment. As the super-industrial revolution unfolds, this "shock absorber" will come in for some shocks of its own.

Social critics have a field day speculating about the family. The family is "near the point of complete extinction," says Ferdinand Lundberg, author of *The Coming World Transformation.* "The family is dead except for the first year or two of child raising," according to psychoanalyst William Wolf. "This will be its only function." Pessimists tell us the family is racing toward oblivion—but seldom tell us what will take its place.

Family optimists, in contrast, contend that the family, having existed all this time, will continue to exist.

Some go so far as to argue that the family is in for a Golden Age. As leisure spreads, they theorize, families will spend more time together and will derive great satisfaction from joint activity. "The family that plays together, stays together," etc.

A more sophisticated view holds that the very turbulence of tomorrow will drive people deeper into their families. "People will marry for stable structure," says Dr. Irwin M. Greenberg, Professor of Psychiatry at the Albert Einstein College of Medicine. According to this view, the family serves as one's "portable roots," anchoring one against the storm of change. In short, the more transient and novel the environment, the more important the family will become.

It may be that both sides in this debate are wrong. For the future is more open than it might appear. The family may neither vanish *nor* enter upon a new Golden Age. It may—and this is far more likely—break up, shatter, only to come together again in weird and novel ways.

## THE MYSTIQUE OF MOTHERHOOD

The most obviously upsetting force likely to strike the family in the decades immediately ahead will be the impact of the new birth technology. The ability to pre-set the sex of one's baby, or even to "program" its IQ, looks and personality traits, must now be regarded as a real possibility. Embryo implants, babies grown *in vitro*, the ability to swallow a pill and guarantee oneself twins or triplets or, even more, the ability to walk into a "babytorium" and actually purchase embryos—all this reaches so far beyond any previous human experience that one needs to look at the future through the eyes of the poet or painter, rather than those of the sociologist or conventional philosopher.

It is regarded as somehow unscholarly, even frivolous, to discuss these matters. Yet advances in science and technology, or in reproductive biology alone,

could, within a short time, smash all orthodox ideas about the family and its responsibilities. When babies can be grown in a laboratory jar what happens to the very notion of maternity? And what happens to the self-image of the female in societies which, since the very beginnings of man, have taught her that her primary mission is the propagation of and nurture of the race?

Few social scientists have begun as yet to concern themselves with such questions. One who has is psychiatrist Hyman G. Weitzen, director of Neuropsychiatric Service at Polyclinic Hospital in New York. The cycle of birth, Dr. Weitzen suggests, "fulfills for most women a major creative need . . . Most women are proud of their ability to bear children . . . The special aura that glorifies the pregnant woman has figured largely in the art and literature of both East and West."

What happens to the cult of motherhood, Weitzen asks, if "her offspring might literally not be hers, but that of a genetically 'superior' ovum, implanted in her womb from another woman, or even grown in a Petri dish?" If women are to be important at all, he suggests, it will no longer be because they alone can bear children. If nothing else, we are about to kill off the mystique of motherhood.

Not merely motherhood, but the concept of parenthood itself may be in for radical revision. Indeed, the day may soon dawn when it is possible for a child to have more than two biological parents. Dr. Beatrice Mintz, a developmental biologist at the Institute for Cancer Research in Philadelphia, has grown what are coming to be known as "multi-mice"—baby mice each of which has more than the usual number of parents. Embryos are taken from each of two pregnant mice. These embryos are placed in a laboratory dish and nurtured until they form a single growing mass. This is then implanted in the womb of a third female mouse. A baby is born that clearly shares the genetic characteristics of both sets of donors. Thus a typical

multi-mouse, born of two pairs of parents, has white fur and whiskers on one side of its face, dark fur and whiskers on the other, with alternating bands of white and dark hair covering the rest of the body. Some 700 multi-mice bred in this fashion have already produced more than 35,000 offspring themselves. If multi-mouse is here, can "multi-man" be far behind?

Under such circumstances, what or who is a parent? When a woman bears in her uterus an embryo conceived in another woman's womb, who is the mother? And just exactly who is the father?

If a couple can actually purchase an embryo, then parenthood becomes a legal, not a biological matter. Unless such transactions are tightly controlled, one can imagine such grotesqueries as a couple buying an embryo, raising it *in vitro*, then buying another in the name of the first, as though for a trust fund. In that case, they might be regarded as legal "grandparents" before their first child is out of its infancy. We shall need a whole new vocabulary to describe kinship ties.

Furthermore, if embryos are for sale, can a corporation buy one? Can it buy ten thousand? Can it resell them? And if not a corporation, how about a noncommercial research laboratory? If we buy and sell living embryos, are we back to a new form of slavery? Such are the nightmarish questions soon to be debated by us. To continue to think of the family, therefore, in purely conventional terms is to defy all reason.

Faced by rapid social change and the staggering implications of the scientific revolution, super-industrial man may be forced to experiment with novel family forms. Innovative minorities can be expected to try out a colorful variety of family arrangements. They will begin by tinkering with existing forms.

## THE STREAMLINED FAMILY

One simple thing they will do is streamline the family. The typical pre-industrial family not only had a good

many children, but numerous other dependents as well—grandparents, uncles, aunts, and cousins. Such "extended" families were well suited for survival in slow-paced agricultural societies. But such families are hard to transport or transplant. They are immobile.

Industrialism demanded masses of workers ready and able to move off the land in pursuit of jobs, and to move again whenever necessary. Thus the extended family gradually shed its excess weight and the so-called "nuclear" family emerged—a stripped-down, portable family unit consisting only of parents and a small set of children. This new style family, far more mobile than the traditional extended family, became the standard model in all the industrial countries.

Super-industrialism, however, the next stage of eco-technological development, requires even higher mobility. Thus we may expect many among the people of the future to carry the streamlining process a step further by remaining childless, cutting the family down to its most elemental components, a man and a woman. Two people, perhaps with matched careers, will prove more efficient at navigating through education and social shoals, through job changes and geographic relocations, than the ordinary child-cluttered family. Indeed, anthropologist Margaret Mead has pointed out that we may already be moving toward a system under which, as she puts it, "parenthood would be limited to a smaller number of families whose principal functions would be childrearing," leaving the rest of the population "free to function—for the first time in history—as individuals."

A compromise may be the postponement of children, rather than childlessness. Men and women today are often torn in conflict between a commitment to career and a commitment to children. In the future, many couples will sidestep this problem by deferring the entire task of raising children until after retirement.

This may strike people of the present as odd. Yet once childbearing is broken away from its biological

base, nothing more than tradition suggests having children at an early age. Why not wait, and buy your embryos later, after your work career is over? Thus childlessness is likely to spread among young and middle-aged couples; sexagenarians who raise infants may be far more common. The post-retirement family could become a recognized social institution.

## BIO-PARENTS AND PRO-PARENTS

If a smaller number of families raise children, however, why do the children have to be their own? Why not a system under which "professional parents" take on the childrearing function for others?

Raising children, after all, requires skills that are by no means universal. We don't let "just anyone" perform brain surgery or, for that matter, sell stocks and bonds. Even the lowest ranking civil servant is required to pass tests proving competence. Yet we allow virtually anyone, almost without regard for mental or moral qualification, to try his or her hand at raising young human beings, so long as these humans are biological offspring. Despite the increasing complexity of the task, parenthood remains the greatest single preserve of the amateur.

As the present system cracks and the super-industrial revolution rolls over us, as the armies of juvenile delinquents swell, as hundreds of thousands of youngsters flee their homes, and students rampage at universities in all the techno-societies, we can expect vociferous demands for an end to parental dilettantism.

There are far better ways to cope with the problems of youth, but professional parenthood is certain to be proposed, if only because it fits so perfectly with the society's overall push toward specialization. Moreover, there is a powerful, pent-up demand for this social innovation. Even now millions of parents, given the opportunity, would happily relinquish their pa-

rental responsibilities—and not necessarily through irresponsibility or lack of love. Harried, frenzied, up against the wall, they have come to see themselves as inadequate to the tasks. Given affluence and the existence of specially-equipped and licensed professional parents, many of today's biological parents would not only gladly surrender their children to them, but would look upon it as an act of love, rather than rejection.

Parental professionals would not be therapists, but actual family units assigned to, and well paid for, rearing children. Such families might be multi-generational by design, offering children in them an opportunity to observe and learn from a variety of adult models, as was the case in the old farm homestead. With the adults paid to be professional parents, they would be freed of the occupational necessity to relocate repeatedly. Such families would take in new children as old ones "graduate" so that age-segregation would be minimized.

Thus newspapers of the future might well carry advertisements addressed to young married couples: "Why let parenthood tie you down? Let us raise your infant into a responsible, successful adult. Class A Pro-family offers: father age 39, mother, 36, grandmother, 67. Uncle and aunt, age 30, live in, hold part-time local employment. Four-child-unit has opening for one, age 6–8. Regulated diet exceeds government standards. All adults certified in child development and management. Bio-parents permitted frequent visits. Telephone contact allowed. Child may spend summer vacation with bio-parents. Religion, art, music encouraged by special arrangement. Five year contract, minimum. Write for further details."

The "real" or "bio-parents" could, as the ad suggests, fill the role presently played by interested godparents, namely that of friendly and helpful outsiders. In such a way, the society could continue to breed a wide diversity of genetic types, yet turn the care of children over to mother-father groups who are equipped,

both intellectually and emotionally, for the task of caring for kids.

## COMMUNES AND HOMOSEXUAL DADDIES

Quite a different alternative lies in the communal family. As transience increases the loneliness and alienation in society, we can anticipate increasing experimentation with various forms of group marriage. The banding together of several adults and children into a single "family" provides a kind of insurance against isolation. Even if one or two members of the household leave, the remaining members have one another. Communes are springing up modeled after those described by psychologist B. F. Skinner in *Walden Two* and by novelist Robert Rimmer in *The Harrad Experiment and Proposition 31.* In the latter work, Rimmer seriously proposes the legalization of a "corporate family" in which from three to six adults adopt a single name, live and raise children in common, and legally incorporate to obtain certain economic and tax advantages.

According to some observers, there are already hundreds of open or covert communes dotting the American map. Not all, by any means, are composed of young people or hippies. Some are organized around specific goals—like the group, quietly financed by three East Coast colleges—which has taken as its function the task of counseling college freshmen, helping to orient them to campus life. The goals may be social, religious, political, even recreational. Thus we shall before long begin to see communal families of surfers dotting the beaches of California and Southern France, if they don't already. We shall see the emergence of communes based on political doctrines and religious faiths. In Denmark, a bill to legalize group marriage has already been introduced in the Folketing (Parliament). While passage is not imminent, the act of introduction is itself a significant symbol of change.

In Chicago, 250 adults and children already live together in "family-style monasticism" under the auspices of a new, fast-growing religious organization, the Ecumenical Institute. Members share the same quarters, cook and eat together, worship and tend children in common, and pool their incomes. At least 60,000 people have taken "EI" courses and similar communes have begun to spring up in Atlanta, Boston, Los Angeles and other cities. "A brand-new world is emerging," says Professor Joseph W. Mathews, leader of the Ecumenical Institute, "but people are still operating in terms of the old one. We seek to re-educate people and give them the tools to build a new social context."

Still another type of family unit likely to win adherents in the future might be called the "geriatric commune"—a group marriage of elderly people drawn together in a common search for companionship and assistance. Disengaged from the productive economy that makes mobility necessary, they will settle in a single place, band together, pool funds, collectively hire domestic or nursing help, and proceed—within limits—to have the "time of their lives."

Communalism runs counter to the pressure for ever greater geographical and social mobility generated by the thrust toward super-industrialism. It presupposes groups of people who "stay put." For this reason, communal experiments will first proliferate among those in the society who are free from the industrial discipline—the retired population, the young, the dropouts, the students, as well as among self-employed professional and technical people. Later, when advanced technology and information systems make it possible for much of the work of society to be done at home via computer-telecommunication hookups, communalism will become feasible for larger numbers.

We shall, however, also see many more "family" units consisting of a single unmarried adult and one or more children. Nor will all of these adults be women. It is already possible in some places for un-

married men to adopt children. In 1965 in Oregon, for example, a thirty-eight-year-old musician named Tony Piazza became the first unmarried man in that state, and perhaps in the United States, to be granted the right to adopt a baby. Courts are more readily granting custody to divorced fathers, too. In London, photographer Michael Cooper, married at twenty and divorced soon after, won the right to raise his infant son, and expressed an interest in adopting other children. Observing that he did not particularly wish to remarry, but that he liked children, Cooper mused aloud: "I wish you could just ask beautiful women to have babies for you. Or any woman you liked, or who had something you admired. Ideally, I'd like a big house full of children—all different colors, shapes and sizes." Romantic? Unmanly? Perhaps. Yet attitudes like these will be widely held by men in the future.

Two pressures are even now softening up the culture, preparing it for acceptance of the idea of child-rearing by men. First, adoptable children are in oversupply in some places. Thus, in California, disc jockeys blare commercials: "We have many wonderful babies of all races and nationalities waiting to bring love and happiness to the right families . . . Call the Los Angeles County Bureau of Adoption." At the same time, the mass media, in a strange non-conspiratorial fashion, appear to have decided simultaneously that men who raise children hold special interest for the public. Extremely popular television shows in recent seasons have glamorized womanless households in which men scrub floors, cook, and, most significantly, raise children. *My Three Sons, The Rifleman, Bonanza* and *Bachelor Father* are four examples.

As homosexuality becomes more socially acceptable, we may even begin to find families based on homosexual "marriages" with the partners adopting children. Whether these children would be of the same or opposite sex remains to be seen. But the rapidity with which homosexuality is winning respectability in the techno-societies distinctly points in this direc-

tion. In Holland not long ago a Catholic priest "married" two homosexuals, explaining to critics that "they are among the faithful to be helped." England has rewritten its relevant legislation; homosexual relations between consenting adults are no longer considered a crime. And in the United States a meeting of Episcopal clergymen concluded publicly that homosexuality might, under certain circumstances, be adjudged "good." The day may also come when a court decides that a couple of stable, well educated homosexuals might make decent "parents."

We might also see the gradual relaxation of bars against polygamy. Polygamous families exist even now, more widely than generally believed, in the midst of "normal" society. Writer Ben Merson, after visiting several such families in Utah where polygamy is still regarded as essential by certain Mormon fundamentalists, estimated that there are some 30,000 people living in underground family units of this type in the United States. As sexual attitudes loosen up, as property rights become less important because of rising affluence, the social repression of polygamy may come to be regarded as irrational. This shift may be facilitated by the very mobility that compels men to spend considerable time away from their present homes. The old male fantasy of the Captain's Paradise may become a reality for some, although it is likely that, under such circumstances, the wives left behind will demand extramarital sexual rights. Yesterday's "captain" would hardly consider this possibility. Tomorrow's may feel quite differently about it.

Still another family form is even now springing up in our midst, a novel childrearing unit that I call the "aggregate family"—a family based on relationships between divorced and remarried couples, in which all the children become part of "one big family." Though sociologists have paid little attention as yet to this phenomenon, it is already so prevalent that it formed the basis for a hilarious scene in a recent American movie entitled *Divorce American Style.* We

may expect aggregate families to take on increasing importance in the decades ahead.

Childless marriage, professional parenthood, post-retirement childrearing, corporate families, communes, geriatric group marriages, homosexual family units, polygamy—these, then, are a few of the family forms and practices with which innovative minorities will experiment in the decades ahead. Not all of us, however, will be willing to participate in such experimentation. What of the majority?

## THE ODDS AGAINST LOVE

Minorities experiment; majorities cling to the forms of the past. It is safe to say that large numbers of people will refuse to jettison the conventional idea of marriage or the familiar family forms. They will, no doubt, continue searching for happiness within the orthodox format. Yet, even they will be forced to innovate in the end, for the odds against success may prove overwhelming.

The orthodox format presupposes that two young people will "find" one another and marry. It presupposes that the two will fulfill certain psychological needs in one another, and that the two personalities will develop over the years, more or less in tandem, so that they continue to fulfill each other's needs. It further presupposes that this process will last "until death do us part."

These expectations are built deeply into our culture. It is no longer respectable, as it once was, to marry for anything but love. Love has changed from a peripheral concern of the family into its primary justification. Indeed, the pursuit of love through family life has become, for many, the very purpose of life itself.

Love, however, is defined in terms of this notion of shared growth. It is seen as a beautiful mesh of complementary needs, flowing into and out of one another, fulfilling the loved ones, and producing feel-

ings of warmth, tenderness and devotion. Unhappy husbands often complain that they have "left their wives behind" in terms of social, educational or intellectual growth. Partners in successful marriages are said to "grow together."

This "parallel development" theory of love carries endorsement from marriage counsellors, psychologists and sociologists. Thus, says sociologist Nelson Foote, a specialist on the family, the quality of the relationship between husband and wife is dependent upon "the degree of matching in their phases of distinct but comparable development."

If love is a product of shared growth, however, and we are to measure success in marriage by the degree to which matched development actually occurs, it becomes possible to make a strong and ominous prediction about the future.

It is possible to demonstrate that, even in a relatively stagnant society, the mathematical odds are heavily stacked against any couple achieving this ideal of parallel growth. The odds for success positively plummet, however, when the rate of change in society accelerates, as it now is doing. In a fast-moving society, in which many things change, not once, but repeatedly, in which the husband moves up and down a variety of economic and social scales, in which the family is again and again torn loose from home and community, in which individuals move further from their parents, further from the religion of origin, and further from traditional values, it is almost miraculous if two people develop at anything like comparable rates.

If, at the same time, average life expectancy rises from, say, fifty to seventy years, thereby lengthening the term during which this acrobatic feat of matched development is supposed to be maintained, the odds against success become absolutely astronomical. Thus, Nelson Foote writes with wry understatement: "To expect a marriage to last indefinitely under modern

conditions is to expect a lot." To ask love to last indefinitely is to expect even more. Transience and novelty are both in league against it.

## TEMPORARY MARRIAGE

It is this change in the statistical odds against love that accounts for the high divorce and separation rates in most of the techno-societies. The faster the rate of change and the longer the life span, the worse these odds grow. Something has to crack.

In point of fact, of course, something has already cracked—and it is the old insistence on permanence. Millions of men and women now adopt what appears to them to be a sensible and conservative strategy. Rather than opting for some offbeat variety of the family, they marry conventionally, they attempt to make it "work," and then, when the paths of the partners diverge beyond an acceptable point, they divorce or depart. Most of them go on to search for a new partner whose developmental stage, at that moment, matches their own.

As human relationships grow more transient and modular, the pursuit of love becomes, if anything, more frenzied. But the temporal expectations change. As conventional marriage proves itself less and less capable of delivering on its promise of lifelong love, therefore, we can anticipate open public acceptance of temporary marriages. Instead of wedding "until death us do part," couples will enter into matrimony knowing from the first that the relationship is likely to be short-lived.

They will know, too, that when the paths of husband and wife diverge, when there is too great a discrepancy in developmental stages, they may call it quits—without shock or embarrassment, perhaps even without some of the pain that goes with divorce today. And when the opportunity presents itself, they will marry again . . . and again . . . and again.

Serial marriage—a pattern of successive temporary marriages—is cut to order for the Age of Transience in which all man's relationships, all his ties with the environment, shrink in duration. It is the natural, the inevitable outgrowth of a social order in which automobiles are rented, dolls traded in, and dresses discarded after one-time use. It is the mainstream marriage pattern of tomorrow.

In one sense, serial marriage is already the best kept family secret of the techno-societies. According to Professor Jessie Bernard, a world-prominent family sociologist, "Plural marriage is more extensive in our society today than it is in societies that permit polygamy—the chief difference being that we have institutionalized plural marriage serially or sequentially rather than contemporaneously." Remarriage is already so prevalent a practice that nearly one out of every four bridegrooms in America has been to the altar before. It is so prevalent that one IBM personnel man reports a poignant incident involving a divorced woman, who, in filling out a job application, paused when she came to the question of marital status. She put her pencil in her mouth, pondered for a moment, then wrote: "Unremarried."

Transience necessarily affects the durational expectancies with which persons approach new situations. While they may yearn for a permanent relationship, something inside whispers to them that it is an increasingly improbable luxury.

Even young people who most passionately seek commitment, profound involvement with people and causes, recognize the power of the thrust toward transience. Listen, for example, to a young black American, a civil-rights worker, as she describes her attitude toward time and marriage:

"In the white world, marriage is always billed as 'the end'—like in a Hollywood movie. I don't go for that. I can't imagine myself promising my whole lifetime away. I might want to get married now, but how about next year? That's not disrespect for the institu-

tion [of marriage], but the deepest respect. In The [civil rights] Movement, you need to have a feeling for the temporary—of making something as good as you can, while it lasts. In conventional relationships, time is a prison."

Such attitudes will not be confined to the young, the few, or the politically active. They will whip across nations as novelty floods into the society and catch fire as the level of transience rises still higher. And along with them will come a sharp increase in the number of temporary—then serial—marriages.

The idea is summed up vividly by a Swedish magazine, *Svensk Damtidning*, which interviewed a number of leading Swedish sociologists, legal experts, and others about the future of man-woman relationships. It presented its findings in five photographs. They showed the same beautiful bride being carried across the threshold five times—by five different bridegrooms.

## MARRIAGE TRAJECTORIES

As serial marriages become more common, we shall begin to characterize people not in terms of their present marital status, but in terms of their marriage career or "trajectory." This trajectory will be formed by the decisions they make at certain vital turning points in their lives.

For most people, the first such juncture will arrive in youth, when they enter into "trial marriage." Even now the young people of the United States and Europe are engaged in a mass experiment with probationary marriage, with or without benefit of ceremony. The staidest of United States universities are beginning to wink at the practice of co-ed housekeeping among their students. Acceptance of trial marriage is even growing among certain religious philosophers. Thus we hear the German theologian Siegfried Keil of Marburg University urge what he terms "recognized premarriage." In Canada, Father Jacques Lazure has

publicly proposed "probationary marriages" of three to eighteen months.

In the past, social pressures and lack of money restricted experimentation with trial marriage to a relative handful. In the future, both these limiting forces will evaporate. Trial marriage will be the first step in the serial marriage "careers" that millions will pursue.

A second critical life juncture for the people of the future will occur when the trial marriage ends. At this point, couples may choose to formalize their relationship and stay together into the next stage. Or they may terminate it and seek out new partners. In either case, they will then face several options. They may prefer to go childless. They may choose to have, adopt or "buy" one or more children. They may decide to raise these children themselves or to farm them out to professional parents. Such decisions will be made, by and large, in the early twenties—by which time many young adults will already be well into their second marriages.

A third significant turning point in the marital career will come, as it does today, when the children finally leave home. The end of parenthood proves excruciating for many, particularly women who, once the children are gone, find themselves without a *raison d'être*. Even today divorces result from the failure of the couple to adapt to this traumatic break in continuity.

Among the more conventional couples of tomorrow who choose to raise their own children in the time-honored fashion, this will continue to be a particularly painful time. It will, however, strike earlier. Young people today already leave home sooner than their counterparts a generation ago. They will probably depart even earlier tomorrow. Masses of youngsters will move off, whether into trial marriage or not, in their mid-teens. Thus we may anticipate that the middle and late thirties will be another important

breakpoint in the marital careers of millions. Many at that juncture will enter into their third marriage.

This third marriage will bring together two people for what could well turn out to be the longest uninterrupted stretch of matrimony in their lives—from, say, the late thirties until one of the partners dies. This may, in fact, turn out to be the only "real" marriage, the basis of the only truly durable marital relationship. During this time two mature people, presumably with well-matched interests and complementary psychological needs, and with a sense of being at comparable stages of personality development, will be able to look forward to a relationship with a decent statistical probability of enduring.

Not all these marriages will survive until death, however, for the family will still face a fourth crisis point. This will come, as it does now for so many, when one or both of the partners retires from work. The abrupt change in daily routine brought about by this development places great strain on the couple. Some couples will go the path of the post-retirement family, choosing this moment to begin the task of raising children. This may overcome for them the vacuum that so many couples now face after reaching the end of their occupational lives. (Today many women go to work when they finish raising children; tomorrow many will reverse that pattern, working first and childrearing next.) Other couples will overcome the crisis of retirement in other ways, fashioning both together a new set of habits, interests and activities. Still others will find the transition too difficult, and will simply sever their ties and enter the pool of "in-betweens"—the floating reserve of temporarily unmarried persons.

Of course, there will be some who, through luck, interpersonal skill and high intelligence, will find it possible to make long-lasting monogamous marriages work. Some will succeed, as they do today, in marrying for life and finding durable love and affection. But others will fail to make even sequential marriages

endure for long. Thus some will try two or even three partners within, say, the final stage of marriage. Across the board, the average number of marriages per capita will rise—slowly but relentlessly.

Most people will probably move forward along this progression, engaging in one "conventional" temporary marriage after another. But with widespread familial experimentation in the society, the more daring or desperate will make side forays into less conventional arrangements as well, perhaps experimenting with communal life at some point, or going it alone with a child. The net result will be a rich variation in the types of marital trajectories that people will trace, a wider choice of life-patterns, an endless opportunity for novelty of experience. Certain patterns will be more common than others. But temporary marriage will be a standard feature, perhaps the dominant feature, of family life in the future.

## THE DEMANDS OF FREEDOM

A world in which marriage is temporary rather than permanent, in which family arrangements are diverse and colorful, in which homosexuals may be acceptable parents and retirees start raising children—such a world is vastly different from our own. Today all boys and girls are expected to find life-long partners. In tomorrow's world, being single will be no crime. Nor will couples be forced to remain imprisoned, as so many still are today, in marriages that have turned rancid. Divorce will be easy to arrange, so long as responsible provision is made for children. In fact, the very introduction of professional parenthood could touch off a great liberating wave of divorces by making it easier for adults to discharge their parental responsibilities without necessarily remaining in the cage of a hateful marriage. With this powerful external pressure removed, those who stay together would be those who wish to stay together, those for

whom marriage is actively fulfilling—those, in short, who are in love.

We are also likely to see, under this looser, more variegated family system, many more marriages involving partners of unequal age. Increasingly, older men will marry young girls or vice versa. What will count will not be chronological age, but complementary values and interests and, above all, the level of personal development. To put it another way, partners will be interested not in age, but in stage.

Children in this super-industrial society will grow up with an ever enlarging circle of what might be called "semi-siblings"—a whole clan of boys and girls brought into the world by their successive sets of parents. What becomes of such "aggregate" families will be fascinating to observe. Semi-sibs may turn out to be like cousins, today. They may help one another professionally or in time of need. But they will also present the society with novel problems. Should semi-sibs marry, for example?

Surely, the whole relationship of the child to the family will be dramatically altered. Except perhaps in communal groupings, the family will lose what little remains of its power to transmit values to the younger generation. This will further accelerate the pace of change and intensify the problems that go with it.

Looming over all such changes, however, and even dwarfing them in significance is something far more subtle. Seldom discussed, there is a hidden rhythm in human affairs that until now has served as one of the key stabilizing forces in society: the family cycle.

We begin as children; we mature; we leave the parental nest; we give birth to children who, in turn, grow up, leave and begin the process all over again. This cycle has been operating so long, so automatically, and with such implacable regularity, that men have taken it for granted. It is part of the human landscape. Long before they reach puberty, children learn the part they are expected to play in keeping this great cycle turning. This predictable succession

of family events has provided all men, of whatever tribe or society, with a sense of continuity, a place in the temporal scheme of things. The family cycle has been one of the sanity-preserving constants in human existence.

Today this cycle is accelerating. We grow up sooner, leave home sooner, marry sooner, have children sooner. We space them more closely together and complete the period of parenthood more quickly. In the words of Dr. Bernice Neugarten, a University of Chicago specialist on family development, "The trend is toward a more rapid rhythm of events through most of the family cycle."

But if industrialism, with its faster pace of life, has accelerated the family cycle, super-industrialism now threatens to smash it altogether. With the fantasies that the birth scientists are hammering into reality, with the colorful familial experimentation that innovative minorities will perform, with the likely development of such institutions as professional parenthood, with the increasing movement toward temporary and serial marriage, we shall not merely run the cycle more rapidly; we shall introduce irregularity, suspense, unpredictability—in a word, novelty—into what was once as regular and certain as the seasons.

When a "mother" can compress the process of birth into a brief visit to an embryo emporium, when by transferring embryos from womb to womb we can destroy even the ancient certainty that childbearing took nine months, children will grow up into a world in which the family cycle, once so smooth a d sure, will be jerkily arhythmic. Another crucial stabilizer will have been removed from the wreckage of the old order, another pillar of sanity broken.

There is, of course, nothing inevitable about the developments traced in the preceding pages. We have it in our power to shape change. We may choose one future over another. We cannot, however, maintain the past. In our family forms, as in our economics,

science, technology and social relationships, we shall be forced to deal with the new.

The Super-industrial Revolution will liberate men from many of the barbarisms that grew out of the restrictive, relatively choiceless family patterns of the past and present. It will offer to each a degree of freedom hitherto unknown. But it will exact a steep price for that freedom.

As we hurtle into tomorrow, millions of ordinary men and women will face emotion-packed options so unfamiliar, so untested, that past experience will offer little clue to wisdom. In their family ties, as in all other aspects of their lives, they will be compelled to cope not merely with transience, but with the added problem of novelty as well.

Thus, in matters both large and small, in the most public of conflicts and the most private of conditions, the balance between routine and non-routine, predictable and non-predictable, the known and the unknown, will be altered. The novelty ratio will rise.

In such an environment, fast-changing and unfamiliar, we shall be forced, as we wend our way through life, to make our personal choices from a diverse array of options. And it is to the third central characteristic of tomorrow, *diversity,* that we must now turn. For it is the final convergence of these three factors—transience, novelty and diversity—that sets the stage for the historic crisis of adaptation that is the subject of this book: future shock.

# Part Four:

# DIVERSITY

# Chapter 12

# THE ORIGINS OF OVERCHOICE

The Super-industrial Revolution will consign to the archives of ignorance most of what we now believe about democracy and the future of human choice.

Today in the techno-societies there is an almost ironclad consensus about the future of freedom. Maximum individual choice is regarded as the democratic ideal. Yet most writers predict that we shall move further and further from this ideal. They conjure up a dark vision of the future, in which people appear as mindless consumer-creatures, surrounded by standardized goods, educated in standardized schools, fed a diet of standardized mass culture, and forced to adopt standardized styles of life.

Such predictions have spawned a generation of future-haters and technophobes, as one might expect. One of the most extreme of these is a French religious mystic, Jacques Ellul, whose books are enjoying a campus vogue. According to Ellul, man was far freer in the past when "Choice was a real possibility for him." By contrast, today, "The human being is no longer in any sense the agent of choice." And, as for tomorrow: "In the future, man will apparently be confined to the role of a recording device." Robbed of choice, he will be acted upon, not active. He will live,

Ellul warns, in a totalitarian state run by a velvet-gloved Gestapo.

This same theme—the loss of choice—runs through much of the work of Arnold Toynbee. It is repeated by everyone from hippie gurus to Supreme Court justices, tabloid editorialists and existentialist philosophers. Put in its simplest form, this Theory of Vanishing Choice rests on a crude syllogism: Science and technology have fostered standardization. Science and technology will advance, making the future even more standardized than the present. *Ergo:* Man will progressively lose his freedom of choice.

If instead of blindly accepting this syllogism, we stop to analyze it, however, we make an extraordinary discovery. For not only is the logic itself faulty, the entire idea is premised on sheer factual ignorance about the nature, the meaning and the direction of the Super-industrial Revolution.

Ironically, the people of the future may suffer not from an absence of choice, but from a paralyzing surfeit of it. They may turn out to be victims of that peculiarly super-industrial dilemma: overchoice.

### DESIGN-A-MUSTANG

No person traveling across Europe or the United States can fail to be impressed by the architectural similarity of one gas station or airport to another. Anyone thirsting for a soft drink will find one bottle of Coca-Cola to be almost identical with the next. Clearly a consequence of mass production techniques, the uniformity of certain aspects of our physical environment has long outraged intellectuals. Some decry the Hiltonization of our hotels; others charge that we are homogenizing the entire human race.

Certainly, it would be difficult to deny that industrialism has had a leveling effect. Our ability to produce millions of nearly identical units is the crowning achievement of the industrial age. Thus, when

intellectuals bewail the sameness of our material goods, they accurately reflect the state of affairs under industrialism.

In the same breath, however, they reveal shocking ignorance about the character of super-industrialism. Focused on what society was, they are blind to what it is fast becoming. For the society of the future will offer not a restricted, standardized flow of goods, but the greatest variety of *unstandardized* goods and services any society has ever seen. We are moving not toward a further extension of material standardization, but toward its dialectical negation.

The end of standardization is already in sight. The pace varies from industry to industry, and from country to country. In Europe, the peak of standardization has not yet been crested. (It may take another twenty or thirty years to run its course.) But in the United States, there is compelling evidence that a historic corner has been turned.

Some years ago, for example, an American marketing expert named Kenneth Schwartz made a surprising discovery. "It is nothing less than a revolutionary transformation that has come over the mass consumer market during the past five years," he wrote. "From a single homogenous unit, the mass market has exploded into a series of segmented, fragmented markets, each with its own needs, tastes and way of life." This fact has begun to alter American industry beyond recognition. The result is an astonishing change in the actual outpouring of goods offered to the consumer.

Philip Morris, for example, sold a single major brand of cigarettes for twenty-one years. Since 1954 by contrast, it has introduced six new brands and so many options with respect to size, filter and menthol that the smoker now has a choice among sixteen different variations. This fact would be trivial, were it not duplicated in virtually every major product field. Gasoline? Until a few years ago, the American motorist took his pick of either "regular" or "premium." Today he drives up to a Sunoco pump and is asked to choose

among eight different blends and mixes. Groceries? Between 1950 and 1963 the number of different soaps and detergents on the American grocery shelf increased from sixty-five to 200; frozen foods from 121 to 350; baking mixes and flour from eighty-four to 200. Even the variety of pet foods increased from fifty-eight to eighty-one.

One major company, Corn Products, produces a pancake syrup called Karo. Instead of offering the same product nationally, however, it sells two different viscosities, having found that Pennsylvanians, for some regional reason, prefer their syrup thicker than other Americans. In the field of office décor and furniture, the same process is at work. "There are ten times the new styles and colors there were a decade ago," says John A. Saunders, president of General Fireproofing Company, a major manufacturer in the field. "Every architect wants his own shade of green." Companies, in other words, are discovering wide variations in consumer wants and are adapting their production lines to accommodate them. Two economic factors encourage this trend: first, consumers have more money to lavish on their specialized wants; second, and even more important, *as technology becomes more sophisticated, the cost of introducing variations declines.*

This is the point that our social critics—most of whom are technologically naive—fail to understand: it is only primitive technology that imposes standardization. Automation, in contrast, frees the path to endless, blinding, mind-numbing diversity.

"The rigid uniformity and long runs of identical products which characterize our traditional mass production plants are becoming less important" reports industrial engineer Boris Yavitz. "Numerically controlled machines can readily shift from one product model or size to another by a simple change of programs . . . Short product runs become economically feasible." According to Professor Van Court Hare, Jr., of the Columbia University Graduate School of

Business, "Automated equipment . . . permits the production of a wide variety of products in short runs at almost 'mass production' costs." Many engineers and business experts foresee the day when diversity will cost no more than uniformity.

The finding that pre-automation technology yields standardization, while advanced technology permits diversity is borne out by even a casual look at that controversial American innovation, the supermarket. Like gas stations and airports, supermarkets tend to look alike whether they are in Milan or Milwaukee. By wiping out thousands of little "mom and pop" stores they have without doubt contributed to uniformity in the architectural environment. Yet the array of goods they offer the consumer is incomparably more diverse than any corner store could afford to stock. Thus at the very moment that they encourage architectural sameness, they foster gastronomic diversity.

The reason for this contrast is simple: Food and food packaging technology is far more advanced than construction techniques. Indeed, construction has scarcely reached the level of mass production; it remains, in large measure, a pre-industrial craft. Strangled by local building codes and conservative trade unions, the industry's rate of technological advance is far below that of other industries. The more advanced the technology, the cheaper it is to introduce variation in output. We can safely predict, therefore, that when the construction industry catches up with manufacture in technological sophistication, gas stations, airports, and hotels, as well as supermarkets, will stop looking as if they had been poured from the same mold. Uniformity will give way to diversity.*

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* Where the process has begun, the results are striking. In Washington, D.C., for example, there is a computer-designed apartment house—Watergate East—in which no two floors are alike. Of 240 apartments, 167 have different floor plans. And there are no continuous straight lines in the building anywhere.

While certain parts of Europe and Japan are still building their first all-purpose supermarkets, the United States has already leaped to the next stage—the creation of specialized super-stores that widen still further (indeed, almost beyond belief) the variety of goods available to the consumer. In Washington, D.C., one such store specializes in foreign foods, offering such delicacies as hippopotamus steak, alligator meat, wild snow hare, and thirty-five different kinds of honey.

The idea that primitive industrial techniques foster uniformity, while advanced automated techniques favor diversity, is dramatized by recent changes in the automobile industry. The widespread introduction of European and Japanese cars into the American market in the late 1950's opened many new options for the buyer—increasing his choice from half a dozen to some fifty makes. Today even this wide range of choice seems narrow and constricted.

Faced with foreign competition, Detroit took a new look at the so-called "mass consumer." It found not a single uniform mass market, but an aggregation of transient mini-markets. It also found, as one writer put it, that "customers wanted custom-like cars that would give them an illusion of having one-of-a-kind." To provide that illusion would have been impossible with the old technology; the new computerized assembly systems, however, make possible not merely the illusion, but even—before long—the reality.

Thus the beautiful and spectacularly successful Mustang is promoted by Ford as "the one you design yourself," because, as critic Reyner Banham explains, there "isn't a dung-regular Mustang any more, just a stockpile of options to meld in combinations of 3 (bodies) × 4 (engines) × 3 (transmissions) × 4 (basic sets of high-performance engine modifications) − 1 (rock-bottom six cylinder car to which these modifications don't apply) + 2 (Shelby grand-touring and racing set-ups applying to only one body shell and not all engine/transmission combinations)."

This does not even take into account the possible variations in color, upholstery and optional equipment.

Both car buyers and auto salesmen are increasingly disconcerted by the sheer multiplicity of options. The buyer's problem of choice has become far more complicated, the addition of each option creating the need for more information, more decisions and subdecisions. Thus, anyone who has attempted to buy a car lately, as I have, soon finds that the task of learning about the various brands, lines, models and options (even within a fixed price range) requires days of shopping and reading. In short, the auto industry may soon reach the point at which its technology can economically produce more diversity than the consumer needs or wants.

Yet we are only beginning the march toward destandardization of our material culture. Marshall McLuhan has noted that "Even today, most United States automobiles are, in a sense, custom-produced. Figuring all possible combinations of styles, options and colors available on a certain new family sports car, for example, a computer expert came up with 25,000,000 different versions of it for a buyer . . . When automated electronic production reaches full potential, it will be just about as cheap to turn out a million differing objects as a million exact duplicates. The only limits on production and consumption will be the human imagination." Many of McLuhan's other assertions are highly debatable. This one is not. He is absolutely correct about the direction in which technology is moving. The material goods of the future will be many things; but they will not be standardized. We are, in fact, racing toward "overchoice"—the point at which the advantages of diversity and individualization are cancelled by the complexity of the buyer's decision-making process.

COMPUTERS AND CLASSROOMS

Does any of this matter? Some people argue that diversity in the material environment is insignificant so long as we are racing toward cultural or spiritual homogeneity. "It's what's inside that counts," they say, paraphrasing a well-known cigarette commercial.

This view gravely underestimates the importance of material goods as symbolic expressions of human personality differences, and it foolishly denies a connection between the inner and outer environment. Those who fear the standardization of human beings should warmly welcome the destandardization of goods. For by increasing the diversity of goods available to man we increase the mathematical probability of differences in the way men actually live.

More important, however, is the very *premise* that we are racing toward cultural homogeneity, since a close look at this also suggests that just the opposite is true. It is unpopular to say this, but we are moving swiftly toward fragmentation and diversity not only in material production, but in art, education and mass culture as well.

One highly revealing test of cultural diversity in any literate society has to do with the number of different books published per million of population. The more standardized the tastes of the public, the fewer titles will be published per million; the more diverse these tastes, the greater the number of titles. The increase or decrease of this figure over time is a significant clue to the direction of cultural change in the society. This was the reasoning behind a study of world book trends published by UNESCO. Conducted by Robert Escarpit director of the Center for the Sociology of Literature at the University of Bordeaux, it provided dramatic evidence of a powerful international shift toward cultural destandardization.

Thus, between 1952 and 1962 the index of diversity rose in fully twenty-one of the twenty-nine chief book-producing nations. Among the countries registering the highest shifts toward literary diversity were Canada, the United States and Sweden, all with increases in excess of 50 percent or more. The United Kingdom, France, Japan and the Netherlands all moved from 10 to 25 percent in the same direction. The eight countries that moved in the opposite direction—i.e., toward greater standardization of literary output—were India, Mexico, Argentina, Italy, Poland, Yugoslavia, Belgium, and Austria. In short, the more advanced the technology in a country, the greater the likelihood that it would be moving in the direction of literary diversity and away from uniformity.

The same push toward pluralism is evident in painting, too, where we find an almost incredibly wide spectrum of production. Representationalism, expressionism, surrealism, abstract expressionism, hard-edge, pop, kinetic, and a hundred other styles are pumped into the society at the same time. One or another may dominate the galleries temporarily, but there are no universal standards or styles. It is a pluralistic marketplace.

When art was a tribal-religious activity, the painter worked for the whole community. Later he worked for a single small aristocratic elite. Still later the audience appeared as a single undifferentiated mass. Today he faces a large audience split into a milling mass of sub-groups. According to John McHale: "The most uniform cultural contexts are typically primitive enclaves. The most striking feature of our contemporary 'mass' culture is the vast range and diversity of its alternative cultural choices . . . The 'mass,' on even cursory examination, breaks down into many different 'audiences.'"

Indeed, artists no longer attempt to work for a universal public. Even when they think they are doing so, they are usually responding to the tastes and styles preferred by one or another sub-group in the

society. Like the manufacturers of pancake syrup and automobiles, artists, too, produce for "mini-markets." And as these markets multiply, artistic output diversifies.

The push for diversity, meanwhile, is igniting bitter conflict in education. Ever since the rise of industrialism, education in the West, and particularly in the United States, has been organized for the mass production of basically standardized educational packages. It is not accidental that at the precise moment when the consumer has begun to demand and obtain greater diversity, the same moment when new technology promises to make destandardization possible, a wave of revolt has begun to sweep the college campus. Though the connection is seldom noticed, events on the campus and events in the consumer market are intimately connected.

One basic complaint of the student is that he is not treated as an individual, that he is served up an undifferentiated gruel, rather than a personalized product. Like the Mustang buyer, the student wants to design his own. The difference is that while industry is highly responsive to consumer demand, education typically has been indifferent to student wants. (In one case we say, "the customer knows best"; in the other, we insist that "Papa—or his educational surrogate—knows best.") Thus the student-consumer is forced to fight to make the education industry responsive to his demand for diversity.

While most colleges and universities have greatly broadened the variety of their course offerings, they are still wedded to complex standardizing systems based on degrees, majors and the like. These systems lay down basic tracks along which all students must progress. While educators are rapidly multiplying the number of alternative paths, the pace of diversification is by no means swift enough for the students. This explains why young people have set up "para-universities"—experimental colleges and so-called free universities—in which each student is free to choose

what he wishes from a mind-shattering smorgasbord of courses that range from guerrilla tactics and stock market techniques to Zen Buddhism and "underground theater."

Long before the year 2000, the entire antiquated structure of degrees, majors and credits will be a shambles. No two students will move along exactly the same educational track. For the students now pressuring higher education to destandardize, to move toward super-industrial diversity, will win their battle.

It is significant, for example, that one of the chief results of the student strike in France was a massive decentralization of the university system. Decentralization makes possible greater regional diversity, local authority to alter curriculum, student regulations and administrative practices.

A parallel revolution is brewing in the public schools as well. It has already flared into open violence. Like the disturbance at Berkeley that initiated the worldwide wave of student protest, it has begun with something that appears at first glimpse to be a purely local issue.

Thus New York City, whose public education system encompasses nearly 900 schools and is responsible for one out of every forty American public school pupils, has suffered the worst teachers' strike in history—precisely over the issue of decentralization. Teacher picket lines, parent boycotts, and near riot have become everyday occurrences in the city's schools. Angered by the ineffectiveness of the schools, and by what they rightfully regard as blatant race prejudice, black parents, backed by various community forces, have demanded that the entire school system be cut up into smaller "community-run" school systems.

In effect, New York's black population, having failed to achieve racial integration and quality education, wants its own school system. It wants courses in Negro history. It wants greater parental involve-

ment with the schools than is possible in the present large, bureaucratic and ossified system. It claims, in short, the right to be different.

The essential issues far transcend racial prejudice, however. Until now the big urban school systems in the United States have been powerful homogenizing influences. By fixing city-wide standards and curricula, by choosing texts and personnel on a city-wide basis, they have imposed considerable uniformity on the schools.

Today, the pressure for decentralization, which has already spread to Detroit, Washington, Milwaukee, and other major cities in the United States (and which will, in different forms, spread to Europe as well), is an attempt not simply to improve the education of Negroes, but to smash the very idea of centralized, city-wide school policies. It is an attempt to generate local variety in public education by turning over control of the schools to local authorities. It is, in short, part of a larger struggle to diversify education in the last third of the twentieth century. That the effort has been temporarily blocked in New York, largely through the stubborn resistance of an entrenched trade union, does not mean that the historic forces pushing toward destandardization will forever be contained.

Failure to diversify education *within* the system will simply lead to the growth of alternative educational opportunities *outside* the system. Thus we have today the suggestions of prominent educators and sociologists, including Kenneth B. Clark and Christopher Jencks, for the creation of new schools outside of, and competitive with, the official public school systems. Clark has called for regional and state schools, federal schools, schools run by colleges, trade unions, corporations and even military units. Such competing schools would, he contends, help create the diversity that education desperately needs. Simultaneously, in a less formal way, a variety of "paraschools" are already being established by hippie com-

munes and other groups who find the mainstream educational system too homogeneous.

We see here, therefore, a major cultural force in the society—education—being pushed to diversify its output, exactly as the economy is doing. And here, exactly as in the realm of material production, the new technology, rather than fostering standardization, carries us toward super-industrial diversity.

Computers, for example, make it easier for a large school to schedule more flexibly. They make it easier for the school to cope with independent study, with a wider range of course offerings and more varied extracurricular activities. More important, computer-assisted education, programmed instruction and other such techniques, despite popular misconceptions, radically enhance the possibility of diversity in the classroom. They permit each student to advance at his own purely personal pace. They permit him to follow a custom-cut path toward knowledge, rather than a rigid syllabus as in the traditional industrial era classroom.

Moreover, in the educational world of tomorrow, that relic of mass production, the centralized work place, will also become less important. Just as economic mass production required large numbers of workers to be assembled in factories, educational mass production required large numbers of students to be assembled in schools. This itself, with its demands for uniform discipline, regular hours, attendance checks and the like, was a standardizing force. Advanced technology will, in the future, make much of this unnecessary. A good deal of education will take place in the student's own room at home or in a dorm, at hours of his own choosing. With vast libraries of data available to him via computerized information retrieval systems, with his own tapes and video units, his own language laboratory and his own electronically equipped study carrel, he will be freed, for much of the time, of the restrictions and unpleasantness that dogged him in the lockstep classroom.

The technology upon which these new freedoms will be based will inevitably spread through the schools in the years ahead—aggressively pushed, no doubt, by major corporations like IBM, RCA, and Xerox. Within thirty years, the educational systems of the United States, and several Western European countries as well, will have broken decisively with the mass production pedagogy of the past, and will have advanced into an era of educational diversity based on the liberating power of the new machines.

In education, therefore, as in the production of material goods, the society is shifting irresistibly away from, rather than toward, standardization. It is not simply a matter of more varied automobiles, detergents and cigarettes. The social thrust toward diversity and increased individual choice affects our mental, as well as our material surroundings.

## "DRAG QUEEN" MOVIES

Of all the forces accused of homogenizing the modern mind, few have been so continuously and bitterly criticized as the mass media. Intellectuals in the United States and Europe have lambasted television, in particular, for standardizing speech, habits, and tastes. They have pictured it as a vast lawnroller flattening out our regional differences, crushing the last vestiges of cultural variety. A thriving academic industry has leveled similar charges against magazines and movies.

While there is truth in some of these charges, they overlook critically important counter-trends that generate diversity, not standardization. Television, with its high costs of production and its limited number of channels, is still necessarily dependent upon very large audiences. But in almost every other communications medium we can trace a decreasing reliance on mass audiences. Everywhere the "market segmentation" process is at work.

A generation ago, American movie-goers saw almost nothing but Hollywood-made films aimed at capturing the so-called mass audience. Today in cities across the country these "mainstream" movies are supplemented by foreign movies, art films, sex movies, and a whole stream of specialized motion pictures consciously designed to appeal to sub-markets—surfers, hot-rodders, motorcyclists, and the like. Output is so specialized that it is even possible, in New York at least, to find a theater patronized almost exclusively by homosexuals who watch the antics of transvestites and "drag queens" filmed especially for them.

All this helps account for the trend toward smaller movie theaters in the United States and Europe. According to the *Economist*, "The days of the 4000-seater Trocadero . . . are over . . . The old-style mass cinema audience of regular once-a-weekers has gone for good." Instead, multiple small audiences turn out for particular kinds of films, and the economics of the industry are up-ended. Thus Cinecenta has opened a cluster of four 150-seat theaters on a single site in London, and other exhibitors are planning midget movie houses. Once again, advanced technology fosters dehomogenization: the development of in-flight movies has led to new low-cost 16 mm. projection systems that are made to order for the mini-movie. They require no projectionist and only a single machine, instead of the customary two. United Artists is marketing these "cineautomats" on a franchise basis.

Radio, too, though still heavily oriented toward the mass market, shows some signs of differentiation. Some American stations beam nothing but classical music to upper-income, high education listeners, while others specialize in news, and still others in rock music. (Rock stations are rapidly subdividing into still finer categories: some aim their fare for the under-eighteen market; others for a somewhat older group; still others for Negroes.) There are even rudimentary attempts to set up radio stations pro-

gramming solely for a single profession—physicians, for example. In the future, we can anticipate networks that broadcast for such specialized occupational groups as engineers, accountants and attorneys. Still later, there will be market segmentation not simply along occupational lines, but along socio-economic and psycho-social lines as well.

It is in publishing, however, that the signs of destandardization are most unmistakable. Until the rise of television, mass magazines were the chief standardizing media in most countries. Carrying the same fiction, the same articles and the same advertisements to hundreds of thousands, even millions of homes, they rapidly spread fashions, political opinions and styles. Like radio broadcasters and moviemakers, publishers tended to seek the largest and most universal audience.

The competition of television killed off a number of major American magazines such as *Collier's* and *Woman's Home Companion.* Those mass market publications that have survived the post-TV shake-up have done so, in part, by turning themselves into a collection of regional and segmentalized editions. Between 1959 and 1969, the number of American magazines offering specialized editions jumped from 126 to 235. Thus every large circulation magazine in the United States today prints slightly different editions for different regions of the country—some publishers offering as many as one hundred variations. Special editions are also addressed to occupational and other groups. The 80,000 physicians and dentists who receive *Time* each week get a somewhat different magazine than that received by teachers whose edition, in turn, is different from that sent to college students. These "demographic editions" are growing increasingly refined and specialized. In short, mass magazine publishers are busily destandardizing, diversifying their output exactly as the automakers and appliance manufacturers have done.

Furthermore, the rate of new magazine births has