

Population - U.S.

Simpson, Hoke S.

A Report of the Arden House Conference

The Changing American Population

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[Simpson, Hoke S. , ed.]

THE CHANGING AMERICAN POPULATION • Edited by

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A Report of the Arden House Conference – Jointly sponsored by the
Graduate School of Business, Columbia University, and the Institute of
Life Insurance.

[New York, Institute of Life Insurance,
1962]

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488 Madison Avenue, New York 22, New York*

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Library of Congress Catalog Card No: 62-17977

Printed in the United States of America.

Fifty cents per copy

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PREFACE •

THE RATE OF CHANGE in all aspects of our society has greatly accelerated since World War II. This phenomenon is most readily observed in the physical sciences. For example, the 350-miles-an-hour piston plane is rapidly being replaced by the jet which travels twice as fast. Nearly one-half of the products which the chemical industry markets now were unknown ten years ago. The practice of medicine is far different from that prior to World War II.

Social and cultural changes are also proceeding apace — perhaps as a result of science and technology. These changes, however, are more difficult to identify, observe, measure, and are certainly more difficult to interpret than those taking place in the physical sciences. The importance of understanding better the social changes which are going on is generally recognized and is evidenced by the fact that social scientists have a large role in policy-making in both business and Government.

The life insurance business is vitally concerned with the implications of the changing social and economic environment in the United States. Conversely, the social scientists find in this business a fertile field of study. The very nature of the business, involved as it is in long-range social changes, demands the setting out of specific areas for future study, research, and understanding.

In recognition of the importance of seeking answers to some of the crucial questions facing society, the Institute of Life Insurance made a grant to the Graduate School of Business, Columbia University, for the purpose of holding a conference to be attended by executives of the life insurance business and outstanding social scientists from the academic world. The Conference which was held October 1-3, 1961, at Arden House, the Harriman, New York campus of Columbia University, brought together 36 social scientists from 31 colleges and universities and 30 life insurance executives from 20 companies.

The theme selected was “The Changing American Population.” This theme takes cognizance of the rapid changes which are taking place in the size and composition of our population and the social and economic effects of these changes.

The Conference participants concerned themselves with seeking answers to questions like these:

What are the social and economic implications of suburbia? What influence has home ownership had on people’s attitudes toward savings

and credit? What are the emerging patterns of family relationships? What are the relative roles of father, mother, and children in decision-making for the family? What do families consider important? What is their concept of security?

Turning to the work force of our country, what are the probable social and economic effects of automation? What are some of the implications of working mothers – the added years of education and training given young people? What about the increasing mobility of the labor force with its influence on the worker's family?

The first five chapters of this book are based upon working papers presented at the Conference. They proceed from changes which can be identified, observed, and measured, to those which are difficult to see, much less measure. Four major problem areas are considered.

Dr. Ewan Clague concerns himself with *Population Growth and Age Structure*. The *Level and Distribution of Income* is the subject of the material presented by Dr. Simon S. Kuznets. Dr. Kingsley Davis discusses the *Changing Patterns of Cities and Suburbs*.

The effect of *Automation* on the work environment and on the mores of the American people is the theme of Chapters IV and V. Dr. William Noland is concerned with the observable impact of science and technology at the work place, in daily living and presents some speculations on the "Space Age." Dr. Bernard J. Muller-Thym's paper might be subtitled, "What It Means to Live at the End of the Neolithic Age." He suggests that we are facing changes which are so vast that existing institutions such as property and work are rapidly becoming obsolescent.

Chapter VI is composed of the reports made at the Conference by the rapporteurs of each of the four smaller groups into which the total group was divided for discussion purposes.

Many old answers to old questions are no longer relevant. Many old questions are no longer relevant to the present situation. We hope that the Conference and the book contribute to the important task of identifying new questions appropriate to "The Changing American Population."

April, 1962.

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Board of Directors
Institute of Life Insurance, 1961

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DEMOGRAPHIC TRENDS AND THEIR SIGNIFICANCE •

Dr. Ewan Clague, Commissioner of Labor Statistics, United States Department of Labor

THIS ARTICLE deals with demographic trends, which are by no means new to members of the Bureau of Labor Statistics and the Department of Labor. We have been looking at these trends for a long time.

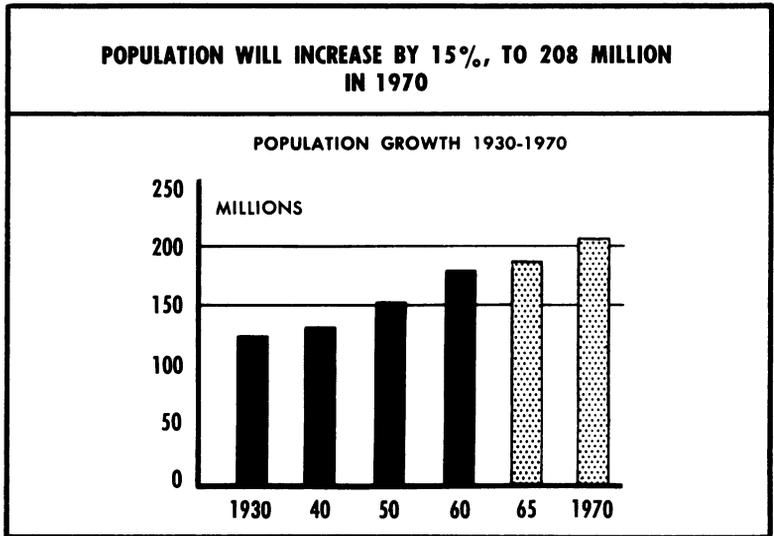
For example, I was engaged in this work in the middle 1930's in the Social Security Board. Then, we were trying to look forward to the year 2000. I later worked with the Bureau of Labor Statistics, where we tried to forecast the outlook for specific occupations, so that we could guide young people in what to study so that they could enter fields with a bright economic future. Incidentally, in my own advice to a youngster, I always emphasize that he first should select what he wants to do, and then only secondarily apply the economic test. I am not worried about anyone who enjoys his work, even if he is in a crowded occupation. However, this gives one example of the use of our projections.

How did we make our projections? Of course, we had to rely on sound, solid data, not only our conjectures. We always have consulted the profession in every field where we have made a forecast. But we developed some information on the economic outlook, and published this in bulletins issued from time to time, projecting the growth of the labor force by major occupational groups for some years into the future.

James P. Mitchell, then Secretary of Labor, conceived the idea of putting this into a popular pamphlet. Mitchell believed that people would not read a statistical bulletin, but that they could understand a chart book with relatively simple text, even though they might not be able to go through the mathematical formulas that we used in making the projections.

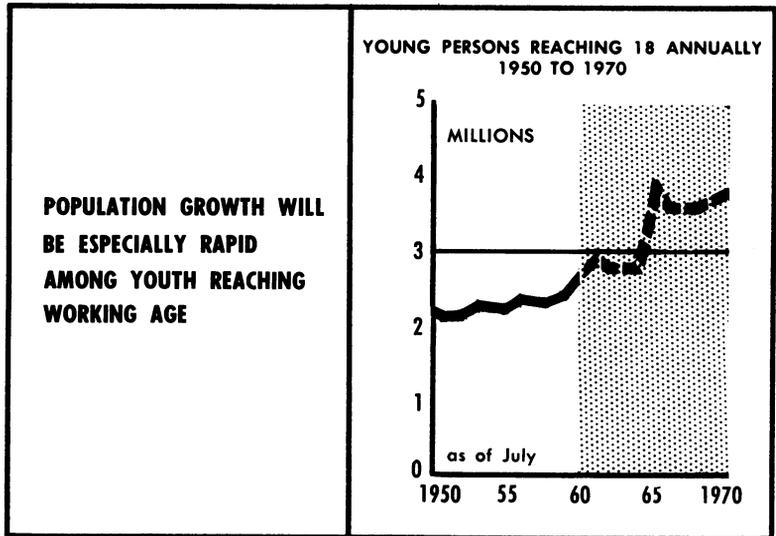
And so, we have a basic bulletin; now we are issuing another edition based on the developments of the last few years. These charts are the basis for the judgments I am expressing in this article.

Chart 1



The census makes four projections for population. I believe that the most likely of these predicts 208 million people in 1970. (Chart 1.) This

Chart 2



figure, in my opinion, will be too low, barring an unforeseen cataclysm. I expect a somewhat larger population in 1970 than 208 million. However, this is the first step in our analysis of the labor force.

A division of the population by age brackets indicates some significant trends. One important population figure is the number of persons reaching age 18 annually. (Chart 2.) In the 1950's, there were approximately 2 million boys and girls reaching this age each year. In 1961, the number was about $2\frac{3}{4}$ million. This figure will stay the same for the next two years. Then, in a single year, in 1965, it will jump to $3\frac{3}{4}$ million. Obviously, this is due to the births of 1947. It means that anyone who tries to get into college in 1965 is going to have a difficult time.

There already is an increase in college students. Considering that the colleges are becoming crowded now, it is obvious what a problem the crowding will be in a few years. There is no relief in sight. Nor will there be any relief when we enter the 1970's, for during most of the next decade, the flood of young people will continue at the same level.

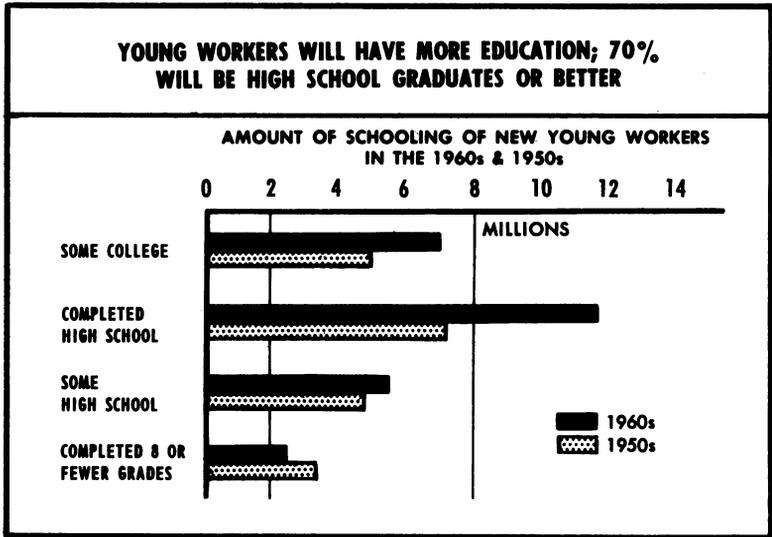
The college is one example of a place where there will be great population pressures. High schools are another example. The students who will swell the college population in 1965 now are in first-year high school. The high schools are going to be very crowded in the next few years; and one worries about the quality of the education given to these students. Then, in 1965, there will be the problem of how the colleges will handle the mass.

In addition, there is an increasing pressure on young people to go to college. If we fatten the percentage of high school graduates who go to college (say, up to one-fifth or more of this age group), there will be an even greater pressure on the colleges at that time. We often cite the number of teachers who will be needed in the high schools and colleges, and we emphasize the problem of facilities and equipment, including the question of whether television will help enlarge the teacher-pupil ratio, thereby making it possible for fewer teachers to handle more students.

How will we deal with the increased pressures on colleges? That is one question raised by our population projections. Another, related question is this: Will we educate more of our children in the future?

Our answer is, yes, we will. We estimate that about $6\frac{1}{2}$ million students will go at least part-way through college in the 1960's. (Chart 3, p. 14.) Twelve million others, we estimate, will complete high school and then quit. There are left about $5\frac{1}{2}$ million young workers who will go part way through high school, and only about $2\frac{1}{4}$ million who will not go beyond grade school. This is much better than we did in the 1950's; we are educating more of our children.

Chart 3



Because of the increase in education, the typical entrant into the labor force in the 1960's will be at least a high school graduate. Therefore, the workers who do not graduate from high school will not get the better jobs: For this reason, we also stress the fact that about 7 million boys

Chart 4

HERE IS THE LABOR FORCE BALANCE SHEET FOR THE 1960s

	(MILLIONS)
NUMBER OF WORKERS IN 1960	73.6
SUBTRACT:	
Withdrawals — death, retirement, marriage, childbearing, etc.	<u>-15.5</u>
1960 WORKERS STILL IN LABOR FORCE IN 1970	<u>58.1</u>
ADD:	
Young entrants	+26.0
Adult women returning to work	<u>+ 3.0</u>
NUMBER OF WORKERS IN 1970	<u>87.1</u>

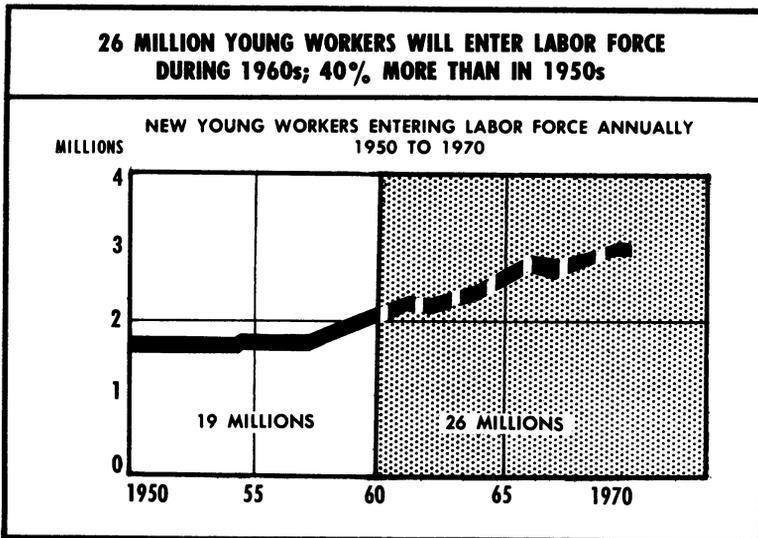
and girls will not finish high school. Most employers will be able to require for all good jobs a minimum of a high school diploma, thereby cutting off the workers at the lower end of the scale, and leaving as their only outlet the unskilled and semi-skilled occupations.

Our population projections also deal with changes in the labor force. We estimate that the labor force will jump from some 73½ million in 1960 to some 87 million in 1970. (Chart 4.) We will lose about 15 million of our present labor force through retirement, disability or death. That will leave 58 million of us, and we will pick up 29 million more. Of these, 26 million will be new-entry young people, and 3 million will be adult women entering or re-entering the labor force. We foresee no slackening in the general upward trend in women's employment, a trend which has existed for at least four decades.

I would like to point out that our labor force projections are not based on projections of future birth rates; the workers of 1970 are already here among us. Our only problem in making these projections is estimating how many will die or retire.

Knowing what the present population is, we say that 26 million new young workers will begin their careers in the 1960's. (Chart 5.) In the 1950's, the number was only 19 million.

Chart 5



That is not the net gain in the labor force; it is the young entrants, from which we must subtract the workers who died or retired. The new

entrants will number some 2½ million a year – and by 1970, 3 million. For a few years, the annual net gain will be about a million and a quarter to a million and a half. After that, it will be still higher.

One of the reasons why we have had higher unemployment rates recently is that more workers are entering the labor force, and more people are seeking work. A larger supply is likely to produce some left-overs. At any rate, the labor force certainly will grow much more rapidly in the coming decade. And year after year, there will be more job-seekers.

The current population trends are producing an imbalanced labor force. Our labor force has aged during the last decade. There were hardly any more people under age 35 in 1960 than there were in 1950. (Chart 6.) In other words, at the lower end of the age scale, we have had almost no gain. On the other hand, from 1950 to 1960, we added about 2½ million workers in the age group from 35 to 45, plus nearly 6 million over age 45. This means a distinct aging of our labor force.

From now to the 1970's, we will move in another direction. We will add 6½ million to the group *under* age 25. That is due to the flood of young people. For the middle-age group, 25 to 45, almost no change is in sight. The rise of 2 million in this group does not occur until about 1967 or 1968, in the end years of the decade. So in the years immediately ahead, this may be a great shortage area.

In brief, we expect almost no gain in prime workers, whom employers normally use, but there will be a further growth of elderly people, 5½

Chart 6

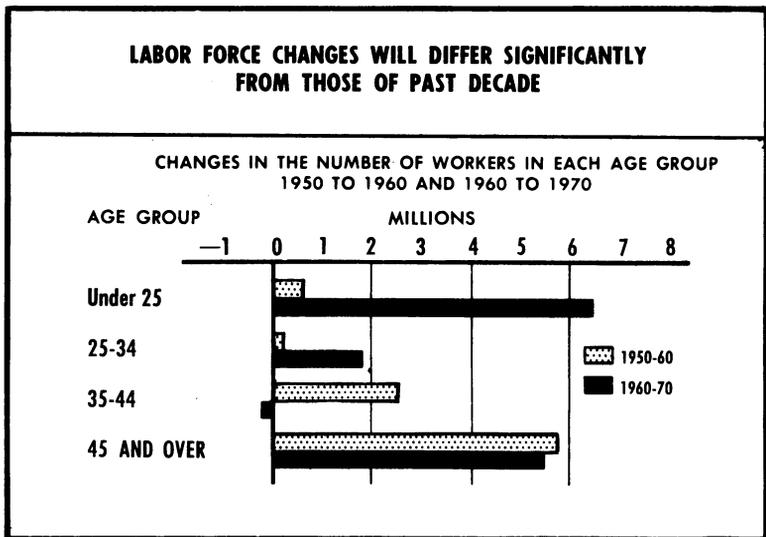
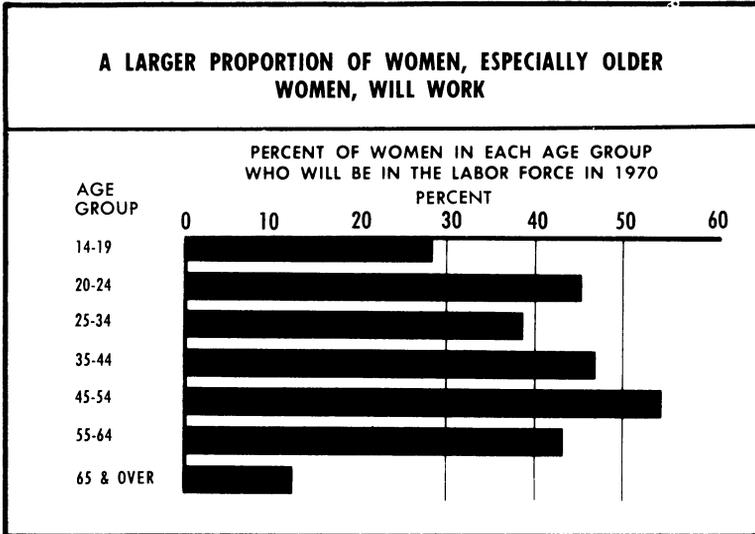


Chart 7



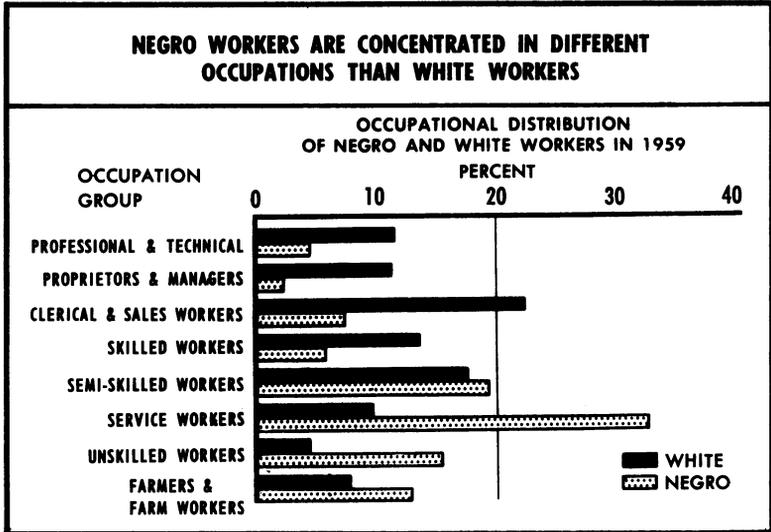
million more than we have now. There will be an increase only in the very old and the very young workers. This will produce an imbalance in the labor force. The shadow will grow during the decade, becoming more and more apparent. It will affect the way businessmen will have to manage their work forces. And it also may have a bearing on the kind of unemployment we have and the social problems that will grow out of it.

Another important trend is the ever-increasing number of women entering the labor force. Among teen-agers, about 30 per cent of the girls are in the labor force; among those aged 20-24, about 45 per cent. After this age, women often disappear from the labor force for a period of time. They get married and begin rearing a family. But later, at 35-40-45, large numbers of them return to the labor force.

We guess that by 1970, 55 women out of every 100 (married, widowed, single or divorced) in the age group 45 to 55 will be trying to earn a living. (Chart 7.) Even at age 55 to 65, there will be about 45 in 100. This means a persistent increase in the number of women seeking jobs. We see no end to the trend.

Women are frequently part-time workers. They seem to prefer part-time jobs. Some of them are only occasional or intermittent workers. In a recent year, for example, when about 68 million persons were employed in July, there were no less than 78 million persons who worked some time during the year. That is because of a great increase of women and young people working in June, July and August. The number increases again

Chart 8



at Christmas, Easter, and at other periods. One of the problems associated with our figures of employment and unemployment is that we are dealing with full-time, year-round workers, who normally work at least 2,000 hours a year, at the same time we are dealing with people who work quite intensively for only a few weeks or a few months, or who work a few hours a day all the year around. There is a large fringe labor force, which varies month by month.

The occupational outlook also is affected by the distribution of Negroes. Some interesting facts emerge from a classification of Negro and white workers in 1959 by occupations. (Chart 8, p. 18.) Many of the whites are in the professional and technical groups, including proprietors, managers, clerical workers, sales people and skilled workers. But going to the lower occupations, by which I mean the occupations that require less education, the Negroes begin to appear in the semi-skilled group. Here we find a higher proportion of Negroes than of whites. This does not mean that there are fewer white workers among the semi-skilled; there are more. However, a higher proportion of the Negro than of the white population do semi-skilled work. This is also true among the service and the unskilled workers, and even among the farmers and farm workers.

The preceding describes how the population is composed today. We also have a projection for the future. This may prove to be wrong, but it is our best estimate.

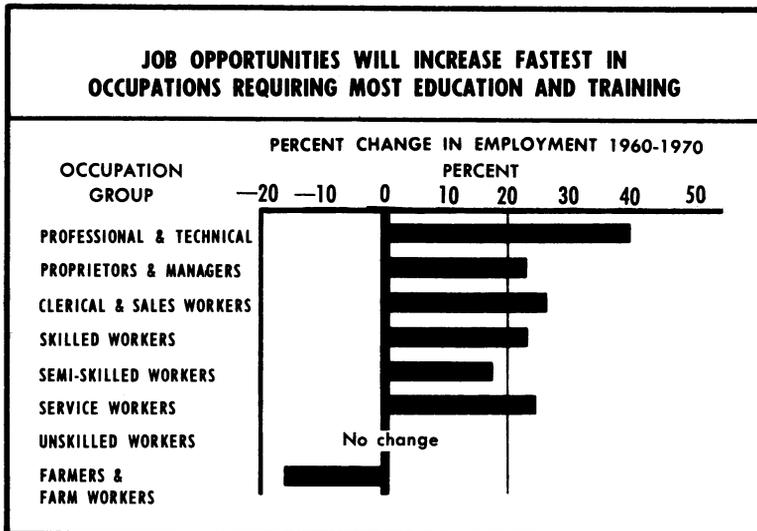
We believe that between 1960 and 1970 there will be an increase by 40 per cent in professional and technical workers, including laboratory technicians, statistical technicians, and others who supplement the professions. (Chart 9.) This is a tremendous increase.

We estimate that there will be more proprietors and managers, more clerical, sales, skilled and service workers. There will be a slight decline in the proportion of semi-skilled workers, but no change at all in unskilled workers. Common labor is fading out.

Someday, that decline in farm workers must end. During my working life, from 1910 when I was a boy on a farm in the state of Washington until 1960, we have seen a decline of about 50 per cent in the farm labor force. We had about 11½ million farmers and farm workers in the spring of 1910, when they took the census. I would guess that on a comparable date now, the number would not be more than 5½ million. We have lost some 6 million in the interval.

We think there will be a further decline of another million or so. In fact, we think that the farmers and farm workers will shrink until they constitute no more than about 6 per cent of the entire labor force in 1975. But this trend will not go on indefinitely. Sooner or later, productivity in agriculture will catch up with that in industry and in the services. Then people may leave jobs in industry and commerce in the city, and move out to the farm to get higher wages. This can happen when farm productivity equals productivity in the rest of the economy. However, as yet,

Chart 9



productivity on the farm per worker (the output per worker) is not equal to that in the rest of the economy, and consequently, people still are drifting to the city. The demand for food, the pressures of the population on the food supply, eventually will put an end to that decline. From then on, the farm labor force will remain stable, or actually might increase.

In studying the occupational change that is likely to occur, it is interesting to consider the educational attainments of the different occupational groups. In 1959 among the professional and technical, 75 per cent had some college education, about 20 per cent had completed high school, and only 6 per cent did not reach high school graduation. Among proprietors and managers, there is a little more diversification. There were 38 per cent with less than a high school education, but there were 30 per cent with some college. Far different amounts of education were found in the less skilled groups. Only four semi-skilled workers in 100 had any college education. Only 6 per cent of the service workers, 5 per cent of the farm, 3 per cent of the unskilled workers had attended college.

This shows that the occupations that are expanding require more education, and those which are slowing down or declining require less. Obviously, a very important question is: Are our educational institutions expanding to keep up with the requirements of our growing occupations?

2

INCOME DISTRIBUTION AND CHANGES IN CONSUMPTION •

*Professor Simon Kuznets,
Harvard University*

INTRODUCTION

THIS ARTICLE presents a picture of an economy in which the average income per family unit, in constant prices, has grown over 60 per cent from 1929 to 1959; in which the inequality in the distribution of income by size had been substantially reduced by 1947, so that the share of the top 5 per cent, after deduction of federal income taxes, had declined from about three-tenths in 1929 to less than a fifth by the early 1950's; and in which the shares of wage and salary income and of transfers, the latter largely to the lower income groups, have risen.

With this increasing and more equally distributed income, the share of personal savings in personal income (after taxes) has been, on the whole, stable at somewhat less than 10 per cent, but the share of contractual savings in total savings has increased and one may infer that the share in total savings of those creditable to the lower income groups has also risen. Finally, with the marked rise in consumer expenditures per capita, the shares in total household consumption of such categories as food and tobacco, and clothing, have decreased, while those of passenger car transportation, certain types of household equipment, health, education and research, and recreation have risen.

In appraising these findings, we must recognize that the underlying estimates of national income and its components reflect a system of measurement that accepts values in the markets; and that, comprehensive and useful as this system is, it does not record some of the possible costs of economic growth resulting from the non-optimal uses of resources — non-optimal from the standpoint of criteria not reflected in market institutions or in pressure-bound decisions in the public sector. These costs can only be briefly illustrated, since they have not been subjected to intensive study and cannot easily be measured.

One obvious illustration is suggested by the increasing cost of satisfying the same needs under the conditions of spreading urbanization in this country in recent decades. The provision of food, shelter, sanitation, trans-

portation, and other amenities, at the same level of satisfaction, requires far more resources (for additional processing, transportation, distribution, etc.) in the cities, particularly the larger ones, than in the countryside. Yet the income estimates, while adjusted for changes in prices *over time*, make no allowance for differences in prices of the same goods between country and city, nor for the higher costs of satisfying the same needs in the latter than in the former. Thus, even if we disregard the possible bias in the estimates due to a failure to record adequately production *within* households in the rural areas, our measures of income and expenditures in constant prices exaggerate the rise in *real* returns, in the welfare equivalent of the higher income, because they do not allow for the higher costs of living under urban conditions.

A somewhat more elusive question relates to the allocation of resources, either between the public and private sectors or between consumption and capital formation. Has it been the optimal one for the long-term growth of the economy, for the balanced satisfaction of needs even of ultimate consumers, or for the international relations of this country?

Total national income or product, in respect to its uses, is divided into three parts: Consumption of individuals and households (purchases by them, plus imputation for owned homes and own production; government consumption (purchases of commodities and services for current use); and capital formation or investment, private and public. Has the increase in the share in national product of purchases by individuals and households, whose rise per capita and less unequal distribution among consuming units we have observed, been perhaps at the expense of the other two uses? By "at the expense" I mean that a smaller final consumption share and a larger capital formation share might have led to a higher rate of economic growth in the immediate past. It might also have been conducive to a more balanced satisfaction even of the needs of ultimate consumers, if, e.g., more capital formation, in the way of residential, road, and other construction, would make for a more satisfying urban life. The same argument might apply to the devotion of more resources to capital formation in the form of investment in research.

Finally, a related aspect of concealed cost of *domestic* growth should be explicitly indicated, in view of this country's need to adjust to an increasingly complicated international situation. The impressive growth in recent years of all the components of national product destined for domestic use — domestic consumption, government expenditures for domestic uses, and capital formation or investment at home — was naturally the fruit of the effort and attention of the human talent engaged in

our economy. Of course, much of the total product was used for aid and other benefits to other countries, and a considerable segment of our human resources was concentrated on the problems of relations with the rest of the world. But still one may ask whether too much emphasis has been put on consumption and domestic capital formation, and if sufficient resources have been expended on improving our relations with other nations.

There was a time when concentration on domestic tasks and problems could be wholehearted, on the reasonable assumption that our country's internal progress was the best assurance of its secure and satisfying future. But the situation has changed and our future progress is, to a large extent, a matter of the growth and progress in much of the rest of the world. There is thus the distinct danger that internal growth is secured at the cost of neglecting external relations; that too much of our professional, managerial, and other resources is devoted to domestic problems and not enough to foreign problems; that some solutions to internal problems, while encouraging domestic productivity and employment, only add to the exacerbation of our foreign relations, and to the deterioration of our position in a rapidly changing and partly hostile world.

The above examples illustrate the hidden costs that are not reflected in the otherwise highly useful national income accounts. And they are only some among many that could be cited. Clearly, it would be difficult to assign even rough weights to these costs — though not impossible for some components by dint of intensive examination of the evidence. Nor can we be sure that the results would warrant such an attempt, which might only obfuscate the aspects that are measurable. And, certainly, we should not disregard the tangible evidence of economic progress revealed in the paper — in the way of a rise in the income and consumption of households and thus a greater return from participation in economic activity.

On the other hand, we must not forget that these continuously used and accepted measures do not tell the complete story; and in particular, that they do not directly provide a base for the kind of judgment that transcends the operation of the private markets and the decisions of the public sector, both of which are subject to short-term pressures of group interests. If one is interested not only in the broad outline of what has happened, but also in its evaluation in terms of long-term criteria of the country's progress, within a wider framework of goals than the measurement reflects, the account given in Chapter II is just a beginning, a point of departure for further analysis. But if the latter is to be pursued effectively, a clear formulation of the long-term goals and of their implications

is needed — a task that is, perhaps, beyond the scope of this book, although it has some bearing upon our prognosis for the future.

Two comments and changes in consumption are in order. First, distribution of income and changes in consumption reflect a variety of underlying trends — in technology, in economic organization within the private sector, in relations between the private sector and government, in patterns of family life, and in general outlook at home and abroad. The tables below attempt to portray what happened to the distribution of income and the structure of private consumption in the United States in recent years, and the discussion summarizes the main findings. But any explanation must perforce be tentative, and could hardly be definitive even in a long treatise — let alone in this brief paper. Second, many of the recent changes in income distribution and in structure of consumption are continuations of long-term trends, and it is important to see them not as something new, but as possibly new manifestations of movements that reach far back in time. When it is relatively easy to do so, an approximate picture of movements back to the 1920's or even to the beginning of the century is given.

I. DISTRIBUTION OF PERSONAL INCOME BY TYPE OF INCOME

Personal income includes all receipts by individuals from current participation in economic activity; from income-yielding assets; and from transfers by government or business, usually arising out of past participation, e.g., pensions and social security payments. The receipts from current participation comprise compensation of employees — largely wages and salaries, but also other labor income (employer contributions to private pension and social security funds, compensation for injuries, and other minor items); and proprietors' incomes — the net income of farmers and non-farm entrepreneurs. The returns on assets cover rent, interest (including that on government debt), and dividends. The transfers are net of personal contributions to pensions and social insurance.

Four trends stand out clearly in Table 1. First, the share of employee compensation has risen, as a percentage of either total personal or total participation income (i.e., the sum of employee compensation and proprietors' income). In the 1950's, the share of compensation of employees in total personal income was 70 per cent, compared with about sixty per cent in the 1920's. And if net transfers (column 8) are assumed to flow largely to employees, the total share is almost 75 per cent in the recent decade. Conversely, the share of proprietors' income declined from about 20 per cent in the 1920's to about 13.5 per cent in the 1950's.

Second, the decline in the share of proprietors' income is due exclusively to the drop in the share of farmers' income, which declined from 9 per cent in the 1920's to 4 per cent in the 1950's. The share of non-agricultural entrepreneurs was about 9.5 per cent in both decades. As a percentage of total *participation* income, the latter shows a slight down-drift — from about 12 per cent in the 1920's to about 11 per cent in the 1950's; but the decline is too small to be significant.

Table 1.

Distribution of Personal Income by Type of Income, 1899-1960

(Percentages based on current price totals)

	COMPENSATION	PROPRIETORS' INCOME			PROPERTY INCOME			NET
	OF EMPLOYEES	Total	Farm	Other	Rent	Inter.	Div.	TRANSFERS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Approximations								
1. 1899-1908	55	24	15.5	8.5	9	7	5	neglig.
2. 1909-1918	56	24	15.5	8.5	8	6	6	neglig.
3. 1919-1928	61	19	9.5	9.5	8	7	5	neglig.
Department of Commerce Estimates								
4. 1929	59.4	17.2	7.0	10.2	6.3	8.6	6.8	1.6
5. 1929-38	61.8	15.0	6.0	9.0	4.4	9.8	5.8	3.2
6. 1939-41	64.5	16.9	6.2	10.7	3.6	7.0	5.0	2.9
7. 1942-45	69.9	18.4	7.3	11.1	3.4	4.1	2.9	1.4
8. 1946-50	65.3	18.2	7.4	10.8	3.7	4.3	3.5	5.0
9. 1951-60	70.0	13.5	4.0	9.5	3.4	5.4	3.5	4.3

Lines 1-3: Line 5 extrapolated by estimates in Simon Kuznets, "Long-Term Changes in the National Income of the United States since 1870," in Kuznets, ed., *Income and Wealth of the United States, Income and Wealth, Series II*, London, 1952, Table 27, p. 136. Proprietors' income was apportioned between farm and other on the basis of R. W. Goldsmith, *A Study of Saving in the United States*, Volume III, Princeton, 1956, Table N-3, col. 1 and 2, p. 431.

Lines 4-9: Underlying data are from Dept. of Commerce, *U.S. Income and Output*, Washington, 1958, Table II-1, pp. 144-45 and "National Income and Product in 1960," *Survey of Current Business*, July 1961, Table 4, p. 8. The 1960 estimates in this and the following tables include Alaska and Hawaii, but their shares are too small to affect our findings.

The entries are percentages of cumulative totals for the periods shown.

Third, the share of property income in total personal income declined appreciably: from 20 per cent in the 1920's to slightly over 12 per cent

in the 1950's. Unlike the trends in the shares of compensation of employees and proprietors' income, which are of long standing, that in the share of property income is of relatively recent origin. Its decline began in the 1930's and continued at a greater rate during World War II and thereafter.

Fourth, the share of net transfers, which was negligible before the 1930's, attained some significance by the 1950's, when it was over 4 per cent; and, presumably, with the extension of public and private social security it is likely to rise further.

The upward trend in the share of compensation of employees and the downward trend in the share of proprietors' income, the latter caused by

Table 2.

Distribution of Persons Engaged Between Entrepreneurs and Employees, and Between Agriculture and Non-Agriculture, 1909-1960 (Percentages)

	ENTREPRENEURS			EMPLOYEES			TOTAL	
	A (1)	Non-A (2)	Total (3)	A (4)	Non-A (5)	Total (6)	A (7)	Non-A (8)
1. 1909-13	15	10	25	11	64	75	26	74
2. 1914-18	14	9	23	10	67	77	24	76
3. 1919-23	13.5	9	22.5	9	68.5	77.5	22.5	77.5
4. 1924-28	12	9.5	21.5	8.5	70	78.5	20.5	79.5
5. 1929-33	12	9	21	8	71	79	20	80
6. 1934-38	11.5	9	20	7	73	80	18.5	82
7. 1939-43	9	8.5	17.5	5	77.5	82.5	14	86
8. 1944-48	8	8	16	4	80	84	12	88
9. 1949-53	6.5	9.5	16	3.5	80.5	84	10	90
10. 1954-57	5.5	9	14.5	3	82.5	85.5	8.5	91.5
11. 1958-60	4.5	9.5	14	3	83	86	7.5	92.5

Lines 1-9: From Kuznets, "Quantitative Aspects of the Economic Growth of Nations, IV. Distribution of National Income by Factor Shares," *Economic Development and Cultural Change*, Vol. VII, No. 3, Part II, April 1959, Appendix Table 18, Panel B, pp. 96-97 and revisions thereof for 1944-53. The Department of Commerce estimates were carried back to 1919-23 on the basis of the Kuznets estimates and further back to 1909-13 on the basis of W. I. King's estimates.

Lines 10 and 11: Calculated from *U.S. Income and Output*, Tables VI-13, VI-14, and VI-16, pp. 211, 212, and 214, and the *Survey of Current Business*, July 1961, Tables 50, 51, and 53, p. 27. These entries are not comparable with those in lines 1-9 in that unpaid family workers and members of the labor force who were unemployed throughout the year are excluded from the former.

The entries are percentages of cumulative totals for the periods shown.

the decline in the share of farmers' income, can be explained by the shifts in the distribution of persons actively engaged (Table 2). The proportion of all actively engaged who were employees rose from 75 per cent before World War I to above 85 per cent in the 1950's, the proportion of proprietors declining correspondingly from 25 to less than 15 per cent. And the decline in the proportion of entrepreneurs reflects the decline in those engaged in agriculture, the proportion of non-agricultural entrepreneurs in the total engaged having been relatively constant over the last half century. Incidentally, Table 2 also shows the rapid shift of the active labor force away from agriculture toward non-agricultural pursuits — the share of the former declined to well below 10 per cent in recent years.

To explain the decline in the share of property income would require more analysis than is possible here. In a recent paper I discussed this share as a product of three variables: R — the ratio of total income-yielding wealth to total output or income; Y — the yield on that capital; and S — the share in that wealth of capital not represented by the equity of individual proprietors and entrepreneurs (the yield on whose equity is included under proprietors' income).¹ Suffice it to say here that both R and Y declined in recent years, while S , already quite high in the 1920's (over eight-tenths), did not rise enough to offset the decline in R and Y . The real question is, of course, why the capital-output ratio and the yield declined. One can easily think of industrial shifts that would make for larger output with the same capital and thus lower R , and of factors that reduce yield, especially that represented by rent and interest. But further discussion would require detail in treatment that is not feasible here.

The emergence of transfers as a significant component of personal income is a natural consequence of the introduction of the social security system in the 1930's and the related spread of private plans for pensions and retirement pay. The factors behind these changes — the increasing proportion of employees in total labor force, the lowering of the age of retirement, the spread of the small family, and the growing acceptance of responsibility by government and business for economic and social security — also had other effects, some of which will be touched upon below. In the present connection, it is of interest to couple the

¹See Kuznets, "Quantitative Aspects of the Economic Growth of Nations, IV. Distribution of National Income by Factor Shares," *Economic Development and Cultural Change*, Vol. VII, No. 3, Part II, April 1959, particularly pp. 15-23 and Table 8, p. 46. The analysis in that paper relates to shares in national income, but it is equally applicable to the share of property income in total personal income.

emergence of transfers as a source of personal income with another, related trend – the marked increase in the draft of personal taxes on personal income (Table 3).

As already stated, the income from services (employee compensation and proprietor's income) and property income were increasingly supplemented by net transfers. But even more was deducted in personal taxes: they grew from less than 3 per cent of personal income in the 1920's to 12 per cent in the 1950's. As a result, disposable income declined from over 97 per cent to 88 per cent of total personal income over the same period. But the point to be noted is that, by and large, the groups that profited from net transfers were not the ones that contributed heavily to personal taxes. The personal taxes, being progressive, were drafts largely upon the higher income brackets, whereas net transfers flowed largely to the lower income groups. If we make the extreme but plausible assumption that taxes are paid only by the upper brackets and transfers received only by the lower, we can add the contribution of net transfers and the draft of personal taxes as flows in the redistribution of total service and property income paid out to individuals (column 6). By doing so, we find that the proportion of total service and property income redistributed, as it were, through net transfers and personal taxes rose from about 3 per cent in the 1920's to 17 per cent in the 1950's. Thus the inequality that characterized the distribution of service and property incomes in column 1 (and it may well have been reduced over time because of the reduction in the share of property incomes) was narrowed further by the increasing redistribution resulting from the addition of net transfers at the lower income levels and subtraction of the increasing personal taxes at the upper income levels.

II. DISTRIBUTION OF INCOME BY SIZE

A summary of recent changes in the distribution of total family income (all personal income, in money or kind, except small amounts received by institutional residents or retained by non-profit institutions, private trusts, etc.) among consuming units (families and unrelated individuals) is provided in Table 4. The following findings stand out.

First, for income before taxes, the inequality in distribution has narrowed: the percentage shares of the lower income groups have risen and those of the upper income groups have declined. The most sensitive measure of inequality, the relative range between per unit income of the top 5 per cent and that of the lowest 40 per cent of units, shows a reduction in inequality of almost half from 1929 to 1959 (line 10).

Second, this narrowing of inequality occurred largely between 1929

Table 3.

Transfers and Taxes as Percentages of Personal Income, 1899-1960

	PER CENT OF PERSONAL INCOME					
	Service and Property Income	Net Transfers	Personal Taxes	Disposable Income	Redistributed Income Col. 2 and 3	Col. 5 as % of Col. 1
	(1)	(2)	(3)	(4)	(5)	(6)
Approximations						
1. 1899-1908	99.2	0.8	1.2	98.8	2.0	2.0
2. 1909-18	99.5	0.5	1.4	98.6	1.9	1.9
3. 1919-28	99.5	0.5	2.7	97.3	3.2	3.2
Department of Commerce Estimates						
4. 1929	98.4	1.6	3.0	97.0	4.6	4.7
5. 1929-38	96.8	3.2	3.3	96.7	6.5	6.7
6. 1939-41	97.1	2.9	3.4	96.6	6.3	6.5
7. 1942-45	98.6	1.4	10.4	89.6	11.8	12.0
8. 1946-50	95.0	5.0	9.9	90.1	14.9	15.7
9. 1951-60	95.7	4.3	12.0	88.0	16.3	17.0

See notes to Table 1 for sources except for lines 1-3, col. 2 and 3. Underlying data for the latter are from R. W. Goldsmith, *op. cit.*, Table N-1, p. 427 and Table N-5, p. 435, net transfers being the difference between transfers from government and contributions for social insurance.

and 1947. In the post-World War II period little reduction in inequality occurred. Indeed, the total deviation from equality shows a slight rise from 1947 to 1959 (line 7); but the more sensitive range shows no significant movement between 1947 and 1959.

Third, if we adjust total family income for federal income tax liability, the reduction in inequality in the distribution of income is even greater. Thus, total deviation from equality for post-tax income declines a fourth from 1929 to 1951 (line 18); whereas for pre-tax income the decline is only about a fifth. Likewise, the relative range in line 21 declines more than a half from 1929 to 1951, whereas that in line 10 declines less than a half. But here again the reduction in inequality ceases after 1951 — the measures suggesting constancy of inequality in the distribution of post-tax income in the 1950's.

Fourth, only federal personal income taxes are deducted in the post-tax income analysis. However, they account for over four-fifths of total direct personal taxes in recent years (including federal, state, and local, income, death, gift, and other direct taxes). An element of progressivity

Table 4.

**Distribution of Total Family Personal Income Among Consumer Units Grouped by
Size of Income per Unit, Selected Years, 1929-1959**

	1929 (1)	1941 (2)	1947 (3)	1951 (4)	1954 (5)	1959 (6)
BEFORE DEDUCTION OF FEDERAL INDIVIDUAL INCOME TAX LIABILITY						
1. Average income per unit, 1960 prices (\$)	4,190	4,570	5,370	5,630	5,910	6,730
Shares of Fifths (%)						
2. Lowest and next	12.5	13.6	16.0	16.3	15.9	15.4
3. Third	13.8	15.3	16.0	16.5	16.4	16.2
4. Fourth	19.3	22.3	22.0	22.3	22.5	22.7
5. Top	54.4	48.8	46.0	44.9	45.2	45.7
6. Share of top 5 per cent (%)	30.0	24.0	20.9	20.7	20.3	19.9
7. Total deviation from equality (%)	68.8	62.2	56.0	54.4	55.4	56.8
8. Per unit income in line 2 as % of countrywide	31	34	40	41	40	38.5
9. Per unit income in line 6 as % of countrywide	600	480	418	414	406	398
10. Relative range (line 9/line 8)	19.4	14.1	10.5	10.1	10.2	10.3
AFTER DEDUCTION OF FEDERAL INDIVIDUAL INCOME TAX LIABILITY						
11. Average after-tax income per unit, 1960 prices (\$)	4,160	4,360	4,840	5,070	5,340	6,040
12. Share of tax liability in average income (%)	0.7	4.6	9.9	9.9	9.6	10.3
Shares of Fifths (%)						
13. Lowest and next	12.6	14.2	na	17.3	16.9	16.3
14. Third	13.9	15.9	na	17.2	17.1	16.8
15. Fourth	19.5	23.1	na	22.8	22.8	23.1
16. Top	54.0	46.9	na	42.7	43.2	43.8
17. Share of top 5 per cent (%)	29.5	21.5	na	18.4	18.3	17.8

	1929 (1)	1941 (2)	1947 (3)	1951 (4)	1954 (5)	1959 (6)
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AFTER DEDUCTION OF FEDERAL INDIVIDUAL INCOME TAX LIABILITY

(Continued)

18. Total deviation from equality (%)	68.0	59.9	na	51.0	52.0	53.8
19. Per unit income in line 13 as % of countrywide	31.5	35.5	na	43	42	41
20. Per unit income in line 17 as % of countrywide	590	430	na	368	366	356
21. Relative range (line 20/line 19)	18.7	12.1	na	8.6	8.7	8.7

na: not available.

The basic data for lines 1-6, 11, and 13-17, are from Selma F. Goldsmith, *Impact of the Income Tax on Socio-Economic Groups of Families in the United States*, a paper prepared for the Conference of the International Association for Research in Income and Wealth, Tutzing, Germany, August 3-10, 1961, Tables 5 and 7; with additional data for 1954, lines 13-21 from Selma F. Goldsmith, "Size Distribution of Personal Income," *Survey of Current Business*, April 1958, pp. 10-19, and for 1947 and 1954, lines 11 and 12 kindly supplied by Mrs. Goldsmith.

Family personal income comprises all current income, including transfers, payment in kind, the value of food and fuel produced and consumed on farms, net imputed rental value of owner-occupied homes, and imputed interest. It is smaller than the personal income aggregate because it excludes income received by institutional residents (including military personnel not living with their families), or retained by nonprofit institutions, private trusts, pension and welfare funds, etc. Tax liability (line 12) represents federal individual income tax liability exclusive of liability on capital gains.

Consumer units comprise families and unrelated individuals, excluding inmates of institutions and members of the armed forces living on post. Families are defined as groups of two or more persons related by blood, marriage, or adoption and residing together.

Consumer units are grouped by size of family personal income. The measure of inequality in lines 7 and 18 is the sum, regardless of sign, of the differences between the shares of the fifths and their shares on the assumption of equality (i.e., 20 per cent for each fifth).

The percentages in lines 8 and 9 and 19 and 20 are derived by dividing the share of the group in income by its share in number of consumer units.

in these other taxes, relative to income after the federal income tax, combined with any increase in their relative weight, would contribute to a further narrowing of inequality in the distribution of disposable income. We have no data at hand on this point. It is, however, not unlikely that taking account of the missing fifth of personal taxes would reduce inequality still further, but the effects would probably be minor compared with those depicted in Table 4.

Data of the type just summarized are subject to several qualifications, if we are concerned with meaningful inequality in the distribution of income among the population. Some arise from the way income is measured and the way its relation to the consuming unit is established. Thus, the data record income for a specific year, subject to all transient fluctuations which inevitably contribute to inequality; we are much more interested in the long-term levels of income free from accidental distortions. Also, consuming units differ in size, i.e., in the number of persons included; and a large income for a unit with many members may mean a small per capita income. Consequently, positive association between the income and size of a unit would mean narrower inequality in the distribution of *per capita* income than in the distribution of *per unit* income. The “splitting up” of consuming units, a point discussed below, makes for a distribution of income by size significantly different from one for large consuming units consisting of several generations. Finally, cost of living and purchasing power of money differ among localities and income groups; and inequality in the distribution of income should be adjusted for such differences in prices.

We shall be able to deal with only some of these points – primarily those relating to the demographic structure of the consuming units at different income levels. But before we do so, mention must be made of questions raised by reliability of data – particularly since there is here an economic incentive to avoid measurement. It may well be that the decline in the relative shares of top income groups in Table 4 has been exaggerated by failure to take adequate account of such items as stock options and deferred compensation contracts for business executives, liberalized treatment of business expense accounts and depreciation allowances, and capital gains. There also may have been understatement of lower level incomes through non-reporting of part-time earnings. While we cannot estimate these gaps reliably, we doubt that they could materially affect the long-term movement of the estimates in Table 4. The decline is too large, and the consistency of the data with a variety of other evidence not affected by these statistical qualifications (e.g., reduction of unemployment, reduced inequality in per worker

compensation among different industries, shifts in the income structure of personal income shown in Tables 1 and 3) lends support to the broad validity of the findings.

If we therefore accept the findings we can trace their implications further – particularly by examining the types of consuming units represented at different levels of the income distribution. We have some readily available data, largely on the demographic structure of consuming units (Table 5, pp. 34-35).

In recent years, the positive association between income and size of consuming unit has been much more marked than in the pre-World War II period. Thus, for both 1948 and 1959, the average number of persons per consuming unit was about 20 per cent larger in the top than in the lowest fifth (lines 7 and 8, columns 1 and 5). This means that the range in per capita income was significantly narrower than that in per unit income: the latter was 9 to 1 in 1947 and 10 to 1 in 1959 (lines 3 and 4); the range in *per capita* income was about 7.7 to 1 in 1947-48 and 8.5 to 1 in 1959. Significantly, the range in number of persons per consuming unit among the quintiles was much wider in recent years than in 1935-36 or even 1941 (lines 5 and 6). It follows that while inequality in the distribution of income among consuming units without regard to size contracted from 1935-36 to 1948 and 1959, inequality in the distribution of *per capita* income was reduced even more.

The second finding relates to the association between per unit income and the number of earners. In general, the consuming units in the higher income brackets have a larger number of earners (lines 9-11). But the differences with respect to this characteristic were much larger in the post-World War II years than in 1935-36. Thus, inequality was reduced *despite* the greater excess of earners per unit in the upper income units in recent years than in 1935-36.

The third, and most interesting, finding relates to the changes in family structure of consuming units at different income levels. The number of children, the age and sex of the family head, and the proportion of wives in the labor market, all bear upon it. Before World War II the age of the family heads of the consuming units in the lower income brackets was about the same as the average, and the number of children under 18 in these consuming units was, if anything, somewhat higher than the average (lines 12, 13, and 16). After World War II, the age of the heads of consuming units in the lower income brackets, say the lowest fifth, was much higher and the average number of children under 18 distinctly lower than the average for the country (lines 14, 15, 17-20). Since there was also a larger than average proportion of female

Table 5.

**The Structure of Families at Different Levels of Per Unit Money Income,
Selected Years, 1935-36 to 1959**

FIFTHS BY PER UNIT MONEY INCOME

	Lowest (1)	Second (2)	Third (3)	Fourth (4)	Top (5)	Total (6)
Shares in Total Income (%)						
1. 1935-36	4.1	9.2	14.1	20.9	51.7	100.0
2. 1941	4.1	9.5	15.3	22.3	48.8	100.0
3. 1947	5.0	11.0	16.0	22.0	46.0	100.0
4. 1959	4.5	10.9	16.2	22.7	45.7	100.0
Number of Persons per Family						
5. 1935-36	3.73	3.93	3.92	3.87	3.98	3.88
6. 1941	3.55	3.63	3.67	3.65	4.00	3.70
7. 1948	3.29	3.52	3.58	3.62	3.94	3.59
8. 1959	3.24	3.64	3.80	3.83	3.89	3.68
Number of Earners per Family						
9. 1935-36	1.10	1.17	1.24	1.34	1.52	1.27
10. 1948	1.06	1.32	1.40	1.62	2.03	1.49
11. 1959	1.02	1.38	1.52	1.72	1.99	1.53
Number of Children under 18 per Family						
12. 1935-36	1.40	1.51	1.42	1.29	1.07	1.34
13. 1941	1.30	1.35	1.31	1.10	1.00	1.21
14. 1948	1.14	1.29	1.30	1.19	1.03	1.19
15. 1959	1.19	1.45	1.56	1.50	1.30	1.40
Median Age of Family Head, Urban Families						
16. 1935-36	43	39	40	41	46	42
17. 1948	50	41	41	43	48	44
18. 1959	53	43	43	44	48	46
Per cent of Family Heads 65 Years Old and Over						
19. 1948	27.6	11.2	7.7	6.7	7.9	12.2
20. 1959	32.9	14.8	7.8	6.5	6.6	13.7
Per cent of Families with Female Heads						
21. 1948	19.8	10.7	6.0	5.5	6.2	9.6
22. 1959	24.5	11.3	6.1	4.5	3.6	10.0

FIFTHS BY PER UNIT MONEY INCOME (Continued)

	Lowest (1)	Second (2)	Third (3)	Fourth (4)	Top (5)	Total (6)
Per cent of Husband-Wife Families with Wife in Paid Labor Force						
23. 1948	13.4	17.6	17.5	27.2	30.5	21.5
24. 1959	16.5	22.6	26.1	34.5	40.1	28.6
Per cent of Families by Major Occupation of Family Heads						
1948						
25. Proprietors and independent professions	28.0	16.7	13.7	13.5	23.6	19.2
26. Salaried workers (incl. managers and officers)	1.6	5.5	9.5	12.9	19.4	9.7
27. Clerical and sales workers	2.5	7.5	12.1	12.5	11.5	9.2
28. Craftsmen and operatives	13.2	32.7	41.2	43.4	29.8	32.1
29. Service workers and laborers	17.6	18.6	12.0	8.4	6.4	12.6
30. Not in labor force, in armed forces, or unemployed	37.1	19.0	11.5	9.3	9.3	17.2
1959						
31. Proprietors, etc.	17.4	12.0	9.5	8.4	16.2	12.7
32. Salaried workers	1.9	5.8	10.7	18.4	31.2	13.7
33. Clerical and sales workers	2.8	9.1	13.8	14.0	13.0	10.6
34. Craftsmen and operatives	11.8	32.5	41.0	42.0	26.8	30.8
35. Service, etc.	15.5	16.0	11.4	8.1	4.7	11.1
36. Not in labor force, in armed forces, or unemployed	50.5	24.8	13.5	9.2	8.2	21.3

From Selma F. Goldsmith, *Impact of the Income Tax on Socio-Economic Groups of Families in the United States*, Tables 2-5.

Lines 1-4 include families and unrelated individuals grouped by total income; all other lines refer to families grouped by money income.

heads, i.e., of “broken” families, in the lowest fifth (lines 21 and 22), it is evident that in the post-World War II years, the lowest fifth was increasingly characterized by a small consuming unit, with either an aged or a female head, with a smaller than average number of children – in short, either a semi- or fully retired, or a broken family unit. Moreover, between 1948 and 1959 the proportion of such consuming units among the lowest fifth increased substantially.

A fourth finding is closely related to the one just noted. As the occupational distribution of family heads shows (lines 25-36), the proportion of heads of families not in the labor force for the lowest quintile is much larger than the average for the country. (Members of the armed forces and the unemployed probably account for not much more than 10 per cent of family heads in the lowest fifth.) And this proportion for the lowest quintile also increased markedly from 1948 to 1959. Not in the labor force means that no active search for a job is made and no job is held – in short, retirement.

This trend toward the domination of the lowest group of consumer units by retired family heads reflects the spread of social insurance and the “splitting up” of consumer units, the separation of generations, already alluded to above. Splitting up would, all other conditions being equal, widen the inequality in the distribution of income among consuming units – as measured; for it would create an increasingly large group of units at the lower end of the distribution, whose needs are relatively modest, and whose drive toward or capacity for substantial earnings is limited.

If reaching retirement age means passing the optimum earning phase of one’s life, and declining into a position below the average not unlike that held in the early stages of life, i.e., before the acquisition of experience and maturity, the separation of aged heads from the younger consuming units only lengthens the lower tail of the income distribution and makes for greater measured inequality than would be the case if retired folks continued to live with their children in one consuming unit. Inequality would also be intensified if splitting up of the very young into separate consumer units increased, since their income also would be much below the average. And this may well be the case, as suggested by some indirect evidence in Table 6, pp. 38-39. The point to be stressed is that in so far as splitting up began in the 1930’s and continued thereafter, inequality in the distribution of income among consuming units declined until 1947 and was constant thereafter *despite* the underlying trend in the structure of consuming units. In other words, even in the 1950’s there may have been forces making for narrower

income inequality, but their effects may have been offset by the greater fractionalization of consuming units at both ends of the age distribution of heads, i.e., the very old and the very young, and at one end of the income distribution, i.e., the low one.

In view of the effects of household structure on the distribution of income by size and on consumption, and the bearing of the demographic trends on the future, it may be of value to examine in Table 6 these trends for a longer stretch of time than that covered in Table 5.

The trend toward a smaller household, while of long standing, has accelerated in recent years. The rate of decline was much greater from 1930 to 1950 than from 1890 to 1930; and interestingly, the decline continued into the 1950's despite the much higher birth rate in the 1950's than between 1930 and 1950 (line 1). This is clearly a reflection of the continued splitting up that occurred after World War II.

The same can be said of the steady increase in the proportion of older heads of units (lines 4-8). The division line in the table is at age 55, but the trends would be even more marked if the line could be drawn at age 65. Here also the increase was more rapid between 1930 and 1950 than between 1890 and 1930, and continued apace in the 1950's.

Along with the increase in the proportion of aged family heads, there was a distinct rise in that of female heads (line 3). Although the latter declined from 1890 to 1930, it rose from 1930 to 1950, and the rate of increase accelerated in the 1950's.

The trends toward a smaller household and greater proportions of older and female family heads, have already been observed in connection with Table 5. The new evidence in Table 6 reveals that although these trends are of long standing, they were intensified after 1930; and those with respect to age and sex of heads, were even more marked in the 1950's than between 1930 and 1950. The underlying determinants of these trends can be examined further. In the process we shall discover why the proportion of younger heads of families (lines 4 and 5) has failed to increase in recent years, as we should have expected because of the earlier age of World War II and post-World War II marriages.

The analysis in lines 9-47 distinguishes male from female population over 20 years, by age groups, and male from female heads of family by similar age groups, and then relates the heads of families to population, male and female, by the same age groups. The only assumption made is that heads of families under 25 years of age are comparable with the 20-24 age group in total population, on the premise that very few family heads are under 20 years of age. The findings can be stated briefly.

Table 6.

Number of Persons per Household, and the Distribution of Households by Sex and Age of Head, Selected Years, 1890-1957

	1890 (1)	1930 (2)	1950 (3)	1957 (4)
1. Persons per household	4.93	4.11	3.52	3.42
Percentage Distribution by Sex of Head				
2. Male	85.6	87.3	84.9	82.6
3. Female	14.4	12.7	15.1	17.4
Percentage Distribution by Age of Head				
4. Below 25	5.0	4.6	4.8	4.7
5. 25-34	25.2	20.9	20.5	19.3
6. 35-44	25.8	26.0	22.8	22.1
7. 45-54	20.9	22.1	20.2	20.5
8. 55 and over	23.2	26.3	31.7	33.4

Relation Between the Distribution of Males 20 and Over by Age and the Distribution of Households by Age of Male Head

Percentage Distribution of All Males 20 and over				
9. 20-24	17.8	14.0	11.5	10.4
10. 25-34	29.4	24.7	23.7	21.7
11. 35-44	21.3	23.2	21.6	21.9
12. 45-54	15.1	17.9	17.7	18.6
13. 55 and over	16.4	20.2	25.5	27.4
Percentage Distribution of Households with Male Heads by Age of Head				
14. Below 25	5.3	4.9	5.2	4.9
15. 25-34	27.3	22.5	22.7	21.5
16. 35-44	26.6	27.1	24.2	24.0
17. 45-54	20.1	22.0	20.3	20.8
18. 55 and over	20.8	23.5	27.7	28.7
Male Heads of Households as % of All Males, by Age				
19. 20-24	18.4	23.7	33.0	37.1
20. 25-34	57.8	62.4	70.2	78.0
21. 35-44	77.8	80.3	81.9	86.2
22. 45-54	83.1	84.4	84.0	88.1
23. 55 and over	78.7	79.6	79.6	82.4
24. 20 and over	62.3	68.5	73.3	78.6

Relation Between the Distribution of Females 20 and Over by Age and the Distribution of Households by Age of Female Head

Percentage Distribution of All Females 20 and over				
25. 20-24	19.0	15.0	11.6	10.2
26. 25-34	28.8	25.8	24.0	21.4

	1890 (1)	1930 (2)	1950 (3)	1957 (4)
27. 35-44	20.6	22.7	21.4	21.6
28. 45-54	15.0	16.8	17.1	17.9
29. 55 and over	16.5	19.8	25.8	28.9
Percentage Distribution of Households with Female Heads by Age of Head				
30. Below 25	3.2	3.2	2.6	3.9
31. 25-34	12.5	9.8	8.5	8.5
32. 35-44	21.1	18.1	14.6	13.1
33. 45-54	25.4	22.8	19.8	18.9
34. 55 and over	37.7	46.2	54.6	55.5
Female Heads of Households as % of All Females, by Age				
35. 20-24	1.9	2.2	2.8	6.0
36. 25-34	4.9	3.9	4.4	6.3
37. 35-44	11.6	8.2	8.6	9.5
38. 45-54	19.2	13.9	14.5	16.5
39. 55 and over	25.8	23.8	26.6	30.2
40. 20 and over	11.3	10.2	12.6	15.7
Sex Ratio for Population Over 20 by Age				
41. 20-24	100.4	96.5	95.4	95.4
42. 25-34	109.4	98.8	95.4	95.8
43. 35-44	110.8	105.2	97.5	96.0
44. 45-54	108.1	109.5	99.6	97.8
45. 55 and over	106.8	104.9	95.2	89.8
46. 20 and over	107.3	102.9	96.5	94.4
47. Ratio of all heads of families to all population over 20	37.7	39.8	42.4	46.3

Line 1: From Bureau of the Census, *Historical Statistics of the United States*, Washington, 1960, Series A-257, p. 16.

Lines 2-8; lines 9-13, columns 1-3; lines 14-18; lines 25-29, columns 1-3; and lines 30-34: From *ibid.*, Series A-75 through A-84, p. 10, and A-230 through A-241, p. 15.

Lines 9-13, column 4 and lines 25-29, column 4: Interpolated between column 3 and data for 1960 in the Bureau of the Census, *Statistical Abstract of the United States*, 1961, Washington, 1961, Table 19, p. 28.

All other lines are calculated from those mentioned above. The sex ratio is the number of males per 100 females.

For the definition of household see the source cited. While it has generally been identical with a dwelling unit, in 1890 quasi-households (a household with at least five lodgers, hotels, dormitories, etc.) were included. The effects of their inclusion on comparability with respect to size, and age and sex of head are slight.

(i) There has been a marked rise in the proportion of males over 35 (lines 11-13) and a decline in the proportion of the younger age groups (lines 9-10). The proportion of aged heads among all male heads increased so much in recent years largely because the proportion of aged males in total population increased (line 13); and their "propensity" to head families remained about the same or increased slightly (line 23). The proportion of male family heads under 25 years of age failed to rise (line 14) because their increased propensity to become heads of families, reflecting early marriage (line 19), was offset by the decline in the proportion of males 20-24 in total male population over 20 (line 9). And the proportion of male family heads in the ages between 25 and 34 declined, if slightly in recent years (line 15), because their propensity to form families, i.e., a higher marriage rate (line 20), did not increase sufficiently to offset the marked decline in the proportion of that age group to total males over 20 (line 10).

(ii) The proportion of all females over 20 to all males over 20 rose markedly, as seen from the decline in the sex ratio (line 46). The rise in the proportion of female family heads was due to two trends: an increase in the ratio of females over 20 to males over 20, and an increasing propensity of females to become family heads (line 40). The latter trend was due largely to the sharply increasing proportion of females 55 years old and over to all females aged 20 and over (line 29), and the much higher proportion of family heads in this aged female group than in any other female age group (line 39, compared with lines 35-38).

(iii) The propensity of females to become family heads, has *declined* for the 35-44 age group, and even for the 45-54 age group (lines 37 and 38). This may have been due to the extension of the life span of males, which would lead to a lower proportion of widows in the age groups below 55. By contrast, the propensity to become family heads among females 55 years of age and over increased, particularly after 1930 and at a greater rate in the 1950's (line 39). This may have been due partly to social security payments, and partly to the increasing longevity of females relative to that of males.

The ratios in Table 6 reasonably suggest future trends in the structure of households. Obviously, any further aging of the population, combined with extension of social security, would produce further splitting up of households, and an increase in the share of consuming units with aged family heads. Also, a continued decline in the sex ratio (i.e., a rise in the number of females over 20 relative to males over 20), combined with the further aging of the female population and the increased

excess of longevity of females over males would produce a rise in the proportion of female family heads to all family heads. Application of the propensity to become head of a household – as given in lines 19-23 and 35-39 for 1957, or possibly refined for more detailed age groups and for a more recent year – to projections of population by age and sex, would yield projections of households, by age and sex of household head. Rough preliminary calculations, based on the 1957 ratios and a projection of population to 1980, suggest further, if minor, rises in the proportions of households with aged and female heads. But the calculations are too crude, and the changes from 1957 too slight, to warrant citation and discussion here.

III. THE SHARE OF PERSONAL SAVINGS AND THE STRUCTURE OF CONSUMPTION

Since the beginning of the century, disposable personal income per capita, in constant prices, more than doubled (Table 7, p. 42). It rose about 50 per cent from the period 1899-1908 to 1929; and another 50 per cent from 1929 to 1951-60. This trend was a continuation of a movement that extends back, except for the interruption of the Civil War, at least to 1840 and perhaps to earlier years.

The distribution of disposable personal income between personal savings and consumption expenditures is variable over short periods and different for two estimates of savings (columns 2 and 3). Of the two, Goldsmith's appears to be more acceptable, since it is not derived as a residual. The main finding is that the share of personal savings in disposable income was, on the whole, either constant or subject to a slight downdrift (column 3). In the relatively "normal" periods, free from wars or acute depressions – 1899-1908, 1919-28, and 1951-56 – the percentages were 9.8, 9.5, and 9.1 respectively.

This stability or slight decline in the ratio of personal and, implicitly, national savings reaches back to the 1870's. Given a rate of growth in real income per capita of some 50 per cent each quarter of a century, why did the personal savings-income ratio remain about 10 per cent or decline slightly instead of rising?

The explanation lies largely in the changes in conditions of life and in the consumer goods that progressive technology offers – which both compel and tempt consumers to spend a large part of their rise in income on consumption. Furthermore, limits are set on savings by retirement and emergency needs among the low income groups, by the competitive style of life among the high income groups, and by the constraints on the share of income going to the upper income groups imposed by

Table 7.

Per Capita Disposable Personal Income, in Constant Prices, and the Shares in It of Personal Savings and Contractual Savings, 1899-1960

	DISPOSABLE INCOME PER CAPITA, CONSTANT PRICES (1929=100)	PERS. SAVINGS AS % OF DIS- POSABLE INCOME		% IN TOTAL SAVINGS				COL. 7 AS % OF NET SAVINGS
		Dept. of Com- merce	R. W. Gold- smith	Life Ins. Reserves	Govt. Pens. & Retirement Funds	Private Pensions	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. 1899-1908	66	na	9.8	6.4	0	0	6.0	8.6
2. 1909-18	78	na	13.2	4.2	0	0	4.2	5.7
3. 1919-28	87	na	9.5	8.5	1.2	0.3	10.0	15.5
4. 1929	100	5.0	11.7	9.7	2.0	1.4	13.1	15.8
5. 1929-38	88	3.1	4.7	38.6	13.0	2.4	53.9	53.9
6. 1939-41	107	7.6	9.6	18.1	14.1	0.6	32.8	46.0
7. 1942-45	136	23.1	27.9	7.9	10.9	1.1	19.9	19.9
8. 1946-50	132	5.5	6.9	16.0	13.0	3.2	32.3	58.9
9. 1951-56	145	7.5	9.1	12.8	9.1	5.0	26.9	44.8
10. 1951-60	150	7.4	na	na	na	na	na	na

na: not available.

Column 1: Total disposable income in constant prices for 1929 to date is from the sources cited in the notes to Table 1; for years before 1929, from R. W. Goldsmith, *op. cit.*, Table N-2, p. 429. Totals were averaged for the periods shown and divided by average population, derived from the *Statistical Abstract, 1961*, Table 2, p. 5.

Column 2: From the sources cited in the notes to Table 1.

Column 3: Total personal savings, excluding consumers' durables, are the sum of net savings, given in *Historical Statistics, 1960* edition, Series F-317, p. 156 and increases in liabilities, given in *ibid.*, Series F-339 through F-345, p. 157. Personal disposable income is from R. W. Goldsmith, *op. cit.*, Table N-1, col. 9, p. 427, extrapolated from 1949 by the Department of Commerce series. Entries are percentages of averages for the periods shown.

Columns 4-8: Component series are from *Historical Statistics, 1960* edition, Series F-330 through F-333, pp. 156-57 and are related to total and net savings as described in the notes to col. 3.

explicit regulation or by the dynamism of economic growth itself (for an extended discussion of these points, see my *Capital in the American Economy: Its Formation and Financing*, National Bureau of Economic Research, 1961, Chapter 2).

The data cited in some of the preceding tables point to specific factors that might have made for a constant or slightly declining ratio of savings to disposable income, despite a marked rise in per capita real

income. The increasing shift away from agriculture, accompanied by urbanization, means that an ever larger proportion of total population lives in the larger cities, where consumption – on the same level of satisfaction as in rural areas – calls for a greater input of resources, greater real costs (not reflected in the customary price indexes used to “deflate” current price totals). The reduction in the proportion of proprietors and entrepreneurs means a decrease in the share of the active population for whom money savings, to be invested in material capital formation, are the primary method of assuring a relative rise in the competitive struggle; and the increase in the proportion of employees, whose main capital is their own ability and skill, means a rise in the proportion of the active population who tend to increase their “investment” in their own education and the education of their children (which in customary accounting is included with consumer expenditures, not with savings).

Finally, and perhaps most important here, the reduction in inequality in the distribution of income, observed in Table 4, in itself makes for a decline in the over-all savings-income ratio, offsetting any rise in the latter that could be caused by a rise in real per capita income. Some conjectural but plausible calculations illustrate the point.

In Table 4, the share of the top 5 per cent of consuming units in personal income, after allowance for federal income tax liability, declined from 29.5 per cent in 1929 to about 18 per cent in the 1950's (line 17). If we assume that the former share characterized the 1920's, and that the savings-income ratio for the top 5 per cent was 0.25, the savings of this top group amount to 7.4 per cent of countrywide disposable income. For 1919-28 the over-all ratio of personal savings to disposable income is 9.5 per cent (see Table 7, column 3). This leaves 2.1 per cent of the countrywide disposable income to be credited to the lower 95 per cent of consuming units, whose share in total disposable income is 70.5 per cent; their savings-income ratio is then roughly 3 per cent.

If these savings-income ratios of the top 5 and the lower 95 per cent groups of consuming units are applied to their shares in total disposable income in the 1950's, the derived countrywide savings-income ratio is then the sum of (0.18×0.25) for the top 5 per cent group, and (0.82×0.03) for the lower 95 per cent group, or 7 per cent. Actually, the savings-income ratio for the 1950's was 9.1, not 7 per cent. If the assumed savings-income ratios for the 1920's are not unrealistic, the savings-income ratios for *some* groups in the population must have been higher in the 1950's than in the 1920's. But for which groups? Those at the lower end of the distribution? In general, we would be inclined

to this hypothesis since the income of the lower income groups rose much more than that of the top 5 per cent. Indeed, the per capita income of the latter actually declined from (100×0.295) to (150×0.18) . On this hypothesis, then, the savings of the lower 95 percent must have risen from 2.1 to 4.6 per cent of the countrywide income total – even if we assume that the savings-income ratio of the top 5 per cent group did not decline despite stability or decline in its per capita income. It follows that the savings-income ratio for the lower 95 per cent of consuming units rose from 3 per cent in the 1920's to almost 6 per cent in the 1950's $(4.6/0.82)$; and, most important, whereas in the 1920's 78 per cent of countrywide personal savings were provided by the top 5 per cent of consuming units and only 22 per cent by the lower 95 per cent, by the 1950's these shares became 50 and 50 per cent, respectively.

To be sure, the magnitudes just derived, although plausible, are still conjectural. Yet the conclusion indicated – a substantial shift between the 1920's and the 1950's toward a greater proportion of countrywide personal savings coming from the lower 95 per cent of consuming units – is the result of two propositions, both undeniable. First, the shares of disposable income received by the top 5 and lower 95 per cent groups changed as indicated in Table 4. Second, the savings-income ratio of the top 5 per cent of consuming units is a large multiple of that for the lower 95 per cent.

If we accept the evidence in Table 4 on the shift in income shares, we must consider the contribution – to the change in the distribution of personal savings between the top 5 per cent and the lower 95 per cent – of the size of the multiple which the savings-income ratio for the top 5 per cent constitutes of that for the lower 95 per cent. The larger the multiple, the greater the change in the share of the savings of the lower 95 per cent group in countrywide personal savings. But as long as the multiple is well above 1, a substantial change must occur. Thus, if we set the savings-income ratio for the top 5 per cent in the 1920's at 20 per cent – about as low as possible, realistically – the implicit savings-income ratio for the lower 95 per cent becomes 5.1 per cent; and the multiple drops from over 8 to 1 in the earlier illustration (i.e., $25/3$) to less than 4 to 1. Applying these ratios to the income shares in the 1950's, we derive savings (as a percentage of countrywide disposable income) of 3.6 per cent for the top 5 per cent group (i.e., 0.18×0.2), leaving 5.5 per cent to be assigned to the lower 95 per cent group (which raises their savings-income ratio to almost 7 per cent, i.e., $5.5/0.82$). In this calculation of total countrywide personal savings

in the 1950's, 40 per cent are contributed by the top 5 per cent group and 60 per cent by the lower 95 – compared with 62 and 38 per cent, respectively, in the 1920's. The total shift here, about 22 percentage points, is smaller than the 28 percentage points in the earlier illustration; but it is still quite marked – despite the low differential assumed between the savings-income ratios of the top and lower income groups in the 1920's.

This inference, not certain but plausible, as to the much greater share in the 1950's than in the 1920's of total personal savings originating with the lower 95 per cent of consuming units has some bearing upon the rise in the share of contractual in total savings (Table 7, columns 4-8). Life insurance, government pension and retirement funds, and private pension and retirement funds, can be classified as contractual forms of savings – in the sense that individuals undertake fixed obligations to provide for them; and, in fact, often receive current income net of deductions for them. The sum of the additions to personal claims under these three heads can be related to total personal savings, either gross or net of changes in personal liabilities. Such liabilities can be, and usually are, contracted with the additions to claims in mind, or sometimes even as security, so that the proper comparison and the more defensible ratios are those in which all additions to personal liabilities are charged to the additions to claims, in proportion to the latter (as was done in columns 4-7). Even on this basis, the share of contractual in total savings rises from about 10 per cent in the 1920's to over 25 per cent in the 1950's. When the ratio is to *net* personal savings, the share of contractual savings rises even more precipitously, from about 16 per cent in the 1920's to over 40 per cent in the 1950's.

If the savings of the lower income groups have accounted for a higher share of total savings in the 1950's than in the 1920's, the greater proportion of contractual to total savings by these lower income groups (compared with the proportion for upper income brackets) would, in and of itself, make for a rise in the share of contractual to total savings in the 1950's. But there were other factors. The introduction and spread of the government social security system is one. Another is the high tax rates on current income, which may have made for the spread of pension and retirement plans which shift savings, as it were, to a deferred basis and tend to exempt them from current personal taxation. A third is investment in life insurance, which may have been increased to establish large estates after death, that could not be built up out of current income subject to heavy taxation. In short, both the changes in the shares in total personal savings of top and lower income groups,

and other factors favoring the shift to future savings, may have favored the rise of contractual forms of savings — which may be somewhat understated in Table 7.

How were consumption expenditures, which accounted steadily for over 90 per cent of the growing volume of disposable income, distributed among the various categories of consumer goods? An approximate summary of this aspect of the structure of consumer expenditures is provided in Table 8.

Two points relating to the distribution should be noted. First, consumer expenditures on a per capita basis and in constant prices rose as rapidly as disposable income per capita. Between 1909 and 1929, consumer expenditures per head rose almost 45 per cent, and from 1929 to 1958-60 another 52 per cent (from the annual estimates made for *Capital in the American Economy: Its Formation and Financing*, and the Department of Commerce sources cited in the notes to Table 2). Second, the distribution is based on estimates in *current* prices. Different price trends for the different categories of consumer goods would mean that, in constant prices, the changes in the shares of some

Table 8.
Distribution of Consumer Expenditures Among Various Categories of Goods,
Selected Years, 1909-1960

	(Percentages based on current price totals)							
	1909	1914	1923-25	1929	1929	1939-41	1955-57	1958-60
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Food and tobacco	34.4	35.4	28.9	29.5	26.9	31.1	28.4	27.3
2. a. For off-premise consumption	na	na	na	na	18.7	20.9	19.7	19.0
3. b. Purchased meals	na	na	na	na	3.7	5.6	5.5	5.3
4. c. Farm retention	na	na	na	na	2.0	1.6	0.6	0.4
5. Clothing, etc.	14.3	13.5	15.2	13.7	14.2	12.6	10.9	10.5
6. a. Clothing & shoes	na	na	na	na	11.9	10.6	9.0	8.7
7. b. Cleaning, etc.	na	na	na	na	1.4	1.2	1.1	1.0
8. c. Jewelry	na	na	na	na	0.7	0.6	0.7	0.7
9. Personal care	0.9	0.9	1.3	1.4	1.4	1.4	1.4	1.6
10. Housing	19.1	18.4	15.8	14.0	14.5	12.8	12.2	12.8
11. a. Owner-occupied	na	na	na	na	7.4	6.0	7.4	8.1
12. b. Tenant-occupied	na	na	na	na	5.7	5.7	3.8	3.7
13. c. Farm housing	na	na	na	na	1.0	0.9	0.6	0.6
14. House operation	14.1	13.7	14.7	14.1	13.6	14.5	14.2	14.0
15. a. Durables					4.7	4.9	5.3	4.8
16. b. Nondurable household goods	5.7	5.4	7.1	6.7	1.7	2.0	2.2	2.2

	1909	1914	1923-25	1929	1929	1939-41	1955-57	1958-60
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
17. c. Utilities and fuel	5.3	5.6	5.2	4.9	4.6	5.4	5.0	5.2
18. d. Domestic services	2.5	2.1	1.8	1.9	2.2	1.6	1.2	1.2
19. Medical and death expenses	3.3	3.2	4.0	4.4	4.5	4.8	5.7	6.3
20. Personal business	1.0	1.2	2.0	4.1	6.4	5.0	5.3	6.0
21. a. Financial	0.5	0.5	1.1	3.0	3.9	1.5	1.8	2.0
b. Interest on debt					0.7	1.1	1.6	1.8
23. c. Life insurance charges	0.5	0.7	0.9	1.1	1.1	1.4	1.2	1.4
24. Transportation	5.2	6.5	10.4	9.9	9.6	9.9	13.0	12.1
25. a. User	2.2	3.2	7.7	7.4	7.5	8.1	11.8	11.0
26. b. Common carrier	3.0	3.3	2.7	2.5	2.1	1.8	1.2	1.1
27. Recreation	3.6	3.6	4.5	5.3	5.5	5.2	5.6	5.8
28. Education and research	0.7	0.7	0.7	0.8	0.8	0.9	1.1	1.3
29. Religion and domestic private welfare	1.5	1.3	1.5	1.5	1.5	1.4	1.3	1.4
30. Foreign travel and remittances	1.9	1.7	1.0	1.2	1.0	0.4	0.9	0.9
31. a. Foreign travel by private residents	0.4	0.4	0.5	0.8	0.8	0.3	0.6	0.7

na: not available.

The groupings are those of the Department of Commerce classification.

Columns 1-4: From J. Frederic Dewhurst and associates, *America's Needs and Resources*, New York, 1947, Appendix 7, pp. 714-19. The following shifts were made for comparability with the Department of Commerce estimates for later years: (i) furniture, furnishings, and equipment were combined with mechanical appliances (household) and cleaning and polishing preparations (estimated at 0.4 of total cleaning and repair when not shown separately) to yield lines 15 and 16, combined; (ii) fuel, lighting, household utilities, and communication were summated for line 17; (iii) line 14 is the total of household equipment and operation, excluding financial and legal expenses (which were shifted to line 20); (iv) life insurance charges were subtracted from the medical care and death expenses, in line 19, and combined with legal and financial expenses in line 20; (v) foreign travel was transferred from line 24 to line 30; (vi) reading was transferred from line 28 to line 27; and (vii) personal remittances to foreign countries were transferred from line 29 to line 30.

For 1923-25 the entries are averages of the percentage shares for the two years. The difference between columns 4 and 5 in the share of food and tobacco is due largely to the inclusion of alcoholic beverages in the former (amounting to 2.5 per cent of total consumption expenditures); and their exclusion from the latter.

Columns 5-8: Calculated from Department of Commerce, *National Income, 1954 Edition*, Washington, 1954, Table 30, pp. 206-08; *U. S. Income and Output*, Table II-4, pp. 150-51, and the *Survey of Current Business*, July 1961, Table 15, p. 14. The entries are percentages of absolute totals for the periods shown.

categories would differ from those shown in Table 8. But no fully reliable price data are available by which the composition of consumer expenditures could be adequately adjusted for price movements. And while we make an attempt to do so below, there is some value in Table 8 — on the reasonable assumption that marked, persistent trends in the shares of major groups in current prices will rarely be cancelled by opposite movements of price differentials.

Columns 1-4 are not quite comparable with columns 5-7; but the shares for 1929, the year common to both, are not too different, and the major discrepancy is explained by the inclusion in the earlier set of estimates of alcoholic beverages (under food and tobacco), and the exclusion from the later official set of these illegal expenditures — illegal because Prohibition was in effect. The observable trends can be briefly indicated. In general, the shares of food and tobacco, clothing and related articles, and housing — among the major categories — decline as do the shares of domestic service and total foreign travel and remittances (due largely to the decline in immigrant remittances). In contrast, shares of personal care, housefurnishings, medical and death expenses, personal business, transportation (specifically user, i.e., passenger cars), recreation, and education and research show significant long-term rises. The shares of utilities and fuel within household operation, and of religion and private welfare, are relatively constant.

These are the long-term trends that we can observe for the period from 1909 to 1958-60 — half a century. If we concentrate on a comparison of the 1950's with 1929 or with the 1920's, most of them persist; the shares of clothing, housing, domestic service, and common carrier transportation still decline, while the shares of medical care, user transportation, recreation, and education and research still rise. But there are some interesting exceptions. The most notable one is food, whose share shows hardly any decline from the 1920's to the 1950's. The share of personal care shows hardly any rise after the 1920's. The share of personal business declines from 1929 to 1955-57 and in 1958-60 is still below the 1929 level. This movement is due largely to the marked drop in the share of financial charges (brokers' fees, bank service charges, services furnished by financial intermediaries, etc.).

The adjustment for price changes, allowing for differences in price movements among the various categories of consumer goods, is only approximate (Table 9). We applied the ratios of retail prices of foods, clothing, and other broad groups distinguished, to the over-all Bureau of Labor Statistics consumer price index, to the shares given in Table 8. The qualifications of such a procedure are obvious. First, the groups

in the consumer price index, designed by the Bureau of Labor Statistics to derive changes in the cost of living of wage earners, do not fit too well the groups in Table 8, which relates to the structure of consumer expenditures for total population. Second, the implicit weights of various components in the B.L.S. index and their shares in total consumer expenditures are not the same. Finally, the comparisons cover too short a period for many of the categories, particularly consumer goods other than such basic necessities as foods, clothing, and housing. Yet the approximations in Table 9 are useful if only as an indication of the effect on the trends observed in the distribution in current prices of even a crude adjustment for differential price changes.

A comparison of Tables 8 and 9 reveals that, by and large, the

Table 9.

Approximations to Percentage Shares of Selected Categories of Consumer Goods in Total Consumer Expenditures, Constant Prices (implicitly 1947-49), Selected Years, 1914-1960

	1914	1923-25	1929	1929	1939-41	1955-57	1958-60
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Food and tobacco (1)	38	34	33	30	39	29.5	28.5
2. a. For off-premise consumption (2)	na	na	na	21	26	20.5	20
3. Clothing, etc. (5)	16	17	17	17	14	12	12
4. Personal care (9)	na	na	na	na	1.4	1.4	1.5
5. Housing (10)	10	9	9	9	9	11	11.5
6. a. Tenant-occupied (12)	na	na	na	3.6	4.0	3.3	3.3
7. b. Housefurnishings (15 & 16)	7	8	8	8	8	8	8.5
8. c. Utilities and fuel (17)	5	4.5	4	4	4	4.5	5
9. Medical care (19)	na	na	na	4.5	4	5	5
10. Transportation (24)	na	na	na	na	8.5	11.5	10.5
11. a. User (25)	na	na	na	na	7.5	11.5	10
12. b. Common carrier (26)	na	na	na	na	1.3	0.8	0.7
13. Recreation (27)	na	na	na	na	5	6	6

na: not available.

Figures in parentheses refer to line numbers in Table 8. The share in constant prices for a specific category was derived by applying to the share in Table 8 the ratio of its price index to the total price index, both contained in the Bureau of Labor Statistics consumer price index, given in *Historical Statistics*, 1960 edition, Series E-113 through E-139, pp. 125-26. The ratio of food prices to the total index was used for lines 1 and 2; of clothing prices for line 3; and so on. For lines 5 and 6 the ratio of rent to the total consumer price index was used. Since the price index is to the base of 1947-49, the percentage shares are those that would have been secured if all consumer expenditures had been calculated in 1947-49 prices.

significant trends are not much changed. The share of food declines even after 1929 (except in 1939-41). The share of clothing still declines, although in Table 9 the decline starts only after 1929. As far as one can see, the share of passenger automobiles still rises significantly and the share of public transportation declines. The major modification is in the share of housing, which showed a distinct downward drift in the distribution in current prices and indicates relative constancy, if not a rise, on the basis of constant prices. But for this category the price indexes may be inadequate.

To sum up: with the marked rise in consumer expenditures per capita from the 1920's to the 1950's, the shares of clothing, domestic service, public transportation, and possibly housing declined; the shares of medical care, certain types of housefurnishings, passenger automobiles, recreation, and education rose. The share of personal care, and surprisingly, the share of food, remained constant.

One implication of the findings in Tables 8 and 9 is worth stressing, obvious as it is. Per capita consumer expenditures, in constant prices, rose more than 50 per cent from 1929 to the late 1950's. Hence, if the share of a given consumer good, say food and tobacco, remained constant, the per capita expenditure on that category also rose about 50 per cent. Even for a good whose share in total expenditures declined, the absolute level of per capita expenditure, in constant prices, may still have risen. Thus for clothing, the index of absolute per capita expenditures would be 180 in 1958-60, compared with 170 in 1929 (Table 9, line 3 multiplied by 150 and 100 for 1958-60 and 1929, respectively). And, of course, when the share in total expenditures rose, the rise in the absolute per capita level of consumption was all the greater. Thus for user transportation the index of per capita consumption would be about 80 in 1929 and as high as 150 in 1958-60.

These marked rises in the per capita consumption of some categories of goods, particularly those for such "necessities" as food, may seem puzzling at first. But conditions of life change as economic growth proceeds and per capita income rises: goods must be increasingly processed, transported over longer distances, and distributed to a growing urban population; a technological change that yields new commodities creates new needs — so that the extended use of passenger cars, for example, means more roads, more service stations, different residential neighborhoods, new types of recreation, new types of hotel services, and so on. Since consumer needs are complementary, creation of new commodities by technological progress results in imbalances which, in turn, provide a stimulus to further consumption designed to repair these

imbalances; so that in a sense higher consumption of commodity *X*, created by technological changes, may mean pressure for higher consumption of *Y* and *Z*, while having a depressing effect on the demand for *A* and *B*. Thus, while per capita consumption is raised, the factors just alluded to have a differential impact upon various categories of goods and bear also upon shifts in the structure of consumption.

Three groups of factors may have made for these shifts in the structure of consumption. The first is connected with the response of consumers at different income levels, observed in budget studies, reflected in the allocation of total expenditures among various goods (e.g., a lower proportion spent on food combined with higher proportions on clothing, cars, etc., at higher income levels). These cross-section income elasticities of demand may be interpreted as scales of preference that suggest what the total economy will do when per capita income rises. Second, there are the changes in distribution of income: reduction in inequality, and hence in the inequality in per capita expenditures, should affect the distribution of consumption among various categories of consumer goods — just as in the earlier discussion we assumed that it affects the distribution of disposable income between personal savings and consumption. Third, as already noted, there are the changes in conditions of life associated with urbanization — greater spread of employee status, and changes in demand associated with technological changes — that bring forth new needs and create new goods.

No one of these groups of factors may suffice in itself to explain the changes in the distribution of consumer expenditures. We know from cross-section studies of family budgets that the expenditure elasticity of demand for food is distinctly below 1, often as low as 0.5 — meaning that an increase of one percentage point in per capita expenditures effects an increase of only about half a per cent in expenditures on food. Indeed, in a slightly different form it was established as a widely accepted generalization in economics over a century ago (the Engel “law”). Yet between 1929 and 1958-60, when per capita expenditures in real terms increased more than 50 per cent, the share of food, either in current or constant price totals, remained about the same — meaning that per capita expenditures on food also increased 50 per cent. We know that the expenditure elasticity of demand for clothing in cross-section analysis is above 1. We should therefore expect that with a rise in per capita expenditures, the proportion spent on clothing would rise: yet it declined between 1929 and 1958-60. Evidently, other factors prevented the scales of preference represented by cross-section elasticities of demand from acting over time.

One of these sets of factors, reflected in the changes in inequality in the size distribution of income, also influenced consumer expenditures. Clearly, a marked reduction in income inequality, as indicated in Table 4, must have meant a substantial reduction in inequality in the distribution of consumer expenditures. If, referring to our earlier calculation, we assume that with the rise in the share (in total disposable income) of the groups below the top 5 per cent from 70.5 per cent in 1929 to 82 per cent in the 1950's, their savings-income ratio rose from 3 to almost 6 per cent, whereas the savings-income ratio for the top 5 per cent of consumer units remained at 25 per cent, the share of the groups below the top 5 per cent in total consumer expenditures would be 75.6 per cent in 1929 and 85.1 per cent in the 1950's.

So marked a shift in the allocation of aggregate consumption between the top and the lower income groups must affect the distribution of consumption among various categories of goods. If the proportion of total consumer expenditures accounted for by the lower income groups increases, and if within these expenditures a higher proportion is spent on food, then, all other conditions being equal, the countrywide proportion of food to total consumer expenditures must rise. And this rise may offset the decline in the share of food caused by a general rise in real per capita expenditures. Likewise, given an expenditure elasticity of demand for clothing above 1, the rise in the share of lower income groups should, all other conditions being equal, lead to a decline in the share of clothing in total expenditures — which is what happened.

But even this combination of the cross-section structure of consumer demand at different income levels with the effects of changes in the size distribution of income and expenditures does not provide an adequate explanation of the changes depicted in Tables 8 and 9. Given the low elasticity of demand for food and the presumable absence of any reduction in the inequality of income between 1909 and 1929, the share of food should have dropped much more than is indicated in Table 9; and the share of clothing over the same period should have increased significantly. Likewise, between 1929 and 1958-60, the share of expenditures on passenger automobiles shown in Table 8 and suggested in Table 9 should not have risen, since the reduction in inequality of income and expenditures should have offset the effects of the high (above 1) cross-section elasticity of demand for cars.

It is the third group of factors — the shifts in tastes caused by technological progress and by changes in conditions of life — that contains the indispensable elements that determine the shifts in the distribution of consumer expenditures among various categories of goods. Thus, while

the reduction in inequality in the distribution of income and expenditures made for a stable share of food expenditures in the total, the increasing urbanization of the country, greater degree of processing of food products (partly explained by new technology, such as quick-freezing), and greater relative weight in total food costs of processing, transportation, and distribution charges exerted a much greater influence. The rapid rise in the share of restaurant-sold food is one minor item of evidence on this point. The failure of the food share in total expenditures to decline may thus have been due largely to the continued steady relative demand not for the primary, or farmer's input into food, but for the processing, transportation, and distribution charges entering final cost. Likewise, the share of clothing in total expenditures may have declined only because in competition with other, newer, and more desirable commodities, such as passenger cars, electric appliances, and the like, it became a less preferred commodity.

We are in no position to estimate the relative weights of the three groups of factors – the scales of preference revealed by cross-section budget studies, the changes in the size distribution of income and expenditures, and the changes in technology and conditions of life that modify the scales of preference; nor are we convinced that with the present data and tools of analysis such weighting is possible. We can only present our impressions; and those suggested by examination of the shifts even in the broad categories distinguished in Tables 8 and 9 favor assigning dominance to changes in technology and conditions of life, to technological and sociological factors.

This impression would only be strengthened if we dealt with a more detailed distribution than that presented above. If within foods we could distinguish between those for which the demand has been rising rapidly (some dairy products, ice cream, frozen vegetables) and whose share in the consumer dollar has been growing accordingly, and the older, more basic types, for which the demand has been relatively stable, the different trends in the shares of these subgroups of food in total expenditures would be explicable only in terms of changed technology, changed conditions of life, and changed tastes. This line of reasoning would apply also to subgroups of clothing, with the differences between the new and rapidly growing synthetic fibers and the stagnating staple items; of housefurnishings, with the difference between furniture and electric appliances; and so on. With these further distinctions, and hence a greater variety of technological changes and changes in conditions of life whose effects could be distinguished, the static elements that are observed in cross-section comparisons of budgets at a given time – even when modified by con-

sideration of changes in the size distribution of income and expenditures — would recede into the background.

Our discussion so far has referred to the structure of private consumption alone. Yet some of governments' uses of resources are a direct contribution to ultimate consumers, e.g., when they provide health, education, and recreation services directly to ultimate users (as distinct from money grants included under transfers). Furthermore, private consumption is a major use of total product, and we should observe, while adding to it consumption contributed by government services to ultimate consumers, the proportion that it constitutes of the total output of commodities and services in the country (Table 10).

Some of the trends are familiar. The rise in the proportion of gross national product accounted for by the use of resources for national defense is one. If we treat national defense as a cost, not a final product, private consumption expenditures constituted a slightly declining proportion of gross national product limited to peace-type uses (line 3). Total capital formation, including government construction but excluding military, was somewhat higher in the post-World War II years than in 1929; but the difference is slight (line 4).

All government outlays on goods, excluding defense, were a somewhat higher proportion of peace-type product after World War II than in 1929, whether or not construction is included (line 7 or line 7 + line 6). Including construction, the share of government in gross national product, excluding national defense, was about 8 per cent in 1929, 10.5 per cent in 1955-56, and almost 11 per cent in 1951-60. This upward movement is a continuation of a long-term trend that can be traced back at least to 1909. In 1909-13 the total outlay by government, including whatever minor defense outlays were incurred, was 3.1 per cent of gross national product; in 1920-28, 4.0 per cent (see *U.S. Income and Output*, Table I-16, pp. 138-39).

This recent rise in the share of government outlays on goods, excluding public construction and national defense, in peace-type gross national product is almost fully accounted for by the rise in the outlays on health and education services — from 1.7 per cent in 1929 to 3.5 per cent in 1955-56 (lines 8 and 9). The remaining government outlay — for general government functions (legislative, judiciary, executive, etc.) — constitutes a fairly constant share of peace-type gross national product, about 4 per cent in both 1929 and 1955-56. An allowance for some defense outlay in 1929 would be too small to affect this share. On the other hand, we do not allow for government outlays on other direct contributions to ultimate consumption, e.g., public parks, etc., for recreation, which also

Table 10.

**Distribution of Gross National Product, Excluding National Defense,
Among Major Types of Use, Selected Years, 1929-1960**

(Percentages based on current price totals)

	1929	1939-41	1942-45	1946-50	1955-56	1951-60
	(1)	(2)	(3)	(4)	(5)	(6)
1. GNP, including national defense	100	106	160	105.5	111	112
2. GNP, excluding national defense	100	100	100	100	100	100
3. Private consumption	75.7	73.8	86.7	73.4	71.4	72.2
4. Gross national capital formation	18.7	18.4	8.3	19.5	21.3	20.1
5. a. Private	16.3	14.7	5.6	17.6	18.3	16.9
6. b. Government construction, excluding military	2.4	3.7	2.7	1.9	3.0	3.2
7. Government outlay on goods, excluding national defense & construction	5.7	7.9	4.9	7.1	7.3	7.7
8. a. Health	0.2	0.6	0.6	0.6	0.8	na
9. b. Education	1.5	2.2	2.4	2.0	2.7	na
10. c. Other	4.0	5.1	1.9	4.5	3.8	na

na: not available.

Lines 1-7: Underlying data are from *U.S. Income and Output*, Table I-1, pp. 118-19 and Table V-3, p. 190, and the *Survey of Current Business*, July 1961, Table 1, p. 6 and Table 36, p. 23. We assumed that national defense outlays in 1929 were negligible and could be disregarded (they must have been within 1 per cent of gross national product).

Line 8: Total minus capital expenditures from *Historical Statistics*, 1960 edition, Series H-16, p. 193 and Series N-47, p. 381.

Line 9: Total minus capital expenditures from *ibid.*, Series H-22, p. 193 and Series N-46, p. 381.

The entries are percentages of cumulative totals for the periods shown.

probably increased as a share of total government outlay, excluding defense and public construction.

Some additional inferences for the level and structure of ultimate consumption should be noted. First, the contribution of government to health and education services constitutes a rising proportion of private consumption — about 2 per cent in 1929 and almost 5 per cent in 1955-56. With the addition of these services, total ultimate consumption is 77 per cent of gross national product, excluding national defense, in

1929 and almost 75 per cent in 1955-56. Second, these additional services accentuate the upward trend in the shares in private consumption of the two categories, medical care and education and research, in Tables 8 and 9. Finally, since it may be assumed that the proportional contribution of these direct health and education services by government are larger relative to the income and consumption of the lower income groups than to those of the upper income groups, the inclusion of these services would make for a further, if slight, reduction in the inequality in the distribution of income and consumption.

IV. CONCLUDING COMMENTS

As indicated in the introductory paragraph, the recent changes in sources of personal income, in inequality in the size distribution of income, and in structure of consumption, reflect underlying changes in a variety of conditions affecting the behavior of our society. Hazardous as the task may be, it is worthwhile to note these changes.

If we compare the 1950's with the 1920's and place both against a longer background of growth and change in this country, the major trends can be grouped under four heads.

First, there have been major changes in the patterns by which this country's population has grown: a significant shift away from increase by immigration; a long-time decline in birth rates, which in recent decades reverted to much higher levels; a steady reduction in death rates, and a sharp rise in longevity. In addition to the resulting changes in the rate of growth of total population and in its age and sex composition, there have been changes in the distribution of population across the country and between the countryside and the cities — caused partly by the demographic differentials of births, deaths, and external migration; partly by the impact of technological and organizational changes.

Second, there have been technological changes — the results of the increase in the general stock of knowledge and of the input of resources, human and material, in the application of this new knowledge to useful ends. It is only against the background of this continuous impact of technological change, combined with what we know of the human needs and wants that determine usefulness, that we can understand the continuous changes in the industrial structure of the economy and in the prevailing forms of organization of the economic units which must adjust themselves to changing demands of technology, e.g., the optimum scale of the plant and the size of capital investment. And one can easily perceive the ramifying influence that technological and related organizational changes had in the way of increased urbanization, and changing distribution of people

in space, among economic sectors, and among types of position in the economic system.

Third, there have been major changes in international conditions – increasing strain, finding expression in, and exacerbated by, world wars and latent conflict. Whether these increased international tensions, and accelerated changes in the political structure of the world and in the relative position of various political units and groupings, can be explained in terms of the spread of industrialization to areas with differing historical and political antecedents or whether other factors are responsible is a question that can hardly be answered here. But the changes are too obvious to be gainsaid.

Finally, there have been significant shifts in the relation between the private sector and the government. The increasing responsibility of government for economic stability and growth resulted in a rapid rise in the relative importance of the government sector and in a deeper penetration of government into the fabric of economic society – in ways that cannot easily be gauged by statistical measures.

The four groups of changes distinguished above are not substantive summaries but merely subheads in a classification that is still incomplete. They are largely reminders of the directions that our thinking should take if we hope to understand the background against which, and the basis upon which, the income distribution and the structure of consumption changed in this country. Here we can only make a few general comments on them.

The first, already suggested above, is that they are all inter-related, in the sense that the occurrence of *A* may set off *B* and *C*; and *B* and *C*, once set off, may reinforce and extend *A*. Thus, the increase in international tensions raised the share and role of government in the economy; the latter may have contributed to some of the recent demographic patterns, by affecting employment levels and the distribution of income by size; and population growth may have created problems that called for intervention by government and added further to its share in the economy. The trends in the four groups distinguished are linked in various ways; but clearly technological changes, and the forces behind them, have had a pervasive influence and have been connected with all the other trends.

Second, the rate of change in many of these trends may well have accelerated in recent decades. This is a conjecture that may reflect the bias of a contemporary unduly impressed by the magnitude and rapidity of recent changes, compared with those in the more distant past. But it is supported by a variety of tangible evidence that shows that acceleration characterized many *measurable* aspects of economic growth. Moreover,

the very spread of industrialization throughout the world would, in itself, mean an accelerated rate of accumulation of resources devoted to change — creating technological and organizational innovations.

Third, the four complexes of trends, which we have listed as characteristic of this country in recent decades, also operated, although with significant modifications, in many other countries. Other countries have experienced changing demographic patterns, technological and related organizational changes, increased international tension and accelerated political shifts, and a changing relation between government and the individuals comprising the specific society. And it is the spread of these trends to an increasing number of countries that in part provides the setting for the acceleration of the rates of change within individual countries.

Finally, the experience of this country back to the mid-19th century demonstrates clearly that problems in the field of international relations loom ever larger relative to purely internal problems, indicating a shift in relative importance of external and internal conditions in their effects on the change — growth and structural shifts — within the country.

Brief as the preceding comments are, their bearing upon the relevance of the observed changes to those likely to occur in the future is clear. The long-term trends in the internal structure of this country's economy and society, reflected in population growth, industrial distribution, structure of income and consumption, and the like, could be projected forward — on the assumption that external conditions would not change materially. And it would be tempting to argue that with external conditions stabilized, the shape of the 1950's could, with minor modifications, be carried forward into the 1960's or further. But external conditions are highly unlikely to remain the same; and even continuation of the trends of the 1950's would make many pressures (e.g., those created by the problems of our cities) unbearably great. We cannot, therefore, pass from the aspects of income distribution and structure of consumption, observable and measurable in the past, to their prospects for the future without elaborate attempts to extrapolate trends under a variety of assumptions; to observe the problems of imbalance, not apparent now, that may emerge; and to speculate upon the various responses that society may make to these problems, thereby changing the projected trends.

3

URBANIZATION—CHANGING PATTERNS OF LIVING •

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IF WE LOOK BROADLY at the history of the United States, we can discern certain geographical shifts of population which tell a fairly complete story. In broad outline, there are perhaps five major shifts. First, is the well-known westward migration of our people, which has continued with amazing persistence since the founding of our nation, and seems destined to go on for some time yet. Second, the less publicized but nevertheless impressive movement from South to North. Third, the continued movement of people from rural lands to major urban aggregations, which has already made this nation what I call an urbanized society. Fourth, the greater participation of one-tenth of our population, the Negroes, in all three of these movements — in the South-to-North, the East-to-West, and the rural-to-urban movements. Fifth, the accelerating deconcentration of the populations in our big and growing metropolitan areas.

I shall not go into detail on the South-to-North movement, except to note that in 1950 there were two million more people who were born in the South but living in the North than vice versa. In other words, over roughly a lifetime there was a net residue of two million migrants from South to North.

Connected with the five geographical shifts in the United States are two other trends — the sustained growth of population in the nation, and the rising level of living. These long-run persistent factors are partly responsible for and partly the result of the geographical shifts.

Let me deal briefly with the westward movement and its urban implications. As indicated already, its most distinctive feature is its persistence. The historian, Frederick Jackson Turner, thought of the moving frontier as the dominant force in American history, and he described that frontier as essentially being gone by 1890. It turns out that Turner was thinking altogether too heavily in terms of the role of agriculture, and hence of free land, in the westward movement. There is no indication whatever that the westward movement diminished after 1890.

If we take the block of states grouped as the West, and compute the ratio of their population growth to that of the nation as a whole, we find that the West never gained in population less than one and a half times,

or more than three and a half times, what the entire country gained. The advantage of the West in population growth in the 1940-50 decade was higher than it was in any but two previous decades. The 1950-60 advantage was below average, but still above what it was in the 1910-to-1930 period. In the decade of the 1950's the West added eight million to its population. One state, California, added more than five million, more people than any but six states had in 1950. Of this additional five million in California, 62 per cent can be estimated to be due to net in-migration and only 38 per cent to natural increase. Since Californians reproduce at about the national average, their greater growth in population is due to in-migration.

Why this continued movement from East to West, long after the frontier was closed? Undoubtedly the answer lies in greater economic opportunities, but not solely or even chiefly in agriculture. In 1960 only 5.3 per cent of the population of the West was classified as farm. In California in 1950 only 5.5 per cent of the state's population was classified as rural farm, and of the five and one-tenth million increase in the state's population between 1950 and 1960, 92.1 per cent occurred in the urbanized areas. These urbanized areas constituted only 1.9 per cent of the total area of the state.

The East-to-West migration is overwhelmingly a movement to cities and to urban occupations, and not into agriculture. The continuance of the movement has been due to the lateness and hence the greater modernity of economic development in the West. The Eastern Seaboard was settled in a pre-industrial era, under an old-line, only partially modernized European-type agriculture; and it was fairly densely settled under that kind of an economy. It was not easy, therefore, for this area to rationalize its economic activities. It did rationalize them in part, especially in the northern part of the Eastern Seaboard, under the stimulus of its tremendous trade and commerce with Europe. As population moved into the Midwest, it moved at a time when the industrial revolution was already under way, so that the new economic activities, including agriculture, were pursued on a more rationalized economic basis.

As a consequence, the Midwest never acquired the high ratio of people to land that the Eastern Seaboard exhibited. Especially in the western part of the Midwest, an extensive, highly rationalized agriculture developed which used relatively little manpower. It looked for a while as if the Midwest — from Minnesota and the Dakotas on down — would develop in much the same way as the New World nations arriving late in the industrialization process did (Argentina, New Zealand and Australia, for example), with tremendous urbanization and highly rationalized agri-

culture using very scant manpower. The only trouble was that this western part of the Midwest was not itself a whole country. The main market cities for its products and sources of its manufactures were not there in its own territory but on the seaboard where the commerce was. And so, there came a brake to the development of the Midwest, which slowed it down and caused it to remain more agricultural than most of the other areas. The region was too remote from international commerce and trade.

The Far West came still later in its development and hence started at a yet more modernized level. Being more rationalized from the beginning in its economic development, it could pay higher wages and could thus exert a tremendous pull on migrants. Some areas of the Far West never went through an agricultural phase at all. California, for example, had most of its people in mining at first, and they shifted very quickly to urban occupations. The state never had more than 23 per cent of its labor force in agriculture. It skipped the agrarian phase completely and went on into a modern urbanized economy.

If you analyze the industries on the Far West Coast now, you can see that they tend to be high-technology industries, using the newest kind of plants, equipment, knowledge and so forth, and paying high wages. It is the high wages – not the climate – which keeps bringing people into the West.

The tremendous East-West migration has clearly had an effect upon urbanization. The two most urbanized areas today are the Middle Atlantic, on the one hand – the old industrial area – and, on the other hand, the Pacific Coast, the most recently settled area; which means that the Pacific Coast has accomplished its urban industrial revolution in a fraction of the time that it took the Eastern Coast to accomplish it. As a consequence, many of the cities in the western area were built after the automobile age. They give us a glimpse of the wave of the future if things are permitted to go as modern technology dictates. I suppose that wave of the future is best represented by Los Angeles. In that city they probably now have more miles of freeway per citizen – they certainly have more cars per family – than any other urbanized area in the United States. I find very few people who like it.

Urbanization in the United States, if you take the nation as a whole, not the western regions that I have been talking about, reached its fastest pace in the previous century. If you take the proportion that is urban and analyze the percentage by which it rises each decade, the average rise per decade from 1820 to 1870, which was the most rapid period of urbanization, was 29.3 per cent. From 1900 to 1960 the average rise in the proportion was only 9.1 per cent, or less than a third what it was earlier.

So the great wave of urbanization in this country occurred a long time ago.

This is only natural. We are measuring urbanization by the proportion living in towns or cities. One gets much the same curve by taking the proportion of the population in places of 100,000 or over as by taking simply the proportion urban. As the saturation point is reached, as most of the population is already living in cities, there are fewer and fewer other people to draw from to furnish increments to the cities. The percentage increase in the proportion urban is bound eventually to taper off. It yields what we call a logistic-type curve, which eventually flattens out. Our cities, however, are still growing, and growing rapidly. This growth is not due to rural-urban migration any more, but to natural increase. From here on out, you can expect that most of the growth in the urban population — in fact, the overwhelming bulk of it — is going to be just a function of the rapidity of growth of the national population. By now we have a high degree of urbanization. In 1960, for example, there were nearly 96 million people living in the urbanized areas that the Census Bureau delimits. This did not include all of the urban population, because there is some urban population outside of the urbanized areas. Nevertheless, 53.4 per cent of the population in 1960 was living in the urbanized areas. These areas occupied a territorial expanse that was only 0.71 per cent of the total land area of the United States.

I find it ironic that we in the United States often talk about the heavy population densities in India, Egypt, Java, Japan and so forth, when we are living at actual effective population densities that would make these people cringe. If you speak not of human density but of the number of automobiles per square mile, ours is the most densely settled country in the world. This is especially true when you realize that most of the automobiles are housed in the urbanized 0.71 per cent of the territory of the United States. Anybody who pays storage bills in Manhattan will soon discover that our auto density is high.

It is difficult to determine where the saturation point will be reached in the process of urbanization in the United States. I suppose we shall eventually reach the point that seems to have been reached in England, where the big ones begin to eat up the little ones. In this situation it is not the rural people but the smaller urban centers that are disappearing. The latter are being engulfed by the expanding large urbanized areas, or else, if remote from those large areas, they are being abandoned.

It would be very difficult to have continued urbanization of the population, in the sense of their living in big cities, if they continued to pile into the same old boundaries of those cities. You can see what would have happened in New York City if all of the population that lives in the

outlying areas of the New York metropolitan area had crowded into the city over the decades, instead of living out in the suburbs. Manhattan, for example, would be even more of an impossible place than it already is. Something has been occurring which I find everybody has noticed but few have been able to define or analyze clearly. It is called by various names: suburbanization, metropolitan deconcentration, decentralization, metropolitan dispersion, centrifugal urban expansion, fringe development, and so forth.

Whatever is meant, this movement is not simply an expansion of the territory occupied by an urban aggregate. Everybody can see that the edges of our urban aggregates are moving out. But they are almost bound to move out as they grow in population. Where else could the people go? If you continuously emit sand from one spout, the pile will grow both upward and outward. Similarly, as cities grow in population, as they are doing and will continue to do in this country, their boundaries will inevitably expand. Surely this is not what is meant by urban deconcentration. There has always been expansion of cities beyond their boundaries. Even the medieval cities kept building beyond the wall to get more space for the expanded body of citizens.

As the phrase "suburban movement" is used today, there are three connotations that imply that it is something more than the normal expansion of city territory as the city population grows. There is, first, the implication that the suburbs have developed particularly in the last few decades and that they are therefore a recent phenomenon, whereas the mere expansion of cities at their edges is an old phenomenon. Second, there is the notion that although suburbs are appearing at great distance from the central city, they are composed heavily of people who work in the central city. For this reason they are sometimes called dormitory or bedroom towns, or residential suburbs. The journey to work has become a problem in modern society in consequence. There is, finally, the characterization of the suburbs as low-density areas of settlement. Perhaps the term that carries all of the three implications better than any other is "urban fringe." And it is of interest that it is precisely the urban fringe, the farthest-out zone of the urbanized area, which has exhibited the largest percentage increase in population.

It is possible to find an operational definition of metropolitan deconcentration which will take care of the elements of recency, commutation and low density. This definition is as follows: Urban deconcentration is occurring when the city's territory is growing at a more rapid rate than its population. Concentration is occurring when the opposite is occurring. I am obviously not referring to the city in its political sense, but in its

ecological sense,— that is, the actual urban aggregate and its expansion. If the territory is growing faster than the population, the city is deconcentrating; if the opposite is true, it is concentrating.

I have tried to examine such deconcentration with reference to two or three cities — unfortunately, not in the United States, because I could not get the data. I found that, according to my operational definition, London had been deconcentrating ever since 1811, but that the movement accelerated and became very rapid after 1921. With Britain's population hardly growing at all, the population of the London urbanized area absolutely declined between 1939 and 1957, but the territory covered by this area expanded. This would appear to be the condition reached when an economy attains a very advanced state. In London, as in the United States, the population was diffusing so rapidly that it was penetrating far into the surrounding rural zone. Such interpenetration of urban with rural modes of settlement and exploitation makes it difficult to measure just where the urban aggregate extends to.

Another kind of deconcentration, which I have called internal deconcentration, occurs when the different zones within the urban aggregate become more equal in population density. As most of us know, the central part of our cities either has been growing slowly or has been declining in population. Now, if the total population remained the same and the boundaries remained the same, this would mean that people near the center had been moving into other bands, the consequence being an equalization of density across the different bands of the city. This type of deconcentration seems to have been occurring along with the other kind. London has reached the point where, in 1957, the average person lived about seven miles from the center. This was, as nearly as we can calculate, more than four times what it was in 1831.

What explains this deconcentration? People often offer a psychological interpretation to the effect that city-dwellers like green scenery and open spaces. This seems to be absolutely true, but it is of no value in explaining urban deconcentration, because the latter is a *recent* phenomenon. The truth is that our cities now are better places to live in than they were back in, say, the post-medieval period. Since at that time they were awful dumps, you would think that the urge to get out was even greater than it would be now. People have always liked to be in open spaces, to see greenery, and to have some distance between themselves and their neighbors.

The next most common explanation of urban deconcentration is better transportation. But the effect of the first improvements in city transport was to concentrate people, not to spread them. The early rapid transit

developments involved such heavy capitalization that they could be put only in areas where there was going to be dense population. In 1925, in four Boroughs of New York City, 91 per cent of the population was concentrated in the 40 per cent of the area which fell within a half-mile of the rapid transit lines. After the rapid transit lines were laid down, residences were concentrated near them because once the passengers got off, they could only walk, and they would not walk a great distance.

It was not until the automobile that improvements in transportation really facilitated urban deconcentration. This began around the period 1915 to 1920. The automobile, both as a private family vehicle and as a bus for public transportation, gave a marvelously increased flexibility. It allowed the transportation network to be adapted to almost any residential pattern. Instead of location being determined almost completely by the transport system, the latter came to be determined by the people's preferences for living.

There were other factors that are generally ignored. One of them was the reduction in the hours of work. The reduction in hours of work was not only impressive from an over-all point of view, but also it tended to be selective: It was Saturday that tended to be dropped. The breadwinner who went into the central city had to go in now only five days a week instead of six. In a sense we have not really reduced the hours of work of the metropolitan resident, we have simply changed how he uses his hours. He now spends, say, an hour getting to work and an hour coming back, and his work week has been reduced two hours per day at the office. The result is that the week's work remains exactly what it was, in terms of total hours.

Perhaps this is one reason why the life-expectancy of females has been moving ahead faster than the life-expectancy of males. It is the breadwinner who goes into the city to work. Most of the people in the suburbs do not commute to the central city. In fact, only a very small fraction of them commute to the central city; and of that small fraction, overwhelmingly the commuters are the male breadwinners, on whom the brunt of the whole system necessarily falls.

As mentioned at the start, two abiding conditions under which the geographical shifts of our people have been occurring are the continued growth of the nation's total population and the continued increase in our level of living. Accordingly, in order to understand our urban deconcentration, you have to look at all of the segments of our lives; not merely at transportation to work, not merely at reduction in working hours, but also at other aspects of our increasingly efficient technology. For instance, one should look at the communications industry. If you live in the sub-

urbs, your telephone works as well as it does in the city. You get the same TV programs, the same radio programs, as instantly as anybody in the central city does; usually, the recent movie comes out to the suburbs, sometimes even faster than it comes to the center of the city. Thus, you pay no penalty for living in the suburbs. The morning paper gets there before breakfast, just as it does in the center of the city. Due to our modern instantaneous communication, you are not isolated.

As for the social concomitants and consequences of urban deconcentration, I must confess that I am speculating. This is a wide-open field. The "social consequences" of something always invite a speculative frame of mind and unwillingness to look for hard evidence. There is a reason for this: The hard evidence is usually extremely difficult to find. So anyone who differs is as much entitled to his opinion as I am to mine.

Let us begin with the family. One possibility is that the spread of city inhabitants to the surrounding suburban and fringe areas of the urbanized aggregates has aided the baby boom, and hence facilitated the population growth that is in part itself behind the expansion of these populations. One of the motives people have in mind for moving out to the suburbs is to find better places to rear children. There is more space in the suburbs for children to play and utilize their gadgets. Having moved out to the suburbs, the parents have less resistance than they would otherwise have to bearing more children. So there may be a stimulant to the birth rate in the very fact of suburban residence.

It is also possible to maintain that there has been a tendency for suburban living to pull the nuclear family apart. I realize this is heresy, because suburbs we regard as good things; the family is a good thing, and so, by the logic of social discourse, a good thing can never cause a bad thing, the tearing apart of the family.

But, as the work-place is moved farther from the home, as increased suburbanization tends to do, the husband's and the wife's worlds are further apart, both geographically and socially. Thus is explained the numerous articles in popular magazines about how the wife, who is living deep in the suburbs, is to cope with the secretary, who sees the husband all during the day.

The situation affects the children, too. Children in the suburbs presumably see their father less. They have only female models, the mother and the teachers in school all being females. This is particularly hard on the boys who have no male model after whom they can pattern themselves. They are unacquainted with that specific aspect of maleness which is the occupational pursuit of the father.

The situation may tend — and notice, I couch this in the subjunctive

mood because I do not know for sure — to lead to over-intense but ineffective mother care. It is a peculiar thing, this mixture of extreme permissiveness and intense concern on the part of American parents. We let children do anything they want, and worry about everything they do. The mystery to me is how the children survive it; they manage to in most cases, but some of them come through only as psychic cripples.

The situation is one in which particularly the males could be expected to rebel against female domination. One form that the rebellion may take is peer group allegiance. Suburbs tend to be differentiated, as you know. There are wealthy suburbs, where, for the most part, men who have made the grade live, and they are not bothered with many young children around. Then there are the other, child-oriented suburbs, where the children are most in evidence. And here, of course, it is easy for the children to get together; in fact, they are encouraged to get together, because it is considered good child-rearing practice to have the children get along with their peers and see a lot of them. We are now acquainted with what David Riesman and others have pointed out as the emphasis on the peer-group in American life, in which the main interest of the youngster is in conforming to the group's expectations. These expectations are somewhat different from what adult expectations would be. Observers have noted a kind of anti-learning or anti-effort bias in these groups. Intellectual endeavor is identified with the alien and inimical adult world. Further, there is an unwillingness to do anything that makes one look queer. It has been discovered with some trepidation that the notion of "queer" on the part of our adolescents includes "odd-balls" like scientists, and this is in a society worried about the scarcity of highly trained manpower.

Shifting from these speculations concerning the family to a related subject, we can ask what the effects of urban deconcentration have been for work and leisure. One effect has been that people now draw a sharper distinction between work and non-work. The two have come to be separated in space. One works in the city or in an "industrial park" or other center; one spends one's leisure in the residential suburb. One works with one group and plays cards with another group. The work day is one thing, the non-work part of the day is something else. The work part is associated with pay, the other part with non-pay. We have had, in a sense, a redefinition of work and play.

The movement to the suburbs has accelerated one aspect of this new set of definitions by facilitating the "do-it-yourself" movement. Here, I think, the absurdity of the notion of work versus leisure begins to come to the fore. We notice that do-it-yourself activity requires space. This

requirement is inherent in certain kinds of do-it-yourself, like gardening; but other kinds require space because they involve equipment. You have to have a place to put the power-saw, the power-sander, the power-drill, the power-grinder and the power-mower. The necessary space cannot be obtained in the city but only in the low-density suburbs. The movement to low-density areas on the outer edges of the metropolis is thus one of the stimulants to do-it-yourself, and do-it-yourself is one of the stimulants to the outward movement.

Do-it-yourself, including house-painting, plumbing, electrical repairs, toy manufacturing, tree-trimming, planting, lawn-maintenance, etc., embraces activities which, for the most part, we used to hire a specialist to come in and do. The head of the house now attempts to do them himself; it takes him three or four times as long as the specialist would take, and he is therefore working for very low wages. But still, the outside wages are so high that he cannot hire it done. Do-it-yourself is unpaid work and it is the obverse side of the reduction in paid-work-hours and the increase in paid-work wages.

We hear much about the "decline" of the center of cities, the central business district in particular. I find it extremely difficult, however, to get people to exactly pinpoint the problem. What is the trouble with the central part of cities? Is it the loss of residential population or the failure of the residential population to grow? Surely this is not a problem, for these places are too densely settled already. It is the solution of a problem to get people out of the crowded central cities and into less crowded suburbs.

Perhaps the worry is one that people often hesitate to talk about, especially in public and for the newspapers, namely, not so much a reduction in the proportion of people in the central city as a dramatic shift in the character of the population living there. To put it simply, the degree to which the central city maintains its residential population today is largely a function of how rapidly it brings in low-income migrants to replace the middle-class people who are leaving for the suburbs. Inevitably the economic and cultural level of the population at the center is lowered. Since the central city is usually a political entity, too, this has consequences for municipal finances, educational institutions, welfare work and so forth. It is in part the low-income Negroes, many from the South, who have gone to the central cities in great abundance and whose increase there represents not only a lowered economic level for central-city residents but a source of racial friction as well. The process has a spiral character. The more that low-income groups move into the central city, the more will higher-income groups want to move out.

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TECHNOLOGY'S IMPACT ON CULTURE AND WORK •

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I WOULD LIKE to divide my remarks into four major topics: First, technology – and, of course, automation – within the firm; second, technology in the community and society at large; third, some specific changes which appear to stem from or to be associated with technology, particularly the technology of the space program; and fourth, technology and culture values.

Let us begin with a definition of automation. There is nothing difficult or profound in the one I am about to use; doubtless you are already familiar with it. It involves the basic notion of replacement of human operators. The basic statement, I think, would be: The application of control devices of a feedback nature to self-regulating production processes. As Floyd Mann and Richard Hoffman put it, automation “replaces man’s sensoria in monitoring production processes . . . replaces man’s brain in certain regulatory decision-making functions.”

The first stage in automation is that of eliminating highly repetitive and extensively subdivided jobs. The production line will look the same except for the absence of people. A second stage, which Robert Dubin calls the transitional stage, is one of specially designed single-purpose machine tools. The third stage, or the second if you call the second the transitional, is one during which we shall have fundamental redesign of production equipment itself – machine tools which are universal in character. And along with this will go striking changes in personnel requirements; people will need to be trained in engineering and science to enable them to program operations and to set up programming controls for the maintenance of both operating and control equipment. All of this will involve, of course, the displacement of a substantial number of people. Some of them will be shifted to other kinds of jobs – into distribution and sales, for example, although we recognize, of course, that these employment areas will not absorb all of them.

Now let us be specific about the changes that automation will cause in the working environment within the firm. The environment will be a complex one of machines, to be sure. There will be fewer people, and the capital investment per worker will be considerably higher. Such a

situation — the presence of fewer people — may not be very reassuring to those who are left. At least some of them may suffer from a fear of the unknown, uncertainty as to what might go wrong and what to do if it does, uncertainty born of having to learn new skills. The work place, however, will be physically pleasant. The work will be physically easier, a factor likely of some significance for the employment of older people.

Yet there may remain substantially the same impediments to the retention of old people. I predict a strengthening of personnel policies that insist on a definite retirement age for employees. In fact, it may not be as high as sixty-five, as many firms have at the present time; it may be as early as sixty. Certainly the length of work life will be shorter, because people will spend a longer time in school getting ready for the kinds of jobs that automation will have created, and because they will retire earlier.

The basic patterns of group relations within the plant will change. There are those who argue that there will be more contact among operating personnel. To me this is questionable, because if fewer people are scattered over substantially the same amount of space, contacts among these people may be more infrequent than now. Likely there will be less heterogeneity of jobs, and, therefore, perhaps a reduction in status differences among them. The net result of all this, some argue, will be greater group solidarity and stronger coöperation among operating personnel. This, I believe, may affect labor unions. There are those who claim that since this will be true, labor unions will find it easier to organize operating personnel than they have in the past. On the other hand, there will be a cohesiveness among operating personnel which will prompt them to see less need for labor union affiliation.

In this connection, I was intrigued a few years ago, in a study I made of hiring policies in the Southeast, to find that many employers in that area felt that their work groups were immune to labor union organization. They cited as the principal reason the fact that they were homogeneous work groups. Our people think alike, they reasoned, so it is very difficult to organize them. This is interesting to ponder. This may be true when it comes to organizing people into unions — it may impede a union's effort to get into a plant in the first place — but once the employees are organized, the more homogeneous they are the more difficult it may be to displace the union.

There will be changes in job content; there will be job enlargement and job rotation. This may mean a restoration of pride and satisfaction in one's job, stemming from his chance to perform more interesting and challenging work. Certainly there will be more attention given to one's capacity for intellectual understanding. Yet at the same time, on the

other side, people may be more concerned about their chances for promotion; they may feel that promotion opportunities for them have dwindled. It is a good pastime to speculate on why this may be true. I base my assumption on the notion that unfamiliarity with what lies ahead may conduce in the work situation to optimism regarding promotion. In an automated situation, characterized by the presence of relatively few people, an employee at any given level may have a better opportunity than ever before to understand what difficulties actually lie ahead for him in the next higher job and, consequently, his chances of not adjusting to it satisfactorily.

The work place will be chockful of new specialists, so there will be sharp changes in the skill composition of the total labor force. A large proportion will be highly skilled; the semi-skilled will decline in relative importance. This will call for training for new jobs and, it seems reasonable, discovery of new training methods. Emphasis will be on intellectual as opposed to motor skills, and on the acquisition of new motor behaviors. People will have to come nearer understanding the entire production process than they have had to do in the past. In fact, the new ways of doing things may be so complicated that training will have to involve the assignment of these people to the machines already installed in the plant in order for them to learn what to do. This is, of course, based on the assumption that highly automated machines will be so expensive as to be found only in their production habitat, rather than in schools and laboratories as well. In short, management may have to admit, and adjust its thinking to, the fact that the operating process is so complex that the actual operation of the machines within the plant will be an essential part of the training process. The schooling of specialists obviously will be a big challenge to our school system, as more companies send more of their employees back to school.

Much is being said and written these days about the unemployment that automation will cause, and the retraining it will necessitate. Actually, we have been concerned with the impact of automation on unemployment for a long time. Walter Hunt invented a sewing machine in the 1830's but refused to have it patented because of the unemployment that would result, but Elias Howe didn't seem to mind. In the 1930's a Congressional committee gave serious consideration to declaring a moratorium on labor-saving inventions. But even the most pessimistic will have to admit that not all unemployment is technological: some is due to bad management by the employer, and some is traceable to consumer preference for a competing product.

Nevertheless, it is not difficult to dramatize the impact of automation

on industrial change. In coal, for example, as Robert J. Myers points up, there were more than 400,000 production workers in 1947, but less than 200,000 by 1959. During this period output per man-hour was doubled, due mainly to mechanization of loading, growth of strip mining, and the use of continuous mining machines. However, only two-thirds as many tons were mined in 1959 as in 1947, due in large measure to less demand stemming from technological change elsewhere – dieselization of railroads, which resulted in a trimming down in coal consumption to the tune of 100 million tons a year, and displacement of coal in the heating of homes and in manufacturing.

With railroads, output per man-hour among production workers rose 65 per cent during the period referred to earlier, from 1947 to 1959, due to mechanization of maintenance of way, introduction of diesel locomotives, and centralized control. But production, measured in total income from traffic revenues, declined during this period by 17 per cent, due largely to the competition from airlines, private automobiles, and trucking. The number of railroad employees declined 40 per cent. In steel, output per man-hour of production workers rose 42 per cent during this period and production increased 15 per cent – but there were only four-fifths as many workers at the end of that period as at the beginning. The use of plastics – in automobile bodies, building materials, and the like – is an item of the new technology to be reckoned with here. While there appears to be little justification for believing that the machine is about to take over completely – actually any claim that the long-run trend in joblessness has been upward is open to serious doubt – we have the job of keeping a watchful eye on this obvious social and economic implication of automation, unemployment.

Displacement of people poses other problems, including the upsetting of what has been a big employment motivator, the company security programs. And who will retrain the displaced people? Labor unions? They will raise questions about their role. To what extent should society itself take the responsibility for retraining?

Styles of supervision will change. There are two major and somewhat counter opinions regarding the changes that are likely here. One school of thought – the name of Robert Dubin immediately comes to mind – holds that automation will bring a standardization of command functions. Under automation, a book of well-developed standard operating procedures can be written, and the supervisor's job will consist largely of using this to administer rather than to supervise the employees. In short, because the operating procedures will be so standardized, the supervisors will no longer be supervisors in the traditional sense but administrators

instead. The other people will be specialists, requiring no supervision because they will see themselves as professionals capable of self-supervision.

According to a strikingly different – substantially, a polar – point of view, automation will make the human relations component of supervision even more important. The argument runs as follows: Automated operations will be so self-regulating that people will have more time for concern with their own needs. Moreover, the workers can handle the technical complexities, leaving the supervisor with a job that is almost solely one of handling people. Regarding the manipulation-of-people part of his job, the supervisor will become even more important. Here, the recent research of Mann and Hoffman comes to mind.

It seems to me that we can resolve these differences of opinion by saying that all this depends on what a supervisor is made to be. If he is to remain not only the handler of people and the builder of morale, but the technical specialist as well, this will be one thing; if, however, we define the supervisor as a person who just handles people, this is quite a different matter. Then we shall need another kind of supervisor, for whom we shall have to invent a name, who will provide guidance and counsel on the technical complexities of the job. So the supervisor's role depends on how we define supervision and what the supervisor is given to do.

Automation complicates the problem of measuring individual and organizational effectiveness. In the automated age, the individual will have little control over the quantity and quality of his output, so there will be little room for an incentive system to improve performance that can be tied to productivity. Perhaps “down time” – time when machines are not running – may prove to be as good a measure as any of an individual's performance, if we exclude, of course, down time for the purpose of preventive maintenance. This may not only be a rough measure of an employee's ability to limit the effects of breakdown, but it may prove to be about the only meaningful measure of total organizational effectiveness.

Automation will bring more shift work and a shorter work week, phenomena of great significance for home and community life. The four-day work week may some day be a reality. The greater leisure it will provide will raise many questions. Will this leisure be spent purposively, to make for greater capacity for work and achievement, to promote the only realistic approach to discipline, namely, self-discipline? Or will the use of leisure be non-purposive, reflecting a lessened future-time orientation and a lessened respect for discipline?

Will the fact that jobs will have been made easier by automation mean

that leisure will be spent less recuperatively and more creatively? That “spectatoritis” will decrease in favor of people being more active in sports and the like? That people will engage in service-oriented rather than self-oriented activities? That participation in community affairs, especially by lower management and non-management people, will increase because the new leisure will represent to them freedom to become involved rather than freedom from involvement?

The leisure created by the shorter work week may change adult educational needs. Some adults will want to return to school almost for the sake of returning to school. All may need to have instilled in them new values and interests consistent with the new leisure. Departments of conservation will have a heavier load, particularly with respect to the provision of more and better hunting and fishing facilities. Labor union people may find themselves not as busy within the plant as they have been, so their participation in community activities, particularly in politics, may increase.

Family life doubtless will change. In a recent survey reported by William Faunce, 96.8 per cent of the interviewees, when asked what more leisure would mean to them, looked to “working around the house,” and 76.8 per cent anticipated “spending more time with family.” It seems likely, therefore, that the father will take a more active part in the socialization of his children, that the family will become less matriarchal. There is the possibility, however, that some employees will be working, say, four straight days and will be away from work three days at a time. An employee with this work arrangement might have two homes — one for his family, quite removed from the work place, and the other a “bachelor apartment” near his job. Whether or not this arrangement would promote family solidarity and proper child socialization is open to question.

Let us turn now to automation and management functions. Up to this point, I have discussed functions and people below the managerial level. I believe we can argue — at least it is being argued these days — that top management decisions will become more rational under automation, because more up-to-the-minute information will be available and, therefore, more variables can be considered. Think of the implications of this for, say, inventory control. The rationale will be that the best possible answer to a given question will come from precise information programming.

Recruitment and background of managers will undergo unmistakable change. Managers will have to be able to exercise ingenuity in asking the right kinds of questions of the machines. They will need constructive imagination and knowledge of science and technology. Sophistication in the social and behavioral sciences will be important, for one will be called

on constantly to ask the right questions about the *human* consequences of automation. Managers, with relatively less time committed to in-company work, may broaden their interests and participate in a wider variety of community affairs. They may pay more attention to what one might call the social welfare aspects of the business community.

My failure to date to find among business managers a clear conception of automation prompts me to raise at this juncture certain questions and to propose certain managerial paths. It is conceivable that much of management's willingness to automate will hinge on the chance it sees to recover its investment. Success here doubtless will hinge on several factors. There will be a need for high operating capacity — and its important companion, high consumption. Both of these will depend, in turn, on how the federal government operates. A more rapid depreciation (“write off”) rate will be needed; it may need to be as high as, say, 20 per cent instead of 5. Management — and perhaps everyone — will have to accept certain phenomena as inherent in automation, and make certain commensurate assumptions. There will be a smaller work force for a given production; some technological unemployment will be in evidence; and a relatively stable wage structure for technicians will be essential.

I doubt that most managers of automated operations have a good measure of how well automation is doing for them. Many computer systems now in use are not well understood by management and stand idle much of the time. As John Diebold points out, automation is not to be seen simply as that change which provides for a group of new machines or devices to do present things in a different way; instead, it must be regarded as a new concept, as consisting of a new set of principles, of self-regulating systems, for solving new operational problems and for aiding in making better decisions and ones which could not be made by traditional methods. In fact, perhaps the best and sometimes only justification for using automated equipment for traditional jobs lies in the chance to reap from such an approach heretofore unrealized by-products. One does not automate because his golf partner is doing it. Realistic estimation of costs is always needed. The initial cost of the automated equipment is only a part of it: planning, installation and conversion costs are equally heavy. Once data-processing machines are installed, the cost battle has just begun: preparing data for the machines is costly and continual.

Now let us consider labor unions and collective bargaining. Labor unions are and will continue to be skeptical about the changes wrought by automation. Among its chief evils they see technological unemployment, lower purchasing power, and personnel problems stemming from

displacement of workers. Management, by contrast, will see in automation lower unit prices and a larger gross national product which, in combination, will help sustain a satisfactorily large mass market for output. Here a major difference between management and labor is length of time perspective — the long-term view by management, the short-run view by labor.

Collective bargaining will change. Automation will lead to new types of workers, affecting the present jurisdictions of labor unions and causing problems in membership recruitment. The better trained people in this age of automation will come closer to regarding themselves as professionals, which raises an interesting question: Are professionals less given to labor unionism and labor union membership than those who do not regard themselves as professionals? One argument insists that labor union power under automation will increase because, since there will be fewer workers involved in a particular production complex, the increment of work held by each worker will be relatively greater. On the other hand, if bargaining is to take place at higher levels than it has in the past — and it seems that automation will make for that kind of change — employees in the lower reaches of the organization may feel more nearly left out in the cold than they feel now, and labor union strength may suffer proportionally.

Measured in terms of ability to bring more facts to bear on a decision, collective bargaining will become more sophisticated. There likely will be more emphasis on the preparation and presentation of these facts than on interpretation of them. To the extent that management and labor unions relish the legalistic approach to collective bargaining, automation's effects should make them happy.

At this point I need to say more about what can be done to get ready for automation. So far, I have tried to imply a need to consider psychological and social factors as well as technological and economic ones. There will be the danger of preoccupation with the technical facets of change to the relative neglect of changes in the social system. An over-all scheme committing a company irrevocably to a certain plan of change is bad. Change must be designed to proceed in stages. It will be so easy to focus on the point of innovation, on the immediate demands of the new process, that people in non-automated units may feel that they are insecure, inferior, and that they have little chance to grow. Readiness for change is associated with many factors. Four come easily to mind: The state of management-union relations in the firm; the level of employee over-all satisfaction with the company; the incidence of mutual trust and goodwill; and the history of the company's subscription to change.

The role the government proposes to take in alleviating the unemployment problem, particularly as it relates to technology, is beginning to take shape. The *Occupational Outlook Handbook* of the Bureau of Labor Statistics describes hundreds of promising occupations, so that young workers may be duly discouraged from entering dwindling or disappearing endeavors. Perhaps the government has the job of preventing or impeding certain trends. Some businesses may fail because their competitors have automated earlier — some textile firms may be cases in point — and some may be losing their market because of technological change in the industries that absorb their products. Of course, all of us are familiar with efforts today to cushion the impact of unemployment on workers: Supplementary unemployment benefits paid in a few industries under collective bargaining agreements, the provision for early retirement in coal mining, safeguards for workers from the vicissitudes of mergers in the railroad industry, and the dismissal wage some apparel industries provide to sustain workers when they are seeking new jobs. And, of course, there is the state-federal system of unemployment insurance, although the benefits period is limited; the Depressed Area Bill to develop new industries in distressed areas, and the proposed Manpower and Training Bill to support training for new and changing jobs.

Let us jump now to some questions on the impingements of automation on American life. *Where are we going in automation? Where will automation affect us most? In what areas will change be most distinct — and distinctive?* I believe we can understand well the nature and potentialities of automation only by considering our efforts to launch a man into space. There are many who quite reasonably question the sense that our space program is making or even promises to make. Although many of the implications of the space program are military in nature, I would like to comment solely on the peaceful uses of the findings of space research.

In a relatively short time we are going to have satellite-based communication systems. When we do — note that I say when, not if — many behavior patterns will be altered. We will have better control and coordination of far-flung business organizations. There will be easier communication between people in the various units of a company, which, I suspect, will be particularly effective and profitable at the middle management level. These innovations in communication will eliminate many conferences as we know them now. We will no longer have attendance at conferences in the present sense, so travel time and expense of participants will be eliminated, and risk to life and limb of key personnel will be minimized. There will be a greater marshaling of resources at each

home base. In-the-flesh relationships, non-verbal expressive gestures, and the ancillary, supposedly morale-building, cocktail hour will be conspicuously absent.

A satellite-based communication network will make for faster communication in diplomatic and international relations. This, however, may not be an unmixed blessing. There are times when it appears that communication in this area is already taking place too rapidly; perhaps even now diplomats are being robbed of that amount of time necessary for the pondering of problems and the making of wise decisions. On the other hand, this may be good, for it may serve to eliminate intrigue, conniving and treachery, and make for honesty and forthrightness.

Our society is about to change its attitudes toward educating people in underdeveloped countries. On the positive side, we are inclined to admit – and certainly when we get satellite-based communication systems, we shall be more likely to admit – that educating people in underdeveloped areas is possible, and that this sort of activity will provide more markets abroad. There are problems, however, such as how to overcome these people's resistance to learning, what to teach them, and what it will cost.

There will be change also in attitudes toward education between advanced countries. Among the positive aspects of this endeavor would be the creation of video tape repository libraries, and experimentation with airborne TV in an effort to learn what can be taught best by live TV and what can be taught just as effectively by TV tapes. A question as yet unanswered is this: Will greater familiarity with our neighbors in advanced countries make for greater or less tolerance?

Let us briefly examine next the implications of a satellite-based communication system for political manipulation. I think it conceivable that better communication of this kind will promote allegiances with countries that cannot afford, let us say, a ground-based transmitter or other key items of communication system equipment. Also, I would suggest, we might promote greater allegiance with areas which now are somewhat decentralized politically, which have no central political core. On the negative side, however, better communication may disrupt allegiances through the easier transmission of inciting materials and jamming of signals of countries that have existing political cores. The net result of all this may very well be the forced adoption of non-partisan international political purposes – what a dream! – for partisan national political purposes.

Next I would like to discuss another innovation that is just over the horizon – satellite-based weather-predicting systems. Here there are legal

problems and, potentially, situations which are almost sure to provoke international misunderstanding. To illustrate my point, I need mention only rain making, and attempts to control hurricanes and typhoons by altering ozone levels in the upper atmosphere by, say, nuclear explosions. Also, there is now a shortage of meteorologists and related personnel. The accumulation, processing and distribution of weather data will be done automatically, so there is no problem here. But we will have to find the people to interpret weather data. The training in foreign countries of indigenous personnel for this type of assignment is sure to be a tricky undertaking.

To make more sense in discussing the importance to industrial operations of weather prediction, I shall divide industries into three categories, on the basis of degree of such weather dependency. Those that are directly weather dependent, it seems, are agriculture, public utilities, especially water and water-generated electric power; fuel manufacture and distribution, recreation and tourism, and transportation and storage facilities for commodities. Those which are secondarily weather dependent are finance, insurance, farm machinery, marketing and distributive services, merchandising and advertising. There is a third category of economic endeavors which will become weather dependent or more nearly so: those having to do with the providing of medical needs and of taking care of hospital emergency cases, out of which likely will come better hospital facilities and medical personnel.

An international weather predicting system should affect food raisers. When we can predict weather accurately for long periods, there will be better use made of marginal food-raising areas. Population pressures will thereby be somewhat alleviated. Planting a particular crop for a particular season will be feasible. Of course, these innovations may not be necessary, for science and technology are about to give us some techniques to compensate for our shortcoming in food raising: synthetic photosynthesis and algae-growing; harvesting of the sea; economical desalination methods, as soon as we have nuclear energy power pumps, to eliminate the threat of drought; and growing crops under plastics, to multiply yields in areas of stable weather. We also have the job – and the weather-predicting system doubtless will help us in this – of overcoming tradition-oriented methods of food-raising, such as devotion to planting dates and to succession of crops.

Long-range forecasts – those extending over several months or even a year – will prompt the complete withdrawal of acreage that is now under cultivation despite long climatic odds. Rather obvious examples of areas where such a change would be introduced are the northern

Canadian wheat areas, the Russian new lands, and the Iceland margins — but I suspect we could find their counterparts within the boundaries of the United States. Good long-term weather forecasting will promote the establishing of new industry to supplement the income of certain classes of farm laborers. There are industry types, of course, that do not need a full-time labor force. There will be substitution of alternative crops and discovery of ways to sell people on using them. More attention will be paid such techniques as irrigation and intensive dry farming, and investment in loss preventors, such as smudging equipment.

From a weather-prediction system such as we have been describing may come a more clear-cut definition of the role of government in farming. In the past the government has set production goals and price supports, and special credit terms. It has subsidized certain practices, maintained parity of farm prices, managed international market operations, and handled surplus disposal and gifts abroad. In the future, the government may devise a government-guaranteed, weather-related type of credit provision, farmer education in new industry, crop insurance to provide financial reserves for the withdrawal of land, and storage schemes to carry over supplies on subsistence agricultural systems. The government may renegotiate international quotas, to allow for international marketing and significant increases in production substitutes, and originate international granary reserve schemes to provide for emergency supplies to areas with serious crop failures.

In transportation, we will have the almost complete elimination of weather dependency of aircraft, ships and trains, a better allocation of freight transportation facilities, and more information for planning the handling of bumper crops and the distribution of fuels, such as coal. With respect to water and water power facilities, there can be a more effective use of dams for power, transportation, and irrigation. As for the fossil fuels industry, there can be an elimination of seasonality in extraction and production, less need for overtime, a better use of transportation facilities, and perhaps an elimination or a minimizing of much of the complex pricing and production policies of the industry and government.

Weather disaster mitigation can become a reality. We shall be able to know beforehand what the additional equipment and personnel needs will be, as well as the legal procedures to be followed. There may be a better definition of the role of government in providing law and policing in such emergency situations. These advantages are being claimed, of course, with the fullest recognition that the actual behavior of people faced with a major disaster is very hard to predict.

I would like to discuss the implications of short-range weather predic-

tions (i.e., from 7 to 30 days). Let me mention quickly just one — tourism and its related activities. Good weather prediction might pave the way for cooperative arrangements among providers of tourist facilities, a rescheduling and repricing of transport facilities for tourists, more “sophisticated” weather insurance, the discovery of additional sites, and a long and profitable look at non-weather-sensitive attractions.

There are also technological by-products of the space program on the horizon. Atomedics — a new word to stand for new medical practices in the atomic age — will be chockful of dramatic innovations. For example, new ways of diagnosing cardiac disorders await the discovery of pertinent physiological indicators, and the development of appropriate telemetering devices for patients, including compact power sources. Such change, however, will have to be timed to other changes, particularly in attitudes and sentiments surrounding the doctor-patient-society relationship. There will have to be major revisions in the legal, moral, and economic aspects of this nexus. For example, who will be responsible when the machine-made decision is wrong? How will the patient who does not trust a computer but cannot afford a “live” doctor be handled? How much of the doctor’s traditional job will the machine be permitted to take over? What changes in the training of medical personnel will be made, and what changes in the makeup of medical economics will ensue?

A word about new fabricating materials is in order. These will be light in weight, strong, resistant to temperature extremes, and non-corrosive. But there will be disadvantages too: Disruption in the communities which have been and still are furnishing raw materials for the products which are currently on the market; changes in labor skills; and a redistribution of labor. Maintenance and service personnel will be reduced, because these new products will last longer and require less upkeep. And there may be some disruption of international trade patterns stemming from all this.

Advances in aircraft propulsion will permit high speed shipment of freight. Here the problems will include shaping the product to fit the space vehicle so that it can be properly protected, dismantling, and initial design considerations to protect whatever is being transported against acceleration, vibration, sonic and impact damage. Aircraft lifting and braking rockets are around the corner. These have implications for shorter runways, permitting less acreage in airports, and for jet transport for remote areas.

Next, a word about industry-government relations seems appropriate. The government’s handling of scientists is a problem that is already with us. I believe that as we move along technologically, we shall experience

— and I think this is especially true because of the impact of the space program — a greater participation of government in economic life. I see this as a trend which is actually being accelerated by the space program. The space program and similar government-supported endeavors are hiring many scientists these days, particularly physical scientists. Some of these scientists are being handled in ways they do not quite understand and conceivably do not like. Some are expected to be scientists, with traditional universalistic values, and at the same time policy decision-makers who must carve out for themselves their proper niches in a power structure. These conflicting interests in the scientist have to be recognized, and somehow have to be handled. He fears that his work is not being given proper recognition, that he is being “used” by politicians and other interest groups, that he has little chance to use his own methods and pursue his own goals, and, perhaps as important as anything else, that he cannot afford the luxury of failure, historically considered to be the birthright of the scientist.

There will be jurisdictional problems in this industry-government nexus. Patent ownership regulations may have to be revised. The financing of some of the efforts, particularly the space program, if done by private industry, will call for a revision of anti-trust laws that will permit a sufficient accumulation of monies to do these sorts of things. Small businesses, in the age we are about to face, will have a harder time.

Companies involved in the space effort, exclusively (e.g., missilery) or partially (e.g., electronics), are in the throes of a large variety of problems — in financial arrangements, personnel handling, organizational change, and relationships with government. Realistic definition of the future for these firms includes the need for long-term investment, recognition that risks will be long-run, and that return on investment is likely to be quite conservative, a phenomenon which may have rather serious implications for private investment in such enterprises. In a situation of the space program type, where the product is custom-made and limited in amount, where government is the chief consumer, and where there is no price mechanism, profits will have to be negotiated, perhaps in a manner similar to that used earlier in atomic energy development, and a new scheme will have to be devised for computing performance efficiency. The net result of all this is more government control over industry. And there is the distinct possibility that businesses will be “guilty” of some “questionable behavior.” They may resort to stockpiling scarce scientific and engineering personnel, and to pirating personnel from government and business competitors.

Now let us turn to the last topic I plan to discuss here: How space

technology may change cultural values. Let us assume that in the very near future — or, for that matter, at any time in the future — extraterrestrial life will be discovered, or we travel to another planet. How will this affect our behavior? There will be a growing concern for a more precise definition of the universe and man's place in it. There will be increased interest in understanding the dynamics of and the belief in the ability of man to control social change. The nature of human nature, man's limitations, and, perhaps more importantly, man's potentialities will have to be reexamined. It is appropriate to speculate here on changes that are likely to take place in man's image of himself. Even the poet, who, I think, historically and quite habitually has seen science as anti-human and mechanistic, may change. Our concept of Biblical teachings — our concept, even, of heaven and hell — may be altered by the discovery of extraterrestrial life and by travel to another planet. In fact, it makes sense to argue that we are about to move into a period of much unlearning.

Sociologists doubtless have already turned over in their minds some of the major value orientations in our society which may be affected by space age discovery. Let us examine some of these (and here I am indebted to Robin Williams and his book, *American Society*, for ideas). Our emphasis on *personal achievement* finds expression in the astronaut as an extraordinary person of unbelievable accomplishment, despite the fact that in reality he is only one of a very large team. Our culture values *success* measured in terms of action and mastery of the physical world. Ours is a land, in Williams' words, of "ceaseless activity and agitation," where individuals, in situations lending themselves to expression of individuality, are encouraged to perform at full capacity. Our devotion to *individualism*, permitting, and even encouraging, a wide variety of achievements, makes room for the space effort. Technology, because it enables us "to control the world," is good; in fact, *progress*, another value, is defined substantially in terms of technological innovation. *Efficiency* and *practicality*, while perhaps not themselves culture values but simply derivatives therefrom, are everyday watchwords in American life.

Freedom means different things in different cultures, but one of its components as we see it is an underlying psychological constellation that includes self-confidence, expansiveness, and the individual's belief in his chance to make the choice he wishes to make. Surely this conception of freedom appears in generous supply among the supporters and near-supporters of the space program. Conformity as a value in our society appears to have many origins: one must conform in order to adjust satisfactorily to group life; we need to conform to protect ourselves from outside dangers; and one's chance to become upwardly mobile hinges on

the adoption of certain conforming behavior patterns. But in the economic realm, where behavior has concentrated on the sanctioning of technological and economic innovation, where the notions of individual initiative, the right of the individual *qua* individual, and personal independence have held sway, *nonconformity* rather than conformity has been the practice. So it appears that here, in subscription to nonconformity in the economic realm, the space program can find some of its *raison d'etre*.

But our culture is one of multitudinous value conflicts. In developing this thesis I shall draw heavily on the formulations of Clyde Kluckhohn and his interpretation of the work of many others (e.g., Stouffer, Jacob, Sutton, William H. Whyte, Kardiner, Riesman, Schneider, Dornbusch, Collins, Spindler, Allen, Morris, Gillespie, Allport). It is argued that the drive for personal achievement is being diluted or subdued to some extent these days by a cultural orientation to group values rather than personal values. There appear or are implied in the writings of several authors, whose books have the knack of getting on the best seller lists, warnings of our striving to achieve similarity rather than uniqueness, of our greater concern for respectable and stable security than for future success, of the gradual disappearance of the old pattern of tense and highly competitive striving in favor of being less antagonistic toward other peoples and less determined to transform them into a replica of ourselves. Along with this change, some argue, go a greater tolerance of diversification in manners and morals, and an emphasis on “being” rather than “doing.” My reaction to all this takes the form of two observations:

Actually we do not know just what remains of old values and attitudes, or the magnitude and complexion of the new; and what are claimed to be the current dominant values of our culture are a function of who is expressing them. The physical scientists thrive on change, the humanists often resist and even resent it—and the social scientists often are caught in the crossfire. The opinions, attitudes, and values of so many are unknown simply because they are not heard, a fact which prompts us to entertain the possibility that silence, rather than giving consent or assent, may actually be a reflection of dissent.

To the extent to which science itself is an integral component of the value system of the American culture, the space program is the benefactor. Science reenforces so many of our other values and orientations — rationalistic-individualistic tradition, discipline, systematic diligence, honesty, efficiency, and faith in human reason and in the order of nature. We may not believe that science will save us, but it is with us, full-blown and demanding our every attention.

5 CULTURAL AND SOCIAL CHANGES •

Dr. Bernard J. Muller-Thym

WE ARE LIVING at the end of the Neolithic Age. The changes taking place in the world today are not merely changes from one form of society, one form of technology, to another. They are so wide-sweeping that they are taking us from one major epoch of human history into another.

To find a parallel set of phenomena, we must go back many thousands of years ago, to the beginning of the Neolithic Age. At that time, another set of changes occurred, and the race of man entered a completely different way of life from that which he had led a few hundred, a few thousand years, before.

Therefore, I am going to discuss what it means to live at the end of the Neolithic Age. The changes in which we are involved are deep, pervasive, irresistible. We may stay them for a while or in some part of the world, but we cannot stay them everywhere, nor for long. Their direction is irreversible; they are happening all together, and they are happening one as a function of the other. Our past has prepared us only partially for them, and for some of them, not at all.

Among the changes are these:

1. *In work and property.* Most of what we have known as work in the past is disappearing rapidly. And our concept of property is changing, for the things one owns and the meaning of what it is to own are at last approaching the end of a long series of changes. At the beginning of the Neolithic Age, when man settled down on land, he invented agriculture. First there was sacred, and only later, apparently profane agriculture. With the invention of agriculture came the invention of property, and then the ethical description of what it was to own something; but here the act of owning is defined in terms of a thing-type object. And so, for ownership you must have some *thing*. The act of ownership establishes some kind of relationship between a person and an object, excluding others from this relationship. However, this kind of ownership did not appear until man settled, became static, became Neolithic. Then, at that

stage of history, man invented this exclusivity, and the residence of ownership in something material. Gerard Piel, in his book *Science in the Cause of Man* describes these two phenomena eloquently.

2. *In the family.* Even until recently the family was a kind of plant with dependents, relatives, servants, slaves, living in a house or house-type factory, for a long period of time, in the expectation of the owner's creating an estate and passing this on to his descendants. But the family at last has been pared down to the bare core of a husband and wife, some children, no servants or relatives. Members of a family live for increasingly short periods of time, not in a house, but in a space valve. They move from one such space valve to another in our society, not attached to land, to city, to house.

3. *In business.* The meaning of business has changed. Instead of depending upon agriculture for the creation of wealth, supplemented by mercantile activity, and then independent, sporadic invention occurring as a result of genius, we have invented the organization of invention. And at the very same moment, we have brought into existence — and in the decade, I should say, of the 1950's recognizably for the first time — this institution which, for want of a better word, we call a business; and have given it the role of being the prime wealth-generating, wealth-creating organ in our society. At the very moment when we have done this, the definitions of what a business does, what wealth is, what the value of economic exchanges consists of, and the things by which it is measured, instantly change.

4. We have moved out of a mechanical or electro-mechanical age into an electronic age, whose characteristics are instantaneity, totality and random access; and this moment has occurred at the very same moment when we have achieved a plenum of science and technology, and an interpenetration of cultures. At this moment, however, what we have known as sciences and technologies disappear, in the same way that property and boundary lines disappear.

5. The same forces are moving us inexorably from tribe to polity.

6. With these changes there now emerge organizational forms not bureaucratic in nature, not whose principal dynamic lines of force are lines of authority and power, but rather forms which are based more on the requirements of an action-communication network, different from the bureaucratic forms with which we have been familiar. And at the same time the concepts and institutions of authority with which we are long familiar, and which our ancestors labored many centuries to bring into existence as reinforcements for our social structure, now find themselves

naive and inadequate for carrying on our conduct in the world which we are just now entering.

At the beginning of the Neolithic Age, man, who had been nomadic, living in some kind of loose family tribal association, settled down. After having been mobile, man became static. When he became static, one of the first things he did was to invent the wheel. Contrary to what many people think, the wheel, at least as we know it, is not an old human invention. Clubs, primitive arrowheads, perhaps the lever and fire, were old inventions. The wheel was not.

We are living at the end of the age of the wheel. It is interesting to reflect that the wheel was invented just as man became static; in centers of greatest density and of maximum stasis today, we find the greatest concentration of wheels.

Wheels have been important to the Neolithic man. But even he did not turn them into engines or parts of engines until relatively late. To take one, very old, example, I own a lovely Neolithic pot, which is about 2,500 to 3,000 years old and which comes from Hunan in northern China. It probably was turned on a potter's wheel. Then, too, I have some exquisite Neolithic jades, dating from about 4,000 to 6,000 B.C. Each jade is a disc with a hole in the center. They are not wheels used as part of an engine; they are religious objects, once used in the cult of sun-worship. After these came the appearance of the wheel as we now know it.

For an example of the changes in machines, take the IBM machines. All the things the old IBM machines did depended upon the revolution of the wheel. The passing of the cards, the harvesting of the information, the inputs into counters: all these depend upon the position of the wheel at some moment during its rotation.

The earliest computers were a transition, equivalent to an animal between monkey and man. A computer like the vest-pocket ones, like the "650," has a rapidly rotating drum for the sake of the program; it is a transitional form. The new generation of computers does not depend upon the revolution of the wheel.

The same with telephones. The telephone dial system found in most parts of this country is electro-mechanical; it depends upon a wheel, and upon moving parts. There is a new telephone exchange on a trial basis in Morris, Illinois. This exchange, electronic in character, has no wheels, no moving parts. It has a memory, and it does things in a completely different way.

For another example of how we have been Neolithic until now, and that we are no longer Neolithic (although we have some survivals), take

weaponry. In weaponry, we have had several changes in technology, in speed of weapons, in changes in armor to match the speed. But basically, we have been concerned with missiles, which are projected and which have been selective in their action.

At the beginning of the Neolithic Age, there were fairly well-polished arrowheads. At the next stage of technology, a long pole was put behind the arrowhead for a propellant. Next, a shorter pole. Then, the pole was shortened still further, and put in a crossbow. The flint was changed to metal, and put in a tube, with some gunpowder behind it. Then the rate of firing was speeded up.

The weapon which is characteristic of our age is random, total, non-selective, instantaneous. You cannot play the war game with a non-Neolithic type weapon. With a Neolithic-type weapon you can go on; you can prolong the game for some period of time and have some fun with it. With a random-access, total, instantaneous weapon, it is all over with the first shot.

Moreover, with a post-Neolithic type weapon, like any of the nuclear bombs, you have everything in one bomb – and you just cannot spend that much money, you cannot waste that much, you cannot squander that much of the gross national product in the new kind of warfare.

The only alternative to this is to spend forty billion dollars and send a man to the moon. This, as a friend of mine said to me recently, for a country as wealthy as ours, with as many things as we have to do, is something like the gift for the man who has everything.

Before discussing the possible impact of these changes, I shall go through what I call “my ten-minute history of economics.”

The first significant moment in the history of economics occurred in the 4th century B.C., when Aristotle discovered and identified this body of human competence and gave it its name.

In his *Politics*, Aristotle describes a body of knowledge which is concerned with how the individual should order his life well; then he describes what it is for many men to live together in a well-ordered community, and this body of knowledge he called politics. And then he says: in between, there is a competence which is concerned with a society that is more than one but is not the kind that a polis or a state is. This body of competence is what we call economics. The object of this body of knowledge is wealth.

Aristotle names economics after the *oikia*, the household, because this was the prime and only competent, complete wealth-generating organ in the ancient world. In the ancient world, the household was a machine for making wealth. It also was an economic unit. It had property, oxen

herds, slaves. The major source of wealth came from agriculture, and there was some fabrication: harness-making, sword-making, shield-making, weaving.

From the ancient world until the present, we have had other kinds of economic activity. There have been the activities of traders. In this category I would include the activities of the Barbarians, such as the Franks and the Merovingians. In the spring of every year, the Barbarian tribes held their form of a general sales meeting, in which they decided what tribes they would plunder, how many furs and women they would get. They set their sales quotas, and they went off and spent the summer making budgets.

There have also been banking activities. And there have been the kinds of economic activity on which most of our modern corporation law is based, one of the reasons why the law is obsolete. This is an example of the kind of activity to which I am referring: A group of people who had some money would engage a ship's master. He would impound a crew, get a vessel, go to Africa, get slaves, and take them back to America, where they would be sold for money. Then the people who were paying for this venture would take their new wealth back into England and disband. This was an early extractive industry. What they had over and above their expenses, they called profit. And this is what becomes P & L on a statement. Someone owns it and distributes it to his stockholders as if they owned it.

We had many things like this. The theory of the early economists follows the same pattern as the theory in physics that there is just a certain amount of matter in the world, and there is just a certain amount of motion or of energy. All that you can describe in classic physics are the transfers that take place. You can change the piles in which matter is gathered; you can describe the mechanisms by which it is moved from one place to another — but that is all!

Likewise, in classic economics, there is a thing called wealth. This wealth is related to *thing*-type objects. By transforming them or by doing something to them, such as weaving, hitting, painting, carving, changing their chemical molecular structure, one can make them more valuable. And one can re-allocate the packages in which the wealth is distributed.

By and large, the Socialists, as I read them, and the early economists do not differ on this point at all. They start with the same basic assumptions; they differ simply in saying who should have the wealth, or in the mechanisms of redistribution. So they differ only in the matter of the technology of the process: How are you going to shove wealth around?

We have also lived up to now in an economy of scarcity, not the almost

absolute scarcity of poor, non-productive societies, but the tolerable, relative scarcities which made competition meaningful, which put a premium upon productivity, and which enabled us to talk about unemployment (the non-working, non-wage paying status of men engaged in largely servile labor) in meaningful economic measures.

I believe that business today, in this country, and the economy in which it is located are different from what I have just been describing. In our earlier industrial society, business was like this: The founder hires some hands in a factory to make a product, and then he hires some salesmen to sell the product for more than it cost. Then the owner takes his profit, distributes it, and retires. The next generation, the founder's descendants or the stockholders, now own the business, but they keep on splitting up the profit.

New England is full of towns of empty factories whose owners thought that a business should fit that description. Our idea of a business is very different from its antecedents. There is a source of increase of wealth beyond agriculture, beyond the shoving around of mercantile activity. This source is *invention*.

Invention originally was supposed to be the work of sporadically occurring genius. Our patent laws still go this way. Contrary to this, we have invented the organization of invention. We deliberately build organs, such as the Research and Development Department, into our businesses. The whole purpose of these departments is to create imbalance where there was a balanced money system, and to inject risk; because, apparently, you do not start creating wealth until somehow or other you inject risk.

The problem of designing a business with risk is something like the problem of designing a reactor. You must get the thing going, and then, once the reaction is going, you try to keep it under some set of controlled conditions so that the thing does not go wild and explode. But it has to go critical; it must get the reaction going.

In the same way, you deliberately have to inject risk into an economic institution before you begin to get some kind of wealth produced. You have to tap into inventive sources of intelligence and organize this way. Once you begin to do this, then all at once, the business becomes not a closed system, but a system in which output is greater than input.

Simultaneously with the emergence of this kind of business, a couple of very interesting things happened. One, wealth became a function of the total system, not something which is added simply by production. Not only that, but what we call money, in an economic transaction, is a

value which is created in the transaction itself and has no other existence except in that moment.

Except in that moment, or in anticipation of it, it is only inventory. Its value is what you write it off at then. So the value itself, and the wealth, is both created by and exists only in the moment of the exchange. It exists at an intersection in a very complex network. And this very fact, at the moment when a business came into existence as a wealth-generating organ, divorced wealth from property and *thing*-type objects.

We can see how far this divorce has gone. Until recently, most of what people made, traded, sold, bought, were *things*. Mixed in with the material component, there is a competence component in the thing exchanged. For example, shoes are made of leather, string, glue, and also of competence to walk well with feet protected from stuff on the ground. Now, in the great majority of our economic exchanges today, the competence percentage of what we buy and sell is rising very rapidly in relation to the *thing*-type component.

An example is what IBM sells. What kind of business is IBM in? At an executive conference, sometimes the participants go through a little intellectual exercise of saying: What kind of business are we in? If you say IBM is in the business of making and selling office machines, that is one kind of answer. A completely different answer is this: IBM really is selling to people the competence to manage information, the competence to handle a language, and this competence is now achieved in an electronic as against an electro-mechanical technology. The same is true for machine tool manufacturers, and other businesses of this kind. Therefore, we are moving into a world where we are paying more for the non-*thing* component than we are for the *thing* component in the product. (The OK-type, 1962 word for such competence is software, as against hardware.)

Something else is happening in business. The character of work and of the work force is changing radically from what it has been. Up to now, our organizational forms have been those which go along with a print culture.

Like our Neolithic work, printing is linear and fragmented. Reflect on the invention of the phonetic alphabet. About midway through the Neolithic Age, someone in the West invented the phonetic alphabet and writing on paper. This invention and the related technology were completed by the invention of printing from movable type.

The first step was to take the whole universe of discourse, which is multi-sensual, multi-dimensional, reduce it to one dimension, and to one sense, the sense of vision. Then the universe was broken into 26

parts, the 26 letters. The parts are non-significant and interchangeable. Every A is interchangeable with every other A, every B with every other B, and so forth.

Then these bits and pieces are arranged on a line, like T-H-E, B-I-G, F-A-T, D-O-G. This is linear and fragmented. With movable type, the completion of this technology, out of a matrix there can be cast a thousand A's, five thousand C's, and so forth. Then these letters are arranged into a book.

The book was the first massed-produced object in our civilization. The inventor of mass production was not Henry Ford; he was somebody no later than Gutenberg.

On this cultural model, the early industrial engineers made assumptions about work. They figured that work done by human beings was better, cheaper, more efficient if they broke down the process and rearranged the pieces. They took a total chunk of work, a total process or sequence of operations, and broke it into bits which are relatively fine, more on the fine than on the coarse side. Then the engineers arranged these pieces into a linear program, shoving work in here, having work come out there.

Classically, to each bit and piece of work you attached a bit and piece of pay, like piece rates.

As by over-milling flour you take out the minerals and vitamins, so by this system, the engineers have destroyed the natural dynamics and the relationship of worker to work. To keep people working this way, they put some dynamics artificially back into the system.

To keep people in such fragmented jobs and to make the whole system function, we engaged in the system of doing everything twice. We make everything once on paper, all the way through, then once in steel, or wood, or nitrogen, or whatever. The cost of getting, engineering, and processing the order differs from the cost of making the thing as the price of paper differs from the price of the material you are making the stuff in.

We go through the whole productive dance twice — unless we have an over-zealous accounting department, in which case we go through it three times!

Then we create organizationally a supervisor. This person can engage in only a limited relationship with a given number of subordinates. Then if we add the assumption that everybody must have one and only one boss, there is generated, inexorably, a managerial work structure that is many-layered and pyramidal. It gets bigger, bigger and bigger. There is an increase, exponentially in relationship to size, in delays in the transmission of action and messages, in the fragmentation of competences, in

the dispersion of competence within it. It is strictly a matter of structure.

Now, there is no reason why we should use this kind of structure. It was possible to run businesses and governments with this structure when the skills required were few, primitive, low-grade. It happens, however, that at the moment when business develops this way, when wealth is a function of the network of the exchanges which go on within it, and not just of the things it makes, we all at once entered a world where at last we achieved command over nature. We have begun to live in a world in which there is a plenum of science and technology.

By command over nature, I do not mean simply that we are able to invent things like a flying machine or a steam engine, but for the first time, we not only know how to invent something, but also we have organized this process. The process of invention works backwards; that is, you first decide what you are going to invent, and then you select the competences and the technologies that you need for this. If you do not have the technology, you then know how to invent the technology itself — and we are doing this now all the time.

Recently, I was in Huntsville, Alabama, with Werner von Braun and his group of people, who make rockets. While I was talking, very casually, with the man in charge of advanced planning, he said that we know already what we can do in the next fifteen years; it is just a matter of selecting what project we are going to do and deciding that we are going to do it.

For example, one of the things we are thinking of doing is making a space platform. Probably the first effort will be somewhere between Mars and Venus. The platform will pick particles out of the cosmos, gather them and turn them into fuel. Fuel will be made there with just a little, independent, completely automated, cosmic fuel plant for rockets. We will just land out in space and refuel, so that we do not have to take off with so much load on the way out of the galaxy.

That which Simon Magus tried to buy from Saint Peter, that which Albertus Magnus was playing around with in his laboratory at Cologne, that which Roger Bacon and his associates were trying to do, that which Francis Bacon wrote about in *The Advancement of Learning*, we now have!

At the moment when we have it, though, everything that we know as a science has changed. Physics is not what physics was. Biology is not what biology was. Chemistry is not what chemistry was. A few years ago, it used to be fashionable to call the sciences interdisciplinary. But we know that the phenomenon is more radical than that. In the same way that property has disappeared, and boundary lines along with it,

there has been a disappearance of knowledge as something in which you can have property, in which there are areas, in which there are fields, in which there are proprietary interests, like the interests of a professor of this as against that.

With this disappearance, we know that all our university curricula are obsolete, just as those in our technical schools, because, instead of teaching electrical, say, or mechanical engineering, we need to teach people how to design a system. And our professors, not our students, do not know how to do this. We are having to get ourselves through the barrier.

The network of economic exchanges is also different. It no longer goes like the flow of energy in an old-time electrical circuit; it is not like hydraulics or plumbing, where you have water in the reservoir up here, so you have pressure up here and no pressure down here, and water flows down.

It is still possible to engage, as older empires did, with less favored nations, where you treat them as suppliers of raw material and then send back to their people the products you made. But actually, the most profitable kinds of economic exchanges are those which take place between equals and people who are equally wealthy.

California is an example. Twenty years ago, it was very difficult to do business with California. There was not enough money, nor enough people; there was not enough industry, nor enough economic competence. At the moment when California began, in wealth and in economic savvy, to approximate at least the Eastern Seaboard, then it became possible for us to deal with them in a variety and in a volume and richness of economic exchange which was impossible before.

Today's world, too, is electronic, total, instantaneous, non-mechanical. We are living in a world in which there is an interpenetration of cultures, and in which, for all practical purposes, there is no distance.

It is a world in which it is impossible to keep a secret. The only secret you can keep is the fact that there is a secret. Once this is out, anybody with enough resources and enough industry can invent the very thing which is your secret.

This is the kind of world, therefore, in which you move from having security attached to a *thing* to security attached to the network, in which you move from security being attached to stasis to security being attached to increased mobility, because it is only at the maximum of mobility, or at the maximum of stasis, that you have security. In between, you have wobble, as in a gyroscope.

Our concept of machines, too, must change. We have been brought up to think of machines like a stamping press or a punch press or a lathe.

These make it possible for human work to be more specialized, more fragmented, and less complex. Such organization, made possible by such machines, we suppose more perfect.

But this is completely counter to our total experience with nature, in which the more perfect organizational forms are more complex and less specialized. For example, man and dinosaur. Dinosaurs were pretty specialized; a dinosaur had a long neck and could not get signals down from his birdbrain to his legs in time when animals were nibbling at him. The dinosaur is not around any more. Man is more complex, less specialized; man survives.

Considering the nervous system behind a man, he is among the most complex things in nature. And it is very difficult to discover specialization in the human organism. Take the fingers, for example. What can you do with them? You can play the piano, brush your teeth, paint, shave, do appendectomies. The system of our fingers and thumbs is general purpose, non-specialized, highly complex.

We supposed that more perfect machines would be simpler, bigger, more specialized. We made presses that had dies in them, settings; they got bigger, bigger, bigger.

Now, the new generation of machines is not like this at all. One example of the new machines is the machine for making automobile tailpipes. Made by Milwaukee Machine Tool Company, it is programmed with General Electric thermoplastic tape. You start with just lengths of pipe. There are no dies, no machine set-up time, no special-purpose things. But the machine has things like hands: grippers, advancers, benders; and in the back, there is a little console through which a piece of thermoplastic tape runs. That is what determines the shapes that machine makes out of a pipe.

On this machine, you can make eighty different tailpipes in succession as rapidly and as cheaply as you can make eighty of the same one. This is something different.

When you have a network of these machines, which can be programmed and related to each other in a factory, you have the complete capacity of the machine to replace servile work. And it's about time!

To emphasize the magnitude of this change, I want to point out that these machines will replace not simply people who are screwing things, hitting them, chopping them up. The machines also will replace some people who have been engaged in the processing of information. Do not think that only the file clerks have been doing this. There are engineers at drafting boards who should not have been there, making routine applications. There are capable people who are wasting their time in

middle management, using 80 per cent of their time simply handling information. They are using the bucket-brigade technology for doing this. All accounting reports are like this, with a sampling of information passed from layer to layer. This is a horribly inefficient way of doing things.

With the introduction of computers, the technologically unemployed will not be simply file clerks, people who are auditing claims, and people in similar jobs, but also middle management.

Now we have a technology with which we can deal with total information. As a pilot has immediate access to any information in the control tower, we have immediate and random access to any of the total information necessary for the system to function.

The number of people we will need is going to decrease constantly.

Now, at the moment when wealth had been attached to property and property disappears, and when wealth becomes a function of the intersection of the network and at the moment of exchange, the way that we have of distributing wealth — namely, pay for work — is going to disappear, because this kind of work is going to disappear.

Then we will have a real problem in inventing not only the mechanism for distributing the wealth which we undoubtedly can generate, but also the language and institutions necessary for our new world.

You do not own a single bit of property, but you have a right to health; you do not own a single piece of thing (unless you want to name the clothes on your back, or your toothbrush because no one else uses it), but you have a right to be a part of the network where wealth is generated. You own less, less, less, and have a right to more, more, and more.

We do not have any concept of how to adjust. Fringe benefits, unemployment insurance, shorter hours are just stop-gap measures. Retraining of workers — a farce! Of course, there will be training and education, but they will be of a different kind. We will not have to spend as much time at education because the knowledge will not be organized according to the subject matter, and we will not proceed linearly from one course to another. Then we can learn much more rapidly.

Now, all of these changes are changes in which we are involved right now. This is an order of change which is completely different from anything which our ancestors knew, unless we go back about 10,000 years, when they invented property, when they invented ownership, when they invented work, and mechanics based on the wheel, and bureaucracy.

6 THE CONFERENCE IN REVIEW—REPORTS OF FOUR DISCUSSION GROUPS •

Rapporteur No. 1

*Dr. Vincent H. Whitney, Chairman, Department of Sociology,
Wharton School of Finance and Commerce, University of Pennsylvania*

I WOULD LIKE to run through a few things that were said and present these sequentially. We began our first discussion with several comments on urbanization. It was noted that certain trends, such as the economic decline of the center city, or the strangulation by traffic, might be reversed by an awareness of these, and by present attempts by city planners to redesign cities. It was noted that planning has been rather limited in scope up to the present time, and has dealt with a very small area; and it would seem significant, if the emphasis were to be shifted, to take into account the relationship between the city and its hinterland in the broader region in which it is set.

There were a number of questions raised as to migration. We concluded that there is, of course, a great gross movement which exceeds the net, and that actually we are seeing people moving in great numbers in all directions in a highly mobile country like ours. It was pointed out that it was important to find out exactly who was moving and why, as there were probably qualitative as well as quantitative differences, so that migration might mean gains as well as losses.

Our discussion included the desirability of the central city, especially as a place for a life insurance home office, and I think we reached no consensus on whether the center city or the suburb is superior. There were a number of suggestions, including one that the journey to work, which creates a lot of congestion in the city, might be reduced, for example, through a company's housing its staff in the immediate neighborhood. However, there seemed to be more objections to this than favorable responses. One member of the panel suggested that insurance companies should consider whether there was any long-run conflict between their providing large parking areas that brought large numbers of employees into the city center, and the highway congestion affecting the economic health of the city.

Afterward we shifted to other points. One was talent. Given the demonstrated need for increased talent, many persons have felt that not enough talent could be secured, simply was not available. One member of our group presented a chart showing, in effect, that we aren't utilizing all the talent that we do have. In a sample of some 10,000 Wisconsin high school seniors, it was shown that among the students who were roughly equal in intelligence the percentage with plans to go to college varies from high to low, according to the status of the father's occupation; so that, in general, the lower the occupational status of the father, the lower the percentage who plan to go to college, especially for women.

We discussed at some length the problems of salvaging bright uneducated young people through such devices as more scholarships, pushed down to take in the top one-fifth, and not simply the top one or two per cent of high school graduates as the present National Merit Scholarships do. And we spoke of the need to try to spread the intellectual climate so there would be motivation for the talented who come from homes not accustomed to sending their children to college.

It was suggested that we might need a national policy to identify bright young people early, and also more intensive work should be done by teachers in giving encouragement to such students. A network of colleges covering an entire state, with a special concentration perhaps in urban areas, was also suggested as being highly desirable, particularly including junior colleges, as the State of California has already developed and where they are important in providing particular technical skills which are badly needed.

We had a discussion of automation in relation to the future of our economy and the labor force; and it was thought possible that automation trends might lower the marginal productivity curves of human beings. With automation, more of a person's income might be independent of the work he does and come not from job performance, but from such sources as Social Security or from shares in the country's productivity.

There was a considerable discussion and a general reluctance to accept the idea that the productivity of men will be greatly diminished relative to the productivity of machines.

We agreed that we would be faced in the near future with the problem of what to do with our leisure time, with men not starting to work until they were 30 and retiring at 35 — to take an extreme case!

The significance of work in the life of the individual was stressed, and there was a general feeling that there are many reasons why work

should and must be maintained. But we reached the point eventually in our discussion where one member said that he thought we ought to give some consideration to the backbreaking toil now going on in countries like China; and he said if we are going to have a high degree of automation, let's first continue a high level of production and distribute some of the fruits of our wealth before worrying about what to do with our leisure time.

We were stimulated by the paper on changes in income distribution and consumption in the United States. If the Soviet Union counted only material goods as part of the gross national product, did this mean that the Soviet Union would not be counting the teaching or the training of scientists, which are important parts of their program, and would this omission make a comparison of Soviet and United States GNP trends less accurate than would otherwise be the case?

Another member of the panel felt the crucial question was not absolute levels of GNP in the two countries, but rather, the trends in each: Are the two countries coming closer together, or are they separating?

There was a suggestion that perhaps we should not make comparisons, as this distorted the picture; but it was felt that it would be a worse disservice to try to suppress or brush aside figures to make the United States happier. It was also pointed out that actually there might be something encouraging in a rapid increase in the GNP in the Soviet Union, if this implied a larger share in the status quo and, consequently, a lesser inclination to use war or other adventures.

Rapporteur No. 2

Dr. Joseph W. Wiggins, Professor, Department of Sociology and Anthropology, Emory University

OUR DISCUSSIONS were enlivened by the variety of backgrounds and points of view represented. Population trends seen as threatening by some were viewed calmly by others. Recurrent themes were the decline of the central city, the impact of automation and the changing division of labor, the changing character structure of the American people, and needed research in population generally – and in its insurance aspects specifically.

The central city's main problems were identified as (1) loss of population, (2) changing characteristics of remaining population, and

(3) the growth of suburbs. Net loss of population by the central city not only produces strains in the economy, but also in the broader social order. Declining property values resulting from reduced demand affect individual owners, but on a larger scale losses may be suffered by corporations and institutions. Tax revenues are lost.

The central city's new population was described as poorly prepared to assume the responsibilities of manning and carrying out the city's traditional functions. The accelerating concentration of masses of unskilled, uneducated, and un-motivated people in the center has placed at least temporary strains on tax sources, both for basic maintenance and for training or retraining programs. The new population in effect demands but does not contribute; it furnishes a disproportionate share of the chronically unemployed, the dependent, and the deviant.

The movement to the suburbs has had many diagnoses. Among other explanations, the flight from "excessive" taxation and from the "new population" may both be significant factors. In any case, there is no disagreement about the facts. Near-universal commuting into the city for work or play has declined as the suburbs have been better served. The increasing independence of the suburbanites, who have been followed in their hegira by retailers, service establishments, and industry, has resulted in a social and political fragmentation of the metropolitan complex. Our group shared a certain sadness in the face of the city's changes, but moved promptly to consider courses of action currently offered to meet the problem.

Three basic programs were identified: (1) urban redevelopment, or the restoration of the *status quo ante* — a goal which might be labeled "reactionary" but for its "liberal" proponents; (2) stabilization of the population through devices to hold the population in place by persuasion, subsidy, or coercion; (3) acceptance of change, depending for solutions on the adaptability of the American population at all levels. A fourth approach, which was not advocated in the Group, is the Utopian: since the city is in such a mess, it should be razed and rebuilt by prescription.

Recognizing that the city's major functions are essential in modern America, the possibility of performing these functions in a decentralized society was questioned. Several members agreed that, using modern methods of communication, the functions of coordination, integration, and control do not require immediate physical access to the population. Both business and government have developed efficient systems of centralized control with decentralized operations. Look at the New York Stock Exchange.

The urban redevelopment technique received considerable attention but limited enthusiasm. It was noted that, in some cases at least, urban redevelopment might restore or maintain property values (and the tax base) in the vicinity of the redeveloped area. However, experience in particular cities showed that the displaced population was priced out of the housing market in the redeveloped area, and tended to increase density around the area. Low occupancy rates for redeveloped housing allowed the inference that there is less than a frenetic demand even by those who can afford to pay. Some local studies were reported to have shown that the movement back to the city was more likely in later middle age, after the children are grown.

Before any solution was found for training the new urban population, the group was challenged by a statement that there is a general refusal to face the reality of automation. It was agreed that automation initially produces obsolescence of skills and of entire occupational groups. The convergence between the problems of city population and the products of automation produced a convergence of answers. It was proposed that training programs already established by private industry be expanded, with each industry training the labor it needed and thus gearing training to actual demand for labor. This might, in effect, serve as a type of capital formation. In counterpoint, the investment in labor skills was recognized as something less than fixed, since the trained man can take his skills to other plants, other regions. It was also moved that the United States Government establish or underwrite additional vocational and technical schools for retraining displaced workers, but this idea was not viewed with unanimous approval.

Automation's reduction of the total human effort required in production was found to produce two adjustments. In lieu of unemployment, the work-week may be shortened, both to absorb the contribution of the machine and to allow the employment of more workers. In connection with this practice, the group was asked whether there is any known irreducible minimum of working hours, physiologically and psychologically.

The third major focus for our group was on the causes and effects of changes in the American character. Members of the group espousing the values of individual initiative, personal responsibility, and personal decision-making observed that the values seem to be in decline. It was noted that other values seem to be gaining adherents rapidly — such values as the yearning for security, avoidance of risk, dissaving, and dependency. Is government making Lotus Eaters of us all? On the other hand, does corporate decision-making for workers encourage a

trend toward socialism? Do labor union welfare or retirement schemes usurp the individual's right or responsibility for his own welfare?

How can we, as a nation, capitalize on individual excellence, wherever it may be found, while maintaining the egalitarian commitment? What kinds of people are willing to move beyond conformity in the attempt to resolve old and new puzzles with really new answers? How can they be found, how nurtured, how cultivated, how placed?

Rapporteur No. 3

*Dr. Raymond W. Mack, Chairman, Department of Sociology,
Northwestern University*

I THINK WE CAN ORGANIZE what we covered under three headings: urbanization and suburbanization, social stratification and power, and technology and social change within our institutional framework.

We began with the question whether the insurance business was moving out of the central city. We heard from the president of one company that has, and from the head of another company that hasn't; in fact, that was moving in! The latter pointed out that if we want people to work in the central city, then the central city has to be made more attractive.

The question of motives for suburbanization was raised, and I think we got these down under three headings eventually: a reduced marginal cost of familism; the space demand; and the fact that we subsidize prices. One man pointed out that the familially-oriented suburban life reduces marginal cost, both in values and in money, of having one more child; and this is a drive toward suburbanization.

We were reminded that space demand was the essential thing we were dealing with in the spreading of the city. And another insurance executive raised the point of price as a factor in suburbanization; namely, that home ownership is subsidized, and home rental is not. That is, by taxation there are economic inducements for suburbanization.

The question was raised of the future of urban renewal, and we talked here of high-cost apartments in the central city, and the fact that they can be rented — there is a market for those. Some one then brought up the two-house family, which caused those who had been talking of space demand to groan anew. But we seemed to have some idea that there is some trend in upper-income brackets toward the two-house family.

In the Washington area, it was pointed out, one substitution you see for the suburban house is the combination of a city apartment plus a shore cottage or cabin, thus meeting the two functions the suburban house is supposed to meet. And then a New Yorker drew attention to the new pattern of giving up a house in the suburbs, particularly for older people whose children are grown, and moving into an apartment, but in the suburbs – suburban apartment life.

At this point, another man urged us not to exaggerate the movement back to the city, saying that while there is such a movement the balance of the movement clearly is from the central city out into the suburbs. Some one raised the question whether Negroes live in the central city to be near their work, and we concluded that this was not true, but rather that they lived where they could get housing; and more and more of the work of the minority populations is in factories, which in turn are decentralizing along with other functions of the central city.

Among the questions we raised and didn't answer were those of public versus private transportation, which several people felt was a major problem in saving the central city. Was the central city fit for human habitation, and, if not, could we make it so? We were told a little about a life insurance company's program in Chicago, the investment opportunity possible in both making the central city fit for human habitation and at the same time providing housing for minorities.

And from the academic side we were reminded that most of what we had talked about here under urbanization and suburbanization were fundamentally consequences of the rate of population growth. We heard about some interesting research on the prediction of human fertility, where women were interviewed as to the number of children they intended to have, and then there was a check-back after five years and it was found that the predictions were indeed excellent.

One thing fascinating about this was that another sample of women indicated that the present 18-to-24 age group plan to have about a half a child less than the previous sample interviewed – which, while it may make some odd-looking families, might help the population pressure situation.

A company president posed the question of civic leadership for the central city, and the difficulty that suburbanization has in drawing the business leaders, who work in the central city, home to the suburbs at night, as far as voluntary civic work was concerned. Another man raised the question whether business was inherently conservative, and we batted that around a while.

The main point we got to at one session was the need for research on

several of the problems we've been talking about. We talked about the need for research on social problems, and the need for research on costs, ways and means, possibilities, and the revitalization of the central city.

Our attention was called to the need for research on the extent of filial obligation. We talked about the possibility of the support of the aged in our society by their children who do not at present support them, through insurance for retirement income.

Then we turned to the talk of the great wealth of the insurance business, and whether wielders of such great power do not have an enormous obligation to the public, and so forth. One sociologist said he thought large-scale organizations were such that the people in them — individuals — did not really wield great power, whether they had assets of billions of dollars or assets of students or assets of church members, that the nature of bureaucratization was such that he doubted that the individuals involved were wielders of great power.

At one point we turned to discussion of the data on inequalities in income and reduction of inequality, whether this was a good or bad thing. We got into the research on that talent pool which is wasted because of the children coming from low-income families where they are not taught the motivation for upward mobility, much less have the economic opportunity. This central value in our society, the commitment to upward mobility, seems to me important for you insurance people to be concerned with.

Rapporteur No. 4

*Dr. Clarence C. Walton, Associate Dean, Graduate
School of Business, Columbia University*

I WANT TO TRY to impersonalize some of the interesting propositions and observations made by our group, realizing, though I do, that such filtering through my eyes may not reflect these points adequately.

I would like to analyze first, as our group did, some of the hypotheses dropped by some of the major speakers in terms of their relevancies to our society; and then discuss selected trends that our group identified as having impact with the decision-making process in a liberal society, or with the goals — the commitments — of an American society. And then we would move into a translation of how these decisions and goals are actually implemented in terms of certain selected problems; the effect on people who might be distressed because of age, of sex, of color, of occupation. And then we moved externally into what might be the inter-

national commitments of our American business. And, finally, we did two things I thought unique. We speculated about the implications if the cold war should end. And we wound up by saying what might be the relevancies of many of these propositions to the life insurance industry.

An allusion to peer leadership found a warm response with our group, although there were strictures on the feeling that this might be a new phenomenon, or the feeling perhaps that among the young there's an anti-intellectual bias. However, I think germane to all our discussions was the conviction that understanding peer leadership had significant implications for the total society. To illustrate: What is the influence of the peer group on women's attitude toward the number of children? Toward the responsibilities of the middle-age groups to parents? Of the attitudes of the aged toward early retirement? Or of the peer group in terms of the aged living near to or apart from the offspring?

The conjecture that *lebensraum* induced a higher birth rate was looked at interestingly; but our group did raise certain serious questions that we felt were unanswered, such as: Why is our birth rate running consistently higher than the birth rate of Western Europe? Why is it that we must look at our norms for evaluating correlations, and not be trapped into the pre-1935 formula of relating industrialization and urbanization to declining birth rate – or stabilized birth rate?

And finally, in terms of work patterns, our group was quick to accept the fact that these patterns are changing enormously in time and space, that our dichotomies between work and play were sharply etched. But I thought, interestingly enough, that this group said, as a working proposition, that business enjoyed a monopoly – traditionally, at least – over a man's life in terms of his work commitments; and therefore, it fell to business to make certain that the commitment was not to a job specialization which robbed the man of full growth, full potential, and that clearly the job should not be related to the total human activity.

Indeed, implicit in this discussion was the notion that more education was necessary perhaps at the mid-career level, and we did not explore whether or not this kind of education fruitfully should go on within the industry, such as A.T.&T., or in an Arden House kind of setting.

Now, in terms of the decision-making process, our group observed that cities offered an interesting anomaly in being the administrative centers for far-flung business operations, while at the same time the surrounding residential core was declining; and therefore, serious consideration had to be given to whether or not this core could sustain this kind of business concentration, and whether or not it was really a local or a national problem.

In terms of decision-making, too, the question was asked: Will the aged, because of inability to adjust quickly to technological change, be a hindrance on the necessary social innovations which a technological society would demand? What is the impact of the defense program on the decision-making process? Are too many things subsumed under the noble aim of military security? And are we not looking rationally at some of these clear issues, such as aid to education, aid to distressed areas, and the like?

And finally, there was a sense, I believe, that competition as a disciplinarian for bad decision-making was going out the window, particularly with government procurement practices which were on a negotiated, not a competitive basis, with negotiated profits as a by-product.

And finally, of course, the problem of size was raised.

We looked at the old problem of the social scientist's role: Is he to be descriptive or prescriptive? Interestingly, our group said, in effect, that really one of the major functions is to redefine the commitments of our society, and that instead of asking questions in terms of responses clearly and sheerly à la Toynbee to environment, we ought to say, instead of, should we remain work-oriented or consumer-oriented — will we? We should turn it around to an oughtness, a *should*.

Indeed, in terms of the big cities, should the question be, do they have a specialized role in terms of stimulating the arts, the creative arts, supporting operas, et cetera; and what should be the society's commitment for these kinds of national services?

Now, when it came time to put the decision-making and the goals to work in selected problems, I thought our group demonstrated some interesting differences and similarities. I've said that we defined the groups externally and internally — internally in terms of age. Should, for example, the country's insurance companies invest in cities and projects designed exclusively for senior citizens? Or should we seek an integrated kind of housing for the aged group, so that the relationship to other age groups would be maintained?

Is there not more need of study on the influence of force retirements, which denies the elder person a function, and what this means in terms of growing senility? It was clear that we do not know enough about the relationship between chronological and biological aging. Should retirement ages be moved up, as in the military, so that a man could look for two careers? Or should it be extended to capitalize on experience? And if we do, what impact does this have on the 35-45-year-olds who see room at the top sharply constricted?

We touched on many other problems. We felt that the attitudes of our

society toward the woman – her role as a widow, for example, or her role as a consumer – were not adequately explored. And we wondered about private and governmental programs, in terms of subsistence, farmers' problems, the unemployed miners, migrant workers.

As a working proposition, I thought our group accepted the interesting notion that more homogenization was going on than ever before, and that if this homogenization occurred in layers you might see class identifications which would make class conflict more likely. On the other hand, if it became a total process, you took certain risks in terms of a sort of standardization and uniformity, which is alien to the American individualistic tradition.

**PARTICIPANTS IN THE ARDEN HOUSE CONFERENCE
ON "THE CHANGING AMERICAN POPULATION"**

October 1-3, 1961

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