RICHARD T. ELY LECTURE

Two Centuries of Economic Growth: Reflections on U.S. Experience

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Over most of the two past centuries, the country's growth was a movement from the small, largely agricultural, economy of thirteen divided colonies on the Atlantic shores, to a unified, industrialized, advanced economy of continental dimensions. The combination of a high rate of growth of population, peopling an expanding territory, with a rise in per capita product and productivity associated with a stream of technological innovations and rapid shifts in the structure of production, was of uniquely large impact in the United States; and while sharing much in common with the growth experience of other, currently developed, countries, displayed several distinctive features.

Reflecting on this process, one may raise four questions. First, how was the high rate of population growth attained? Second, how was the impressive rate of growth in per capita product sustained over most of the period, at least back to the early 19th century? Third, how, in the face of divisive sectional interests and differential impacts of rapid economic growth, was unity preserved and economic inequality affected? Fourth, how does one evaluate the drastic shifts that occurred since World War I in the international framework within which this country lived and grew? Such broad questions, and their implications, can be treated only briefly and incompletely; but, at least, they may help to organize the discussion.

I. The Growth of Population

In the mid-1770's, the population of the thirteen original colonies was 2.5 million. At that time, the population of Great Britain was 9 million; of France over 24 million; of Europe, excluding Russia, 128 million (all within the 1914 boundaries). By 1910, the population of the United States was 91.6 million (excluding, for comparability, the minor group of nonwhites other than Negroes)—over twice that of either Great Britain or France (each with about 40 million at that date). By mid-1975, the population of the United States was close to 214 million. The multiplication factor over the two centuries was over 85 for the *U.S.* population; for Europe, including or excluding European Russia, it was about 4; for the more rapidly growing among the European countries, not much more than 7. Nor was the contrast less striking in comparison with the population growth of Japan.

The contrast is, of course, the result of a long period of cumulation of the excess of annual or decennial rates of increase in the United States. Over the two centuries, the average rate of population growth *per year* was about 2¼ percent in the United States, and 0.9 percent in Great Britain. Taken over a decade or two, the cumulative difference would not be large; taken over two centuries, it cumulated to a contrast in multiples between over 85 and barely over 6.

A high population growth rate can be due to a high birth rate, or to a low death rate, or to a high net in-migration rate. In comparison with other developed countries, specifically those in Europe, the death rates, crude or refined, were not that much lower in this country as to contribute significantly to the much greater capacity of *U.S.* population to grow. The sources of the difference lay largely in the birth and in-migration rates. The birth rate in the United States in the early 19th century was estimated at

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close to 50 per thousand—high even by current standards in the less developed countries. While it dropped rapidly in the early decades of the last century and moved further downwards to the low levels of today, it tended to remain distinctly higher than in the older developed countries—as was also the case in the other, young, overseas countries like Canada, Australia, and New Zealand.

The other major source of growth was immigration. For the country's black population, immigration, or rather importation, was of significant proportions between 1770 and 1810, but negligible thereafter. For the far larger white population, immigration contributed little between the Revolution and the mid-1830's, but was an important factor over the eight decades prior to World War I and for a few years after the war. The magnitude of this immigration (on which we shall concentrate henceforth) can be illustrated by references to the millions of immigrants who came in and stayed. But one must also take account of the offspring of these immigrants in succeeding generations, a net addition if we assume that the birth rates of the original, nonimmigrant population would have declined just as much, if not more, without immigration. The assumption is reasonable, since we find substantial declines in native white birth rates in periods (before 1840) and later also in regions (South and rural non-South), that were relatively little affected by white immigration. A calculation, made by a Census expert (W. S. Rossiter) using the native white birth rates prevailing in the past, estimated the contribution of the original white stock (i.e., the one in this country at the time of the Revolution) to the 1920 population of the United States at 47.3 million out of a total white population of 94.8 million—the rest being immigrants and their descendants. This result, that half of the population was to be credited to immigrants and their descendants, would be roughly valid for total population, including the Negroes; and would also hold true of the more recent dates after 1920.

The persistence, over two centuries, of birth rates higher than those in the older developed countries of Europe and Japan, and the prevalence over some eight to nine decades of net immigration that contributed so much to population increase, may reasonably be associated with the "newness" of the United States. The "newness" meant the presence, and an awareness of the presence, of vast resources in unsettled land of a geographically expanding nation; a population that had detached itself from the European economic and institutional constraints on early marriage and on prolific child bearing; a willingness to welcome and encourage immigration, if, after a while, only within limits as to the cultural areas of origin. These features of the United States as a new country, the first among the overseas offshoots of Europe to achieve political sovereignty, are well known and hardly need documentation, even were it feasible here. But we might note aspects that seem relevant to understanding some distinctive characteristics of this country's growth.

The first comment relates to the long period over which obviously large reserves of land and resources remained and could continue to exercise effects on birth and immigration rates. The land area of the country within the continental United States (i.e. except Hawaii and Alaska), as it became fixed in the 20th century, amounted, at the censuses of 1790 and 1800, to 0.82 million square miles, grew by the census of 1810 to 1.7 million miles (reflecting the Louisiana Purchase) and to 2.94 million, the present size, after the census of 1840. A more telling series relates to the area of *settled* land, land with a population density of at least 2 persons per square mile. From 1790 to 1890, this area, originally 0.24 million square miles, grew at an average of over 50 percent every twenty years, including a growth of 53 percent from 1870 to 1890. Even when the limit was reached at 1.9 million in 1890, the closing of the frontier did not mean the absence of room for expansion. A similar story of a long process of settlement of a wide, and for a long while expanding, territorial base is told by the dates of admission of new

states into the Union: the last in the continental United States were admitted as late as 1907 and 1912—over a century and a quarter after the founding of the Republic. That native birth rates began declining so early is no reflection of a pressure of limits, but indicates a sensitivity to increasing affluence and to greater density in the *older* settled parts of the country; or, conversely, to the costs of internal migration toward the still abundant land.

Second, the desire to people the continent, to use the country's sovereignty to extend its area and to add to its population without interference from a metropolitan, colonial monarchy, was explicitly indicated in the Declaration of Independence—with its reference to the attempt on the part of the British monarch "to prevent the population of these States; for that purpose obstructing the Laws of Naturalization of foreigners; refusing to pass others to encourage their migration hither...." And this declared willingness, subject later to some selective restrictions, to admit immigrants from a wide range of European countries and those in the Americas, persisted until shortly after World War I. Thus, for some three-quarters of the two-century span, the United States was a country of open immigration, the only one with so long a record and with a huge absorptive capacity combined with a high standard of living.

In considering the impact of immigration, one must keep in mind its selectivity. There was selectivity not only with respect to age and sex, which resulted in a high proportion of males in prime working ages; not only with respect to occupations and attachments within the country of origin, which made for high proportions of farmers and farm workers, common laborers and semiskilled artisans; not only with respect to individual characteristics that favored the more adventurous and adaptable among the younger groups within the labor force; not only with respect to timing, which meant that, with the exception of the 1842 Irish famine, the impelling occasion was the entry of the sending country into modern economic growth, with its dislocating effects on rural population and that part of the urban population that might have been adversely affected by industrialization. There was also selectivity of immigration flows in their location, geographical and socio-structural, in the United States, the country of destination.

To begin with, few immigrants settled in the South, a census region largely identical with the slave-owning states and extending from Maryland-Delaware in the North to Florida in the South, and from the Atlantic coast states in the East to Texas and Oklahoma in the West. Already by 1860, when the foreign born were close to 19 percent of all whites in the regions outside the South, the percentage in the South was below 6; an allowance for native born of foreign or mixed parentage would raise the proportion of the foreign white stock to about 28 percent of the whites in the non-South and only 8½ percent in the South. This selectivity persisted, so that in 1910, when the foreign white stock proportion (close to 50 percent of all whites) was at its peak in the non-South, that proportion in the South was below 10 percent. Second, the immigrant flow tended towards the urban rather than rural areas, and to the bigger cities within the urban. Thus, already in 1850, the first year of data on the foreign born, the proportion of foreign born whites (and of free colored, a small component) to the corresponding total in the non-South was 14 percent; but it was 39 percent in the large cities, and 11 percent in the other city areas. By 1920, the foreign white stock accounted for 66 percent of total white population in cities of 500,000 and over; about 44 percent in cities of 25 to 500 thousand; 35 percent in the smaller cities; and only 20 percent of the rural population. Third, while this concentration in the urban areas and under-representation in the rural meant that the foreign stock, both foreign born and the first generation of their descendants, were under-represented in agriculture, there was selectivity even in the urban occupations, at least among the foreign born. For obvious reasons they were concentrated in the laborers and operatives categories, and under-represented among the white

collar and professional pursuits.

Only a few tentative remarks can be made here on the impact of immigration on the country's economic growth. The direct economic effect was to add to the labor supply, particularly in the non-South, the addition representing human capital investment made in the country of origin; and to provide an inflow of labor to urban and related pursuits at costs presumably lower than those that would have been involved in attracting the native labor force to move from older pursuits in the countryside and smaller cities. The more indirect economic effects lay in making possible a more rapid growth to a larger scale, with whatever special economies and efficient production possibilities such more rapid growth and larger scale may have implied. The wider, less narrowly economic effects, lay in assisting to tilt the balance of power against the slave-holding South, white immigration representing an effective vote for the free labor, industrializing economy; in diversifying the cultural and historical sources of the American population, and affirming the role of the United States as the haven and long-term base of populations, dislocated, particularly in Europe, in the transition from the preindustrial to the industrial economy; and, in placing on the educational and cultural institutions of the country the task of assimilating the newcomers, and especially their children, into the community. In general, one may suggest that because of the availability of immigration, the *U.S.* economy and society were able to operate with a wider range of choice—at least in that part of the country to which the immigration flowed freely and in significant numbers.

The drastic reduction of immigration, combined with the continuing secular decline in the rate of natural increase, brought the period of an impressively high population growth to an end by the late 1920's. From 1790 to 1830, the rate was at 29.4 per thousand per year, with immigration negligible. From 1830 to 1885, the rate was 26.8 per thousand per year, and net immigration accounted for as much as 6.0 points, or almost a quarter. From 1885 to 1925 the rate was 18.1 per thousand per year, with immigration accounting for 4.8 points, or over a quarter. For 1925–1970, the rate was only 12.6 per thousand per year—still significantly higher than in most older developed countries—with immigration accounting for only 1.2 points, or less than a tenth.

The slowing down of population growth, and the drastic decline in the flow of economically oriented immigrant labor to the country, had a variety of consequences. Some of them are touched upon below. Here we can refer briefly to some effects of immigration restriction. Internally, it meant, once the worst of the depression of the 1930's was over, that the reduction in the inflow of immigrant labor opened up opportunities for more employment of native labor at similar skill levels, particularly of Negroes from the South. It is hardly an accident that while the proportion of all Negroes in the country residing in the South hovered at about 90 percent from 1770 to 1910, it began to decline with World War I, and by 1970 dropped to 53 percent, with substantial shares of Negro population appearing in the other regions, particularly the North. Conversely, the proportion of foreign born in the total white population of the non-South, at a peak of about 21 percent in 1910, dropped to below 6 percent in 1970. Likewise, the cessation of mass immigration, flowing in the past largely to the middle-Atlantic shores, must have affected differentials in population growth among the various regions of the country. And, of course, immigration restriction signalled the end of the United States as an open country, as a haven for economically displaced workers and population from Europe and elsewhere.

II. Growth in Per Capita and Total Product

The high growth rate of population in the United States was combined with a substantial growth rate in per capita product. In shifting from numbers of people to the magnitude of the output that they turned out, we face the complexities of the economic and social coverage of net product (or gross of capital consumption

only) and its valuation. One has to recognize that the magnitudes are affected by the price scales applied, the use of initial prices yielding higher growth rates than the use of terminal prices; that omission of some production in kind will impart an upward bias to growth rates; and so on. But we are concerned here with rough orders of magnitude, employing linked indexes of series in which quantities are weighted by changing price ratios.

In looking back to the 1770's, we find that the record to 1800 yields a rather uncertain result, with the period affected by revolution, war, the immediate following difficulties, and recovery. For 1800 to 1840 we have tentative estimates, which can be accepted as suggesting growth of about 1 percent per capita per year—a substantial rate of growth by the standards of the time. For the next forty-five years, from 1834–43 to 1879–88, the rate, based on totals inclusive of improvements in kind, and manufacturing value-added, in agriculture, was between 1.3 and 1.5 percent per year. It then rose over the next two periods—from 1880–89 to 1920–29, and from 1920–29 to 1970—to between 1.6 and 1.8 percent per year. If, to secure a simple cumulative result, we assume that there was no growth in per capita product between 1770 and 1800, and cumulate over the remaining years from 1800 to 1970, we find that per capita product rose by a factor of somewhat over 11½ (over the two centuries). Before comparing it with the record for other developed countries, we should note that with the growth in population by a factor of over 85 and in per capita product of over 11½, the scale of the economy, as reflected in total product, must have grown by a factor close to 1,000. It is this latter figure that recapitulates the movement of the United States from a small, largely agrarian economy, two hundred years ago, to the huge, industrialized economy of today.

In attempting comparison with other countries, we encounter difficulties in that the records for most other countries do not go back as far as for the United States; and, more important, that one should expect a higher growth rate in per capita product in a country that enters the phase of industrialization and modern economic growth later. We can compare the United States with Great Britain-United Kingdom, for the stretch back to 1800 or to later initial dates; and overall, the growth rate in per capita product in the United States is distinctly higher, by perhaps a quarter. In comparisons with France (back to 1840) and Germany (back to 1850), we find the rates for the three countries fairly similar. Higher growth rates are found in the Scandinavian countries, particularly Sweden, the comparisons beginning in the 1860's; in Japan, the comparison beginning in the 1800's; and in Italy, the comparison beginning in the 1890's. But we know that in Italy and Japan the earlier periods in the 19th century were marked by low growth in per capita product; and the same may have been true of the Scandinavian countries prior to the 1860's, although we have no relevant evidence at hand. Hence, if the comparison between the United States and these several countries with higher growth rates in per capita product in the more recent (if still long) periods, were extended back to, say, 1800, the differences would most likely disappear, or be reversed. The suggestion, of more general relevance, is that a later entry into modern economic growth, assuming that the growth is then sustained, is associated with higher rates of increase in per capita product once growth begins; and extension to longer periods in the comparisons for countries that have attained an adequate level of development, reduces differences associated with the *timing* of the start. This *making-up* characteristic of modern economic growth is found also in other sequences (e.g., in connection with the differential impact of a war, or of other interruptions in the "normal" course of growth).

A study for 1970 (by Irving Kravis and others), based on detailed analysis of comparative prices, yields a per capita product for the United States that, in terms of international prices, exceeds that of the United Kingdom by a ratio of 100 to 60; of France and Germany by a ratio of 100 to 75; and is about equal to that of

Sweden (with rough allowance made here for differences between exchange rate and international price conversions). Extrapolation of such ratios back by per capita growth rates in the United States and in other countries yields a relationship between the *initial* per capita products in the international prices of 1970, or in some hybrid set of prices if chain indexes of product adjusted by price indexes to different time bases were used. A direct comparison in the international prices of, say, 1800, or 1840, or 1870, might look different. But the calculation still permits a judgment that the initial levels of per capita product in the United States were comparatively high, even before industrialization proceeded far. Indeed, it is doubtful that per capita product in this country in the early 19th century was much lower than that in Great Britain, the leading industrial country of the world at the time (the shortfall could hardly have been more than a fifth, if that); and it was clearly above the initial per capita product of the other European countries, which entered the process of industrialization in the 1840's or later. Thus, the United States, in the early 19th century (and the late 18th) was an agricultural country, but productive and rich. One of the sources of its quantitative dominance in the economic world of later and more recent decades was that the high growth rates of its population were combined with substantial growth rates of per capita product sustained over a long period *and* applied to an initial per capita income of a level that was already high.

One should have expected substantial growth in per capita product in this country, its major source being that associated with modern economic growth—i.e., technological advance, connected in varying degrees of closeness with the advance of science and useful knowledge. After all, the American revolution came about the same time as the industrial revolution. Great Britain, the original mother country, was, through most of the 19th century, the leader in the industrial revolution; and the major technological breakthroughs connected with the textile and chemical industries, with the iron and steel industries, and the introduction of steam power, were easily accessible to and found prompt application in this country. Indeed, the United States, through most of the century, was noted for effective adaptation and modification of the advancing world technology to fit it better to the country's resource endowments; and then later, in the electric and internal combustion age, began to contribute more heavily to the initial inventions and innovations. In the still more recent period, beginning shortly after World War I—a period of some five decades marked by extraordinary advances in health, agriculture, the spread of internal combustion to air transport and of electricity to household services, the emergence and spread of the electronic and nuclear revolutions, and so on to space exploration—the United States played a far more active and leading role than it had in the technological revolutions of the century and a half that preceded World War I.

We are so used to sustained and substantial growth in per capita product that we tend to take it for granted—not realizing how exceptional growth of that magnitude is on the scale of human history; and how much it requires in the complicated process of invention, application, accumulation, and adjustment. If we find that, say, over a quarter of a century, per capita product rose by 50 percent, this means that usually with the same or smaller labor input per capita, the working population managed to produce that much more of final product—food, clothing, shelter etc., *and* whatever additional capital, material or human, was needed to produce it. Such a feat can be accomplished either because of a lucky gift of hitherto unused natural resources—hardly a sustainable source, except through advance of knowledge that creates resources out of hitherto useless components of nature; or because of greater learning, within the context of already available knowledge —again a quickly exhaustible source without creation of new knowledge that extends the limits within which learning can occur; or, and most importantly, because of new inventions, which, when applied, enlarge the productive

capacity of human labor. And, indeed, when one looks behind the rather unrevealing economic aggregates, one finds a stream of technological changes representing the applications of new inventions and new knowledge—and contributing, when applied, to further learning, discovery, and invention. A glance at a single sector in the United States, say that of internal transport, reveals a sequence of canals and turnpikes, steamboats on internal waterways and steam railroads, electric railroads, internal combustion engine transport and highways, air transport—all of this in successive major breakthroughs, and cycles of emergence, learning, expansion, and eventually obsolescence.

Technological innovations, which constitute the major permissive source of modern economic growth, carry constraints of their own, even in a country like the United States that also enjoyed extensive expansion and access to additional natural resources. The innovations require, for effective application, specific responses from the society desirous of utilizing them. And these, in turn, mean adjustments in economic and social institutions, differential impacts on various groups within a society, and effects on even purely economic relations, e.g., the amounts of capital investment that have to be generated to embody the technological innovation, relative to the net product that it will yield. Thus, the domestic capital formation proportions that we find in the United States in the 19th century—at over 20 percent gross or close to 15 percent net—were substantially higher than the 10 to 12 percent gross in Great Britain or the Scandinavian countries at the time; and may be viewed as responses to the capital demanding infrastructure of residential and related construction, railroads and other public utilities, in a continental country, with a rapidly growing population. One may also note in the reproducible capital stock at the end of the century the high proportion of capital in transport, communication, housing and related construction—the capital investment in manufacturing and agriculture becoming proportionately greater only later. And the completion of capital-demanding infrastructure in the 19th century, and the marked slowing down in the growth of population and labor in the 20th century, may perhaps explain the greater rate of growth of factor productivity in the recent decades—with a less capital-demanding technology.

But the effects of technological innovations were not only on capital formation and factor productivity. They were also on the organization of economic production or management units, in the pressure for the modern type of corporation; and they had a ramifying effect on industrial organization through the use of the discriminating power of monopoly. They affected conditions of work, with changes in labor force status, employment requirements, educational levels, and the active lifespan of the working population; and they affected conditions of life, through furthering urbanization and modifying patterns of consumption and other elements in the modes of living associated with rising economic standards. The various institutional adjustments, and shifts in conditions of work and life, required for effective channeling of the continuous stream of technological innovations, were neither easy, nor costless. The gap between the stock of knowledge and inventions as the necessary condition, and the institutional and social adjustments that would convert the former into a sufficient condition, is wide—as past history of the economically developed countries and the current history of the less developed amply show. That the United States achieved a sustained and fairly high rate of growth of per capita product over this long period is evidence of the country's capacity to modify its institutions and patterns of work and life, at rates sufficient to accommodate the technological potentials and in ways that preserved, except for the Civil War, a freely accepted social consensus.

The emphasis on the technological innovations, associated with a growing stock of knowledge, involves the implicit argument that conventional measures of factor productivity, even if expanded to include investment in

human capital, are incomplete. This is so at least at present, when our understanding of the processes by which new knowledge and new inventions originate is so meager, and so long as the economic calculus is of limited application to a resource the returns from which are so wide-flung in space and time, and the identifiable costs of which are in such disproportion to returns when observable. One should also add that the feedback effects of the application of new inventions in mass production on the facilitation of additional knowledge and invention have not been studied sufficiently to provide an adequate body of data. Do we really understand, in economic terms, the succession of various sources of industrial power, and can we explain, e.g., the timing of the emergence of the electronic revolution in communication? Questions such as these are pertinent to the analysis of *U.S.* growth even in the 19th century, when the United States was a follower country applying largely European discoveries and inventions. They become of critical significance in the recent decades when this country has attained sufficient leadership to become itself the major source of advance in new knowledge and invention.

III. Unity and Inequality

The political and social framework of a country sets the major conditions for economic growth, in formulating and monitoring rules of economic and social behavior; and changing them, when adjustments are required by new obstacles and opportunities brought by accumulated costs of the past, new knowledge, and new external circumstances. Since modern economic growth means a succession of differential impacts of innovations on different groups within a society, unified, effective decisions may be required to preserve consensus, minimize negative impacts and maximize the positive contributions of growth. Indeed, a major function of modern sovereign government is to help channel social and political adjustments to economic growth, to modify old and create new institutional patterns that would facilitate growth while limiting its inequitable effects. Given the variety of, and likely conflicts among, the group interests affected, an overriding sovereign power is required that would represent the interests and values of the community.

The problem of maintaining flexible and creative unity despite divisiveness produced by modern economic growth, was complicated in the case of the United States by several historical circumstances. To begin with, the nation was formed of thirteen colonies, which, by the time the new political entity began operating, had had well over a century of separate existence, and thus opportunity to develop different economic, political, and social characteristics. The distinction between the North and the South (more specifically the Northeast and the Southeast) was sharply marked, already in 1790—the year of the first census and within the country's first presidential term. In that year, of 1.97 million population in the North, only 3 percent were Negroes, and of these fewer than two-thirds were slaves; in the South, of a similar total population of 1.96 million, over 35 percent were Negroes and of these over 95 percent were slaves. One can also find data on the tonnage of trade of the various colonies in 1770, which clearly point to the dominance in the North of trade with the West Indies, and in the South of trade with Great Britain. The subsequent persistence of the original North-South cleavage, and its sharpening to a clash between incompatible bases of economic and social organization, led to a civil war almost a century after the American revolution. While the legal abolition of slavery marked, in one way, the end of this clash, the heritage persisted in the isolation of the South and the continued economic and social discrimination against the Negro—not to be effectively mitigated until the post-World War II decades.

Next, even setting aside the conflict with regard to slavery, a long period of political experimentation and innovation was required to weld the original, and increasing, number of states into an organization capable of formulat-

ing and enforcing unified decision, and, indeed, of establishing the common interests that these decisions were intended to serve. At least three novel elements were involved, setting the conditions in which the evolution of a unified country had to take place. First, there was the basic decision to launch a new nation by agreement among former colonies that declared an end to their old allegiance to a single, outside, authority. This, in itself, represented a revolutionary novelty, a major innovation; and like all major innovations, it needed prolonged experimentation and adjustment before it could attain a realistically optimum level. The period of such adjustment would have been long even without additional complications of rapid geographic expansion, and, after an early date, of intensive industrialization and major technological advance. But, second, this new nation, with only emergent unifying powers and only gradually widening bases for common action, was in the process of rapid westward expansion, with special sets of problems created by the movement of people to the frontiers and the addition of new state units to the older commonwealth. The emergence, and conditions of admission, of these new units were of differing consequence to the several older parts of the country; and while such geographical expansion provided a strong sense of unity to the country, the specific changes had to be made without too much damage to the consensus. Third, and most relevant to economic growth, there was the process of industrialization and structural transformation, a flow of novel changes requiring new institutional and legal patterns, and affecting differently the several groups in the population. There was, consequently, need for some single authority, acting for the country and capable of evolving—to monitor and select the necessary institutional and legal adjustments, and try to provide the proper channels for economic advance while mitigating its adverse effects.

The results of *U.S.* economic growth are clearly seen in the high rates of growth of population and of per capita product the process could also be viewed in a series of growth-setting decisions. These would begin with the commitment to political independence from outside, and political unity within; and would then involve the implementation of that independent and unifying power in a series of decisions—on the public domain, the treatment of debt, free labor and slavery, internal improvements, regulation of foreign trade, public education, and so on in a long list. It is not possible here, nor am I competent, to attempt such a list, in proper order and weight of decisions. One can only observe that the successive decades of the 19th and early 20th centuries witnessed a series of secular- or growth-decisions, the long-term implications of which were largely perceived by the different groups aware of their interests but also cognizant of some common goals; that, if one can judge by the changing political organization, the trend has been towards a continuing widening in popular participation, at least in the election of representatives charged with exploring, and arriving at, the decisions; and that, finally, at least prior to World War I, there seemed to have been a persistent thread in these growth decisions. The thread was provided by a desire to people the continental span of the country, and to exploit the large scale opportunities provided, on the one hand, by the stock of natural resources perceived as such in the light of current knowledge, and on the other, by the advance in modern technology which created new resources and widened markedly the range of productivity of human labor organized within an adequate social framework. Both extensive and intensive expansion was pursued, by a country open to immigration and unconcerned with external threats or, after the civil war, with dangers to internal unity.

Extensive expansion ceased at some time in the early 20th century, within a span of years extending from the closing of the frontier at the end of the 19th century, to the admission of the last state in the continental United States in 1912, to the effects of World War I of 1914-18, to the sharp restriction of immigration in the

mid-1920's. The period of five decades that followed was quite different; and even within it, there was a contrast between the first twenty-five years from the mid-1920's to the end of the 1940's—with a major depression and a world war, and the last quarter of a century. It is only during the latter subperiod that a variety of adjustments occurred, adjustments to the cessation of mass immigration with its differential impact on regions and on communities of different size, and to major shifts in world conditions.

In turning now to economic inequality, changes in which are a potent source of unity and disunity, I find it difficult to deal broadly with this wide and complex aspect of the country's economic growth. My interest is largely in inequality generated by economic growth, and the difficulty is in finding data and analysis that would cover both the growth-induced income disparities and the offsets through mobility—all of this with proper cognizance also of changes in family and household structure generated by modern demographic trends. But it may be useful to call attention to special elements in our historical experience, which differed between the long sweep to World War I and the more recent period since the late 1920's.

In the earlier period, the existence of slavery over the first century after independence, and of effective legal and social discrimination in the South in later decades, introduce elements that render conventional economic measures unrevealing and inadequate. Whatever shortfalls there were in the calculated economic returns to the people bound in slavery, or to those with sharply restricted rights, they were a limited part of the story; and the major part was hardly susceptible of a purely economic calculation. Here was a case of economic, legal, and social deprivation that persisted over three quarters of the total long-time span, and allowed only limited relief through mobility—all of this applying to a substantial group within the country's population. In greatly reduced form, the observation may apply even to the majority of the white population in the South, relative to the white population in the other regions. The former were not afforded opportunities as great as those for the white population elsewhere, since the slave population and its custom-bound successors prior to World War I failed to provide the domestic markets and thus the growing demand, that the local white population could satisfy and grow with. Nor were conditions in the South a good preparation for a would-be white migrant to regions outside the South, a fact that inhibited such migration.

Within the long period prior to the 1920's, in a subperiod beginning with the late 1830's, the income distribution among the population outside the South (almost all white) was complicated by the incidence of mass immigration. The latter, with the typically lower incomes of the foreign born, meant an addition of weight to the lower tail of the income distribution—even though, to the immigrant himself, the income, even in his earlier years in the country, may have meant a marked advance over what he was earning in his country of origin. And, most likely, this income-inequality-widening effect of the entry of immigrants varied over time with variations in the relative inflow and the widening contrast between the income levels prevailing in the United States and those at which employment openings could be filled by the newcomers. But the same factor also made for higher mobility up the income ladder—in that with the passage of time and accumulation of experience, the income of the foreign born would rise more rapidly than that of the native born; and in that, as the data indicate, the incomes of the next generation, native born of foreign parents, would show a rise over the incomes of their parents greater than between two successive generations of native born of native parents.

With substantial mobility of labor in and out of the country in the decades before World War I, there was only limited pressure for sustained government intervention to supplement income during depressions by unemployment compensation or public works; or to provide for old age pensions through governmental security plans.

And with the hoped-for mobility up the economic ladder, at least for the white population, under conditions of peace and rapid growth, there was no great pressure for governmental policy to reduce income inequalities, except through assurance of equality of opportunity. The impression I have is that the income distribution in the United States, in the decades before World War I and for some years thereafter—until the great depression of the 1930's—was little modified by government intervention.

To what extent the situation changed after the mid-1920's and particularly since the early 1950's, is a matter for exploration by scholars more familiar with the trends in this recent period. I can only offer conjectures. As already indicated, there has been in the recent period a movement of Negroes away from the South and to other regions; and there has been a marked advance in removing limitations and discrimination, particularly after World War II. This should have led to a reduction of economic differentials, and, most important, to a weakening of restrictions on opportunities and on mobility. The marked reduction in the volume of net immigration and the shift in its composition away from dominance by labor of lower skills, should have reduced its contribution to the low tail of the income distribution among the white population in the non-South. At the same time, it should have reduced mobility over time within the income distribution. But there may well have been offsetting changes elsewhere.

Most impressive was the marked trend toward greater government intervention, to provide some offsets to the incidence of income deficiency occasioned by unemployment, illness, breakdown within the family, and old age insecurity; and to extend equality of opportunity through enforcement of the rights of hitherto restricted minorities. The trend, emerging first during the depth of the depression of the 1930's, in response to critical levels of unemployment and economic deprivation, expanded much further after World War II. It was due only partly to the stabilization of the *U.S.* population and labor force, following the reduction of immigration; and it was due partly to the slowly shifting views on the peace-type goals of economic and social life. But it was also due to the realization that with the incidence and dangers of wars affecting the country and threatening its population, the burdens imposed by discrimination, and by the purely competitive pressures of the unregulated private market, should not be tolerated. There was, apparently, a line of connection between changes in the international framework within which this country had to operate after World War I and the policies of the government (later involved in the massive programs connected with defense) bearing on equality of opportunities and on income distribution.

IV. Recent Changes in the International Framework

By the international framework within which a country lives and grows I mean the structure of the rest of the world, with which the given country engages either in peaceful exchange of goods, men, capital, and ideas; or in active, or potential, conflict involving the use of force. At a given time, this structure of the rest of the world would differ from country to country, depending on its size, location, economic and social characteristics, and the like; and it would change over time for a given country, as the latter and the rest of the world change, and as the means of contact among them also change.

One omission, among several, in our selective discussion so far is the neglect of the salient and changing aspects of the international framework within which this country has been operating since the early days of its political independence. This omission cannot be repaired here: doing so would require coverage of the peaceful flows of trade, migration, and capital; of the conditions of tension and conflict in the rest of the world, and between some of it and this country; and of the changing technology of international relations. Yet, because of its obvious major impact on the structure of economic growth of this country in recent decades, one

should note briefly the marked change that occurred in the political and conflict aspects of the international framework as it may be perceived for this country.

World War I, coming after almost a century of relative peace (punctuated only by local wars), and followed within two decades by World War II, signified the beginning of a new period for the United States, as it did for many other nations. After withdrawal from European stresses and conflicts since the early 19th century, this country participated in both world conflicts; and modified its policies to suit the new conditions of growing world disarray. The very occurrence of "world" wars, i.e., ones characterized by prolonged and costly participation by a high proportion of the major developed countries of the world (together with some less developed partners), meant that, by the early 20th century, the number of such large industrialized countries had grown sufficiently large to have generated numerous points of conflict. It also suggests that, despite the obvious mutual advantages of growing volumes of peaceful trade and capital flows, there were sufficiently large elements of international competition and friction in modern economic growth under the auspices of increasingly nationalistic sovereign states, to make the occurrence of a war a high probability.

Several consequences of such major wars may be noted. First, and most direct, they accentuated the advance of war technology —which, however, in developed countries, is an integral part of the country's technological complex. Thus, the advance of technology since the late 18th century increased the capacity and productivity of long-distance transport and communication at least as much, if not more, than it did that of the production of commodities and other services. Modern technology bridged space gaps within and among countries that barred flows of goods and men for centuries; and it resulted, by the mid-20th century, in a world in which no part of mankind was really isolated from others (except, in some countries, by government fiat). But such revolutionary improvements in transport were just as important for delivery of war materiel and armies as they were for peace-type transport; and, indeed, the advance in the capacity of delivering war "goods" at long distance was clearly greater. Likewise, the increased technological power of mankind, i.e., the greater power to modify natural processes to satisfy human purposes, was perhaps as great, if not greater, when these purposes had to do with destruction in time of war than with construction for peaceful ends. Thus, the enormous advance in transport and communication resulted in economic and political interdependence among nations that was quite recent and new in the long history of human societies; and came after millenia of almost isolated existence, during which distinctive historical heritage was accumulated by different societies, little affected by, and indeed often unaware of, the rest of the world. But the removal of isolation meant also the removal of protection. For the United States, as for many other countries, protective (as well as inhibiting) distance from other powers shrank rapidly, particularly after World War II.

Second, participation in the prolonged and major conflicts meant, for the developed countries and their less economically developed partners, a strain that led often to political breakdowns and the emergence of new and deviant forms of political and social organization. In the less developed countries, like Russia and China, the heretofore gradually-growing modern elements were weakened by World Wars I and II, sufficiently to give way to Communism. Among the developed countries of Europe, the first World War led to the dissolution of a multinational monarchy like Austria-Hungary, and the emergence of fascism in Italy, Germany, and some of the other European states—another case of the use of a hierarchically organized dictatorial party to force the growth of economic and political power of the country by ideologically claimed control over the population. Since these were new approaches, representing violent breaks with the past, explicit hostility to the past, and to other

nations still associated with it and representing competing forms, became a long-term policy at times taking particularly virulent forms. These outbreaks of deviant and self-proclaimed revolutionary regimes, emerging as engines of accelerated political and economic growth, introduced into the world, particularly after the 1920's, elements of cleavage and divisiveness that were absent, or only latent, before World War I.

Finally, one should note that the world wars came as a result of the culmination of antecedent and competitive expansion by the economically developed countries towards colonization of much of the rest of the world. A consequence of World War I was to demonstrate that the advantages of such colonization to the developed countries were limited. And this demonstration was greatly reinforced by the realization that the tutelage of the colonies by the metropolitan countries was self-terminating if there was to be sharing of modern values—a sharing inevitable in continued contact. The shift was finally completed in the course of World War II when distant colonies were lost so easily; and when it became evident that, with the advance of modern technology, the advantages of presumably secure natural resources in the colonies were limited, while the rights of the native inhabitants of the colonies to be the masters of their own political and hence, presumably, also economic, destinies, were paramount. The result was a remarkable spread of national sovereignty extending to large numbers of hitherto colonial areas, to some after World War I, but to others at a far greater rate after World War II.

It may seem paradoxical that precisely at the time when technological progress broke down the isolation in the world and made for increased economic interdependence, divisive boundaries of national sovereign statehood spread so widely; and that there occurred a striking decentralization of political power among a mushrooming number of new and small jurisdictions. But perhaps this is not paradox at all. If the world has become so much tighter, and countries are exposed to both benefits and dangers from so many possible outside sources, a national society that shares a strong feeling of community of kind, might desire to have the freedom of sovereign decision to be exercised in crucial choices. And this would be all the more so, when the government is in the hands of a monolithic minority party that might want to have the power and trappings of sovereignty to protect itself internally, and to isolate the country from external influences viewed as temptation or corrupting knowledge.

As the comments above suggest, the world wars were only a reflection of the underlying causes that brought about the major shifts in the international framework since the 1920's, and particularly rapidly since the early 1950's. They reflect the enormous technological contribution in the developed countries, which was accessible to, and adopted by much of the rest of the world, but in a selective way; and they also reflect the strains and stresses that economic growth was creating in both developed and developing countries and that led to nationalistic and aggressive policies—with whatever ideological claims were evolved to justify the latter. Even without overt wars, the combination of advance in technological power, for good and bad, with its differential spread to, and impact on, countries at different stages of development, and with the shrinking of distance in the world, would have resulted in much greater international tension than existed in the earlier periods of greater distance and isolation.

Whatever the causes, and the comments above provide only tentative suggestions, the changes in the international framework in the recent decades—the increased divisiveness, more intensified ideologically-powered hostility, and the greater danger of war-induced devastation—involve heavy costs to this country, as well as to many others. These costs should be noted not only in terms of large military budgets, and the absorption of a larger proportion of high level scientific and technological manpower in war-related work. There are also the costs of distortion of channels of cooperation and communication in an ideologically di-

vided world; and the costs involved in the greater complexity within the country's economic and social organization, which must provide the means for viable policy decisions—both on the domestic use of the increased technological power for equitable economic and social advance, and on the problems of relations with the rest of the world that may be so explosive.

The growth problems of a developed country can be viewed within the context of a combination of technological and economic power, present and prospective; of a variety of accepted goals, and hence of responsibilities; and of the dangers of unforeseen (some unforeseeable) errors and of unavoided (some unavoidable) failures. One may characterize this combination for the United States, recently and currently, as that of enormous power, wide responsibilities, and substantial dangers. The very size of the country's population and economic product, and particularly the large reservoir of its scientific and technologically creative human resources, give it enormous power, currently and in prospect. The responsibilities are wide because the country's decisions—on the directions of basic and applied research, on policy with respect to agriculture and agricultural stockpiling, on nuclear and other energy, on weapon production and sales, on multinational corporations and so on in a long list—have a marked impact not only on its own population but also on much of the rest of the world. The dangers of error and failure are formidable because the power of advanced technology makes errors potentially that much more costly; because so much of the rest of the world needs assistance in its attempts to bridge the gap between attainments and minimum aspirations; and because the destructive potentialities of modern technology are so much greater, particularly in a divided world.

Within the past two centuries, and associated with modern economic growth, there must have been many such combinations of increasingly great technological and economic power, with diverse goals, and the greater dangers associated with errors and failures. Yet, even with lagging adjustments and costly failures, the results, at least in terms of material returns, showed a fairly marked upward trend. Even in this recent twenty-five year period of greater strain and danger, the growth in peace-type product per capita in the United States was still at a high rate; and in the rest of the world, developed and less developed (but excepting the few countries and periods marked by internal conflicts and political breakdown), material returns have grown, per capita, at a rate higher than that ever observed in the past. And one should note that current problems, still unresolved, always loom larger than those of the past—which have been resolved sufficiently for us to have survived and flourished and for us to be able to view them more dispassionately.

But long-term projections into ranges well beyond those covered by the observed past are subject to wide errors; and the variables and parameters under discussion (and many more should be cited) are too diverse and too crude to permit adequate analysis, certainly within the limits of my competence. The purpose of the brief comment was to emphasize the association between growth of technological and economic power (stemming in large part from new knowledge) occurring under the aegis of the nationalist sovereign state, and the probability of errors of innovation (based, by definition, on incomplete knowledge) and of international strain and conflict.