Politics and the Future of Industrial Society

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PREFACE

This book explores the political implications associated with the term "postindustrial society." It represents an important contribution to a literature that seeks to understand the transformations which are taking place at the present time in advanced industrial societies and the possible futures for these societies. Unfortunately, to date this literature has sorely neglected political variables, whether taken as dependent or independent, effect or cause. There are important and striking areas of convergence in these chapters, although each author adopts a somewhat different analytical strategy. The diversity of perspectives on common problems that results is one of the most valuable aspects of the collection, for it puts into relief the very difficult epistemological, methodological, and conceptual issues that must be confronted if we are to understand ongoing change processes and the emergent properties of large, complex social systems.

Another relatively novel feature of the volume is that it carries the discussion of postindustrial phenomena out of what has been a fairly parochial context. The bulk of the existing literature is based, implicitly or explicitly, on American experience or example; it has simply assumed that the United States is the most "post." The papers presented here challenge this assumption. They extend the field of comparison to include societies

as diverse as California, Japan, and Western Europe, thus opening up yet another important set of methodological and theoretical issues. The authors suggest that industrial societies, although they experience similar changes and encounter many of the same policy or political system crises, are likely to respond in very different ways. One of the most interesting questions to ask about the future is whether a range of different types of "postindustrial" societies will emerge in response to different historical-cultural heritages, political structures, timing and patterning of change, and public and elite responses.

Taken as a whole, the collection offers not only stimulating and fascinating glimpses into the possible futures of advanced industrial societies, but also makes an important contribution to the effort to design coherent and reliable strategies for research on ongoing change and its political consequences.

Each paper printed here represents "work in progress." Each raises more questions than it can answer. The cumulative result is perforce somewhat contradictory and indecisive, as the last chapter will suggest, for each author looks at the changing industrial or capitalist system through a different lens. Our purpose has been to encourage more systematic research into these questions and to suggest some fruitful lines such research might take. The success of our venture will be judged by the rapidity with which our formulations are superseded and improved upon.

The imperatives of focusing on observable individual behavior and on the contradictory social forces that are implicit in any given time or situation bring us back to one of the principal common preoccupations of the authors of this volume, namely, political perception and political choice, and the often competing and contradictory efforts of elites or counterelites to interpret experience and to impose order and stability by means of public policies.

THE PLAN OF THE BOOK

Having identified the basic lines along which these articles converge and diverge, and how they can as a group be related to futures study, on the one hand, and to macro-change theory, on the other, let me now briefly summarize the papers to indicate more specifically their preoccupations and how they relate one to another.

Todd La Porte and C. J. Abrams in "Alternative Patterns of Postindustria: The Californian Experience," set out to demonstrate that California has displayed the basic characteristics attributed to "postindustrial" society (technology-induced sectoral shifts in employment, growth of knowledge-intensive industries, increasing affluence and leisure, a multiplicity of value patterns) longer than any other society, indeed since well before World War II, and possesses them now to a higher degree than the United States as a whole. They argue that the state thus offers a useful "testing ground for illuminating the politics of advanced industrial societies." They construct a model of "Stable Postindustria," inferring its social dynamics from the available literature, and seeking to make the variables operational. In this model technology is treated as a crucial "stimulus variable." The model describes the sequential cycles of increasing social and organizational capacity created by technological advances and the increased organizational differentiation and interdependence that is the overall result. The "new society" that emerges from this process is characterized by an increasing "apparent" organizational capacity to deal with social problems and by increased importance attributed to knowledge producing and using classes in dominant institutions. But politics in this society "is likely to take on an odd cast of promise and reassurance" because of "a contradictory undertone of latent confusion associated with complexity."

If planners and leaders are able to understand what the public wants and have adequate causal knowledge about the dynamics of the system, the system can remain stable in its development and such presumed characteristics of "postindustrial society" as continued affluence, ascendency of a knowledge elite, new value orientations, etc., will predominate. But La Porte and Abrams are not optimistic in this regard, holding it more likely that leaders "and their knowledgeable assistants" will

have great difficulty in determining what the public wants and in managing the system. They thus see "Unstable Postindustria" as the second stage of postindustrial development. This model stresses the discontinuities and rising levels of political and personal insecurity that are produced by ever more frequent policy failure in the midst of high expectations and interorganizational complexity. Recent California experiences of political tumult and the emergence of extremism of the Left and Right are cited as testimony to these discontents and uncertainties.

Ronald Inglehart focuses directly on "The Nature of Value Change in Postindustrial Societies." He, too, concludes that "the future looks difficult for Western governments," citing some of the same factors as La Porte and Abrams, i.e., the salience of new issues (social equality, belonging, self-expression, dissatisfaction with hierarchically structured organizations) that the governments of advanced industrial societies are not well equipped to handle, a realignment of voting patterns, a decline in public confidence in government. But Inglehart traces these phenomena to *secular processes of value change* that are the consequence of childhood socialization experiences of certain age cohorts with economic and physical security. On the basis of extensive survey research data from the United States and Western Europe, he argues that a gradual but deeply rooted and pervasive process of value change is taking place among the populations of Western societies—a shift from Materialist to Postmaterialist orientations. He argues that the politics of the future will be "quite different" from that of the past because "the cohorts now entering the electorate (and eventually the decision-making posts) seem to want very different things than those who are already there."

The article is especially rich in its methodological treatment of the problems of conceptualizing and measuring value change in mass publics, in its substantive detail on the patterns of value priorities the author sees emerging, and on their relationship to attitudes toward the economy, the environment, occupational choices, parochialism or cosmopolitanism, attitudes toward innovation and change, and party preferences. He concludes by showing how these value changes *and the expectations to which they give rise* have been associated with rapid economic growth, and by asking what would be the political consequences of a failure of Western governments to sustain these growth rates in the face of the mounting economic problems of the 1970s.

Taketsugu Tsurutani considers "Japan as a Postindustrial Society." He argues that certain industrial and technological dynamics are producing a variety of important political transformations in Japan. These dynamic forces seem similar to those affecting other advanced industrial societies, but Japan offers some distinct advantages as a site in which to observe their political implications because Japan is not handicapped by overinstitutionalization of the mode of thought and pattern of be-

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ALTERNATIVE PATTERNS OF POSTINDUSTRIA: THE CALIFORNIAN EXPERIENCE*

TODD LA PORTE / C. J. ABRAMS

California's rapid growth and change over the past century and a quarter have drawn considerable comment.[1] Many of these changes, visible since 1900, reflect features said to typify a society well beyond ordinary industrialization. Social scientists, save for a growing number of historians, do not usually view regions such as the American West as "societies" per se, but insights from the perspective of comparative politics invite this broader view of contemporary California.[2] In adopting it here, we find that the culture west of the Sierra Nevada Mountains takes on an unusual cast.

As a society, California has been subjected to enormous "pressures from the East." In the state's early days, this influence from the more highly industrialized East amounted to a kind of "foreign assistance," accompanying the expansion of the railroads and at their behest. More recently this "assistance" has been part of the direct extension of the

*Discussions with imaginative colleagues are often catalytic, and we are grateful for a conversation with Warren Ilchman which began the train of notions prompting this paper. We are indebted to Andrew McFarland, Kai N. Lee, Serge Taylor, and Stephen Zwerling for thoughtful critiques of earlier drafts. Thanks to them there is greater clarity in our effort and fewer confusions, though some have persisted in spite of their admonitions. We are also most grateful for the most able editorial assistance of Mary Fenneman, statistical assistance from Karen Chase and Roslyn Tuttle, and the typing skill of Linda Harris, all of the Institute of Governmental Studies, University of California, Berkeley.

interests of the federal government. Since the 1930s California has been the object of several successive waves of technical, military-related, and economic assistance occasioned by the Great Depression, World War II, the Korean war, the cold war, particularly its development into the space race, and finally the war in Vietnam. In all five cases, this "foreign assistance" has involved the most sophisticated technology of the particular period and has effected significant concentrations of financial resources, professional capabilities, and technical expertise. The technologies developed in this process span innovations in petrochemicals, agriculture, the transport and aerospace industries, electronics, nuclear energy, medicine and other biological fields, and important innovations in research and development and education. These developments were accompanied by the massive population shifts associated with large-scale techno-industrial growth—mainly immigration into the state. Concurrently, swift social changes have occurred within California, sometimes triggering violence.[3] Many of these disruptions accompanying social changes can be associated with lags of political and social institutions in coping with the problems of rapid growth—lags commonly associated with "future shock." In a sense, Californian culture can be seen as the product of massively induced social change. It is a culture split into two significantly different subcultures, one in the south and one in the north. One could say that these two subcultures represent two versions of the future, each with its distinctive character, each with a distinctive response to technologically induced social change.

Insofar as changes in California share certain characteristics with those advanced industrial societies which have served as prototypes of "Postindustria," we believe that the study of contemporary California can yield a twofold benefit. California may prove an excellent testing ground for present theories of "postindustrialism," while at the same time affording us the opportunity of developing alternative conceptions of "postindustrial" development. Indeed it is intriguing to view California as one of the first genuinely "postindustrial societies," its development stimulated by many of the factors intrinsic to postindustrialism, factors productive of many political and cultural phenomena included in that vaguely described set of conditions so strikingly different from those of industrial societies. With our dual aim in mind, our version of postindustrialism has been fashioned in the attempt to make that notion more operational. In so doing, we have begun with indicators derived from those characteristics so often used in the literature to describe postindustrial societies. Since the United States is the closest of those societies that have served as the touchstones for the concept of postindustrialism, we compare California with the United States on the leading indicators of postindustrialism: the dramatic increase in employment in the service sector of the economy, the tipping of the scales in the labor force on the

side of the white-collar workers over blue-collar laborers, the rising affluence of the population over the past thirty years, and other manifestations of postindustrial change. We do not have great confidence that these "postindustrial indicators" will directly reveal the phenomena we seek to describe and understand. Data related to these indicators have all the limits of data collected for other purposes, but they are the only ones at present available.

In this enterprise we do not seek to engage in a definition of the postindustrial society, we are not explicitly taking up any particular version of the postindustrial notion, nor are we intent upon critically evaluating this notion, though there is sore need for this kind of rigorous analytic work.[4] Rather we are engaged in a speculative venture, initially taking the notions of others about important characteristics of advanced industrial societies and seeing what might be revealed about the particular qualities of California by viewing it *as* a postindustrial society. Our intent is to begin to explore a way of thinking about the highly advanced industrial society that is California. In the process of this effort, we have formed some alternative conceptions of potential development beyond industrialism; perhaps it is more accurate to say that these conceptions are emerging in a developmental pattern, one stage following another. Their validity must await empirical corroboration.

THE POSTINDUSTRIAL NOTION

There is an emerging body of literature which attempts to describe social developments arising out of growth beyond the industrial state.[5] It seems certain to be prompted in part by our penchant to understand events not neatly explained by the conventional wisdom. The clearest message from this literature is that important elements in industrial society no longer dominate economic, social, or political behavior. Social and economic organization is alleged to be undergoing a radical transformation from the industrial to the postindustrial. Something akin to the transformation from an agrarian to an industrial society which marked the industrial revolution is said to be occurring within today's advanced industrial states. This transformation, it is asserted, will so alter the face of industrial societies as to render contemporary understanding of their organization obsolete.

In our discussion, we are assuming that something out there has genuinely changed for which there is not yet an adequate language of analysis. We assert, without elaboration, that in past industrial societies the norms and values of industrial and commercial life came to be held as important criteria for the evaluations and operations of nonindustrial institutions. This is to say that efficiency, economies of scale, bureaucratic organization, and concerns for productivity, if not those for profits,

came to be held as important criteria for the evaluations and operations of nonindustrial institutions. This was the case for governmental, military, medical, and welfare organizations and for religious or other voluntary organizations and educational institutions alike. The values of industrial organizations came to be legitimate guides to the nature of social life and to the activities of nonindustrial institutions. What seems most characteristic of the attempts to describe the *post*industrial phenomenon is the argument that this homogeneity of values and beliefs spanning most social institutions no longer exists.[6]

Much of the discussion about postindustrialism has been based on the analysis of and extrapolation from recent trends in advanced industrial societies, particularly the contemporary United States. New trends in the economic order which appear to have significance for the organization of the rest of society have been assumed to predict something about contours of the near future and to suggest a broad outline of postindustrial society. Accordingly, the term postindustrialism has been used to identify both the characteristics that distinguish the most advanced Western societies from their industrial predecessors and the process of change underlying contemporary social dynamics.

The literature indicates that the shift which marks the transition from industrial to postindustrial societies has been signaled by a change in the kind of work in which people engage to earn their livelihoods. Thus, a change in the proportional distribution of employment among various sectors from goods production to service production and the change of employees' collar colors signifies a change in the *kind* of on-the-job work performed. This change has been postulated both as evidence of a change in the relative importance of the factors of production as well as evidence of the obsolescence of existing forms of economic and social regulation. Such evidence, it is claimed, portends a new society. This new work milieu, in combination with the increasing affluence available to the society, is commonly regarded as the factor promoting value change.[7]

This change in the distribution of employment among sectors underlies the rise of the "tertiary" or "service" sector, which is commonly construed to be the distinctive economic characteristic of a postindustrial society. For analytic purposes, economies have been divided into three sectors analogous to the stages of economic development: the primary, the secondary, and the tertiary sectors. This trichotomy is intended to indicate an historic process of technological development as well as to separate kinds of economic activities. The primary sector includes those activities that provide the basic raw materials needed for living, those carried on in *agriculture*, *forestry*, *fishing*, and *mining*; it was the supporting system of preindustrial society. The secondary sector, comprised mostly of *manufacturing*, but including construction,[8] is taken as the

stamp of industrial society. It emerged out of the industrial revolution's technological advances which stimulated the development of new goods and enabled increased productivity in the primary sector, thereby freeing labor to move to employment in manufacturing. The tertiary sector, comprised of services, wholesale and retail trade, transportation, communication, utilities, finance, insurance and real estate, public services or government work, is considered the supporting system of a postindustrial society. It has allegedly emerged out of the "postindustrial revolution's" technological advances which enable increased productivity in both the primary and secondary sectors, freeing the labor force formerly tied to those sectors to move to still other areas of employment. Just as the description of a society as industrial is not intended to convey an absence of preindustrial economic activities, but rather the diminished use of human labor by agriculture and mining, so the description of a society as postindustrial should not be taken to imply the absence of industrial economic activities, but simply the reduced use of physical labor in this sector. Thus, postindustrialism signifies a shift to the tertiary sector of the bulk of the labor force.[9] This is the first criterion to be examined with California data in the next section. The other indicator, increase in productivity, is also examined briefly.

Two notions attendant on the assumption of increased productivity further characterize a postindustrial society: affluence and leisure.[10] Increases in productivity per man-hour in the manufacture of goods are purportedly manifested in a greater abundance of goods as well as in wage and salary increases. Theoretically, substantial increases in productivity per man-hour allow a shorter work week to occur simultaneously with increased production of goods and increased wages and salaries. To the extent that California is a proving ground for such postindustrial notions, some demonstration of its increased income or shortened work week for some employees may be in order.

The literature suggests that postindustrialism has not only to do with a change in the mode of production but also with a change in the relative importance of the factors of production, altering therefore the relative importance of various factors in the production process. The labor-intensive industry necessary to increased production in the preindustrial era and the capital-intensive industry of the industrial era are purportedly followed by the knowledge-intensive industry of the postindustrial era. In the knowledge-intensive industry, technology as the concrete application of knowledge and professionals as its human transmitters apparently become requisite to increased productivity. The increased importance of knowledge as a factor of production leads to the increased importance of the knowledgeable—of the professional technical expert—with a consequent decrease in importance of the capitalist entrepreneur in the production process. An enhanced capacity for plan

ning and regulating economic growth, generated by the development of increasingly sophisticated intellectual technologies, elevates the importance of the planner as the embodiment of technical skill. The investment in planning required to implement technology in industry further enhances the importance of the planner. The predominance of planning is likely to reduce the emphasis on immediate maximization of profit as a decision rule in industry and to increase attention to long-term trends which may interfere with the market's regulation of the economy. In combination with the perceived need to mitigate the stresses and strains of rapid growth (such as resource depletion, intolerable population densities, etc.) this emphasis gives planning and planners a preeminent position in the policy circles of a postindustrial society.

(It has been suggested that the emphasis on planning changes the capitalistic ethos and replaces it with something else. We shall be concerned, since a change in ethos cannot be demonstrated, at least to find evidence in California of the increase in the number of professionals and planners said to distinguish the postindustrial society.)

Whatever else the concept of postindustrialism is meant to signify, it suggests a decline in the strength of industrial norms and a rise of other norms and values characterizing distinctive features of social institutions. Advanced industrial society appears to have achieved a level of economic development that frees increasing numbers of people from *direct* involvement with agricultural and industrial production organizations, thus reducing the overwhelming effects of industrial values on other social institutions. With increasing numbers of people able to devote full-time energies to educational, governmental, religious, and service-sector activities, we can expect a multiplicity of value orientations to mingle in society.

In the discussion that follows, we use the term postindustrial society advisedly, with no suggestion that one sector's values necessarily dominate those of other sectors. Rather, we mean to suggest a much more *differentiated and interdependent situation in which multiple value systems operate within sectors, sectors that have become increasingly dependent upon one another in reciprocal ways.* Our understanding of the causal and sequential relations among the variables of postindustrialism suggested by the literature is sketched out, and data are cited that we find relevant to describing California in these terms.

THE DYNAMICS OF POSTINDUSTRIAL SOCIETY

We begin with a caveat: What follows is both tentative and presumptuous, for it presents a scheme for thinking about most of the relationships between technological growth and recent sociopolitical developments. In so doing, it takes into account many factors generally

associated with the concept of postindustrialism. We suggest that our scheme is a sensible basis for further research into the structure and dynamics of highly advanced industrial societies. Finally, our view diverges significantly from other speculations about postindustrial societies. Others have been optimistic about progress; we are not.

Stable Postindustria

The theories of postindustrial societal dynamics implicit in the literature suggest a society in progress toward an extrapolated future: certain tendencies undergo constant amplification, becoming ever more dominant, shaping events rather than simply following them. The trends emerging from development of sophisticated technologies have been given particular prominence in the literature; hence technology is treated as a crucial "stimulus" variable for subsequent social processes. Our perspective, too, begins with technological possibilities as the impetus to change. Other factors as well result in social changes, but for the moment we shall assume that modern technology is a major source of change in our culture. The strong consensus among writers in the field concerning the consequences of technological change for economic and social change suggests a paradigm similar to Kuhn's "normal science" paradigm.[11] By analogy, we might call what follows "normal postindustrialism." Since this paradigm implies a kind of movement toward an evolving society never far out of equilibrium, we shall term it "Stable Postindustria."

Figure 2.1 represents our attempt to draw together the main structure of arguments relating technological development to changes in basic social patterns. In effect, it is a description of social dynamics as inferred from many of the writers on postindustrialism. The schema asserts that industrial or governmental groups, recognizing that a technological possibility is potentially useful, go on to establish organizations of *production, distribution,* and *service* which make the possibility an actuality. The literature on technical innovation gives testimony to this process as does that dealing with economic development. Large industrial firms, factories, transport and wholesaling organizations, governmental agencies, and medical and educational institutions adopt new technological devices and systems in order to improve their own capacity to alter the world around them or augment their role in it through their services.[12] When this tendency is widespread throughout a society, such adoption of innovation appears to be necessary simply to maintain a position of competition with other organizations.

One indication that technological innovation stimulates an increase in organizations of production, distribution, and service, albeit an indirect one, is increased productivity per person.[13] As technology is introduced to improve efficiency and to multiply human effort many times,

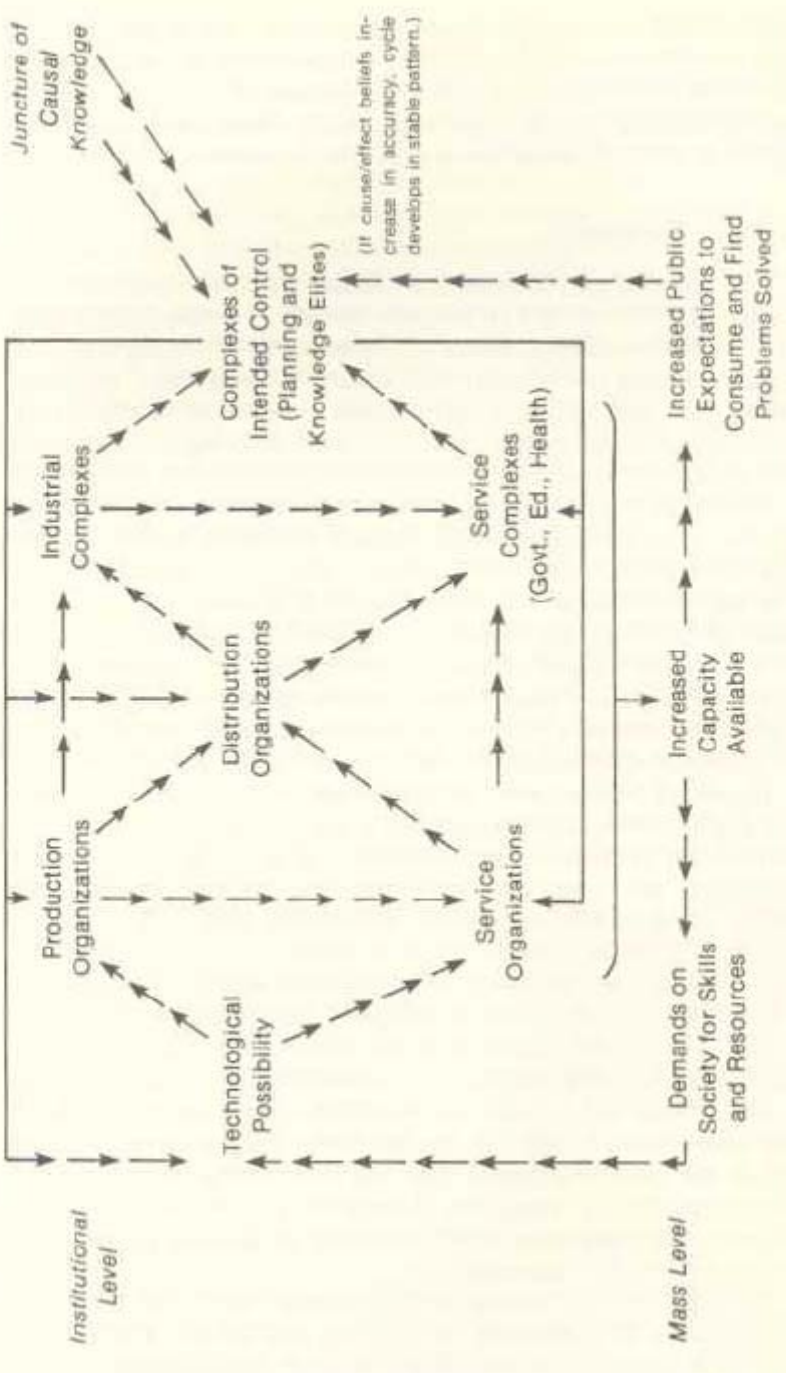


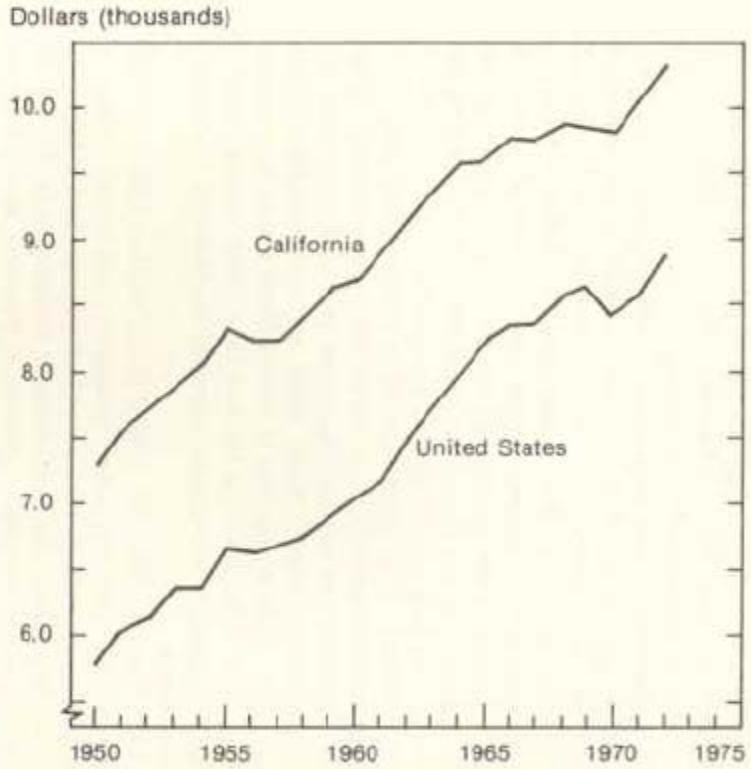
Figure 2.1. Dynamics of Stable Postindustria.

productivity per person increases. This increase is well documented for the United States as a whole, and California compares favorably with the overall trend, as figure 2.2 depicts. These data are doubly significant for increased production per person is also linked, as we shall see, to consequent shifts in employment among the various economic sectors.

As new technological possibilities emerge, either from within large organizations or from without them, new cycles of adaptation and growth take place; in each phase of this "advance," society's overall capacity for coping with its problems of sustenance and development is augmented. Technological advances with consequent widespread organizational implementation have released people from the confining necessity for physical labor, especially on farms, and have multiplied the variety of goods available to consumers. This release from agriculture has spurred massive shifts in employment patterns, with significant proportions of the work force leaving the farms to enter manufacturing and/or service employment. Thus, it is argued that there has been a decline in the proportion of people attached to the land and engaged in primary production and a consequent growth in both secondary production organizations and tertiary service activities. Figure 2.3 presents data indicating these shifts in employment.[14] As the data showing California's increasing share of America's employment might suggest, an overall increase in social and organizational capacity occurs. Such growth in scale is accompanied by increases in the overall demand for natural resources and human skills in order that the growth process be sustained. As cycles of innovation and growth continue, organized complexes of industrial production organizations result, with parallel developments of distribution and service complexes.[15] At the same time, the redistribution of employment for California over time and compared to the United States is interesting.

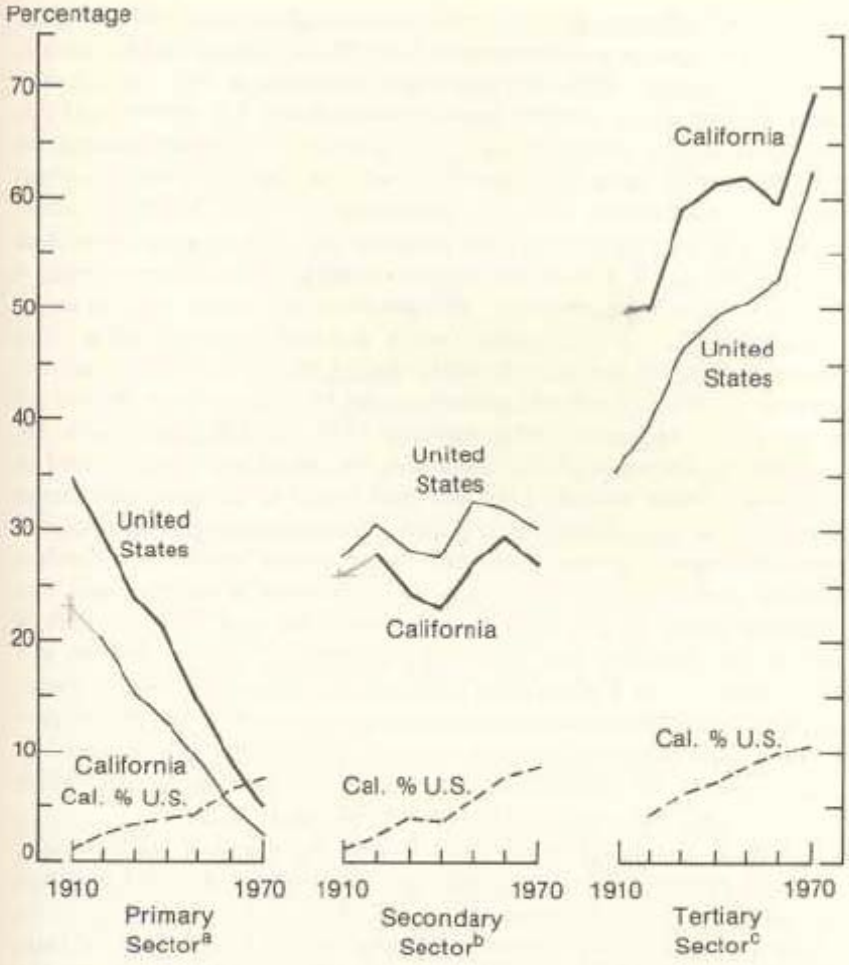
Data in figure 2.3 can be interpreted as evidence that implementation of technological innovation in the primary- and secondary-goods-producing industries was responsible for the shift in employment associated with postindustrialism. When dated, postindustrialism is usually considered to be a post-World War II phenomenon and to have emerged sometime prior to 1956, when for the first time in the United States the percentage employed in white-collar occupations exceeded that in blue-collar occupations.

In 1920, employment in the United States was not equally distributed among the three sectors (primary, secondary, and tertiary or service). Yet their correspondence at that time (28.9 percent; 30.8 percent; and 40.3 percent, respectively) was the closest it was ever to be, for by 1970 the distribution was to become 4.5 percent, 31.9 percent, and 63.6 percent, respectively. But by 1920 in California there was not even this rough parity. Already in this state primary industry was employing only slightly less than a fifth of the labor force (19.7 percent), secondary industry less than



Year	United States	California
1972	$8.885	$10.302
1971	8.574	10.063
1970	8.410	9.800
1969	8.613	9.822
1968	8.588	9.868
1967	8.357	9.750
1966	8.341	9.751
1965	8.203	9.594
1964	7.935	9.564
1963	7.701	9.389
1962	7.496	9.167
1961	7.167	8.904
1960	7.048	8.687
1958	6.716	8.419
1957	6.673	8.223
1956	6.603	8.228
1955	6.637	8.322
1954	6.336	8.054
1953	6.303	7.895
1952	6.113	7.707
1951	6.002	7.568
1950	5.787	7.290

Figure 2.2 Output per Man-year in the United States and California, 1950-72 (in thousands of 1958 dollars). Data on the United States 1950-65 from U.S. Department of Commerce, Bureau of the Census, *Long Term Economic Growth*, pp. 188-89. Data on California for the above table and graph courtesy of the University of California, Los Angeles, Business Forecasting Project. See Appendix for further information.



[a] Includes agriculture, forestry, and fishing industries since 1920, and mineral extraction as always under 3% of the total.

[b] Includes manufacturing and construction industries (with construction always under 8% since 1940).

[c] Includes trade, finance, insurance and real estate, transportation, communication, utilities, public administration, and the service industries.

Figure 2.3. Percent Distribution of Employment in Industry by Sector in the United States and California, 1910–70. See tables A and B in the Appendix for the percentages and raw figures from which these graphs were derived.

a third (28.6 percent), and *tertiary or service industry over one-half (51.9 percent)* of all employees in the state. By 1970, California's tertiary sector, with 69.4 percent of the employed, far outdistanced both the primary sector, whose employed had fallen to a miniscule 3.6 percent, and the secondary sector, which claimed 27.0 percent. This apportionment, on its face, appears to be quite *consistent* with the industrial/postindustrial thesis, i.e., with a rapid decline in agriculture during the heyday of industrialism, followed by an even more rapid decline, heralding the onset of an entirely new era. Yet there also appears to be a *contradiction* to what is implied in that thesis, namely, the release of labor from agriculture to manufacturing in the industrial period and the release of labor from manufacturing to the service sector during the postindustrial period: Between 1920 and 1940, the labor released from agriculture showed up in the *service* industries; while between 1940 and 1960, *manufacturing* realized this increment. This reshuffling was even more pronounced in California, where between 1940 and 1960 nearly all the labor percentage released from agriculture was regained in manufacturing. This apparent contradiction is somewhat resolved, however, when we note that California's service sector already claimed the lion's share of the employed, and especially when we also note that between 1960 and 1970 the shift in employment in both areas followed the predicted pattern. Indeed, if a high percentage of a labor force employed in the service sector is meaningful as a crucial indicator of postindustrialism, and if we take the percentage employed therein in the United States in 1960 as a standard by which to judge, *California has been postindustrial at least since the 1920s* and since then has continued to become ever more so.

Just as these data indicate a shift in employment among *industries*, a similar pattern is also apparent for *occupations*. Table 2.1 indicates that not only does California follow the trend in the increase of white-collar workers and the corresponding decrease of blue-collar and farm workers, but it *leads* that trend. Already by 1950 California white-collar workers outnumbered their blue-collar neighbors. For the United States as a whole this did not happen until sometime between 1950 and 1960, probably about 1956. By 1970, over half of those employed in California were in white-collar occupations, a figure that was ahead of the distribution for the United States generally.

Like other indicators we have used in our discussion, these two indicators of employment shifts within California suggest indirect evidence that the attitude profiles of the working population may be changing. We argued above that a shift of overall emphasis from *direct* engagement in rural or industrial production to a preponderance of workers in service and/or white-collar work was likely to decrease the application of industrial values to other institutions in a society. That is, since more employees become engaged in work related to servic-

Table 2.1 Distribution of Employment Among Major Occupational Divisions in the United States and California, 1950, 1960, and 1970 (in percent)

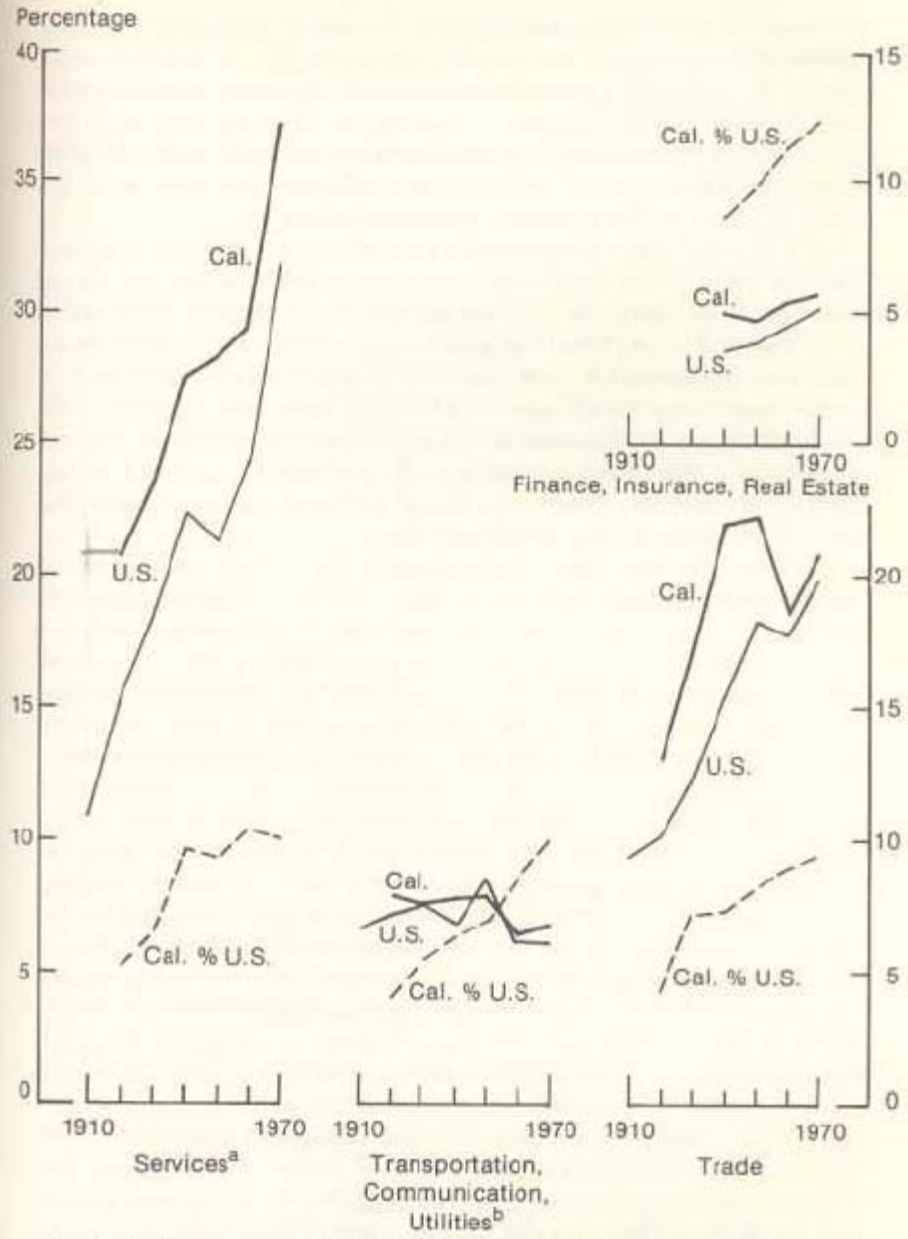
	1950	1960	1970
All Occupations[a]	100	100	100
White Collar			
United States	36.9	41.4	48.2
California	45.0	47.3	54.4
Blue Collar			
United States	39.8	36.7	35.9
California	36.3	33.1	30.8
Farm Workers			
United States	11.9	6.1	3.1
California	6.8	3.9	2.2
Service Workers			
United States	10.1	11.1	12.8
California	11.0	10.4	12.6

[a]1950, 1960 percentages total less than 100% because of unreported occupations, approximately 1% and 5% respectively.

SOURCE: Data compiled from U.S. Department of Commerce, Bureau of the Census, *Census of Populations* (Washington, D.C.: Government Printing Office, selected years).

ing people rather than related to producing things and products exclusively, the probability emerges that a number of values will be mixed in the culture, represented by groups deriving economic sustenance from pursuing them. We would expect these values to be played out in the appearance of social and political issues reflecting such a diversity. To be sure, many other conditions contribute to such a differentiation of value expressions. We suggest that such a development is massively enabled by the kinds of shifts characterized by the data in figure 2.3 and table 2.1.

Perhaps the most important feature of Stable Postindustria is the cycles of increasing social and organizational capacity that occur as the various organizational complexes become more differentiated and interdependent.[16] Regular bodies of statistics available for the period do not yield a direct indication of this characteristic, so we must rely on rough surrogates. When technical organizations are astutely arranged and coordinated, they find great mutual advantage in the business of production and distribution of goods and services; the advantage spills over to consumers and the public at large. Such arrangements require joint efforts for continued operations; thus we could expect increases in transportation capabilities, financial organizations, and trade activities implemented for



[a] Includes professional service, domestic and personal services, business and repair services, entertainment and recreational services, and public service industries.

[b] Includes utilities only since 1940.

Figure 2.4. Percent Distribution of Employment Among Industry Groups in the Service Sector in the United States and California, 1910–70. For the percentages and actual raw numbers from which these graphs were derived, see Appendix, tables A and B.

professional administrators, lawyers, industrial engineers, planners, public officials, bankers, and the like. Our assumption is that as the complexity of economic, political, and social life increases, more attention will be paid to its coordination. To the degree this is the case, we expect a slow rise in the percentages of administrative positions within the labor force. As population and organizational infrastructure grow, so grows the proportion of those charged with coordinating it.

Figure 2.5 shows the changes in the overall proportions of administrative skills in the employment pool for California and the United States. Clearly California, until the last decade, led the rest of the nation in its engagement with staffing coordinative roles. Notably there was a huge absolute increase in these positions, though it was not quite as great as the enormous absolute growth of the total labor pool. Somewhat unaccountably, the 1960s witnessed an overall relative decline in the proportions of Californians occupying such positions. The last half of that decade also included the onset of social upheaval and an increase in a sense of lost control over social institutions.

Other data add detail to this picture. As a society grows and becomes complex, especially in its services to citizens, resources for public governance, on the one hand, and resources for knowledge-based services, on the other, could be expected to increase as well. In a sense, these capacities are benchmarks of societies beyond industrialism. Figure 2.6 shows a very substantial and sustained investment in both. The curves of increased employment in the public-services and public-administration industries speak for themselves. They support the more intuitive sense of growth felt by many. But the increases in proportion of those professionally employed are the most dramatic of all our data. Since 1950 there has been a truly phenomenal increase in the absolute and the proportional employment in the knowledge-based industries. California has led the nation, and as is the case for other indicators we have used, the rest of the country is coming to be more and more like California in this respect. But the data in figures 2.5 and 2.6 also report an apparent anomaly. While there has been a sharp and *continuous* increase in the proportion of all those employed in public administration in California, there has been a relative decline in all coordinative roles within public and private organizations, suggesting perhaps that the managerial capacities of the private sector may have suffered a relative decline. To the degree that this is the case and it results in a general decline in the capacity for the private sector to anticipate and deal with greater inter- as well as intrasector interdependence, it is likely that the public sector would be turned to with demands for service and coordination. It would also be likely that the large population influx would make it difficult or impossible for California government to deal effectively with such demands.

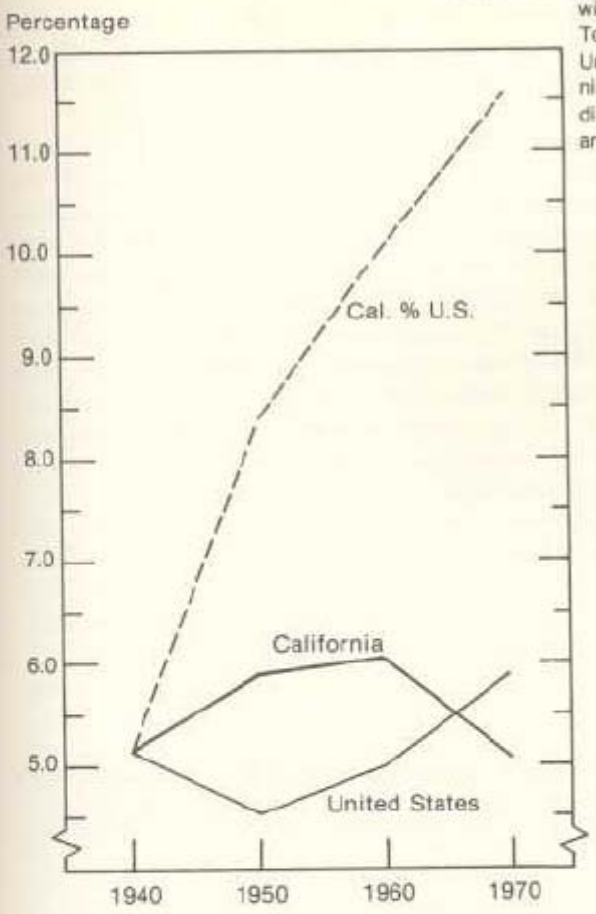


Figure 2.5. Proportion of Employed with Coordinative Skills to Total Employed in the United States and California, 1940–70. See Appendix for source citations and explication.

	United States	California	Calif. % U.S.
1970	$\frac{4527^a}{76,554}$ 5.91%	$\frac{528}{10,319}$ 5.12%	11.66
1960	$\frac{3416}{67,990}$ 5.02%	$\frac{353}{5761}$ 6.13%	10.33
1950	$\frac{2695}{59,230}$ 4.55%	$\frac{230}{3902}$ 5.89%	8.43
1940	$\frac{2431}{45,166}$ 5.38%	$\frac{132}{2476}$ 5.33%	5.43

[a] Numerator = employed with coordinative skills; denominator = total employed.

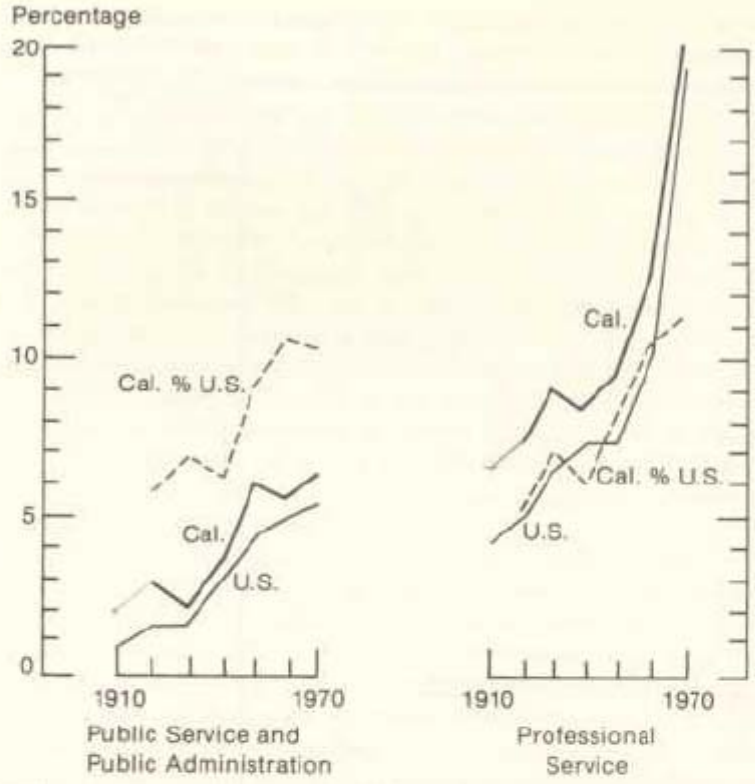


Figure 2.5. Percent Distribution of Employment Among Service Industries in the United States and California, 1910-70. For the percentages and actual raw numbers from which these graphs were derived, see Appendix, tables A and B.

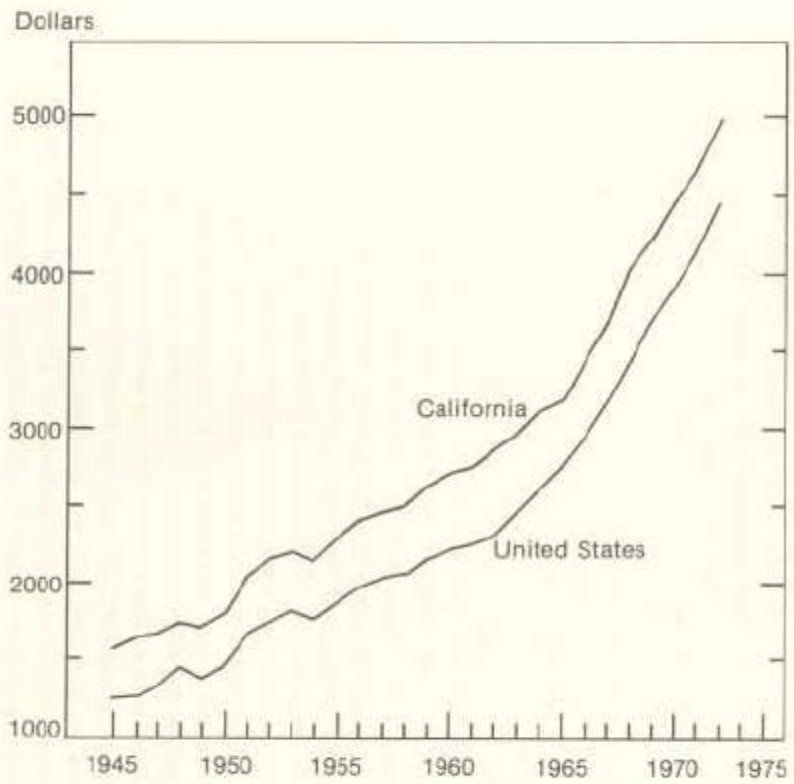
We have experienced a time in which large organizations in industry and government have, indeed, altered the face of the physical and social landscape. In a sense the 1960s was the highwater mark of confidence in large-scale efforts to do the impossible. Much has been invested in hopes and expectations that large organizations can and will solve whatever problems are thrust upon them. At the same time, the unanticipated results of using this high capacity for problem solving have occasioned an increasing number of social and environmental surprises, which in turn have stimulated an even greater penchant for planning and policy studies.[19] Time and again, the emphasis upon the gathering of knowledge as a support for decision making is underscored, auguring the ascendency of a new elite composed of those who have access to and control of specialized information. New complexes of techno-political direction have arisen; groups of educated men and women have been

brought together as planning units, advisory commissions, study and policy groups, and regulatory agencies, whose manifest mission is to provide knowledge and political acumen for control over the many related industrial, distribution, and service complexes that have evolved.

In this milieu of increased capacity, investment in planning, and production, the public's expectations have risen in accordance with the increase in perceived capacity to solve social problems. Accomplishments once thought of as unlikely or physically impossible have now become commonplace. In fact, for many the meaning of "impossible" seems to have changed significantly. What was once "impossible" no longer is; what is meant by "impossible" now is likely to be "politically difficult." Such confidence in attitude seems to mark private, governmental, and individual expectation equally. We have argued already concerning both real and perceived public capacity. Such expectations will probably increase at the personal level as individual affluence increases. Figure 2.7 leaves little doubt about the relative and absolute growth in spending power of the Californian compared with that of other Americans. It is quite likely that such increases will sustain the public's hope that rising affluence will continue after recent economic setbacks are overcome, and such hope will contribute to an impatience about unresolved social, economic, and resource problems.

In the context of a society taking on the character we have outlined, what might be expected about its politics? We suggest that it is the *politics of psychic reassurance*, a politics taking on the paradoxical cast of promise and reassurance *and* latent uncertainty.[20] Perhaps it is almost the politics of anxious hope, hope that the system can in fact be run efficiently enough to ensure the realization of the things we now believe are possible. But such is the mantle cloaking a contradictory undertone of latent confusion associated with complexity beyond comprehension. Public figures try to assure us that confusion can be moderated; they try to persuade the citizenry that all is well and that the machines of government and industry really do operate as advertised—or can be made to if only a change of administration is won.

With widespread perception of improved capacity to produce, distribute, and serve the public, expectations of both elites and the public escalate, and planning units and regulatory agencies proliferate to assure that potential capacity is realized. At the same time, a sense of potential breakdown rears its head, stimulating a complementary enthusiasm for ever more rational decisions and organizational actions. In the scenarios of writers on Postindustria, the emphasis on the rise of a technocratic elite and on the increased importance of knowledge-based action suggests that the quality of theoretically based knowledge is adequate and will be put to effective use. Thus, one gets the sense from much of the literature that all will be relatively well in our postindustrial future.



Year	United States	California
1972	$4478	$5002
1971	4156	4640
1970	3933	4444
1969	3698	4232
1968	3412	4012
1967	3159	3697
1966	2963	3457
1965	2724	3196
1964	2574	3112
1963	2451	2986
1962	2368	2882
1961	2264	2772
1960	2215	2705
1959	2161	2647
1958	2068	2509
1957	2045	2487
1956	1975	2418
1955	1876	2311
1954	1785	2170
1953	1804	2203
1952	1733	2166
1951	1652	2042
1950	1496	1851
1949	1384	1728
1948	1430	1751
1947	1316	1678
1946	1249	1654
1945	1234	1580

Figure 2.7. Per Capita Personal Income in the United States and California, 1945–72. U.S. and California figures taken from U.S. Department of Commerce, Bureau of the Census, *Long-Term Economic Growth, 1860–1965*, series C1 and C58, pp. 210, 217. See Appendix for further information.

In such a future, planners and leaders could have a clear understanding of the wants the public has been able to articulate reasonably well *and* these leaders could have adequate causal knowledge about the socioeconomic dynamics of the system. That being the case, there would be some assurance that the problems associated with economic growth, system coordination, and institutional development can be kept minor. Such a situation would naturally lead to the ascendency of the new "knowledge elite" coming to power perforce of its special capacities for using knowledge effectively, thus winning devotion from leaders and the public. *The crucial and assumed condition in this description of stable postindustrial dynamics is the ability of this new knowledge elite to develop significantly improved causal knowledge about the behavior of social and economic systems and to act upon it.* If this ability proves out, presumably continued affluence will result; and new sociocultural patterns may emerge, engendered by affluence and freedom from economic scarcity. Cultural developments, relatively untroubled by great social and political surprises, might well become based on the "new scarcities" of information, coordination abilities and time that Professor Daniel Bell discussed recently.[21] New value orientations would emerge, and perhaps they are emerging. In a sense this interpretation could be applied to the Swedish case as described by Hancock in chapter 6 of this volume.

We have attempted thus far to show the plausibility of considering California as a society which exhibits many of the structural characteristics of "postindustrialism." We have depended heavily upon the indicators other writers have used in charting changes in societies they say are associated with developments "beyond industrialism." We have also nominated a set of relationships making explicit some of our notions about the underlying dynamics of this development. Two things can be said thus far. First, it appears that California as a society is, indeed, well beyond simple industrialism. If we can put much confidence in the indicators others have used, California is well into a postindustrial condition. Therefore, it appears to be an excellent candidate for intensive study. Second, the scheme outlining some of the dynamics of stable postindustria, derived largely from the literature, rests heavily upon the assumption that advances in knowledge have paralleled and will continue to parallel the swift changes in social interaction prompted by the multiple social complexes we have noted. We question whether this is a viable assumption.

What follows is a departure from other visions of the postindustrial future. It is much more speculative than our preceeding discussion and is, in a sense, in the prehypothesis stage. A good deal of the impetus for our effort comes from a deep uneasiness about applying the stable postindustrial notion to the California experience. It may be that those notions cannot be appropriately applied to the society of the West Coast, but in the

spirit of attempting to understand the changes "out there" which seem to go beyond the conditions of industrialism, we present the concluding part of this paper.

Unstable Postindustria

In the "stable" postindustrial society, experts may indeed be said to be expert, for the causal knowledge upon which they base action is in a significant sense correct; knowledgeable policies *could* shape events in desired directions. The condition of adequate causal knowledge and effective implementation *could* be met. In the face of rapid and extreme social change, however, an equally plausible condition may obtain; one in which leaders and their knowledgeable assistants have great difficulty in determining what is desired by a population afflicted with a mild state of disorientation. This difficulty is compounded when the validity of the cause-effect beliefs held by these experts for predicting the dynamics of economic, social, and political life diminishes. That their validity *will* diminish is extremely likely if the character of the social science theory relied upon by these experts derives mainly from simple social systems. These theories will prove grossly inadequate when applied to highly complex systems.[22] We argue that to the degree that the beliefs about causality underlying the construction and implementation of policy are mismatched with the economic, social, and political conditions to which they are applied, the dynamics of stable postindustrial societies begin a process leading them ultimately to instability. In a sense, "unstable" Postindustria is the second stage of postindustrial development. An alternative pattern of political development associated with advanced industrial society, it is directly related to the *quality of knowledge* about social operations, organization, and coordination.

Our conception of Unstable Postindustria, drawn schematically in figure 2.8, was in the main developed in our attempt to understand what seems to be happening within California's society. It bespeaks our uneasiness in directly and definitively applying the "normal" postindustrial notion to this experience, even though its vestiges are clearly present within it. Something in the application jars us. A number of indications that the promise of the postindustrial condition has not been realized confronts those of us who live in California.

A postindustrial system approaching an unstable condition retains certain features of Stable Postindustria noted above: (1) increasing apparent organizational capacity to deal with social problems and production demand; (2) increasing public expectation to consume; and (3) increasing importance attributed to the knowledge producing and using classes in dominant institutions. But accompanying this continuity is the emergence of two additional tendencies: (4) increased perception of

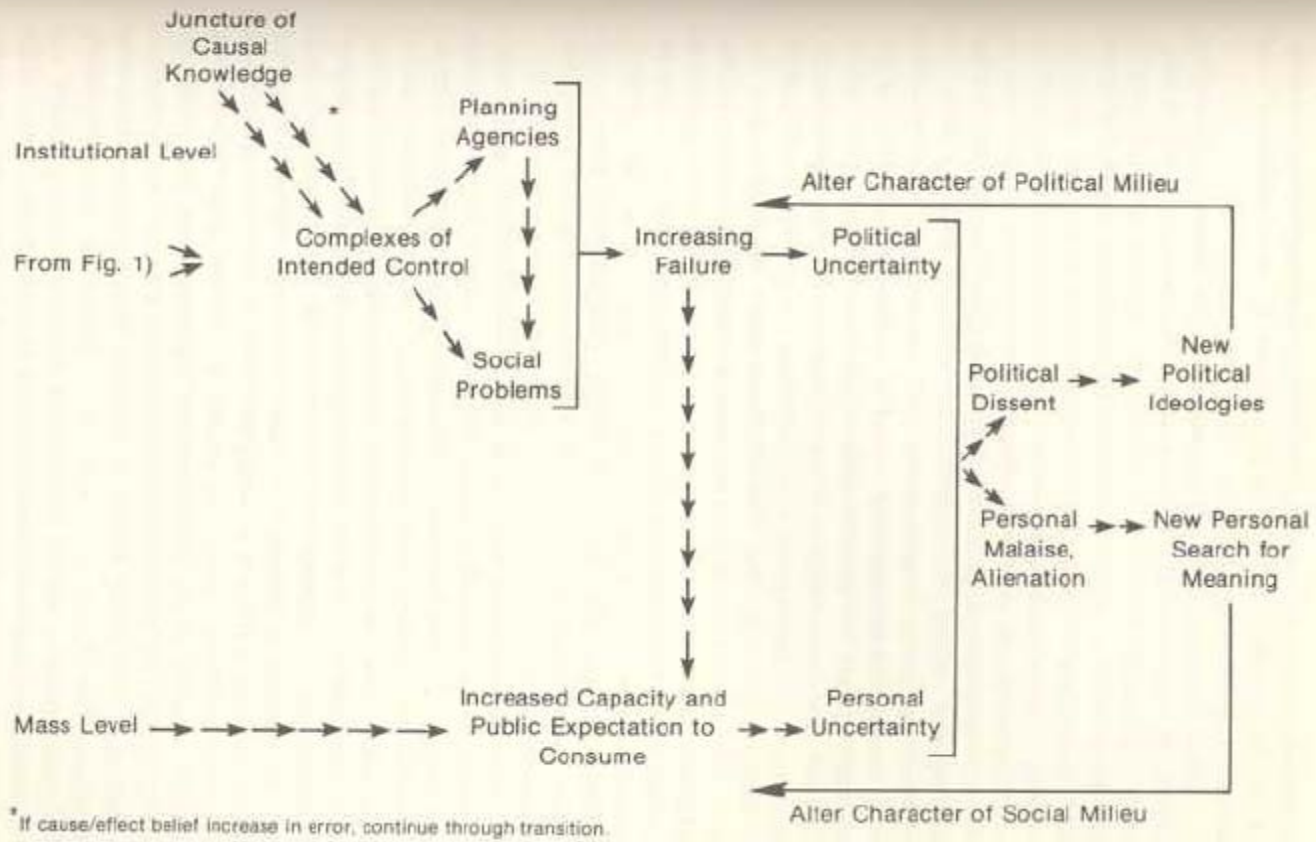


Figure 2.8. Transition to Unstable Postindustria.

the growing number of social, economic, and management problems; and (5) an increased sense that the failure of social, economic, and political programs is *unjustified.*

These two latter conditions issue from the widening disjuncture between the character of the social and environmental problems associated with social complexes of production, distribution, and services and the established institutions of coordination and control designed by an older order for coping with these problems. In the very act of attempting to solve social and production problems, government and industry, operating on erroneous assumptions about the social dynamics behind these problems, promote programs that increase organized complexities and reduce the potential for effective control. Thus, the large-scale programs of government and industry designed to promote social benefit and stability lead in fact to an increasing number of unpleasant surprises, for decision makers, for citizens, and for consumers. The issue here has nothing to do with questions about the malevolence, self-interest, or incompetence of industrial or governmental leaders. Rather, we are contending that the cause-effect beliefs they hold and upon which their institutional processes are developed correspond less and less to what is actually happening in the world. To the degree this is the case, the knowledge elite falters, its promise unrealized. Then experts are expert only on what is past, on matters of relative simplicity applicable to an older scheme of things. These leaders, then, cannot predict or speak rightly of the future, yet they must continue to prescribe for it somehow.

We are suggesting that events and actual conditions have outrun the capacities of experts, both public and private, to understand them well enough to plan reasonably effectively. Policy making and implementation are as much error making as they are productive of desired outcomes. To be sure, many things cause policy failure and exacerbate social problems.[23] That notwithstanding, the futuristic vision of the post-industrial writers implicitly asserts that knowledge-based policy produced with the backing of cadres of science-rooted experts probably suffices for anticipating disruptive external forces or at least for responding to them in ways flexible enough to prevent an increase in social problems. But that vision does not appear fulfilled at present, or is there much reason to believe that it will be in the *near* future. The increase in emphasis on planning and policy studies can in fact be seen as an indicator of significant past failure in these areas. It is possible, indeed probable, that an increasing number of presently constituted policy studies and plans will *not*, as some apparently believe, lead to the resolutions of the problems stimulating the policy studies and plans in the first place. Thus, it is quite possible to have a situation in which there are parallel increases in perceived policy failure, in the number and intensity of social

problems, and in public expectation that we should be able to overcome them.

In combination, then, the major characteristics of Unstable Postindustria amount to an intensification of the paradox noted earlier, and with it people's heightened perception of that paradox: the bewildering coexistence of society's impressive potential for dealing with its problems but its equally impressive inability to do so effectively. Whatever the methods we employ in the high hopes of solving our problems, they seem to produce many new ones, often without solving the original ones. Still, we must act; and our official actions are of necessity based on what we think we know. A deep confidence in the generally held perspectives on economic and social problems and in the institutions that have been developed to deal with them almost by definition must inform the actions of leaders and their planners. What other conceptual basis do they have upon which to rationalize their acts? But what if there is a growing number of negative social surprises and apparent policy failures?

It is reasonable to assume that continued and increasing perceived policy failure and negative surprises will result in fundamental uncertainties about the orthodox bases for political decision making and about the sociopolitical ideologies and the institutions they have spawned. If this uncertainty grows sufficiently intense, some kinds of measures for reducing it will be taken. Similarly for individual responses regarding one's own personal future: If one encounters increasing numbers of negative surprises in the events of everyday life, it is likely that, after a time, he or she may become infested with doubt about his or her basis for experiencing the world. As this uncertainty grows more intense, it is certain that a way must be sought to deal with it.

Many and varied are the sources of political and personal uncertainty. How much of this uncertainty may be traced to the planning and policy failures of large institutions is, of course, an empirical question. Yet in an increasingly interdependent economic and social system, the behavior of large institutions and the leadership prompting their action clearly have a significant influence on events. While planning or policy failure may not be the only or the single most important source of uncertainty, we assert that it is one of growing importance. Certainly the experience of living in California leads one to resist putting much confidence in the acumen of public or private leaders, their planners or policy programs.

The San Francisco and Los Angeles areas as well as rural California have been witness to a series of social and political phenomena we might understand to be manifestations of social discontinuity. These phenomena are also evidence of response to increasing levels of political and personal uncertainty. Instances of political tumult evident in Cali-

fornia's recent past and the emergence of extremism on both the Right and the Left are testimony to this discontinuity and uncertainty. A great deal has been written about the consequences of this kind of political disaffection. In California the visible results have been social upheaval and dissent. Political extremism on the Right has been evident in the enthusiasm for the Christian anti-Communist Crusade, the development of the John Birch Society, and paramilitary groups such as the Minutemen. These movements have issued principally from Southern California. Somewhat parallel, leftist-tinged movements in the North have also been evident: the rise of the New Left, the Yippies, the Free Speech Movement and its various student progeny in the long saga of campus unrest, and other groups engaging in the "politics of confrontation," much of which took the form of antiwar demonstrations. All such factions have attempted to prompt fundamental changes in the political structure; their ideologies are a scattering of neo-Nazism, extreme nationalism, pacifism, environmental radicalism, and Gay Liberation.

Concurrent with political dissidence, personal alienation and malaise have also increased among many sectors of California's society. These are perhaps less visible but equally important socially. In Southern California periodic renewals of neofundamentalist religious movements have occurred, now particularly evident in the growing numbers of zealots known as "Jesus Freaks." The San Francisco area for its part has seen a significant turn to Oriental religions. Buddhist communities have attracted many disillusioned with the materialism of Western values. The Hare Krishna youngsters are a more evangelistic example. Another type of response may be seen in the mystic cults which extend even to devil worship. Such have found a surprisingly large following among the displaced. In both Northern and Southern California, the encounter-group mystique, the drug culture, and other loosely organized manifestations of the search for alternative life styles have been sufficiently in evidence to prompt a rash of popular commentary. In a sense, Northern California and Southern California might be seen as two visions of the future, each with its lessons of development amid confusion. Each region has responded dramatically to massively induced social change. What may develop in the future is difficult to foresee.

Both the search for new patterns of social and political life and the attempt to recover the familiarities of older forms seem a natural consequence of increased leisure time newly available to individuals. We have developed an economy which has freed people from tight attachment to agriculture and factory labor. Indeed, *most* of our population is freed of those activities which over long hours sap physical and psychic energies, thus precluding for the citizenry both motivation and time for introspection and reflection on public matters. *But* the forms of response to this affluence in time and energy seem to be born more

from *uncertainties* about the public order and personal relations than from an image promising an exciting, self-actualizing future within a social order that distributes its wealth in just fashion. California's response, echoed in many other parts of the United States, has been a search at two levels: a search for altered political ideologies and a search for new patterns of personal meaning. These searches have not had the optimistic undertone implicit in the views of many of the "stable post-industrialists." Instead, there has been much to suggest the slightly frantic tone of Toffler's notion of "future shock." Even the hopeful strivings of the various ethnic groups in California have this quality, and their search is characterized more by disillusion and bewilderment than by a sense of promise.

Our recognition of the disparity between these widespread negative-tinged reactions and the positive promise at least *potential* in the bounties of an advanced industrial society underlies our conception of Unstable Postindustria.

There is some evidence that in California political activism has become much less attractive and that the doctrines of neofundamentalist and mystical religious movements have increased their drawing power. But whatever the forms popular movements take, if they are followed by sufficiently large numbers of people, they will alter the political and social milieu within which technological development and government operate. It is likely that new forms of social organization will emerge—perhaps they are already emerging—that are not simply extrapolations of familiar forms. The dynamics of this process in the recent past and its probable extension into the near future are the focus for a series of research questions set forth below.

THE STUDY OF CALIFORNIA AS AN ADVANCED INDUSTRIAL SOCIETY

We believe that the Californian experience since, say, about 1940, can provide an apt setting for examining the more detailed dynamics of technological development and sociopolitical change. The series of relationships hypothesized in figures 2.1 and 2.8 is intended to be seen as a network of linkages tracing a sequential, chronological development and positing significant causal relationships. As such, they can be put to the test in the context of the Californian experience whether or not the experience proves to be a prototype of the future changes expected to occur in societies a bit slower in industrial and technical development. Whatever turns out to be the case for California, two levels of research problems confront us, one descriptive, the other analytic.

A much better description of the relationship between technological development and industrial-distributive-service development is needed

in order that more finely detailed indicators may be developed. Without such indicators, hypotheses will be difficult to test. An important *initial hypothesis* is that as technological developments have become more complex and more sophisticated, the organizations associated with their development and with the consequent distribution of technical output have themselves become more complex internally and more interdependent with other organizations. Thus, the first order of business should be an exploration of the character of technological development and the patterns of stimulus/response shown by various industrial and service organizations. A *second* and related hypothesis asserts that, meanwhile, with some time lag for learning, the public's level of expectation about "normal" services begins to increase. In other words, a higher and higher level of service and rate of consumption becomes considered an allowable minimum.

A *third* hypothesis is one more in keeping with the conventional way of conceptualizing the postindustrial phenomenon with the connection made between the type of employment (and/or the type of employing organization) and the sort of values likely to be held by the employee. A much better understanding of the process by which divergent deeply held social values are shaped by *industrial* as opposed to *service* activity is necessary if we are to continue to use this gross occupation indicator with much confidence. Examination of these major hypotheses adds up in a sense to methodological research aimed at increasing the confidence we can place in the meaning of indicators which, on their face at least, seem rather indirect signs of the behavior under scrutiny. Such a project may be possible for the California case, though the outlines of the effort are not clear at present.

The relationship between those holding knowledge and their consequent participation in planning and advisory councils is also crucial for the whole postindustrial argument. A *fourth* hypothesis asserts that as the complexity of techno-organizational development increases, there is increasing need felt by institutional leaders to include those who have knowledge in determining the policies of industrial-governmental complexes. A corollary to this hypothesis is that the use of knowledge enables an improvement of complicated institutional relationships, sufficient for the system to continue operating without undue surprise or difficulty.

An expectation of stability and limited surprise, however, does not make much sense any longer for those of us who live in California; too many things seem out of control. But the effective coordination of the system with the assistance of a knowledge elite may well *have been* the case at some time in the recent past. The question becomes one of the *degree* to which knowledge-based policy has been closely related to stability. What were the characteristics of the situation and the state of knowledge and its use that prompted this alliance of knowledge-based

coordination? When, if ever, did this condition begin? To what degree is it still the case? Has there been an erosion of expert effectiveness in institutional guidance? To what factors might such a decline in effectiveness, if not in participation, be attributed?

This line of research points straightaway to the second part of our schema—to the transition to "Unstable Postindustria" charted in figure 2.8. There are many indications that the promised improvements in the "quality of life" implicit in writings on postindustrialism have not been realized in California's society. There is widespread uncertainty and controversy about the role of government, the costs of public services have skyrocketed, systems of welfare run amuck, and medical programs do not function well. In one area of production and services after another, the system flounders. In short, the state does not strike people as nearly so attractive as it once did.

The series of relationships outlined in figure 2.8 might partially describe what is happening. A *fifth* hypothesis is that as the quality of knowledge about system dynamics declines, there is in fact an increasing number of policy failures; programs do not work anywhere nearly as well as the public has been led to believe they should. As a result, there is more investment in the planning function and at the same time there is a growing recognition of numerous social problems. Some way of testing this hypothesis may be worked out, though the problems of gathering data on such sensitive materials are bound to be considerable. Indirect indicators may have to fill the gap. Yet such a test is crucial to the argument. If the quality of cause-effect beliefs has not declined, and there is still erosion in public and private programs, another story is implied. On the other hand, the sense of program failure may not adequately reflect what has, in fact, happened; then some way of accounting for that perception is in order.

Our last observations involve the patterns of value and ideological changes apparently abroad in our society. The argument can be summarized in a *sixth*, summary hypothesis: that for citizens and consumers, simultaneous perceptions of increasing failure in government and private programs, of increasing social capacity to deal with public problems, and an increasing or constant expectation to consume products and services leads to feelings of uncertainty about their personal futures. Granted, such a relationship may not exist in fact; if it does not, then there can be no direct connection between perceptions of capacity, consumption, and social failure and political or personal malaise. But if it does, it must be explored and its affinity to the emergence of new political ideologies and to the significant increase in the number of people following alternative life styles established.

Let us say that all the relationships we have asserted about reality are so. Our task is not over; we have merely taken the descriptive steps. New obligations come forth. If our notions have merit, it is in their use-

fulness in *ordering* a series of relationships in sensible ways. But that feat does not *explain* what has been going on. Explanation must await a more searching series of studies, studies which can be put into perspective by our final set of questions:

What is it about technological development that prompts the increased organized complexity of social, economic, and political institutions?

What is it about the character of social science knowledge that prompts an erosion of quality in the face of such increased organized complexity?

What is it about the sense of uncertainty that results in an impulse to search out either a new political ideology or a new religious emphasis or orientation?

Finally, what *would* it be about an altered political or social milieu that would shape future technological development in ways different from those of the past when, unconstrained by social and political values, such development was seemingly driven by a simple faith in progress through technology?

NOTES

1. See, for example, Walton Bean, *California, An Interpretive History* (2nd ed.; New York: McGraw-Hill, 1973); David Lavender, *California: Land of New Beginnings* (New York: Harper & Row, 1972); Robert G. Cleland and G. S. Dumke, eds., *From Wilderness to Empire—A History of California* (New York: Knopf, 1959); Ralph J. Roske, *Everyman's Eden: A History of California* (New York: Macmillan, 1968); and Michael Rogin and John L. Shover, *Political Change in California: Critical Elections and Social Movements 1890-1966* (Westport, Conn.: Greenwood Press, 1970). For the more popular literature concerning recent events see, for example, John Brooks, *The Great Leap Forward—The Past Twenty-Five Years in America* (New York: Harper & Row, 1966); Michael Davie, *California, The Vanishing Dream* (New York: Dodd Mead, 1972); Curt Gentry, *The Last Days of the Late Great State of California* (New York: Putnam, 1968); Dennis Hale and Jonathan Eisen, eds., *The California Dream* (New York: Collier Books, 1968); and Carey McWilliams, ed., *The California Revolution* (New York: Grossman, 1968). See also Neil Morgan, *The Westward Tilt: The American West Today* (New York: Random House, 1963); Neal R. Pierce, *The Megastates of America* (New York: Norton, 1972); and Kevin Starr, *Americans and the California Dream* (New York: Oxford University Press, 1973).

2. From the perspective of comparative politics, California may be viewed as a society whose political system has a high degree of internal integration but is yet tightly bound to the society to its east through economic and political ties. Accordingly, the effects of exchange between the two societies can be examined, as well as can the impact of external influences upon California emanating from the East.

3. Particularly dramatic examples (and ones drawn from the extreme ends of our chronological spectrum) are (1) the "Bloody Thursday" confrontation on the San Francisco waterfront in 1934 between ILWU dockworkers and the National Guard, which triggered a general strike in the Bay Area; and (2) the frequent clashes in the late 1960s between antiwar demonstrators and city police, county law-enforcement personnel, and the militia.

4. We accept the term "postindustrial" with some uneasiness. It has come to mean many things to many people, and in a descriptive sense it discloses more ambiguities than it clarifies. We adapt it here in part heuristically—as an exercise—and in part metaphorically—as symbolic of the situations facing highly advanced industrial societies.

5. Limitations of space do not allow us to mention all those who have contributed to the concept of postindustrialism. Some of the seminal ideas were provided by Daniel Bell, "Notes on the Post-Industrial Society" *Public Interest* 1, nos. 6, 7 (Winter and Spring 1967); "The Measurement of Knowledge and Technology," in *Indicators of Social Change*, Eleanor Bernet Sheldon and Wilbert E. Moore, eds. (New York: Russell Sage Foundation, 1968); and *The Coming of Post-industrial Society* (New York: Basic Books, 1973). See also Norman Birnbaum, *The Crisis of Industrial Society* (New York: Oxford University Press, 1969) and "Is There a Post-Industrial Revolution?" *Social Policy* 1, no. 2 (July/August 1970); Zbigniew Brzezinski, *Between Two Ages: America's Role in the Technetronic Age* (New York: Viking Press, 1970); Amitai Etzioni, *The Active Society* (New York: Free Press, 1968); Victor C. Ferkiss, *Technological Man* (New York: Braziller, 1969); Victor R. Fuchs, *The Service Economy* (New York: National Bureau of Economic Research, 1968); John Kenneth Galbraith, *The New Industrial State* (Boston: Houghton Mifflin, 1967); Bertram Gross, "Planning in an Era of Social Revolution" *Public Administration Review* 3 (May/June 1971): 259-97; Robert Heilbroner, *The Limits of American Capitalism* (New York: Harper & Row, 1965) and "Economic Problems of a 'Postindustrial' Society," *Dissent* (Spring 1973): 163-76; Ronald Inglehart, "The Silent Revolution in Europe" *APSR* 65, no. 4 (December 1971): 991-1017; Herman Kahn and Anthony J. Wiener, *The Year 2000* (New York: Macmillan, 1967); Sheldon and Moore, *Indicators of Social Change*; and Alain Touraine, *The Post-Industrial Society* (New York: Random House, 1971).

6. We are grateful to our colleague Martin Landau for discussing this vital point with us.

7. For an association of affluence with postscarcity values see Inglehart, "The Silent Revolution in Europe," pp. 991-1017. For an argument challenging the idea that new "social experiences and needs" are traceable to the disappearance of the old industrial work milieu, on grounds that the industrial milieu is not being appreciably reduced, see Heilbroner, "Economic Problems of a 'Postindustrial' Society," pp. 164-65.

8. Heilbroner adds transportation and utilities (usually grouped in the tertiary or service sector) and mining (usually grouped in the primary sector) to the secondary or manufacturing sector as well (ibid., p. 164). We note that Daniel Bell follows the same grouping of tertiary industries as we do here; see *The Coming of Post-Industrial Society*.

9. Whether the shift in employment has been neatly patterned after this scheme (i.e., from agriculture to manufacturing during the industrial revolution and from manufacturing to services during the "postindustrial revolution") or whether it has been one from agriculture to services and manufacturing is a debated matter. Heilbroner, "Economic Problems," and Kenneth Boulding, "Is Scarcity Dead?" *Public Interest* (Fall 1966), suggest that the shift has been from

agriculture to services. We present data in the following section which bears on this debate.

10. The literature is replete with discussions of the difficulties of measuring these indicators. Also, the problem of measuring productivity in the service industries is complicated by inflationary spirals and depletion of resources which ultimately militate against affluence and abundance. For a discussion which bears on this point, see Boulding (ibid.).

11. Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1964).

12. This conception of technology and organization builds on the assumption that technology must be embodied in social organization before the promise of the physical concept and machines of the technology can be realized. It also means that without widespread distribution of the technology little social change will result. Thus, it is not technical potential or theoretical capacity which makes a difference in a society's operation, but the combined action of new capabilities with the organizations to carry out technically based operations on the physical world in sufficient volume to alter experience for large numbers of people. For a full discussion of this point, see T. R. La Porte, "Technology as Source," in La Porte et al., *Interactions of Technology and Society—Impacts of Improved Airtransport: A Study of Airports at the Grass Roots* (Berkeley: Institute of Governmental Studies, University of California, Berkeley, Report to the National Aeronautics and Space Administration, December 1974), chap. 1.

13. As with other indicators used in this paper, increased productivity is, in a sense, a surrogate indicator. A more straightforward indication would be a careful charting of the actual degree and magnitude of technical innovation's active introduction into the work processes. But we are not blessed with such data and will have to settle for the less precise and the indirect data available from economic statistics. We are equally handicapped in measuring other aspects of postindustrial dynamics. To wit: A rough indicator of innovative efforts (and hence of general productivity) can be found in federal, state, and private sector expenditures for research and development. A review of relevant data shows that California compares favorably with the patterns for the whole United States both in the degree of increase and in the relative proportion of R&D efforts. See, for example, National Science Foundation, *Federal Funds for Research and Development and Other Scientific Activities*, Surveys of Science Resources Series NSF 72-317, vol. 21, p. 154 ff.; National Science Foundation, *Research and Development in State Government Agencies—Fiscal Years 1967-1968*, Survey of Science Resources, NSF 70-22, p. 82 ff.; National Science Foundation, *Research and Development in Industry, 1970*, Surveys of Science Resources Series NSF 72-309, pp. 50-51; and National Science Foundation, *Resources for Scientific Activities at Universities and Colleges*, 1971, Surveys of Science Resources Series, NSF 72-315, pp. 30-39; 43-51. See also Jay D. Starling, "Extra Incrementalism in Science Spending: Toward an Understanding of Exceptional Policy Outcomes" (University of California, Berkeley, Space Sciences Laboratory Internal Working Paper no. 115, May 1970). Preliminary investigation suggests that California commands a disproportionate share of the nation's research and development activities in all fields and on all counts (expenditures, professionals, etc.).

14. See Appendix for numerical tables supporting figures 2.3 and 2.4. Based on U.S. Census data, these categories could be constructed reliably from 1910 for the United States, from 1920 for California.

15. The term "*organized* complexity" as opposed to *un*organized complexity distinguishes the type of structural complexity based on relatively tight internal interdependence from that describing the complex interaction and behavior of atomic particles, voters, and buyers in a market system. The essential difference is in the degree of internal interdependence among individual com-

ponents. This distinction, originally advanced by Warren Weaver, "Science and Complexity," *American Scientist* 36 (1946), became the initial basis for a series of related studies in the effects of "organized social complexity"; see Todd La Porte, ed., *Organized Social Complexity: Challenge to Politics and Policy* (Princeton, N.J.: Princeton University Press, 1975).

16. There are no effective measures of interdependence at this time. Patterns of internal interdependence are most difficult to chart; adequate measures of this intuitively sensible phenomenon must await developments both in concept and statistics. See ibid., chaps. 1, 6, and 7.

17. See note 15.

18. See Galbraith, *New Industrial State*.

19. One early manifestation of this situation in California government was Governor Edmund Brown's attempt to enlist the aerospace industry in seeking solutions to social problems like welfare, waste disposal, and crime. See Ida Hoos, "Systems Analysis as a Technique for Solving Social Problems" (University of California Space Sciences Laboratory, Reprint no. 88, 1968).

20. For a more complete discussion of the emergence of the politics of psychic reassurance, see T. R. La Porte, "Complexity and Uncertainty: Challenge to Action," in La Porte, *Organized Social Complexity*, chap. 10.

21. *The Coming of Post-Industrial Society*.

22. La Porte, "Complexity and Uncertainty."

23. One of the more important factors for both the United States and California is the close economic and political bonds each has with other societies. In varying degrees each is only modestly in control of its own future.

APPENDIX
TECHNICAL NOTES AND STATISTICAL TABLES

TECHNICAL NOTES

FIGURE 2.2 Data for the United States 1966–72 are not readily available in "output per man-year" form; so, using the definition of output provided by *Long-Term Economic Growth*, Series A158 and A159 ("Output per Employee," p. 143), figures were derived by dividing the 1966 GNP in 1958 dollars by the total employment for 1966. The same procedure was used for 1967–72. The GNP in 1958 dollars for 1966–72 is from *Survey of Current Business*, October 1973, table A, "Alternative Measures of Constant Dollar GNP," p. 9. Employment figures were taken from *Statistical Abstract of the U.S., 1972*, p. 216.

FIGURE 2.5 Data on the proportion of employed with coordinative skills to total employed in the United States and California, 1940–70 are taken from U.S. Department of Commerce, Bureau of the Census publications as follows: For U.S. data, *Population 1970*, vol. 3, *The Labor Force*, pt. 1, table 58, pp. 75–76; *Census of the Population 1960*, vol. 1, pt. 1, table 202, pp. 1-528 and 1-529; *Detailed Characteristics*, U.S. Summary, pp. 725–27. For California data, *Population*, Third series, *The Labor Force*, table 2, pp. 25–27; *Census of Population 1960*, vol. 1, *California*, table 120, pp. 6-660 and 6-662; and *Detailed Characteristics, California*, sect. 1, table 171, pp. 1539–41.

Table A. Distribution Among Sectors of Employment in Industry for United States and California[a] 1910–70 (In percent)

		1910	1920	1930	1940	1950	1960	1970
Primary Sector Industries	U.S.	34.98	28.90	23.97	21.03	14.11	7.74	4.53
All categories	Cal.	28.40	19.67	14.98	12.90	8.41	5.09	3.58
	Cal. % U.S.	.84	2.54	3.20	3.37	4.00	5.87	7.79
Agriculture, forestry, fishing	U.S.	32.46	26.28	21.90	18.99	12.46	6.73	3.71
	Cal.	2.03	18.04	13.40	11.05	7.64	4.65	3.12
	Cal. % U.S.		2.55	3.12	3.20	4.24	6.16	8.23
Mineral extraction	U.S.	2.50	2.60	2.00	2.00	1.60	1.00	.82
	Cal.	2.37	1.63	1.58	1.85	.80	.50	.46
	Cal. % U.S.	2.42	2.27	4.04	4.99	3.26	3.97	5.45
Secondary Sector Industries								
Manufacturing and construction[b]	U.S.	27.90	30.80	28.90	28.31	32.10	33.00	31.88
	Cal.	26.30	28.60	25.45	22.99	27.22	30.42	26.98
	Cal. % U.S.	1.08	3.36	4.51	4.46	5.85	8.22	8.31
Tertiary Sector Industries								
All categories	U.S.	36.45	40.26	47.12	50.66	52.69	57.94	63.58
	Cal.	50.50	51.85	59.15	64.11	64.36	64.47	69.44
	Cal. % U.S.		4.68	6.43	7.02	8.53	9.89	10.81

Table A continued

Trade, transportation, communication	U.S.	21.00	25.10	28.60	26.87	29.98	29.29	31.86
utilities, clerical, finance	Cal.	24.20	30.66	35.55	35.14	35.17	30.70	34.09
insurance, real estate	Cal. % U.S.		4.46	6.37	7.18	8.12	9.32	10.46
Professional services	U.S.	4.50	5.20	6.70	7.50	8.51	11.70	18.47
	Cal.	6.40	7.69	9.41	8.75	9.70	12.70	20.08
	Cal. % U.S.		5.36	7.23	6.39	8.92	10.90	10.63
Public service/administration[c]	U.S.	1.10	1.80	1.80	3.10	4.50	5.00	5.49
	Cal.	2.20	3.01	2.42	3.81	6.30	5.90	6.49
	Cal. % U.S.		6.19	7.09	6.66	9.79	10.61	11.55
Domestic, personal, business, and	U.S.	9.80	8.10	10.10	11.52	9.36	9.29	7.75
repair services; entertainment,	Cal.	12.10	10.23	11.75	14.99	12.00	11.80	8.77
and recreation	Cal. % U.S.		4.58	5.94	7.15	8.92	10.15	11.07
Grand Total[d]	U.S.	100.01	99.88	100.00	98.29	98.51	96.01	99.98
	Cal.		100.06	99.48	98.58	98.83	96.67	99.98

[a] Data compiled from U.S. Department of Commerce, Bureau of the Census, *Census of Population* (Washington, D.C.: Government Printing Office, 1910–70). Percents do not add to 100% due to rounding. Data for California before 1920 are sketchy and not strictly comparable.

[b] Construction under 8% of secondary sector since 1940.

[c] Public administration as an employment category has been in use since 1940.

[d] Percentage discrepancies 1940–60 in grand total are due to industry-not-reported.

Table B. Distribution of Employment Among Major Industry Groups in the United States and California, 1910–70[a]

		1910	1920	1930	1940[b]	1950[b]	1960[b]	1970[c]
Agriculture, Forestry, Fishing	U.S.	12,388,309	10,936,026	10,722,467	8,559,134	7,033,591	4,349,884	2,840,488
	Cal.	88,197	272,947	334,968	273,488	298,119	267,760	233,850
Agriculture	U.S.		10,665,612	10,471,988	8,449,463	6,908,647	4,256,734	
	Cal.[d]			332,024	265,871	286,642		
Forestry, fishing[e]	U.S.	241,806	270,214	250,469	109,671	124,944	93,150	
	Cal.			12,944	7,617	11,477		
Mineral Extractions	U.S.	965,169	1,090,223	984,323	918,853	930,968	654,006	630,788
	Cal.[d]	23,358	24,698	39,743	45,892	30,308	25,973	34,379
Manufacturing	U.S.	10,656,545	12,831,679	14,110,652	10,670,087	14,685,482	17,513,086	19,837,208
	Cal.[d]	115,296	430,631	636,564	415,721	763,680	1,391,166	1,614,687
Construction	U.S.				2,087,564	3,457,980	3,815,937	4,572,235
	Cal.				153,310	298,675	361,691	404,350
Trade[f]	U.S.	3,633,265	4,257,664	6,081,467	7,497,743	10,507,331	11,792,645	15,372,880
	Cal.		209,399	436,619	552,160	872,608	1,081,730	1,575,721
Transportation, Communication Utilities[g]	U.S.				3,143,227	4,449,861	4,458,147	5,186,101
	Cal.				198,221	318,913	393,804	533,119
Transportation, communication	U.S.	2,665,269	3,096,829	3,843,147	2,588,226	3,664,504	3,559,562	
	Cal.		124,848	199,228	156,393	254,300		
Clerical, Financial, Insurance[h]	U.S.	1,718,458	3,111,836	4,025,324	1,474,681	1,919,610	2,694,630	3,838,367
	Cal.		133,405	253,320	119,959	179,417	291,367	443,165
Professional Services[i]	U.S.	1,711,275	2,171,251	3,253,884	3,390,427	4,238,789	6,723,318	14,142,397
	Cal.		116,412	235,386	216,510	378,012	732,864	1,503,263
Public Service and Public Administration[j]	U.S.	431,442	738,525	856,205	1,415,283	2,514,469	3,202,890	4,201,652
	Cal.		45,579	60,741	94,298	246,230	339,826	485,453
Domestic and Personal Services	U.S.	3,755,798	3,379,995	4,952,451	3,903,884	3,464,991	3,858,494	3,536,576
	Cal.		154,841	294,075	237,522	263,043	326,688	339,314
Business and Repair Services	U.S.				883,313	1,307,669	1,610,728	2,394,467
	Cal.				69,778	130,260	197,717	317,389
Repair services	U.S.				636,974	949,543	849,298	

Table B continued

Entertainment and Recreation Services	U.S.				396,529	493,433	502,879	
	Cal.				63,700	76,795	81,864	
Industry Not Reported	U.S.				729,540	843,335	2,608,085	
	Cal.				35,022	46,218	268,983	
Grand Total All Occupations[i]	U.S.	38,167,366	41,614,248	48,829,920	45,070,315	56,435,273	64,639,247	76,553,599
	Cal.		1,512,760	2,500,644	2,475,581	3,902,278	5,761,433	7,484,690

[a] Further information on sources, methods of computation, and lacunae may be obtained from the authors.

[b] U.S. figures taken from summary in U.S. Department of Commerce, Bureau of the Census, *Census of Population*, vol. 1, *Characteristics of Population* (Washington, D.C.: Government Printing Office, 1960), pt. 1, pp. 1-223.

[c] The most recent U.S. data are less reliable for comparative purposes, because of census category proliferation and collapse, than data of previous decades when categories remained more parallel from census to census. Neither U.S. nor California 1970 figures for Entertainment and Recreation are available from census sources.

[d] Number employed in Agriculture in California in 1910 categorized as "farmers" in 1910 California census data source. See U.S. Department of Commerce, Office of the Census, *Statistics for California 1910* (Washington, D.C.: Government Printing Office, 1914), p. 538. This source differentiates "farmers" from "wage earners," the category containing the figures shown here for Manufacturing and Mineral Extraction (Mining).

[e] California figures for 1960 and 1970 not entered because most up-to-date source available combines figures for Forestry, Fishing, and Agriculture. But see table A above for percent distribution.

[f] Calculations for the United States in this category for 1940, 1950, and 1960 based on 1960 census figures for a wide variety of wholesale and retail activities and outlets.

[g] U.S. figures for 1940, 1950, and 1960 calculated from 1960 U.S. census data. California figures for 1940 and 1950 from 1950 census data (17th Census), *Census of Population*, vol. 2, pt. 5, "California." U.S. and California figures for Transportation and Communication, 1970, not separable from overall total which includes Utilities.

[h] The 1960 U.S. census data, the source providing the U.S. figures for 1940, 1950, and 1960, also include Real Estate and other fields not counted here in their Clerical category.

[i] The 1960 U.S. census source distinguishes Professional Services as either "government" or "private." The present table combines those figures for this category, which for 1940 includes figures based on welfare, religious, and nonprofit organizations and for 1940, 1950, and 1960 on hospital and other related services.

[j] In the 1960 census data which provides the U.S. figures here for 1940, 1950, and 1960 Public Service figures are derived from number employed in public administration.

[k] Figures for 1940 and 1950 taken from California census data in the 17th Census of the U.S. (see note g), table 31: "Industry Group of Employed Persons by Sex for the State 1950 and 1940," pp. 5-70.

A detailed list of the 2a occupational categories considered to require coordinative skill is on file with the authors and available to interested readers. Occupations so designated were totaled and compared to the entire labor force including the military. Census data for 1940–70 are not strictly comparable because of major shifts and extensions of occupational categories occurring from census to census. For example, "accountants, auditors, bookkeepers" comprised a nonprofessional category in the 1940 census; but in the two subsequent censuses "accountants" were designated professionals while "auditors" and "bookkeepers" remained nonprofessional categories. Later changes in census categories make it difficult to determine for our purposes in what areas of "business administration," for example, coordinative skills are requisite. Figures in table 5 are to be taken as more-or-less accurate indicators of the correlation of coordinative skills to other skills throughout the labor force.

FIGURE 2.7 Data for the personal income per person for the United States and California 1966–72 were gathered from the *Statistical Abstract of the United States* as follows: 1966 figure from 1968 edition (no. 468, p. 322); 1967 and 1968 figures (the 1968 figure is termed preliminary) from 1969 edition (no. 469, p. 320); 1969 figure from the 1971 edition (no. 497, p. 314); and 1970–72 figures (preliminary for 1972) from the 1973 edition (no. 529, p. 326).