OCCUPATIONAL COMPOSITION AND COMMUNITY STRUCTURE: A STUDY OF THE IMPACT OF PROFESSIONALIZATION ON COMMUNITY LIFE AND STRATIFICATION PATTERNS

Thesis for the Degree of Ph. D.

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DONALD ARMOUR CLELLAND

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ABSTRACT

OCCUPATIONAL COMPOSITION AND COMMUNITY STRUCTURE: A STUDY OF THE IMPACT OF PROFESSIONALIZATION ON COMMUNITY LIFE AND STRATIFICATION PATTERNS

By

Donald Armour Clelland

Among the changes associated with recent technological change are major shifts in the occupational distribution of the labor force, most notably, an increase in the proportion of professional-technical workers and a decrease in the proportion of production workers. The purpose of this study was to investigate the impact of these changes in occupational composition on attitudes toward the community, community institutions and services, community participation, and class cleavage.

The research site was a "vanguard" community, a small one-industry city which was selected because of its advanced technology. A major focus of the study was a comparison of three occupational types most directly affected by technological change. Questionnaires were administered to scientific professionals (N = 95), technicians (N = 95), and blue-collar production workers (N = 137), drawn randomly from the work force of the dominant employer, a chemical firm. Twenty-nine "community knowledgeables" were interviewed. A wide variety of available data were gathered. The findings were compared with the results of previous studies.

As expected, scientific professionals and technicians were more cosmopolitan than the workers in their orientation toward the community. However, the professionals showed surprisingly strong feelings of community identity and preferences for localized social relationships.

The professionals were characterized by a "quest for community," but for a narrowly defined community of status peers.

Comparative data on a wide variety of indicators of "community quality" suggest that professionalization furthers the improvement, growth, and rationalization of community services. The scientific professionals expressed strong desires for excellent community amenities, thus exerting a demand pressure. A higher level of community satisfaction among professionals than among technicians and workers relects the former's dominance in shaping the political and social tone of the community.

Scientific professionals participate more fully than technicians and workers in voluntary organizational and local political life. Comparative data suggest that scientific professionals are at least as high in such participation as other professionals. Such data also seem to indicate that the "participational" climate established by professionals encourages high participation by blue-collar workers in voluntary associations (but not churches) and local political affairs.

The findings of the study failed, in many ways, to support widely accepted hypotheses concerning the political "embourgeoisement" of the working class and the "depolarization" of class politics. Although there was little sense of political-economic class consciousness and little evidence of overt class conflict, neither was there evidence that the sense of class identity was low. Comparative data suggest that class cleavage along political and ideological lines was unusually strong. Although rarely recognized by respondents, division on local issues followed class lines.

Scientific professionals controlled the formal governmental decision-making positions in the community. Reputational influence rested in the hands of the higher corporation executives. But there was no evidence of conflict between the executive elite and the professional stratum. Thus "back-stage" and "on-stage" power-wielders worked toward the same goals.

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By

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It is said that on the wall of an obscure Western saloon a sign was posted: "Please don't shoot the piano player, he's doing the best he can." I wish to express my gratitude to those who, living by this injunction, withheld their fire, the fire of righteous judgment, while I searched for the right key--Dr. William A. Faunce, my dissertation committee chairman, Dr. James McKee, Dr. William H. Form, Dr. Einar Hardin, Dr. Jack Stieber, and Joanne and Pips. The tune and its dischords, its grace and graceless notes, are mine. I wish I could blame someone else.

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I

TECHNOLOGICAL CHANGE, OCCUPATIONAL COMPOSITION AND COMMUNITY STRUCTURE: A REVIEW OF THE LITERATURE

Introduction

Sociology emerged as a new discipline in the nineteenth century in response to the social disruptions occasioned by industrialization. The purpose of the new science was the explanation of forces which were forever changing the face of the old order of Western civilization and the prediction and control of these forces in the shaping of the new industrial order. Among the major theorists, from Saint Simon and Comte, to Marx and to Durkheim and Weber, the first task of sociology was the analysis of the causes and consequences of industrialization. The study of technological change and accompanying changes in social structure, then, have always been at the heart of the discipline (Nisbet, 1966, especially Chapter 2; Bell, 1963b). Similarly, the projection of the future of industrial man has remained a focal interest (Meadows, 1950 and 1965; Kerr, et al., 1960; Ellul, 1964; Faunce, 1968).

After a period of relative neglect the study of the impact of changing technology and division of labor are once more coming to the fore. Once again, in response to basic changes in the productive order, sociologists are becoming attuned to projections of the state of future societies (Winthrop, 1968). Increasingly the idea that Western civilization is passing from its industrial phase to its "post industrial"[1] stage is becoming accepted. Science, technology, and research and development are seen as the foundation stones of a new

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[1] Daniel Bell (1964; 1967) is probably most responsible for the popularization of this phrase.

social order. The study to be reported here deals with the impact of science and technology on the division of labor and on the consequences at the community level and is intended as a contribution to the understanding of the emergent social order.

The Social Impact of Changing Technology

Much of the revival of interest in the social impact of technological change has centered in the concept of "automation." Fears and hopes concerning the prospects of man and society about to be submerged in the tidal wave of the "second industrial revolution" gave rise to widespread scholarly and journalistic theorizing and speculation (e.g., Michael, 1962; Ad Hoc Committee, 1964). A vast array of non-empirical works on the subject was soon followed by a smaller but substantial number of research studies. (For bibliographic reviews see Cheek, 1958; Hardin, et al., 1961; Hardin et al., 1966). It is probably fair to conclude that the major value of these studies was to stem over-reaction of the commentators to what are, nevertheless, quite fundamental changes in the substructure of society. In general, empirical automation studies, which have focused on unemployment, changing skill requirements, in-plant re-organization, individual reactions, job satisfaction, and the growth and use of leisure time, have not produced blindingly spectacular results. It might be said that the most revolutionary change which has occurred in the modern world is the concern for change itself. Nevertheless, these studies have been valuable in pointing the direction in which society will evolve.[2]

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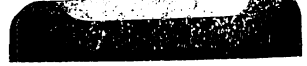
[2] These studies, in conjunction with controlled speculation predicting new technological developments and probable social implications are the primary tools of the "futurist," a new breed of specialist, the professional student of that which does not yet exist. The rationalization of the art of conjecture has already yielded a wide variety of plausible hypotheses on the shape of the future.



A central theme of many large scale studies of the impact of recent technological change and of future prospects is the importance of the changing division of labor as reflected in the occupational structure. Bell (1967a: 27-8), for example, believes that the essence of the post-industrial society is to be found in the development of a highly professionalized labor force and a service economy. Michael (1965: esp. Ch. 10) has focused his analysis of the prospects for the next generation on the expanding demand for professionals and technicians and the declining demand for unskilled workers. Many scholars, including Wolfbein (1962), the National Commission on Technology, Automation and Economic Progress (1966b), and Faunce (1968) have focused on changes in the composition of the labor force as among the most important measurable results of technological change.[3]

Changing Occupational Composition

Recent and projected changes in the composition of the U. S. labor force are shown in Table 1. A number of plausible relationships between technological-social organizational change and occupational structure may be deduced from these data. The most striking changes during the decade of the thirties were in the blue collar segment of the work force; a sizable increase in the proportion of semi-skilled operatives and, in continuation of earlier trends, major losses in the shares of skilled craftsmen and unskilled laborers. This period may be viewed as the latter phase of the stage of

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[3] Faunce correctly notes that changes have not been and will not be as great as many had anticipated (58) but believes that, in the long run, shifts in the labor force may be the "most revolutionary consequence" of automation (97). But Silberman (1966: 31-35) denies any great importance to technology in changing the occupational structure, viewing this thesis as one of the "myths of automation." Rather, he believes, these changes can largely be explained by the continuing growth of the service economy and by a temporary surge in research and development.

Table 1. Occupational Composition of the United States Non-Farm Labor Force,* 1930-1970**

	1930	1940	1950	1960 A	1960 B	1970
			Percent			
Professional and technical	8.6	9.1	9.8	12.2	12.2	14.2
Managers, proprietors, and officials	9.4	8.8	9.9	9.1	11.5	10.9
Clerical and sales	19.3	19.7	21.9	23.8	23.2	23.8
Craftsmen, foremen and kindred workers	16.2	14.5	16.1	15.3	13,9	13.5
Operatives and kindred workers	20.1	22.3	23.1	21.2	19.6	18.5
Laborers, except farm and mine	14.0	11.4	7.5	5.9	6.0	4.8
Service workers, including private household	12.4	14.2	11.9	12.6	13.6	14.4
Index of Net Redistribution***						
	1930-1940, 4.9		1940-1950, 6.3		1950-60, 5.55	1960B-70 3.35

*All agricultural workers and "occupation not reported" were excluded from the calculations; thus, except for rounding errors, the totals in each column equal 100.

**Since the projections for 1970 are based on Bureau of Labor Statistics data, which are not comparable to Bureau of the Census Data from which the other figures were derived, 1960 figures based on both data sources have been included.

***Computed as the index of dissimilarity between the occupational distributions for any two dates. The index is one-half of the absolute values of the differences between the occupational differences for any two dates, taken occupation by occupation (cf. Reiss, 1957: 425).

Sources: 1930-1950, derived from U. S. Bureau of the Census, 1960, Table D 72-122: 74; 1960A, derived from U. S. Bureau of the Census, 1962b; 1960B and 1970, derived from U. S. Department of Labor, Table E-8: 274.

technological development designated by Faunce (1968: 45) as the period of "mechanized production." The most notable new development during the forties was the resurgent growth of the clerical category. This may be interpreted as the beginning of a new phase in the bureaucratization process which began around the turn of the century. This trend continued into the fifties but the remarkably rapid expansion of the professional-technical group marks this decade as the beginning of a period of professionalization. At the same time the reduction in the ratio of all blue collar workers, but especially operatives, indicates the introduction of the stage of "automated production" (Faunce: 45). The U. S. Labor Department (1967) projections to 1970 indicate that these trends will continue through the sixties although at a slower pace.

Community Studies

These changes have been widely noted, but a serious examination of the multitude of studies which describe, explain and predict the social consequences of changing technology and occupational structure reveals rather large gaps. The emphasis has been either on the macroscopic level of analysis, dealing with whole societies, or on the microscopic level, treating individuals or organizations. Few studies have examined the impact of technological change at the community level. Nearly all of the research which has been conducted at this level has been directed at the spectacular but narrow problem of massive local unemployment resulting from plant shut-downs or the decline of an industry. (For reviews of this literature see Levitas and Sheppard, 1963; Haber et al., 1963). The odor of death has enticed numerous social scientists as well as journalists (e.g. Swados, 1959; Francois, 1961) to circle like vultures above the corpse of the town betrayed by technical progress. The untoward effects of the over-dependence of certain cities on such fickle industries as coal mining (Lantz, 1958; Fernstrom, 1960; Dean, 1965), iron mining

(Landis, 1938), railroads (Cottrell, 1951), and textiles (Wolfbein, 1944) have been portrayed; and steel (Walker, 1950; Foltman, 1968), automobiles (D'Antonio, 1966; Aiken et al., 1967) and farm machinery (Adams, 1957) as well. In general the social structural and social psychological impact of technological change in "bust towns" has been profound but not surprising; the effects include abrupt changes in the class, status and power structures, disruption of the normative order, anomie, alienation and apathy.[4]

The consequences of industrialization for community structure has also been studied in a number of "boom towns" (Landis, 1938; Havighurst and Morgan, 1951; Carr and Stermer, 1952; Keesing, et al., 1955). Such studies have tended to exaggerate the generalizable effects of technological change because of the abruptness with which change was introduced into non-industrial communities. Despite the widespread recognition of the importance of industrialization and attendent technological change in shaping the structure of cities (Heberle, 1948; Warren, 1963), research in more stable communities has rarely focused sharply on these variables (but cf. Westby, 1962; Faunce and Smucker, 1966). Nevertheless, these factors were of considerable importance in the classic "Middletown" (Lynd and Lynd, 1929; Lynd and Lynd, 1937) and "Yankee City" (esp. Warner and Low, 1947) studies and in many others, especially those treating status (Warner et al., 1949; Wray, 1954; Morland, 1958) or power structures (Schulze, 1958; Dahl, 1961; Clelland and Form, 1964). Stein (1960: 5) in fact, divines the importance of American community studies in terms of their analysis of three major processes shaping modern life: urbanization, industrialization and bureaucratization. Both the Lynds and Warner and Low are

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[4]The primacy of technological change, in the strictest sense of the term, in causing the unemployment and disruption described in these studies is, of course, questionable in many cases. However, the results of the failure of local industry probably do not vary greatly regardless of the role of technological change in causing such failure.

quite explicit in demonstrating that change in production technology has produced changes in occupational composition which, in turn, had an effect upon community social structure.

The Lynds have shown that the fulcrum of all change in Middletown, 1890-1924, was the introduction of machines and assembly line techniques in the glass jar industry, which resulted in the breakdown of the skill hierarchy. A similar chain of events in the shoe industry in "Yankee City" is viewed by Warner and Low as a basic source of class conflict.

Further research on the importance of occupational composition in shaping community structure has been carried out by Gillen (1951: 108), who states that "no consideration of any kind about a city can get very far away from the occupational distribution." Gillen (1951: 44) showed that there are very high correlations between the occupational composition of cities (as measured by his weighted occupational index) and the "goodness" of cities (as measured by Thorndike's (1939) G score, a composite measure of education, health and recreation levels). Form and Miller (1960: 49) have suggested a chain of causation: "Industrial composition shapes the occupational composition of the community. This occupational composition influences the income and educational levels of the community. When these levels are set, then many other community variables are affected including health, education, housing, and cultural attainments." Technological change might be considered the initial link in this chain.

As indicated previously, many studies have dealt with some of these links. Most earlier studies treated the improvement of machine tools and other phases in the development of mass production technology. The result of these changes was most often increased functional specialization with accompanying dilution of skills and an increase in the proportion of semi-skilled workers in the labor force. Stein (1960: 105-6), after admiringly appraising the worth and utility of many of these earlier studies, goes on to say: "Perhaps the spread

of automation heralds the next major phase of industrialization. Its effects on community life, both directly through changes in work roles and indirectly through the increased leisure it will make available, are incalculable." And elsewhere he states: "Students of industrialization in the sixties must attend to technological innovations like automation which promise to disrupt the job structure almost as much as the breakdown of the craft hierarchy" (Stein, 1960: 68). A substantial body of opinion and some evidence from case studies of automated plants (Faunce, 1959; Mann and Hoffman, 1960; Blauner, 1964) indicates that the coming stage of technological development does, indeed, promise great changes, if not disruption of the job structure, most importantly, through a reduction in the proportion of semi-skilled workers and an increase in the proportion of technicians and scientific professionals. Judging from the implications of earlier mechanization for community occupational structure, stratification, and institutions detailed in previously mentioned studies, the consequences of changing occupational requirements under a new technology will be momentous. The lack of empirical studies of these consequences lies less in the inability to foresee great changes than in the spatial diffusion and the less than cataclysmic rate of growth of automated production.[5] In contradistruction to many definitions of automation, we will throughout this work refer to it as an emergent distinguishable stage of technological development not to be confused with simple continued advance in the mechanization of energy conversion and processing operations. As defined by Faunce (1968: 44), automation "refers to the automatic, centralized control of an integrated production system." Thus the "age of automation" has just begun and relatively few plants can be described as automated (Faunce 1968: 51). Moreover, since these plants are

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[5] The best measure of technological change available is productivity. Recent yearly increases in productivity have been solid but not vastly accelerated (National Commission on Technology, Automation, and Economic Progress, 1966: 2, 11).

widely scattered, automation has made a decided impact in still fewer cities. And so the community impact of automation has generally only been studied when mass unemployment occurred. Since technological change can also affect communities in more positive and more subtle ways, it is appropriate at this time to study economically expanding communities whose growth patterns have been shaped by a new level of technology. The populations of such cities should be characterized by labor force distributions which reflect extensions of the changes represented in Table 1. The proto-type community of the future will have a large professional-technical employee middle class and a diminishing working class.

The fundamental impact of such changes has, of course, been long recognized in studies such as those by Corey (1935), Mills (1951), Whyte (1956), and Miller and Swanson (1958), which emphasize the eclipse of the old entrepreneurial middle class by the new bureaucratic middle class. Within the new middle class there are four major components: managers, salaried professionals, sales workers, and office workers. But the most important analyses of the white collar segment, those by Mills (1951, but cf. chaps. 6 and 7), and Whyte (1956, but cf. chaps. 16 and 17) have focused on managerial and clerical workers, giving short shrift to organizational professionals. This relative neglect has been rather unfortunate because such professionals rank at the top of the white collar pyramid and because it reinforces the tendency to think of professionals as predominantly "free," that is, as members of the old middle class. Currently, however, over 90% of all professionals are salaried.[6]

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[6]The term "professional" throughout this work will be used to refer to the census category "Professional, technical and kindred workers," thereby avoiding the lengthy and sterile definitional dispute over the true essence of the professions (cf. Carr-Saunders and Wilson, 1933; Cogan, 1953; Greenwood, 1957; Gross, 1958; Barber, 1963; Wilensky, 1964b; Cheek, 1967). Rather than attempting to define the category, the census basically accepts as

Moreover, as indicated in Table 2, salaried professions are the fastest growing segment of the middle class, out-stripping even clerical workers. They are also the fastest growing segment within the income elite (Miller, 1964: 132) and among those in positions of corporate power (Gould, 1966). It is likely that the professional-technical occupational category will grow more rapidly than any other over the coming decade (U. S. Dept. of Labor, 1967: 166).

Scientific Professionals

As Kenneth Lynd (1963: 649) stated in introducing an overview of the professions in the 1960's, "Everywhere in American life, the professions are triumphant." However, from the early survey of Carr-Saunders and Wilson (1933), through Huntington's (1956) trend report in the middle fifties, to the recent Daedalus symposium (Lynn, 1963), the common cry has been that little empirical research on the professions has been conducted. Moreover, the preponderance of research which had been done dealt with the "old-established" professions (Carr-Saunders, 1955: 280) i. e., religion, law, medicine, higher education and aesthetics. Over two-thirds of the sources cited by Huntington (1956) fall in this category. The major foci of the sociology of the professions have thus far been definition, the professionalization process, recruitment and socialization, and the client-professional relationship. The relationship between the professional and his social milieu have been generally neglected. Only recently has the study of salaried professionals working in large scale organizations begun to bloom in full force (cf. Blau and Scott, 1962: 60-74; Presthus, 1962; Abrahamson, 1967). With this florescence the conflict between professional and organizational

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professions those occupations which have been labeled as such by society. As Becker (1962: 32) has commented: ". . . professions [are] . . . those occupations which have been fortunate enough in the politics of today's work world to gain and maintain possession of that honorific title."

Table 2. The Middle Classes, 1870-1970

	1870	1940	1950	1960	1970
			Percent		
Old Middle Class	85	44	31	19	16
Farmers	62	23	17	9	6
Businessmen	21	19	12	9	8
Free Professionals	2	2	2	2	2
New Middle Class	15	56	69	81	84
Managers	2	6	10	12	14
Salaried Prof.	4	14	18	23	26
Salespeople	7	14	14	14	11
Office workers	2	22	28	32	33

Sources: 1870 and 1940, Mills (1951: 65); 1950 and 1960, derived from U. S. Bureau of the Census (1962b), PC-1 Series, Table 89 and PD-1 Series, Table 120; 1970, derived from U. S. Department of Labor (1967), Table E-4, with sub-category classification based on extrapolations from U. S. Bureau of the Census (1962b).

roles was introduced as a central problem. Still, these studies have rarely gotten beyond the more narrow confines of the organizational setting to show the place and role of the salaried professional in the society or community.

One of the more important features of recent literature in the sociology of the professions is the broadening of the field to include the "new professions" (Carr-Saunders, 1955: 280), particularly engineering and science. The relative neglect of these occupations has been most unfortunate, not only because of their functional importance but because of their sheer size. Engineering is the second largest professional occupation, after teaching, and the largest among males. There are now over one million engineers in the U. S., an increase of over 80% since 1950. A similar expansion of the number of scientists is indicated by the growth among chemists, who number over half of all natural scientists. Between 1950 and 1964, the number of chemists grew by 60%. In conjunction with the growth of scientists and engineers, supporting marginal professions have also expanded rapidly. Engineering and science technicians increased by 38% between 1960 and 1964. Projections by the Bureau of Labor Statistics indicate that all three of these occupational categories, engineers, chemists, and technicians, will expand by over 50% between 1964 and 1975, a rate of growth which exceeds that of the professional-technical category as a whole (National Commission, 1966a: 137, 139, 140).

The growth of these fields may be attributed to a number of factors. All of these occupations have benefited by the fact that industries employing scientists and engineers have expanded and will expand more rapidly than the average. The demand for engineers and for technicians is increased by automation and the rapid pace of technological change. The demand for chemists, laboratory technicians, and engineers is highly dependent on the growth of research and development which is expected to continue over the

coming decade although at a slower rate.[7] Some idea of the importance and recency of industrial research and development as a demand factor can be gleaned from the growth of professional personnel employed in industrial research from 37,000 in 1940 to 126,000 in 1955 (Blank and Stigler, 1957: 17) to 349,300 in 1964 (U. S. Bureau of the Census, 1967: 541). Research laboratories grew at the rate of 15% a year from 1935 to 1960 (Brozen, 1960).

In spite of the near-universal recognition of the supremacy of science in the modern age and the staggering multiplication of scientists and technicians in the labor force, the development of the sociology of science was exceedingly slow until the past decade. (For review of the field, see Barber, 1956a; 1956b; Kaplan, 1964). As might be expected, a large portion of the studies of scientists have concentrated on the most intelligent, most creative and/or most productive (Roe, 1953; Bello, 1954; Terman, 1954; Eiduson, 1962; Hagstrom, 1965; Klaw, 1968). These studies have dealt with the scientist's role as citizen in only very limited measure and provide only the most doubtful basis for generalization to the profession as a whole, over half of which (including 60% of the Ph.D.s in chemistry) is employed in industry (Klaw, 1968: 190). Despite widespread speculation about the emergence of a new type of scientist (Hirsch, 1968: 93) as "Big Science" replaces "Little Science" (Price, 1963), few studies have compared creative and run-of-the-mill scientists or scientists in different settings (but cf. Krohn, 1962). The past

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[7] The impact of changing plant technology is reflected in the "bench-mark estimates" for 1962-1975. The Manpower Administration of the U. S. Department of Labor projects an 81% growth of engineers and a 152% growth of technicians in the "private plant and equipment" sphere, which as a whole will grow by 51%. In the "research and development" sector it is estimated that the number of natural scientists will grow by 56%, engineers by 60%, technicians by 75% and total employment by 49%. It is expected that these two areas will be the fastest growing sectors of the economy (Lecht, 1968: 409, 422, 103).

few years have been marked by an outpouring of research on that previously forgotten man of modern industrial society, the industrial researcher (Marcson, 1960; Kornhauser, 1962; Strauss and Rainwater, 1962; Glaser, 1964; Prandy, 1965; and many articles such as those reprinted in Orth, et al., 1964). The major emphasis of these studies has been on the professional career of the scientist, on the scientist's role in large-scale organizations, and on the conflict between professional and organizational roles, norms, and values. However, except for the important problem of the national policy role of scientists (Greenberg, 1968, is the most recent contribution to a rather voluminous literature) and Prandy's (1965) examinations of certain aspects of class and status of scientific professionals in Great Britain, the role and impact of the scientist in society has barely been touched upon. The only studies of the community role of scientists which have come to the attention of the author were published after the data for the study on which this dissertation is based were collected.[8] Holmes (1967: chap. 3) has studied the role of scientists in local politics in the research city of Los Alamos, New Mexico. Wilensky and Ladinsky (1967) have examined some aspects of the community role of engineers in Detroit as part of a much larger study of work, careers and leisure.

Even the broader question of the community roles of professionals in general provides little research from which insights might be drawn. There are at least three empirical studies which touch on the community role of professors in college towns. Both Rapport (1939) and Miller (1963) have noted the town versus gown conflict, of greater and lesser strength respectively. This conflict may be reinterpreted as status conflict between the professional

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[8] An early study of Oak Ridge (Robinson, 1950) provided very little information of sociological relevance about local scientists. Currently, however, Thomas C. Hood, Jack E. Holmes and Arnett Elliott are conducting studies of scientists in Oak Ridge and in Huntsville, Alabama.

middle class and the business middle class, each group defending its own life style. Miller indicates that the professional life style is characterized by opting out of heavy local participation and involvement in community decision-making. Wildavsky (1964) has made the most thorough study of a town with a highly professionalized labor force, Oberlin, Ohio. Possibly because he wishes to generalize from his study to support a broad theoretical position, Wildavsky makes peculiarly small reference to the bearing of the town's unusual occupational composition, 38% professional, on his findings. A number of studies have demonstrated the restraining influence of community norms on the activities of public school teachers in small cities. There is little logic, however, in extrapolating from these studies of old professions to the members of new professions. Seemingly vast differences exist in the relationship between occupational role and community. Some degree of community participation is demanded by the occupational role of members of the established professions. But what of the scientist? Is John Mills (1946: 131) correct in his assessment of the integration of the scientific worker into his community? "As a class they are not as yet noted for their civic activities. They are not workers or contributors to campaigns and causes."

Contrary to such a muted comment, it should be remembered that many observers have looked with awe upon the emergence of a new scientific elite, seeing therein both the potential saviors of society and the potential dictators of a more oppressive social order. Although the rise of a technical elite was foreseen as far back as Saint Simon (Manuel, 1956) perhaps the most notable advocate was Thorstein Veblen (1963: 82) who viewed engineers as the "General Staff of the industrial system." Although Veblen stopped just short of predicting a revolution by the technicians, he saw an ineradicable conflict between the engineers, who were concerned with production and rationality and the "captains of industry and finance" whose

interest was profit. Although the reform impulse which advocated governance by engineers reached its absurb conclusion in the technocrat movement (Elsner, 1967), the fundamental form of Veblen's theory can be seen in many recent discussions of the emergence of a technical elite and in the recurrent emphasis on the theme of professional-organizational conflict in the sociology of science literature. Gould (1966) has demonstrated that the technically educated have quietly seized the seats of power within industry and celebrates it as a victory for the forces of good. Galbraith (1967: 71) provides a more jaundiced view of the emergence of this new elite which he designates as the "techno-structure."[9] Ellul (1964: 275-6), Bell (1967: 30), Harrington (1968: 285) and Bazelon (1967: 308) are among the prophets of some sort of a new class of highly educated organizational decision-makers. Opinions vary concerning the exact place of scientists within the emerging national power structures and concerning the consequences for the society at large. Faced with a paucity of empirical research on these matters, it is hoped that some light may be shed by examining the role of scientific professionals in the local community and the emerging stratification structure within a highly professionalized industrial city.

Technicians

If sociological research on the technical professions has focused on only a narrow range of issues, investigations of technical subprofessions have been practically nil. Among the previously mentioned books on industrial scientists, only Marcson (1960: 27-31) discusses the role of the technician, implicitly highlighting the problem of marginality, a problem which is central to Evan's (1964) speculative analysis of the engineering technician. In one of the few empirical studies of technicians, Boggs (1963), has investigated a question in the

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[9] The emphasis here is on specialization of a variety of kinds, not just technical specialization.

same general area, the subjective response of laboratory workers to the recognition of closed mobility channels. In contrast to the common emphasis on status conflict and ambiguity, Vollmer and Mills (1962) present a case for the growing professionalization of nuclear technicians. Of the various sources cited, only the last makes even tangential reference to the position of the technician outside the work-place in the larger community. An examination of technicians in a community in which they are a sizeable segment of the labor force should provide insights regarding the future marginality or professionalization of this occupational type.

Blue Collar Workers

In contrast to the limited data on professional scientists and technicians, the sociological literature on industrial workers is voluminous (see e.g., Gross, 1958: Chaps. 11-14). But the bulk of this work is comprised of studies of the nature of industrial work or the place of workers in the social organization of industry. Such pervasive focal themes as productivity and morale or satisfaction-alienation, which dominate the literature, are of only tangential relevance to this study. If, as Dubin (1956) has shown, the "central life interests" of workers lie not in the workplace but in the broader community, it would seem that a wider net should be cast. Recently, at least partially in response to the mass society thesis that class differences are being extinguished, studies of the life styles of blue-collar workers (and to a lesser extent, of the source of these life styles in the work situation) have begun to emerge (see e.g., the collection of articles in Shostak and Gomberg, 1964). These studies, of course, draw on one of the oldest traditions in sociology, a tradition which finds its roots in LePlay, Booth, and other nineteenth century founders of the field and, in the more recent past, in the community-stratification studies of the Lynds and the Warner school. The focus of the latter on the existence of a distinctive working class sub-culture has been re-emphasized in studies by Gans (1962), Berger (1960), and Dobriner

(1963) in the United States as well as in a large number of British studies (e.g., Hoggart, 1957; Young and Willmott, 1957; Willmott and Young, 1960; Goldthorpe and Lockwood, 1963; Jackson, 1968). Quite justifially, the discussion of the relationship of occupation and community in these studies has centered on family and kin. Nonetheless, a considerable body of data on the extra-familial community life of workers has been accumulated in these studies and in local (Lane, 1962; Deutsch, 1964; Kornhauser, 1965; Bonjean, 1966) and national (Rainwater et al., 1959; Hamilton, 1964; Glenn and Alston, 1968) surveys as well. In general these studies support the Miller-Riessman (1961a; 1961b) thesis that the working class shares a distinct, definable sub-culture (i.e., distinct from the lower-lower and lower-middle class) as against the class-leveling or mass society thesis that workers are becoming middle class (i.e., at least the upper working class is becoming indistinguishable from the lower middle class in behavior and attitudes) (Drucker, 1953; Silberman, 1959; Faris, 1960: 5; Abrams, 1960; Wilensky, 1961: 525; Zweig, 1961: ix; Mayer, 1963; Hodges, 1964: 171). Since the "embourgeoisment" thesis (Goldthorpe and Lockwood, 1963: 134) is based on the supposed consequences of working class affluence and the sub-culture thesis is based, at least partly, on limited occupational mobility, it will be possible to provide data relevant to this controversy by studying a category of workers who are both relatively affluent and faced with a declining opportunity structure because of technological change.

As Blauner (1964: 5) has pointed out, generalizations about the working class in America have suffered from the tendency to extrapolate from studies of semi-skilled factory workers and especially from assembly line workers. What is needed is greater attention to skill level and to type of blue collar occupations. Blauner's study of alienation in four work settings is one of the rare attempts to compare the effects of different blue collar occupations. His chapters (1964:

chaps. 6 and 7] on chemical operators constitute the only sociological analysis of this or related occupations known to the author.[10] He concludes that workers in an automated chemical plant are less alienated than textile or automobile workers. In discussing the implications of his findings, Blauner employs a logic similar to that which is used in this study. In a most un-Marxian sense chemical workers may be regarded as the "vanguard of the working class." They are among the better paid wage workers in the United States[11] and their work environment is among the most technologically advanced in industry. As a consequence of the high level of technology, increasing productivity allows for ever greater levels of production with very little expansion in the number, but a sizeable decline in the proportion, of production workers. In a period of nearly two decades, 1947-1964, production workers in the chemical industry increased by just 6% as compared with a 32% increase in total employment. Put another way, the proportion of production workers in the work force of the chemical industry declined from 76% to 60% (figures derived from U. S. Department of Labor, 1965: 233-4). During approximately the same period, 1950-1966, chemical production increased by 251%, a rate of growth which exceeds all other industries (U. S. Bureau of Census, 1967: 739).

Earlier studies which dealt with the improvement of machine tools and other initial phases of the mass production process showed that a dilution of skills and an increase in the proportion of semi-skilled

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[10] But Whyte (1956) has presented a case study of a gasoline production operator who became progressively disgruntled as his job was routinized and opportunity for advancement was closed. Whyte (1961: Chaps. 14 and 15) also studied the failure of unionization in the same petroleum products plant.

[11] In 1962 the average hourly earnings of chemical workers were $2.65 as compared with an average of $2.39 for all manufacturing (U. S. Department of Labor, 1967: 253).

workers in the labor force followed these changes. More recent case studies in an automobile plant (Faunce, 1959: 45), in an electric power plant (Mann and Hoffman, 1960: 73-77), and in business and government offices (Hoos, 1960) indicate that automation, in contrast, reduces the proportion of semi-skilled workers. A similar trend in the chemical industry may be inferred from the diminished ratio of production workers. Chemical workers should provide a fertile ground for study of the social impact of changing technology. On the one hand, they have shared the economic benefits of automation. On the other hand, they are members of an occupational category which has reached a stage of stagnation or incipient decline.

Purpose of the Study

Many previous studies have demonstrated the importance of technology in shaping the character and social structure of communities. The technological changes examined in these earlier studies are representative of a type of change which occurs at a relatively early stage in the evolution of industrial productive systems (i.e., the development of specialized machine tools). The study reported here deals with the impact of technological change at the latest stage of industrial production, which involves a high degree of automation. This stage of production technology necessitates important shifts in the occupational distribution of the labor force. Among the most notable of these changes is the demand for an increased proportion of professional-technical personnel (scientists, engineers, and technicians) and for a lesser proportion of production workers (especially semi-skilled and laborers). The purpose of this study is to discover the impact of these changes in occupational composition on the stratification and institutional structure of an industrial community. More specifically the aim of this research is the examination of the consequences of professionalization of the labor force for local class structure, for community attitudes and participation, and for local governmental and educational institutions.

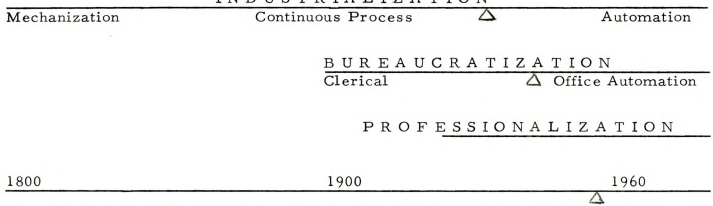
II

A CONCEPTUAL FRAMEWORK FOR ANALYSIS OF CHANGE IN AMERICAN COMMUNITIES

Major Processes Affecting Communities

The comparison of discrete community studies can be advanced by the application of a conceptual framework which relates specific findings to general determinative processes. Maurice Stein (1960) provides a basic framework of this kind. He describes three processes that are largely responsible for shaping the character of contemporary industrial cities: (1) urbanization, (2) industrialization, and (3) bureaucratization. To a greater or lesser degree these are the master processes which the classical sociological theorists, such as Marx, Weber, Durkheim, Simmel, and Mannheim, have viewed as the central forces in the transformation of Western society. It is our contention that a fourth process, professionalization, is now becoming an increasingly important determinant of the character of contemporary communities and societies. Each of these processes is largely dependent upon changes in the level of technology and is reflected in the occupational structure.

Historically the processes develop in stages which are roughly sequential, each being an outgrowth of developments in the preceding stage. As illustrated in Figure 1, fundamental changes in the earlier processes continue after the effects of a later process have begun to be felt. Since sociology has been marked by a massive confusion of the consequences of urbanization and industrialization (e.g., Stein, 1960: Ch. 2), we will not include urbanization as one of the processes in our paradigm of community change. This decision is based on agreement with the argument that technology causes changes in



△ Significant changes in occupational composition related to the basic processes.

Figure 1. Basic Processes of Social Change

community structure beside which the effects of urbanization[1] are "real but relatively unimportant" (Dewey, 1960; Wilensky and Lebeaux, 1958: 132-3).

Stein (1960: 6) defines industrialization quite simply as "mass production and mass consumption." Actually, mass production and consumption occur only in a later phase of industrialization. The Industrial Revolution of the eighteenth century began with the mechanization of work tasks. In the early twentieth century, mechanization of materials handling, which allowed continuous flow, plus increased standardization ushered in the second, or continuous process phase of industrialization (Buckingham, 1961: 5-15). The first phase of industrialization brought about the great migration from farms to fill the low skill jobs in the factories. A high degree of skill was still necessary in many jobs, however. By 1900 the demand for unskilled muscle power was sharply on the decline and by the decade of the thirties assembly-line mass production was causing a decline in the proportion of skilled craftsmen and a concomitant growth in semi-skilled operatives (see Table 1). This decade marked a notable surge in the effects of industrialization on occupational structure. But as Blauner (1964: 7) points out "most individual industries have their characteristic forms of production," so that various kinds of technology, craft (e.g., printing, until recently), machine-tending (e.g., textile mills), assembly-line (e.g., automobiles) are still found today. Thus movement between stages of technological development is not strictly evolutionary, but proceeds differentially by industry. Yet the most distinctive social impacts of industrialization occur with the displacement of skilled craftsmen by introduction or extension of either machine-tending or assembly line technology whether this occurred

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[1] "Urbanization" is here defined solely in terms of population growth and density (cf. Tisdale, 1942: 311).

around the turn of the century, as in the glass-making (Lynd and Lynd, 1929), textile and steel industries (Sharlin, 1961) or during the thirties, as in the shoe industry (Warner and Low, 1947). As Wilensky and Lebeaux (1958) have shown, the early impact of industrialization is quite different from the later impact. Following Stein's terminology, we prefer to view this later impact in terms of the bureaucratization process. The "Middletown" study may be viewed as a portrayal of the impact of mechanization and the "Yankee City" study an illustration of the combined impact of the introduction of continuous process and bureaucratization.

Bureaucracy can, of course, be found in the ancient world. But as Weber demonstrated, modern bureaucratization is a response to the drive toward rationalization of the world. Bureaucratization is the emergence of large scale organizations, hierarchically structured, operated according to impersonal, legal-rational controls.[2] Bureaucratization has been quite discernable since the late nineteenth century, as reflected in the continuing growth of salaried managers and clerical workers since that time (see Tables 1 and 2). The forties and fifties, however, mark a special period of bureaucratic transformation, after which the expansion of these two occupational types has been slowed, due, in part, to the introduction of automated technology into the office.

Just as the rationalization of organizational structure and procedures in large complex organizations calls forth the extensive use of layers of administrative personnel and low skilled clerical workers, continued rationalization of the industrial process involves professionalization, i.e., an increase in the proportion of occupations

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[2] This definition is, of course, derived from Weber (1946: 196-98; 1947: 333-6) who presented a much larger catalog of characteristics. Once again, we are diverging from Stein (1960: 83-4) who takes the growth of absentee ownership as the single aspect of bureaucratization important for his framework.

requiring professional and technical skills. Continued technological advance is dependent upon a growing professional research staff, supervision of a more complex productive process demands ever greater professional skills, and professionals are increasingly judged most competent for higher administrative posts. An examination of the numerous characteristics attributed to professionals by a variety of professional definers (Parsons, 1939: 467 and 1951: 454; Cogan, 1953; Foote, 1953; Greenwood, 1957; Gross, 1958: 77-80; Barber, 1963: 672; Wilensky, 1964b: 138; Elias, 1964: 542; Slocum, 1966: 123-30) shows general agreement on just two criteria: 1) professionals have a specialized technical competence based on systematically ordered, abstract knowledge; 2) professionals have codes of ethics which support a service ideal.[3] These are also the characteristics which should have the greatest impact on society through the professionalization process. In broadest terms professionalization refers to the growth of a highly educated stratum (cf. Elias, 1964: 542, B. 2) and the spread of a "collectivity-orientation" (Parsons, 1951: 463) which varies from the dominant "self-orientation" value pattern. Following Wilensky (1964b: 141) we are taking "the scientist's disinterested search for truth . . . [as] the functional equivalent of the professional's technical service ideal." As shown in Tables 1

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[3]Other characteristics attributed to professionals include affective neutrality, universalistic impartiality, transferable skills, regulation of careers by colleagues, authoritative relationship with clients, general acceptance of limited claims to authority, and a high degree of functional significance. In addition to commanding little consensus from the authorities on the subject, these characteristics can be applied to an extremely wide variety of occupations (cf. Foote, 1953; Wilensky, 1964b) and, in any event, are of limited utility in examining the occupational-community nexus. One other imputed characteristic of professions, which is, however, shared with many occupations, a strong tendency toward group identification (Gross, 1958: 80) is significant for this study. Goode (1957) has referred to professions as a "community within a community."

and 2 the growth of the professional category in the fifties and sixties (a growth which will be sustained in the foreseeable future) marks the beginning of the professionalization stage. Occupationally, this stage is also characterized by the growth of supporting technicians and the decline of semi-skilled operatives as production technology shifts from the mechanization to the automation stage. Professionalization, concurrently with automation, is ushering in the "post-industrial society."

Usually, the four processes, industrialization, urbanization, bureaucratization, and professionalization, have occurred in sequence, each stage developing out of the previous one. But the rate of development varies in different communities. Massive urbanization is a consequence of industrialization, but urbanization both precedes industrialization and continues to be spurred by bureaucratization and professionalization. Bureaucratization is an organizational response to the complexities introduced by mechanization, mass production, and the increase in size, density and heterogeneity of communities. Professionalization is a natural structural continuation and expansion of bureaucratic principles of reliance of expertise and rationality. The sequential chain of production technology (Blauner, 1964; Faunce, 1965: 153) parallels the development of these processes.

A Paradigm for Analyzing Community Change

In the paradigmatic framework presented in Figure 2, this sequence is viewed as a series of distinguishable phases in the evolution of the industrial community.[4] Among the typological characteristics

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[4] As will be made clear in the following discussion, this paradigm is based on a wide variety of sources. The most direct antecedents, however, are to be found in Warner and Low (1947: 65) and Stein (1960). An earlier version of this paradigm is found in Faunce and Clelland (1963). See also Faunce and Clelland (1967: 341-42) and Faunce (1968: 170).

PERIOD	PRE-INDUSTRIAL	EARLY INDUSTRIAL	LATE INDUSTRIAL	POST-INDUSTRIAL
Dominant Socio-Economic Process	Craft Production	Industrialization	Bureaucratization	Professionalization
Characteristic Form of Production Technology	Hand Tools	Mechanization-Mass Production		Automation
Major Change in Occupational Composition	Stable	Increase % semi-skilled, decrease % laborers	Increase % clerks & managers	Increase % professional & technicians
Community Characteristics				
1. Sense of community	Localistic	Eclipse of community		Cosmopolitan
2. Orientation toward community institutions	Traditional	Laissez faire	Rational	Laissez innover
3. Quality of services	Low	Higher	Higher	Higher
4. Community satisfaction	High	Lower	Lower	Lower
Characteristic community Participation				
1. Voluntary organizational	Small	Increase	Increase	Increase
2. Local political participation	High (limited franchise)	Decrease	Increase	Increase

Figure 2. A Paradigm For Analysis of Community Change.

Figure 2 (cont'd).

Characteristic Stratification Order				
1. Fundamental basis	Control of land & commerce	Control of capital	Control of organizations	Control of technical knowledge
2. Mobility pattern		Entrpre-neurial accumulation	Bureaucratic promotion	Professional-technical attain-ment
Characteristic Class Arrangements				
1. Class identification	Low	Higher	Lower ?	Lower
2. Class consciousness	Low	Higher	Lower ?	Lower
3. Class conflict	Low	Higher	Lower	Lower
Characteristic Status Arrangements				
1. Status criteria	Family, age & skill	Commodity display	Office	Contribution to field
2. Life style variation (vertical)	Very great	Great	Decrease	Increase
3. Horizontal status cleavage	Merchant-rentier	Industrialist-merchant	Old middle class-new middle class	Professional-businessman
4. Marginality		Craftsmen	Small entre-preneur	Technician
Characteristic Political Power Arrangements				
1. Type of elite	Commercial	Entrepre-neurial	Managerial	Professional
2. Local conflict groups	Merchant-artisan	Economic dominants-political machine	Middle class-Working class	Status group (life style) conflict
3. Working class political	Low	Higher	Higher	Higher

of each period are distinctive patterns of production technology, occupational structure, social stratification, community imagery, community institutions and community participation. The stratification arrangements and the community patterns are viewed as products of the nature of production technology, form of division of labor, and other correlates of the dominant socio-economic processes at each stage of development. The particular patterns listed in Figure 2 are not intended to represent the only ones present in each period--there may, for example, be powerful entrepreneurs in all four periods--but they should be the most common patterns if the other attributes ascribed to the period are present. The purpose of the paradigm is to order data about community change by suggesting some configurations of "central tendencies" that characterize various stages in this process. A second purpose is to suggest a particular sequence in the occurrence of these configurations. While all cities do not pass through each of the periods described in Figure 2, a community having attributes ascribed to any one of the periods should evolve toward the next.

The initial stage in this sequence is the familiar shift from the commercial pre-industrial to the industrial city which was marked by a change from a handicraft to a mechanized form of production technology. Much has been written about the changes in division of labor, stratification and community patterns typical of this early phase in the industrialization process. Somewhat less has been written about the next stage but a large body of research can be drawn upon to demonstrate the importance of bureaucratization patterns for community structure. At the societal level Wilensky and Lebeaux (1958: 133) and Mott (1965: 172ff.) discuss the change to a "welfare-bureaucratic" society. From a general historical perspective, the period of professionalization has clearly not yet arrived, and the characteristics attributed to this period are basically projections of current trends.

Community Characteristics: Values and Structure

The impact of urbanization, industrialization and bureaucratization on sense of community is the central focus of Stein's review of classic American community studies, The Eclipse of Community (1960). Similarly, Warren (1963: 17, 58, 72) derives from these studies the view that "lack of identification with the community" is one of the major consequences of the "great change." In accord with accepted generalizations, Lane (1962: 301-05) has found that "common men" rate low on three aspects of the sense of community: "community identity," a sense of we-ness; "localism," the importance of city events and environs; and "rootedness," the emotional hold of the community on loyalties. The negative impact of bureaucratization of "rootedness" has been especially stressed by White (1956: 318). To the extent that satisfaction with one's community is dependent on the existence of a strong sense of community, it logically has declined with the latter. The post-industrial period should see a continuing decline in the sense of community, stemming in part from the cosmopolitanism of the expanding professional category (Dobriner, 1958). On the other hand this very cosmopolitanism should bring higher degrees of community satisfaction as satisfaction is based less on Gemeinschaft-like qualities and more on the presence of physical amenities.

In contrast to the earlier traditionalism, Western industrialization encouraged, at first, the application of a laissez faire utilitarianism to community institutions (Mumford, 1961: 452). But with the failure of institutions guided by these values to meet community demands, a desire for the rationalization of these institutions emerges in spite of a counter-tendency to walk backwards into the future (Lynd and Lynd, 1937: 510; Vidich and Bensman, 1958: 100). One example of this orientation was the partially successful attempt to take local government out of politics which began with the reform movement at the turn of the century. This movement, which stressed "businesslike management"

and administration by "experts" (Banfield and Wilson, 1963: Ch. 11), appealed especially to the expanding white collar class. The same segment of the population, responding to the structural demands of industrialization and bureaucratization provided the impetus for the pragmatic rationalization of school reform (Cremin, 1961) which resulted, first, in the creation of a system of mass secondary terminal education and, later, in mass preparation for higher education (Trow, 1961). The latter has increasingly made the school the central community institution and its "experts" leading community actors (Seeley et al., 1956: 224, 343 ff.). Given the occupational values of organizational professionals, especially scientific professionals (Barber, 1952: 31; Danielson, 1960: 8-9) there is every reason to expect even greater pressure toward rationalization in the future. McDermott (1969: 35) believes that the technical elite have evolved a new ideology which he terms "laissez innover"--all problems can best be solved by letting technological innovation run its unhampered course.

With increasing affluence, the rationalization of means has, of course, been applied to the goal-demand of more and better services in all institutional areas. Fowler (1964) has shown that bureaucratization as indicated by absentee ownership is associated with high levels of "general welfare." Earlier, Gillen (1951) had demonstrated the association of occupational level and community quality. The work of Gillen, Thorndike (1939) and Williams et al. (1965) shows that occupation and education create a demand for services beyond what is explained by the resources of income alone. This is especially so in regard to quality education (see also, Whyte, 1956: Ch. 28; Seeley et al., Ch. 8). It is to be expected that the quality of services will continue to improve as community comes to be viewed as "a product to be rationally consumed" (Dobriner, 1963: 136).

Characteristic Community Participation Patterns

One of the responses to the loss of a sense of community in industrial cities was the multiplication of voluntary associations

(Wirth, 1938; Wilensky and Lebeaux, 1958: 119). The Lynds (1929: 285-6) present evidence of rapid growth in organizational participation in Middletown in the period of industrialization. The basic studies of the community life of the bureaucratic middle classes (Whyte, 1956: 317; Seeley et al., 1956: 292) show possibly an even greater stress on voluntary associations. Since education has been shown to be related to associational participation in a number of studies (cf. Bell et al., 1961: 111-13) it is reasonable to extrapolate this trend into the more highly educated post-industrial era. Participation in local politics on the other hand does not show a linear trend of development. It is probable that Bryce (1890: 115) was correct in attributing apathy as well as corruption to the local political scene at the turn of the century. The tide of immigrants brought in by industrialization probably caused a decline in political participation (Dahl, 1961: 276). Although political participation is still slight in comparison with the democratic ideal, it has gradually increased on both the local (Dahl, 1961: 277) and national (Lane, 1959: 21) levels. Since this rise is no doubt related to the increasing educational level of the population (Almond and Verba, 1965: 370) a continuance of this trend is a reasonable projection for the future. It should be noted, however, that these expectations concerning associational and political participation run contrary to major themes of "mass society" theory, the theses that associational commitment is low and/or decreasing in the population at large (Nisbet, 1953: 71) or in the lower strata (Kornhauser, 1959: 68) and that political apathy is great and/or increasing. Theories of mass politics generally suggest that the functions of intermediate associations and local government have been undermined by structural characteristics of industrialization and bureaucratization. Presthus (1962: 255-6) holds that "indifference [is] the most common pattern of bureaucratic accommodation" and that the indifferent tend to reject not only their work organization but politics, unions, and voluntary organizations.

Characteristic Stratification Orders

Although reference to Weber's (1946: 180-95) classic discussion of "Class, Status, Party" has become traditional and even obligatory in studies of stratification, relatively few sociologists have taken Weber's categories seriously (cf. Tumin, 1964: 648; Pease, 1968: 63). Given the continuing confusion in the usage of stratification terms, it is probably necessary to define those used in Figure 2. According to Weber (1946: 181), "'classes,' 'status groups,' and 'parties' are phenomena of the distribution of power within a community." The field of stratification, then, encompasses the study of the unequal distribution of power in the economic order, the social order and the legal order. The economic order is stratified in terms of "classes," categories of people who share similar "life chances" because they share a similar "market situation" (181-2). The social order is stratified in terms of status groups, categories, which share similar degrees of social honor and styles of life (187-8). The legal order is stratified in terms of political groups[5] oriented toward influencing communal action (194). These stratification orders are partially independent and the degree of communal identity felt by persons sharing similar positions in any of the dimensional hierarchies varies from situation to situation.

Although it is useful for analytical purposes to maintain distinctions between the various dimensions of stratification, we begin by viewing the stratification order as a whole. It is generally agreed that the fundamental basis of the Western stratification order passed from control of commerce and land in the pre-industrial city to control of capital and industrial production property in the industrial period. This control was at first based on "ownership" but was later based

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[5] It is not altogether clear that Weber thought that "parties," or political groups, should be considered stratification categories logically similar to classes and status groups. Pease (1968: 109-12) argues forcefully, but not wholly convincingly, that neither party nor power are modes or dimensions of stratification.

simply on organizational position (Burnham, 1941; and more broadly, Dahrendorf, 1959). In the passage to the post-industrial society, access to organizational control positions becomes increasingly based on specialized education as organizations become more dependent on technical knowledge (Galbraith, 1958; 1967; Ellul, 1964; Gould, 1966; Bell, 1967).[6]

With changes in the basis of the stratification order, the dominant pattern of economic, social and political power mobility also changes. The entrepreneurial pattern of accumulation of wealth through the growth and development of privately owned enterprise is portrayed by the Lynds (1929: Ch. 8). The bureaucratic pattern of mobility through organizational career with its stress on education as a prerequisite is presented in the studies of Seeley et al. (1956) and Whyte (1956). It is to be expected that technical expertise will become the major avenue of mobility in the post-industrial society. The importance of educational qualifications will, of course, increase.

Characteristic Class Arrangements

Given the universal existence of objective class division, the possibility of extreme variation in the degree of class identification, class consciousness, and class cleavage remains. "Class identification" here refers to the tendency to identify oneself with others in the same general occupational position. "Class consciousness" here refers to the tendency of those in the same general occupational situation to perceive "common traits, common needs and common collective aims" (De Grazia, 1964: 95). "Class conflict" refers to clashes between categories with opposing economic interests. "Class consciousness"

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[6] Although these changes are important, as Mills (1956: 147) has pointed out concerning the "managerial revolution," it should not be supposed that conflict between those who have arrived at positions of super-ordination by different routes supercedes the more basic division between those with greater or lesser control of life chances, social honor, and political power.

and "class conflict" are not used in the full Marxian sense, which implies a theory of revolution, but as variables which are found to some degree in all but the simplest communities. Although class identification, consciousness, and conflict may vary independently, especially over the short run, they tend to change together. The terms were introduced by Marx who was essentially correct in pointing out that high levels of each were structural consequences of industrialization. Although American sociologists have always played down the importance of class cleavage in the United States as compared to Europe, there can be little doubt that the early years of rapid industrialization greatly exacerabated hostility and conflict between economic aggregates (Wilensky and Lebeaux, 1958: 87). If the extreme polarization expected by Marx never developed, it is nevertheless true that industrialization stimulated relatively high degree of political-economic consciousness among both workers (Lipset, 1960: 285) and farmers (Wiley 1967: 533-35) even though studies indicate only moderate degrees of class identification, not to speak of militant class consciousness, in communities characterized by both high (Jones, 1941; Manie and Meltzer, 1954) and medium (Lynd and Lynd, 1937) degrees of industrialization. Moreover, widespread class action in the form of strikes and violent protest characterized this stage (Brooks, 1965). It is generally agreed that bureaucratization has limited the saliency of class factors as a result of the institutionalization (bureaucratization) of conflict, the spread of affluence and the enlargement of the middle class as a buffer group (Wilensky and Lebeaux, 1958: 107-8). Certainly, the rise of "business unionism" has regularized if not diminished class action (Wilensky and Lebeaux, 1958: 107). However, the initial impact of one aspect of bureaucratization, the replacement of owners by managers is conducive to class conflict because of the breakdown of paternalistic controls (e.g., Green, 1939; Warner and Low, 1947). And the generally accepted views that class solidarity (Moore, 1954: 221 ff.) and political-economic consciousness (Key, 1958: 274) have

declined can be challenged on the basis of studies of class consciousness by Glantz (1958) and Leggett (1963; 1964) and class voting by Kornhauser et al. (1956: 281-2) and Alford (1963). Nevertheless, projections of class relations in the post-industrial society usually indicate a decline in class identity and cleavage on the basis of an expected continuing lessening of the size of the working class and increased general affluence (Kerr, et al., 1960: 286-94; Lipset, 1964). This view is tacit in the many discussions of post-industrial society most of which ignore both class and conflict (e.g., Bell, 1967). A minority, usually those who foresee massive unemployment due to automation, predict a high degree of class cleavage (Leggett, 1964: 226). McDermott (1969: 35) foresees a sharper class conflict on the basis of increased decision-making power in the hands of the technical elite.

Characteristic Status Arrangements

It has often been observed that a concomitant of industrialization is a status assignment system in which commodity display is the major status criterion (Lynd and Lynd, 1929: 81; Stein, 1960: 51, 78). The sharp status distinctions and great differences in life style brought about by industrialization is described in the "social class" studies of the Warner School (see also, Morland, 1958: 174). And the obsolescence of skills brought on by continuing mechanization, placed many craftsmen in marginal positions in the status structure (Lynd and Lynd, 1929: 31; Warner and Low, 1947).

With the rise of bureaucratization, organizational position and the "borrowed" status of the organization itself increasingly become major criteria of status (Mills, 1951; Drucker, 1953; Presthus, 1962; Westby, 1962: 173). Increased affluence and a slight diminishing in the importance of commodity display[7] (or possibly an increase in the

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[7] Despite the increasing importance of office as a status criterion, commodity display, of course loses but little of its importance (cf. Mills, 1951: 257; Seeley et al., 1956: 7).

subtlety with which the game is played) (Whyte, 1956: Ch. 24) brought about a decrease in the life style differences of those in the middle of the status hierarchy (although, as indicated in the previous chapter, it is doubtful this should be viewed as a fusion into a "middle mass," as some sociologists have claimed). But despite this blurring of vertical status lines, both theory (Riesman, et al., 1950: 36; Mills, 1951: 351) and community research (Mills and Ullmer, 1946; Stone and Form, 1953; Miller and Swanson, 1958) point to the probability of status cleavage between the old and new middle classes. With the development of a bureaucratically based status system, the small entrepreneur, a bulwork of the previous status order, becomes increasingly marginal (Bell, 1963a: 19).

To the extent that the post-industrial era is marked by increasing professionalization of the labor force, it is to be expected that education and technical contributions to specialized fields of knowledge will become important determinants of status (Seeley, et al., 1956: 154; Galbraith, 1958: 342). Among most gifted scientists (Hagstrom, 1965) and among many "workbench" scientists (Marcson, 1960: 19) the major basis of social honor and self-esteem is recognition of contributions by ones peers. Since education is related to a wide range of differences in life style characteristics the post-industrial society will potentially develop a somewhat greater differentiation between vertical prestige strata. However, it is also possible that a greater equalization of education will increase the mass-like quality of the middle portion of the status structure. Wilensky (1964a: 188), for example, shows that a taste for "high culture" is fostered by college completion, with little difference between other educational strata. The horizontal status cleavage between old and new middle classes, however, will probably endure in the form of variation in life styles between professionals and small entrepreneurs (Vidich and Bensman, 1958: 53-62) and, possibly, between professionals and management, should differences in work

orientations be carried over into the community (for a partial review of the extensive literature on professional vs. bureaucratic orientations, (see Blau and Scott, 1962: 60-74). Technicians, who occupy an ambiguous and ill-defined position in industry (Evans, 1964) will likely find themselves in a marginal position in the community status structure as well.

Characteristic Political Power Arrangements

With the coming of industrialization, control of community decision-making typically passed from the hands of a commercial to an industrial entrepreneurial elite (C. Mills, 1946; Schulze, 1958; Clelland, 1960; Dahl, 1961) on the basis of ownership and control of the dominant means of production.[8] These elites were often challenged by political machines which tenuously represented the have-nots. These machines were often successful, especially in large cities. But this state of affairs represented symbiosis as much as conflict and was made possible by the fact that the industrial elite, in contrast to the commercial elite gave less than full attention to the game of local decision-making even in smaller cities, since the decisions which affected them most clearly were made at higher governmental levels. This set of power arrangements alienated the middle classes and resulted in numerous reform movements. But despite the previously mentioned increase in class cleavage, feelings of alienation from local political structures among the working class

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[8]The term "elite" as used here to refer to the necessarily small minority of persons who exercise great influence in shaping communal actions. The elite may vary in size, heterogeneity, cohesiveness, and degree of dominance. Communal actions are not necessarily carried out through formal political institutions. If these strictures are taken into account, the admittedly overexaggerated accounts of authoritarian business dominance by the Lynds (1937), Warner and Low (1947), Warner, et al. (1949) and others which have been heatedly challenged by Polsby (1963), may be taken as evidence of notably disproportionate representation of industrial entrepreneurs among community decision-makers, or the elite.

were probably not greatly exacerbated because of identification with political machines (Merton, 1957: 74-5).

As control of economic organizations passed into the hands of managers with bureaucratization, community power was diffused. The reform movement placed greater power in the hands of the bureaucracy rather than in the hands of elected politicians (Adrian, 1958). The industrial managerial elite operates outside the formal political arena (Clelland and Form, 1964; Westby, 1966) and may even opt out completely (Schulze, 1958). The importance of organizational control as a basis for power is seen in the growing influence of unions (Hart, 1949; McKee, 1953) and other interest groups (Williams and Adrian, 1963: Ch. 12; Banfield, 1965). With the increase in home ownership among the working class, one of the primary conflicts in local politics occurs over the issue of provision of better local amenities (especially educational facilities) versus low taxes. This issue aligns new middle classes against working class and small business classes (Dobriner, 1963; Williams and Adrian, 1963: 119; Gans, 1967: 31). Although the evidence is contradictory, working class alienation is probably increased by the bureaucratization of local parties and the diffusion of power within the middle classes (Levin, 1960: 65; Miller and Riesman, 1961: 91; Gans, 1962: 162; but see Lane, 1962: 304).

There is every reason to believe that the rationalization of local politics will continue as the increased influence of professionals makes itself felt. Professionals will increasingly be found in both elective and appointive office and among the reputational elite. There is little reason to believe that conflict over the expenditure of local tax monies will be resolved, although the conflict groups may increasingly reflect educational differences. The working class' sense of powerlessness on local political issues would thus remain high. The alienation of workers in the most tenuous employment situations should be particularly high.

Application of the Paradigm

Following the community study tradition, the research to be reported here was conceived as exploratory and descriptive as well as hypothesis testing in its approach. Nevertheless, an attempt was made to gather evidence which would support or call into question a large number of broad heuristic hypotheses (cf. Bensman and Vidich, 1960) derived from the basic paradigm of community change presented above. These hypotheses refer basically to changes over time but also to current differences in attitude and behavior which may be found among various segments of the population. Specifically, it is assumed that scientific professionals and technicians may be regarded as vanguard occupations and industrial blue collar workers as rearguard occupations (in the sense that two are increasing and the other decreasing as a proportion of the labor force). It is further assumed that changes in the character of the community have been and will be partially shaped by the differential attitude and behavior patterns of those in vanguard and rearguard occupations. The concept of the post-industrial community contains, of course, many dimensions. The dimension which will be subject to examination here is the professionalization of the labor force. We will investigate the impact of a highly professionalized labor force (with a diminishing blue collar segment) on community structure. The hypotheses listed below are stated in a general form which, strictly speaking, requires historical and/or comparative data. This procedure illustrates the broad scope of our general interests. The hypotheses will be recast in operational terms in the chapters discussing the findings. Not all of the hypotheses suggested by the paradigm will be examined in this report. Related hypotheses have been (Faunce and Clelland, 1967) or will be investigated elsewhere.

Hypotheses

1. Professionalization decreases sense of community (increases cosmopolitanism).

2. Professionalization furthers the improvement and growth of community services.

3. Professionalization increases voluntary organizational participation.

4. Professionalization increases local political participation.

5. With professionalization technical expertise becomes the basis of the stratification order and social mobility.

6. Professionalization diminishes class cleavage, including:

   a. sense of class identity

   b. sense of political-economic consciousness

   c. class conflict

7. Professionalization increases the local political power of the professional stratum.

III

RESEARCH SITE AND METHODS OF THE STUDY

The purpose of presenting the paradigm of community change has been to provide a basis for speculation about how the community in the post-industrial era will extend some trends and reverse others. One way of throwing light on the validity of the hypotheses which can be drawn from this paradigm is to study cities in which the occupational structure approaches that which is projected for the post-industrial society. Changes which are expected to occur elsewhere should already be evident in such a setting. In addition, support for the probability of future changes can be inferred from the differential attitude and behavior patterns of persons in growth and stagnant occupations.

Selection of the Community

It is difficult to trace the relationship between technological change, community occupational distribution, and community structure in large industrially diversified cities. Such cities present many alternative opportunities for employment at each occupational level. This makes the task of establishing the impact of technological change on occupational composition almost Herculean. Thus, as in many previous studies relating technology to occupational and community structure, the locale selected for the research project from which this report was drawn, was a small one-industry city.

The research site, to which we have given the pseudonym, "Alchemia," has a population of approximately 25,000, and nearly half of the male labor force is employed by a large chemical processing company. The chemical firm has been the major employer in the community for over fifty years. Since its inception, the company has been characterized by continuing change in production technology in the

direction of increasingly automatic operation. One aspect of automation, continuous process production, was already present shortly after the founding of the company around the turn of the century. Chemical processing is now among the most completely automated American industries (Faunce, 1968: 52). Alchemia is an independent city, somewhat isolated from the industrial heartland of mid-America. Although it does not fall within the standard metropolitan statistical area of any larger city, it is part of a three county area with a total population of nearly 350, 000 people.

Unlike many previously studied communities, Alchemia was not chosen for study because of its typicality, that is, not because it was deemed to be a microcosm of American society, or even because it was thought to be representative of any one particular type of community. Rather, it was selected because it is in many respects a vanguard city. The distinctiveness of the community and many of its vanguard characteristics are evident in the comparison of Alchemia with other cities of similar size, based on census data, which is found in Table 3. In a capsule description, Alchemia is a spacious, rapidly growing industrial city with a population which is middle class, affluent, highly educated, WASP, young and family oriented. Not only is Alchemia affluent, as indicated by high median income and the percentage of families earning over ten thousand dollars, but its underclass is quite small as indicated by the proportion of families below the three thousand dollar poverty level and almost complete absence of poor housing. What few poor are to be found are native whites. The family orientation of the community is indicated in the large proportion of young children and in the very high proportion of single detached homes.

According to Hadden and Borgatta's (1965) factor analytic study of American cities, Alchemia ranks in the lowest decile on factors labeled density, deprivation index, percent nonwhite, and median age. It ranks in the highest decile in percent single dwelling units and in the next to highest decile in median income. The relative stability of the population

Table 3. Demographic Comparison of Alchemia with Other Cities, 25,000-50,000 Population, 1960

	Alchemia	Other Cities
Population increase, 1950-60	94.5%	46.2%
Density per square mile	842	4,722
Manufacturing employees/1000	183.8	106.6
White collar occupations	58.1%	46.7%
Single dwelling units	91.1%	74.3%
Sound dwelling units	90.5%	81.5%
Median income of families	$7,690	$6,221
Families over $10,000 income	29.0%	18.0%
Families under $3,000 income	9.9%	16.4%
Labor force unemployed	3.4%	5.0%
Median school years (adults over 25)	12.7	11.1
College graduates	13.2%	9.8%
Completed less than 5 years school	1.3%	6.6%
Non-white	0.2%	7.9%
Foreign or mixed parentage	13.8%	15.1%
Median age	23.9	30.1
Under 5 years old	15.4%	11.2%
65 years and over	4.5%	9.2%
Live births/1000	25.6	23.9
Deaths/1000	5.1	8.0

Sources: U. S. Bureau of the Census (1962b); Hadden and Borgatta (1965).

is indicated by its rank above the fourth decile in percent in the same house 1955-60 and above the sixth decile in percent migrants. The picture portrayed by statistics is that of a prosperous suburb, a community which is a joy to Chamber of Commerce secretaries and real estate brokers. This picture is reaffirmed in the eye of the observer in his initial visit to the city. Nevertheless, Alchemia is not a residential community but an industrial employment center. The single industry, which employs two thousand more workers than are in the total residential work force is located in one large area in the city. Except for two commercial areas and a zone of transition contiguous to the plant area, the community is an expanse of neat, well-kept single family homes, with lot and house size generally increasing as one moves toward the periphery. Alchemia is, on the face of it, one of the most unusual industrial cities anywhere. Nearly 29% of the labor force falls in the professional and technical category. This is the most highly professionalized work force found in any industrial city in the United States. A higher percentage of professionals is found only in such atomic research cities as Oak Ridge, Tennessee, and Richland, Washington, a number of college towns and a few residential suburbs. The unique occupational distribution fostered by the chemical industry can be seen in the comparison of the occupational profiles in various types of one industry cities found in Figure 3.

Occupational Composition of the Community

Table 4 indicates that there has been an extremely high proportion of professionals in the labor force of this community for more than twenty years and that the proportion continues to increase more rapidly than in the typical small city. Certain other changes in the occupational composition of Alchemia are also exaggerations of national (see Table 1) and small city trends, such as for example, the sharp decline in the

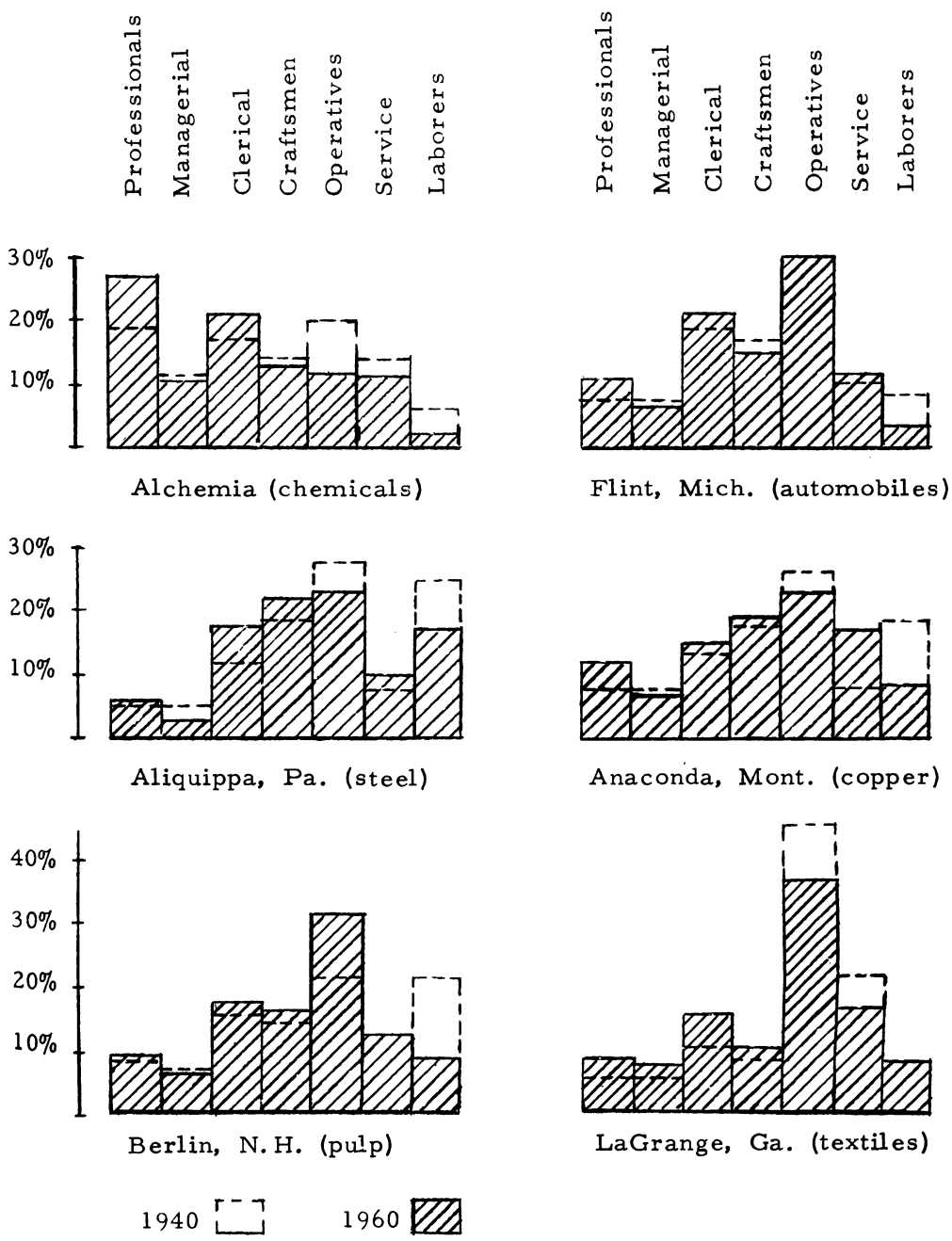

Figure 3. Occupational Composition in Selected One-Industry Cities, 1940-1960.

Table 4. Comparison of Changing Occupational Distribution in Alchemia and Other Cities of 10,000 to 50,000.*

	1940	1950	1960
		Percent	
Professional and Technical:			
Alchemia	19.2	25.2	28.7
Mean, small cities	9.9	11.3	13.7
Managers, proprietors and officials:			
Alchemia	9.0	10.7	10.4
Mean, small cities	11.6	12.1	11.1
Clerical and Sales:			
Alchemia	17.6	23.0	21.9
Mean, small cities	22.0	23.3	25.2
Craftsmen:			
Alchemia	14.4	14.6	13.8
Mean, small cities	12.9	14.9	14.0
Operatives:			
Alchemia	20.3	14.6	12.0
Mean, small cities	21.5	20.9	10.6
Private Household Workers:			
Alchemia	5.9	2.3	4.0
Mean, small cities	6.5	3.4	3.7
Service Workers:			
Alchemia	7.9	7.1	7.0
Mean, small cities	6.5	8.3	9.2
Laborers:			
Alchemia	5.7	2.5	2.2
Mean, small cities	7.2	5.8	4.5
Index of Net Redistribution:**	1940-1950	1950-1960	1940-1960
Alchemia	13.3	5.2	15.2
Mean, small cities	6.05	5.5	9.85

*Based on a five percent systematic sample of all urban places with populations ranging between 10,000 and 50,000 during the entire period, 1940-1960. (Source U. S. Census, 1962b).

**Computed as the index of dissimilarity between the occupational distributions for any two dates. The index is one-half of the absolute values of the differences for any two dates, taken occupation by occupation. This index is derived from Reiss (1957: 42.).

proportion of operatives and laborers. The index of net redistribution indicates that changes in the occupational structure of Alchemia have been much greater than nationally or in the average small city over the twenty year period, 1940-60 but that the more radical changes had taken place in the earlier decade.[1] The pattern of change indicated in Table 4 makes Alchemia an especially suitable research site for this study because the changes which have occurred in Alchemia have taken place in advance of changes elsewhere. The occupational composition of Alchemia in 1940 was more similar to that of the typical small city for 1960 than for 1940.

Occupational Composition Within the Chemical Firm

However, although nearly half of the Alchemia labor force is employed by one chemical processing firm, comparison of Tables 4 and 5 shows that changes in the occupational distribution of the community are only indirectly related to changes in the composition of the chemical-plant work force. Thus, for example, the massive changes which occurred in Alchemia during the forties were not the result of the relatively slight changes taking place in the occupational composition of the plant labor force. Rather, simple expansion of the plant labor force brought about major changes in the occupational distribution in Alchemia. Less than half of the plant employees are Alchemia residents. As the work force doubled between 1940 and 1950, new hourly workers increasingly commuted from the surrounding area, but new salaried workers, especially the professionals, settled within the city. A later study (Preiss and Smith, 1957) showed that 80-85% of the professionals and managers employed by the firm live in the city compared to 46% of all craftsmen, 37% of the operatives and 40% of the technicians. The same study indicated that the more recent the hiring date the less the

[1] Small cities have proportionally, slightly more white collar workers in all categories and slightly fewer blue collar workers in all categories than the national non-farm labor force, but the degree of occupational change in each decade is quite similar.

Table 5. Occupational Distribution of Chemical Plant Labor Force*

	1930	1940	1950	1960	1963
			Percent		
Professional and technical	8.8	17.8	15.8	20.6	27.1
Managers and officials	3.4	4.4	4.8	4.2	7.9
Clerical and sales	3.8	10.2	11.7	12.8	12.9
Craftsmen, foremen and kindred	36.5	22.8	24.8	25.6	20.7
Operatives and kindred	31.7	34.3	33.6	29.6	25.8
Service workers	4.2	4.7	5.5	4.8	4.3
Laborers	11.7	5.8	3.7	2.3	1.2
Index of Net Redistribution	1930-40	1940-50	1950-60	1960-63	
	19.55	4.75	6.2	10.3	
	1940-60		1930-1963		
	8.35		32.1		

*Plant data were reclassified in order to match census categories as closely as possible.

likelihood of living in Alchemia and that distance to work varies inversely with length of employment. During the fifties, the two major changes in the occupational composition of the plant, an increase in the proportion of professionals and a decrease in the proportion of operatives, were not fully reflected in the community distribution because a major expansion of the city limits brought a disproportionate number of blue collar workers into the city. Thus different residence patterns exaggerated technologically induced changes in occupational composition during the forties, and annexation dampened the effect of such changes during the fifties.

Table 5 shows that the greatest occupational redistribution in the chemical plant occurred before 1940 and after 1960, the dates for which census data are available for the community.[2] The extensive pre-war changes reflect, among other things, the often stated comment, by both labor and management, that "automation is nothing new in Alchemia." As might be expected, there is not perfect fit between the schematic model of Figure 1 and the actual occupational composition data. The beginnings of automation and professionalization in the chemical plant precede 1930, but the 1930-40 decade can be viewed as the end of the period of industrialization (sharp decline in the proportion of craftsmen and laborers and an increase in operatives) and early stage of the period of bureaucratization (increase in the percentage of office and managerial workers) and the period of professionalization (increase in the proportion of professional and technical workers). The fifties and sixties are marked by a further maturing of the stages of bureaucratization and professionalization. Bureaucratization actually re-emerges in full force in the last few years with the precipitous rise in managerial personnel due to the consolidation of the company office in Alchemia.

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[2] No data are available prior to 1940 because the community was less than 10,000 population.

This sudden growth of officials at the Alchemia location, then, is the result of slower growth elsewhere. It is interesting to note, however, that office automation has prevented a similar rapid expansion in the proportion of clerical workers. There have been two stages of professionalization. During the fifties, chemists, engineers, and technicians each increased nearly one hundred percent, while the total work force was expanding by approximately one-third. During the next three years the rate of growth of chemists and engineers slowed down slightly, the rate of growth of technicians has increased, and there has been a sharp upturn in scientific professionals with managerial titles, such as section head and group leader, and in non-scientific professionals, such as attorneys, analysts, statisticians, and job evaluation engineers. With increasing professionalization and automation there has been a concomitant decline in the proportion of all blue collar categories in the work force, but especially semi-skilled operatives. This decline was not due to lay-offs as both 1960 and 1963 were full production years in which total plant employment reached new highs.

Many variables have contributed to changes in the character of the chemical plant labor force--automation, expansion of the home office, efforts toward organizational efficiency, and the growth of research operations. Because the company kept no records of the introduction of technological change, because job titles did not precisely designate specific job functions, and because the product mix changes constantly (approximately 700 different products were produced at the plant at the time of the study), it was not possible to demonstrate quantitatively the degree to which technological change was associated with professionalization. However, an indicator of how changing technology acts as a demand factor is found in the 83% growth of the "non-exempt" salaried workers (mostly engineers) in the "maintenance and engineering" division between 1950 and 1962. During this period the plant work force grew by only 41%. In interviews, personnel officers and industrial engineers affirmed the view that automation contributed to the growth of the professional category.

Technological change is also reflected in the lack of demand for blue collar workers. The comparison of differential growth of sales and employment for hourly workers, using 1930 as a base, provides a rough productivity measure for the company studied (see Figure 4). Although sales increased by fifty percent between 1952 and 1962, there was no change in the number of hourly wage earners. An examination of changes in specific blue-collar jobs illustrates the impact of technological change. Chemical operatives (a generic job title which fits roughly half of the blue collar workers) have been among the hardest hit. There has been a slight absolute decline in the number of such workers in the plant since 1950. Laborers, apprentices, boiler-makers, painters, and surprisingly, mechanics and repairmen have also declined in absolute terms. Most other blue collar occupations have held their own but declined as a proportion of the work force. But the same changing technology has acted as a spur for a few blue collar occupations, notably, plumbers and pipe fitters, instrument men, and electricians, all of which gained faster than the total plant work force.

The over-all technologically induced stagnation of the blue collar force of course increases the proportion of professionals in the plant and in the community. But despite the impact of such change on occupational composition, research still remains the major determinant of the high level of professionalization. Roughly two-thirds of the Alchemia scientific professionals were engaged in some form of research or development.

Research Methods

As indicated previously, the impact of professionalization on community structure was studied in two ways: 1) by examination of changes which have occurred over the past quarter century; 2) by examination of the role of changing occupational groups. Much greater emphasis was placed on the second of these methods. It is assumed that differences in attitudes and behavior between those in crucial

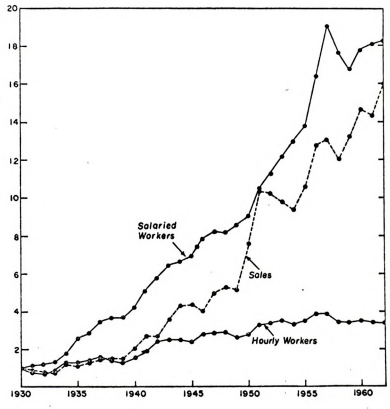

Figure 4. Sales and employment of hourly and salaried workers. This Figure shows the ratio of yearly figures to 1930 figures. The Sales line is sales and transfers at market price from the community location, adjusted to 1939 dollars. Comparison of sales and hourly employment gives a rough indication of productivity. However, the picture of increased productivity is somewhat exaggerated, since increasing value added to products prior to shipment to this location has not been taken into account. The Hourly and Salaried employment lines are based on monthly means for the year.

expanding and declining occupations is helpful in explaining the past and understanding the future. Interviews were conducted with members of two expanding and one declining occupational category. Since the vast majority of professionals in the city are scientists (mostly chemists) and engineers, a sample of 100 of these occupations was drawn randomly from a list of employees of the one major firm in the city. A sample of 100 technicians was drawn in a similar manner. Although laboratory and production technicians represent only a very small proportion of the total work force, they are of special interest because of an increasing demand under an automated technology. As representatives of rearguard occupations in the community, a random sample of 150 production workers was drawn from the list previously mentioned. Only persons living in the city were included in the sampling list. Interviews were eventually conducted with 95 scientific professionals, 95 technicians and 137 blue collar workers.[3] Hereafter, these samples will, at times, be referred to as the "professionals," the "technicians," and the "workers."

Of the professionals, 44% were chemists, 48% were engineers and the remainder had scientific training in other fields. Together, their median income was $10,700 and their mean years of education was 16.9. Their mean age was 38.8. Seventy-two percent of the technicians were laboratory research workers; the rest were scattered throughout the plant. The technicians had a median income of $7,000 and a mean education of 13.1 years. They were the youngest occupational group with a mean age of 32.3 years. Fifty-six percent of the workers were skilled (including foremen), 43% were semi-skilled operatives, and only 1 person was an unskilled laborer. The actual proportion of skilled workers in the plant hourly labor force was somewhat lower and the

[3] Of the twenty-three persons in the sample who were not interviewed, twelve were refusals, six had moved away, four were ill or deceased, and one could not be contacted.

percentage of semi-skilled workers somewhat higher. The sample figures reflect the fact that semi-skilled operatives were more likely than skilled craftsmen to commute to work from outside the city limits. The single unskilled laborer drawn in the sample accurately reflects their near extinction from the plant work force. The workers sampled were somewhat more prosperous and better educated than the typical American blue-collar worker. Their median yearly income was $7,300, slightly higher than that of the technicians. The workers' mean years of schooling was 10.0 and their mean age was 43.6 years.

The interviews followed a schedule (see Appendix) which included both open-end and forced choice questions. The major areas of content were attitudes toward the community, community participation, perception of community structure and change and personal values. Whenever possible available data from other studies which have used the same or similar questions have been drawn upon. The introduction of comparative data demonstrates the extent to which Alchemia varies from other communities and tempers the tendency to overgeneralize from a single case.

Two research techniques were used in examining the second focus of this research, the study of change in the recent history of the community. First, community "knowledgeables" were questioned about their perception of change. Loosely structured interviews were conducted with twenty-nine persons in leadership positions. These included the city manager, the mayor, an ex-mayor, the city planning director, the police chief, the two county party chairmen, the president of the school board, the superintendent of schools, three school principals, three labor union leaders, three heads of businessmen's associations, two health officials, the ministers of the two largest churches, the newspaper editor, the manager of a radio station, the library director, the community recreation center director, the employment security office manager, the president of the local chapter of the American

Chemical Engineers Society, and the manager of technical employment at the chemical company (also a former city councilman). No attempt was made to follow a rigid pattern of questioning but at some point in the interview the respondents were asked to name the major changes that had taken place in Alchemia, to state their impression of the impact of occupational change in their own area of expertise, to express their opinion on the importance of any change in class relations in Alchemia, to designate the top prestige groups and the basis for prestige in Alchemia and how this has changed and to designate the groups and individuals who exert influence, where and how, and how this has changed. Answers to all these questions were obtained from twenty-one of the respondents. Interviews usually lasted about one and one-half hours, ranging from forty-five minutes to four hours. Seven chemical plant officials were also interviewed in regard to more specific questions.

A wide variety of available data were gathered for use as indicators of community change and comparative community quality. Records were collected on demographic characteristics; occupational distribution of the city council, school board, planning board, hospital board, and community recreation center board; local governmental expenditures; voting; school expenditures; school drop-out rates; curriculum changes; high school graduates attending college; health statistics; hospital statistics; welfare expenditures and case load; church membership and attendance; crime and delinquency; library circulation; business statistics; newspaper circulation; unemployment; etc. Where possible an attempt has been made to interpret the trends indicated by these data by comparison with available data for other cities.

IV

COMMUNITY IMAGERY AND QUALITY OF LIFE

The Importance of Community Imagery

In Robert Nisbet's (1966: 47) view of the sociological tradition, "the most fundamental and far-reaching of sociology's unit-ideas is community." And yet, if the nineteenth century sociologists rediscovered the importance of community, as Nisbet claims, it was also their task to clarify and explicate the loss of community in modern society as a consequence of industrialization. Although this theme was most explicitly emphasized by Toennies in Gemeinschaft and Gesellschaft it was also central to Comte, Le Play, Weber, Durkheim, and Simmel. And in American sociology, the same motif is found in Cooley, Redfield, Becker, Sorokin, Parsons and Wirth among others (see McKinney and Loomis' discussion of the typological tradition, 1957). Of course, these global theorists rarely limited themselves to analysis of the local community in noting the drift away from forms of social interaction marked by intimacy, depth, continuity and social integration. But certainly a wide array of empirical studies of American communities did point to similar conclusions. From a review of these data, Warren (1963: 94) has concluded that one of the four major changes in American communities has been a decline in psychological identification with the locality, and Stein (1960) has used these studies to document his thesis of the continuing "eclipse of community" as a consequence of three determining master processes: urbanization, industrialization and bureaucratization. In simplified terms, it might be said that each of these processes decreases the functional importance of the locality group and increases structural and normative differentiation; these changes, in turn, decrease the sense of communal identification. The process of professionalization should only add to this trend. More specifically, examination of relevant literature leads us to hypothesize that

professionals will be characterized by: 1) a cosmopolitan rather than locality oriented world view, 2) little sense of community, 3) a demand for high quality amenities, 4) a demand for the rationalization of services, especially education and government, 5) a degree of community satisfaction dependent on availability of amenities. Conversely, we expect that blue collar workers will be characterized by the opposing traits--a locality oriented world view, etc. Technicians should stand somewhere between these two numerically dominant groups. It is to be expected that the values and behavior of professionals will be a dominant force is reshaping the structure of community.

From the mode of statement of these hypotheses the relevance of the study of community imagery should be apparent. Opposing viewpoints on the nature and uses of community can be a source of major conflict as well as a result and cause of fundamental change. On the other hand, consensus on such basic questions is a source of integration which will serve to meliorate other conflicts. As Bernard (1962: 10) has pointed out: " . . . only human communities are characterized by values. Any study of community behavior must begin with them." Following this injunction we will begin our discussion of substantive findings with an analysis of differential values as expressed in community imagery.

Localism--Cosmopolitanism

One might suppose that technically educated, organizational scientists, because of their educational background and their status as possible "transients" (Whyte, 1956: Ch. 21), would be extremely detached and hard-headed in their attitudes toward the community. In a word, we expect professionals to be more cosmopolitan. The local-cosmopolitan distinction, which was introduced to research by Robert Merton (1949), is of course in a direct line of descent from Toennies (1957) through Zimmerman (1938). Merton, however, transformed the social structural concept of the latter into a social psychological concept-orientation toward the local community or toward the world

outside. This usage has passed into the common vocabulary of sociologists, but it is yet to be widely adapted in community research. William Dobriner (1958) was the first to operationalize Merton's concepts in the form of an attitudinal scale.[1] Using a ten item Likert-type scale, which was based directly on Merton's qualitative findings, he found that among suburbanites localism was directly related to length of residence and inversely related to education. More recently Dye (1963) constructed a similar five item scale for a study of metropolitan politics in sixteen suburbs. His most relevant finding for our purposes: localism is inversely related to status.

Five items drawn from Dobriner (1958: 131-2) were used as a measure of localism-cosmopolitanism in the Alchemia research.[2] The greater cosmopolitanism of the professionals is clearly indicated by the scale scores and four of the item responses shown in Tables 6 and 7. It is also clear that the technicians are closer to the professionals than to the workers in their attitudes. However, the cosmopolitanism of the professionals and technicians is quite relative. Table 7 shows that there were few strong cosmopolites in any group. Only 21% of the professionals and 17% of the technicians gave the cosmopolite response on the majority of questions, and on three of the five questions all groups overwhelmingly give the "localite" response. The professionals are "cosmopolitan" on items 1 and 2, which may tap an "intellectual" dimension, and "localite" on items 3, 4 and 5, which may tap a more "emotional" dimension, of the conceptual property. An anti-urban attitude is especially evident in the response to item three. These data suggest that cosmopolitanism, as an intellectual world view does not

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[1] In an earlier study Sykes (1951) developed a localism-scale based on near-demographic rather than attitudinal data. Sykes' empirical indicants seem rather far removed from Merton's concepts, but like Merton, he uses localism-cosmopolitanism solely as an independent variable.

[2] Three of these items were also used by Dye (1963).

Table 6. Responses to Local-Cosmopolitan Items**

	Agree*	Neither A or D	Disagree*	Occupation
	Percent			
1. News about Alchemia is generally more interesting than national or international news.	16[a]	24	60	Prof.
	17[b]	26	57	Tech.
	37	26	33	Worker
2. National and internation events are important largely because of the way they effect Alchemia as a community.	29[a]	15	56	Prof.
	38[b]	15	47	Tech.
	55	18	27	Worker
3. Big cities may have their place, but when you get right down to it, the local community is the backbone of America.	63[a]	24	13	Prof.
	68[b]	14	18	Tech.
	80	13	7	Worker
4. The most rewarding organizations a person can belong to are local organizations serving local needs.	60[a]	23	17	Prof.
	64[b]	27	8	Tech.
	82	12	7	Worker
5. Meeting and knowing many people is extremely important in establishing oneself in a community.	73	8	19	Prof.
	77	5	18	Tech.
	84	6	10	Worker

*"Strongly agree" and "agree" responses are here combined as are "strongly disagree" and "disagree" responses.

**Source: William M. Dobriner, "Local and Cosmopolitan as Contemporary Suburban Character Types," in William M. Dobriner, ed., The Suburban Community (New York: Putnam's Sons, 1958), pp. 131-2.

[a]Professional-worker differences, $p < .05$, chi-square, 1 d.f.

[b]Technician-worker difference, $p < .05$, chi-square, 1 d.f.

Table 7. Local-Cosmopolitan Index (Observed Range Quartiles)*

Score	6-9 Strong Localite	10-13 Localite	14-17 Intermediate	18-21 Cosmopolite
		Percent		
P	11	33	51	6
T	5	45	43	6
W	15	62	22	1

$p < .001$, chi-square, 6 d.f. Differences between professionals and technicians are not significant.

*The potential range of scores was 5 to 25. The empirical range was 6 to 21. For this table, the observed range was divided into four equal quarters. The titles for score sets are based on the potential range. Thus since the mid-point in the potential range was 15, scores between 14 and 17 have been designated "intermediate."

preclude a high valuation of primary, Gemeinschaftlike community relationships. Thus the concept "cosmopolitanism" should not be regarded as equivalent to Gesellschaft or urbanism as has often been done (cf. Dobriner, 1958: 134, 135; Zimmerman, 1938; Greer, 1962: 124).

Sense of Community

The duality which is found in this short localism-cosmopolitanism scale should alert us to the problem of the multi-dimensionality of the concepts of community and community identification. In a study of the political ideology of the common man, Lane (1962: 301) identifies four aspects of the "sense of place and community": localism (the importance of city events and environs); rootedness (the emotional

hold of community on loyalties); leverage (the feeling of control); and community identity (a sense of we-ness). Lane finds the common man's sense of community quite weak in most ways.[3] Although the Alchemia study was not designed to retest Lane's hypothesis, his distinctions provide a ready framework for examining our data. In a number of important ways our data indicate a sense of community gained is characteristic of the Alchemia professional.

Localism: Lane (1962: 301) defines "localism" as "an attention frame where the events of the city and its envirions assume a special importance marked by personal association." But he operationalizes the concept in terms of greater interest in local than in national affairs and knowledge about local political leaders and affairs. Although half of his small sample of "common men" professed a greater interest in local than in national affairs[4] their general lack of absorption in local affairs led him to the conclusion that localism was anemic. Defined in this manner localism is very similar to local political participation and as we shall see in a later chapter, political interest and participation among Alchemia workers gives little support for the proposition that "localism," as defined by Lane, is of little importance. The findings are further complicated by the fact that this kind of "localism" is even greater among professionals and technicians, who were more cosmopolitan than workers in their general political orientation (see questions 1 and 2, Table 6).

Rootedness: Lane (1962: 302) measures rootedness basically in terms of willingness to leave the community. He concludes that his sample of common men show little evidence of having established deep

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[3] He views this as fortunate circumstance since "it is the very absence of community that makes democracy possible" (Lane, 1962: 226).

[4] Workers in Alchemia responded in a similar way to a similar question. See question 1, Table 6.

roots (although the evidence indicates that only about one-third "would go wherever opportunity beckoned"). Studies of working class culture (Gans, 1962), response of "slum" residents to urban renewal (Fried, 1962), and the reticence of workers to leave a community when a plant shuts down (Walker, 1950: 169-80) render this conclusion doubtful. But the hypothesis that rootlessness is occupationally functional among organization men (Whyte, 1956: 296) is widely accepted. A recent government study (U. S. Bureau of Labor Statistics, 1964) shows that in the most mobile occupational group, the professional and technical category, 30% of all men migrated during a single 5 year period, 1955-1960. Compared with this figure, the 61% of professionals and 60% of technicians who definitely plan to stay in Alchemia until retirement seems to indicate a high degree of rootedness. In another study (Glaser, 1964: 103) a similar proportion of scientists, 65%, reported they expected to remain permanently with a large government research organization. In Alchemia rootedness is encouraged by the fact that promotion almost surely means continued local residence since it is the main research location and the home office. Nevertheless, the professionals and technicians are less rooted than the workers, 84% of whom plan to stay in Alchemia (in both instances $p < .001$, chi-square, 1 d.f.). In addition, workers (15%) are less likely than professionals (28%) (but not technicians, 19%) to believe that their children will be better off settling elsewhere ($p < .05$, chi-square, 1 d.f.).

Leverage: Although Lane believes that localism and rootedness are minimal in his New Haven sample, the common man does have a sense of political leverage, a sense that the local authorities do listen to him. Once again the case seems quite the opposite for the working man in Alchemia. Evidence presented in a later chapter indicates that despite, or because of, his localism and rootedness, he betrays a sense of powerlessness in the local political arena. This lack of political leverage is also felt by the technicians. This is by no means true of the professionals.

Community identity: "Community identity [is] a belief that one shares the place with like-minded others who are, so to speak, psychologically embraced as 'we' (Lane, 1962: 301). Following the tradition of Wirth and Park, Lane proclaims that in urban industrial cities the conditions are not present for such a feeling. "The cost of labor mobility, equality of opportunity, and technical change is a lost community identity . . ." (Lane, 1962: 305). This, as we stated earlier, has been one of the chief plaints and focal interests of sociology since its beginnings.

Although the attack on many facets of Wirth's famous hypothesis of "urbanism as a way of life" has led to widespread recognition of the existence of extensive primary group networks even in large cities (cf. Wilensky and Lebeaux, 1958: 121-30; Sussman and Burchinal, 1962) the loss of a sense of community identity is still widely accepted (Keller, 1968: 146). For example, Herbert Gans, one of the chief critics of the urbanism hypothesis (1962), finds little such identification even among lower middle class suburbanites (1968: 136). The greater cosmopolitan orientation toward community of the highly educated, the greater geographical mobility of professionals, the existence of cosmopolitan (professional) career values as opposed to local (organizational) values among a sizeable body of professional employees (Blau and Scott, 1962: 64-74) and such putative personality characteristics of scientists as introversion (Danielson, 1960: 9) and lack of sociability (Terman, 1954; Roe, 1961: 458; Eiduson, 1962: 114; McClelland, 1962) all support the hypothesis that professionals have little sense of community identity. If such were the case within the largest occupational category, it would be reasonable to assume that the sense of community also would be attenuated among other segments of the population. Within the professional category "localite" (i.e., company oriented) career outlooks should be closely associated with a strong sense of community identity.

On the other hand, there is a substantial body of evidence which indicates that the death of community has been grossly exaggerated. Perhaps, as in the case of the family, sociologists have been so finely attuned to a real historic loss of functions that they have overlooked its current continuing importance (cf. Hills, 1968). A "quest for community" (Nisbet, 1953) theme is evident in the work of many urban scholars attempting to explain suburbanization and the fragmentation of local government. Wood (1958: 102) believes that suburbs represent "the reappearing community." Whyte (1956: 296) believes that " . . . in suburbia . . . organization man is trying, quite consciously, to develop a new kind of roots to replace what he left behind." Dean (1967: 119-22) interprets her finding that "diffuseness" (emphasis on the "whole man") was even greater in an upper middle class suburb than in small towns as an indication of a "shift toward integrative . . . preoccupations and values." Bell (1958) quite explicitly finds a "quest for community theme" as well as familism in the responses of suburbanites explaining their move from the city. And finally, according to Greer (1968: 69), "Our life style has been increasingly one which emphasizes family, home, neighborhood, local community" (emphasis added) (see also, Greer, 1962: 111-15). This preference is illustrated by a recent Gallup Poll (1966) which shows that 49% of the populace would prefer to live in small towns or farms compared to 28% preference for suburbs and 22% for cities.

The felt importance of a sense of community, as well as the expression of considerable ambivalence toward small-town life, among Alchemia professionals is reflected in volunteered responses to questions about which features of the community are most liked and disliked, shown in Tables 8 and 9. Fully 62% of the professionals most appreciated facets which were later coded as "Gemeinschaftlike"[5] (e.g.,

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[5]Despite, or because of, the use which has been made of the Gemeinschaft-Gesellschaft continuum in describing fundamental societal

Table 8. Most Favorable Aspects of Alchemia, All Responses

	Profes-sionals	Techni-cians	Workers	Significant Differences *
		Percent		
Gemeinschaft-like	62	36	42	P-T, P-W
Community spirit	11	0	2	P-T, P-W
Neighborliness	26	8	7	P-T, P-W
Family town	22	13	10	P-W
Social similarity	22	11	9	P-T, P-W
Familiarity	4	4	13	P-W, T-W
Size	28	17	16	P-T, P-W
Small town amenities	30	35	36	
Convenience	11	19	19	
Appearance	15	15	20	
Outdoor recreation	15	4	7	P-T, P-W
Urban amenities	70	69	44	P-W, T-W
Schools	42	38	21	P-W, T-W
Recreation facilities	25	31	21	T-W
Cultural facilities	22	12	2	P-W, T-W
Housing	11	5	4	
Shopping	2	4	5	
Job	18	25	41	P-W, T-W
Nothing, DK, NA	4	4	8	

* chi-square, 1 d.f., $p < .05$

Table 9. Most Favorable Aspects of Alchemia, First Response

	Profes-sionals	Techni cians	Workers	Significant Differences *
		Percent		
Gemeinschaft-like	31	13	19	P-T, P-W
Size	20	12	8	P-W
Small town amenities	14	19	19	
Urban amenities	19	29	12	T-W
Job	5	16	28	P-T, P-W, T-W
NEC	7	6	5	
Nothing, DK, NA	4	4	8	

* $p < .05$, chi-square, 1 d.f.

neighborliness, community spirit, good place to raise a family). Contrary to what might have been expected, this response rate is significantly higher than that of either the technicians or workers.[6] These differences would have been even greater had the ambiguously

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change, the concepts have generally not found favor in the analysis of contemporary communities except among rural sociologists (cf. Heberle, 1941; Bruner, 1942; Loomis and Beegle, 1950). However, derivative research includes that based on the local-cosmopolitan distinction and Dean's (1967) comparative study of community value orientations based on Parson's famous pattern variables. Usually students of urban life discuss the idea of Gemeinschaft simply to show the impossibility of its existence in the urban setting (e.g. Lane, 1962: 222-3).

[6] As is generally the case with open-end questions, the number of responses were directly related to education. Thus some of the apparent differences shown in Table 8 may simply reflect the greater verbal facility of the professionals. But since non-responses were low in all three samples, this bias is partially eliminated by examination of the first response only, which is done in Table 9. This table shows, in general, a pattern quite similar to Table 8, especially on the "Gemeinschaft-like" response category.

simple "small town" preference been coded as "Gemeinschaft-like." That the professionals generally were making reference to social relations rather than physical attractions seems indicated by their comparatively low response on two of the three "small town Amenities" which were widely mentioned.

Professionals are significantly higher on four of the five sub-categories of "Gemeinschaft-like." The first three, "community spirit," "neighborliness," and "family town," perhaps, illustrate some basic continuities and problems in the use of the "Gemeinschaft" concept. Heberle (1941) has identified "neighborhood," "unity of mind and spirit" and "kinship" as the three essential elements of Gemeinschaft. The historical diminution of these characteristics can hardly be doubted, but the professionals show an amazing affinity for weakened versions of these attributes. If they are not attached to a local neighborhood, they still value neighborliness. If they do not seek a medieval unity of mind and spirit they still seek a city which is a source of solidarity. If they do not desire a community based on extended kinship ties, they still value a social order which is beneficial to the immediate family, especially children. According to Parsons (1951: 454), the professional pattern of our society is characterized by four Gesellschaft-like pattern variables. Our data indicate that professionalization promotes such values as achievement rather than ascription and universalism rather than particularism in the community as well as in the work place, but that such work place values as affective neutrality and specificity are not extended into the community. On the contrary, one may speculate that the very strength of Gesellschaft-like values in pursuing career lines causes a more intense quest for community among professionals than among technicians or workers.

At the same time, the professionals (and technicians) are most appreciative of the community's high quality "urbane amenities," facilities which are generally available only in larger cities or wealthy suburbs (e.g., excellent schools, community center, library). Thus

the professionals enjoy the prospect of having their cake and eating it too. But Table 9 indicates the stronger importance of sense of community in their first choice. This table also shows that the technicians value the communal fruits of affluence even more highly than the professionals.

Interestingly, it is the workers who are most job-oriented in discussing favorable aspects of the community. This finding appears to be contrary to the phrasing, if not the substance, of Dubin's conclusions concerning "industrial workers' worlds. Dubin indicates that "work is no longer a central life interest for workers. These life interests have moved out into the community" (1956: 140). Work is definitely, however, no more a central life interest for the workers in Alchemia than for those in Dubin's sample.[7] Yet many workers think of the community largely in terms of their job; and as will be shown later, the workers are the least active group in community participation. Only 9% of the workers designated the community itself or local social relations as among their central life interests. It seems evident, then, that lack of job-centeredness does not elicit strong community-centeredness per se. The life interests of workers have moved out into the community only in the sense that their central life interests, family and consumption activities, occur largely in the community area. The identification of the job as the thing most liked about Alchemia by so many workers probably can be accounted for by the fact that the chemical industry has made Alchemia a high-wage city in the midst of a low wage area. The more career-oriented professionals are less likely to identify job and community because of the transferability of their careers to other locales.

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[7] In contrast to Dubin's research in which "central life interests" were determined indirectly on the basis of a series of multiple choice questions, we asked a single open-ended question: "When you think about what really matters to you, what would you say are the central interests in your life?" The results were almost identical. Dubin found that "24% of all the workers studied would be labelled job-oriented in their life interest." In our sample, 23% of the workers mentioned the job itself as a central life interest, as did 33% of the technicians and 68% of the professionals.

Some insights into the distinctiveness of the way in which the Alchemia samples view their community can be gained from comparison of Tables 8 and 9 with data from studies of Detroit (Kornhauser, 1952: 30-1), Greensboro and Durham (Wilson, 1962: 377).[8] Overall, the order given to things most liked in these cities is quite similar to the order given by the Alchemia workers. As might be expected, "size" and "convenience" are rarely mentioned in the other cities. Alchemia differs from all three cities in its lack of appreciation for its shopping facilities and from Detroit in its lesser interest in recreational and sports activites. These comparisons suggest that the unique concerns of the Alchemia professionals have not radically influenced the mainstream community imagery of the working class.

Further evidence of differences in images of the good community is found in responses to the question, "What do you like least about living in Alchemia" (see Table 10). Each occupational group has its characteristic gripes. Despite the professionals' previously indicated attraction to a small town, Gemeinschaft-like setting, they are most unsatisfied with the lack of certain urban amenities, specifically shopping and recreation facilities. These responses suggest that the professionals will continue to press for their utopia, which contains the best of urban and small-town styles of life as they see it. Continued change, however, will probably bring the professionals into increased conflict with sizeable minorities of the workers and technicians, who hold conflicting views of Alchemia's problems. Workers are most concerned about government and taxes, especially the latter, and thus will tend to oppose any attempt to use tax monies to provide better amenities. Technicians dislike the sort of stratified close-knit community being established by the professionals in which their own status is marginal. Alchemia's main problem

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[8] Although essentially identical questions about things liked and disliked were asked in all these cities, the data is not fully comparable because of coding differences. Moreover, neither Kornhauser nor Wilson provide any cross-tabulations.

Table 10. Unfavorable Aspects of Alchemia, First Response

	Prof	Tech	Worker	Greensboro[a]	Durham[a]	De tro
			Percent			
Shopping	23 (1)*	14 (2)	7 (3)	5 (5)	1 (2)	--
Climate	21 (2)	0	2	--	--	--
Recreation	16 (3)	14 (2)	6 (5)	9 (4)	9 (4)	--
Social conflict	7 (4)	21 (1)	10 (2)	10 (3)	4	(2
Cost of living	2	12 (4)	1	19 (1)	11 (2)	--
Physical characteristics	0	11 (5)	7 (3)	--	--	(4
Government & taxes	3	9	22 (1)	11 (2)	--	(3
Streets, traffic transport	0	0	2	--	28 (1)	(1
Jobs	0	0	0	5 (5)	7 (5)	--
Housing	0	0	0	--	--	(5
Nothing, DK, NA	11	8	32			

*Rank order in parentheses.

[a]Source: Wilson (1962: 377).

[b]Source: Kornhauser (1952: 30-31).

as they see it is class and status conflict and competition. Difficult in keeping up in the status race may be inferred from their distincti strong complaints about the cost of living. Another complaint share by technicians and workers is dislike for the noxious odors and airb dirt produced by the chemical plant. These complaints reflect the c ecology of Alchemia which places the area of working class homes nearest to the plant. The differential dislike of the local climate re the fact that nearly all professionals originated outside the area and nearly all the technicians and workers within.

Besides illustrating that local problems vary considerably fro city to city, the cross-community comparison shown in Table 10 als

suggests that the major concern of each Alchemia occupational group is an important issue in two of the other three cities too. The almost complete absence of responses referring to traffic, employment, or housing problems is notable because of the saliency of these issues in other cities.

Community Quality

Previous studies of the "Goodness" or quality of communities show strong relationships between income, education, and occupation and quality as indicated by such characteristics as infant death rates, expenditures for recreation, value of city property, local governmental debt, school expenditures, school drop-outs, library circulation, homes with telephones and electricity, home ownership, and homicide rate, to name but a few items (Thorndike, 1939; Gillen, 1951; Fowler, 1964; 151). A number of more recent studies indicate that upper-income groups have greater preferences for expanded public expenditures and community services than middle income groups (Williams and Adrian, 1963: Chap. 5; Watson, 1963: Chap. 4; Salisbury and Black, 1963: 591; Boskoff and Zeigler, 1964: Chap. 3; Wilson and Banfield, 1964; Williams, et. al., 1965: 217; Gans, 1967: 28-9) and that local governmental expenditures are positively associated with income (Brazer, 1959: 29), wealth (Sacks and Helmuth, 1961: 115), social rank (Williams, et al., 1965: 135), education (Clark, 1968: 590) and per capita assessed valuation (Bollens, 1961: 322; Sacks and Hellmuth, 1961: 331; Wood, 1961: 37).[9]

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[9]Studies of factors affecting governmental expenditures are a good illustration of the non-cumulative nature of social science. Not only do different samples of cities yield different findings, but the researchers tend to ignore contrary results or even claim such findings as supportive of their own study (e.g., Masotti and Bowen, 1965: 44; Clark, 1968: 589). Wood (1961: 40) finds that a factor which he titles "residential affluence" is negatively associated with total operating expenses and all service functions but recreation and libraries. Similarly Masotti and Bowen (1965: 45-48) find that "SES" is negatively

The association between income and school expenditures has been quite solidly established (Sexton, 1961; Sacks and Helmuth, 1961: 125; James, et al., 1963; Williams, et al., 1965: 151; Sacks and Ranney, 1966). Surprisingly, the "moral integration" of cities, as measured by a crime index and a welfare effort index has been found unrelated to income (Angell, 1957).

In order to establish the "quality" of life in Alchemia, an attempt was made to collect data on characteristics used in previous studies which had not become dated. Most of these measures of the amenities of life are indicative of a rather individualistic value system, but some (e.g., crime rates and community fund contributions) may be considered as measures of "moral integration" (Angell, 1957). The indicators of the quality of life in Alchemia for which comparable data could be obtained are found in Table 11. These hard data suggest that Alchemians lead a good life.

The objective data affirm the subjective judgments of the visitor to Alchemia. In appearance, when one moves beyond the area adjacent to the chemical plant, Alchemia is a picture-book city of well-groomed houses on spacious lots and neat tree-lined streets. The presence of a nationally famous architect in the community has had a strong impact on the style of architecture in the city. Most of the public buildings and many of the churches bear a stylistic stamp of excellence far beyond

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related or unrelated to per capita expenditures on twelve budgetary items. A lack of substantial relationship between income and non-educational expenditures is also reported by Campbell and Sacks (1967: 140). There is general agreement that per capita assessed valuation is directly associated with per capita governmental expenses of nearly all types. However, Eulau and Eyestone (1968: 133) find no support for the hypothesis that high per capita assessed valuation is associated with high amenity spending (percentage of total governmental expenses spent for health, libraries, parks, and recreation). Per capita assessed valuation is often found to be not strongly related to measures of income.

Table 11. Comparative Indicators of Community Quality

	Alchemia	Other	Unit of Comparison	Source
Government				
Per capita expenditures				
Total	$ 92.19	$ 70.53	U.S. cities 25-50,000	1
Streets	$ 24.41	$ 15.24	State cities, 25-50,000	2
Police	$ 8.21	$ 9.77	" " "	2
Fire protection	$ 7.70	$ 7.27	" " "	2
Sewerage & sanitation	$ 11.70	$ 7.90	" " "	2
Interest on debt	$ 2.99	$ 1.67	" " "	2
PC debt outstanding	$ 359.30	$ 67.76	" " "	2
PC assessed valuation	$ 8201.00	$ 3119.00	" " "	3
Total taxes/$1000 valuation	$ 32.01	$ 41.17	" " "	3
PC city govt. employees	8.01	7.05	" " "	2
Schools				
Operating expenditures per pupil	$ 380.67	$ 297.61	State K-12 school districts	4
PC school taxes	$ 152.32	$ 68.20	State cities, 25-50,000	3
Pupil-teacher ratio	23.00	24.02	State	5
% teachers advanced degree	32%	30%	State	5
Mean classroom teacher salary	6324.00	5333.00	State	5
% Drop-out rate (from 9th grade)	20.9%	ca 40%	U. S.	6
% College attendance (H.S. grade)	52.8%	34%	State	5
Health				
Infant death rate	17.6	23.9	State	7
Venereal disease/100,000	61.2	204.3	State	7
Doctors/100,000	158	131	State	8
Dentists/100,000	133	51	State	8
PC hospital expenditures (county)	$ 45.95	$ 46.96	U. S.	8

Table 11 (Cont'd.)

	Alchemia	Other	Unit of Comparison	Source
Recreation & Culture				
P.C. govt. recreation expenditures	$ 7.50	$ 4.28	All local govts.	8
PC expend: libraries	$ 3.08	$ 1.43	Libraries serving	8
PC library holdings	1.37	1.13	50-99,999	8
PC circulation	6.17	4.29	50-99,999	8
Volumes added per year /1000	160	90	50-99,999	8
Housing				
% units sound	90.5%	81.5%	U.S. cities 25-50,000	1
Median value owner occupied units	$15,900	$13,237	U.S. cities 25-50,000	1
Charity				
PC contributions, United Fund	5.55	4.79	State counties 10-100,000	9
Crime (rate per 100,000)				
Murder and manslaughter	0.0	3.6	Cities outside	10
Forcible rape	3.6	4.1	SMSA's	10
Robbery	3.6	14.2	"	10
Aggravated assault	3.6	47.1	"	10
Burglary	245.8	357.0	"	10
Larceny $50 and over	219.6	187.7	"	10
Auto theft	223.2	105.5	"	10
Shopping				
Retail estab/10,000	85.0	99.4	U.S. cities 25-50,000	1
Empl wholesale & retail /1000	42.9	60.8	U.S. cities 25-50,000	1
PC retail sales	$1477.00	$1407.00	State cities 25-50,000	2
PC automobile sales	$ 321.00	$ 386.00	" " "	2
PC apparel sales	$ 65.00	$ 88.00	" " "	2
PC eating, drinking sales	$ 48.00	$ 80.00	" " "	2
PC service estab. receipts	$111.00	$ 146.00	" " "	2
PC personal service receipts	$ 39.00	$ 51.00	" " "	2

Table 11 (Cont'd.)

	Alchemia	Other	Unit of Comparison	Source

Sources of comparative data:

1. Hadden and Borgatta (1965)
2. U. S. Bureau of the Census (1962c)
3. State Tax Commission
4. State Teacher's Association
5. State Superintendent of Public Instruction
6. Dentler and Warshauer (1968)
7. State Health Statistics
8. U. S. Bureau of the Census (1962a)
9. United Community Funds (1964)
10. Federal Bureau of Investigation (1962)

what one expects to find in a small city. The visitor cannot fail to be impressed by the modern library, hospital, community center and schools. The county building is impressive if archaic. Only the old, over-crowded city hall and the main street shopping area are exceptions to the general rule of conspicuous display. The latter has the general appearance of the main street of a country town of ten thousand and is notable for the absence of any movies, bars or other recreational facilities. The community does boast an excellent public golf course and an ice rink with artificial ice which doubles the skating days.

On nearly all measures of the quality of community life, Alchemia ranks well above the norm. Government expenditures are above average for cities of its size, as are outlays for such public amenities as streets, fire protection, and sewerage and sanitation. Alchemia ranks below the mean only on expenditures for police. Without a doubt, these relatively high expenditures represent to some degree, a demand factor. However, the industrial base of Alchemia gives it a per capita assessed valuation which is nearly three times the average for state cities of its size. This allows a tax rate which is twenty percent below the average rate and the lowest of the nineteen state cities in the size class. Thus the Alchemia professionals can obtain quality city services at a cut rate to the individual taxpayer, since 65% of the taxes are paid by the chemical company. Alchemia also has financed capital expenditures by a very heavy rate of borrowing as indicated by per capita debt and interest.

School expenditures follow the same pattern as governmental expenditures. A large tax bill is collected on the basis of a very low millage. Operating expenditures are well above the median for state school districts. The quality which this money will buy is roughly indicated in the better than average pupil-teacher ratio, teachers' salaries and proportion of teachers with at least a master's degree. The attempt to develop a quality program is also indicated by the existence of an accelerated English program which allows some students to cover five years of English in a four year program, advanced courses in

chemistry and physics, college credit courses in chemistry and math, four and two track programs in various subjects, pilot projects in large group teaching, independent small group seminars in the eighth grade, elementary school science courses, and specially trained teacher-consultants for "exceptional" children. The expected outcome of the conjunction of quality education and high educational and occupational standing of parents is seen in the relatively low drop-out rate and the high proportion of graduates who are admitted to college. As far back as 1953, fully 23% of the high school graduating class went on to obtain bachelor's degrees. In comparison Sewell and Shah (1967: 9) found that 18% of Wisconsin high school graduates subsequently obtained a college degree. The high quality of Alchemia education is also indicated by the relative success of Alchemia High School graduates at the two major state universities. The average grade of students in two recent years was .2 to .4 above the average for all freshmen at these schools.

Although the quality of education in Alchemia is without a doubt well beyond the ordinary, it should not be thought that it matches the level of excellence found in Conant's (1964: 97) "lighthouse schools." The mean I.Q. level of Alchemia High School graduates, for example, averaged between 98 and 105 in recent years, compared with 121 for Conant's sample of six quality schools. A comparison of the credits earned by one of the elite groups of Alchemia students, those attending a major state university, with a random sample of students from the lighthouse schools shows that Alchemia lags well behind in the percentage of students obtaining at least three years of mathematics (33% vs. 82%), science (36% vs. 60%), and foreign languages (24% vs. 61%) (Conant, 1964: 112). This relative weakness in science and math is particularly surprising. Given the fact that Alchemia ranks near the bottom of the list of state school districts in millage for education and spends less than two-thirds of the maximum school district expenditures, it is clear that professional demands for quality education have not resulted in a maximum effort but have been tempered by cost considerations.

Unlike many college oriented suburban high schools, Alchemia does not completely neglect those in non-college-preparatory programs. The 30% of the students in the business education curriculum seem well provided for with an extensive co-operative program. A business college was recently begun in the city and a nearby junior college places a strong emphasis on technical training. An unusually strong adult education program, serving 2400 persons a year, also exists in Alchemia.

The quality of health services as measured by the ratios of doctors and dentists is quite high. The hospital expenditures indicator shows that Alchemia is quite average, but this may be partially explained by the low median age, a factor which is associated with low health and hospital expenditures (Masotti and Bowen, 1965: 50). The excellence of local health services is also indicated by the low infant death rate, often considered "the best single index of community health" (Gillen, 1951: 78).

Table 11 also provides substantial evidence of Alchemians' concerns for recreational and cultural amenities. They expend funds well above the average for both recreation and library.[10] As might be expected for a community with a high educational level, library use is quite high (cf. Parker and Paisley, 1965). An unusual characteristic of circulation in Alchemia is the near equivalence of fiction and non-fiction withdrawals by adults as compared to the normal two to one ratio favoring fiction (Parker and Paisley, 1965). This pattern probably reflects the technical training of the scientific professionals. The educational level of the community is also reflected in the presence of a theatrical group and a symphony orchestra.

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[10] Although studies of local expenditures show agreement on the relationship of "residential affluence" (Wood, 1961: 38), "social rank" (Williams, et al., 1965: 135), and library expenditures, no such agreement is found regarding recreation. Masotti and Bowen (1965: 45), for example, find an inverse relationship with "SES."

Census data substantiates the observer's perception of high quality housing in Alchemia. A number of respondents commented on the tendency of local residents to stretch themselves to the limits of their means in purchasing housing. Another respondent drew attention to the failure of a low-priced housing project in the midst of a general housing boom. The high median house value reflects not only building and zoning regulations but the choice of many less highly paid workers to live elsewhere.

Alchemia ranks quite high on the basic factors used by Angell (1957) in constructing his index of "moral integration" of cities, viz., contributions to the "Community Chest" and crime rates. Per capita contributions to the United Fund exceed those in most state fund-raising areas of comparable size for which data were available. The visible manifestations of large scale philanthropy abound in Alchemia. The library, the community centers, the court house, parks, the golf course, the ice rink and many of the churches were constructed wholly or in large part from funds donated by local millionaires, especially by the family which founded and still controls the chemical company. The pattern is more than slightly reminiscent of the much quoted statement on the "X family" which the Lynds placed at the head of chapter three in Middletown in Transition.[11] Although the town is not grossly controlled by one family, the wealthy class or company management, their unusually large contributions to community facilities and programs makes it exceedingly difficult to attribute the high quality of community life solely to the demands of the rising professional segment of the population. In fact, with little exaggeration, the community might be viewed as a welfare state for the upper middle class.

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[11] "If I'm out of work I go to the X plant; if I need money I go to the X bank; and if they don't like me I don't get it; my children go to the X college; when I get sick I go to the X hospital; I buy a building lot or house in an X subdivision; my wife goes downtown to buy clothes at the X department store; if my dog stays away he is put in the X pound; I buy X milk; I drink X beer, vote for X political parties, and get help from X charities;

As befits a community characterized both by private charity and a fairly well developed "public sector," crime rates are generally low, especially the more serious crimes. Major larcenies exceed the non-metropolitan city rate, however. And auto theft, a crime associated with middle class youth (Wattenberg and Balistrieri, 1952), is exceptionally high. However, the juvenile delinquency rate (based on juvenile court cases), which ranged from 1.6 to 2.4 per 1000 over a four year period prior to the study, was lower than any of the surrounding four counties.

Of the many measurable amenities on which data were collected, only shopping facilities are sub-par. Even though the affluent Alchemian spends a normal amount of his paycheck locally, the data shown in Table 11 indicate that Alchemia lacks the number and quality of apparel stores, restaurants and bars, automobile dealers and personal services found in other communities of its size. Apparel stores actually showed an absolute decline in sales over the five years previous to the study, a period of rapid population growth. On the other hand, general merchandise, food, and furniture sales per capita closely match comparable community norms. A survey sponsored by a local merchants' association documents widespread antipathy toward local shopping facilities and a tendency to buy elsewhere.

Community Satisfaction

Given the high quality of community services and amenities in Alchemia, it is not surprising that its citizens express a high degree of satisfaction with most local institutions. Table 12 shows that all three

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my boy goes to the X Y.M.C.A. and my girl to their Y.W.C.A.; I listen to the word of God in X-subsidized churches; if I'm a Mason I go to the X Masonic Temple; I read the news from the X morning newspaper; and if I am rich enough, I travel via the X airport." (Lynd and Lynd, 1937: 74).

Table 12. Dissatisfaction with Alchemia

	Prof.	Tech.	Workers	Significant Differences*
		Percent		
1. Efficiency of government	10	40	33	P-T, P-W
2. Responsiveness of government	27	52	47	P-T, P-W
3. Schools	5	6	17	P-W, T-W
4. Sewage disposal	26	37	39	P-W
5. City taxes	16	27	28	P-T, P-W
6. Shopping facilities	79	64	46	P-T, P-W, T-W
7. Health facilities	8	11	12	
8. Recreational facilities	4	7	8	
9. Cultural facilities	14	11	9	
10. Welfare facilities	6	8	12	
11. Labor-management relations	13	12	8	

*$p < .05$, chi-square, 1 d.f.

occupational groups express high levels of satisfaction concerning health, recreational,[12] cultural, and welfare facilities and labor-management relations.

The more important data in Table 12, however, are those which reaffirm and specify some of the basic conflicts of group interest previously mentioned. The professionals show a rather high level of contentment in all but one of the eleven areas. They are once again shown to be significantly more irritated with the shopping facilities than the other groups, who nevertheless are highly dissatisfied also. The workers and technicians are quite dissatisfied with four aspects of

[12] The question did not specifically mention movie theatres, the lack of which caused considerable complaint, coded as "recreational facilities" in Table 10.

city government: the efficiency and responsiveness of local government, city taxes, and sewage disposal. The workers also show a slight dissatisfaction with Alchemia schools which is nevertheless significantly greater than that of the other groups. The professionals' greater satisfaction with local government and schools is not surprising, since scientific professionals have overwhelmingly dominated the city council and the school board in recent years.

Since questions similar to many of those on which Table 12 is based have been asked in other cities, indications of Alchemia's atypicality may be found in cross-community comparisons. That the level of hostility toward local government among Alchemia workers and technicians is unusually high is suggested by the fact that studies of Dayton (Bollens, 1959: 241), Detroit (Kornhauser, 1952: 214), St. Louis and its suburbs (Bollens, 1961: 190), and a group of Wisconsin cities (Schmandt and Standing, 1962: 13) all found that less than 20% of the general populace were dissatisfied with their local government. Less substantial evidence that the dissatisfaction of the workers toward the schools is high is found in the fact that no more than 9% of the residents of Detroit (Kornhuaser, 1952: 214), Flint (Hawley and Zimmer, 1961: 166), St. Louis and its suburbs (Bollens, 1961: 432), and Cleveland (Norton, 1963: 61) were dissatisfied. And in a study which gives an occupational breakdown (Wiley, 1962: 79, 124), blue collar dissatisfaction with schools ranged from 10% to 24% in three small towns. The high level of dissatisfaction with sewage disposal found in Alchemia greatly exceeds that found in such large cities as St. Louis, Flint, and Cleveland but is similar to the level (26-33%) found in the St. Louis and Flint suburban areas, so may be fairly typical of rapidly growing localities.

Conclusions and Discussion

The data presented thus far, in general, support four of our five basic hypotheses concerning community attitudes. Professionals are

cosmopolitan in their outlook, they do demand and receive high quality amenities and rationalized services and as a result show a high degree of community satisfaction. However, the evidence contradicts the hypothesis that professionals have but little sense of community. This fact and a number of other unexpected findings necessitate further qualifications. We shall close this chapter with a discussion of some problems which merit further analysis.

It seems fair to conclude on the basis of our analysis that the concept of community is complex and multi-faceted. Not only does community imagery vary by occupational grouping, but the sense of community of each category is marked by internal "discrepancies" and ambiguity. The professionals' sense of ambivalence toward life in a small, isolated city is indicated by the duality of their responses to the localism-cosmopolitanism questions and by the strength of their preference for both the sort of "urbane" amenities that are generally associated with large cities and Gemeinschaft-like social relationships which are generally associated with small towns. This contrast, which may be termed the "rationality versus quest for community" theme also appeared at many other points in the study. For example, the professionals wish to rationalize local government. Only 7% of them disagreed with the statement "A city is like a business and should be run by an appointed manager rather than an elected politician." (Twenty-nine percent of the technicians and 35% of the workers disagreed; in each instance, $p < .05$, chi-square, 1 d.f.). Yet the professionals' quest for a "republic in miniature" (Wood, 1958: 53) is seen in their defense of local autonomy against the intrusions of the federal government almost to the point of phobia. Professionals on the school board refused costless participation in the federally sponsored school lunch program and publicly explained that it was the responsibility of local governments everywhere to stand up for their right to control local issues. This stand gained the community a certain measure of fame when it became the subject of an article in a mass-circulation magazine.

Later, the city council, also dominated by professionals, rejected federal aid for the building of a sewage plant.[13] Although advisory votes carried in favor of federal aid, in both instances by narrow margins, the professionals voted overwhelmingly against. For example, among those who voted on the question of federal aid for the waste disposal plant among our samples, the scientific professionals voted against by better than two to one, technicians favored by a two to one margin, and workers favored by almost four to one. And on the general question of federal aid to local governments an even larger proportion of professionals was able to salve its conscience by taking a stand against it (professionals, 86%; technicians, 52%; workers, 46%). Interestly, among those professionals who voted against federal aid on these two questions, the majority took a pragmatic economy approach on the concrete sewage plant issue, claiming that federal aid costs more in the long run; but regarding the more general issue, the overwhelming majority explained its stand in ideological terms, stressing the importance of "grass roots" government. Finally, 26% of the professionals but only 15% of the technicians and 18% of the workers agreed that "if local school systems accept any kind of federal aid, the national government will eventually control the schools." Although opposition, or at least verbalization, against the loss of local governmental autonomy is characteristic of small towns and cities (cf. Vidich and Bensman, 1958: 292), especially among local enterpreneurs, it is surprising to find such strength of opposition among organizational professionals who are cosmopolitan at least in some ways and who have only resided in Alchemia for a median of ten years.

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[13] The city council eventually capitulated on this issue but the continuing hostility of local office holders to federal government was again brought to light in a recent metropolitan newspaper column which showed that Alchemia County was the only one in the state which has chosen not to participate in the federal food stamp and surplus commodities programs.

But if the professionals espouse a "grass-roots" ideology in opposition to federal government and proclaim the Gemeinschaft-like virtues of Alchemia, they exhibit a seemingly anomolous distrust of the average man in their opposition to the idea that "city governments ought to refer all important decisions directly to the voters." On this question which was meant to tap an efficiency-economy versus populistic orientation toward local government, only 32% of the professionals, as compared with 61% of the technicians and 73% of the workers, gave their agreement (in each instance, $p < .01$, chi-square, 1 d.f.). The point of consistency here is an elitist orientation, since allowing the masses to vote directly allows them to overturn the "rational" decisions of the local governing bodies which are controlled by professionals. Yet federal programs threaten the professionals, as the local political elite, by taking programs partially out of their hands and by minor redistribution of the wealth.

This accumulation of data suggests the interpretation that the community which most professionals seek is a professional ghetto (cf. Wood's explanation of suburbanization, 1958: 288). This interpretation is supported by the tendency of professionals to use their high level of organizational participation (the subject of the next chapter) only for association with others like themselves and by their disproportionate tendency to spontaneously use their occupational category rather than any broader "social class" or "ordinary citizen" categories in designating their reference group within Alchemia. Specifically, in response to the question, "What types of people in Alchemia would you group yourself with?", 61% of the professionals gave occupation as their initial response, compared with 38% of the technicians and 45% of the workers ($p < .05$, chi-square, 1 d.f. in both instances). The "ordinary citizen-average person" response, which was second most popular among the technicians (33%) and workers (30%) was given by only 3% of the professionals.

In the wake of a sharp and extended controversy over the nature of suburbia, in which it was first described, and usually criticized, as a new way of life (Douglass, 1925; Fava, 1956; Riesman, 1957; Stein, 1960: Chaps. 9 and 12) and later described, and usually accepted, as an extension of the variety of urban social class patterns (Ktsanes and Reissman, 1959; Dobriner, 1963; Clark, 1966; Gans, 1967), common agreement seems to be emerging concerning the desire for internal homogeneity to be found in the suburbs. Even those researchers who are most adamant in their denial of the importance of community or search for community stress, as did the earlier critics, the importance of the sure knowledge of sharing one's residential area with others holding a similar life style (Clark, 1966: 211; Gans, 1967: 167). This is, of course, not a peculiarly suburban characteristic, but a trait shared with most people everywhere, which, as Wilson (1968) proclaims, lies behind "the urban unease." In discussing the lack of a genuine community in modern cities, Lane (1962: 222-3) delineates six elements derived from Toennies' Gemeinschaft which are sharply attenuated by urbanization: intimate relationships; worth based on who one is, not what one has done; specific and consonant roles; immobility; homogeneity; and a clear code of behavior. In response to clear tendencies toward the eclipse of these characteristics, the Alchemia data suggest that professionals will actively promote homogeneity as a basis for intimate relationships and a clear cut code. Yet the professionals are definitely attuned to performance (see Faunce and Clelland, 1967) and mobility. The existence of and importance of community in contemporary society is highly dependent on the definition of terms. But if we accept the elements proposed by Lane (himself a cosmopolitan critic of the myth of community) as definitional, the reality contained in the concept of community is certainly more significant than that proclaimed by certain critics (e.g., Gans, 1968: 136). This usage is basically in accord with Wilson (1968: 27):

> When I speak of the concern for 'community,' I refer to a desire for the observance of standards of right and seemly conduct in public places in which one lives and moves, those standards to be consistent with--and supportive of--the values and life styles of the particular individual . . . . Viewed in this way, the concern for community is less the 'need' for 'belonging.' . . . than the concerns of any rationally self-interested person with a normal but not compulsive interest in the environment of himself and his family.

But we do stress a desire for intimate relationships with peers as well. Thus, we are speaking of the "community of limited liability" of Janowitz (1956: 223-4) and Greer (1962: ch. 4), limited in the sense that the possibility of out-migration is an accepted fact of life and in the sense that "community" does not include those with a different life style. The basis of community solidarity in this sense is Gidding's (1922: 122) "consciousness of kind." The community of the Alchemia professionals is a "community within a community" in a different sense that meant by Goods (1957). But, since there is no inside without an outside, this life style community breeds conflict within the ecological community.

The community attitudes (and all other attributes of the professionals in the Alchemia sample are of course only of general interest to the extent that they represent some sizeable segment of all professionals. On this important question our data shed only a minimal light and there are few comparative data. There is some evidence that the Alchemia scientists are disproportionately drawn from small towns and cities. Only 21% of those under forty (N = 53) come from cities of over 250,000, as compared with 46% of a sample of outstanding young university scientists (Bello, 1954) and 39% of all those in professional occupations in Oakland, California (recalculated from Lipset and Bendix, 1959: 205). On the other hand, the Fortune Magazine (Anonymous, 1948) national survey study of men listed in American Men of Science concluded that chemists "generally come from small towns." When questioned about possible difficulties in attracting scientists to a non-cosmopolitan locale, company personnel officers said they recognized it as a problem but did not consider it a serious one. At the very least, the community

attitudes of the Alchemia professionals should lead one to be wary of the proposition that increasing professionalization will lead to cosmopolitan demands for urban jobs and housing.

"Internal discrepancies" are also found in the community imagery patterns of the technicians and the workers. Like the scientists, the technicians are relatively high on localism and rootedness, but significantly less so than the workers. Both groups, however, rank low on sense of local political leverage and both, but especially the technicians, rank low on sense of community identity, the feeling of belonging to a we-group. These results are inevitable consequences of the types of community desired and being built by the professionals, a community in which they are inside and the others are outside.

V

COMMUNITY PARTICIPATION

Organizational Participation

The importance of voluntary associations in American society has been noted by social observers since Tocqueville (1835: Part 2, Book II, Ch. 5) and has been especially stressed in most of the famous community studies (Lynd and Lynd, 1929: Ch. 19; Warner, et al., 1963: Ch. 5; Warner, et al., 1949: Chaps. 8 and 9; Vidich and Bensman, 1958: 23-29). There can be little doubt that in democratic countries voluntary organizational membership has multiplied in response to industrial urbanization toward a Gesellschaft-like or "associational" society (Rose, 1967: 205). The Lynds (1929: 285-6), in fact, have documented the rapid growth of organizational participation in Middletown between 1890 and 1925. Since a vast array of studies (reviewed by Bell, et al., 1961: 111-13; Nosow, 1962: 521-22; and Marshall, 1968: 204-7) have demonstrated that, in general, the higher the social stratum, the higher the associational activity, there is good reason to believe that continuing up-grading of the occupational structure will further increase such participation. Studies of the community life of middle and upper level organization men (Whyte, 1956: Ch. 22; Seeley, et al., 1956: Ch. 10), in fact, suggest an absolute frenzy of such activity.[1] However, one should be wary of statements and predictions of changing participation rates

[1] Clark (1966: 161) finds these pictures of contemporary middle class suburbia highly exaggerated. On the basis of his own studies of fifteen Toronto suburbs he concludes that "the evidence was overwhelming of a general apathy among the population." Even in the two upper-middle class suburbs where community activity was relatively greatest, organizational affiliation reached only 56% (179).

because of the absence of reliable trend data (Marshall, 1968: 213). Moreover, there is ample reason for speculating (cf. J. Mills, 1946: 131) that technical professionals are less inclined toward community participation than other professionals or highly educated people. Studies of eminent physical scientists and engineers (Roe, 1952: Ch. 5; 1961; Terman, 1955: 6; Eiduson, 1961: 114; McClelland, 1962: 144) show that they rank relatively low on a wide range of measures of sociability and participation in non-professional organizations. A more "average" sample of scientists and engineers characterized their professional peers as "introverted" and "individualistic" (Danielson, 1960: 27). In contrast to the established professions neither educational background nor the occupational necessity of wide contacts encourage participation. Despite Whyte's (1956) belief that the organization man adheres to an occupationally induced social ethic which is carried over into community life and the suggestion of others (Litwak, 1961) that large scale organizations actively encourage community participation, there is some evidence (Litt, 1966) that technical education, commitment to the work organization, and acceptance of the organizational hierarchy all discourage local activity.

As indicated in Table 13 comparison of the three occupational categories studied in Alchemia reveals no deviation from the usual relationship between occupation and participation. The mean number of organizational memberships (including church and union) for the professionals was considerably greater than that of the technicians, which was, in turn, slightly greater than the average memberships per worker. In accord with most, but not all, previous studies, which show lower female than male participation (Rose, 1967: 224), the wives of the respondents were somewhat less active than the men (see Table 14). Otherwise the comparison by occupational category is quite similar, the wives of professionals by far the most active (mean memberships, 2.74), with little difference between the wives of technicians (1.38) and of workers (1.39).

Table 13. Extent and Level of Respondents' Associational Participation

	Professional (N = 95)	Technician (N = 95)	Worker (N = 137)
Mean number of associational memberships*	4.06	2.47	2.27
Membership other than church or union	95%	64%	51%
High attendance*[a]	74%	47%	26%
Ever held office*	59%	27%	28%
Current office*	33%	19%	9%

*Includes church and union.

[a]Four points or more on an index of attendance participation: three points were scored for attending "almost all" of the meetings of an organization, two points for attending "most" of the meetings, one point for "seldom" and zero for "none."

NB: All differences between professionals and the other two categories are statistically significant at the .05 level (t-test and chi-square). Comparing technicians and workers, only the differences in "high attendance" and "current office" reach the .05 level of significance.

Table 14. Extent and Level of Wives' Associational Participation

	Professional (N = 91)	Technician (N = 87)	Worker (N = 134)
Mean number of associational memberships*	2.74	1.38	1.39
Membership other than church or union	84%	57%	48%
High attendance*a	65%	36%	27%
Ever held office*	46%	17%	19%
Current office*	24%	13%	8%

*Includes church and union.

[a]See footnotes to Table 13.

NB: All differences between professionals and the other two categories are statistically significant at the .05 level (t-test and chi-square). None of the differences between technicians' and workers' wives are statistically significant.

Ninety-five percent of the scientific professionals in Alchemia belong to at least one organization other than church. This is a much higher proportion than that given in most reports on professionals.[2] For example, estimates based on nation-wide survey data range from 53% to

[2]Because of differences in operational definition of voluntary associations and in data gathering techniques, comparisons of the results of studies of associational participation are notoriously difficult (cf. Palisi, 1968). For example, some sutdies have included membership in church and church related organizations, others have not. Some studies have probed more intensively for complete answers than others. For this study, respondents were handed a card identifying ten types of local organizations and were given sufficient time to identify the particular organizations in which they held membership. This technique may elicit fuller response than some others.

73% (Wright and Hyman, 1958; Lane, 1959: 78; Hausknecht, 1962); studies in Detroit (Axelrod, 1956), in Butler County, Pennsylvania (Graham, 1959: 349), and in New York City (Komarovsky, 1946) report 61%, 72%, and 79% membership in voluntary organizations for professionals.[3] In studies in cities comparable in size to Alchemia, "social class" rather than occupation has generally been used as the independent variable. For example, Warner, et al., (1963: 131) report 64% associational membership for the upper-middle class in Yankee City, and Mizruchi (1964: 112) found 77% participation among the middle classes of a small New York state city. In Middletown (Lynd and Lynd, 1929: 528), 97% of a small non-random sample representing the "business class" were members of voluntary organizations. National data on the relationship between associational membership and size of community are varied. Using 1953 NORC data on family membership, Wright and Hyman (1958: 290) show a slight positive correlation. But on the basis of 1955 NORC and 1954 AIPO data on individual membership, Hausknecht (1962: 18) reports that the smaller the community the higher the rate of associational membership.[4] In general, both of the latter surveys show that this relationship holds when income and education are controlled. The NORC survey shows that 58% of the professionals in the least urbanized counties (no town as large as 10,000) join associations. The percentage of participating professionals for counties in the same class as Alchemia (largest city, 10-50,000) is not reported but the participation rate of those in the highest income and edicational categories is greatest in counties of this size. Thus there is at least a tenuous basis

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[3] The Wright-Hyman, Hauskuecht, Graham, and Komarovsky figures are for professionals, Lane's figure is for the professional-managerial category; Axelrod's figure is for the professional-managerial-proprietor category.

[4] In a Nebraska state-wide survey, Babchuck and Booth (1969: 35) find no relationship between community size and rate of affiliation.

for suspecting that participation in Alchemia is encouraged by city size. Nevertheless, on the basis of the assembled comparative data, it seems fair to conclude that scientific professionals in Alchemia participate in local community life at least as frequently as, and probably more frequently than, the general category of professionals. This conclusion takes on special interest in light of the fact that these technical professionals are by training and vocation oriented toward things rather than people and that their occupational setting seemingly does not encourage community participation as does the milieu of the "established" professional, businessman, or manager. Thus the data support the hypothesis that professionalization fosters associational participation. The replacement of the "business class" (the Lynds' term) by technically trained professionals as the dominant high status type seems not to be associated with a decline in associational life. This conclusion leaves open the possibilities that 1) scientists and engineers who choose to live in small, somewhat isolated cities may be self-selected on the basis of value orientations which predispose them to high rates of community participation, and 2) participation rates are enhanced simply by the strong concentration of people with similar interests. However, support for the basic hypothesis is provided by evidence of the high rates of participation by technical professionals in Oak Ridge and Huntsville (Hood, et al., unpublished data) and in an unnamed large scale research organization (Hagedom and Labowitz, 1967: 485) which found only 10% of the scientists and 23% of the engineers without associational memberships.

Like the professionals, the technicians and workers sampled in Alchemia are apparently more involved in local associations than their counterparts elsewhere. Sixty-four percent of the technicians and 51% of the workers belong to some voluntary association other than church or union. These figures are substantially higher than the 41% membership for clerical and sales workers, the 32-40% for skilled workers, and the 23-27% for semi-skilled workers reported from national surveys

(Wright and Hyman, 1958: 289; Hausknecht, 1962: 21).[5] Lower figures were also reported from a survey of urban workers (Dotson, 1951) and from a survey of a working class suburb (Berger, 1960: 59). Hausknecht reports 40% and 27% participation for skilled and semi-skilled workers in the least urbanized counties, figures which are still well below those found in Alchemia. These differences suggest that widespread organizational participation by a growing professional elite provides a milieu which encourages this sort of activity among other segments of the population.[6]

In addition to rates and amount of participation Tables 13 and 14 also show two measures of intensity of participation. The professionals are much more intensively involved than either technicians or workers. The technicians, in turn, are more intensively involved than workers. Although no directly comparable data on intensity of associational participation seem to have been published, a rough comparison with Axelrod's (1956) study suggests that the proportion of Alchemia professionals who are very active is extremely high, but that proportions of highly active technicians and blue collar workers may vary little from the Detroit occupational norms.[7] Alchemia professionals are also slightly more

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[5] Union membership is excluded. The data reported in the other previously cited studies which give occupation breakdowns all include union membership and thus are not directly comparable to the Alchemia data from which union membership has been excluded because it is required of all technicians and workers sampled except 22 salaried technicians and 10 foremen.

[6] This hypothesis is supported by Bell and Force's (1956: 31) finding that associational participation among blue collar workers is greater in high economic status neighborhoods than in low economic status neighborhoods.

[7] Axelrod defines "very active" as attending three meetings in the three months before the interviews plus holding office, committee membership, or participating outside regular meetings at least twice during the three months. His figures are: professionals, managers, and proprietors - 11%; clerical and sales - 21%; craftsmen - 11%;

actively involved in terms of high attendance than those with "some college" education in four Wisconsin cities (Alford and Scoble, 1968: 262). Comparison of Alchemia occupational categories with national educational categories (Almond and Verba, 1965: 259) concerning the proportion which has ever held office reveals the same pattern. The national survey showed that 51% of those with "some university" training and 24% of those with "some secondary" education had been associational officers. Similarly, Reissman (1954: 80) found that 53% and 33% of high and low occupational prestige groups had held office in Evanston, Illinois.

Among the wives of respondents, only the wives of the workers were as active as their husbands (compare Tables 13 and 14). The professionals' spouses were significantly more intensively involved than the wives of technicians or workers. The lack of differences between the latter is probably accounted for by the younger age of the technicians' wives.

Since we are using associational activity as an indicator of participation in community life, it is useful to examine not only the level but also the scope and type of participation. It is possible, of course, that high rates of associational participation are concentrated within a narrow range of associations. Such a pattern of participation would tend to be associated with segmental interests rather than broad community interests. As a measure of the scope of community participation as mediated by local associations, each organization was classified in one of six institutional areas: religious, economic, civic-public welfare, political, educational, and cultural-recreational. One point was assigned for associational participation in each area, yielding a range of scores from zero to six. The wide scope of participation by the professionals is indicated by the fact that no less than 63% hold

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operatives - 8%. Compare the Alchemia figures for current office only: professionals - 33%; technicians - 19%; blue collar workers - 9%.

organizational memberships in three or more institutional spheres. The associational membership of technicians and workers is much more segmental, 33% of the technicians and 24% of the workers holding membership in at least three institutional areas. The institutional range of membership of wives is considerably less than that of the respondents in all three occupational categories (percent with membership in three or more institutional areas: wives of professionals, 37%, of technicians, 10%, of workers, 7%). However, this lesser range is accounted for almost solely by the fact that almost no wives held membership in economic organizations. The vast majority of the males in all three occupations did hold such memberships. Thus, if membership in economic associations is ignored, the range of institutional participation for husbands and wives in each occupational category is about equal (e.g., wives with memberships in two or more institutional areas: wives of professionals, 73%, of technicians, 48%, of workers, 40%).

In addition to the examination of the extent of participation in institutional spheres, something of the range and nature of associational participation can be learned from an examination of the types of associations which are found in Alchemia. Table 15 is a comparison of the types of associations found in Alchemia in 1962 and in "Middletown" in 1924.[8]

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[8]Not too much should be made of the exact figures presented as a claim of an absolutely complete listing of associations is not made for either study. Moreover, the data were obtained by different methods. The Lynds gathered their data from a careful reading of local newspapers augmented by city directories and reports of individuals (p. 286). The Alchemia figures are based on a directory of local organizations prepared by the local Junior Chamber of Commerce Auxillary augmented by the reports of the respondents in the study. The categorization found in the table is that used by the Lynds. The Lynds included data on religious and church related clubs. These data have been omitted from the comparison because the Alchemia data are grossly incomplete. Political organizations have been omitted because they were not included in the Lynds' listing. The Lynds apparently include the PTA in one of the other categories since they refer to it elsewhere (p. 293).

Table 15. Comparison of the Number and Types of Associations in Alchemia, 1962, and Middletown, 1924.

Type of Association	Middletown	Alchemia
Athletic (not including teams)	3	20
Benevolent	50	44
Business and professional	9	23
Civic	11	14
Literary, musical, and study	24	29
Military and patriotic	13	12
Social	129	79
Trade Unions	19	5
Miscellaneous	4	3
PTA and parent	--	22
TOTAL	252	251

Source for Middletown data: Lynd and Lynd (1929: 527).

This comparison of cities of approximately the same size reveals a number of interesting differences in type of associations, although the totals are deceptively similar.[9]

The largest single difference is in the number of social organizations, but this is partly a reflection of different data gathering techniques. The Lynds consistently use the term "club" rather than

[9]The wide variation in reported total voluntary associations for small cities may be seen in the following figures: "Yankee City" (population, 17,000), 357 (Warner and Lunt, 1941); Boulder, Colorado (12,000), 268 (Bushee, 1945); "Jonesville" (6,000), 133 (Warner, et al., 1949: 118); Park Forest, Illinois (ca. 25,000), 66 (Whyte, 1956: 317); Los Alamos, N. M. (15,000), 150 and Oak Ridge, Tenn. (27,000), 245 (Holmes, 1967); Levittown, N. J. (ca. 25,000), ca. 100 (Gans, 1967: 67). Something of the irrelevance of these totals may be indicated by the fact Whyte labels Park Forest as "A hotbed of participation," but Gans finds Levittowners "not hyperactive."

association in their discussion of community organizational life. Their listing includes a large number of small women's social clubs (for example, the "Kill Kare Club," "Jolly Eight," etc.), a type which is not included in the Alchemia list. A casual reading of the local newspaper causes one to suspect that few such clubs exist in Alchemia, probably having been replaced by still more informal coffee kletzes.

Other large differences in number of specific types of associations are the larger number of athletic, business and professional, and parent-teacher associations in Alchemia and the larger number of unions in Middletown. The difference which is most directly related to different occupational distributions is in the number of professional associations. There are six local chapters of scientific professional organizations in Alchemia. Seventy-nine percent of the professionals interviewed belonged to at least one professional society, a figure which is much higher than the 58% membership for scientists and engineers employed in industry reported in a national survey (President's Scientific Research Board, 1947: 246), but quite similar to the figures reported by Hagedorn and Labowitz (1967) for a large research organization (chemists, 73%; chemical engineers, 88%). However, only 28% of the professionals were active to the extent that they attended a majority of the monthly meetings of a local chapter. A few technicians were also involved in these societies. Eight of the twenty-two salaried technicians interviewed belonged, but only three of these were active members.

The difference in the number of unions in Alchemia and Middletown reflects the difference between a one-industry and industrially organized city and a diversified and craft union city. Because of the nature of the sample, union membership accounts for a large portion of the total membership of workers and technicians. It does not account for much active participation. Only 13 of 127 (10%) of the workers who were union members (there were 10 foremen in the sample) were active members (i.e., attend most of the local meetings). However, another

another 16% claimed past union office. The union apparently gets participation from its members through wide distribution of union work tasks rather than through attendance. Among the hourly technicians, 5 of 73 (7%) are active and another 5% had held past office. This is interesting in that most studies show that the more skilled workers are the most active in unions (Spinrad, 1960: 239). This low participation may reflect the technicians ambivalence toward considering themselves blue-collar workers. Status conflict between technicians and other union members is also reported by union officials.

The seemingly low level of participation by the chemical workers in Alchemia is actually about normal for large industrial locals. Sayles and Strauss (1953: 173), who investigated normal attendance at the meetings of 19 different kinds of locals state that "except for skilled locals . . . and very small locals of less than 200, attendance varies from 2 to 6 percent."

Like union participation, political party participation is limited. Fifteen percent of the professionals report that they are members of a political party, but only 7% say that they attend meetings. All of these are Republicans. As with other forms of organizational participation, the professionals are more active than either technicians or workers. Seven of 95 technicians are party members (3 Republican, 4 Democrat) and 4 attend meetings. Among 137 workers there are 4 Republicans and 3 Democrats and just 2 participate through attendance. That party membership among technicians and workers is not unusually low is indicated by Dahl's (1961: 278) report of 4% membership in the general New Haven population. Officials of both parties claimed that scientific professionals played important roles in their party. In fact, one Democratic leader credits a recent revitalization of interest in his party to a few scientists and engineers who "have come in from outside." Actually, such revitalization could only have been slight, for Alchemia has gone solidly Republican in every state and national election since 1936, the 1964 Presidential race excepted.

Although the authors of community studies have often allowed themselves more than a note of irony in describing associational activities, all have agreed that voluntary organizations perform valuable functions for society, community, and participants.[10] Two of the most important community functions are the formulation of opinions and the representation of particular interests. The significance of voluntary associations in performing these functions has often been grossly exaggerated, but there can be little doubt that, locally, professionals use associations for these ends more than do others. In Alchemia, 34% of the professionals, but only 26% of the technicians and 16% of the workers, could recall at least one instance of a stand taken on a local issue by some organization in which they held membership.

The Parent-Teacher Associations are the most notable examples of organizations which have represented the scientific professionals' interests in formulating opinion and shaping policy. A large majority of professionals and/or their wives, but few blue collar workers, belong to P. T. A. s. Scientists and engineers also dominate the school board. The result has been the construction of excellent school facilities, a very strong college preparatory course, especially in the sciences, and notable success in sending a high proportion of high school graduates to college. The union, on the other hand, attracts the low level of participation normal for large industrial locals and, although successful on "bread and butter" issues, makes no strong efforts to shape opinion or policy on local problems.

Another important function often claimed for voluntary associations is that they "bind the community together" (Warner, et al., 1949: 115), not only because many projects and services aid the whole community, but also because of the social heterogeneity of membership within organizations and because multiple affiliations lead to cross-cutting

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[10] These functions are discussed by Rose (1954: Chaps. 3 and 4), Hausknecht (1962: Ch. 7), and Smith (1966).

loyalties.[11] On the other hand, it is possible for associational participation to be dysfunctional for the community as a whole by promoting the hardening of group boundaries, out-group hostility and institutionalized conflict. As is the case in many functional explanations, so in this one, no one seems to have found a way to show in fact whether high rates of associational participation primarily produce community cohesion or conflict, although Warner, et al., (1949: 116, 148) manage to have it both ways, claiming at one point that associations produce cohesion because they "cut across the major divisions which exist," but concluding that "the associations of Jonesville and America generally organize the various social classes, expressing their distinguishing attitudes and ideologies and giving to the members a sense of social solidarity." Since the cohesive aspects of associations have more often been emphasized, it is perhaps fitting to touch on some potential conflict producing elements of associational life in Alchemia. There is little evidence that the high level of associational participation by professionals in Alchemia leads to either extensive or intensive involvement across the white-blue collar line. This lack of interaction is, no doubt, part of the reason for the sense of political alienation which was widespread among the workers and technicians. As indicated previously the majority of scientists and engineers belong to local chapters of professional associations, thus encouraging the development of a number of professional "communities within the community" (Goode, 1957) in Alchemia. Only a few technicians are even marginally involved in such sub-communities through formal organizations. Almost half of the workers do not have even potential associational contacts with professional people. Finally, the professionals are notable for their absence from the traditional organizations of businessmen, such as Rotary, Kiwanis and the Chamber of Commerce, a fact which signals potential conflict. An antipathy between the organizational professionals and local businessmen was noted at many points in the study.

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[11] Using community data, Kornhauser (1959: 80) applies these arguments to the society as a whole.

Church Participation

Like many other types of associational involvement, church participation is generally directly related to "social class." This generalization has usually been supported regardless of the stratification indicator(s) used, and whether preference (Hollingshead, 1949: 218), membership (Cantril, 1943: Rosten, 1955: 239-41; Burchinal, 1959; Glenn and Alston, 1967: 385) or attendance (Goode, 1965, reviews an extensive literature) was measured. There is ample reason to doubt, however, that educational and occupational upgrading of the population will result in more church participation. Most especially, few scholars would expect high rates of church activity among the technically trained, not only because of the historic conflict between science and religion (cf. White, 1960), but because large majorities of two samples of outstanding scientists (Roe, 1952: 62; Bello, 1954) were not active religiously and because a national sample of scientists (Vaughn, et al., 1966) revealed that only 23% attend church more often than once a month. Moreover, whatever the impact of undergraduate education on religious practices, a national survey of graduate students indicates quite clearly, that graduate training attenuates church affiliation and attendance (Stark, 1963). The low church participation of college professors (Gerstl, 1961) suggests a curvilinear relationship with education, a possibility which receives further support from the fact that the one study which shows no relationship between social stratum and church attendance (Bultena, 1949) was conducted in a university city. Thus two contrary hypotheses are derivable from previous research: that scientific professionals will be either strong or weak participators in local church life.

Table 16 indicates that the Alchemia professionals were clearly more active than technicians or workers. This finding suggests that the work-a-day industrial scientist follows the religious practice of his status peers rather than those of the scientific elite. It also may be taken as further indication of the special character of these small town

Table 16. Extent and Level of Church Participation

	Professional	Technician	Worker	Significant Differences**
		Respondents		
% church members	86	60	64	P-T, P-W
% highly active* members in sample	64	40	32	P-T, P-W
% members who were highly active*	73	67	50	P-W, T-W
		Wives		
% church members	91	64	73	P-T, P-W
% highly active* members in sample	70	43	48	P-T, P-W
% members who were highly active*	77	66	65	

*Attended "all" or "most" of the time.

**$p < .05$, chi-square, 1 d.f.

scientists or of the cumulative impact of the work organization and of the city itself.

Not only does the Alchemia data fit the pattern of the stratification explanation of church participation, but comparative data indicate fairly strongly that the professionals (but not the technicians or workers) are more actively involved than the general run of "high status" Americans.[12] National poll data (Rosten, 1955; Glenn and Alston, 1967) indicate that 81-83% in the professional-managerial category and 73-78% in various manual categories claim church membership (these data include Catholics and so should be higher than the Alchemia figures, ceteris paribus). Although comparisons of the extent of activity must be viewed as quite tenuous because of variations in coding categories, it would appear that Alchemia professionals attend church more often than the top stratum reported in six community studies (Lynd and Lynd, 1929: 359; Mather, 1941; Bultena, 1949; Reissman, 1954; Bonjean, 1966) and one national survey (Anonymous, 1952) and participate at about the same rate as the professional category figures reported by (Lazerwitz, 1961) on the bases of three combined national samples. The same studies plus Berger's (1960) study of working class suburb and Hamilton's (1964) report of another national survey support the conclusion that church attendance among Alchemia technicians and blue collar workers is unusually low, or more conservatively stated, not high. Thus, in contrast to general organizational activity, high church participation by scientific professionals does not seem to create a context which encourages high participation in other groups.

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[12] Comparison of data on church participation is an even more sticky business than comparison of other associational activity. First, most survey studies of church membership report excessively high figures as compared to the 63% membership reported by the denominations (Landis, 1964). People, then, either tend to have loose views on the qualifications of formal membership and/or lie about their church participation as they presumably do not about their voluntary

The third row of Table 16 also presents findings that are interestingly at variance with most reported evidence. Contrary to the positive relationship between stratification indicators and the church attendance in the population at large, most studies report only very low associations when members only are considered (Bultena, 1949: 388; Burchinal, 1959: 63; Demerath, 1965: 206; Goode, 1965: 110[13]). Yet the Alchemia data reveal, once again, a direct relationship between church activity and occupational level and an apparently unusually high level of participation among scientific professionals (and technicians, but not workers) who are church members. Goode's (1965: 110) presentation of data from a Congregational Church sample shows high attendance (at least three times per month) ranging from 49% to 58% by occupational stratum. Demerath (1965: 206) reports high attendance (at least four times per month) by "socioeconomic status" for combined samples from five denominations ranging only from 57% to 59%. Whatever their religiosity or theological belief systems, Alchemia professionals are definitely not just paper church members. Moreover, the hypothesis that a unique small town and/or quest for community orientation characterizing this group of scientists explains high church participation is severely damaged by equally high rates among scientists sampled in Oak Ridge and Huntsville (Hood, et al., unpublished data). Scientists in these three scientifically oriented communities are more active than those in a national sample of chemical engineers, physists, zoologists and geologists, 24% of whom were not

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association involvement. Second, despite large differences in participation rates by Catholics vs. Protestants and by sex, reported breakdowns by occupation rarely control for these factors. The Alchemia data is also weakened slightly by failure to separate out the Catholics and Jews but none of the samples showed more than approximately 10% adherence to these faiths.

[13] Goode reports a low association for a Congregation Church sample but a high relationship for an Appalachian sample (109).

members (Vaughn, et al., 1966). But this same study also shows much higher rates of participation for scientists in industry and chemical engineers considered separately.

The wives of the professionals and technicians showed patterns of church participation which were almost identical to those of their husbands. This carries a certain amount of interest in itself inasmuch as poll data (e.g., Lazerwitz, 1961) consistently shows larger variations between males and females. Perhaps the Alchemia data on these two occupational groups can be viewed as consistent with an ethic of family togetherness (cf. Whyte, 1956: Ch. 5). The working class wives, on the other hand, were considerably more active than their mates, surpassing, in fact, both the technicians and their wives.

Since skepticism about the religious meaning of church participation abounds in the sociology of religion literature, it is perhaps not remiss at this point to add a few words about the meaning of the Alchemia data. There can be little doubt that in Alchemia, as elsewhere, church affiliation is for many simply another form of social intercourse. One might suspect that this would be particularly true of the scientific professionals. Although no questions on religious beliefs were included in the questionnaire, respondents at one point were asked to describe their central life interests in an open-ended question. Fully 27% of the professionals compared with 20% of the technicians and 10% of the workers mentioned religion (ranking third, fourth and sixth respectively). These results are of interest in that they seem to indicate that a religion is of considerable importance for a sizeable minority of these professionals and in that the pattern of response in the three occupational groups follows the same rank order as church participation.

Local Political Participation

Political participation, like voluntary associational activity, has been shown to be positively associated with "socioeconomic status," regardless of the indicator used, in numerous studies (for reviews of

the literature, mostly involving national politics see Lane, 1959; Erbe, 1964; Milbrath, 1965; Marshall, 1968). Among the studies which substantiate this relationship regarding local politics are those by Agger and Ostrum (1956), Agger and Goldrich (1958), Bollens (1959; 1961), Dahl (1961), Agger, et al., (1964), Almond and Verba (1965), and Bonjean (1966). On the basis of such overwhelming evidence it seems reasonable to postulate increased local political participation resulting from professionalization, a high level of such participation among Alchemia's professionals and significant differences among the occupations sampled. These hypotheses are not as trivial as they may seem at first glance, however, for there are also ample reasons to expect changes in past trends. The same personality characteristics of scientific professionals mentioned previously, which supposedly discourage social activity, should also weaken political participation. In addition such dominant value orientations of the social system of science as strict rationality and a dispassionate approach to problems tend to weigh against a descent into the political thicket (Eiduson, 1961: 227, 251, 262; Hagstrom, 1965: 9; Wood, 1964: 48). Even at the national level, where a technological orientation has been increasingly incorporated into the decision-making process, the theory of an emerging scientific establishment (Price, 1962) has been seriously disputed on the basis of the scientists' disinclination to wield power (Greenberg, 1965; 1968). A study of university science and engineering students (Grogan, 1968) indicates that they anticipate less future political participation and have a lower sense of political efficacy than their fellow students. Data gathered by Terman (1955) show that talented scientists (but not engineers) are extremely low in voting in local elections when compared with their peers in other occupational areas. Litt (1966: 114) found the technically trained less active in the political life of an affluent suburb than other college graduates. Finally, Zikmund and Smith (1969: 448) found a curvilinear relation between active participation in local politics and both education and occupation in an upper-middle-class

suburb. Activity dropped off among professionals and those with post-graduate training. On the basis of these data they hypothesize that professionalization, especially the growth of scientific technicians, will weaken civic activity.

The Alchemia data offer no support for the hypothesis of an emerging apolitical technically trained stratum. Rather, the pattern of local political participation is quite similar to the pattern of organizational participation. The scientific professionals show a greater degree of participation on most measures than the technicians and blue collar workers. The professionals, once again, must be judged as quite active on the basis of comparable data from other communities. And once more the data suggest that this high involvement provides a context which encourages higher than normal participation in other segments of the population.

Eleven measures of political activity are presented in Table 17. A limited amount of comparable data from other community studies is available for most of these measures. The first four items were derived from Dahl's (1961: 279) study of New Haven.[14] Even among the Alchemia blue collar workers, the proportion who discuss local issues with friends at least occasionally is greater than the general citizenry in New Haven (47%), Oberlin (72%) (Wildavsky, 1964: 19), and in three of the four communities (range, 56-81%) studied by Agger, et al., (1964: 268). All three Alchemia occupational types also rate high in having ever contacted someone about a local issue compared with the 27% of a national sample who "have attempted to influence their local government" (Almond and Verba, 1965: 144), the 27% of New Haven residents who had ever contacted a "local public official or politician"

[14] The wording was changed slightly for all but the first item for the Alchemia questionnaire. In items two and three Dahl asked specifically about contacts with "public officials or politicians." Only a small proportion of those contacted in Alchemia were neither.

Table 17. Local Political Activity

	Prof.	Tech.	Worker	Significant Differences*
		Percent		
Talk with friends about local politics	87	81	73	P-W
Ever contacted someone about a local problem	57	46	45	
Contacted someone about a local problem in past year	34	40	23	T-W
Have been actively involved in a local issue	28	14	15	P-T, P-W
Belong to an organization which has taken a stand on a local issue	34	26	16	P-W
Never voted in a local election	12	14	7	
Voted in last school election	73	52	62	P-T
Voted in last local referendum	73	59	60	P-T, P-W
Can name a general influential	44	30	32	P-T
Can name an educational influential	68	40	50	P-T, P-W
Can name a political influential	56	40	34	P-T, P-W

* $p < .05$, chi-square, 1 d.f.

(Dahl, 1961: 279), and the 12-21% in St. Louis and suburbs who had "complained to a government official, employee or agency" (Bollens, 1961: 273). In contacts during the previous year the Alchemians rank ahead of the Grand Rapids (18%) and New Haven citizens (16%) but vary little from the Oberlin sample (30%) and are well below the 50% and 58% reported for affluent suburbs near Grand Rapids (Press, 1961) and Philadelphia (Zikmund and Smith, 1969: 446).[15] In the Philadelphia suburb the proportion who reported they had taken a more active part in local politics (27%) is comparable to the professionals' report in Alchemia. In six other cities previously mentioned "active involvement" ranged from 5% to 16% (Dahl, 1961: 279; Wildavsky, 1964: 16; Agger, et al., 1964: 268), figures similar to or less than the Alchemia data for technicians and workers. Although most of the studies mentioned indicate the expected relationship between socio-economic variables and political participation only Agger, et al., (1964: 695) present data. In comparison with the "highly educated" segments of the population in two western and two southern cities, the proportion of Alchemia professionals who discuss local politics falls within the established range (78-93%). But the 28% of the scientific professionals who report that they are active exceeds the figures reported for the "highly educated" in the other four cities (18-24%). On the basis of such data we can conservatively conclude that the Alchemia study supports the hypothesis that the technical professional is no less involved in civic activity than the rest of the educated populace.

The pattern of informal local political participation discussed thus far is also reflected in voting turnout behavior in the most recent elections. Turnout was quite high both on a controversial sewage bond

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[15] Press demonstrates that attempted access is greater in six Grand Rapids suburbs than in the central city. It appears from his data that this form of political participation is inversely related to the size of the governmental unit and directly related to the socioeconomic level of the area.

issue and a much less controversial school bond issue, with professionals leading the way. Although reported voting no doubt gives an exaggerated picture of actual behavior (cf. Miller, 1952) these turnouts are apparently extremely high. Comparative data on turnouts in local elections is elusory but a study of forty-five cities (O'Rourke, 1953) gives a range of 10 to 61% of the registered voters. Reported voting in a school election in a southern city (Bonjean, 1966) was substantially less than in Alchemia for both professionals and blue-collar workers. Scientists in Oak Ridge and Huntsville, however, turn out in similar proportions to the Alchemia professionals. Turnout in presidential elections is, of course, much higher than in local elections. In 1960 Alchemia led the state in the proportion of registered voters going to the polls.

Surprisingly, there is little relationship between occupation and life-time non-voting in local elections. However, the Alchemia figures compare quite favorably with Dayton (Bollens, 1959: 231) and St. Louis (Bollens, 1961: 428) studies which found that over one-fourth of the eligible voters had never voted.

One final set of measures of local political activity is shown in Table 17, the ability to name local influentials, here used as a measure of community political knowledge. Respondents were asked to designate whom they could see to solve almost any local problem, an educational problem, and a governmental problem. Professionals were significantly more knowledgeable than technicians and workers, there being little appreciable difference between the latter two groups.

In conclusion, this study demonstrates that political participation in a community with a professionalized labor force is very high for professionals, technicians and blue collar workers. It is probable that this high level is not unusual for small cities with high educational levels and that such cities provide a context which encourages participation in all segments of the population. But confirmation of such conclusions must await carefully designed comparative studies.

Community Power Arrangements

For the scientific professionals of Alchemia the pay-off for high participation can be seen in the representation of professionals in the most important local decision-making bodies. The hypothesis that professionalization increases the political power of the professional stratum at the local level is one that could readily be directly tested, at least in part, by diachronic analysis. Table 18 indicates the growth in positional power of the organizational professionals, from the weakest of four occupational groups in 1930-34 to an overwhelmingly dominant position in the latest period. This occupational distribution may be compared with the representation of (mostly independent) professionals on the city councils of Seattle (29%), El Paso (20%) and Lansing (20%) over parts of the same time span (Form and Miller, 1960: 163). In four small cities in the same state as Alchemia the proportion of professionals on the councils ranged from 4% to 22% (Williams and Adrian, 1963: 58). The salaried professionals of Table 18 were, of course, nearly all scientists or engineers. At the time of the study, three of the five city councilmen and all five school board members were scientific professionals. In addition, most of the corporation executives who had held office had had scientific training. Technical professionals were also heavily represented on the community center board, the hospital board, the library board, and the city planning commission. The Alchemia professionals certainly show no reticence about engaging in public life.

The decline in the "official" power of the small businessmen and independent professionals is worthy of note since these occupational types generally hold the governmental reins in American cities (Form and Miller, 1960: 161-3). This lack of political power reflects and exacerbates status and economic cleavage between the old middle class Main Street business establishment and the organizational professionals. The latter are quite willing to spend local tax funds for quality services

Table 18. Occupational Distribution of Elected Officials,* 1930-62.

	1930-1934	1935-1939	1940-1944	1945-1949	1950-1954	1955-1962
			Percent			
Executives and Managers	28	27	13	22	23	22
Salaried professionals	17	27	38	53	55	64
Small business and Independent Professionals	25	19	23	17	13	14
Blue Collar	29	28	26	8	8	0

*City-council, school board, and prior to 1945, the mayor.

and amenities (most of the money actually comes from the company rather than the home owner), but they are quite unwilling to use tax money to provide downtown parking space. Hostility toward the local merchants was expressed by scientific professionals in a number of ways during the study, most notably in response to a question concerning attitude toward local shopping facilities (see Chapter 4). They rarely (5%) identified the merchants as the group most like their own on political issues, quite often (37%) identified them as the group least like their own, and viewed them as less influential in politics than their own group.

The complete demise of blue-collar representatives from the local political scene is an indicator of potential conflict between professionals and workers (see Chapter 6). The workers viewed the technical professionals, the executives and the merchants as having roughly equal power in the community. But they selected executives, merchants,

and independent professionals as the groups least like themselves on local political matters. As a matter of fact, the interviews showed that the workers differed sharply from the professionals on a number of local issues. The workers and the technicians recognized their own low political influence and displayed a widespread sense of powerlessness at a number of points in the interview. For example, only 39% of the technicians and 42% of the workers gave an unqualified affirmative response to the question, "Do you think that people like yourself have much to say about how the city is run?" As might be expected, 74% of the professionals answered "yes" without qualification.

As has already been indicated, the reputational influence of the technical professionals was substantial but somewhat less striking than their overt positional power positions would indicate. The twenty-two community "knowledgeables" who were interviewed on community power followed the technicians and workers in giving equally high placement to the scientific professionals and company executives. The family of the company's founding father also had a considerable reputation for influence, but less than might have been expected in a company town. Many respondents remarked that the three groups overlapped to the point of being indistinguishable. The panel viewed the merchants, independent professionals, the political parties and the union as having little power.

In spite of the professionals reputed influence as a group, they were not well represented among the individuals designated as influential by the panel. Six of the top ten nominees were top management executives. Of twenty-three "top influentials" nominated in this manner, there were 14 corporation executives, only two scientific professionals, two Main Street businessmen, two independent professionals, the superintendent of schools, the newspaper editor, and a union leader. The person who easily garnered the most votes was the surviving son of the company founder.

It seems quite probable that the picture of power in Alchemia here presented, professions wielding power out front with corporation executives and founding family working behind the scenes, is accurate. This is not to say that the professionals merely act as puppets. There was very little evidence of disagreement between these three groups and considerable evidence of similarity of outlook and program. Decision-making in Alchemia merges these three groups in a mutual desire to provide the good life through their common affluence. As has been indicated in Chapter 4, the professionals have successfully used their political positions to work for a "quality" community, and the company and founding family have provided the cash through taxes and philanthropy.

VI

STRATIFICATION PATTERNS

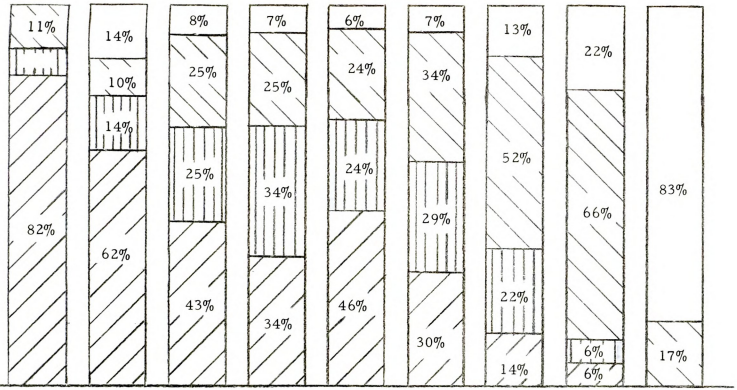
As indicated in Chapter Two, the theoretical perspective which was applied to the study of stratification patterns in Alchemia was that of Weber (1946). Thus class, status, and political power are here treated as analytically distinct dimensions of stratification. Nevertheless, we begin our analysis with a brief look at the hypothesis that professionalization increases the importance of technical expertise as the underlying basis of hierarchical position and social mobility in each of the major dimensions of the stratification order. Consistent with the usage throughout this dissertation, the term professionalization is operationally defined as growth of the proportion of professional-technical workers in the community labor force. Since technical expertise is a defining characteristic of professional occupations, since occupation is widely accepted as the fundamental factor of stratification, and since professional occupations rank near the top of the occupational hierarchy, this basic hypothesis takes on the character of a near-tautology. This is not quite true, however, because of the possibility that the non-technically trained managerial elite may be able to maintain their dominance in the stratification order, at least for a period of time, despite the growth of a professional stratum. Moreover, it is necessary to investigate the importance of technical expertise not only at the top of the occupational structure but at lower levels as well; and not only the objective impact but the subjective response.

The Importance of Technical Expertise

The long-term growth of professionals and the recent rise in managerial personnel in the plant and community labor forces was discussed in Chapter Three. No attempt was made at that point to demonstrate the arbitrary nature of and extent of overlap between

these categories. From the top layer down the management of the company is in fact dominated by scientifically trained professionals. Eighty percent of the board of directors are graduate engineers. At the very least, forty percent of those placed in the management category in the company's own classification system (which varies considerably from the census) were scientists and engineers. This percentage includes only those in positions which obviously require technical training. In addition, a large number of the salesmen and "field representatives" are graduate engineers. Technical training then is the main requisite for mobility not only into the higher level professional jobs but for a successful career in sales or top management. As a matter of fact, in this chemical company, scientists, including the founder, and engineers have commanded the daily operations from the beginning. A number of fortunes were made by these early manager-scientists. Along with the families of the early suppliers of capital, the families of these technical professionals comprise the bulk of the economic elite of the community. The continuing availability of open mobility channels between science and management in the industrial firm and the common background of much of management and the professional corps almost, but not quite, completely defuses the Veblenian conflict between engineers and management.

Just as technical training has become the major qualification for boarding the occupational mobility escalator for salaried workers, a high school diploma, or even two years of technical training in college, have become pre-requisites of the employment of hourly workers in the technologically advanced chemical industry. Figure 5 indicates the rapid up-grading of educational requirements in the Alchemia firm. A large proportion of those with more than a high school education were hired as technicians. The last column in Figure 5 exaggerates the established trend because of the low level of hiring during those two years.



N. B. Percentages are based upon a 10 percent random sample of hourly workers.

Figure 5. Changes in the Educational Level of the Chemical Plant Hourly Work Force by Period Hired.

Given the objective impact of changing technology on the occupational and opportunity structures, the citizens of Alchemia recognized the occurrence of past changes and the probability of future changes in a curiously selective manner. For example, the community knowledgeables who were interviewed made relatively few connections between the growth of the professional stratum and other basic changes even when pressed. Even more to the point at hand, of the nineteen "expert witnesses" questioned about basic community changes, only three mentioned the growth of professionals and two others the increase in the educational level. On the other hand, there can be little doubt that the high quality of the school program, including a strong scientific emphasis, and the high proportion of students in college preparatory programs indicate a widespread recognition of the importance of quality training for career mobility.

The perceived impact of changing technology on the opportunity structure was only somewhat greater when the attention of respondents was focused toward the bottom and toward negative consequences. Moreover, such recognition was inconsistent in character. In this quasi-company town based on a single highly automated industry, during a period of widespread discussion in the popular press of structural changes in the labor force and unemployment, recognition of a changing economic order was rather slight and the expression of concern even more rare. The "myths" of automation were not accepted in Alchemia. Nearly half of the panel of knowledgeables recognized the recent end of a period of rapid growth for the chemical company as a significant change for the community. However, there was little concern about unemployment or pessimism about the future. Even union leaders showed a mixture of concern and complacency. When pressed about the impact of a changing occupational distribution on the union and the community one labor leader replied:

> Well, automation is nothing new to us. We have experienced it for a number of years and are used to it and do not fear it. We expect that technological change and automation will

> continue here with no increase in the work force. As a matter of fact the company expects to reduce the number of employees to the '52 level eventually. But this will be done through normal attrition. Of course it is hard to trace where automation takes place since it happens so gradually. We have a clause in the contract that allows a worker to ask for reexamination of his wage rate if his job duties are changed, but so far we haven't done much with it. It is tough to say when a change has occurred, especially since changes often occur a little bit at a time.

The same official was more concerned about foreign competition than automation and even advocated "tax depreciations for modernization." He was not worried about the prospect of a stable or declining membership in his local, stating:

> Our job is to look out for our members. We can't make new jobs.

A second union official was more ambivalent about the impact of technological change. On the one hand he stated:

> The chemical industry has always been highly automated. It's nothing new to us. It's easy to see that automation will continue further. But the people that should be worrying most are the office workers. Their work is routine and can be automated easily. These people are going to be hurt worse than the blue collar workers.

Earlier in the interview, however, the same leader had said:

> People are greatly concerned about their job future. For themselves, but not only; for the future and for their children also. Why just this week we were told that some automatic pumps were being installed. This will eliminate about 15 of our highest paid workers in the next few years. A few of these will retire but maybe half will bump down. Bumping practically always means less pay and a lower standard of living.

The muted responses of these union officials reflected the simple fact that mass lay-offs and unemployment had not been problems in Alchemia despite the fact that technological advances had allowed the company to increase production while cutting the number of blue collar workers by approximately seven hundred during the five years previous

to the study. The company was not laying workers off; it was just not hiring a full number of replacements. The county unemployment rate at the time of the study was 2.8%, well below the state average of over 6%.

Like their union leaders, the chemical workers recognized but did not fear the impact of changing technology on the opportunity structure. Only 4% of the workers, significantly fewer than the proportion among the professionals, volunteered the opinion that unemployment was among the major local problems. This lack of pessimism prevailed in spite of the fact that a relatively large proportion (48%) recognized that local job opportunities for blue collar workers were worsening. Only 11% of the workers said that this change had affected them personally; the same proportion thought their own chances for getting ahead were getting worse.

Interestingly, technicians, who were the fastest growing occupational segment of the plant work force were most pessimistic about the opportunity structure. Fully 52% of the technicians thought that job opportunities for people in jobs like their own were getting worse. Twenty-nine percent of the technicians said they were personally affected and 23% believed their own chances for getting ahead were getting worse (both of these responses were significantly different from the workers, $p < .05$, chi-square, 1 d.f.). These responses may be taken as reactions against the dead-end nature of these jobs which increasingly require two years of technical training at the junior college level. Recognition of the technical basis of further advancement is seen in the fact that the technicians' most common solution to the perceived problem of worsening opportunity was to obtain more education. And many were attending college part time to escape the "mobility trap" (the term is borrowed from Wiley, 1967b) in which they found themselves.

Although the direct impact of technological change on most workers was relatively slight, the closing off of employment

opportunities for local youth promised more serious complications. Up until recent years the chemical firm had been the major initial employer for young blue collar workers. But in the two years previous to the study not a single local high school graduate had been hired except for office work. The result was a high rate of unemployment among the young, 15.3% of the high school graduates of two previous years who were in the civilian labor force as compared with 2.8% unemployment in the county as a whole and 16.6% nationally for all youths aged 14 - 24, which figure includes high school drop-outs (U. S. Bureau of Census, 1962a; 216-17). Generally, this problem was not at the forefront of the minds of either the knowledgeables or the chemical workers. Only 15% of the latter thought that their children would have a better chance to get ahead by leaving. Union recognition of the problem and minimal response to it is illustrated in the following statement by a union leader:

> Kids coming out of high school don't know where the hell to go to work. Kids that don't graduate have even less chance.
>
> Interviewer: What is the union doing about this problem?
>
> [Another union leader] and I go over to the high school once or twice a year. A lot of kids don't realize the importance of taking chemistry--also physics and math. We emphasize this. Even for operators people who have some chemistry are preferred at the chemical plant. And for laboratory technicians some knowledge of physics and algebra is more and more needed. We tell them to go to college. If that's out we tell them to at least finish high school. We train our own mechanics here. There's no point in taking welding and things like that in high school. If we have a job opening it is posted plant-wide, and anybody who thinks he is qualified can take a shot at it [according to seniority]. We don't have any openings like that for high school graduates. The same change is taking place in the crafts here as in a lot of other places. Take lead burners. When I first came here they were the highest paying job in the plant. Now lead burning is on the way out. They're going over to ceramics.

Class Arrangements

The term "class" as used here refers simply to aggregates of persons who share similar positions and life chances in the economic order (cf. Weber, 1946). Given this definition there can be no dispute about the existence of classes; the major problematic questions revolve around the questions of degree of class identification, class (political-economic) consciousness and class conflict. The blue-collar workers sampled belong to a common economic class; so do the professionals. The technicians are less clearly identifiable as members of a common class, not because their income range exceeds that of the blue-collar workers (it does not) or because of the sharp differences of skill levels within the category (which do not exceed those found among blue-collar workers), but because of the differential relationship to the controllers of the means of production which is indicated by the separation of the category into hourly and salaried workers.

As indicated in Chapter Two of this dissertation, it is widely accepted that class cleavage has diminished as society has passed from the stage of early industrialization through bureaucratization toward a post-industrial stage. As indicated in Chapter One, numerous theories or "explanatory sketches" have been developed in order to account for the decline or lack of (some aspects of) class cleavage in the United States and/or post-industrial societies, e.g., works which proclaim the replacement of the classes by "masses" (Lederer, 1940: 30-1), the replacement of the class society by the "employee society" (Drucker, 1953), the replacement of white-collar--blue-collar distinctions by a "middle mass" (Seligman, 1959; Wilensky, 1961), the "embourgeois-ment" of the working class (a summary term applied by Goldthorpe and Lockwood, 1963, to the ideas of Abrams, 1960; Zweig, 1961; and others), the "bourgeoisification of the working class" (Lane: 1962: 136), and the replacement of a class-stratified society by a rank-stratified society (Nisbet, 1959; Wrong, 1965). Certain elements from the

explanations offered in these works may be applied to Alchemia as a vanguard community based on a highly advanced technology and to its blue-collar workers as a vanguard of working classlessness. Drawing from these works we can synthesize a hypothesis which proclaims that general affluence (sometimes, but not necessarily, expressed in terms of a reduction of income inequalities), increased job and income security, mass education, and mass communications,which inculcate mass culture,enable blue collar workers (except for the underclass) to merge into the middle class in terms of consumption patterns, normative standards and values, and common social relationships. These factors, in turn, breed a very low sense of class consciousness among those in the old "working class" occupations.

We will begin our discussion of the causes of lack of class consciousness by drawing on Lipset's (1960: Ch. 7) analysis of the correlates of left voting ("the expression of democratic class struggle") because of its solid data base. After having reviewed an extensive literature Lipset concluded that left voting among lower-income groups can be best explained in terms of three types of deprivation (insecurity of income, unsatisfying work, and low prestige) and three facilitating conditions (good intra-class communications, low expectation of mobility, and lack of traditionalism). None of the deprivation factors is found among blue-collar workers in highly automated chemical plants and the facilitating conditions were not present to any large degree among Alchemia workmen. As indicated previously, the Alchemia chemical plant and the chemical industry in general (Blauner, 1964: 147-8) provides not only a relatively high wage but a very stable income because of the rarity of lay-offs, seasonal or otherwise. Blauner (1964: 204) has shown that chemical workers find their jobs more interesting than most industrial workers. Although our questionnaire did not measure job satisfaction directly, 75% of the workers (and 91% of the technicians) sampled said that their present job was the best one they had ever held. When asked about their career goals, only 5% of the workers (but 12%

of technicians) indicated that they wanted to leave the firm.[1] These data support Blauner's findings.[2] Leaving aside the problem of relative status deprivation, few chemical workers and technicians can be viewed as plagued by low prestige status position, because of the near absence of unskilled work in the industry.

The relative lack of the three types of deprivation in the chemical industry is largely a structural consequence of the level of technology. The relative lack of the three facilitating conditions is largely an accidental attribute of the Alchemia location. The presence of good intra-class communications is certainly often enhanced by the existence of a large work force organized by a single union in a rather small, rather isolated community (Kerr and Siegel, 1954). However, the separation of home and work in the chemical plant work force (over half of the blue collar workers live outside the city) is an important mitigating factor. Moreover, the separation of work locations, most notably that between laboratory technicians and production workers, eliminates some intra-class communication.

Although the stability of the size of the blue-collar work force at the Alchemia plant and in the chemical industry generally suggest a decline in occupational mobility opportunities and although this seems to be widely recognized, only among technicians is there a large minority who feel that their own chances of getting ahead are getting worse.[3] The reason for this optimism becomes immediately apparent

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[1] In contrast, 77% of the automobile workers interviewed by Chinoy (1953: 457) indicated that they had "thought of getting out of the shop." Chinoy also reports that "the possibility of leaving the shop forms a stable topic of conversation on the job."

[2] However, as reported elsewhere (Faunce and Clelland, 1967: 347), we gathered quite convincing evidence that work was not a central life interest of either chemical workers or technicians.

[3] Similarly, a national survey of factory workers reveals that chemical workers lead all others in the belief that their jobs lead to promotions if done well (Blauner, 1964: 206).

when we examine the meanings attached to the phrase "getting ahead in the world." Multiple responses to an open-end question revealed that only 12% of the blue-collar workers and 24% of the technicians define getting ahead in terms of promotion. Thus low expectations of occupational mobility are not traumatic because other forms of mobility (e.g., increased economic security) are considered more important.

Finally, Alchemia workers bring a "traditional" orientation to the industrial situation. There are few immigrants or southern migrants among them. They are drawn from an area population which is almost entirely native white Protestant non-ethnic. These people have a long history of solid Republicanism. Many workers are drawn from the farms of the surrounding counties and substantial number continue farming part-time. As Wiley (1967a: 537) has pointed out, part-time farmers are among those who are drawn to right wing politics because of the inconsistency of their class situations. And Leggett (1968) has demonstrated that class consciousness is related to uprootedness and ethnicity, neither of which are characteristic of the Alchemia work force.

In addition to sharing many characteristics which should limit class consciousness in common with other advanced segments of the industrial work force, chemical workers operate in a daily work environment which, according to Blauner (1964: 178-82), fosters "social integration," "consensus between workers and management," the emergence of a "social personality like that of the new middle class . . . a worker 'organization-man' in the making," and, finally, "the secular decline in the worker's class consciousness and militancy." More specifically, Blauner indicates that these effects are brought about by such structural concomitants of continuous-process technology as a balanced skill distribution, high mobility opportunities, small plant size, "Balkanized" (spatially separated) units, team responsibility, similarity of blue-collar and management work, contact with managers and engineers and a relaxed job atmosphere. With the exception of

plant size and, possibly, high mobility opportunities, these factors apply to the work situation in the Alchemia plant.[4] In addition, the stability of the plant blue-collar work force resulted in an aging work class. The average age of the non-salaried workers increased from 37.2 to 41.2 during the five years previous to the study. To the extent that aging produces conservatism (Kerr, 1944), such a change in the age structure should result in lessened class consciousness.

Class Identification

One of the simplest and most controversial measures of class consciousness is self designation. The most widely used measure of this sort is the question first used by Centers (1947): "If you were asked to use one of these four names for your social class, which would you say you belonged in: the middle class, lower class, working class, or upper class?" One need not accept Centers' position that this single question is a valid measure of class consciousness to accept the idea that it is a useful measure of one aspect of class consciousness (cf. Runciman, 1966). In this study we used the Centers question as a simple measure of class-status identity. (The Weberian distinction between class and status is, of course, blurred by the forced designation of "social class"). It is reasonable to assume that class identification precedes but does not necessarily result in higher levels of class consciousness. The class identification within the three Alchemia samples is shown in Table 19. The differences between the three major occupations and within the technician category are large and statistically significant. More important than differences between categories in Alchemia are the comparisons of Alchemia and national data. Alchemia professionals identify with the middle class even more than those in the

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[4] Although I am hesitant to criticize Blauner's observations on the basis of my own more transient observation, the extremely rosy picture of the work environment of chemical plants which he presents seems exaggerated as compared with the Alchemia plant.

Table 19. Class Identification

	Alchemia			National Surveys % Middle**		
	Middle	Working*	DK-NA	(1945)[a]	(1955)[b]	
	Percent					
Prof.	98	2	0	85	82	Prof.
Technician	60	35	5	63	63	Clerical-Sales
Salaried	82	18	0			
Hourly	53	40	7			
Blue-collar	31	66	3			
Skilled	36	62	2	28	44	Skilled
Semi-skilled	25	72	3	15	37	Semi-skill

*Two blue-collar workers who identified themselves as "lower class" have been included in the working class figure. None of the respondents designated themselves "upper class."

**Includes the small percentages identified as "upper class."

[a]National quota sample survey reported by Centers (1949).

[b]National Gallup poll reported by Glenn and Alston (1968).

national samples. Salaried technicians see themselves as middle class more often and hourly-wage technicians less often than the general run of white collar workers. Substantial majorities of both skilled and semi-skilled chemical workers in Alchemia identify themselves as working class. The amount of middle class identification in these two categories lies mid-way between the findings in the national surveys cited.[5]

[5]Although a number of more recent surveys have used the Centers class identification question, the results are not readily available. Recently, a mild controversy has arisen concerning whether or not a drift toward middle class identification by blue collar workers has been demonstrated by poll data. Tucker (1966; 1968) and Hodge and Treiman (1968) have presented data from 1963 and 1964 surveys which show

We can only conclude that we have no support for the hypothesis suggesting a decline in working class-consciousness as measured by class identification. Thus far the data suggest that among hourly-rated chemical workers, only the technicians are becoming "middle class."

Further evidence of class and/or status identifications in Alchemia is found in responses to an earlier question intended to provide data on self-designated reference groups. The question was worded, "What types of people would you group yourself with?" and was followed by the probe, "What would you mean by the phrase 'people like yourself'?"[6] As shown in Table 20, direct identification with a class was not common except among blue-collar workers. Over half who used this terminology identified with the middle class. But if direct class identification was minimal, it should still be recognized that the substantial majority of all responses were to standard stratification categories or groups. However, few identified with others in their economic stratum. Occupational identification (with its implications of both shared economic situation and shared life style) was easily the most popular choice among all three samples, but most notably among professionals.[7] Some

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over half of the blue collar workers identify themselves as middle class. However, Hamilton (1966b), who had earlier reported 1956 national survey data which indicated that only roughly half of the clerical and sales group and about one-third of skilled workers identify themselves as middle class (1966a), claims that his review of fifteen national surveys through 1964 shows no evidence of a drift toward middle-class identification. Hamilton attributes Tucker's findings to the changed wording of the question which allowed choice from among six social class possibilities. Hodge and Treiman draw on data which are based on five possible class responses.

[6]The first three responses were coded. The pattern for all three responses varies little from the first response pattern shown in Table 19.

[7]Responses to the reference group question were probably contaminated by earlier questions about the influence of occupational categories but not by the "social class" question which came later.

Table 20. Self-designated Reference Group by Occupation*

	Professional	Technician	Worker	Significant Differences**
		Percent		
Class	5	11	22	P-W, T-W
Occupational	61	38	45	P-T, P-W
Income	5	6	4	
Educational	9	1	1	
Life style	9	8	2	
Average citizen	5	29	21	P-T, P-W
N. E. C. or N. A.	4	6	4	

*First response only.

**$p < .05$, chi-square, 1 d.f.

support for the "middle mass" hypothesis is found in the high identification of technicians and workers with the average citizen (including such responses as "average people," "regular Joes," "family men" etc.). The failure of professionals to identify with this middle mass has negative implications for the hypothesis. Because of the confusion of class and status factors it is difficult to apply the findings of Table 20 to the class identification hypothesis. It is probable, however, that the predominant, occupational response was more often based on status life style considerations than on identification with an economic interest group. Had the latter been an important factor, there should have been more references to income strata as second and third responses. Only 9% of the workers and 14% of the technicians identified with an income stratum in this way.

Political-Economic Consciousness

The ambiguity of these findings on class identification may very well stem solely from the use of measures which do not separate economic class and social status factors. A theoretically more important aspect of class cleavage is political-economic consciousness, the recognition of differential economic interests and its political consequences. Respondents were asked to specify "how much difference is there between people from different social classes in Alchemia in their views on political and economic matters." Over two-thirds of the respondents saw no great differences. Although more technicians (39%) and blue-collar workers (31%) than scientific professionals (27%) saw "a lot of difference," the differences are not statistically significant. Likewise, only 16% of the community "knowledgeables" saw large differences; and none of them believed these differences were larger than in comparable cities. The "embourgeoisment hypothesis was succinctly stated by the most "militant" of the union leaders interviewed:

> The [class]differences are much less than in most places . . . . A lot of hourly [workers] are Republicans. They feel that government has done too much for people. They move into the middle class and begin to think like the middle class. The hourly workers here aren't interested in politics. We can't get near the interest in [Alchemia] that the UAW gets in Detroit.

Even among those workers who saw some political-economic differences between classes, the perceived differences did not fit the classic class-consciousness pattern (see Table 21). The most frequent response referred to the working class preference for low local taxes as opposed to the middle class desire for expanded services. Workers did not see class differences in terms of a wider economic conflict, as for example, union versus management identification, or in terms of an ideological split, except as implied by party identification. Even those workers who saw a difference in power or influence as central

Table 21. Perceived Political-Economic Difference between Classes

	Professionals (N = 53)	Technicians (N = 57)	Workers (N = 70)
Union vs management	4%	5%	6%
Liberal vs conservative	51%*	32%***	0%
Democrat vs Republican	13	18	26
Lower taxes vs services	11**	18	27
Low vs high influence	4**	5***	19
Not elsewhere classified	17	23	23

*P-T and P-W differences significant at .05 level, chi-square, 1 d.f.

**P-W difference significant at .05 level, chi-square, 1 d.f.

***T-W difference significant at .05 level, chi-square, 1 d.f.

as often as not attributed this difference to the apathy of the workers. The professionals, on the other hand demonstrated considerable consensus that the differences between classes could be interpreted along ideological lines (e.g., attitudes toward federal aid, federal control, social welfare legislation, etc.). In this sense it might be said that the professionals show greater (political-economic) class consciousness than the chemical workers.

Roughly two-thirds of each occupational group saw little change in class differences during the time they had lived in the city. Among those who did perceive such a change, only small minorities indicated that political-economic differences were increasing rather than declining. Neither was there consensual explanation advanced among those who saw a change. The same pattern prevailed among the knowledgeables questioned.

The lack of political-economic class consciousness among Alchemia chemical workers was reflected in the lack of identification with the union. As indicated in chapter five, participation is low, even though probably not below normal. The head of the smaller of two chemical workers locals said that of 569 members only 35 were "real active workers." As shown earlier in Table 12, few workers were dissatisfied with union management relations or with welfare policies.

Although two of the three union officials interviewed expressed themselves freely in rather militant class terms (e.g., "Higher class people don't care about the exploitation of the working man;" "personally, I think that nine out of ten Republican politicians are bastards"), all of them expressed an accommodative rather than a conflict orientation toward management. The Union leaders presented an even rosier picture of union-management relations than did the representatives of the company. All three union officials volunteered the information that the union took a non-partisan stance on politics. As one of them put it: "We don't like to tie politics in with the Union; it hurts bargaining." In sum, the impression gained from these interviews was that these leaders and their union are definitely characterized by "job consciousness" (cf. Perlman, 1923) rather than by "class consciousness." Perhaps the best indication of the weakness of even "union consciousness" is a comment made by a union official at the beginning of his interview. Referring to the letter which he had signed,indicating union support for this study, which was sent to the sampled chemical workers, he stated apologetically that "for some members, union endorsement will mean nothing; it will even bring a negative response from some."

Class Conflict

Probably the most obvious indicator of economic class conflict is the strike. In the United States the combination of militant union tactics and "job conscious" (rather than "class conscious") unionism

has resulted in a high incidence of strikes (Lipset, 1963: 178-82). It has rarely been noticed that, if one accepts conflict between economic interest groups as "class conflict," the United States, despite the relative lack of working-class consciousness, has experienced a high level of class conflict in the form of industrial strikes and lockouts (Ross and Hartman, 1960: 141-5; 161-2) and violent conflict at that (cf. Adamic, 1934; Brooks, 1964). With the bureaucratization of the bargaining process, violence diminished rapidly (Taft and Ross, 1969). Similarly, the working time lost through work stoppages has declined in each five year period since 1946, from 0.65%, to 0.31% to 0.29% to 0.14% in the 1961-65 period (calculated from Tables 323 and 350 U. S. Bureau of the Census, 1962a and 1969). In the chemical industry the percentage of the employed and the percentage of working time involved in work stoppages have been consistently less than the percentages for all industries in recent years. The means for the 1958-61 period are as follows (calculated from Tables 291, 306, 323 and 325, U. S. Bureau of the Census, 1962a):

	All industries	Chemical Industry
WORKERS INVOLVED	3.8%	2.3%
WORKING TIME LOST	0.29%	0.11%

Class conflict, as measured by strikes, has been very slight in Alchemia. There have been only three strikes since the union was organized in the chemical plant. The first was a two day wildcat strike in 1941. The second, in 1948, was more prolonged but followed a strike vote which had been supported by only 54% of the workers who voted. A third strike occurred some time after the fieldwork for this study had been completed. Over the years, time lost through strikes at the Alchemia location is similar to the chemical industry average.

A second form of possible class conflict in a democracy takes place at the ballot box. At the very least, voting produces a struggle among those academics who hold that it represents the "democratic

class struggle" (Anderson and Davidson, 1943; Lipset; 1960) and those who hold that American politics never has been explainable in terms on its "economic basis" (Drucker, 1968). Given that economic interest has in the past been the major source of political division, arguments still arise concerning a recent trend toward a decline in class voting. In Great Britain an embourgeoisment hypothesis was popularized in the early sixties as an explanation of Conservative Party electoral success (cf. Abrams, 1960; 1961; Butler and Rose, 1960). In the United States similar "status depolarization" (Campbell, et al., 1960: 347) and "middle majority" (the upper working and lower middle classes against both ends)[8] hypotheses have been proposed. Despite Alford's (1963) apparently sound empirical refutation of these hypotheses, an expectation of a decline in the economic basis of politics in increasingly affluent, technologically advanced societies remains common (e.g., Janowitz and Segal, 1967). Alford (1963: 249, 337), in contrast, proposes that, despite a decline in class consciousness, polarization of party voting along economic class lines will occur as mass culture, governmental centralization and secularization mitigate the importance of region and religion. In any event, it is certainly logically possibly that a lack of political-economic class consciousness need not be associated with a lack of actual political class cleavage.

Table 22, which shows party preference by occupation (as a class indicator), discloses that Alchemia varies widely from the national pattern. Alchemia professionals show an unusually strong allegiance to the Republican party. Technicians and workers are most notably weak in their preference for the Democratic party and high in the tendency to designate themselves "independents." Although the unusual strength of the Republican party and weakness of the Democratic party across occupational lines might be interpreted as a sign of inter-class consensus, a close examination of Table 21 reveals that such an

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[8] Janowitz and Segal (1967: 602) attribute this position to Lane (1965) and, incorrectly, I believe, to Lipset (1964).

Table 22. Party Preference by Occupational Category

	Republican	Democrat	Independent
		Percent	
Alchemia			
Scientific Professionals	62	9	28
Technicians	38	24	38
Chemical Workers	20	41	38
National*			
Professional-business	34	37	26
White Collar	25	45	29
Blue Collar	17	57	24
Oak Ridge**			
Scientists	38	47	14
Huntsville**			
Scientists	38	32	28

*Gallup poll, Fall 1964, reported in Free and Cantrill (1968: 234).

**Data furnished by Hood, et al., (unpublished).

interpretation would be unsound. Alford (1963: 79) has used the difference between manual and non-manual workers in the percentage voting Democratic as an index of "class voting." If in a similar manner, an index of political class cleavage is constructed by subtracting the percentage preferring the Democratic party in one occupation from the percentage in another occupation, we see that such cleavage between Alchemia professionals and workers (plus 32) is considerably greater than in the nation at large (plus 20). Moreover, the degree of political disjunction between technicians and workers (plus 17) is greater than the national division between white and blue collar workers (plus 12). The Alchemia technicians, like white collar

workers nationally, hold a position midway between the professional (and business) group and the blue collar group. But in Alchemia they are a relatively small group bridging a much wider chasm. Contrary to most of our measures of class cleavage, voting patterns show strong class differentials, broadly following the pattern found by the "class identification" question. Despite the lack of overt class consciousness in Alchemia, the data provide little support for the "embourgeoisment" (class depolarization) hypothesis.

Additional light may be thrown on this problem by comparison with the class voting pattern found in three other small out-state Republican communities in the same state as Alchemia. Wiley (1962: 76) found that preference for the Democratic party among blue-collar workers in three communities ran from 44% to 62%. Thus the Alchemia workers rank low in left party preference. But it should be noted that this low ranking stems directly from the large proportion of independents. If only those who express preference for one of the two parties are considered, 67% of the Alchemia workers identify with the Democrats, compared with 51-67% in the other communities. These figures give us a basis for speculating that some combination of structural factors in Alchemia (e.g., the overwhelmingly Republican milieu established by the occupationally dominant professionals) has encouraged a drift from Democratic to "independent" political identification. At the same time it is a near certainty that the expansion of the professional segment of the middle class has increased the political solidarity of non-manual workers by contributing even further to the existing Republican majority. Thus, even if the relatively low Democratic party identification of the Chemical workers represents a shift away from polarity, the professionalization of the community labor force increases the degree of party polarization between economic classes. Indices of political class cleavage, based on manual - non - manual differences, show scores of +13, +15, and +44 in Wiley's three

communities, or scores of +22, +17, and +49 if independents are excluded from the percentage base. Although Alchemia scores are not absolutely comparable, the professional-chemical worker differentials, +32, or +54 ignoring independents, suggest a relatively high degree of political class cleavage in Alchemia as compared with other small cities in the same state.

The fact that the political parties are marked by cleavage along occupational lines does not mean that the community is rent by partisan controversy. On the contrary, only roughly one-quarter of each of the occupational groups believed there were important differences between the parties on local issues. Even the party leaders themselves tended to agree with this assessment.

Latent Class Cleavage

Up to this point the evidence we have presented on class cleavage indicates a rather high degree of class identification and class voting but a rather low degree of overt political-economic class consciousness and little tendency toward open class conflict. Thus, the hypothesis that professionalization diminished class cleavage is supported in only a limited sense. And beyond the data already presented there is further evidence of latent class conflict. Despite the inability of all types of respondents to see important differences between parties or in the political-economic attitudes of classes, the different occupational groups do, in fact, react differently on the most salient local issues and do associate themselves differentially with liberalism and conservatism.

The major local issue at the time of the research was the question of whether or not to build a new waste disposal plant. This entailed the passage of a bond issue by referendum. The city council had unanimously recognized the need of a new waste plant as recommended by the city manager on the basis of technical advice. The city

newspaper supported the plan editorially and ran a series of detailed articles explaining the plan and the necessity for it. On election day it was turned down by a narrow margin. An analysis of the vote, as shown in Table 23, indicates that this was a revolt of the working-class. When asked why they voted as they did, those against the plan objected first to the way the issue was handled (basically an objection to lack of consultation with the public and full open discussion) and, second, to the cost. The proposed location in the working class ward and the refusal of the council to seek federal aid were also problems. Recognizing the latter as a source of opposition the council placed an advisory vote on federal aid along with the bond issue question on the second referendum. This time the issue passed with the support of all three occupational groups, partly because many who had voted against the first time retired to the sidelines, and others who had not voted came out to vote in favor the second time. The class pattern of the vote remained constant, however. And the same pattern is found in the advisory vote on federal aid which was recommended by a majority, revealing that the city council, which had voted unanimously against accepting federal aid,was quite out of touch with the working class. Finally, the voting pattern on an earlier school bond issue, as revealed in Table 23, follows class lines even though each occupational group favored it overwhelmingly. It is of particular interest that on all of these referenda, the technicians, who as a whole tend to identify with the middle class, did not differ significantly from the workers.

This voting pattern can be interpreted as class politics in so far as it expresses the low tax interests of the workers and technicians for whom local tax increases represent greater opportunity costs than for the professionals. It can be interpreted as status politics in so far as it expresses a difference in valued life styles. In local politics it might be said that workers vote their economic interests and the upper middle class votes for amenities which support its life style. The voting pattern on these referenda indicate the alienation of the workers

Table 23. Vote on Local Referenda by Occupation.

	Professionals	Technicians	Workers
		Percent	
First waste plant vote			
For	49	18	21
Against	21	39	43
Did not vote	25	42	34
Second waste plant vote			
For	65	34	38
Against	9	24	22
Did not vote	27	41	40
Federal aid for waste plant			
For	23	40	48
Against	47	20	13
Did not vote	30	40	39
School bond issue			
For	70	38	46
Against	3	14	16
Did not vote	25	48	38

N. B. Differences between occupation categories on each vote, $p < .001$, chi-square, 4 d.f.

and technicians as class and status aggregates from local government, which is run by the professionals. This alienation represents only a latent form of class conflict because the workers and technicians have little consciousness of common interests and because they do not identify the opposition as a specifiable group. For example, workers and technicians, when asked to select from a list of occupational categories those which have opinions on local issues least like their own, chose "merchants and businessmen" and "independent professionals," categories which actually share a low tax interest with them and have little power. They did not see either scientific professionals or corporative executives as their primary opponents.

Nevertheless, unrecognized class cleavage exists not only on concrete local issues but in terms of underlying identification as liberal or conservative. At first glance the data presented in Table 24 seems to support the "middle majority" hypothesis, since all occupational groups show a relatively high propensity to designate themselves as "middle of the road" as compared with the national sample. Partly, but not wholly, this is a result of forced choice in the Alchemia interviews, eliminating the "don't know" response. Moreover, as we shall see, there was little precision among the respondents in defining the terms "liberal" and "conservative." Nevertheless, not too much should be made of emerging consensus or "end of ideology" theses in interpreting this table. For even the establishment of a non-ideological majority in the middle of the road does not necessarily mean a depolarization from the remaining minority. Table 24 reveals greater occupational cleavage on conservative identification in Alchemia than in the nation at large. Among those who identify with one of the two polar types, scientific professionals and technicians identify with conservatism by better than a two to one margin, a pattern which indicates an exceptionally weak liberal identification when compared with the national figures. Alchemia workers vary less from the national pattern for blue collar workers. Despite the movement toward the middle, significant occupational cleavage along ideological lines remains.

A close examination of Table 24 throws some light on political class cleavage (Table 22) in Alchemia. As was the case with the latter, occupational differentiation by ideological self designation is not caused by the movement of the workers toward the right but the polarization of professionals. Once again the data seem to indicate that professionalization increases some aspects of class cleavage rather than depolarizing it. For if the chemical workers of Alchemia show signs of "embourgeoisment" in their depoliticalization, the scientific professionals do not.

Table 24. Liberal-Conservative Self-Designation by Occupation

	Conser-vative	Middle of the Road	Liberal	Don't Know
			Percent	
Alchemia*				
Scientific Professionals	40	43	17	
Technicians	29	59	13	
Chemical Workers	19	60	21	
National**				
Professional-business	36	31	28	5
White collar	31	34	31	4
Blue collar	25	37	26	12

*Differences among Alchemia occupational categories, $p < .01$, chi-square, 4 d.f.

**Gallup poll, Fall 1964, reported in Free and Cantril (1968: 223).

Contrary to Veblen's (1963) expectation that engineers would become liberal in their politics in opposition to "the price system, ' a number of studies (A. Kornhauser, 1938: 264; 1939: 255; Lipset, 1960: 316; W. Kornhauser, 1963: 151-2) have shown that engineers are quite conservative. Scientists, on the other hand, even those employed in industry,tend to be political liberals (Lipset, 1960: 315-6; Kornhauser, 1962: 151-2). The data presented in Table 25 indicate that Alchemia scientists and engineers vary little in their political stances. But both types of scientific professionals are less liberal (although not more conservative) than a sample of Purdue graduates (Hirsch, 1968). The Alchemia scientists differ in their politics from Oak Ridge, Huntsville (Hood, et al., unpublished data) (see Table 22), and Los Alamos (Holmes, 1967) research scientists, all of whom deviate only to minor degrees from national patterns of party preference. They are similar to the Huntsville, but not the Oak Ridge scientists, in their

ideological self-designation. These data suggest that the growth of a stratum of scientific professionals of medium talent, working at applied tasks (e.g., the Alchemia and Huntsville scientists) and employed in industry, in contrast to a professional elite, working at more basic research (e.g., the Oak Ridge scientists) or employed in universities (e.g., many of the Purdue Ph.D.s) will not lead to a diminution of political-economic cleavage between the "upper middle class" and the "upper working class." The comparative data offer further support for a "finding" presented (on the basis of very little empirical data) by Berelson and Steiner, 1964: 430): "The more closely a profession is tied to the business community, the more conservative its political preferences." (See also Campbell, et al., 1960: 482-3). Several ad hoc explanations for the weak appeal of liberalism and the Democratic party are also suggested. First, the management of the Alchemia chemical firm is somewhat more openly and adamantly aligned with the Republican party than in most large companies. Second, the type of scientists attracted to Alchemia may vary from the mode (see Chapter 4). Third, the Alchemia scientific professional population contains a smaller portion of Ph.D.s than the other science-oriented communities. Possession of the doctorate should tie scientists more closely to the more liberal university community.

The combined data of Tables 22 and 25 suggest that the Alchemia professionals are unswerving supporters of the Republican party but tend to exercise a moderating (if anti-liberal) "middle of the road" influence. In any event, this is the picture presented by party officials. Although Alchemia has a reputation throughout the state for its political conservatism, there was little evidence that the professionals were the social base for this movement. Informants were agreed that the professionals were unhappy with their outspokenly conservative state senator. None of the company spokesmen who were publically

Table 25. Liberal--Conservative Self-Designation of Scientists and Engineers

	Alchemia		Purdue*		Oak Ridge**	Huntsville **
	Scientists	Engineers	Scientists	Engineers	Scientists	Scientists
				Percent		
Conservative	35	46	32	47	26	39
Middle of the Road	48	38	16	18	27	39
Liberal	17	17	52	35	34	16
Don't Know	1	0	--	--	12	6

*Based on a study of Purdue Ph. D. s since 1950 (Hirsch, 1968).

**Data furnished by Hood, et al., (unpublished).

identified with conservative causes were trained in the natural sciences (and most company officials were so trained). Informants were agreed that the local right wing element (including two John Birch chapters) was noisy but small and was not composed primarily of scientific professionals. It is probable that status conflicts between scientific professionals and the old middle class acted as a stimulant for right-wing politics. Nevertheless, it cannot be denied that the election to the school board of a number of scientific professionals who were vocal educational conservatives could not have occurred had the professionals not given them considerable support.

Since the terms "liberal" and "conservative" have such unstable meanings, respondents were asked not only to identify where they stood in regard to these terms but to state what these terms suggested to them. Some light may be thrown on the previous discussion by an analysis of responses to the definitional question (see Table 26). Clearly these are terms which are not in the daily vocabulary of at least half of the blue collar workers. The majority could not define these terms, or defined them as personality traits (e.g. liberal as open-minded, conservative as rigid), or gave answers which ranged from uncodeable to incomprehensible. The most common response by far among the workers as among the better educated technicians, who had much less trouble finding a conventional definition, was that liberals are willing to spend money and conservatives are not. Other usages by the blue collar workers are notable for their lack of ideological expression. This accords with our previous findings of a lack of political-economic consciousness among the workers. Nevertheless, the data presented in Table 25 run contrary to the "depolarization" and "end of ideology" hypotheses. For once again there are sizeable occupational differences. We have already seen (Table 25) that the industrial scientific professionals of Alchemia are quite conservative. Now we see that they show a stronger tendency than technicians and workers to define their conservatism in ideological

Table 26. Meanings of "Liberal" and "Conservative" by Occupation

	Liberalism			Conservatism		
	Prof.	Tech.	Worker	Prof.	Tech.	Worker
			Percent			
Money	20*	34	26	22[a]	34	39
Change	27[a]	18	11	37[a]	26[b]	9
Ideology	31[a]	18[b]	8	26[a]	12	2
Party	5	3	1	1	2	0
Personality traits	6	14	9	1	11	5
Other	9[a]	7[b]	25	7	12	15
NA - DK	2[a]	6[b]	21	4[a]	4[b]	29

*Difference between professionals and technicians, $p < .05$, chi-square, 1 d. f.

[a]Difference between professionals and workers, $p < .05$, chi-square, 1 d. f.

[b]Difference between technicians and workers, $p < .05$, chi-square, 1 d. f.

terms (i.e., free enterprise vs. socialism, individualism vs. welfare statism, local government vs. the federal government). Such a stance raises problems for the "end of ideology" hypothesis because the expected cessation is dependent, in large part, on the growing acceptance of technical, non-ideological outlook among the highly educated and those in decision-making positions (Lane, 1966: 660; Bell, 1967-b: 107; Brzezinski, 1968: 18-19). While not denying a decline in ideology among the national decision-making elites, these data throw some doubt on the thesis of a unitary non-ideological professional stratum. The end of ideology thesis, with its emphasis on consensus within the intelligensia, has ignored continuing polarization both within the highly educated (but non-professorial) stratum and between occupational strata.

This emphasis on ideology should not lead us to ignore the tendency of professionals to define "conservative" in the less ideological sense of opposition to change and satisfaction with the status quo (cf. Rossiter, 1955: 4-9). Neither should it lead us to ignore what is missing. Lane (1959) in his study of the political ideology of the common man concludes that the two greatest ideals of democracy, "freedom" and "equality" are advanced only accidentally by the business and working classes and that they survive as ideals chiefly in the professional class. Our data support Lane's conclusion concerning blue-collar workers and cast doubt on the proposition that professionals are strong defenders of these ideals. The scientific professionals of Alchemia almost completely ignored "equality" and mentioned "freedom" only in terms of freedom from big government in defining basic ideological positions.

Further evidence of class cleavage is presented in Tables 27 and 28. Once again we see that among these respondents, who can see little class variation on political-economic questions among themselves, there are vast differences in actual political-economic orientations. Compared with white and blue collar workers in three small communities in the same state (Wiley, 1962: 74), all three Alchemia

Table 27. Attitudes Toward Large Corporations and Unions by Occupation

	Prof.	Tech.	Worker	Index of Class Polarization*: Alchemia	Other **
		Percent			
The way they are run now, labor unions do this country more harm than good***					
Agree	34	25	9	+25	+15
Neither A nor D	29	17	17		
Disagree	37	58	74		
Big companies control too much of American business***					
Agree	17	32	55	+38	+12
Neither A nor D	23	22	17		
Disagree	60	46	28		

*The difference between the percentage of professionals and workers agreeing with the statement.

**The mean difference in the percentage of white-collar and blue-collar workers agreeing with the statement in three small cities, calculated from data presented in Wiley (1962: 74).

***Differences in response patterns by occupation, $p < .001$, chi-square, 4 d. f.

Table 28. A Typology of Political Orientation* by Occupation

	Prof. (N = 51)[a]	Tech. (N = 65)[a]	Worker (N = 94)[a]	Index of Class Polarization
		Percent		
Labor-liberals (pro-union, anti-business)	10	28	57	47
19th century liberals (anti-union and business)	14	15	10	4
Moderate conservatives (pro-union and business)	47	45	30	17
Right-wing conservatives (anti-union, pro-business)	29	12	3	26

*The typology and the questions on which it is based are from Trow (1958: 275). The questions appear in Table 27.

[a]All respondents who gave a neutral response to either question were eliminated from the calculations for this table.

occupational groups were quite pro-union and pro-big business. But once again we find a greater degree of class polarization (+25 and + 38) in Alchemia than in the other communities, in which the polarization measures on the union question ranged from +4 to +22 and on the big business question from -1 to +20. In contrast to a number of indications of the worker's luke-warm attitude toward the union, they show here that they are basically satisfied with unionism. In this instance it is the unusually strong "left" response of the workers rather than an exceptionally strong "right" response of the professionals which accounts for the opinion cleavage. The responses to the big-business statement, on the other hand, fit the previously established pattern. The large class polarization score stems from the very low proportion of professionals taking the more "liberal" position. The "depolarization" and "embourgeoisement" hypotheses do not fare well against these data. The polarization between professionals and workers on these fundamental questions is further illuminated by the typology which can be drawn up based upon them (Trow, 1958: 275). Table 28 shows that most workers but few professionals are "labor-liberals," and few workers but many professionals are "right-wing conservatives." The modal political orientation of professionals is "moderate conservative," the expected response of salaried, big-business employees. The technicians, in general, fall mid-way between the other groups and thus give some evidence that political "embourgeoisement" does effect at least a narrow segment of the Alchemia work force. Because of coding differences it is not possible to compare our data with Trow's Bennington study except roughly. The overall patterns of response by occupation (manual vs. salaried workers for Bennington) are quite similar with possibly greater polarization in Alchemia.

Conclusions

In this chapter we have presented data bearing on the degree of economic class cleavage found in Alchemia. The data were examined in the light of a number of global hypotheses which predict a decline in class identification, political-economic consciousness, and conflict in post-industrial society. The evidence here presented adds some cumulative empirical bricks to the theoretical wall of supposition but chips some cracks in the mortar.

There was little evidence of strong class conflict on economic issues or of overt, recognized political-economic class consciousness in Alchemia. But important indicators of other forms of class cleavage were quite visible. Differences among the three occupational categories in class (or possibly status) identification were large. Differences in party identification, which may be considered to reflect a form of economic class conflict were large. Differences on direct and indirect measures of liberal-conservative political orientations were large. Differences in opinion on salient local issues were large. Local non-partisan political conflict is basically explainable in terms of the disjunction of class (and status) interests. Comparative evidence suggests that class polarization is normal to high, although this is denied in the "public ideology" (cf. Vidich and Bensman, 1958: 51). Such evidence also suggests that the chemical workers of Alchemia are rather typical representatives of the American working class but that the scientific professionals are rather untypical of the American middle classes in their extreme middle class identification, Republicanism, and anti-liberal brand of moderate conservatism. It is these unrecognized class attitudes of the professionals which explains the degree of latent class polarization found in Alchemia. We have presented no evidence on the question of the possible political-economic integration of workers and lower middle classes into a "middle mass." It is suggested,

however, that one segment of the professional upper-middle class, scientific professionals, show few signs of integration into such a political-economic "middle-majority."

VII

SUMMARY AND CONCLUSIONS

The Problem

In the midst of proliferating speculation about the nature and shape of "post-industrial" society, relatively little research has been aimed at exploring the most "advanced" segments of the contemporary industrial order. The research from which this report has been drawn was just such a study, a study of a "vanguard" community in which the single dominant industry (chemicals) was characterized by an advanced technology. In this community a combination of technological change and the bureaucratization of research had produced a distinctive occupational structure--exceptionally high proportions of professionals (chemists and engineers) and technicians and an exceptionally small (and proportionally declining) industrial blue-collar work force. In this study we have investigated the impact of such an occupational structure on attitudes toward the community, community institutions and services, community participation and class cleavage.

On the basis of the review of an extensive body of research literature and logical derivations from the characteristics of professionals, a global orienting paradigm for the analysis of certain aspects of technological change on certain aspects of the structure of the emerging "post-industrial" community was presented (see Chapter 2). This paradigm is directly convertible into a series of testable hypotheses. A full test of these hypotheses would entail detailed historical research and/or a comparative study of communities at different levels of technological development. The study reported here, however, uses the hypotheses of the paradigm as heuristic devices for interpreting the structure of a single community. Conversely, the data collected in this research has been used to suggest a number of oversimplifications and needed reformulations in the paradigm.

A major focus of this study was a comparison of three basic occupational types which were most directly affected by technological change--scientific professionals, technicians, and blue-collar workers. It was assumed that the study of similarities and differences in the two largest occupational segments of the community would answer many questions about the structure of the community and the direction of change. Technicians were also studied because they are a rapidly enlarging unique middle category. The analysis was based on questionnaires which were administered to these three groups, on interviews with community "knowledgeables" and on available data. Comparative data have been drawn upon wherever possible. Historical investigation of change in the community has been purposely limited because of the difficulty of obtaining and analyzing data on the impact of technological and occupational change in a community where the change has been gradual over a long period so that it has been relatively imperceptible to the residents. It is hoped that the explorations of the present study will be followed by further studies of historical and comparative natures which will test and solidify the findings which are reported here.

Summary of Findings

The first heuristic hypothesis examined in this dissertation was that professionalization decreases sense of community. The Alchemia data illuminates this hypothesis in a number of ways, even though few comparative community or occupational data were available. In so doing, it also complicates the issue. Alchemia scientific professionals and technicians were more cosmopolitan than the workers in their orientation toward the community. However, the professionals showed an unexpectedly strong localistic bent in regard to preferred social relations. In their attitudes toward the community they showed surprisingly strong feelings of community identity. It was the blue-collar workers who had an instrumental (i.e., job-centered)

orientation toward the community. As this finding contradicts the "conventional wisdom" about a trend toward the eclipse of community, stimulated, in part, by changes in the occupational structure, it is certainly worthy of further investigation. Even if it should be proven that only a small segment of all professionals are characterized by a "quest for community" posture, it would be of some minor significance. It would be considerably more important if this theme characterized a large portion of the emerging professional stratum. It seems quite possible that sociologists have too soon written off the contemporary importance of the idea of community. On this question as well as others the Alchemia data suggest that the university professors who study professionals as a category may project their own values into their research in the shaping of questions and research design, in the selection of samples from the top of the stratum, and in analysis of data. Future research should be directed toward taking into account the meaning of the concept of community to the respondents themselves. The Alchemia data suggest that the sort of community being sought by at least some professionals is a narrowly defined community of status peers.

The second orienting hypothesis for this study was that professionalization furthers the improvement and growth of community services. Comparative data on a wide variety of indicators of "community quality" provide substantial support for this hypothesis. The solid tax base and philanthropy of the chemical company and the local rich may be more important explanations of community quality than the attitudes and efforts of professionals. Nevertheless, the professionals did express attitudes toward community amenities which no doubt have acted as demand pressure. And the professionals control the formal governmental decision-making positions. The results of the professionals' desire for rationalization can be seen in the government and school systems. Given the high level of amenities,

it is not surprising that professionals are highly satisfied with the community. The higher degree of satisfaction among professionals than among technicians and workers also reflects the former's dominance in shaping the social tone of the community. The larger significance of this pattern of rational improvement and control in the hands of a professional elite is that it sets the stage for conflict between workers demanding low taxes and professionals demanding high expenditures. Further comparative community research is needed to investigate the extent and depth of conflict between the professional upper-middle class and other segments of the population with lesser economic resources and different concepts of the good community. Further investigation is also needed to show the circumstances under which the professional stratum solidifies sufficient control to implement its demands.

The third and fourth heuristic hypotheses were that professionalization increases voluntary organizational and local political participation. As expected, scientific professionals participate more fully than technicians or workers. Comparative data suggest that scientific professionals are at least as high in participation as other professionals. This finding contradicts some widely held hypotheses about scientists and should be investigated further. The hypothesis that scientific professionals act differently when strongly concentrated in a locale than when isolated from each other particularly needs investigation. Comparative data also seem to indicate that the "participational" climate established by professionals encourages high participation by blue-collar workers in voluntary associations (but not churches) and in local political affairs. This implication should be investigated through comparative community research.

The fifth orienting hypothesis was that with professionalization, technical expertise becomes the basis of the stratification order (or orders) and social mobility. The Alchemia findings indicate that this is indeed the case. Technical expertise does become an increasingly important basis of the economic, status, and political power hierarchies

and of mobility within these hierarchies. Further research on the recognition of these changes, or lack thereof, is needed.

The sixth hieristic hypothesis which was investigated was that professionalization diminishes class cleavage. Although there was little sense of political-economic class consciousness and little evidence of overt class conflict in Alchemia, neither was there evidence that the sense of class identity was unusually low. Moreover, comparative data suggest that class cleavage along political and ideological lines was unusually strong. Furthermore, although recognized by few in the community, division on local issues did, in fact, follow class lines. These findings, in many ways, fail to support the "diminishing class cleavage" hypothesis, which was in turn drawn from hypotheses of the political "embourgeoisment" of the working class and the "depolarization" of class politics. The blue-collar workers of Alchemia showed but little evidence of the former, and the political stance of the scientific professionals may actually further polarize politics along class lines. To establish the generalizability of these findings further research on the politics of professionals, scientists and engineers, and, particularly, organizational professionals is needed. Comparative community studies could test the alternative hypothesis suggested by the Alchemia findings, namely, that a top-heavy occupational structure increases the degree of class cleavage, especially as reflected in local politics.

The seventh hypothesis was that professionalization increases the political power of the professional stratum at the local level. In Chapter Five evidence of the professionals' high level of participation in local political affairs was presented. Evidence of their high level of satisfaction with local government and the school system was presented in Chapter Four. The professionals quite rightly perceived themselves as influential and displayed a strong sense of political efficacy. Representation of the scientific professional stratum in the most important

political offices (city council, school board, mayor) had increased gradually over the years to 64% of the offices in the most recent period. Corporation executives were viewed as slightly more powerful than professionals by the panel of "knowledgeables." Six of the top ten reputational leaders were corporation executives; only two were professionals. But most of the corporation executives were themselves technically trained. And there was not a single important case of conflict of interest on a local issue between the executive elite and the professional stratum. Thus "back-stage" and "on-stage" power-wielders work toward the same goals.

As pointed out in Chapter Four, these goals include the provision of high quality amenities, especially educational, recreational and cultural facilities, and the rationalization of government and the school system. These goals reflect life style values which are at variance with those of a large portion of the population, most notably, the working class.

Additional Findings

Further findings of this study will be or have been reported elsewhere (Faunce and Clelland, 1963; Clelland, 1966; Faunce and Clelland, 1967). The major findings concerning status and political alienation will be reported here briefly.

The meaning of success differed among the three Alchemia occupational groups. For the scientific professionals the most common meaning of "getting ahead" was recognition in one's field. For technicians and workers success was most commonly defined in terms of security. Questions about work goals and preference for advancement through management versus professional fields showed an equal division between preferences for organizational and professional mobility. These findings suggest that professionals are less likely to regard income and material status display as status criteria than professional competance and organizational position. Comparative

data indicate that in judging status the citizens of Alchemia may place unusually strong emphasis on ability, education and civic participation and unusually weak emphasis on economic success, social life, and differential behavior and attitudes.

Contrary to a number of mass society hypotheses, the Alchemia data indicate that professionalization may foster life style variation. Occupational differences in values (e.g., community orientations) and behavior (e.g., community participation) have been reported in earlier chapters of this dissertation. Life-style differences were found at many other points in this study, most notably in response to a question about central life interests. Professionals, in contrast to technicians and workers, were extremely work-oriented. They also saw religion as central in their lives significantly more often than the workers. The technicians and blue-collar workers were significantly more concerned with the good consumer life. These findings suggest that the expansion of the professional stratum will strengthen a tendency toward status group closure among those who share a life style which separates them from other segments of the population.

There was clear evidence of status cleavage in Alchemia, not only between the occupations studied, but between the scientific professionals and the old enterpreneurial middle class, an increasingly marginal segment of the population. There was little evidence of a Veblenian status cleavage between scientific professionals and corporate management. On the whole the professionals seemed much more integrated into the corporate structure than the extensive literature on the conflict of professional and organizational roles would lead one to expect.

The status position of technicians is of special interest because of the potential growth of this occupational type. The Alchemia data support the findings of earlier studies which indicate that technicians hold ill-defined and marginal positions within the status order,

ambiguously suspended between the middle and working classes. The technicians' concern about status and status conflict appeared in response to a wide array of questions (e.g., in their discontent about their chances for mobility and their volunteered expression of concern about class distinctions in the community). Feelings of status ambiguity no doubt contributed to the high level of alienation from the local political system which was found among the technicians.

Given the differing economic interest and values of the workers and the dominant professionals, it is not surprising that the workers, who in fact possessed little power in the local political arena, betrayed definite feelings of powerlessness. It is interesting that a high proportion of the workers were alienated from the local government even though the local political participation of workers was unusually high. Generally political alienation and apathy have been found to be related. There was little indication that political alienation in Alchemia was related to work alienation or fear of unemployment. There is also evidence that political alienation was not on the rise. Thus even though the data indicate that professionalization of the occupational structure leads to polarization of interests, they do not demonstrate that this polarization is transferred into increased feelings of powerlessness. Comparative data suggest that the level of political alienation found among Alchemia workers is typical of blue-collar workers. It may follow that changes in the nature and setting of work in a highly advanced technology will have little impact beyond the workplace and the worker's relationship to his job.

Suggestions for Further Research

As has already been mentioned, the research reported here was designed and interpreted in terms of a set of heuristic hypotheses which could only be tested by means of an historical and/or comparative community research design. The study of a single community, of

course, can offer firm evidence neither in support of, nor contrary to, any hypothesis. Nevertheless, the use of such hypotheses does serve to point out the possible wider relevance of a study and to keep the researchers attention focused on important sociological issues. Hopefully, the research findings that have been reported here will stimulate further research of a historical and/or comparative nature. Such research is necessary to determine similarities and differences between industrial and non-industrial scientific professionals and between scientific and non-scientific professionals. Such research is also needed to determine the representativeness of scientific professionals who have chosen to live in a rather isolated non-metropolitan location. A number of questions which most especially need the illumination of comparative research have been mentioned in the summary section.

At a number of points in the analysis that has been presented here, it is apparent that comparison of the three occupational groups studied with other occupational groups would have been helpful. Inclusion of such groups in future research designs could throw further light on such questions as the differences and conflicts between organizational professionals and the "old middle class," the extent or lack of polarization between blue-collar workers and lower white-collar workers, and so on.

Finally, I am embarrassingly conscious of my failure to fully "milk" the data which I have collected. Perhaps from an obsessive attraction to "bright" explanations, I have failed to develop the "cute" explanations (cf. Mills, 1953) in which dissertations usually abound. Further analysis of the data from which this report was drawn will make use of specifications, especially within the independent occupational variables, which should provide fuller answers for some of the questions raised in the analysis and questions for some of the answers. Particularly, among the scientific professionals, the differences between chemists and engineers, between administrators and bench-professionals, and between local and cosmopolitan career types should

be examined more carefully. Among technicians differences between salaried and hourly rated workers should be investigated. Among the workers the effects of skill level and differential relationship of specific occupations to technological change should be taken into account. There can be little doubt that many other things could be clarified by some judicious cross-tabulations, had I but world enough, and time.

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APPENDIX

APPENDIX

INTERVIEW SCHEDULE

ALCHEMIA COMMUNITY STUDY

My name is _____. I am working on the Michigan State University Alchemia Community Study. You probably received a letter saying that you are among the people who were selected to be interviewed for this study. We are interviewing a list of people in different occupations in Alchemia to find out their views about Alchemia as a community.

The study is being paid for by the National Science Foundation and is being conducted by the Department of Sociology and Anthropology at Michigan State. As we indicated in our letter, your answers to our questions will be confidential and your name will not be used in any reports from the study.

1. First of all, we would like to know how many years altogether you have lived in Alchemia?

   1) Whole life _____ 2) Years here _____
   (IF WHOLE LIFE, SKIP TO QUESTION 4)

2. Would you say that most of your life has been spent: (READ RESPONSE CATEGORIES AND CIRCLE ANSWER)

   1) on a farm, 2) in a small town, 3) in a medium-sized city, 4) or in a big city?

3. Was there anything about Alchemia itself which affected your decision to come here? (CIRCLE ANSWER)

   1) yes 2) no 3) not respondent's decision
   (IF NO, SKIP TO QUESTION 4)

IF YES:)

   a) What did you think you would like about Alchemia? (PROBE: Was there anything else about Alchemia itself?)

(b) Have you changed your mind about this (any of these things)? (CIRCLE ANSWER)

2) no
1) yes (would you explain that please?)

(c) Thinking back to your decision to move to Alchemia, was there anything that you thought you would dislike about Alchemia? (CIRCLE ANSWER)

2) no
1) yes (What was that?)

(d) Have you changed your mind about this (any of these things)?

2) no
1) yes (What things have you changed your mind about?)

4. What do you (now) like most about living in Alchemia? (PROBE: Can you think of anything else?)

5. What do you (now) like least about living in Alchemia? (PROBE: Can you think of anything else?)

6. Do you plan to stay here in Alehcmia at least until you retire? (CIRCLE ANSWER)

1) yes 2) no 3) Don't know or "that depends"

Why is that? (PROBE: Is there anything else about Alchemia itself?)

7. Some people refer to Alchemia as a "company town." Do you agree with this?

   1) Yes (What do you mean by this?)

   2) No (What do you think people mean by this?)

8. Now we would like to know how you rate some particular things about Alchemia. Which of these five statements (HAND CARD NO. 1) best describes how you feel about: (CIRCLE NO. OF THE RESPONSE)

	NI	VD	SD	SS	VS
(a) Alchemia's schools	1	2	3	4	5
(b) Sewage disposal in Alchemia right now	1	2	3	4	5
(c) The efficiency of Alchemia's city government - that is, how well run is it.	1	2	3	4	5
(d) The responsiveness of Alchemia's city government to public opinion - that is, whether they do what the people want.	1	2	3	4	5
(e) The amount and the fairness of city taxes	1	2	3	4	5
(f) Goods and services offered by local merchants	1	2	3	4	5
(g) Relations between labor and management in Alchemia	1	2	3	4	5
(h) Health facilities (like doctors, dentists and hospitals) in Alchemia	1	2	3	4	5
(i) Playgrounds, parks, sports and other recreational facilities in Alchemia	1	2	3	4	5

	NI	VD	SD	SS	VS
(j) Libraries, music, theatre or other cultural facilities in Alchemia	1	2	3	4	5
(k) Welfare facilities in Alchemia	1	2	3	4	5

9. When you and your friends get together do you ever talk about Alchemia politics and local affairs such as those we have been talking about?

2) No
1) Yes

(IF YES) On the average, how often would you say this happens - how many times per week, month, year or whatever?

_____

10. Suppose you really wanted to get something done about problems of the kind we have been talking about. Do you know anyone you could go to see who might get some action started on almost any local problem?

(NOTE: GET BOTH NAME AND POSITION WHERE POSSIBLE. IF NAME IS NOT KNOWN, WRITE D K IN SPACE PROVIDED FOR NAME. IF MORE THAN ONE NAME OR POSITION IS MENTIONED, ASK, "WHO WOULD BE THE BEST ONE TO SEE?")

2) No
1) Yes

(IF YES) (a) Who would you see? _____
NAME

(b) What is his occupation or position? _____

11. Suppose you were concerned particularly about some problem regarding Alchemia's schools. Would you know who to see to get something done about a problem of this kind?

2) No
1) Yes

(IF YES) (a) Who would you see? _____
NAME

(b) What is his occupation or position? _____

12. Now suppose you were concerned about some problem regarding city government or politics. Would you know who to see?

2) No
1) Yes

(IF YES) (a) Who would you see? _____
NAME

(b) What is his occupation or position? _____

13. In the past year or so have you actually talked to anyone who might help you get something done about some problem in Alchemia?

1) Yes
(IF YES) Who did you see? _____
NAMES

_____

_____

What did you talk with them about? _____

_____

_____

2) No

(IF NO) Have you ever done so?

1) Yes

2) No

(IF NO) Was that because: (READ SLOWLY AND REPEAT IF NECESSARY - GET ONLY ONE ANSWER)

(1) are not very concerned with local problems,

(2) you are satisfied with things as they are, or

(3) because you did not think it would do any good?

14. Now we would like to get your ideas about what changes there have been in Alchemia during the time you have lived here. What, in your opinion, have been the major changes? (PROBES: In what (other) ways is Alchemia different than it was when you first came here? Are there any other ways in which it has changed?)

15. Which of the groups on this card (HAND CARD NO. 2) do you think have had most to do with bringing about changes in Alchemia? Please read the whole list before answering. (PAUSE) Which one do you think has been most responsible for change in Alchemia? (WRITE NO. 1 BY NAME)

Now, which one has had the next most effect? (WRITE NO. 2 BY NAME) Which one has been the third most important? (WRITE NO. 3 BY NAME)

_____1) Skilled craftsmen
_____2) Merchants and businessmen
_____3) Self employed professionals like doctors or lawyers
_____4) Technical people, like chemists and engineers
_____5) Industrial machine operators
_____6) Industrial executives and managers
_____7) Laboratory and production technicians

16. Why, in your opinion, have these groups had most to do with bringing about change?

17. Do any of the groups on the card have more influence now than when you first came to Alchemia?

2) No
1) Yes

(IF YES) (a) Which ones?

(b) Can you think of any reasons why this has happened?

18. Do any of these groups have less influence now than when you first came to Alchemia?

2) No
1) Yes

(IF YES) (a) Which ones?

(b) Can you think of any reasons why this has happened?

19. What, in your opinion, have been the most important issues or problems for Alchemia that have come up during the time you have lived here? (PROBE:) Are there any others?

20. Do you think that people like yourself have much to say about how these problems are handled or how the city is run generally?

1) Yes
2) No

(IF NO) Why is that?

21. Do you think the importance of the opinions of people like yourself, here in Alchemia, has been increasing or decreasing in recent years, or has it stayed about the same?

1) increase 2) decrease 3) same

(IF INCREASE OR DECREASE) Can you think of any reasons why this is so?

22. We have just asked you some questions about people like yourself. What types of people would you group yourself with? (PROBE: What would you mean by the phrase "people like yourself?")

23. Not including the group in which you belong, which of the groups on this card (CARD NO. 2) has opinions on local issues that are most like yours?

24. Which of the groups on the card has opinions on local issues that are least like yours?

25. Now we would like you to tell us something about your activities in the community. Do you or your wife belong to any clubs or organizations like these? (HAND CARD NO. 3) (ASK FOLLOWING QUESTIONS REGARDING EACH ORGANIZATION MENTIONED. WRITE IN RESPONSE AND, IN PARENTHESES, NEXT TO IT, WRITE W FOR WIFE, H FOR HUSBAND, OR B FOR BOTH)

    (a) How often do you attend the regular meetings? Do you attend all of them, some of them, or none of them?

    (b) How often does your wife attend?

    (c) Are you or your wife an officer in the organization?

    (d) Have you or your wife ever been an officer?

    (e) Are you or your wife on any committees?

Names of Organizations	Attendance	Hold Office	Past Office	Committees
Church and Church Related				
Social or Fraternal				
Labor Union				
Professional				
Political				
Neighborhood				
Civic				
School Related				
Cultural				
Other				

26. Have any of the organizations you belong to taken a stand on any of these issues? (SHOW CARD NO. 4)

2) No
1) Yes

(IF YES, ASK FOLLOWING QUESTIONS REGARDING EACH INSTANCE)
(a) which organizations?
(b) what was their position and what action was taken?

Name of Organization	Issue	Position and Action

27. Have you yourself been actively involved in trying to bring about changes in any of these areas?

(1) Yes (2) No

(IF YES)
(a) What were the specific projects or issues in which you were involved?

(b) What did you do?

28. Now I would like to know a little more about your interest in local politics and government.
In city elections, during the time you have been qualified to vote in Alchemia would you say you have voted in all of them, most of them, some of them, or none of them?

1) all 2) most 3) some 4) none

29. How did you vote on the first waste plant bond issue?

1) for it 2) against it 3) did not vote

(IF VOTED): Why did you vote as you did?

30. How did you vote on the waste plant bond issue in the last election?

1) for it 2) against it 3) did not vote

(IF CHANGED): Why did you change your vote?

31. How did you vote on the proposal that federal aid be sought for the waste disposal plant?

1) for it 2) against it 3) did not vote

(IF VOTED): Why did you vote as you did?

32. How do you feel generally about federal aid to local governments? Are you:

1) for it? or 2) against it?

Why do you feel that way?

33. How did you vote the last time there was an election on a school bond issue?

1) for it 2) against it 3) did not vote

(IF VOTED): Why did you vote as you did?

34. In most communities in the United States, both the amount of money spent by local government and the number of services given have increased over the years. How do you feel about these increases here in Alchemia?

35. Do you feel that local officials in Alchemia are close enough to the citizens to know what they really want?

1) yes
2) no

(IF NO): Why do you think that is?

36. Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent or what?

1) Republican 2) Democrat 3) Independent 4) Other _____

37. Do you think there are important differences between Republicans and Democrats on local issues, or are they about the same?

1) Important differences 2) About the same

(IF DIFFERENCES) What are these differences?

38. Would you say that your views on political and economic matters are generally liberal, conservative, or "middle of the road?"

1) liberal 2) conservative 3) middle of the road

39. What do these terms mean to you?

(a) First, what does the term liberal suggest to you?

(b) How about conservative?

40. Would you say that your views on political and economic matters have become more liberal or more conservative since you first came to Alchemia?

1) More liberal 2) More conservative 3) No change

(IF ANY CHANGE)

(a) Why is that?

(b) Do you think that anything (else) here in Alchemia has affected your views?

2) NO
1) YES

(IF YES) What?

41. If you were asked to use one of these four names for your social class, which would you say you belong in: the middle class, lower class, working class, or upper class?

1) Middle 2) Lower 3) Working 4) Upper 5) DK

42. How much difference is there between people from different social classes in Alchemia in their views on political and economic matters? Would you say there was:

1) a lot of difference 2) some difference 3) very little difference

4) DK

(IF "A LOT" OR "SOME") What are the major differences?

43. Would you say that these differences have been getting larger or smaller during the time you have lived in Alchemia, or has there been little change?

1) larger 2) smaller 3) little change 4) DK

(IF CHANGE) Can you think of any reasons why this is so?

44. Now I would like to shift to another kind of question. Different people regard different kinds of things as important in life. When you think about what really matter to you, what would you say are the central interests in your life? (PROBE: What else is important to you?)

Which of the things you have mentioned is most important to you? (CIRCLE THE ONE MENTIONED)

45. The phrase "getting ahead in the world" means different things to different people. What would you have to do to feel that you had gotten ahead or were a success?

Do you think most people in Alchemia would agree with this meaning?

1) Yes 2) No

(IF NO) What do you think "getting ahead" means to them?

46. Do you think that your chances for getting ahead in Alchemia have been getting better or worse, or has there been no change?

1) better 2) worse 3) no change

(IF CHANGE) Why is that?

47. Do you think that Alchemia offers your children a good chance to get ahead or do you think they will be better off if they settle elsewhere?

1) Alchemia 2) elsewhere 3) DK

48. Do you think that job opportunities in Alchemia for people with jobs like yours have been getting better, worse, or stayed about the same?

1) better 2) worse 3) same

(IF WORSE)
(a) How has this affected you? (PROBE: Has it affected your life off the job in any way?)

(b) What do you think should be done about this problem?

49. Now I would like to know a little something about your work. First, what is your occupation?

How would you describe the nature of your work? (FOR PROFESSIONS: PROBE CHIEF FUNCTION, I.E., RESEARCH, ADMINISTRATION, PRODUCTION SUPERVISION, ETC.)

50. (OPERATIVES AND TECHNICIANS ONLY) Are you working on some shift other than days?

1) Yes 2) No

(IF NO) (OPERATIVES AND TECHNICIANS ONLY) Have you ever worked nights or afternoon shifts in Alchemia?

1) Yes 2) No

51. (IF YES TO EITHER OF ABOVE)
How does this affect the kinds of things you do off the job?

52. Now we would like to know a little bit about how you use your leisure time? How do you spend most of your time off the job?

53. What sort of goals have you set for yourself in your work or career? (PROBE: What would you like to be doing ten years from now?)

Do you think you will be able to achieve these goals?

1) Yes 2) No (IF NO) Why not?

54. Would you say your present job is the best job you have ever had?

1) Yes 2) No (IF NO) What was the best job you ever had?

55. (Professionals ONLY) Would you prefer to advance your career by moving into a supervisory job or by gaining recognition for technical competence in your present job?

1) supervisory 2) technical competence

Now I have just a few more quick answer questions which we can go over quite fast. As I ask these questions, just pick out the answer listed on this card (HAND CARD NO. 5) which most nearly expresses your opinion.

56. News about Alchemia is generally more interesting than national or international news.

1) SA 2) A 3) NAD 4) D 5) SD

57. The most rewarding organizations a person can belong to are local organizations serving local needs.

1) SA 2) A 3) NAD 4) D 5) SD

58. Big cities may have their place, but when you get right down to it, the local community is the backbone of America.

1) SA 2) A 3) NAD 4) D 5) SD

59. Meeting and knowing many people is extremely important in establishing oneself in a community.

1) SA 2) A 3) NAD 4) D 5) SD

60. National and international events are important largely because of the way they effect Alchemia as a community.

1) SA 2) A 3) NAD 4) D 5) SD

61. A person's life is not affected very much by what the local city government does or does not do.

1) SA 2) A 3) NAD 4) D 5) SD

62. The way people vote is the main thing that decides how things are run in this city.

1) SA 2) A 3) NAD 4) D 5) SD

63. In most local elections here there usually isn't enough information available for me to make an intelligent choice.

1) SA 2) A 3) NAD 4) D 5) SD

64. A city is like a business and should be run by an appointed manager rather than an elected politician.

1) SA 2) A 3) NAD 4) D 5) SD

65. City governments ought to refer all important decisions directly to the voters.

1) SA 2) A 3) NAD 4) D 5) SD

66. Local taxes should be decreased even if it means fewer services.

1) SA 2) A 3) NAD 4) D 5) SD

67. If local school systems accept any kind of federal aid, the national government will eventually control the schools.

1) SA 2) A 3) NAD 4) D 5) SD

68. The way they are run now, labor unions do this country more harm than good.

1) SA 2) A 3) NAD 4) D 5) SD

69. Big companies control too much of American business.

1) SA 2) A 3) NAD 4) D 5) SD

Now, to finish up, we need a little more information about you.

70. Are you married:

1) Yes 2) No (IF NO) Have you ever been married?
3) Yes 4) No

71. (IF EVER MARRIED) How many children do you have? _____

72. How many of these children are:

of preschool age _____
in grades 1-6 _____
in grades 9-12 _____
in college _____
employed _____
other _____

73. Do you rent your home, are you buying it, or do you own it?

1) Rent 2) Buying 3) Own

74. (OPERATIVES AND TECHNICIANS) What was the highest grade in school that you completed?

(PROFESSIONALS) What is the highest degree you have completed?
(IF NONE) What education have you had beyond high school?

Grades:	1	2	3	4	5	6	7	8	9	10	11	12
Technical School	1	2	3	4								
College	1	2	3	4								

Graduate work: _____ years
Highest degree: _____

75. What was your total personal income before taxes last year? (SHOW CARD NO. 6)

0) NA
1) Less than $2,000
2) $2,000 - $3,999
3) $4,000 - $5,999
4) $6,000 - $7,999
5) $8.000 - $9,999
6) $10,000 - $11,999
7) $12,000 - $14,999
8) $15,000 or more

76. What is your age? _____

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