THE CLASSIFICATION OF OCCUPATIONS: SOME PROBLEMS OF SOCIOLOGICAL INTERPRETATION*

Robert W. Hodge and Paul M. Siegel
National Opinion Research Center, University of Chicago

According to Webster's an occupation is, among other things, "the principal business of one's life: a craft, trade, profession or other means of earning a living."[1] Albert J. Reiss, Jr., takes us a little further toward a viable definition of the objects considered in this paper:

> The social valuations attached to work in a society may be thought of as referring to both the kind of work a person does and the situation in which one works. The specific kind of work a person does in a socially evaluated work situation generally is thought of as a job, while an occupation refers to job characteristics that are transferable among employers.[2]

Reiss continues by setting forth the major components of work and work situations:

> The major characteristics related to the kind of work a person does are (a) the task, whether one manipulates symbols, physical and/or social objects (this is what is usually given in the "job description" of the Dictionary of Occupational Titles); (b) the prerequisites for entry into the work, such as educational, training, certification, and experience requirements; (c) the kind of social organization for the task, whether individual or group, for example; (d) the structure of interpersonal relations in the task, as the nature of work supervision; and (e) the structural demands made of the worker, such as responsibility for physical or social objects. The work situation includes a variety of conditions in addition to these, such as (a) the institutionalized setting, whether a factory, office, hospital, etc.; (b) the community setting of the work situation, as for example, its place in a labor-market area or the structure of the community in which it is located; (c) the perquisites of the job, as tenure, retirement benefits, etc.; (d) the rewards, such as income, recognition, etc.; (e) the type of industry; and (f) the class-of-worker, whether private, public, or self-employed. The particular configuration of these elements defines a particular job The classification of these jobs into larger categories of work requires the selection of characteristics in respect to which the jobs remain homogeneous. Work categories called occupations generally are defined by characteristics designating the kind of work and include, as a minimum, a definition of the task[3]

So conceived, the particular jobs which must be grouped to form occupational classifications are themselves defined by the logical intersections of a wide range of mutually exclusive and exhaustive classifications of jobs according to more refined aspects of their formal definitions. Heterogeneity in the taxonomic principles utilized to create occupational classes and diversity in the dimensions needed to write detailed job descriptions create the major difficulties encountered in the sociological use and interpretation of occupational data. In this paper, we develop the view that research on the division of labor is hindered by the multidimensional character of occupational typologies currently employed and would profit from efforts (1) to reduce the dimensions employed in constructing occupational typologies and (2) to work out more systematically the logical possibilities admitted by the variables used in developing an occupational classification The great need for continuity from decade to decade in the form of published statistics requires, however, that any energies expended in the creation of new occupational groups should ultimately supplement rather than replace existing modes of classification.

*The research reported in this paper was undertaken as background to a larger project dealing with occupational stratification in the United States. The study is being conducted under a grant to the National Opinion Research Center from the National Science Foundation (NSF #GS725, "Occupations and Social Stratification"). We are grateful to the National Science Foundation for its support.

[1] Philip Babcock Gove, ed., Webster's 3rd New International Dictionary (Springfield, Mass.: G. and C. Merriam Company, 1961), p. 1560.

[2] Albert J. Reiss, Jr., and others, Occupations and Social Status (New York: The Free Press of Glencoe, 1961), p. 10.

[3] Ibid., pp. 10-11.

PRINCIPLES OF OCCUPATIONAL CLASSIFICATION

On the whole, sociologists and other social scientists have shown but little interest in the problem of allocating individual reports upon jobs and occupations into relatively detailed occupational categories, such as those identified in the 3-digit census occupational code. Instead, they have been more concerned with the problem of aggregating relatively detailed occupational codes into a few broad classes of occupations. For the moment, however, we postpone commentary upon questions of aggregation and address ourselves to some disturbing particulars of the Classified Index of Occupations and Industries and the detailed census occupational code.

Most of the criteria of occupational classification enumerated by Reiss are manifest in the 3-digit or detailed occupational code of the U. S. Bureau of the Census. Many of the occupations identified in the detailed classification are, of course, groupings of individual jobs largely upon the basis of similarity in the tasks performed by their incumbents. For example, only individuals who report their occupation on the census schedule as "optologist" or "optometrist" are classified into the detailed census occupational title identified as optometrists. These two jobs engender the performance of nearly identical tasks and grouping them into a single occupation seems to be effected primarily upon the basis of their task similarity. Detailed occupational codes created in this manner are the ones best adapted for sociological use. They do not contaminate the occupational code with the rewards, work contexts, and other variables associated with the duties of particular jobs and, consequently, do not undermine the investigation of the associations between job tasks and these variables.

While detailed occupations such as optometrists, dentists, and bus drivers which adhere primarily to the principle of task similarity in the individual jobs comprising them are frequently found in the census code, other detailed occupations are clearly formed by invoking other criteria such as those mentioned by Reiss. With the notable exceptions of nurses, professional; nurses, student professional; and apprentices in various trades, the training, experience, and certification requirements of jobs do not appear to have been extensively used in forming detailed occupational codes. These criteria are, however, used to form the major census occupational groups from the detailed classification, a point to which we return below.

The social organization of tasks is likewise used rather infrequently in creation of the detailed occupational codes. Such detailed occupations as social and welfare workers, except group; and deliverymen and routemen (as distinct from truck and tractor drivers, hucksters and peddlers, and messengers and office boys) appear, however, to have been formed primarily with reference to the social organization of the task. Relationships of subordination and superordination--a feature of the structure of interpersonal contact in work tasks--are utilized to define some managerial titles in the detailed census code and are explicitly introduced to identify foremen (not elsewhere classified); carpenters' helpers, except logging and mining; and truck drivers' helpers. The structural demands made of workers are also employed in the detailed census code, usually by making explicit reference to the specific physical or social objects for which employees are responsible. Some examples of detailed census occupations employing this criterion are personnel and labor relations workers; public relations men and publicity writers; buyers and shippers, farm products; inspectors, scalers, and graders, log and lumber; and fruit, nut, and vegetable graders and packers, except factory.

In addition to various aspects of the kind of work a person does, the detailed census occupational classification also employs various aspects of work situations to define occupational groups. The institutionalized setting of jobs is, for example, frequently employed to identify the detailed codes in the census classification. Various types of attendants are separated almost wholly according to this criterion: attendants and assistants, library; attendants, physician's and dentist's office; attendants, auto service and parking; attendants, hospital and other institutions; attendants, professional and personal service (not elsewhere classified); and attendants, recreation and amusement. Not all of these attendants, of course, perform similar tasks, but most of them do perform tasks essentially the same as those performed by individuals whose jobs are classified in other detailed census occupations, as, for example, appears to be the case with attendants, physician's and dentist's office and receptionists. Other examples of the use of institutional settings to define occupational groupings are scattered throughout the detailed census code. Some particular instances are buyers and department heads, store; dressmakers and seamstresses, except factory; and the distinctions between many kinds of service workers according to whether or not they are employed in private households.

Other aspects of work situations utilized to define detailed occupations in the census code are industry and class of worker. Examples of the use of industry include the distinction of conductors, railroad from conductors, bus and street railway; the distinction of painters, construction and maintenance from painters, except construction and maintenance; the distinction of graders and sorters, manufacturing from inspectors, scalers and graders, log and lumber, and fruit, nut, and vegetable graders and packers, except factory; and of sewers and stitchers, manufacturing from dressmakers and seamstresses, except factory. The use of class of worker is evident in such detailed occupational titles as inspectors, public administration (public administration itself being an industrial code defined by class of worker); farm laborers, wage workers; and farm service laborers, self-employed. In addition the Bureau of the Census employs both industry and class of worker distinctions to subdivide managers, officials, and proprietors (not elsewhere classified) in many published tabulations. Industry alone is used similarly to subdivide salesmen and sales clerks (not elsewhere classified); operatives and kindred workers (not elsewhere classified); and laborers (not elsewhere classified) in publishing tabulations.

The foregoing discussion makes abundantly clear that the occupational classification currently employed by the U. S. Bureau of the Census is at best a multidimensional typology. Occupational codes are not formed solely by reference to the similarity in tasks performed by individual incumbents of specific jobs. Instead, work settings, industrial affiliation, and other factors are used to define detailed occupational groups. To the extent that this is the case, the operational meaning of occupation begins to depart from the notion of a classification of jobs requiring skills transferable among employers. At this point, difficulties are posed in the sociological use of occupational statistics.

The student of the division of labor more than likely will carefully distinguish between several forms of labor specialization and regard the relationships between these forms as empirically problematical. Common distinctions are those between the territorial, the task, and the functional division of labor. The division of labor according to tasks refers to the grouping of particular work activities--such as typing, painting, reading, operating a floor polisher, etc.--into specific jobs performed by a single individual. Further grouping of these specific jobs according to the similarity in their tasks or work activities produces an occupational classification. The division of labor according to function refers to the larger purpose or goal toward which work activities are ultimately directed such as the production of knowledge in specific fields, the administration of justice, the extraction of raw materials, or the manufacture of specific products. When specific jobs are grouped according to the goals or purposes which vindicate their performance, then one creates an industrial classification of jobs. Everyone knows, of course, that the occupational and industrial division of labor are interlarded; some purposes require the performance of tasks which the pursuit of other goals either does not require at all or requires to a lesser extent. Precisely how the industrial and occupational division of labor are intertwined and the manner in which they are intertwined in different sectors of the economy should be an empirical question. But one can hardly conduct any definitive empirical study of their interrelationships if the answer to the question has already been partially built into the data by the use of industrial and class of worker distinctions to define occupational groups. Much the same can, of course, be said for the use of any criterion other than task similarity to define occupational groups. The sociologist has much interest in the relationships between job tasks and such distinct variables as the social organizations of these tasks, the nature of interpersonal relations on the job, their institutional setting, the prerequisites (education, experience, on-the-job training, etc.) for performing them, and the rewards derived from their performance. However, when these variables are utilized to construct occupational typologies it becomes circular to inquire subsequently about their relationship to the occupational division of labor.

THE HOMOGENEITY OF DETAILED OCCUPATIONAL GROUPS

Sociological use and interpretation of occupational statistics is impeded not only by the employment of diverse criteria to create an occupational typology, but also by the consistency with which the criteria are employed and the homogeneity of the occupational groups so formed. The detailed occupational groups of the U. S. Bureau of the Census are organized according to such major occupational levels as professional, technical, and kindred workers; sales workers; operatives and kindred workers; and laborers, except farm and mine. Each of these major occupational levels contains one detailed occupational group which incorporates all jobs assigned to the major occupational level that are not elsewhere classified (n. e. c.) into a specific detailed occupation assigned to the major occupational group. Thus, 313,858 of the

estimated 7,335,699 professional, technical, and kindred workers in the experienced civilian labor force in 1960 were assigned to the detailed occupation, professional, technical, and kindred workers (n. e. c.).[4] At the professional level, the detailed occupation incorporating workers not elsewhere classified is relatively small, comprising less than 5 per cent of the total number of professional, technical, and kindred workers in the experienced civilian labor force. However, as one can see in Table 1, the not elsewhere classified groups comprise substantial fractions of other major occupational levels. Needless to say, at every major occupational level the specific job titles falling in the not elsewhere classified category are quite heterogeneous. For example, merely to list the job titles falling in operatives and kindred workers (n. e. c.) requires sixty-six, double-columned, single-spaced, typed pages in the Classified Index of Occupations and Industries.[5] For the sociologist who wishes to use detailed occupation as an indicator of socio-economic status, the lack of homogeneity in the not elsewhere classified codes can only comprise a major source of inaccuracy which afflicts 32.8 per cent of the total experienced civilian labor force.

There is no reason to discuss the problem of homogeneity created by the not elsewhere classified groups in great detail, since the problem is widely recognized by most users of occupational statistics. Table 1 shows that, on the whole, changes in the system of occupational classification between 1950 and 1960 tended to reduce the fraction of the experienced civilian labor force falling into the residual, "n. e. c." categories at each major occupational level. This conclusion may be drawn by comparing the percentages of the 1950 experienced civilian labor force in "n. e. c." categories when the 1950 labor force is alternatively classified by the 1950 and 1960 systems of occupational classification. Changes in the labor force distribution tended to have little overall effect upon the proportion of the experienced civilian labor force falling in residual, "n. e. c." categories in 1950 and 1960. This conclusion may be reached by comparing the proportion of the 1950 and 1960 experienced civilian labor force in "n. e. c." categories when both are distributed according to the 1960 system of occupational classification.[6]

Apart from the problem of the large "n. e. c." categories, there are other curiosities in the way

[4] The figures are taken from U. S. Bureau of the Census, 1960 Census of Population, Detailed Characteristics, United States Summary, Final Report PC(1)--1D (Washington, D. C.: U. S. Government Printing Office, 1963), Table 201, p. 522.

[5] U. S. Bureau of the Census, 1960 Census of Population, Classified Index of Occupations and Industries (Washington, D. C.: U. S. Government Printing Office, 1960), p. 133-199.

[6] At least one commentator, though rightly concerned about the size of the "n. e. c." categories, appears to confuse growth in the labor force size with growth in the relative importance of these residual categories. See J. G. Scoville, "Making Occupational Statistics More Relevant," Proceedings of the Business and Economics Statistics Section of the American Statistical Association: 1965, p. 318.

Table 1.--Per Cent of Persons in Each Major Occupation Group Falling in Generic "Not Elsewhere Classified" Codes, Experienced Civilian Labor Force, 1950 and 1960

Major Occupation Group	Reported In 1950[a]	1960 System of Occupational Classification Applied In:	
		1950[b]	1960[b]
	Total Experienced Civilian Labor Force		
Total, all groups	38.8%	33.6%	32.8%
Professional, technical, and kindred	2.3	1.8	4.3
Managers, officials, and proprietors, except farm	85.7	85.7	83.5
Clerical and kindred	42.6	33.0	31.4
Sales	84.3	84.9	81.0
Craftsmen, foremen, and kindred	0.9	0.9	1.2
Operatives and kindred	54.9	40.4	38.9
Private household	85.3	80.3	70.2
Service, except private household	12.0	4.4	3.3
Laborers, except farm and mine	84.4	79.4	78.3
All farm workers	....	....	....

Table 1. --Continued

Major Occupation Group	Reported In 1950[a]	1960 System of Occupational Classification Applied In:	
		1950[b]	1960[b]
	Male Experienced Civilian Labor Force		
Total, all groups	35.7%	32.4%	32.5%
Professional, technical, and kindred	3.1	2.2	5.5
Managers, officials, and proprietors, except farm	86.4	86.4	84.2
Clerical and kindred	57.3	40.4	39.3
Sales	78.8	79.7	75.2
Craftsmen, foremen, and kindred	0.9	0.9	1.2
Operatives and kindred	46.0	38.9	38.0
Private household	89.4	86.9	82.2
Service, except private household	8.6	5.1	4.0
Laborers, except farm and mine	84.1	78.9	77.8
All farm workers	....	....	....
	Female Experienced Civilian Labor Force		
Total, all groups	47.1%	36.7%	33.3%
Professional, technical, and kindred	1.1	1.2	2.3
Managers, officials, and proprietors, except farm	81.2	81.2	79.5
Clerical and kindred	33.6	28.4	27.5
Sales	94.8	94.8	91.1
Craftsmen, foremen, and kindred	0.5	0.5	0.7
Operatives and kindred	78.8	44.4	41.1
Private household	85.1	79.9	69.8
Service, except private household	16.3	3.4	2.7
Laborers, except farm and mine	92.8	92.8	91.4
All farm workers	....	....	....

[a]Source: U. S. Bureau of the Census, 1950 Census of Population, Vol. II, Characteristics of the Population, Part 1, U. S. Summary, Chapter C (Washington, D. C.: U. S. Government Printing Office, 1953), Table 124, pp. 261-266; U. S. Bureau of the Census, 1950 Census of Population, Vol. II, Characteristics of the Population, Part 51, Alaska, Chapter C (Washington, D. C.: U. S. Government Printing Office, 1952), Table 46, pp. 59-62; and U. S. Bureau of the Census, 1950 Census of Population, Vol. II, Characteristics of the Population, Part 52, Hawaii, Chapter C (Washington, D. C.: U. S. Government Printing Office, 1952), Table 52, pp. 99-105.

[b]Source: U. S. Bureau of the Census, 1960 Census of Population, Detailed Characteristics, United States Summary, Final Report PC (1)--1D (Washington, D. C.: U. S. Government Printing Office, 1963), Table 201, pp. 522-527.

specific job titles are assigned to detailed occupational groups which are less well known. Here we discuss a few examples which suggest that the Classified Index of Occupations and Industries might be profitably reviewed with the explicit goal of attempting to form detailed occupations characterized primarily by the task similarity in the specific job titles allocated to them.

For the researcher who wants to identify the detailed occupational classification of any particular job, the best starting place is the Alphabetical Index of Occupations and Industries.[7] Should, for example, a person look under the heading "engineer, specified type: flight" he would find that in 1960 persons

[7]U. S. Bureau of the Census, 1960 Census of Population, Alphabetical Index of Occupations and Industries, revised edition (Washington, D.C.: U. S. Government Printing Office, 1960).

reporting their occupation as "flight engineer" were classified into two detailed occupations depending upon their industrial affiliation. Those employed in industries manufacturing "transportation equipment: aircraft and parts" are assigned by the census code to engineers, aeronautical--a detailed title which is subsequently associated with the major occupation group identified as professional, technical, and kindred workers. Alternatively, "flight engineers" employed in the "air transportation" industry are assigned by the census occupational code to mechanics and repairmen, airplane--a detailed title which is subsequently allocated to the major occupation group identified as craftsmen, foremen, and kindred workers. The use of industry to assign persons reporting themselves as "flight engineers" is probably wholly justified and is doubtless an example of the situation in which industry must serve as a guide to occupational classification "because the same occupation title is sometimes applied to entirely different kinds of work in different industries."[8]

While the Alphabetical Index of Occupations and Industries informs us how the individual returns should be classified, it still leaves us uncertain about the job duties of "flight engineers." We know, however, that we need to be careful to distinguish between persons so designated in the aircraft manufacturing and air transportation industries. The "flight engineer" in the air transportation industry is probably better known to the public as the second officer on commercial airliners--a person who aids the first officer or captain in flying the aircraft and who is hardly distinguishable from the pilot in dress and outward appearance. A more careful job description of "flight engineers" in the air transportation industry is given by the Dictionary of Occupational Titles:

> Makes preflight, inflight, and postflight inspections, adjustments, and minor repairs to insure safe and efficient operation of aircraft: Inspects aircraft prior to takeoff for defects, such as fuel or oil leaks and malfunctions in electrical, hydraulic, or pressurization systems according to preflight check-list. Verifies passenger and cargo distribution and amount of fuel to insure that weight and balance specifications are met. Monitors control panel to verify aircraft performance, and regulates engine speed according to instructions of AIRPLANE PILOT, COMMERCIAL. Makes inflight repairs, such as replacing fuses, adjusting instruments, and freeing jammed flight control cables, using handtools, or takes emergency measures to compensate for failure of equipment, such as autopilot, wing heaters, and electrical and hydraulic systems. Monitors fuel gauges and computes rate of fuel consumption. Keeps log of fuel consumption and engine performance. Records malfunctions which were not corrected during flight, and reports needed repairs to ground maintenance personnel. May perform repairs upon completion of flight. Must be licensed by Federal Aviation Agency. May be required to be licensed AIRCRAFT-AND-ENGINE MECHANIC or AIRPLANE PILOT, COMMERCIAL.[9]

Apart from the fact that the "flight engineer" may be required to be a licensed airplane pilot, there are certain other similarities in the tasks of the two jobs. The Dictionary of Occupational Titles informs us that an "airplane pilot, commercial" is engaged by such activities as reviewing "ship's papers to ascertain factors, such as load weight, fuel supply, weather conditions, and flight route and schedule" and reading " gauges to verify that oil, hydraulic fluid, fuel quantities, and cabin pressure are at prescribed levels prior to starting engines."[10] These duties seem very similar to those of the "flight engineer," yet the census code assigns "airline pilots" to the detailed occupation designated as airplane pilots and navigators while, as noted above, the "flight engineer" in the air transportation industry is included in the detailed occupation designated as mechanics and repairmen, airplane.

For the occupational analyst it is perhaps not too disturbing that "flight engineers" and "airline pilots" be classified into different detailed census occupations. The distinction between the two occupations is also given formal expression in the social organization of the two jobs into different unions--the International Air Line Pilots Association and the Flight Engineer's

---

[8] U. S. Bureau of the Census, 1960 Census of Population, Classified Index of Occupations and Industries, op. cit., pp. v-vi.

[9] U. S. Department of Labor, Dictionary of Occupational Titles, Vol. I, Definitions of Titles, third edition (Washington, D. C.: U. S. Government Printing Office, 1965), pp. 288-289.

[10] Ibid., p. 11.

International Association.[11] The subsequent assignment of the detailed occupations into which "flight engineers" and "airline pilots" fall to widely different major occupational levels is, however, less than satisfactory, especially in view of the overlapping tasks and cooperation between the two jobs. As it turns out, mechanics and repairmen, airplane fall into the major occupation group described as craftsmen, foremen, and kindred workers, while airplane pilots and navigators are part of the major occupation group described as professional, technical, and kindred workers. Thus, the "flight engineer" in the air transportation industry is ultimately considered a blue collar worker, while the airline pilot is regarded as a professional. Such a wide distinction in these two jobs hardly seems justified, especially when one ponders the fact that the detailed occupation described as baggagemen, transportation--a group which includes "cargo handlers" in the air transportation industry--falls into the major occupation group described as clerical and kindred workers and would be regarded as falling together with "airline pilots," but not "flight engineers," in the broader group of white collar workers.

We have explored the case of the "flight engineer" at some length in order to indicate just how difficult it is to evaluate the homogeneity of the detailed census occupational code. Examination of the Classified Index of Occupations and Industries reveals many other instances of heterogeneity in detailed occupations and curiosities in the way particular jobs and pairs of jobs are classified. A few particulars may help convince the reader that, whether or not he agrees individual jobs should be classified according to their task similarity, the detailed census occupational code falls short of fully satisfying such a criterion.

The student of the Classified Index of Occupations and Industries may at first be stunned by the enormous task it accomplishes. Closer scrutiny may reveal some job titles whose classification demands explanation. Why is a "professional golfer" assigned to the detailed occupation designated as athletes, while a "golf pro" is assigned to detailed occupation described as sports instructors and officials? Does the census really believe that this minor difference in the way a person reports his occupation enables one to distinguish between Arnold Palmer, Jack Nicklaus, and the hundreds of professional golfers who also serve as the professionals-in-residence at country clubs and the like? Or, for that matter, is the distinction even meaningful, particularly when one recognizes that even the top professional golfers perform the functions of instructors in a different fashion by authoring columns in newspapers and writing manuals of best golfing practices? (In 1970, Arnold Palmer and Jack Nicklaus will doubtless turn up as editors and reporters or authors.)

Other instances of dubious classification of specific jobs are scattered throughout the Classified Index of Occupations and Industries. For example, a "seeing-eye dog teacher" is placed in the detailed occupation described as entertainers (n. e. c.). A "student-activities director" in a college is placed in the detailed occupation identified as social and welfare workers, except group, rather than in the detailed occupation--recreation and group workers--which contains such similar jobs as "recreation directors" and "Y. M. C. A. program directors." "Caterpillar operators" are classified as truck and tractor drivers, a detailed occupation subsequently placed in the major occupation group identified as operatives and kindred workers. To the best of our knowledge, "Caterpillar" is a brand name which is colloquially used to identify certain kinds of heavy machinery, notably earth moving equipment and bulldozers. But a "bulldozer driver" and a "heavy-equipment operator--except manufacturing" are specific occupational titles which are allocated to excavating, grading, and road machinery operators, a detailed occupation subsequently placed at the major occupation level described as craftsmen, foremen, and kindred workers. "Dance hall supervisors" are classified as policemen and detectives, but "bouncers" (in the miscellaneous entertainment and recreation service industry) are classified as guards, watchmen, and door-keepers. "Floorwalkers" and "ushers" in the retail trade industry are classified as floormen and floor managers, store, a detailed occupation subsequently grouped at the major level with managers, officials, and proprietors, except farm. However, the man who shows you to your seat at the symphony and "floorwalkers" in hotels and lodging places are grouped, respectively, with ushers, recreation and amusement and policemen and detectives, two detailed occupations ultimately assigned at the major level to service workers, except private household.

Other cases in which the detailed occupational code departs from a criterion of task similarity

[11] For information concerning these unions, see Frederick G. Ruffner, Jr., and others, eds., Encyclopedia of Associations, Vol. I, National Organizations of the United States, 4th edition (Detroit, Michigan.: Gale Research Company, 1964) pp. 859ff.

in job classification could be supplied by scanning the Classified Index of Occupations and Industries. But the point is apparent enough: to the extent that the detailed occupations identified by the Bureau of the Census are themselves heterogeneous, one is frustrated in attempting to form relatively broad occupational groups, in assigning prestige or socio-economic status scores to detailed occupations and in using the distribution of the labor force over detailed occupations to form anything but a vague impression of the job skills currently being exercised by employees. Certainly, the detailed occupational titles provide no sure guide to the actual content of the detailed occupational codes; the user of census occupational statistics must be prepared to examine the Classified Index of Occupations and Industries before drawing any definitive conclusions from inter-occupational comparisons.

THE FORMATION OF OCCUPATIONAL CLASSES

Sociologists have evidenced little interest in detailed occupational statistics; like the political economists in the late 19th and early 20th centuries they have been primarily concerned with the aggregation of individual reports upon jobs into relatively broad occupational classes designed to reveal the social class configuration or divide the population according to the principal axes of structural differentiation in society. Many traditional, sociological approaches to the aggregation of occupational data doubtless had and, to a large extent, still have their theoretical roots in Karl Marx's distinctions between the three great social classes of wage laborers, capitalists, and landlords. Remnants of the distinction still exist in the three-fold classification of white collar, blue collar, and farm workers frequently employed in sociological analyses. But Marx, unlike many subsequent writers, was at least conscious that questions bearing upon social class should not be confused with--even though they are related to--questions concerning the occupational division of labor. He observed that it is "well known that modern class differences are not in any way based upon handicraft differences, and that, on the contrary, the division of labour produces very diverse occupations within the same class."[12]

[12] Karl Marx, Selected Writings in Sociology and Social Philosophy, edited by T. B. Bottomore and Maximilien Rubel and translated by T. B. Bottomore (London: C. A. Watts and Company, 1956), pp. 201-202.

However one evaluates the final product, the uneasy wedding between political economy and econometric theory seems to have transformed the earlier concern of economists with the class bases of society into more specific questions about the supply and demand of various job skills and the effects of technological change upon them. During the decades when the economists were changing the focus of their interests in occupational data, sociologists began to question the utility of a unitary concept of "socio-economic status." Rather than regarding income, education, and occupation as resources which individuals transformed into a single, unique position in the social hierarchies of communities, theorists and researchers alike suggested that attitudes, values, and behavior were contingent not only upon the "sum" of these resources, but also upon the particular way in which they were combined. Thus, while the "social value" attached to the resources of a highly educated person with a low income might be roughly equivalent to that associated with the resources of a high income person with little education, there is some question whether or not they belong to the same "socio-economic group." To assign two such respondents to the same class ignores differences in the nature of their resources--differences which might well be related to their consumption habits, childbearing patterns, and tastes. However, despite the apparent abandonment of interest in social class configurations by economists and the growing conviction of sociologists that a unitary measure of "socio-economic status" or class is not sufficient to describe a person's location in the social stratification system, the aggregation of occupational data into broad groups continues to be dominated by a conception which equates "occupational classes" with "socio-economic groups."[13]

The earliest census reports on the occupations of the people did not admit of aggregation according to "socio-economic status." For example, the British Censuses of 1801, 1811, and 1821 identified only three broad occupational pursuits: (1) those chiefly employed in agriculture, (2) those chiefly employed in trade, manufacture, or handicraft, and (3) those not

[13] This point and many others raised in this paper are also discussed by Scoville, op. cit., pp. 317-323. Indeed, in writing this paper it became increasingly clear as we moved from one point to another that we were treading ground already covered by Scoville's short and generally excellent review of problems of occupational classification.

employed in the preceding two classes.[14] The Sixth Census of the United States (1840) called only for the enumeration of the number of persons in each family employed in mining, agriculture, commerce, manufactures and trades, navigation of the ocean, navigation of canals, lakes and rivers, and learned professions and engineers.[15] These early efforts to describe the occupational distribution of the population over a few broad groups were, however, soon replaced by the collection and publication of more detailed statistics which admit of summary by aggregation in various ways.[16] In many instances, researchers chose to invoke criteria of aggregation which make no reference at all to "socio-economic status." For example, in his many discussions of British occupational statistics in the late 19th and early 20th centuries, Welton employed a distinction which amounts to whether occupational pursuits are required ubiquitously in order to service populations or are necessitated primarily by the economic bases of particular communities. In his own words,

> The secondary occupations are those connected immediately with the consumption of articles of necessity, and with the supply of the daily wants of the population. The primary occupations are those which are connected with the production and manufacture and traffic in articles, afterwards to fall into the hands of the secondary class, and in general all occupations which do not subserve merely the supply or benefit of the neighboring population, but also that of distant places, or which are necessary for the fulfillment of national requirements.[17]

Attempts to create broad occupational classes according to the way particular jobs or detailed occupations are articulated with the needs of local or national populations tend, however, to confuse the distinction between industries and occupations. More importantly, such a basis of occupational classification was hardly suitable for the investigation of the poverty of wage laborers and the effects of industrial change upon labor--questions perennially raised, but only periodically consuming economic and social investigators as they did in the late 19th century and show evidence of doing today.[18]

By 1911, Isaac A. Hourwich could still observe, "Our population statistics, however, have heretofore taken no cognizance of economic classes."[19] He then proceeded to undertake

---

[14] For a discussion of 19th century, British occupational statistics, see Charles Booth, "Occupations of the People of the United Kingdom, 1801-81," Journal of the Statistical Society of London, 49 (June, 1886), pp. 314-435.

[15] Carroll D. Wright, The History and Growth of the United States Census (Washington, D. C.: U. S. Government Printing Office, 1900), pp. 142ff.

[16] The 1855 New York State Census adopted, for example, a classification involving several hundred detailed occupational groups. In many ways this early classification is superior to that employed by the U. S. Bureau of the Census prior to 1930, since it avoids much of the confounding between industry and occupation which was especially pronounced in early Federal censuses. See New York (State), Secretary of State, Census of the State of New York for 1855 (Albany, N. Y.: Charles Van Venthuysen, 1857), pp. 178-195.

[17] T. A. Welton, "On the Classification of the People by Occupations and On Other Subjects Connected With Population Statistics of England," Journal of the Statistical Society of London, 32 (September, 1869), p. 274. Among Welton's many analyses and discussions of British occupational statistics are the following papers: "On the English Census of Occupations, 1871," Transactions of the Manchester Statistical Society, Session of 1875-76, pp. 51-110; "On Forty Years' Industrial Changes in England and Wales," Transactions of the Manchester Statistical Society, Session of 1897-98, pp. 153-243; "On the 1891 Census of Occupations of Males in England and Wales, so far as Relates to the Large Towns and to the Counties after the Exclusion of Such Towns," Transactions of the Manchester Statistical Society, Session of 1897-98, pp. 244-266; "The Occupations of the People of England and Wales in 1911, from the Point of View of Industrial Developments," Transactions of the Manchester Statistical Society, Session of 1914-15, pp. 47-170.

[18] On statistical activities in the late 19th century, see T. S. Ashton, Economic and Social Investigations in Manchester, 1833-1933 (London: P. S. King and Son, 1934), especially pp. 99-107.

[19] Isaac A. Hourwich, "The Social-Economic Classes of the Population of the United States, I," Journal of Political Economy, 19 (March, 1911), p. 188.

a socio-economic grouping of the detailed occupations identified in the reports of the decennial censuses. Hourwich did not choose to elaborate at length upon the problems encountered in construction of his grouping, remarking that

> . . . just as we find no difficulty in assigning a vertebrate and a tree to distinct realms of nature, although a bacteriologist might hesitate where to place certain microbes, so in a complex society like ours the existence of a few leading classes should not be obscured by the recognition of the parallel existence of intermediate or transitional social groups. To be sure, it is impracticable to apply to the occupation groups of the census the familiar classical division of society into landowners, entrepreneurs, and laborers. We may accept as satisfactory a scheme of classification which divides the population into indecomposable social groups or strata. . . [20]

Without further elaboration, Hourwich proceeded to present his classification, which, within the limitations of the then current detailed occupational classification, resembled rather closely the major occupation groups still employed in occupational tabulations of the U. S. Bureau of the Census.

Hourwich clearly hit upon a popular note, for Alba Edwards was soon at work on precisely the same problem.[21] By 1933, Edwards had culminated his investigations, publishing a socio-economic grouping of occupations which in many essential details remains equivalent to the major occupation groups currently identified by the U. S. Bureau of the Census.[22] Dividing manual workers into three levels on the basis of skill, Edwards formed six broad divisions--(1) professional persons, (2) proprietors, managers, and officials, (3) clerks and kindred workers, (4) skilled workers and foremen, (5) semiskilled workers, and (6) unskilled workers--which he regarded as ordered according to their "socio-economic status." The resemblance of this classification to the major occupational groups currently in use is apparent and requires no further comment.

We have already provided above some indications that the major occupation groups currently employed by the U. S. Bureau of the Census do not adequately fulfill a criterion of classification based on task similarity. It is also the case that, despite the obvious use of socio-economic criteria to form them, they do not comprise a grouping of detailed occupations effected on the basis of status alone. From recent studies of occupational prestige, we know, for example, that the ratings assigned by respondents to specific jobs or occupations falling in different major occupational groups overlap appreciably.[23] When the average income and average years of school completed by the incumbents of detailed occupations are used to assign them a socio-economic status score, one also finds an appreciable overlap in the scores achieved by the detailed occupations falling in different major occupation groups.[24] Thus, many sociologists would doubtless prefer to see detailed occupational statistics aggregated into broad classes explicitly on the basis of social status, without any reference to the task similarities of the specific occupations classified into identical major levels. In a study of graduate student finances, James A. Davis, for example, rejects the major occupation groups employed by the U. S. Bureau of the Census because they "present some difficulty when used as a measure of prestige."[25] One can, of course, appreciate the sociologist's need for a classification of occupations on the basis of status alone. Where occupation is the only measure of economic well-being or social evaluation available to a researcher--as is the case with death registration and marriage license application statistics and is often the case in sample surveys of intergenerational mobility--then the investigator may choose to analyze his materials by effecting a grouping of occupational returns on the basis of their

---

[20] Ibid., pp. 189-190.

[21] Alba M. Edwards, "Social-Economic Groups of the United States," Journal of the American Statistical Association, 12 (June, 1917).

[22] Alba M. Edwards, "A Social-Economic Grouping of the Gainful Workers of the United States," Journal of the American Statistical Association, 28 (December, 1933), pp. 377-387.

[23] See, for example, Robert W. Hodge, Paul M. Siegel, and Peter H. Rossi, "Occupational Prestige in the United States, 1925-1963," American Journal of Sociology, 70 (November, 1964), pp. 286-302.

[24] See Otis Dudley Duncan, "A Socioeconomic Index for All Occupations," in Albert J. Reiss, Jr., and others, Occupations and Social Status, op. cit., pp. 109-138.

[25] James A. Davis, Stipends and Spouses (Chicago, Ill.: University of Chicago Press, 1962), p. 25.

prestige or socio-economic level. While this particular need might best be met by revising the current major occupation groups into occupational classes homogeneous with respect to status and/or economic position, we do not feel that this need is urgent enough to offset the general disadvantages of the resultant heterogeneity of occupational groups with respect to task similarity of the specific jobs and detailed occupations aggregated to form its broad divisions.

If the occupational codes currently in use were to be extensively revised, we would prefer to see an attempt made to create more homogeneous groupings of specific jobs at the detailed level and an attempt to use generic features of job tasks--such as their complexity--to form revised divisions at the major level. There are several reasons why we believe such a revision would be superior to one in which the Bureau of the Census either produced groupings of detailed occupations solely on the basis of some estimate of their socio-economic position or abandoned current tabulations by major occupation groups in favor of tabulations by some composite status index. First, if detailed occupations were formed according to the task similarity of specific jobs, one might expect relatively more detailed occupations to be identified in published statistics than is currently the case. These occupations, though perhaps numerically small in many instances, would at least be relatively more homogeneous. Under such a situation, individual researchers would violate empirical reality much less by assigning the specific jobs grouped into a detailed occupation the same status or prestige score and, of course, published tabulations at the detailed level would still leave the researcher free to form his own classification of occupations according to status as he best saw fit. Second, resort to a major grouping of occupations based solely on status distinctions between them ignores the fact that many interoccupational differences are not attributable to socio-economic differences, but to other features of occupations such as their work settings, the kinds of objects and symbols manipulated by their incumbents, and the responsibilities incurred by their performance.

BROAD OCCUPATIONAL CLASSIFICATIONS

Two different standardized procedures for grouping detailed occupations into relatively gross occupational categories are currently available to research workers. One, the major occupation groups of the U. S. Bureau of the Census, employs socio-economic considerations among other criteria to effect an occupational typology. The other, the classification presented in the revised Dictionary of Occupational Titles, employs the criteria of work tasks and work settings to a much greater extent, especially among manual workers. A comparison of these two classifications and their relationship to socio-economic correlates is of some interest, since a decision to adopt either one or both of them in a particular research situation should be informed by knowledge of the relationship between them and of their associations with other standard indicators of social status and related phenomena.

Distributions of the labor force are not published according to the categories recognized in the revised Dictionary classification. Consequently, in order to compare census major occupation groups to those recognized in the Dictionary of Occupational Titles, it is necessary to aggregate published, detailed occupational statistics into the Dictionary codes. Nine broad occupational groups are recognized in the Dictionary classification: (1) professional, technical, and managerial occupations, (2) clerical and sales occupations, (3) service occupations, (4) farming, fishery, forestry, and related occupations, (5) processing occupations, (6) machine trades occupations, (7) bench work occupations, (8) structural work occupations, and (9) miscellaneous occupations. In order to tabulate the labor force according to these divisions, we used the Dictionary of Occupational Titles and the Classified Index of Occupations and Industries to assign each title identified in the detailed occupational classification of the U. S. Bureau of the Census to one of the nine major divisions recognized in the Dictionary classification. The assignment of the detailed occupational categories to the nine broad groups recognized in the DOT (Dictionary of Occupational Titles) code was not wholly satisfactory, for some of the specific occupations assigned to the detailed census codes actually fall into different major categories of the DOT classification. However, the allocation of detailed census occupations to the major DOT divisions is sufficiently precise to permit gross comparisons between the census major occupation groups and the broad DOT categories.

For the total experienced civilian labor in 1960, exclusive of those not reporting occupation and "former members of the armed forces," Table 2 shows the relationship between the major occupation groups of the U. S. Bureau of the Census and the broad categories of the DOT classification. As one can

Table 2.--Relationship of Census Major Occupation Groups to Revised Dictionary Classification, Total Experienced Civilian Labor Force, 1960

Major Occupation Groups	Classifications Used in Revised Dictionary of Occupation Titles									Total Per Cent	Number In Total ECLF (In Thousands)
	Professional, Technical, and Managerial Occupations	Clerical and Sales Occupations	Service Occupations	Farming, Fishery, Forestry, and Related Occupations	Processing Occupations	Machine Trades Occupations	Bench Work Occupations	Structural Work Occupations	Miscellaneous Occupations		
	Percentage Distribution										
Total ECLF	20.0	22.5	13.7	6.8	10.2	5.9	3.2	7.1	10.6	100.0	64,518
Professional, technical, and kindred workers.	98.6	...	0.5	0.5	...	...	...	...	0.4	100.0	7,336
Managers, officials, and proprietors, except farm	98.2	0.2	...	...	...	...	...	...	1.6	100.0	5,490
Clerical and kindred workers.	3.0	95.5	...	...	...	...	...	...	1.4	99.9	9,617
Sales workers . .	...	100.0	...	...	...	...	...	...	...	100.0	4,801
Craftsmen, foremen, and kindred workers	0.0+	0.6	0.4	...	2.1	37.2	3.2	35.0	21.6	100.1	9,223
Operatives and kindred workers.	0.0+	3.4	4.7	...	43.8	2.8	13.5	3.4	28.3	99.9	12,846
Service and private household workers	...	...	100.0	...	...	...	...	...	...	100.0	7,590
Laborers, except farm and mine .	...	...	15.6	7.3	20.8	1.5	0.9	26.6	27.4	100.1	3,530
All farm workers .	...	...	...	100.0	...	...	...	...	...	100.0	4,085

Compiled from U.S. Bureau of the Census, 1960 Census of Population, Detailed Characteristics, United States Summary, Final Report PC(1)--1D (Washington, D.C.: U.S. Government Printing Office, 1963), Table 201, pp. 522-527.

see from the tabulation in Table 2, two of the DOT categories are essentially combinations of divisions recognized in the major occupation code of the U. S. Bureau of the Census. Although there are minor exceptions, the DOT category identified as professional, technical and managerial occupations is basically just a combination of the major occupation groups identified as professional, technical, and kindred workers and managers, officials, and proprietors, except farm. Similarly, the DOT category of clerical and sales occupations is basically just a combination of the major occupation groups specified as clerical and kindred workers and sales workers. However, among manual workers the fit between the census major occupation groups and the DOT categories is much less perfect. The major occupation group identified as craftsmen, foremen, and kindred workers is basically split into three of the DOT groups: machine trades occupations, structural work occupations, and miscellaneous occupations. The major group operatives and kindred workers is likewise dispersed between the DOT categories; two-fifths fall in processing occupations, three-tenths in miscellaneous occupations, and a little more than one-tenth are assigned to bench work occupations. The census category laborers, except farm and mine is also

divided among the broad DOT divisions--roughly one-fourth to one-fifth fall in the DOT groupings of processing occupations, structural work occupations, and miscellaneous occupations, while another 15 per cent of laborers are assigned by the DOT to service occupations. The DOT category of service occupations is comprised of all persons in the major census group identified as service and private household workers, together with a sizeable number of persons falling in the census categories operatives and kindred workers and laborers, except farm and mine. Finally, the DOT category referred to as farming, fishery, forestry, and related occupations is basically comprised of the major occupation groups identified as farmers and farm managers and farm laborers and foremen (collapsed in Table 2 as all farm workers) along with 7 per cent of the census category laborers, except farm and mine.

In sum, the broad DOT groups retain for most practical purposes the distinction between white collar and blue collar occupations as found in the major occupation groups of the U. S. Bureau of the Census. However, among white collar occupations, the DOT employs a more coarse grouping than the census major occupation classification, combining the four census codes among white collar occupations to two groups. Among blue collar occupations, the DOT categories completely revise the census groups, substituting a division based on work tasks for the skill gradient employed in the census code. In addition, the DOT classification does not identify farm workers as such, placing them together with occupations in the related extractive industries of fishing and forestry.

SOCIO-ECONOMIC CHARACTERISTICS OF OCCUPATIONAL GROUPS

In addition to the direct comparison of the broad DOT categories and the major census occupation groups, we have also aggregated the income and educational distributions of the detailed census occupations falling into each of the DOT categories. This enables us to contrast the relationship of the census and DOT occupational groupings to two standard indicators of social status. Relevant summary statistics are shown in Table 3, which gives the mean income and mean years of school completed for the male experienced civilian labor force in each DOT group as well as for the major occupation groups of the U. S. Bureau of the Census.

As the reader can see from Table 3, the major occupation groups of the U. S. Bureau of the Census tend to fall along a socio-economic gradient defined by education and income. Both the manual and non-manual groups are differentiated by income and education, a point which is not surprising since skill levels were used as explicit criteria for defining the manual categories and such factors as income and education taken as guidelines for devising the distinctions between white collar occupations effected by the major occupation groups. The socio-economic grading of the DOT categories is not so readily apparent as that observed among the major occupation groups of the U. S. Bureau of the Census. This is especially true for the manual categories: nearly identical levels of average income and education are observed for processing occupations, machine trades occupations, bench work occupations, structural work occupations, and miscellaneous occupations. The DOT classification makes clear that the socio-economic differentiation of manual workers does not depend in any important way upon a gross differentiation of the kinds of tasks performed and the situations in which they are carried out. Instead, the differentiation of manual workers appears to rest upon entry requirements and skill levels which cut across gross divisions of task characteristics and functional settings.

In addition to the mean levels of education and income within each of the broad occupational groups identified in the census and DOT classifications, Table 3 also shows the correlation ratios of individual income and years of school completed with both the major occupation groups of the U. S. Bureau of the Census and the DOT classification. Despite the differences in the two classification schemes at the manual level, both explain roughly the same proportion of the total variation in the income and education of individuals. As one would expect, the correlation ratios of income and education on the DOT classification are less than the corresponding correlation ratios on the major occupation groups of the U. S. Bureau of the Census. The two sets of correlations are not, however, substantially different, indicating that the use of skill levels to distinguish grades of manual workers has little overall effect in the proportion of variation in individual income and education explained by the census' major occupation groups. That the correlation ratios are not identical, though roughly of the same magnitude, is testimony to the point that there is no single set of correlation coefficients which adequately summarize the relationships between occupation and other indices of social status. The correlation between occupation and any variable is in part a function of one's

Table 3.--Income and Years of School Completed by Census Major Occupation Groups and the Revised Dictionary Classification, Male Experienced Civilian Labor Force, 1960

Occupation Groups	1959 Income (In Thousands of Dollars	Years of School Completed
	Means	
Major Occupation Groups		
Professional, technical, and kindred	7.7	15.3
Managers, officials, and proprietors, except farm	8.1	12.3
and kindred	4.9	12.0
Sales workers	5.8	12.0
Craftsmen, foremen, and kindred	5.4	10.2
Operatives and kindred	4.4	9.5
Service and Private household	3.6	9.6
Laborers, except farm and mine	3.2	8.5
All farm workers	2.7	8.6
D. O. T. Classification		
Professional, technical, and managerial	7.9	13.8
Clerical and sales	5.2	11.8
Service	3.5	9.5
Farming, fishery, forestry, and related	2.7	8.6
Processing occupations	4.4	9.3
Machine trades occupations	5.1	10.0
Bench work occupations	4.5	9.9
Structural work occupations	4.7	9.6
Miscellaneous occupations	4.9	9.8
Total, All Occupations	5.2	10.8
Association with	Squares of Correlation Ratios	
Census Major Occupation Groups	.2052	.2948
D. O. T. Classification	.1860	.2457

Source: Compiled from U. S. Bureau of the Census, 1960 Census of Population, Subject Reports, Occupational Characteristics, Final Report PC(2)--7A (Washington, D. C.: U. S. Government Printing Office, 1963), Table 9, pp. 116-129, and Table 25, pp. 296-315. Persons not reporting on occupation and "former members of the armed forces" are excluded from the figures shown in this table; income and education means were derived by scoring the intervals identified in the census tabulations according to their midpoints and setting then open-ended, upper intervals equal to the arbitrary values of $18,000 for income and eighteen years for education.

choice of occupational classification and the criteria upon which it is based. The indeterminancy of the association between occupation and other variables is also augmented by the problem of intellectual, if not wholly logical, circularity when the criteria of occupational classification are also the variables whose relation to occupation is in dispute.[26]

From the perspective of the sociologist, there is no comprehensive answer to questions

[26] This point is discussed by Pascal K. Whelpton and Edward Hollander, "A Standard Occupational and Industrial Classification of Workers," Social Forces, 18 (May, 1940), pp. 488-494.

involving the relative merits of the census and DOT classifications. In studies of differential mortality, fertility, life style, and social values where occupation is used as a surrogate for social status, then the major occupation groups of the U. S. Bureau of the Census are preferable. However, in these situations there are alternative strategies for coding occupations according to their social status which are superior to using the major occupation groups.[27] In other research contexts, as for example in studies of work satisfaction, the broad DOT groups may be more suitable than the census classification. Ultimately, however, there is little point in evaluating the relative merits of the two broad occupational groups under discussion. What is needed is discussion of revisions of the entire occupational code, at the detailed level, so as to effect occupational categories more homogeneous with respect to the actual tasks performed in the specific jobs assigned to each occupational code.

PROBLEMS OF COMPARABILITY

Although we have argued in this paper that several advantages might be expected to accrue from attempts at revising the detailed census code in order to achieve greater homogeneity within detailed occupations, we do not believe that those revisions and the advantages which might flow from them warrant sacrificing intercensal comparability in any degree. Elaborations of the existing occupational classification which permit of aggregation to the groups identified in previous censuses are, of course, entirely acceptable. Changes which destroy the validity of intercensal comparisons--such as the shifting between 1940 and 1950 of accountants and auditors from clerical and kindred workers to professional, technical, and kindred workers--are not acceptable. However plausible such changes might be for the cross-sectional uses of the census, the price of intercensal changes in definition seems too high to pay. One's ability to undertake studies of social change in the labor force and to effect age cohort comparisons in occupational attainment is restricted by such revisions, yet the study of the trends obscured by changes in definition forms, at least for the sociologist, a major focus of interest in census statistics.[28] Our view is that modifications of the currently employed occupational code should be effected only if one of the following three conditions are met: (1) the changes are only elaborations of the existing code and permit, therefore, aggregation to classifications employed in previous censuses, (2) extensive revisions are made, but large subsamples of previous censuses are drawn, recoded with the new scheme, and tabulated so as to effect comparability with current reports of occupation specific to age, sex, race, education, income, etc., or (3) a revised occupational scheme is used only to supplement rather than replace tabulations according to the classification employed in previous censuses. Doubtless this makes us, at ages under thirty, stodgy old men with fat cigars. But it is our life expectancy which makes us recalcitrant to change: we can look forward to the prospect of examining occupational changes from 1940 to 2000, but we shall never be able to accomplish it if in 2000 we look backward over a tangle of major and minor intercensal revisions in the occupational code effected without adequate regard for problems of comparability.

A fairly large number of changes in the detailed occupational classification of the U. S. Bureau of the Census were effected between 1950 and 1960. Many of these revisions involve the identification of new titles and were designed to ease the numbers of the labor force falling into the "not elsewhere classified" categories observed at each major occupation level. Among the new lines appearing in the detailed occupational classification for 1960 are receptionists, postal clerks, payroll and timekeeping clerks, and file clerks in the major occupation group clerical and kindred workers; assemblers, checkers, examiners, and inspectors, manufacturing, graders and sorters, manufacturing, knitters, loopers, and toppers, textile, packers and wrappers, n. e. c., and sewers and stitchers, manufacturing, in the major occupation group operatives and kindred workers; and carpenters' helpers, truck drivers' helpers, and warehousemen, n. e. c. in the major occupation group laborers, except farm and mine. On the whole, these changes seem like modest and useful elaborations of the 1950 detailed occupational code. The only trouble with them and with other changes effected between 1950 and 1960 is that it is impossible to reconcile the changes so as to effect exact comparability

---

[27] See Duncan, op. cit.

[28] Recent studies dependent upon one's ability to effect age cohort comparisons of occupational attainment between different censuses are Paul M. Siegel, "On the Cost of Being Negro," Sociological Inquiry, 35 (Winter, 1965), pp. 41-57, and Otis Dudley Duncan, "Occupation Trends and Patterns of Net Mobility in the United States," Demography, 3 (May, 1966) pp. 1-18.

between the 1950 and 1960 classifications. At least one of the changes which we can pinpoint crosses the lines of major occupation groups--the very kind of change which tends to invalidate even gross occupational comparisons. In the 1950 occupational classification, the detailed occupation insurance agents and brokers was placed in the major occupation group sales workers. Adding Alaska and Hawaii returns to the 1950 census reports indicates that there were 304,633 employed persons in this group. In the 1960 census code, we no longer have a line for insurance agents and brokers; instead we find a line identified as insurance agents, brokers, and underwriters. The reports of the 1960 census inform us that as of 1950 there were exactly 272,663 insurance agents, brokers, and underwriters, a figure which falls 32,000 short of the number of insurance agents and brokers we can find in the returns of the 1950 census. Further examination of the 1960 occupational classification suggests that these 32,000 insurance agents and brokers did a disappearing act from the major occupation group sales workers to the major occupation group clerical and kindred workers. The 1960 occupational classification provides for a line among clerical and kindred workers identified as insurance adjusters, examiners, and investigators. This line did not appear in the 1950 occupational classification but the 1960 census reports inform us that as of 1950 there were exactly 32,000 persons employed as insurance adjusters, examiners, and investigators. This is just the number of insurance agents and brokers we are lacking and one presumes that in creating the new line--insurance adjusters, examiners, and investigators--among clerical and kindred workers the census officials decided to fill it up with some sales workers, in particular with insurance agents and brokers.

The reports of the 1960 census are themselves of little help in pursuing the kind of detective work, illustrated above, which is necessary to reconcile the 1950 and 1960 occupational classifications. To the best of our knowledge there is no published document which details the changes in classification and their effects on intercensal comparisons. In the 1960 census reports, we can find only the comforting assurance that,

> The occupational classification system used in 1940 and 1950 is basically the same as that of 1960. There are a number of differences, however, in title and content for certain items, as well as in the degree of detail shown for the various major groups.[29]

The precise nature of these differences is not apparently to be revealed in published documents, a deficiency which can only discourage one's faith in intertemporal comparisons. As Charles Booth complained of the British occupational statistics some eighty years ago,

> . . . there is such a want of fixity of principle or method, that even competent authorities have been seriously misled regarding the apparent results. Possibly these changes were to a large extent necessary or unavoidable, but surely attention might have been drawn to them and some explanation given, instead of which there is not even so much as a footnote. The seeker after information is left to grope his way in the dark; if by chance he stumbles on the truth, well and good, if not he but adds his quota to the enormous total of false information before the public.[30]

Changes in classification without proper attention to comparability are abhorrent enough; failure to detail these changes and provisions of guidelines for effecting comparability with earlier returns is inexcusable.

CONCLUSIONS

The purpose of this paper was to review problems of occupational classification from the perspective of the use of occupational statistics in sociological research. The most important deficiency in the occupational classification currently employed by the U. S. Bureau of the Census is heterogeneity of the specific jobs assigned to many detailed occupational codes. Lack of homogeneity in detailed occupations makes it risky for the sociologist to assign a unique socio-economic status or prestige score to all individuals falling into each detailed occupational category. A further problem with the current classification is the method of its construction: implicitly and explicitly many characteristics, ranging from industrial affiliation and class of worker to skill level and entry requirements, are used to define the occupational aggregates identified in the detailed census code. However, for

---

[29] U. S. Bureau of the Census, 1960 Census of Population, Subject Reports, Occupational Characteristics, Final Report PC(2)--7A (Washington:D. C.: U. S. Government Printing Office, 1963), p. xiv.

[30] Booth, op. cit., p. 318.

sociologists and economists alike, some of the most signal questions which can be posed of occupational statistics concern the relationship between occupation, skill levels and training requirements and the interlarding of the occupational and industrial divisions of labor. It is difficult to devise cogent answers to these queries when the variables of central interest have already been employed, either in whole or in part, to help define occupational groups.

Some of the difficulties posed with current classification schemes could be eased, in our opinion, by a complete revision of the system of occupational classification aimed at devising new categories of specific jobs which are very homogeneous in the work tasks performed by their incumbents. Such a classification should give a much better overall impression of the job skills actually utilized by the labor force; it would also involve a more elaborate coding system in which the total number of detailed occupations identified would be several times the number of detailed occupational codes recognized in the present system of classification.

Comparability with previous censuses poses the most severe barrier to effecting an extensively revised system of occupational classification. Unless government agencies are willing to publish statistics by both the old and a revised system of classification or recode and retabulate older censuses with a new system, changes in occupational classification must be limited to modest elaborations of the existing system. This is perhaps a high price to pay for comparability, but we believe that most sociologists, economists, and even many local users of census statistics would prefer to cope with the inadequacies of the present, detailed occupational codes than lose the reasonable, if not precise, correspondence of the present system with the classifications employed in 1940 and 1950.