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Study of the past may be the only rational basis for assessment of the future, but history never repeats itself. Impaled on the horns of this dilemma, I have been contemplating the relevance of study of past census data to assessment of future trends in occupational differentials. I should like to speak briefly to the uses of the past, then marshall evidence for the irrelevance of the past, and finally outline the beginnings of a rather complicated and unsatisfying resolution.

As a demographer who has wandered into the domains of race relations and occupational structures, I carry with me the demographer's predilection for differentiating between prediction and projection. Demographers' predictions in the 1930's of imminent population decline have been confronted with the harsh reality of 200 million Americans. From this bitter experience it has become a matter of professional image-building to maintain that we project rather than predict.

The art of projection flourishes. Past trends in components of population change (fertility, mortality, immigration, emigration) can be measured and plausibly narrow limits can be placed on likely short-term future trends in all except fertility. Even though birth rates fluctuate in pesky fashion, sophisticated analysis of detailed data can remove many irregularities from the series.

Extension of the projection model to subpopulations, such as occupation groups, is feasible conceptually, but processes of entry and exit into a sub-population are much more complicated and past trends are very inadequately measured. Hence reliance tends to be placed on rather straight-forward extrapolation techniques.

The extrapolation approach at its simplest takes trends in white and Negro occupational distributions among major census categories (Table 1) and carries them forward. The implicit model tends to be an occupational structure initially resembling a caste situation (with Negroes at the bottom) but now being transformed in more or less regular fashion by Negroes pushing up into successively higher occupational strata. Each of us can speculatively add to Table 1 a column representing 1970 or 1975. I need not belabor the limitations of this means of projection. It can be improved upon by assembling a more detailed occupational series and calculating appropriate indices of change in racial composition, but a convincing rationale for any specific extrapolation system is difficult to provide.[1]

Another approach is to extrapolate flows or change processes rather than successive crosssectional distributions. A recent instructive example is provided by Lieberson and Fuguitt's use of an intergenerational occupational mobility tabulation as the basis for a transition matrix in a Markov process.[2] A supplement to the March, 1962, Current Population Survey, "Occupational Changes in a Generation," provided a tabulation of occupation of father by occupation of son.[3] This yielded an intergenerational transition matrix for major occupations. The initial white and Negro occupational distributions (for 1960) were quite dissimilar. Application of the matrix yielded second generation distributions much less divergent one from another (index of dissimilarity declined from 40 for the first generation to 13 for the second.). By the third generation the occupational distributions were very similar (index of dissimilarity of 4). Lieberson and Fuguitt also considered a process in which a father-son educational level transition matrix was applied to whites and Negroes alike. If Negroes were to translate educational attainment into occupational level in the same manner as whites, then two generations of "racially neutral" father-son educational mobility would yield highly similar white-Negro occupational distributions.

In summary, the Lieberson-Fuguitt analysis shows that application of white intergenerational mobility patterns (whether of education or of occupation) to Negroes would greatly reduce white-Negro occupational differences in one generation and would virtually eliminate them in two generations. I have four brief comments on these results:

1) The speed of convergence is more rapid than might have been expected given discussion of a vicious circle of disadvantages and a culture of poverty. The occupational stratification system in the United States is sufficiently open that low origins, in and of themselves, are not an impenetrable barrier to occupational advance. On the other hand, two generations represent about 40 years according to the assumptions of the model, and this assumes instant complete elimination of race as a factor in occupational mobility. Each year is a long time from the perspective of those seeking rapid change.

2) The model has no acceptable rationale as a basis for prediction. The authors freely acknowledge that "occupational structure and changes in structure could not be deduced from intergenerational occupational mobility."

3) The results speak mainly to the character of the basic transition matrix. There are no occupational statuses which are excessively difficult to get into or out of. Hence the character of the initial occupational distribution of Negroes makes little difference. The cube of the matrix is nearly at equilibrium. Hence only two generations suffice to redistribute Negroes and whites nearly to the equilibrium distribution.

4) The fact that white and Negro occupational distributions have been and continue to be divergent probably means that the intergenerational occupational mobility matrix for Negroes differs from that for whites. The instant substitution of a new matrix for Negroes being grossly unrealistic, attention should be directed to the difference.

The separate matrices were unavailable to Lieberson and Fuguitt, but were subsequently assembled and examined by Duncan.[4] The summary Negro intergenerational occupational mobility matrix is radically different from that for whites. Paradoxically, as pointed out by Duncan, its dominant feature is a form of equalitarianism. Among Negroes, for each father's occupation a majority of sons obtains unskilled or semiskilled employment. Among whites, most sons retain or improve upon father's occupational level. Differences between Negro and white intergenerational mobility processes in part represent the educational and other disadvantages experienced by Negroes, but in large part are attributable to racial discrimination in the labor market. Transformation of the Negro matrix into the white matrix, therefore, would require a variety of substantial social changes.

There are a number of technical difficulties with this application of a transition matrix, such as the indefinite time period to which it applies, the disregard of differential fertility, the glossing over of patterns of occupational mobility within a career, the difficulty of bringing to bear other relevant variables such as educational level of father and son, and the assumption that a single transition matrix adequately characterizes a variety of social mobility processes. Many of these difficulties can be overcome to some degree by consideration of more complex sets of mobility data. Yet this would still not solve the extrapolation problem-how rationally to designate the appropriate Markov or other stochastic process for projection into the future.

To be sure it should be possible to concoct a rationale for some particular approach. But my concern is more deep-seated, arising from that side of the original dilemma that says that history never repeats itself. In very large measure the history of occupational transformations cannot repeat itself. The Negro mobility matrix for the first half of this century was dominated by the transformation from farm origins to nonfarm activities. This transformation occurred through mass migration and urbanization and a restructuring of the total labor force. In 1966, three-fourths of all Negroes lived in cities and only 6 per cent of employed Negro males were farmers or farm laborers. This particular transition has largely run its course; it cannot continue. The majority of employed Negro males holds unskilled or semi-skilled jobs in the laborer, operative, and service categories. If the Negro occupational distribution is to converge toward that of whites, the next great transition must be into the skilled and white collar levels. To be sure mobility matrices from the past entail movement from lower manual jobs to higher levels, but the flows were small in magnitude. A radical change in magnitude would necessarily involve considerable change in the structure of flows. At the minimum, the manner in which the total occupational structure can change imposes constraints on the possible Negro mobility patterns and imposes a dependence of white and Negro patterns on one another.

There is an additional difference of future from past, and that is the likely degree of deliberate intervention into the racial aspects of occupational mobility, intervention by private pressure groups as well as by various levels of government. The aggregate rate of economic growth may or may not dominate future employment trends as many would argue it has in the past, but the number, variety, and effectiveness of specific programs to foster Negro occupational mobility seem certain to increase.

The final task set for this discussion is to move toward a resolution of the dilemma. Obviously we must project, and obviously we must rely on the past. The question is not whether the past is a satisfactory basis for projection-it isn't--but how best to use the past. I would like to draw an analogy to the situation confronting demographers in the 1930's. Trends in natural increase seemed subject to linear or logistic extrapolation. The net reproduction rate, a recently derived descriptive measure, seemed to provide a basis for prediction--it was even called an "intrinsic" rate. These simple techniques proved inadequate, however, and it required two decades of developments in data (cohort fertility series) and techniques to reach the current state of the art. Whatever the shortcomings of national population projections there is at least a clear perception of the relevant population dynamics, specific components can be measured currently and assessed against assumed trends, and the assumptions may easily be modified and new projections made. To attempt to predict future white-Negro occupational differences by simple techniques, is, I would assert, to repeat the mistakes of the 1930's. The equilibrium vector produced by a Markov process is really no more than a descriptive measure of the transition matrix, and hence is no more of a predictive device than the intrinsic rates of a stable population model. Until we have data and techniques for describing the underlying mobility processes, we cannot expect to do very well even at short-term projection of occupational distributions of whites and Negroes.

What are the needed data? I could speculate about the full range of flow data one might like from social security records if detailed occupation and race were available, or from the new Equal Employment Opportunities Commission series if age of worker were available. Clearly we need analysis of the occupational histories of successive cohorts of whites and Negroes and of the forces facilitating and inhibiting Negro occupational mobility. But rather than launch into a general discussion, I should merely like to illustrate the prior importance of taking a much more complex and detailed view of the labor force.

The structure of the labor force involves a matching of skills with tasks, job seekers with prospective employers, occupation with industry. To call attention to the relevance of the industrial dimension to racial occupational trends, the time series in Table 2 suffices to document a wide variation among industries in utilization of Negroes in the unskilled and semiskilled labor forces. Contemplation of these data and of preliminary tallies from a special tabulation of per cent Negro for very detailed occupations and industries from the 1960 Census leads me to suggest an alternative model of occupational assimilation. Earlier I mentioned the common implicit notion of steady movement of Negroes upward in the hierarchy

of major occupations. If the labor force structure is viewed as a lattice of detailed occupations and industries, the channels of Negro advance will probably prove to be much more varied. In particular, there may be certain industries-government being one obvious example--which provide opportunities at a number of occupational levels. Patterns of labor mobility between industries may then serve to disperse Negroes at selected occupational levels without a corresponding Negro presence at other occupational levels lower in the prestige hierarchy. For example, Negro white collar workers may flow from government into various highly regulated industries even though craft unions remain closed to Negroes. Viewing the labor force as a structure of thousands of discrete types of employment may. in the long run, facilitate our ability to identify channels of Negro advance and to anticipate and guide programs of planned intervention.

The dilemma is not resolved. Negro occupational trends cannot be foreseen in detail. But the core of my argument is that the rationality of projections must be increased by expansions of the relevant data base rather than by application of fancier formulae to existing data. As with population projections, the aim should be not perfect prediction but movement toward an ever-improving accounting system which lets us see where we are in some detail and shows us the processes which got us there and are moving us on.

Notes:

- [1] A detailed occupational series for 1940 to 1960 together with indices of change have been assembled by Daniel O. Price for his forthcoming Census Monograph on Negro population. Construction of appropriate indices of change is also addressed in R. David Mustian and C. Horace Hamilton, "Measuring the Extent, Character, and Direction of Occupational Changes," <u>Social Forces</u>, 4 Social Forces, 45 (March, 1967), 440-444.
- [2] Stanley Lieberson and Glenn V. Fuguitt, "Negro-White Occupational Differences in the Absence of Discrimination," American Journal of Sociology, 73 (September, 1967), 188-200.
- [3] Current Population Reports, Series P-23, No. 11.
- [4] Otis Dudley Duncan, "Patterns of Occupational Mobility among Negro Men," paper presented at the 1967 Annual Meetings of the Population Association of America.

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	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professionals	3.3	1.1	3.4	1.1	4.2	1. 5	6.0	1.9	7.0	2.2	11.3	4.0	13.2	4.4
Managers	8.6	1.1	8.6	1.0	9.8	1. 3	10.5	1.7	11.8	2.3	14.6	2.7	14.5	2.6
Clerical and Sales	10.1	1.0	11.4	1.4	14.0	1.7	14.4	2.3	14.6	4.3	13.8	7.0	14.0	7.9
Craf tsmen	15.5	3.6	17.5	4.4	17.5	4.8	15.8	4.5	19.4	8.1	20.0	0.0	20.0	10.3
Operatives, Service, Laborers	30.3	37.6	31.1	43.0	31.2	50.0	31.9	48.4	32.7	59.1	31.0	62.7	31.8	68.3
Farmers	18.9	25.6	17.3	24.9	14.4	21.8	14.3	20.8	10.2	13.3	6.3	5.7	4.5	2.1
Farm Laborers	13.3	30.0	10.7	24.2	8.9	18.9	7.1	20.4	4.3	10.7	3.0	8.9	2.0	4.4
Source: Dale L. Hiestand Econ	nomic Gr	owth and	Employm	ant Onno.	rtimitie	a for Mi	norities	(New Yo	rk: Col	.ull eidmu	l verst tv	Press	1964) T	able
II. 1966 data are for	March,	from Em	ployment	and Ear	nings an	d Monthl	y Report	on the l	abor Fo	rce, 12	(April,	1966), T	able A-2	3, and

KABLE 1.--Occupational Distribution of White and Negro Male Labor Force, 1910-1966

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	La	borers,	n.e.c.	<u></u> /	Operatives, n.e.c. <u>7</u> /
Industry	1910	1930	1950	1960	1910 1930 1950 1960
0 111-					10 / 0.0 0.0 17 5
Sawmills	33.4	37.2	37.8	31.3	10.4 9.0 23.0 17.8
Furniture	5.9	8.2	20.8	22.2	2.0 2.4 6.5 9.2
Glass 1/	7.0	8.8	5.6	7.5	1.4 2.3 3.6 4.1
Cement='				-	5.9 8.4 16.0 16.1
Structural clay	20.4	20.6	21.7	25.6	8.3 8.5 15.1 17.5
Pottery	3.9	6.5	4.3	5.9	0.7 1.2 1.7 3.2
Misc. nonmetallic	10.7	12.4	19.2	18.9	4.0 2.7 5.5 9.8
Motor vehicles	1.2	13.6	25.0	24.4	0.3 2.2 10.3 12.3
Shipbuilding 2/	24.4	26.3	37.4	39.6	3.3 9.3 17.6 17.0
Electrical machinery ²	1.4	3.8	8.5	12.3	
Meat products	9.1	22.5	29.2	24.9	6.1 14.6 20.2 19.7
Canning _{1/}	4.3	11.6	14.1	16.4	2.6 13.0 13.0 19.3
Dairy <u>+</u> /	-	-	-	-	0.2 0.7 3.6 3.9
Grain mills	11.9	15.3	20.7	20.5	6.1 7.2 12.6 15.1
Bakery	10.0	13.4	22.0	18.0	4.1 5.3 9.4 11.3
Confectionery	6.7	9.2	14.7	17.7	2.8 3.8 10.1 12.0
Beverage 2/	7.4	18.6	14.3	22.5	2.4 6.8 6.5 9.3
Misc. and not spec. food $\frac{3}{}$	-	-	-	-	12.0 6.6 16.1 21.7
Tobacco , ,	50.4	62.9	68.3	56.4	10.1 16.1 27.1 29.5
Knitting, $\frac{4}{4}$	-	_	-	-	1.7 0.5 0.9 5.9
Dveing $\frac{4}{4}$	-	-	_	-	1.2 1.1 2.7 5.0
Carpets $\frac{4}{}$	-	_	-	_	2.4 1.0 5.6 6.6
Yarn	9.6	13.8	23.1	24.4	1.0 1.1 4.0 5.1
Misc. textiles $\frac{4}{}$	_	_	_	_	0.7 2.2 7.6 10.9
Apparel 57	7.4	16.0	18.5	23.2	2.3 5.1 4.8 6.7
Misc. fab. textiles $\frac{5}{}$	_	_		_	1.1 1.0 7.2 11.2
Pulp mills	2.6	9.5	23.3	25.5	0.6 1.7 6.2 5.8
Misc. paper	1.6	5.3	22.7	23.1	1.0 1.2 5.4 5.8
Paperboard	2.4	5.1	15.4	16.2	0.6 1.3 8.5 9.8
Printing	15.7	10.4	21.4	19.0	
Synthetic fibers		14.9	14.0	23.4	- 0.8 0.9 2.9
Printe	44	12 3	14.8	16 2	
Drugs and misc chemicals $\frac{3}{2}$	28.0	38 0	34 4	30 %	
Petroleum refining	8 1	10.3	22.8	22 8	
Misc petroleum $\frac{2}{2}$	-	-		-	
Lesther	57	7 0	12 7	10 7	
Footwar 6/	5.7	-	12.1	10.7	
Losther products $\frac{6}{}$	_	_	_	_	
Not open mfg		15 1	2/ 8	20 3	
Not spec. mg.	19.4	21 /	24.0	25.0	
Beilmoede	15 2	21.4	27.0	23.3	
Transportation and talegom	16 0	17 2	27.5	2/./	3.2 0.2 11.7 9.9
Pusipose corriges	10.0	10 7	22.4	17 1	3.3 3.7 10.3 13.0
Dusiness services	4.0	19.7	22.0	1/.1	
Public administration	10.0	22.1	29.7	33.0	
Iraue — 4/	23.9	23.3	20.1	10.9	5.0 6.6 13.6 16.4
Misc. light mrg. 2/	10.9	21.4	13.1	14.9	2.7 3.2 5.3 6.9
misc. neavy mig	6.2	15.4	23.3	22.9	1.6 3.3 6.1 6.9
rersonal services and all other	20.8	20.9	34.2	30.5	6./ 8.0 13.5 16.4
TOTAL	17.2	21.0	25.3	24.3	3.2 4.7 8.7 9.7

TABLE 2, -- Per Cent Negro among Employed Male Laborersand Operatives, by Industry, 1910-1960.

NOTES:

1. For laborers, cement and dairy are included with trade.

2. For laborers, misc. petroleum is included with misc. heavy mfg. For operatives, electrical machinery is included with misc. heavy mfg.

3. For laborers, misc. and not spec. food are included with drugs and misc. chemicals.

4. For laborers, knitting, dyeing, carpets, and misc. textiles are included with misc. light mfg.

5. For laborers, misc. fab. textiles is included with apparel.

6. For laborers, footwear and leather products are included with leather

7. Some specific laborer and operative jobs are separately identified in census tabulations, e.g., longshoremen; the rest are aggregated together as "n.e.c." -- not elsewhere classified.