

A Methodological Inquiry into Social Mobility

Author(s): Saburo Yasuda

Source: *American Sociological Review*, Vol. 29, No. 1 (Feb., 1964), pp. 16-23

Published by: American Sociological Association

Stable URL: <https://www.jstor.org/stable/2094637>

Accessed: 19-12-2019 09:24 UTC

REFERENCES

Linked references are available on JSTOR for this article:

https://www.jstor.org/stable/2094637?seq=1&cid=pdf-reference#references_tab_contents

You may need to log in to JSTOR to access the linked references.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



American Sociological Association is collaborating with JSTOR to digitize, preserve and extend access to *American Sociological Review*

JSTOR

A METHODOLOGICAL INQUIRY INTO SOCIAL MOBILITY *

SABURO YASUDA

Tokyo University of Education

This article contributes three points to the methodology of social mobility. (1) The index of association which is widely used to measure the degree of association between the statuses of two generations is shown to be invalid, and a new index is presented. (2) It is misleading to compare the subject's present job with his father's main job. The author proposes to compare the subject's first job with the job held by his father at the time the subject began his career. (3) Inter-generational mobility can be measured from the viewpoint of the father as well as the son; the former gives a different picture, based on the same data.

SINCE Sorokin's pioneering work, a considerable body of information has accumulated on the subject of social mobility.¹ Concepts and measuring devices have not yet been sufficiently refined,² however, and present controversies among students of social mobility are partly attributable to this deficiency.³

* The Japanese original of this article was twice as voluminous, including detailed methodological discussion of both the conception and measurement of social mobility. (Saburo Yasuda, "Shakai-Ido-Ron eno Tokei-teki Josetsu (A Statistical Introduction to Social Mobility Study)," *Shakai-Kagaku Ronshu* (Tokyo University of Education, Tokyo), No. 9, March 1962). In this English version the discussion will focus on problems of measurement, particularly the measurement of inter-generational mobility. The author wishes to thank Miss Patricia Golden and Dr. John I. Kitsuse, who did so much to refine the English in this paper.

¹ For a bibliography of cumulative achievements in the field of social mobility, see for example, Raymond W. Mack, *et al.*, *Social Mobility: Thirty Years of Research and Theory*, Syracuse: Syracuse University Press, 1957.

² Recent contributions on this point include: Gösta Carlsson, *Social Mobility and Class Structure*, Lund: C. W. K. Gleerup, 1958; Melvin M. Tumin and Arnold S. Feldman, "Theory and Measurement of Occupational Mobility," *American Sociological Review*, 22 (June, 1957), pp. 281-288; Charles F. Westoff, Marvin Bressler and Philip C. Sagi, "The Concept of Social Mobility: An Empirical Inquiry," *American Sociological Review*, 25 (June, 1960), pp. 375-385.

³ For example, Gerhard E. Lenski pointed out that the controversy between Sjöberg, Peterson, and Lipset and Bendix on the one hand and Chinoy and Hertzler on the other, about the mobility trend in American society, stems mainly from failure to distinguish between inter-generational and intra-generational mobility; that is, while the rate of inter-generational mobility may have increased,

THE INDEX OF ASSOCIATION, Q-COEFFICIENT, AND Y-COEFFICIENT

In a discussion of the methodology of mobility measurement, devices used to measure pure mobility must be mentioned first.⁴ I believe that the only measure used hitherto is the index of association (and dissassociation), or social distance mobility, or the coefficient of association, as it is called by Glass, Rogoff, and Carlsson, respectively.⁵

the rate of intra-generational mobility has declined. "Social Stratification," in Joseph S. Roucek, *Contemporary Sociology*, New York: Philosophical Library, 1958, pp. 521-538. Lenski might have added the distinction between pure and factual mobility. While most optimists viewing the trend of American mobility are thinking of the increase of inter-generational pure mobility, all of the skeptics are concerned with the decline of intra-generational factual mobility. (See footnote 4.)

⁴ *Factual mobility* is the concrete mobility of an individual. It may be caused by (1) changes in stratum composition, (2) differential change among strata in size of population (birth, death, in- and out-migration), and (3) interchange of individuals between different status categories. We cannot attribute the factual mobility of specific individuals to one of the three factors, but we can divide *total mobility*, or the total amount of factual mobility in a society, into *forced mobility* (that caused by the first two factors) and *pure mobility* (that caused by the third factor), and assess their relative contributions. Pure mobility has sometimes been called individual mobility (e.g., Joseph A. Kahl, *The American Class Structure*, New York: Rinehart, 1953), but this terminology is inappropriate because pure mobility is a concept at the societal level, not at the level of the individual. See Westoff, Bressler, and Sagi, *op. cit.*

⁵ David V. Glass, *Social Mobility in Britain*, London: Routledge and Paul, 1954; Natalie Rogoff, *Recent Trends in Occupational Mobility*, Glencoe, Ill.: Fress Press, 1953; Gösta Carlsson, *op. cit.*

It looks very plausible indeed, taking the formula

$$Nf_{ij}/n_{i.}n_{.j} \quad (1)$$

when the association between the two generations is shown as in Table 1.

TABLE 1

Father's Status (i)	Subject's Status (j)					Total
	1	2	3	...	r	
1	f_{11}	f_{12}	f_{13}	...	f_{1r}	$n_{1.}$
2	f_{21}	f_{22}	f_{23}	...	f_{2r}	$n_{2.}$
3	f_{31}	f_{32}	f_{33}	...	f_{3r}	$n_{3.}$
.	.	.	.	...	.	.
.	.	.	.	...	.	.
r	f_{r1}	f_{r2}	f_{r3}	...	f_{rr}	$n_{r.}$
Total	$n_{.1}$	$n_{.2}$	$n_{.3}$	...	$n_{.r}$	N

But when we scrutinize its range of possible values, the index turns out to be very misleading. It has a value of one in the case of perfect mobility according to Glass' terminology (that is, statistical independence), and a minimum value of zero when f_{ij} is zero. The maximum value occurs when f_{ij} is greatest. This is identical to n_{ij} when $n_{i.} > n_{.j}$ (when $n_{i.} < n_{.j}$, the maximum f_{ij} equals $n_{i.}$). Hence the maximum value of the index of association A is

$$\text{Max } A = N/n_{i.}, \text{ when } n_{i.} > n_{.j} \quad (2)$$

$$\text{Max } A = N/n_{.j}, \text{ when } n_{i.} < n_{.j} \quad (2')$$

Therefore, the index of association is not independent of the marginal distribution, being influenced by the value of $n_{i.}$ or $n_{.j}$.

This has already been pointed out and fully discussed with hypothetical data by W. Z. Billewicz.⁶ As a substantive example, the index for semi-professionals in Rogoff's Indianapolis data, decreased sharply from 14.61 to 6.23 because the marginal total for that occupation increased markedly from 1910 to 1940. Measured by the Q-coefficient to be explained below, the values are .913 and .777, which does not represent a sharp decline.

For a more striking example, the Research Committee of the Japan Sociological Society calculated values of the index for a national

sample⁷ and obtained the results shown in the first column of Table 3. In Japan there are few farmers whose fathers were not farmers; hence the value of the index of association ought to be very high for the farmer group. But contrary to expectation, Table 3 shows the lowest value for farmers. This is because the farmer group had a far larger marginal than any other occupational category in the Japan of 1954, and the index of association is influenced by the size of the marginal. According to the Q-coefficient and the y'-coefficient explained below, farmers show a very high association between two generations.⁸

Now, in this situation we must adopt another index to measure pure mobility. I believe the problem is simply to measure the association between the subject's status and his father's. There are many measures of association between two qualitative attributes, but I first tried Yule's coefficient of association Q for the following reasons.

First, Q takes a maximum value of +1 and a minimum value of -1, and it is zero when the situation is one of perfect mobility. Secondly, among the various measures of qualitative association, Q is the only one that takes an extreme value (+1 or -1) when only one cell of a given fourfold table is zero, as in Table 2A or 2B. Other measures of qualitative association take extreme values only when both cells on the principal or minor diagonal are zero, as in Table 2C. Since pure mobility must be considered as zero in Tables 2A and 2B also, a measure of pure mobility should give an extreme value. Therefore, traditional measures other

⁷ Research Committee of the Japan Sociological Society, *Nippon Shakai no Kaiso-teki Koso (Status Structure of Japanese Society)*, Tokyo: Yuhikaku, 1958.

⁸ This criticism of the index of association is also applicable to the so-called *location quotient* some human ecologists are using, because the defining formula of the latter is the same. But while the former is defined for $m \times m$ tables where the two series of categories (statuses of two generations) are identical with each other, the location quotient is usually defined for $m \times n$ tables (where $m \neq n$). Hence in the case of regional analysis, the Q-coefficient, but not the y'-coefficient explained below, can be used instead of the location quotient. For the location quotient, see, for example, Otis Dudley Duncan, *et al.*, *Metropolis and Region*, Baltimore: Johns Hopkins Press, 1960, pp. 209 ff.

⁶ W. Z. Billewicz, "Some Remarks on the Measurement of Social Mobility," *Population Studies*, 9 (July, 1955), pp. 96-100.

TABLE 2A

Father's Status	Subject's Status		
	j	Others	Total
i	f_{ij}	0	$n_{i.}(=f_{ij})$
Others	$n_{.j}-f_{ij}$	$N-n_{.j}$	$N-n_{i.}$
Total	$n_{.j}$	$N-n_{.j}$	N

TABLE 2B

Father's Status	Subject's Status		
	j	Others	Total
i	0	$n_{i.}$	$n_{i.}$
Others	$n_{.j}$	$N-n_{i.}-n_{.j}$	$N-n_{i.}$
Total	$n_{.j}$	$N-n_{.j}$	N

TABLE 2C

Father's Status	Subject's Status		
	j	Others	Total
i	f_{ij}	0	$n_{i.}(=f_{ij})$
Others	0	$N-f_{ij}$	$N-n_{i.}$
Total	$n_{.j}(=f_{ij})$	$N-n_{.j}$	N

than the Q-coefficient are not appropriate for measuring pure mobility.

The shortcomings of Q as a measure of pure mobility are as follows: (1) Because it is defined only for fourfold tables, rows and columns other than the i^{th} row and j^{th} column in question must be combined in order to compute Q for an $m \times m$ table. (2) To obtain a Q-value for a row, column, or whole table rather than a cell, one must produce an average of the Q-values for all cells weighted by $n_{i.n.j}/N$, and that calculation is not easy to handle. (3) The formula for Q does not have a clear-cut mathematical meaning. It is formulated only as a measure to satisfy three formal conditions: that is, to give values of +1, -1, and zero when at least one cell on the minor diagonal is zero, at least one cell on the principal diagonal is zero, and the association is null, respectively.

Consequently, I have formulated an original measure for social mobility. As mentioned in footnote 4, the total amount of social mobility in a given society stems from

two sources: forced mobility and pure mobility. Now, the factual out-mobility in the i^{th} row in Table 1 is

$$n_{i.}-f_{ij} \quad (3)$$

The forced out-mobility is

$$n_{i.}-\bar{n}_{ij} \quad (4)$$

where $\bar{n}_{ij}$ means the smaller of $n_{i.}$ and $n_{.j}$. Hence the pure mobility is

$$(n_{i.}-f_{ij})-(n_{i.}-\bar{n}_{ij})=(\bar{n}_{ij}-f_{ij}).^9 \quad (5)$$

Now pure mobility must be measured from the origin of perfect mobility. Since the pure mobility in the perfect mobility situation is

$$(n_{i.}-n_{i.n.j}/N)-(n_{i.}-\bar{n}_{ij})=\bar{n}_{ij}-n_{i.n.j}/N, \quad (6)$$

a coefficient of openness which measures the degree of approximation to perfect mobility can be formulated as (5)/(6), namely

$$y_{ij}=(\bar{n}_{ij}-f_{ij})/(\bar{n}_{ij}-n_{i.n.j}/N). \quad (7)$$

Likewise, the coefficient of openness for the sum of all strata can be defined as

$$Y=(\Sigma \bar{n}_{ij}-\Sigma f_{ij})/(\Sigma \bar{n}_{ij}-\Sigma n_{i.n.j}/N). \quad (8)$$

Both y_{ij} and Y take the value of one when the i^{th} cell and all the cells on the principal diagonal contain the figures expected in the perfect mobility situation and zero when there is no pure mobility.

A minor problem in the proposed formula is that the value of y can be influenced by the size of marginals when mobility is greater than perfect. This becomes apparent when we consider the other extreme value of y . Where none of the sons has the same occupation as his father, f_{ij} would be zero, and $\max y_{ij}=\bar{n}_{ij}/(\bar{n}_{ij}-n_{i.n.j}/N)$, which depends again on the size of marginal totals. But this deficiency is negligible, because f_{ij} seldom surpasses $n_{i.n.j}/N$ in practice.¹⁰

Because the cells outside the principal diagonal often have values surpassing $n_{i.n.j}/N$,

⁹ The same expression for pure mobility can be derived from the formulae for in-mobility. The factual in-mobility is $n_{.i}-f_{ij}$, the forced in-mobility is $n_{.i}-\bar{n}_{ij}$, therefore the pure mobility must be $(n_{.i}-f_{ij})-(n_{.i}-\bar{n}_{ij})=\bar{n}_{ij}-f_{ij}$.

¹⁰ As suggested implicitly in the preceding paragraph, a Y -coefficient of one does not always mean theoretically the perfectly mobile society, although the perfectly mobile society would always have a Y value of one. But since f_{ij} seldom surpasses $n_{i.n.j}/N$ in practice, a Y -coefficient of one almost always means perfect mobility.

we hesitate to define y_{ij} (where $i \neq j$) by mechanically expanding the formula of the y_{ii} -coefficient.

The y -coefficient shows to what degree a given society approaches the maximum mobility possible in the perfect mobility situation, strictly following the concept of pure mobility. Moreover, its calculation is very simple. Hence the y -coefficient is superior to other measures of pure mobility.

The y -coefficient is strictly equivalent to Durbin's index I .¹¹ But he did not show the mathematical derivation of the new index, nor did he specify its sociological meaning. He states, "whether I measures what the sociologist is interested in better than [the index of association] A is another matter." In my construction of the y -coefficient, however, I have given primary consideration to its sociological meaning.

Let us now compare the Q -coefficient and the y -coefficient with the index of association. Table 3 shows those values for major occupational categories of the Japanese male population. They are calculated for the cells on the principal diagonal, and in place of the y -coefficient

$$y'_{ii} = 1 - y_{ii} \quad (9)$$

is used, so that larger values indicate greater

¹¹ J. Durbin, "Appendix Note on a Statistical Question raised in the preceding Paper," *Population Studies*, 9 (July, 1955), p. 101. Supplementing Billewicz' criticism of the index of association, Durbin suggested a new index

$$I = (A - 1)n_{ii} / (N - n_{ii}),$$

(where n_{ii} means the larger of n_i and n_i), in the place of the index of association. The formula turns out to be

$$\begin{aligned} I &= \left(\frac{Nf}{n\bar{n}} - 1 \right) \frac{n}{N-n} \\ &= \left(\frac{Nf}{\bar{n}} - n \right) \frac{1}{N-n} \\ &= \left(N - n - N + \frac{Nf}{\bar{n}} \right) \frac{1}{N-n} \\ &= 1 - \left(N - \frac{Nf}{\bar{n}} \right) \frac{1}{N-n} \\ &= 1 - \frac{N\bar{n} - Nf}{\bar{n}(N-n)} \\ &= 1 - \frac{\bar{n} - f}{\bar{n} - \frac{Nf}{N}} \\ &= 1 - y_{ii}. \end{aligned}$$

(Here we have omitted the subscript ii for f , $\bar{n}$, and n for brevity.)

TABLE 3. COMPARISON OF THE THREE INDEXES FOR JAPANESE OCCUPATIONAL CATEGORIES

Occupation	Index of Association A	Q Coefficient	Y' Coefficient
Professional	6.0	.86	.36
Managerial	3.2	.65	.17
Clerical workers	2.2	.52	.15
Sales workers	3.0	.71	.28
Skilled workers	3.7	.79	.35
Semi-skilled workers	3.2	.65	.17
Unskilled workers	4.4	.80	.26
Farmers	1.7	.85	.72

distance from perfect mobility. Differences between categories are reflected most in the y -coefficient and least in the Q -coefficient. While the rank correlation between the y -coefficient and Q -coefficient is .88, it is only .42 between the index of association and the

TABLE 4. COMPARISON OF INTER-GENERATIONAL PURE MOBILITY AMONG VARIOUS COUNTRIES

Country	Y-Coefficient
England and Wales	.848
Sweden	.776
United States	.724
Japan	.604
West Germany	.569
France	.535

y -coefficient, reflecting the invalidity of the index of association.

Table 4 shows the openness of various countries, as measured by the Y -coefficient.¹² Because the time point of inter-generational comparison varies among these countries, the sampling error of the y -coefficient is unknown, and because there are problems in-

¹² The original data were taken from the following sources. Because absolute figures were not given for British and German data, we calculated them from percentages and then determined Y -coefficients for those countries. Glass, *op. cit.*, p. 183; Carlsson, *op. cit.*, p. 93; Research Committee of the Japan Sociological Society, *op. cit.*, p. 160; Morris Janowitz, "Social Stratification and Mobility in West Germany," *American Journal of Sociology*, 64 (July, 1958), pp. 6-24; Marcel M. Brésard, "La mobilité sociale en France," *Cahier Français d'information*, No. 196, 1952. The original data for the United States were taken from the 1956 Election Study, courtesy of the Survey Research Center, University of Michigan.

trinsic to qualitative association,¹³ the values in Table 4 cannot be regarded rigorously. Without these limitations, the values would reveal that England is unexpectedly open; Sweden is also more open than the United States, despite the large proportion of agricultural workers; and Japan ranks between the United States and West Germany.

THE TIME POINT IN INTER-GENERATIONAL COMPARISON

In previous studies of inter-generational mobility, it has been customary to cross-tabulate the subject's present occupational status by his father's main occupational status. But Glass, Carlsson and Lenski have pointed out a large pitfall in this approach.¹⁴ The subject's present status has not yet stabilized if he is still young, and it is lower than that of his prime of life if he is now very old. In either case the subject's present status is not comparable with his father's main status. Thus, Glass suggests that only the main occupations of persons past 50 should be studied, and Lipset and Bendix suggest that the subject's present status be compared with the father's status when he was the same age as the subject.¹⁵

Glass' suggestion is awkward because it omits most of the present population. The Lipset-Bendix suggestion is also awkward because it mechanically matches the two generations by age without any other considerations. An even more important objection to both is that they neglect the relation between inter-generational and intra-generational mobility. That is, their measurements of inter-generational mobility do not distinguish between that portion which is a function of the mobility advantages derived

from the father's status and that which is a consequence of the son's own career mobility. The former should properly be taken as the measure of inter-generational mobility, the latter as intra-generational mobility.

Mukherjee and Hall have made an important comment on this point. They state that in previous studies of social mobility, "in most cases the problem was assumed to be solved by examining the association between the father's and subject's final status categories in a contingency table. But this is to treat the question in a static manner, and to overlook the essential dynamic character of social mobility." And, "the analysis should ideally begin with his birth, his social status then being that of his father, and this status should be related to the successive changes in the status the individual himself achieves during his life, until he reaches stability in his final status. In this way the analysis would cover movement in time as well as in, so to speak, space."¹⁶

They are correct in pointing out that the status of the father is also exposed to intra-generational change. But if they assume that a son at birth has the same status as his father and if they discard the comparison of the final statuses of the two generations, at what time-point(s) can they compare the statuses inter-generationally? It is also questionable to take birth as the origin of career.

Lenski clearly understood the complex relation between intra- and inter-generational mobility, but his technique was somewhat clumsy. He wanted to compare both generations in their forties and to eliminate the effect of the subject's intra-generational mobility. Accordingly he had to estimate the future distributions of cohorts now in their twenties and thirties and also to estimate the effect of intra-generational mobility by a rule-of-thumb. The error of the double estimate might be great.

I would argue that inter-generational mobility should properly be measured by the comparison of two generations' statuses at the time the career of an independent adult begins, rather than at birth or in the forties. The status of the father influences the son

¹³ Any measure of qualitative association would be influenced by the number of categories and by the way in which the categories are delimited. See Carlsson, *op. cit.*, pp. 115-116, and Leo A. Goodman and William H. Kruskal, "Measures of Association for Cross-Classifications, I," *Journal of American Statistical Association*, 49 (1954).

¹⁴ Glass, *op. cit.*, p. 179; Carlsson, *op. cit.*, p. 78; Gerhard E. Lenski, "Trends in Inter-generational Occupational Mobility in the United States," *American Sociological Review*, 23 (October, 1958), pp. 514-523.

¹⁵ Seymour M. Lipset and Reinhard Bendix, *Social Mobility in Industrial Society*, Berkeley: University of California Press, 1959, pp. 182-183.

¹⁶ Ramkrishna Mukherjee and John R. Hall, "A Note on the Analysis of Data on Social Mobility," in Glass, *op. cit.*, pp. 218-220.

at that time, or cumulatively until that time, but their two statuses are not always identical. The difference in status between the two generations is not negligible, and it reflects inter-generational mobility. After the son becomes an independent adult, intra-generational mobility may occur.¹⁷

Rogoff's approach is very similar in respect to the time point of comparison between the two generations, though this may have been an incidental result of the type of data she employed. She compared males' occupation at marriage with fathers' occupation at the same time. There are also Japanese studies that take the father's occupation at the time the son finished his compulsory education.¹⁸ This again is quite similar.

It is, however, more appropriate to use the time when a young man begins his independent occupational career as a starting point, and compare the statuses of the two generations at that time. Marriage marks the onset of a kind of independent adult life, but it refers to life as a family or consumption unit. If we represent social status by occupation, the beginning of occupational career is logically more consistent than the beginning of marriage as a starting point. It is also better than the end of compulsory education for the same reason.

Incidentally, the Glass and Lipset-Bendix methods cannot analyze the trend of inter-generational mobility on the basis of one interviewing survey. Our method makes it possible to do this by studying inter-generational comparisons by cohort. This is another advantage of the method.

The following data show the mobility trend in Japan, presented according to these methodological considerations. The sample is a probability-proportionate random sample of the male population residing in Tokyo

TABLE 5. Y-COEFFICIENT BETWEEN SUBJECT'S FIRST JOB AND FATHER'S JOB AT THAT TIME, BY COHORT

Age of Cohort	Y-Coefficient
20-24	.91
25-29	.77
30-34	.66
35-39	.71
40-49	.68
50-59	.56
60-	.64

central city, regardless of original birth place.¹⁹ Table 5 presents Y-coefficients of the association between the subject's first job and his father's job at that time. While the trend is not absolutely clear because of the small size of the sample and possible specific historical conditions, it can be seen that pure mobility has increased steadily.

TABLE 6. Y-COEFFICIENT BETWEEN SUBJECT'S PRESENT JOB AND FATHER'S MAIN JOB, BY COHORT

Age of Cohort	Y-Coefficient
20-24	.70
25-29	.69
30-34	.80
35-39	.86
40-49	.72
50-59	.91
60-	.90

Now, if we were to compare the subject's present job with his father's main job, as Glass and Carlsson did, what would the same data show? Table 6 shows the results of this calculation in terms of Y-coefficients. Since the higher the age, the more the intra-generational mobility is compounded cumulatively, the older cohorts look more open

¹⁷ As Lenski pointed out, the father's status may influence the son's even after the young man starts his own career. But unless both types of mobility are defined in a certain measurable way, we cannot proceed further. I think it is impossible to define intra-generational mobility as Lenski conceives it, entirely free from the effect of father's status. Cf. Lenski, *op. cit.*

¹⁸ For example, see Tatsuo Honda, "Kindai-teki Rodosha Kaikyu no Demograph-teki Kosatsu (A Demographic Inquiry into Modern Working Class)," *Jinko Mondai Kenkyu*, No. 66, 1956.

¹⁹ The survey was conducted in October 1960 with a probability sample of 1252 adult males residing in Tokyo central city. In July 1961 a supplementary survey of the wives of the previous sample was conducted. As birth order was not included until the second survey, this information was available for only a portion of the original sample, because not all of the original sample were married and because there were non-responses in the second survey. Tokyo central city (*Tokyo-kubu* in Japanese) consists of the substantial part of the built-up area of Tokyo. Official statistics treat this area as a city, though it is not a complete political unit.

and it appears that the society is growing more rigid. This is undoubtedly illusory.

Therefore, Glass and Carlsson's conclusion that there is no change in the trend of pure mobility in Britain and Sweden²⁰ cannot be supported; first, because the index of association is invalid, and second, because of the discrepancy between father's and son's stage of occupational career.

THE FAMILY IN GENERATIONAL MOBILITY

We have hitherto regarded social mobility as a purely individual behavior, neglecting the fact that the subject and his father belong to a family unit. A more detailed scrutiny of social mobility demands recognition of some glaring problems in connection with the family.

The first is the problem of birth order. As Tumin and Feldman²¹ have already pointed out, siblings cannot be expected to be evenly mobile irrespective of birth order, even in the United States. Since in Japan the institution of primogeniture remains, birth order must inevitably be taken into account in the study of social mobility. In self-employed families, and sometimes even in employed families, the eldest son is expected to succeed his father, even though this is not necessarily fully realized in practice. It is often impossible for other sons to take the same job. This is especially true for farmers, due to the limited size of Japanese farms. Therefore, while it is not necessarily futile to analyze inter-generational mobility without reference to the difference between the eldest and other sons, this method is decidedly less valuable. Table 7, based on data from the sample of males residing in central Tokyo, shows that irrespective of place of origin, the eldest sons have gotten better jobs than the others.²² (This is also true for

TABLE 7. OCCUPATIONAL DISTRIBUTION OF ELDEST SONS AND OTHERS, TOKYO MALE POPULATION

Occupation	Tokyo Natives		In-Migrants	
	Eldest	Others	Eldest	Others
Self-employed	23.1	18.1	8.7	11.5
Professional and managerial	8.3	6.6	19.6	6.9
Clerical workers	24.8	16.4	21.7	19.4
Manual workers				
in big enterprise	16.5	13.1	14.1	14.3
in small enterprise	25.6	43.5	35.9	45.7
Others	1.7	2.5	0.0	1.8
Total	100.0 (121)	100.0 (122)	100.0 (92)	100.0 (217)

educational attainment, which is not shown here.)

A second problem deserves closer examination. Previous studies of inter-generational mobility have always used the son as the reference point. Although they are usually termed comparisons of two generations, sons and fathers, they are more strictly a comparison between the subject and his father. Since a father may have more than one son, there is a possibility that two subjects' fathers are identical, i.e., the number of fathers is inflated. (This consideration has already been pointed out.²³) Such inflation is not really a deficiency in research, since the comparison concerns the status of a subject vis-à-vis his father, with the son-subject as the reference point.

But it is equally possible to take the father as a reference point, and to compare the statuses of a subject and his sons.²⁴ Suppose a society consists of three families, A, B, and C. Family A has an only son, who has followed his father's occupation. Family B has two sons, the elder of whom has followed in his father's footsteps. Family C has three sons, and one son other than the eldest has followed his father's occupation. Proceeding in the usual way, the mobility rate will work out to .50, since three out of six sons chose occupations different from their fathers'. Conversely, the occupational inheritance rate is .50, because three out of six sons chose the

²⁰ Glass, *op. cit.*, pp. 185-188; Carlsson, *op. cit.*, p. 103.

²¹ Tumin and Feldman, *op. cit.*

²² The influence of birth order on occupational attainment is assumed to be larger in rural areas than in Tokyo. The large difference between the eldest son and other in-migrants in the professional and managerial category (19.6 versus 6.9) in Table 7 illustrates this fact. But because eldest sons who have succeeded to their fathers' small businesses (including farms) tend to stay in their home towns, the difference in birth order does not appear in self-employed groups of in-migrants to Tokyo.

²³ For example, Glass, *op. cit.*, pp. 242-247.

²⁴ This possibility was originally suggested by Prof. Susumu Kurasawa at Tokyo Gakugei University, in a personal discussion with me.

TABLE 8. INHERITANCE RATES FOR TOKYO NATIVES,
CALCULATED BY TWO DIFFERENT METHODS

Father's Occupation	Eldest Son	All Sons
Liberal profession	16.7	6.7
Self-employed	37.5	25.7
Professional and managerial	6.3	13.2
Clerical workers	71.4	53.1
Manual workers		
in big enterprise	37.5	47.8
in small enterprise	42.1	54.7
Others	11.1	17.6
Total	33.0	30.8

same occupation as their fathers. The picture changes, however, when the mobility pattern is viewed from the father's standpoint. In one sense, the occupational inheritance rate of this imaginary society is 100 per cent, because each of the fathers' occupations has been filled by one son. In another sense, but also from the standpoint of the father, the inheritance rate is 66.7 per cent, because two out of three of the fathers' positions have been filled by eldest sons. There is a third angle: the inheritance rate is 100 per cent for Family A, 50 per cent for Family B, and 33.3 per cent for Family C, because in Families B and C the sons have only partially succeeded their fathers occupationally. From this view, the occupational inheritance rate of the whole society would be $(1+.50+.33)/3=.61$.

Which of these three approaches is most valid depends on the institutions of a given society and the analyst's theoretical interests. At any rate, they afford a picture different from the one obtained by the usual method.

All the viewpoints using the father as a reference require a little more information

about the interviewees. The first and third require knowledge of the statuses of all the interviewees' siblings at the appropriate time point. The number of fathers should be weighted in inverse proportion to the number of siblings. The second viewpoint requires knowledge of birth-order, and only fathers of eldest sons are enumerated.

Table 8 presents an example of the second method from the father's standpoint. The figures in the table represent out-flow inheritance rates, or the percentage of fathers in a given stratum whose sons have succeeded them.²⁵ The figures in the left-hand column are calculated for eldest sons only. Hence that column is based on the second viewpoint. The right-hand column is based on the usual approach, with the son as the reference point, so the number of fathers is inflated. In a society like Japan where primogeniture is traditional, the inheritance rate is higher from the father's standpoint than it is from the son's. This is true even in employed strata like the clerical-worker category. But Table 8 also shows that primogeniture is now followed by only one-third of Tokyo residents.

The difference between using the father and the son as reference points also holds for pure mobility analysis. In Table 3 the y' -coefficient was highest in the farmer stratum, but not equal to 1.00. This is mainly because the coefficient was calculated from the son's standpoint. If the y' -coefficient were calculated for eldest sons only, it would be closer to 1.00, and if it were calculated from the first of the three father-standpoints, it would be almost 1.00.

²⁵ The data in Table 8 are from the Tokyo sample survey mentioned above.