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AUTHOR Farkas, George
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ABSTRACT

Although it is a commonplace observation that urban-industrial growth necessitated the development of the police and the schools as the family, church and personal cross-class relations became inadequate to the task of social control, socialization, and the channeling of mobility, studies of the growth of these urban public-service organizations have been few. Even rarer have been investigations of their newly forming labor force of professionalizing, bureaucratically employed workers. The purpose here is to advance the study of these nineteenth century professionals by examining the careers of public school teachers in five Northeastern cities. What is meant if increasingly successful employee socialization is measured as increasing durations of stayless quick leavers, more long stayers, or merely an increase in the median duration? Should variation in the timing of moves within the hierarchy be studied by sampling all moves ever performed by the members of a cohort or is the proper sampling frame the individual career? By looking at successive entrance cohorts it is possible to chart the progress of socialization and career upward mobility. The methods employed emerge from demographic studies of fertility. (Author/JM)

THE MOBILITY OF PROFESSIONALS IN URBAN PUBLIC SERVICE: A DEMOGRAPHIC ANALYSIS OF TEACHERS CAREERS, 1850-1960

by

George Farkas

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W3-8

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INTRODUCTION

It is a commonplace observation that urban-industrial growth necessitated the invention (or evolution) of the police and the schools as the family, church, and personal cross-class relations became inadequate to the task of social control, socialization and the channeling of mobility. Yet studies of the growth of these urban public-service organizations have been few, and even rarer have been investigations of their newly forming labor force of professionalizing, bureaucratically employed workers. The purpose here is to advance the study of these nineteenth century professionals by examining the careers of public school teachers in five Northeastern cities. By looking at successive entrance cohorts it will be possible to chart the progress of socialization and career upward mobility. Our results will lend new meaning to "professionalization as career immobility" and provide further understanding of the process of mobility in modernizing settings.

A METHODOLOGICAL PURPOSE

The methods employed here are those pioneered by Ryder (1965, 1969) and emerging from his studies of fertility. Despite the wide-spread awareness that these demographic techniques are applicable to careers of almost any sort, and despite a sociological tradition of career-line analysis dating back to the Chicago School[1], it is still infrequently that research is designed in terms of cohort analysis, and even then it is rare to find

the available techniques employed as extensively as is possible.

One purpose of this paper is to demonstrate the salutary effect of employing these techniques to examine hypotheses derived from accepted social theory (that bureaucratization fosters career regularization, for example). We will see that the techniques themselves force a re-evaluation of the theory merely in terms of the proper specification of a process occurring through time. To this end the data analysis will involve, wherever possible, the examination of complete distributions in addition to more summary measures. We will be forced to ask: if increasingly successful employee socialization is measured as increasing durations of stay, do we mean less quick leavers, more long stayers, or merely an increase in the median duration? Should variation in the timing of moves within the hierarchy be studied by sampling all moves ever performed by the members of a cohort or is the proper sampling frame the individual career? With some luck questions such as these will serve to benefit both measurement and theory.

NINETEENTH CENTURY TEACHERS

By the 1850's most Northeastern urban places of population at least 10,000 had public school systems recognizably similar to those of the present day, and police forces were soon to follow (the timing was a little later in other regions of the country). As the century progressed these

organizations underwent the series of structural changes associated with bureaucratization: an increased use of routine and rational procedures and an increasing division of labor, elaboration of hierarchy and centralization of authority.

A driving force behind structural change was the conflict between organizational growth (the outcome of population growth and the felt need to extend city services) and a great reluctance to expend public funds. One of the major problems to be dealt with was the provision of a labor force and the strategy employed by the school managers (a mirror of that successfully employed forty years before in New England factories) combined the division of labor with the increased use of women. As we read in the Newburyport School Report for 1849:

> "We think the plan of having a large male school, with a female assistant, preferable to two small ones. In all our Grammar Schools, there must, from the nature of the case, be pupils of different ages and different degrees of advancement, and the lower classes may be as well taught by a female assistant as by a master. At the same time the rules of order and discipline in a school of boys, are more likely to be enforced under the direction of the latter. By assembling together, then, one hundred boys in one school, a convenient sub-division can be made, and the whole will be as well taught and better governed than if the same number form two separate schools."

The rapidity with which teaching became an essentially female occupation is shown in table 1 for Massachusetts between 1840 and 1865.

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Table 1 about here

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What can we say about this occupational group in which the division of labor facilitated male control despite the numerical predominance of women?

Most striking is the fact that what evolved was not a new female proletariat but rather the first large-scale market for professionals, women whose work setting was increasingly ordered in terms of authority by expertise rather than by discipline. Of course teaching had always been associated with a service orientation: it was the addition of school certified expertise which created a profession. Yet the educational requirements for teaching increased slowly: in 1860 most newly hired Newburyport school teachers were merely graduates of the high school (this was, in fact, the chief justification for its existence), by 1890 new employees had two additional years at the Newburyport Training School, and by 1910 new recruits had typically attended Normal School and many had liberal arts degrees.

These changes occurred while the organizations in question were making every effort to socialize their labor force to greater loyalty and longer durations of stay. Yet these bureaucratizing organizations were faced with a labor force increasingly certified in a national labor market. Our expectations concerning the resultant career patterns are the subject of the next section.

SOCIALIZATION, PROFESSIONALIZATION, AND BUREAUCRATIZATION

We can begin to formulate hypotheses by considering Stinchcombe's (1965) description of labor markets for employed middle-class people as being

> ".....generally organized according to bureaucratic principles, more or less mixed with professional principles (the difference being that professionals have a labor-market status which applies to a wide range of organizations defended by professional associations, while bureaucrats are more oriented to particular organizations). That is, employment is conceived to be permanent and not to respond to short run market variations; most higher officials are recruited from among lower officials; selection and promotion are on grounds of competence and seniority.....Recruitment is from schools, and generally based on an evaluation of school performance. All these characteristics tend to make the job a stage in a career within the same organization, with the criteria of promotion at each career stage determined by superiors."

We can agree that bureaucratization fostered successful employee socialization[2] (measured as increasing career durations of stay in the organization), and since bureaucratization was undoubtedly occurring in the public schools between 1850 and 1900 (although probably at different rates in different cities) we may formulate

Hypothesis 1. Successive cohorts of teachers beginning employment after 1850 displayed increasing durations of stay, the actual magnitudes involved varying by city.

Yet we have already observed that certification in a national labor market is likely to bring about decreased employee loyalty (a point made by Stinchcombe when he talks about professional principles leading to multi-

organizational careers, but ignored by him when he came to conclude that the job becomes "a stage in a career within the same organization"). Explicitly recognizing this effect we formulate[3]

Hypothesis 2. At some point between 1850 and 1900 (which may differ by city) professionalization (certification in a national labor market) caused cohort durations of stay to decrease. This was particularly true for those employees with the most extensive credentials (typically those whose first positions were high in the hierarchy).

Having made a number of predictions about employee mobility out of the organization, it remains to consider the process of internal mobility. Here it must be realized that in contrast to the present day[4] most public school systems in the period 1855 to 1920 were organized according to the hierarchical structure shown in figure 1. Mobility between ranks was not uncommon.

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Figure 1 about here

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Evidence for this ranking abounds. Most important are the clear salary differentials maintained throughout this period (the only area in which they do not support the ranking is in not placing high school teachers above grammar school principals). Other evidence includes the fact that names were always reported in this order, observed mobility was heavily weighted "upward" according to this ranking, and a wealth of anecdotal material, typical of

which is the following from the Newport School Report for 1910:

> "....in the grades below the high school,.too great a difference exists between the salaries of teachers in the lower grades and of those in the higher,...a mistake.. to foster in the minds of the teachers the belief that to be transferred from a lower to a higher grade is, in itself, a promotion...."

At the end of an era in which it was, the school managers doth protest too much.

With this hierarchy in mind we can begin to examine career patterns within the school system. Clearly bureaucratization implies career regularization, and if we think of an individual's career within an organization as being capable of description in terms of quantity (number of moves), timing, and pattern then we are led to

Hypothesis 3. Bureaucratization caused decreasing intra-cohort variation in the quantity, timing and pattern of internal mobility.

But what of professionalization? Here there are two alternatives. Most obviously professional certification provides a dimension of resources which are none other than ascribed characteristics at time of first employment[5]: an employee's position in this distribution is likely to affect his career chances within the organization. As standards of professional certification are extended the variation in this distribution increases, causing more variation in career patterns. This leads to what has become our typical hypothesis: professionalization undoes the work of bureaucratization.

Only, however, on the unlikely assumption that those with different educational credentials are hired into the same hierarchical level. It is reasonable to assume that this was not the case - rather certification and bureaucratization combined to produce increasingly rigid rules concerning the prior training necessary for a particular position, new recruits being immediately sorted into slots in the hierarchy and thenceforward moving little. This implies nothing about a professionalization analog of hypothesis 3, but it does speak for a lowering of the cohort mean quantity of internal mobility. The cohort mean duration of stay before making an internal move should also decrease as experience becomes less salient: those hired recently will have the most extensive credentials. Individuals will move up quickly or not at all. Moreover, increased rigidity in the matching of training to position means that the trend of decrease in the variety of career paths will continue.

These conclusions fly in the face of more usual discussions of bureaucratization fostering regular patterns of ascent. Yet mobility within our organization was always somewhat restricted (recall the close ties between the division of labor and male domination - a related fact is the lateral entry characteristic of public school systems - in the next section this will be contrasted with police employment practices). It is thus appropriate to expect that school teachers were among the earliest occupational groups to have their career patterns fundamentally altered by rising certification standards. We summarize:

Hypothesis 4. Professionalization combined with bureaucratization to produce decreasing intra-cohort means in the quantity and timing of internal mobility. The variation in pattern also decreased.

SOME PREVIOUS RESULTS: THE POLICE

The only previous long time-span investigation of careers in a bureaucratizing organization was Maniha's (1970) study of mobility within the St. Louis Police Department, 1861-1961. Before examining his results it will be useful to contrast the structural conditions of employment for the police and the schools.

Most obviously the police did not permit lateral entry - all vacancies above the lowest level of the hierarchy were filled by promotion from below. This has never been the case in the schools, a fact no doubt related both to the organization of the schools for male administration of female labor and to an increasingly greater reliance by the schools on extra-organizational certification. The result was a situation in which internal mobility was to a greater extent guaranteed by police organization, yet totally dependent on organizational growth and the occurrence of vacancies. By contrast teacher mobility came to hinge on the school managers' preferences for promotion from within versus hiring from without. As previously discussed we may well expect professionalization and bureaucratization to have pushed the managers to the latter decision.

Maniha's results are flawed by the fact that he confines his analysis to those ever promoted, yet with this redirection we see that table 2 supports our hypothesis 1 (bureaucratization associated with longer durations of stay). The change comes about through a decrease in the percentage of quick leavers and a concomitant increase in long stayers.

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Table 2 about here

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The police never did become school-certified in a national labor market, nor does Maniha report period rates of leaving, so the only remaining hypothesis on which his data bear is hypothesis 3: bureaucratization causes career regularization. His analysis is essentially restricted to the timing of internal mobility and his principal finding is that those in later entrance cohorts took longer both to achieve their first promotion (p.180) and to complete their sequence of moves (p.170). This he attributes to the increased salience of seniority (an occurrence perhaps compatible with bureaucratization in the police where school-certified expertise is unimportant) and the longer socialization required with increased complexity. He fails to note that table 3 may in part by explained by table 2: with high turnover not only do many vacancies open up to facilitate quick promotion, but few individuals remain long enough to be promoted after a long stay.

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Table 3 about here

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Maniha concludes that these data fail to support the hypothesis of career standardization because they don't reveal [illegible]g into one system-duration span at first promotion. This is true, yet the clear trend to longer durations before mobility gives promise of an eventual clustering: the uncertainty measure H (an analog of variance for nominal distributions)[6] gives the following values for table 3, H (1844-69) = .23, H (1870-99) = .42, H (1900-29) = .37. The twentieth century cohorts are a little more homogeneous than the previous group. Before turning to a. analysis of teachers careers it is well to examine the nature of the data.

TEACHERS CAREERS: THE CITIES AND THE DATA

Data was collected from annual School Reports[7] for the following cities and years: Newburyport, Mass. (1850-1970), Springfield, Mass. (1850-1898), Syracuse, N.Y. (1844-1898), Albany, N.Y. (1844-1870), and Newport, R.I. (1871-1917). The selection is, of course, arbitrary, but an attempt was made to achieve variation in city size, growth rate, and location within the constraints of reasonably complete data for small and medium-sized cities in the Northeast.

Newburyport was small (populatien = 13400 in 1860) and remained small (14000 in 1960), thereby allowing it to be examined over a long time span. Since it was also the subject of two previous studies (Warner, 1963;

Thernstrom, 1964) it provides a useful base-line. Newport was also small, but growing slowly (steady increase brought it from 10500 in 1860 to 47000 in 1960). It's school board appears to have been on a much sounder financial base.

Springfield and Syracuse both began larger (in 1860 Springfield = 15000, Syracuse = 28000) and grew more rapidly (in 1960 Springfield = 174000), Syracuse = 216000), each growing by about a factor of four between 1860 and 1900. Neither is studied beyond 1900 because their size made the job too difficult.

Albany is an example of a city already large in 1860 (62000) and growing only slowly (94000 in 1900, 130000 in 1960). It provides a useful contrast but its large size precluded the examination of cohorts entering after 1860.

The data consists of the annual lists of teachers and their positions, along with whatever other information was available (typically salary, sex and marital status; education is often available after 1900). These lists appear every year and seem to be quite reliable-particularly in light of the financial - reporting function they served.

Mobility (both out of the system and between positions within the system) was recorded as individual careers arranged by cohort of entrance, and is reported in terms of cohort distributions along various dimensions. Let us begin to examine some results.

COHORT DURATIONS OF STAY

Our theoretical discussion began with the hypothesis that successive cohorts in the nineteenth century exhibited increasing durations of stay as bureaucratization fostered employee socialization. Of course each cohort possesses a distribution of completed lengths of stay: in light of the long tail to be expected (there are usually at least some individuals who stay for forty years) the most appropriate single measure of central tendency is the median. As shown in table 4 these lend fairly strong support to hypothesis 1.

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Table 4 about here

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Springfield and Syracuse display the strongest trend to increasing durations of stay, Syracuse always slightly ahead. There is some evidence of a Newburyport trend, but this is sharply reversed in the 1880's and the ensuing progress is once again reversed 1911-20. The cohorts entering Albany in the 1840's and 1850's display the longest median stays for this period, while those entering Newport in the 70's and 80's are phenomenal in their commitment.

The conclusion must be that hypothesis 1 is supported, but unequivocally only in rapidly growing Springfield and Syracuse. Quite striking are both the city-context differences (Newport in particular) and the much lower levels of loyalty than the greater-than-21 year median observed for the St. Louis police (table 2). We will get a better picture of the distributions involved by examining both tails.

Table 5 shows that the cohorts entering Newburyport before 1880 joined the Springfield and Syracuse employees in being part of a clear trend to fewer quick leavers. Hypothesis 1 is thus further supported: some sort of socialization was occurring progressively more successfully. Yet city differences are still clearly observed. Albany, long established in an older system, commands the greatest loyalty in the 1840's and 50's while Newport (with its high salaries) is actually surpassed in the 1880's by Syracuse.

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Table 5 about here

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Of course the Newburyport fluctuations beginning with the 1880's cohorts must be dealt with, but one observation can be made immediately; striking peaks of quick leaving occur in the boom periods of the 1880's (recovery from the 70's Depression) and the 1920's. We will return later to

discuss the contrast with the behavior of the 1880's cohorts of Springfield and Syracuse.

Hypothesis 1 was vaguely specified because "increasing durations of stay" can mean more than one change in the shape of a distribution. Perhaps the most plausible measure of increasing socialization, however, is an increase in those experiencing extended careers in the organization - the long stayers. Table 6 shows that on this measure also the hypothesis is supported. Yet we observe a new pattern, for while both Springfield and Syracuse experience increasingly greater percentages of long stayers (as per hypothesis 1) Newburyport's nineteenth century cohorts display a remarkable stability in the neighborhood of 11 percent long stayers, then abruptly double with the onset of the twentieth century. To better understand these results (as well as to examine hypothesis 2) we must break them down by individual characteristics.

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Table 6 about here

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Here we are faced with a paucity of data: we would like to know both age and education at the beginning of employment: the only information available to us is first position. The relatively short durations of stay tell us that old age as a limiting factor is likely to play a negligible part in producing

different durations of stay, yet stage in the life cycle clearly is important. We can only hope that it was more or less randomly distributed by cohort and first position. We do know that almost all teachers were unmarried and that most quit employment in one city for similar employment in another. To the extent that professionalization (longer schooling) was associated with later age at first employment we will unavoidably confound the two. As for education, we know the general level possessed by recruits in different periods and have good evidence that it correlated well with first position. This is, of course, a necessary link for the study of hypothesis 2.

With these drawbacks in mind let us see what light can be shed on the previous results and hypothesis 2 when cohort distributions are examined by first position.

PROFESSIONALIZATION AND THE EFFECT OF FIRST POSITION

We have seen that cohort median durations of stay increased in the nineteenth century, then were set back again for the 1880's Newburyport cohorts and continued to be erratic into the twentieth century. The most evident cause for this behavior was macro-economic conditions as manifested in their effect upon quick leavers (table 5). Yet this effect was only observed in Newburyport. As we see in table 7 it was independent of an evolution which was essentially in line with hypothesis 2.

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Table 7 about here

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The relative prosperity of the 1880's produced, among those beginning employment in Newburyport as grammar and elementary school teachers, the lowest median durations of stay of any entering cohorts in their respective positions (except for the unsocialized 1850's grammar school teachers). This event was not repeated in the 1920's, instead an evolution to longer durations of stay had occurred for those beginning as grammar and elementary school teachers. By contrast the high school teachers maintained uniformly low median stays over the eighty year period, a result not confirming hypothesis 2 as stated yet still deducible from the logic of our argument concerning the career effects of professionalization. For while it appears that in Newburyport high school teachers were never so loyal that their new-found market status could produce an observable drop in commitment, a changing market certainly does seem to have resulted in greater loyalty from those less-well equipped: the grammar and elementary school teachers.

Similar results are observed for Springfield and Newport - high school teachers' stays declining or remaining constant, elementary and grammar school teachers displaying increasing loyalty.

The examination of quick leavers produces the same conclusion except here the 1920's increase is visible for Newburyport high school teachers. In general the evolution to more loyal grammar and elementary school teachers, continously disloyal high school teachers, is observed.

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Table 8 about here

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In the case of long stayers we find that the Newburyport pattern of more twentieth century long stayers holds up under controls for first position: although those beginning as high school teachers in any given period usually contain the smallest percentage of long stayers, each group (high, grammar, and elementary) exhibits its consistently highest percentage after 1900.

The Springfield and Newport data again support the hypothesis of increasing commitment from those lower down in the hierarchy.

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Table 9 about here

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PROFESSIONALIZATION AND DURATIONS OF STAY: TENTATIVE CONCLUSIONS

We have observed the hypothesized increasing cohort durations of stay, with school certification apparently acting to make those less well certified become more tied to one particular organization. It is the combination of this process and the structural changes causing high school teachers to increasingly predominate among new recruits which accounts for the erratic Newburyport pattern displayed in table 4. Overlaid on this development has been the effect of macro-economic conditions (most noticeably swelling the ranks of quick leavers from Newburyport in the 1880's and 1920's) and city differences. The latter were most sharply drawn in the case of Newport with its higher salaries and Albany with its older system. The interaction between organizational and macro-economic context (the prosperous 1880's had very different effects on mobility out of stagnant Newburyport than dynamic Springfield and Syracuse) lends support to Peterson's (1970) suggestion that the quest after variance may end in history.

RIGIDIFICATION AND DECREASING INTERNAL MOBILITY

Our expectation is that bureaucratization alone caused decreasing intra-cohort variation in the process of internal mobility (quantity, timing, and pattern) while the combination of professionalization and bureaucratization produced decreasing cohort means in quantity and timing. Yet Maniha's police data did not support these expectations: table 3 displayed an increase

in cohort mean age at first promotion and no decrease in intra-cohort variation. We begin to discover the nature of teachers' careers by looking at first and last positions within the hierarchy, dividing cohort career mobility into up, down, and no change.

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Table 10 about here

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These results appear to support the hypothesis of increasing rigidification: there is a clear decrease in ultimately attained upward mobility. (Note that this says nothing about the pure "quantity" of internal mobility - the total number of moves experienced in a career within the organization. This will be examined below). The pattern of decreasing upward mobility is pronounced only in Newburyport and Newport, and even there we must wonder to what extent it is due to the system dynamics of recruitment and vacancy creation (as with the police), rather than the hypothesized "rigidification" of promotion practices. Table 11 shows that, as was the case with fluctuating cohort durations of stay, a lot is due to the decreased recruitment of elementary school teachers. (They typically experience the most upward mobility in a cohort).

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Table 11 about here

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Rigidification is supported, but weakly and not in Springfield. If for Newburyport we ignore the 1931-40 cohort of elementary school teachers (it is only 4 cases) then we see that the high rates of career upward mobility experienced by those beginning as elementary school teachers in the period 1861-80 are never again equalled.

While the upward shift in Newburyport's recruitment is an important factor in decreased upward mobility there is a drop in mobility rates for those recruited at the bottom. Newport's mobility decrease is not at all due to a change in recruitment patterns, but Springfield's is entirely. Of course the decrease in Newburyport upward mobility rates could be due to the appearance of fewer appropriate vacancies (a system-dynamic explanation) rather than the hypothesized rigidification (school managers' preferences for hiring from without the system). That such was not the case is seen in table 12 - each city displays the trend to increased hiring from without.

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Table 12 about here

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We may thus conclude that the system-dynamics of vacancy creation acted to obscure the very real rigidification occurring: there can be little doubt now that the system managers were increasingly choosing to recruit from without the system.

THE QUANTITY OF INTERNAL MOBILITY

We have measured rigidification by comparing first and last positions in the hierarchy, yet this tells us nothing about the career moves inbetween. A cohort measure of the quantity of such moves is the Crude Mobility Rate (CMR), defined simply as the total number of internal moves ever made by a cohort divided by its initial number of members. It is easy to see that the CMR is equal to

$$\sum_x \frac{M_x}{N_x} \cdot \frac{N_x}{N} = \sum_x p_x \cdot l_x$$

where

M_x = the number of those present in the system for x years who move internally (change positions) between their xth. and (x + 1st.) year.

N_x = the number of individuals whose duration of employment is at least x years.

N = the entering size of the cohort

p_x = the duration-specific probability of moving within the hierarchy

l_x = the cohort survival rate to dumation x

It will often be useful to compute this measure by truncating the cohort's history to durations of length less than thirteen years, producing a measure denoted CMR^*. (This is for purposes of comparison with TMR^*, defined below).

The CMR confounds the "pure" rates of internal mobility (p_x) with mortality (leaving employment). By analogy with fertility studies (Ryder, 1969) we construct the Total Mobility Rate (TMR) as $\sum_x p_x$. This is easily

interpreted as the expected number of moves which would be experienced by a cohort member if none quit employment. Because the small number of individuals typically remaining beyond 12 years would make this measure unreliable we truncate it there, producing TMR^{*}.

Table 13 permits us to look at time trends in these measures and to make comparisons across cities. Differences in CMR and CMR^{*} measure the amount of mobility occurring at late durations while those between CMR^{*} and TMR^{*} show the effect of mortality.

We see that the time trend to decreasing attained mobility in Newburyport (table 10) is closely paralleled by the actual number of moves performed. Indeed the rise and fall of attained mobility for the cohorts 1871-1910 is exactly mirrored by the Newburyport CMR. Such is also the case for Springfield, except here the 50's cohorts experienced a great deal of "ultimately frustrated" mobility. The CMR for Springfield's 1851-60 cohorts was the same as Newburyport's, their TMR^{*} the highest observed. We conclude that the low mobility previously noted in Springfield was not a simple matter: it resulted only after the system managers refused to allow an early cohort to maintain much of its acquired position.

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Table 13 about here

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Differences between CMR^* and TMR^* are quite regular in Newburyport until 1900. After that year mortality appears to show a decreased influence on internal mobility. Its decreased effect in Springfield is regular (the ratio CMR^*/TMR^* increases steadily 1851-1885, a not surprising result in view of the increasing durations of stay previously noted).

Most interesting is the in-step movement of Newburyport's CMR^* and TMR^* in the nineteenth century. We see from the pure measure (TMR^*) that the decline in internal mobility was not an artifact of changing durations of stay. The same point is made even more forcefully by the monotonic decrease in Springfield's TMR^*.

Of course these measures are based on total cohort mobility, failing to differentiate between a few moves performed by many individuals and the situation where a sharp division into movers and stayers exists. Hypotheses 3 and 4 spoke of the cohort mean and variance in the quantity of mobility, expecting both to decrease. The test of these hypotheses is provided by looking at cohort distributions of the number of moves experienced by a given individual during his tenure of employment. These completed varities are exhibited in table 14.

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Table 14 about here

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The hypotheses are confirmed. The over-time increase in stayers (those who never move) is so extreme as to force the variance to decrease also. The "leftward shift" is all pervasive. No teacher entering Newburyport after 1880 experienced more than three internal moves. In each city the time trend is to a decrease in those with more than one move.

THE TIMING OF INTERNAL MOBILITY

The Mean Duration at Mobility (MDM) is simply the average of the durations at which internal moves were experienced by the members of the cohort. Clearly this is

$$\frac{\sum_x x \cdot M_x}{\sum_x M_x} = \frac{\sum_x x \cdot [N \cdot \frac{N_x}{N} \cdot \frac{M_x}{N_x}]}{\sum_x N \cdot \frac{N_x}{N} \cdot \frac{M_x}{N_x}} = \frac{\sum_x x \cdot p_x \cdot l_x}{\sum_x p_x \cdot l_x}$$

As before we may construct MDM* based on durations less than thirteen years and also the mortality-free measure TDM (Total Duration at Mobility), defined as

$$\frac{\sum_x x \cdot N \cdot p_x}{\sum_x N\, p_x} = \frac{\sum_x x \cdot p_x}{\sum_x p_x}$$

Table 15 provides some interesting results. Comparing Newburyports' MDM and MDM* we observe two cohorts (1891-1900 and 1911-20) experiencing extensive mobility at long durations. Ninety-five percent of the 1911-20

cohort never moved at all within the hierarchy (table 14) so we have an extreme (late mover) - stayer dichotomy. The 1891-1900 cohorts are similar in that they had the highest percentage (85) of stayers in the nineteenth century.

In Newburyport MDM* and TDM* move together (and in phase with duration of stay-see table 4) for all nineteenth century cohorts. Thus we see that here, at least, length of stay did not affect the timing of internal mobility. Rather, we might hypothesize that economic conditions influenced both. The 70's cohorts stayed longer because of the Depression yet moved little in their early years because in these bad times few vacancies developed. With the recovery in the 80's both the 70's and 80's entrance cohorts began to move internally: the 80's at shorter duration, of course.

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Table 15 about here

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The twentieth century is a different story. Following the extreme 1911-20 cohort pattern of movement only at long durations (apparently the reward for lasting through the Depression) the 1920's cohorts stayed for short durations (table 4) yet moved internally after relatively long ones. This pattern was reversed for the 1930's Depression cohorts.

The overall pattern supports Maniha's result of increasing duration at mobility to the extent that early cohorts do not exhibit the long-duration movers observed in later cohorts. Since TDM* truncates durations at 12 years, we have no mortality-free measure encompassing late movers. However the percentage of the cohort staying beyond twenty years was essentially constant for Newburyport in the nineteenth century (table 6), so we can discount this as a cause of the rise in late moving for the 1891-1900 cohorts. Most likely the twentieth century behavior is to be accounted for by recruitment patterns (the late-moving 1911-20 cohorts were the first to exhibit substantially reduced recruitment of elementary school teachers) and the attendant changes in vacancy creation. Certainly TDM* fails to support the hypothesis of decreasing duration at mobility. Such is also the case for Springfield and Newport.

Having rejected hypothesis 4 we can go on to reject hypothesis 3: there is no evidence of decreasing variation in the timing of mobility. Indeed, table 16 shows a clear trend of increase in both Springfield and Newport, while Newburyport fluctuates irregularly. These results are sustained when the effect of leaving is controlled (by examining the variance of the p_x distribution) as well as when changes in the mean are considered (coefficients of variation appear in brackets).

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Table 16 about here

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Of course the sampling frame here is the internal move, yet surely the hypothesis is formulated in terms of individual careers: it is perfectly conceivable for the variance of the distribution of moves to be large simply because each individual's career distribution of moves is spread out while at the same time the variation in the individual career median durations at mobility is small. As we see in table 17, however, such is not the case in Newburyport (the other cities exhibit too few extended careers to even entertain this possibility for them). The hypothesis of decreasing variation in the timing of mobility is unequivocally rejected.

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Table 17 about here

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THE PATTERN OF INTERNAL MOBILITY

The hypothesis of decreasing variation in the pattern of mobility (sequence of an individual's career moves) is supported to the extent that rigidification decreased the typical number of career moves experienced, thereby also decreasing the opportunity for variation. In another sense, however, variation increased. Confining our attention to careers of greater than one move (which for all practical purposes restricts us to Newburyport) we see that only one pattern predominated: that of two upward moves. Interestingly enough this predominance is only observed for the

cohorts entering through the 1870's: the period of pre-professional bureaucratization. Once again we reject hypothesis 3: the later stages of bureaucratization with professionalization involved both rigidification and an attendant randomization of what little mobility remained.

BUREAUCRATIZATION AND MOBILITY IN MODERNIZING SETTINGS

We began with a series of hypotheses based on the idea that bureaucratization is associated with increasing durations of stay and career regularization, professionalization with shorter durations of stay and restricted internal mobility. The durations of stay worked out as expected, as did increasing rigidification, but there was no evidence of career regularization (thereby replicating Maniha's result). Most striking, however, were the city and macro-economic effects, and their interaction (recall the different duration of residence behavior brought on by the prosperous 80's in Springfield and Syracuse as compared with Newburyport). This result lends further support to Jacobson and Kendrick's (1973) finding that modernization and the attendant growth of job-related certification was not a process of linear change for those living through it.

CONCLUSION: PROFESSIONALIZATION AS CAREER IMMOBILITY

Goldner and Ritti (1967) called management's attempt to redefine the failure of engineers to enter administration "professionalization as career

immobility". Our results give new meaningtto the term for we have seen that the rise of school-certified expertise had two effects on the less-well certified: (1) They were less able to move within the organization and (2) They were less able to leave the system altbgether. The conclusion supports Kelley's(1972) assertion: under certain circumstances modernization decreases mobility.

NOTES

1. The qualitative study of career lines embraces both actual case histories (e.g. The Jack Roller, Shaw, 1966 - see Becker's introduction to this edition) and analytical discussion (as in "The Moral Career of the Mental Patient", Goffman, 1961)) Quantitative work of this nature has recently begun to progress: see, for example, Juvenile Delinquency in A Birth Cohort (Wolfgang, Figlio, and Sellin, 1972).

2. For a possible mechanism see Becker (1960). Of course in a larger sense we are talking about central life interest and career anchorage (Tausky and Dubin, 1965) for the first large scale labor force of professionalizing women.

3. We make no attempt to exactly date the progress of bureaucratization - it seems unlikely that counting the number of rules in the teachers handbook would yield a measure consistent with the others which might be invented. Rather we rely on the fact that extensive bureaucratization clearly occurred before 1880 and in advance of the growth of professional certification beyond the high school level of education. The pattern was bureaucratization, then increasing certification with further bureaucratization. What we are looking for is an overall pattern of employee response to changing conditions.

4. Bidwell (1965) points out that in the present day there is no bureaucratic career within the teaching cadre. There is much evidence, however, that in the nineteenth century a move to a higher grade constituted a promotion, both in terms of status and salary.

5. This line of reasoning owes much to Jacobson and Kendrick (1973) and Kelley (1972).

6. See Hays (1963), page 611.

7. These are available in the library of the Columbia University Teachers College, New York City. The great wealth of data on nineteenth century education available there still goes largely unanalyzed.

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Figure 1

Hierarchy Within The Public Schools: The Nineteenth Century

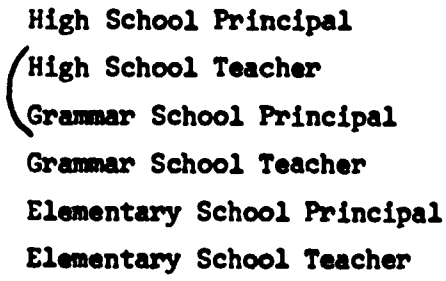

Table 1

The Ratio of Male to Female Teachers: Massachusetts

1840	1845	1850	1855	1860	1865
0.61	0.52	0.41	0.29	0.23	0.14

Source: Katz (1968)

Table 2

Percentage Distribution of Total Time in Organization For Those Ever Promoted, St. Louis Police Dept., 1844-1909

Entry Cohorts	1-10 years	11-20 years	21 years & over	N
1844-69	34.4	13.9	51.6	93
70-99	11.7	15.6	72.5	390
1900-09	2.3	14.7	82.9	129

Source; Maniha (1970, p. 183)

Table 3

Percentage Distribution of Time From Entry to First Promotion, St. Louis Police Dept., 1844-1929

Entry Cohorts	0-5 years	6-15 years	16 yrs. & over	N
1844-69	80.4	18.4	1.0	92
70-99	25.3	56.7	17.9	395
1900-29	7.8	61.3	30.6	397

Source: Maniha (1970, p. 180)

Table 4

Median Duration of Stay (Years), By City and Cohort

	Newburyport	Springfield	Syracuse	Albany	Newport
1844-50			2(71)	5(68)	
51-60	4(78)	2(81)	3(203)	5(133)	
61-70	4(54)	3(207)	4(291)		
71-80	6(47)	5(169)	6(261)		13(37)**
81-90	2(39)	6(172)	8(121)*		12(36)
91-1900	4(60)				
1901-10	7(68)				
11-20	3(66)				
21-30	3(87)				
31-40	6(41)				

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 5

Percentage With Duration of Stay Less Than Three Years, By City and Cohort

	Newburyport	Springfield	Syracuse	Albany	Newport
1844-50			57.8(71)	33.8(68)	
51-60	43.6(78)	52.0(81)	45.3(203)	32.4(133)	
61-70	27.8(54)	44.5(207)	31.0(291)		
71-80	17.4(47)	33.7(169)	29.9(261)		16.7(37)**
81-90	47.4(39)	20.0(172)	10.7(121)*		13.5(36)
91-1900	29.5(60)				
1910-10	23.6(68)				
11-20	25.8(66)				
21-30	48.3(87)				
31-40	24.4(41)				

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 6

Percentage With Duration of Stay Greater Than Twenty Years, By City and Cohort

	Newburyport	Springfield	Syracuse	Albany	Newport
1844-50			2.8(71)	10.3(68)	
51-60	10.3(78)	2.5(81)	6.4(203)	6.0(133)	
61-70	11.1(54)	7.2(207)	11.0(291)		
71-80	10.6(47)	13.1(169)*			33.3(37)**
81-90	10.2(39)				37.9(36)
91-1900	13.1(60)				
1901-10	28.0(68)				
11-20	24.2(66)				
21-30	18.4(87)				
31-40	12.2(41)				

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 7

Median Duration of Stay (Years), By Cohort, First Job, and City

First Job

Teachers

	High	Grammar	Elementary
		Newburyport	
1851-60	2(5)	2(18)	7(44)
61-70	2(3)	'10)	6(23)
71-80	6(5)	4(5)	7(27)
81-90	5(6)	3(7)	4(12)
91-1900	3(19)	5(20)	9(13)
1901-10	3(30)	8(12)	19(21)
11-20	2(42)	6(15)	21(6)
21-30	2(63)	18(14)	21(8)
31-40	4(27)	11(6)	8(5)
		Springfield	
1851-60	6(1)	3(26)	2(43)
61-70	3(8)	3(73)	2(111)
71-80	3(21)	6(50)	5(85)
81-85	4(25)	7(62)	9(73)
		Newport	
1872-80	12(9)	4(5)	14(22)
81-90	7(8)	16(5)	12(22)

Table 8

Percentage With Duration of Stay Less Than Three Years, By Cohort, First Job, and City

First Job

Teachers

Newburyport

	High	Grammar	Elementary
1851-60	60(5)	61(18)	34(44)
61-70	33(3)	20(10)	17(23)
71-80	0(5)	40(5)	15(27)
81-90	50(6)	50(7)	42(12)
91-1900	47(19)	35(20)	15(13)
1901-10	37(30)	8(12)	19(21)
11-20	55(22)	27(15)	0(6)
21-30	60(63)	14(14)	0(8)
31-40	33(27)	17(6)	0(5)

Springfield

1851-60	0(1)	42(26)	58(43)
61-70	12(8)	38(73)	50(111)
71-80	43(21)	26(50)	35(85)
81-8[illegible]	24(25)	26(62)	12(73)

Newport

1872-80	11(9)	20(5)	23(22)
81-90	25(8)	17(5)	9(22)

Table 9

Percentage With Duration of Stay Greater Than Twenty Years, By Cohort, First Job, and City

First Job

Teachers

Newburyport

	High	Grammar	Elementary
1851-60	20(5)	11(18)	9(44)
61-70	0(3)	40(10)	9(23)
71-80	0(5)	0(5)	12(27)
81-90	0(6)	14(7)	17(12)
91-1900	0(19)	10(20)	31(13)
1901-10	17(30)	17(12)	48(21)
11-20	10(42)	47(15)	67(6)
21-30	8(63)	43(14)	50(8)
31-40	11(27)	33(6)	0(5)

Springfield

1851-60	0(1)	0(26)	2(43)
61-70	12(8)	5(73)	8(111)
71-80	0(21)	12(50)	16(85)

Newport

1872-80	33(9)	20(5)	36(22)
81-90	12(8)	33(5)	41(22)

Table 10

Career Mobility By Cohort (%)

Cohort	Up	No Change	Down	N
		Newburyport		
1851-60	26.9	73.1	0.0	78
61-70	30.2	67.9	1.9	53
71-80	34.8	65.2	0.0	46
81-90	15.4	74.4	10.3	39
91-1900	6.7	86.7	6.7	60
1901-10	14.9	79.1	6.0	67
11-20	1.5	98.5	0.0	66
21-30	4.6	94.3	1.1	87
31-40	7.3	90.2	2.4	41
		Springfield		
1851-60	17.6	76.0	6.4	125
61-70	14.6	82.0	3.4	206
71-80	14.3	81.5	4.2	168
81-85	13.6	78.8	7.6	66
		Newport		
1872-80	32.4	67.6	0.0	37
81-90	19.5	80.5	0.0	36

Table 11

Percentage Of Those Beginning as Elementary School Teachers Who End Their Careers Higher

	Newburyport	Springfield	Newport
1851-60	38.6(44)	29.2(48)	
61-70	56.5(23)	22.5(111)	
71-80	50.0(26)	24.7(81)	50.0(22)**
81-90	41.7(12)	32.1(28)*	27.3(22)
91-1900	16.7(12)		
1901-10	38.1(21)		
11-20	20.0(5)		
21-30	37.5(8)		
31-40	50.0(4)		

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 12

Percentage Of Those Ending as High or Grammar School Teachers Who Began Their Careers Lower

	End as H.S. Teacher			End as Grammar School Teacher		
	Newburyport	Springfield	Newport	Newburyport	Springfield	Newport
1851-60	44.4(9)	40.0(5)		37.5(24)	25.6(39)	
61-70	50.0(6)	0.0(8)		22.2(9)a	21.4(84)	
71-80	44.4(9)	8.7(23)	0.0(8)**	55.6(9)	23.2(56)	61.5(13)**
81-90	0.0(5)	0.0*(10)	0.0(8)	33.3(9)	17.4*(23)	50.0(8)
91-1900	13.6(22)			4.8(21)		
1901-10	0.0(29)			21.4(14)		
11-20	0.0(42)			5.6(18)		
21-30	1.6(64)			7.7(13)		
31-40	6.9(29)			16.7(6)		

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 13

Crude And Total Cohort Mobility Rates

	Newburyport			Springfield			Newport		
	CMR	CMR*	TMR*	CMR	CMR*	TMR*	CMR	CMR*	TMR*
1851-60	.51	.45	.96	.51	.49	1.12			
61-70	.62	.57	1.10	.23	.22	.47			
71-80	.63	.59	1.10	.24	.23	..41	.46	.41	.61
81-90	.33	.31	.67	.27	.27	.39	.22	.19	.30
91-1900	.18	.10	.20						
1901-10	.30	.25	.40						
11-20	.06	.02	.02						
21-30	.13	.09	.22						
31.40	.17	.17	.26						

(*: based only on durations less than 13)

As before: the Springfield data only includes 1881-85; Newport, 1872-80.

Table 14

Cohort Completed Parities, Percentage Distribution

	0	1	2	3	4	5	N
Newburyport							
1851-60	72	14	8	5	0	1	78
61-70	60	26	8	2	4	0	53
71-80	65	20	11	0	0	4	46
81-90	77	15	5	3	0	0	39
91-1900	85	12	3	0	0	0	60
1901-10	75	22	1.5	1.5	0	0	67
11-20	95	3	2	0	0	0	66
21-30	93	3	1	2	0	0	87
31-40	88	7	4	0	0	0	41
Springfield							
1851-60	64	22	12	1	0	0	81
61-70	81	14	4	1	0	0	206
71-80	80	16	3	1	0	0	168
81-85	77	18	5	0	0	0	66
Newport							
1872-80	60	35	5	0	0	0	37
81-90	82	15	3	0	0	0	36

Table 15

Mean and Total Durations at Mobility

	Newburyport			Springfield			Newport		
	MDM	MDM*	TDM*	MDM	MDM*	TDM*	MDM	MDM*	TDM*
1851-60	6.10	4.45	6.28	3.7	3.4	4.77			
61-70	6.74	4.80	6.15	4.2	3.4	5.02			
71-80	7.31	6.00	7.32	4.2	4.0	5.41	6.9	3.3	5.28
81-90	4.15	3.32	4.36	4.2	4.2	5.36	8.7	6.9	7.27
91-1900	11.30	4.51	6.90						
1901-10	6.35	4.59	5.42						
11-20	27.60	3.00	3.00						
21-30	8.81	6.14	6.23						
31-40	3.88	3.88	4.50						

Table 16

Variance in the Timing of Mobility: With and Without Mortality# (Coefficients of Variation in Brackets)

	Newburyport		Springfield		Newport	
	With	Without	With	Without	With	Without
1851-60	10.8(2.4)	12.3(2.0)	4.9(1.4)	8.1(1.7)		
61-70	9.3(1.9)	10.6(1.7)	6.5(1.9)	10.1(2.0)		
71-80	12.4(2.1)	12.1(1.7)	9.2(2.3)	10.7(2.0)	3.1(0.9)**	13.7**(2.6)
81-90	4.7(1.4)	5.4(1.2)	9.5(2.3)*	11.3(2.1)*	15.8(2.3)	14.4(2.0)
91-1900	15.6(3.5)	18.0(2.6)				
1901-10	6.9(1.5)	8.4(1.5)				
11-20	0.0(0.0)	0.0(0.0)				
21-30	11.4(1.9)	11.5(1.8)				
31-40	4.4(1.1)	4.9(1.1)				

Based on durations of stay $\leq$ 12 years

* Cohorts entering 1881-85

** Cohorts entering 1872-80

Table 17

The Timing of Mobility in Newburyport: Sampling Individual Careers

	Average of Individual Median Durations	Variance	Coeff. of Variation
1851-60	4.2	14.1	3.4
61-70	4.5	16.4	3.7
71-80	6.9	35.6	5.2
81-90	5.0	16.2	3.2
91-1900	10.9	74.8	6.9
1901-10	5.4	19.9	3.7
11-20	23.0	206.0	9.0
21-30	8.3	23.9	2.9
31.40	3.6	5.8	1.6

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