3 *Ivan K. Fukumoto and David B. Grusky*

Social mobility and class structure in early-industrial France

This chapter provides new evidence on the relationship between economic development and occupational mobility. There is certainly no shortage of empirical research addressing this relationship; we would argue, in fact, that the literature within this subfield is so vast that anyone who seeks to contribute to it has the obligation of first demonstrating that yet another study is warranted.[1] In this regard, we would emphasise the following points.

(a) The mobility research carried out by sociologists has been based almost exclusively on data from *relatively mature* industrial societies.[2] As we shall argue below, there is a long tradition of theorising which suggests that the basic contours of the modern mobility regime were established in the 'take-off stage' of early industrialisation; the obvious corollary of this claim is that all subsequent changes in the mobility regime were of a purely evolutionary kind. It may be a mistake, therefore, to reach any global conclusions about the effects of industrialisation solely on the basis of sociological research pertaining to the last half-century.

(b) This is not to gainsay the importance of a long tradition of historical research on early-industrial mobility.[3] However, it is difficult to interpret and evaluate the evidence that has accumulated within this tradition, since social historians have typically been reluctant to apply standard multiplicative models to their data.[4] Without examining the parameters from a well-specified model, we cannot make reliable judgements about the underlying openness of stratification systems or the structure of class-based differences in life chances.

There is perhaps some merit, then, in applying the analytic methods developed by sociologists to the archival data sets assembled by historians. We believe that doing so will generate important evidence on the contours of early-industrial mobility and the effects of the economic take-off on the process of stratification.

It is tempting to attribute the truncated historical perspective of sociologists to their well-known preference for survey research methods.

Indeed, if contemporary surveys are seen as the sole usable sources of mobility data, then the only possible analyses are those that commence well after the transition to advanced industrialism was in train.[5] Although the 'ahistoricism' of sociologists might be partly explained in this fashion, we would also note that many sociologists are oriented towards testing evolutionary theories that represent economic development and modernisation as largely *continuous* processes. We are referring here to the long-standing 'thesis of industrialism' which, in its most commonly rehearsed form, suggests that class-based differences in mobility chances will slowly wither away as universalistic values spread and bureaucratic personnel systems are established.[6] The distinctive feature of this story is its implicit gradualism; the thesis would seem to suggest that mobility chances are continuously equalised as the successive stages of industrialism unfold.[7] If this form of gradualism is accepted, it follows that researchers can come to understand the effects of industrialisation by intervening at *any arbitrary point* in the developmental process; it should suffice, for example, to examine a time series of data constructed from the most recent contemporary surveys. Moreover, whenever a cross-sectional approach is taken, this same assumption also provides a clear rationale for the continuous scales of economic development that are so commonly applied.[8]

The results generated within this tradition have been mixed at best. Although some analysts have been able to tease out a significant trend towards increasing fluidity, others have argued for a relative constancy in the underlying association between social origins and destinations.[9] The second of these two positions is perhaps the prevailing one; in fact, even Hout refers to the thesis of industrialism as the 'most widely tested and least widely supported' theory within the mobility literature, while Erikson and Goldthorpe conclude from their comprehensive comparative analyses that there is 'no evidence of any general and abiding trends towards ... increased social fluidity, no evidence that mobility rates ... are changing in consistent directions, and no evidence that such rates are tending over time to become cross-nationally more similar'.[10] The latter set of results would seem to call into question the claim that economic development produces a gradual and continuing equalisation in the mobility chances of workers.

There will no doubt be continuing debates over this conclusion and its implications. The important point, at least for our current purposes, is that analyses of this kind cannot speak to the *generic effects* of industrialisation unless one is willing to assume that the developmental process has unfolded in a smooth and continuous fashion. In this regard, we would note that a long tradition of sociological theorising suggests, to the

contrary, that the most fundamental changes in the mobility regime took place at the very onset of industrialisation. The first, and perhaps best-known, example of this sociological tradition appears in the work of Lipset and Zetterberg.[11] It is here that we find the concept of a mobility threshold developed in quite explicit fashion: the Lipset–Zetterberg (LZ) hypothesis allows for a one-time increase in observed mobility during the early take-off period of economic development, but it is inconsistent with any further developmental effects during successive stages of industrialisation. In our view, this longitudinal component to the LZ hypothesis has not been sufficiently appreciated; indeed, most of the contemporary work in this subfield has been based on samples of mature industrial countries, with the null hypothesis of cross-national invariance serving as a (partial) test of the Lipset–Zetterberg thesis.

The LZ hypothesis has been repeatedly rejected on empirical grounds, yet the idea of a threshold effect lives on in modified form in the Featherman–Jones–Hauser (FJH) hypothesis.[12] Under this revised formulation, the claim is that the 'genotypical' pattern of *social fluidity* is similar across all advanced industrial societies, whereas the 'phenotypical' pattern of *observed mobility* will perforce vary as a function of cross-national differences in the contours of the class structure. While the FJH hypothesis was originally couched in this simple cross-sectional form, at least one of its authors would appear to be willing to introduce an explicit longitudinal component. In a subsequent test and reformulation of the hypothesis, Grusky and Hauser argue for 'an initial developmental effect on mobility, but ... no further effect once a certain level of industrialization is reached'.[13] If this minor reformulation is accepted, the end result is a direct analogue to the LZ hypothesis; that is, a simple threshold effect is again posited, but with the caveat that it now applies to the underlying contours of social fluidity rather than the purely phenotypical patterns of observed mobility.

There is perhaps some basis for the claim that the FJH hypothesis is under-theorised. After all, the authors of this hypothesis made no attempt to specify the sources of the one-time 'developmental effect', nor did they seek to account for the subsequent stability in the underlying contours of mobility. However, even if the authors themselves are notably silent on these issues, it is rather straightforward to weld various story lines on to the foundation provided by the FJH hypothesis.[14] It would be natural, for example, to add on a simple functionalist story of the kind favoured by Kingsley Davis and others.[15] The principal claim here is that the intensification of effort needed for a true economic take-off can only be released when traditional status barriers are broken and workers have a fair

opportunity for upward mobility. This approach focuses, therefore, on the institutional *preconditions* for a successful economic take-off; the position taken by Davis is that 'the process of economic modernization *requires* a large amount of individual movement'.[16] Whereas the latter approach treats the mobility regime itself as a causative agent, a somewhat more traditional story line argues that the competitive forces unleashed with the transition to industrialism make it costly for employers to indulge in class-based forms of discrimination. Under this alternative formulation, the economic system becomes an *exogenous* force: we find Hout, for example, arguing that modern industrialism has the potential to generate 'market pressures that eradicate (or at least mitigate) class barriers to opportunity'.[17] This alternative story line is again consistent with a threshold effect; to be sure, the continued application of market pressures may generate a gradual increase in fluidity, but the most important turning point in the evolution of stratification systems is the early-industrial take-off in which the discipline of the market exerts itself in unprecedented fashion.

The foregoing comments make it clear that the 'thesis of industrialism' cannot be said to hold a monopoly within the field. There are, in fact, *two* competing approaches to understanding the developmental trajectory of mobility regimes: the LZ and FJH hypotheses are both consistent with a simple threshold effect, whereas the thesis of industrialism implies a monotonic relationship that should continue to be in evidence throughout the transition to advanced industrialism and beyond. These two approaches have existed side-by-side in the field for several decades; however, even though both types of explanations are widely cited among the same set of mobility scholars, there has been little interest in juxtaposing them in any direct fashion.[18] It is perhaps high time to confront the fact that these two perspectives paint a somewhat different picture of the developmental process.

If there is indeed a threshold effect in the take-off stage of industrialisation, then we certainly cannot capture it without reaching further back into historical time than any contemporary survey might allow. The purpose of the present chapter, then, is to move beyond the now-familiar analyses of mature industrial societies by exploiting an archival data set assembled by William Sewell from Marseille marriage records.[19] We shall start off our Marseille reanalyses by briefly reviewing the current state of knowledge about social mobility in early-industrial France. After doing so, we will turn to our reanalysis of the Marseille data, and we will then conclude by interpreting our results in light of the foregoing comments.

Early-industrial French mobility

There is widespread agreement that Marseille experienced an economic take-off during the mid-nineteenth century that transformed the old agrarian and craft-based order into an economy dominated by manufacturing and controlled by bureaucratic forms of organisation. Although the transformation was obviously a complex process, its basic features can be captured with the simple two-stage model introduced by Sewell.[20] In the first twenty years of the take-off period (1830–49), Sewell argues that Marseille underwent 'a genuine industrial revolution, with all the [usual] characteristics implied by that term'.[21] This does not mean that a purely generic form of industrialisation was at work in Marseille; indeed, unlike the textbook cases of economic take-off in the Ruhr Valley and elsewhere, the transformation in Marseille was intimately tied to maritime commerce. At the same time, the take-off unfolded in largely predictable fashion: the total number of factory workers nearly tripled between 1828 and 1848; the average size of each factory plant increased from nineteen to thirty-eight workers during the same period; and industrial production eventually acquired a dominant share of the total economic output.[22] After this industrial transformation was well underway, Marseille experienced a 'commercial revolution' that reshaped its basic economic institutions and organisations. It is during this second stage of development (i.e., 1850–69) that the last residues of the old guild system disappeared; moreover, a host of joint-stock shipping companies were founded, and modern financial institutions also began to flourish (e.g., joint-stock banks). At the end of the commercial revolution, Marseille had a bureaucratised economy that 'employed swarms of managers, office workers, and supervisors to do work previously performed much more informally by merchants and their employees'.[23]

We would argue, then, that Marseille is a convenient social laboratory for examining the effects of early industrialisation. This is not to say that some sort of critical test can be carried out with the Marseille data; nonetheless, if we fail to find any evidence of a threshold effect in Marseille, then the burden of proof should perhaps shift back to those who originally argued for such an effect. What makes this data set especially valuable is its carefully timed measurements of the mobility regime: the first mobility table assembled by Sewell (1821–2) captures the twilight years of the old social order; the second table (1846–51) pertains to the period after the initial take-off stage of industrialisation had played itself out; and the third table (1869) was collected at the culmination of the so-called 'commercial revolution'. The Marseille data might be seen, therefore, as providing a

natural analogue to a pretest–post-test experimental design. If there was a critical threshold in the mobility regime during the early stages of industrialisation, we would surely expect to find some evidence of it with a set-up of this kind.

There is, of course, a wealth of existing evidence on the structure of occupational inflow and outflow among Marseille workers.[24] However, the results presented by Sewell are sometimes difficult to evaluate and interpret, since they are based on statistics that are sensitive to the underlying contours of occupational supply and demand. The obvious irony here is that Sewell was fully aware of the powerful effects of such forces: the thesis of his book, after all, is that 'variations in social-mobility patterns over time are largely determined by changes in the composition of, demand for, and supply of labor'.[25] Although it is straightforward to test this claim with log-linear or log-multiplicative models, Sewell decided against doing so because he wished to produce a text that historians might readily understand.[26] This was surely a sensible strategy at the time; nonetheless, such delicacy towards historians may no longer be warranted, if only because of the recent spate of expository articles on multiplicative modelling.[27]

In any event, the analytic cost of this decision is clear. It is *not* the case that multiplicative models merely fine-tune our understanding of occupational mobility or increase the 'precision and elegance' of the results.[28] When a mobility analysis is based on outflow rates alone, it becomes difficult indeed to divine the underlying contours of social fluidity; the analyst is required, in effect, to carry out a mock regression in which marginal and interaction effects are controlled by making rough-and-ready mental corrections.[29] It is hardly surprising, then, that Sewell finds it difficult to characterise the contours of the trend line in Marseille. As we noted earlier, one of the principal theses of *Structure and Mobility* is that the economic take-off failed to produce a 'dramatic opening or democratization' of the mobility regime; however, at subsequent points in the text, Sewell argues for 'a general freeing of restrictions in the market, resulting in a far more open occupational structure in the 1850s and 1860s than in the early 19th century'.[30] To be sure, the latter statements not only reflect the underlying complexity of the Marseille data, but also the subjectivity that necessarily surfaces when raw numbers are translated into prose. It is perhaps unfortunate that there are no disciplinary norms specifying the precise point at which a coefficient becomes large enough to safely invoke the terms 'dramatic opening' or 'general freeing'.[31] We would note, however, that such difficulties are only compounded when the methods that are employed cannot provide a direct reading of the long-term trend in social fluidity.

Baseline models of trend

The data that we will be reanalysing were transcribed by Sewell from the marriage registers of 1821–2, 1846–51 and 1869 (see Appendix A).[32] The great virtue of these registers is that they directly list the occupations of *both* the groom and his father; as a result, there is no need to 'link' the data across years or sources, and the analyses are therefore protected from the most serious forms of selection bias. The tables presented in Appendix A pertain, then, to the *full population* of Marseille grooms within each of the specified years.[33] As indicated in the rows of Appendix A, the original occupational titles were recoded by Sewell into a ten-category classification: the first four categories in this classification refer to non-manual occupations, and the remaining categories pertain to manual positions.[34] It should be kept in mind that the occupations reported by Marseille grooms will typically pertain to positions held relatively early in their careers. The mobility classifications assembled by Sewell should be seen, therefore, as a rough analogue to the 'first occupation' tables frequently analysed by sociologists.[35]

We will begin our analyses by examining three hypotheses about the structure of long-term trends in mobility.[36] Whereas the tendency among past practitioners has been to confuse or conflate these hypotheses, our analyses will be based on models that distinguish between them in explicit fashion. The first model in Table 3.1 forces the observed percentages in each cell of the mobility classification to be constant over time (see Line 1). This model can be represented as {T} {OD}, where T refers to time, O refers to occupational origins, and D refers to occupational destinations. As indicated by the test statistics in columns 1 and 2 ($L^2 = 500$ with 198 degrees of freedom), we can easily reject Model 1; the implication is that the basic contours of *observed mobility* did indeed shift during the early economic take-off in Marseille. At the same time, the model of constant mobility only misallocates 10.7 per cent of the cases, and its *BIC* statistic is strongly negative.[37] These statistics suggest that the take-off period may not have generated as much structural mobility as Lipset and Zetterberg seemed to imply.[38]

The next model in Table 3.1 permits an additional interaction term between O and T (see Line 2). When the latter term is included, the resulting model represents the hypothesis of constant *outflow rates*; we can use this model, therefore, to replicate and formalise the analysis of outflow rates carried out by Sewell.[39] As indicated in Table 3.1, Sewell was correct in rejecting the hypothesis implied by Model 2, since the associated fit statistic is clearly significant at any conventional probability

Table 3.1 **Global tests of trend in social mobility between 1821 and 1869**

Model or contrast	L^2	*df*	Δ	*BIC*
1. Constant observed mobility {T} {OD}	500	198	10.7	−1206
2. Constant outflow rates {OT} {OD}	299	180	7.5	−1252
3. Constant social fluidity {OT} {DT} {OD}	156	162	4.5	−1240
4. Model 2 *vs.* Model 1	201	18	–	–
5. Model 3 *vs.* Model 2	143	18	–	–

Note: O = origins; D = destinations; T = time.

level. On the basis of this result alone, it would nonetheless be premature to argue for a fundamental change in the 'openness and competitiveness' of the stratification system.[40] It is possible, instead, that the model fails to fit merely because it forces the destination marginal effects to be invariant. The latter interpretation turns out to be correct; that is, when an interaction between D and T is included in the model, the test statistic is no longer significant (see Line 3).[41] This result is consistent with the claim that there are no changes in the underlying openness of the stratification system.

What must be immediately noted, however, is that the model of constant social fluidity is a rather blunt instrument with which to detect changes in the underlying mobility regime.[42] If we wish to carry out a more powerful test of the null hypothesis, we must first devise models that can account for the origin-by-destination association in a parsimonious fashion. We have done just this in Table 3.2. The approach that we have adopted here is to apply a standard sequence of association models to each of our three mobility tables separately. These models take on the following form:

$$m_{ij} = \alpha\, \beta_i\, \gamma_j\, e^{\phi\, \mu_i\, \nu_j} \qquad [1]$$

where i and j index origins and destinations, m_{ij} refers to the expected value in the ij^{th} cell, α is the grand mean, β_i and γ_j are marginal effects for the rows and columns, ϕ is a global association parameter, and μ_i and ν_j are row and column scale values.[43] The models presented in Table 3.2 differ only by virtue of the restrictions imposed on the parameters in Equation 1. Whereas the first model in each panel implies that origins and destinations are independent (i.e., $\phi = 0$), the second model fits a single parameter for association under the assumption that the class categories are ordered with equal intervals (e.g., $\mu_i = i$ and $\nu_j = j$).[44] The remaining models in Lines 3

Table 3.2 **Selected models of mobility applied to 1821, 1846 and 1869 Marseille data**

Model	L^2	*df*	L^2_b/L^2_t	Δ	*BIC*
A. 1821 Marseille					
1. Independence					
{O} {D}	794	81	100.0	33.0	227
2. Uniform Association					
{O} {D} {I} {U}	95	70	12.0	6.7	−395
3. Model II*					
{O} {D} {I} {V}	79	62	9.9	5.9	−355
4. Model II					
{O} {D} {I} $\{V_i\}$ $\{V_j\}$	59	54	7.4	4.4	−319
B. 1846 Marseille					
1. Independence					
{O} {D}	1,504	81	100.0	28.6	867
2. Uniform association					
{O} {D} {I} {U}	158	70	10.5	6.9	−392
3. Model II*					
{O} {D} {I} {V}	96	62	6.4	4.6	−391
4. Model II					
{O} {D} {I} $\{V_i\}$ $\{V_j\}$	89	54	5.9	4.4	−335
C. 1869 Marseille					
1. Independence					
{O} {D}	895	81	100.0	25.6	286
2. Uniform association					
{O} {D} {I} {U}	167	70	18.7	9.7	−359
3. Model II*					
{O} {D} {I} {V}	98	62	10.9	6.8	−368
4. Model II					
{O} {D} {I} $\{V_i\}$ $\{V_j\}$	90	54	10.1	6.3	−316

Note: O = origins; D = destinations; I = inheritance; U = uniform association; V = homogeneous scale values; V_i = row scale values; V_j = column scale values.

and 4 of each panel freely estimate the inter-class distances *without* conditioning on any prior ranking. The scale values for corresponding rows and columns are constrained to be equal in Line 3 (i.e., $\mu_i = \nu_j$ when i = j); however, when Model II is estimated (Line 4), this equality constraint is dropped. It follows that the full set of parameters in Equation 1 are estimated in unrestricted form under the latter model.

The results in Table 3.2 indicate, not surprisingly, that the model of independence can be soundly rejected in all three panels. Among the remaining specifications in this table, we find that Model II* is clearly preferred within the two post-transition classifications (see Panels B and

Table 3.3 **A decomposition of trends in social fluidity under Model II***

Model or contrast	L^2	*df*	L^2_b/L^2_t	Δ	*BIC*
A. Models					
1. {OT} {DT}	3,193	243	100.0	28.5	1,099
2. {OT} {DT} {VT} {IT}	273	186	8.5	5.6	−1,329
3. {OT} {DT} {V} {IT}	295	204	9.2	6.1	−1,463
4. {OT} {DT} {VT} {I}	299	206	9.4	6.5	−1,476
5. {OT} {DT} {V} {I}	323	224	10.1	7.0	−1,607
B. Contrasts					
1. Class distance variation					
Model 3 *vs.* Model 2	22	18	0.7	–	–
2. Inheritance variation					
Model 4 *vs.* Model 2	26	20	0.8	–	–
3. Total variation					
Model 5 *vs.* Model 2	50	38	1.6	–	–

Note: O = origins; D = destinations; I = inheritance; V = homogeneous scale values; T = time.

C). That is, the contrasts between Models 2 and 3 are significant for the latter classifications, whereas the corresponding contrasts between Models 3 and 4 are clearly not. Within the pre-transition classification (see Panel A), the story is somewhat more complex: the likelihood-ratio contrasts lead us to Model 4, but a *BIC* criterion again prefers a quasi-symmetric specification (i.e., Model 2 or 3). These results make it difficult to choose a single baseline model; nonetheless, the balance of evidence surely favours Model II*, and there are additional heuristic reasons for preferring a quasi-symmetric specification.[45] In the following analyses, we will occasionally employ models that posit asymmetric interactions (see note 69), but for most purposes we will use Model II* as our baseline specification.[46]

We are now in a position to reassess the structure of long-term trends in Marseille. As shown in Table 3.3, we begin the analysis by refitting our baseline model, but now we do so after pooling the data across the three time periods (see Line A2). The models in the next three lines impose successive equality constraints on the scale values (Line A3), on the inheritance effects (Line A4), and on the full set of interaction parameters (Line A5). We can then test for trends by contrasting these constrained models against a baseline specification that permits the parameters of social fluidity to vary freely. When these tests are carried out, the results are quite straightforward: the likelihood-ratio contrasts in Panel B are all insignificant (see Lines B1–B3), and the *BIC* statistics indicate that the posterior odds favour a fully constrained specification (see Line A5). While some of the

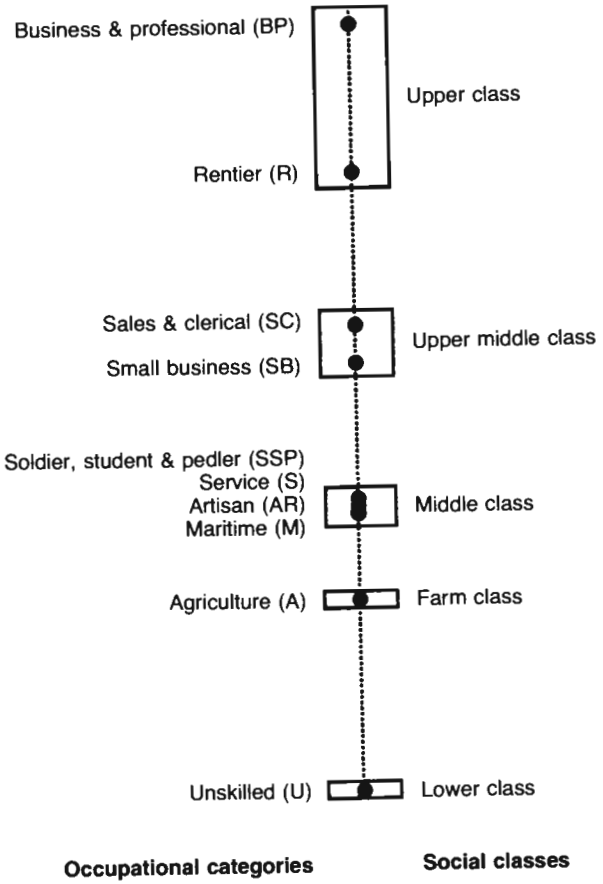

Figure 3.1 **Class structure in nineteenth-century Marseille: interclass distances from pooled Model II***

contrasts in Panel B are at the borderline of significance (see, e.g., Line B3), there is nothing here that suggests a *fundamental* transformation in the mobility chances of Marseille workers.[47] The purpose of the following section, then, is to describe the basic contours of mobility as they persisted over this early-industrial period.

The early-industrial mobility regime

Although there have been dozens of studies of observed mobility in the early-industrial period, the basic structure of social fluidity remains largely uncharted even at this late date.[48] It may be instructive, then, to examine

in some detail the parameters from our preferred version of Model II* (Line A5, Table 3.3). The imagery underlying this model is quite simple; as shown in Figure 3.1, the model scales occupational categories in terms of their patterns of dispersal and recruitment, with the inter-category distances growing smaller as these patterns become more similar. If we follow Weber in defining social classes as 'the totality of ... situations within which individual and generational mobility is easy and typical', then Figure 3.1 can be seen as a primitive map of the early-industrial class structure.[50]

The classes so identified turn out to be complex amalgams of occupations from the old pre-industrial regime and the emerging early-industrial system. As indicated at the top of Figure 3.1, the mobility chances of the old *rentier* class are similar to those of professionals and entrepreneurs (i.e., the 'new class'), while the old middle class of small proprietors assumes a position directly adjacent to the expanding sales and clerical sector. In the interior regions of the stratification hierarchy, we find yet another compound class made up of maritime workers, a nascent service sector, and old artisanal occupations; this clustering of manual occupations belies the claim that artisans were a full-fledged 'aristocracy of labor'.[51] The remaining classes are found at the very bottom of Figure 3.1: the members of the pre-industrial 'underclass' (i.e., peasants) are within striking range of the middle class, whereas their modern-day counterparts (i.e., unskilled workers) are located at the far end of the stratification hierarchy.[52] The picture that emerges, then, suggests a class structure in transition; the industrial and pre-industrial orders have been 'superimposed' on one another, with each containing a broad gradient of positions ranging widely across the stratification system. At the same time, the industrial order is far more extreme in its internal stratification, since it contains the occupational groupings at the two poles of the social hierarchy.

It is also instructive to examine a contour map of the expected densities under Model II* (see Figure 3.2). As shown in Figure 3.2, the vertical axis of our graph specifies the ratios of persistence and mobility, while the two horizontal dimensions refer to the rows and columns of the mobility table. Under this set-up, the height of the bars represents the *total* interaction effects; we have calculated these values by taking the product of the interaction terms pertaining to each cell in the classification (e.g., $s_{11} = \exp[(1.67)^2] \times 1.23 = 20.1$; $s_{12} = \exp[(1.67 \times 1.06)] = 5.9$).[53] The topography of this simple Figure suggests the following four conclusions.

(a) The towering peaks on the main diagonal testify to the strength of occupational inheritance. The sons of *rentiers*, for example, are 28.5 times more likely to inherit their class position than to move to the bottom of the

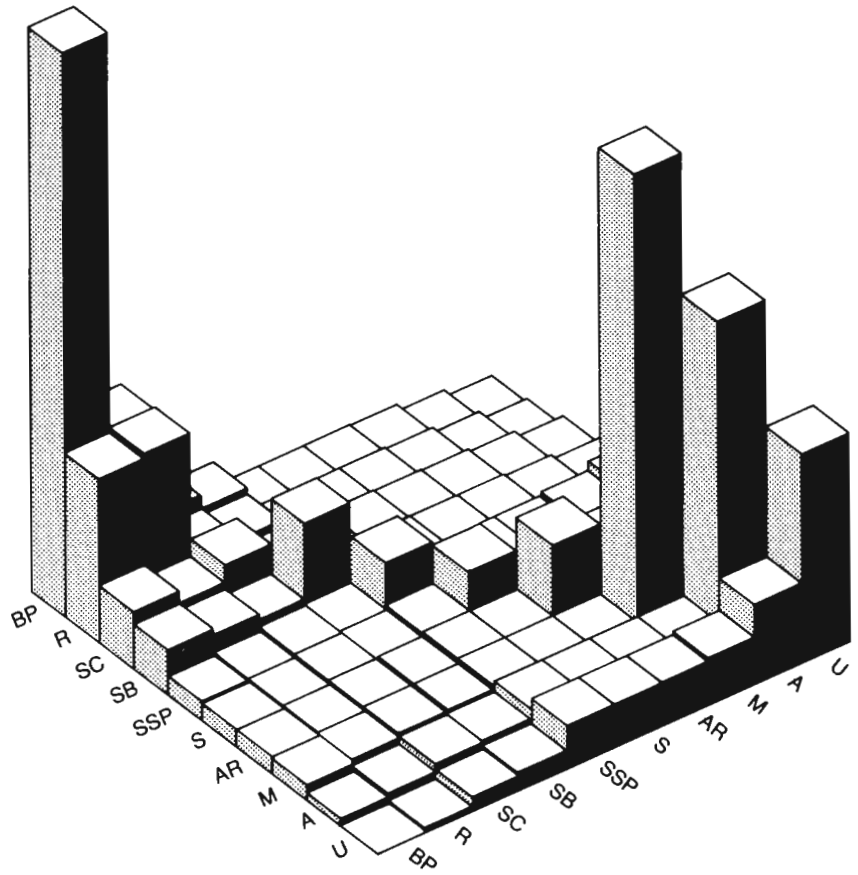

Figure 3.2 **Densities of mobility and immobility in nineteenth-century Marseille**

social hierarchy [i.e., $(s_{22})/(s_{2,10}) = 5.98/0.21 = 28.5$]; the corresponding value for the business-professional class is 250.9 [i.e., $(s_{11})/(s_{1,10}) = 20.07/0.08 = 250.9$]. These results would seem to be consistent with the most extreme criticisms of early-industrial inequality.

(b) The clustering on the main diagonal follows a U-shaped pattern in which the strongest rigidities are found at the top and bottom of the stratification hierarchy. The interior regions of the class structure are a zone of relative fluidity; there is no evidence, for example, that the intrinsic holding power of artisanal occupations is especially strong.[54] At the same time, the persistence ratio for *some* sectors of the middle class is quite high (e.g., maritime workers), and none of the middling occupations evince a

full-fledged 'disinheritance' of the kind frequently found in contemporary tables.[55]

(c) The strength of the manual–non-manual cleavage reveals itself in a low-lying ridge marking out the north-west and south-east quadrants. This cleavage is a prominent feature of the early-industrial landscape (see Figure 3.1 for similar results); indeed, rather than being a 'myth' which presentist sociologists have imposed on the nineteenth century, the manual–non-manual divide appears to have been of fundamental importance in structuring individual life-chances.[56]

(d) The densities of interaction are symmetric about the main diagonal. This result is a feature of the model rather than the data; nonetheless, when we carry out a direct test of quasi-symmetry, the results indicate that the assumptions underlying our model cannot be rejected (see note 46). We can conclude, therefore, that patterns of occupational inflow and outflow are strikingly similar once the structural forces of supply and demand have been purged from the data (see note 69 for a minor qualification).

Taken as a whole, the Figure suggests a broad valley rising into a pair of low-lying plains, with the plains then rising into a jagged mountain ridge that cuts across the valley.[57] The tall peaks and deep ravines in this figure speak to the strength of class-based inequalities during the economic take-off. While some commentators have emphasised the openness of early-industrial mobility regimes, the present results cast new light on the 'seamy side' of the nineteenth century.[58]

Teasing out incremental change

Although none of our tests for trend has been significant up to now, we see no reason to be a slave to conventional probability levels. At this point, we must of course abandon the idea of a fundamental threshold in the mobility regime, but it is still possible that changes of a purely incremental kind might be detected. We will begin, then, by inspecting the point estimates from our unconstrained version of Model II* (i.e., Model A2, Table 3.3).

When the parameters from this model are presented in graphical form (see Figure 3.3), the resulting trend lines index the changing contours of occupational exchange over the full fifty–year period.[59] We can find nothing in these trend lines that suggests changes of an interpretable kind; to be sure, some of the scale values fluctuate over the fifty–year period, but most of this variability is trendless in nature. There is no evidence, for example, that the class position of artisans was deteriorating in strict Marxian fashion, nor do we find that the scale values for manual occupations were converging as the forces of capitalism 'obliterate all distinctions

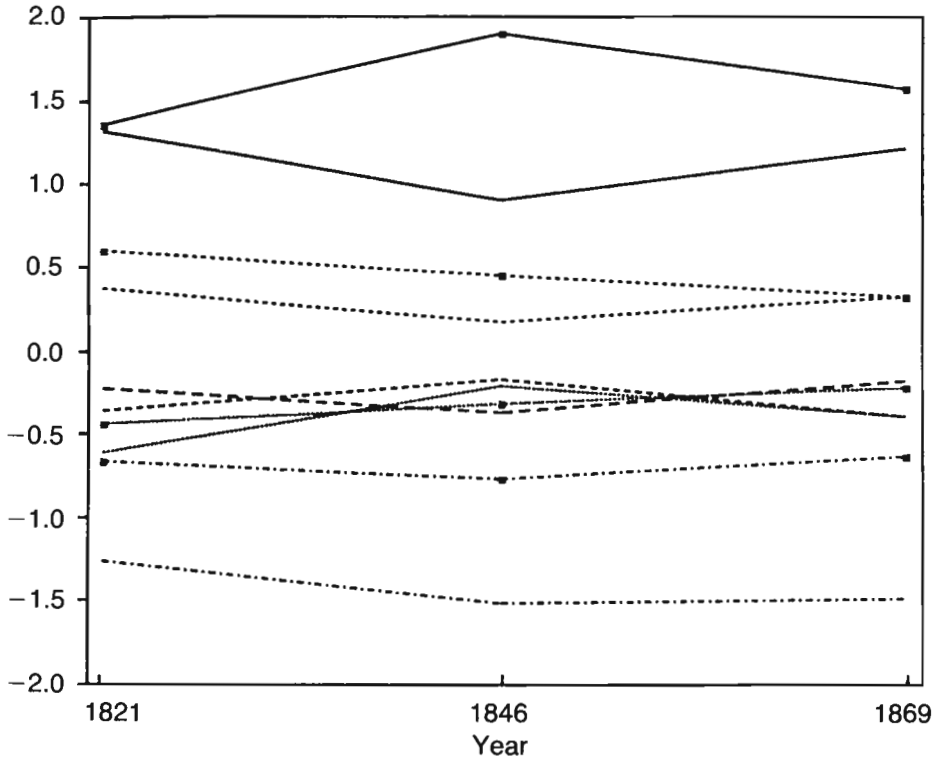

Figure 3.3 **Class structure in 1821–69 Marseille: scale values from unconstrained Model II***

of labor'.[60] If we were forced to impose *some* interpretation on the fluctuations in Figure 3.3, we might point to an apparent (but non-significant) narrowing of the manual–non-manual gap.[61] However, even at the very end of the take-off period, the distance between these strata is still substantial. It would surely be premature to suggest that lower non-manuals were reduced to a 'proletarian condition' at this early point in the developmental process.[62]

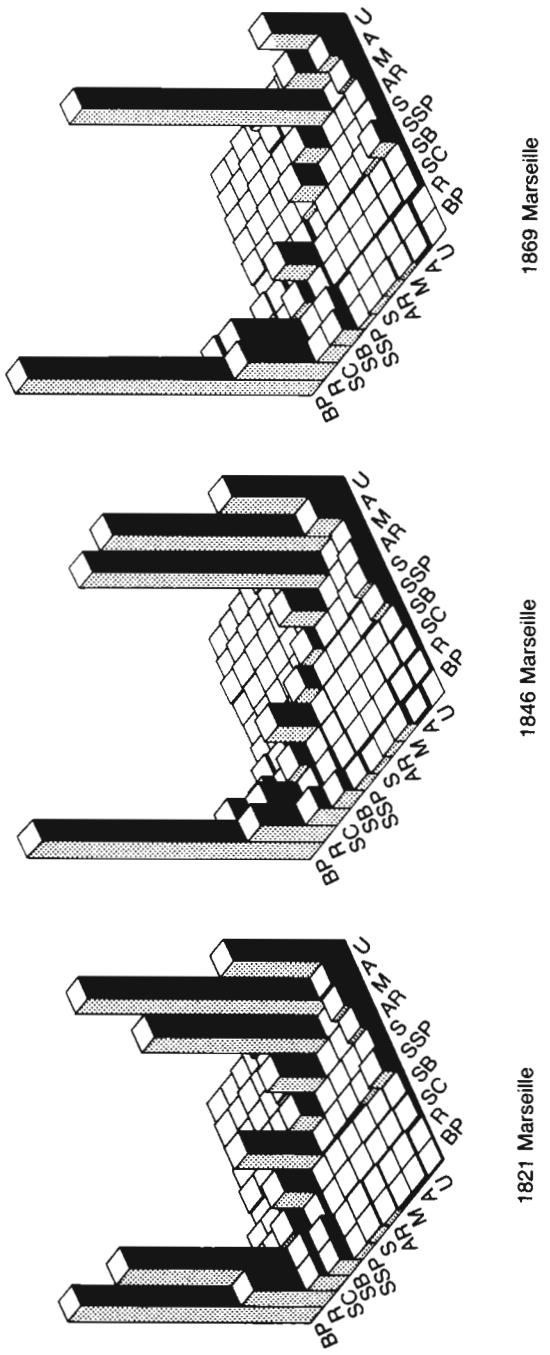

Figure 3.4 **Densities of mobility and immobility in 1821–69 Marseille**

The next step is to re-examine the densities of occupational inheritance under Model A2. It is convenient to do so by calculating the *total* interaction effects for each of the three mobility tables taken separately (see Figure 3.4). As before, the vertical axes in Figure 3.4 represent ratios of persistence and mobility, but now the densities are based on the time-varying parameters of Model A2 (Table 3.3). The graphs in this figure provide our first hint of a long-term trend in the underlying contours of social fluidity. For several of the 'pre-industrial' occupations, the graphs suggest a *secular decline* in inheritance; the holding power of *rentiers*, soldiers, artisans, and farmers appears to have diminished in the post-transition decades. It should be noted, however, that this reading of the evidence goes well beyond the results secured with standard significance tests. When the statistics for a full set of pairwise tests are computed, only two of them (both for the farming parameters) register a significant trend. In the remaining twenty-eight tests, we were unable to reject the null hypothesis of no change.[63]

If we are willing to assume that the 'holding power' of all occupations is changing at the *same* rate, we can then carry out a more powerful test of trend. This test is embodied in the model {OT} {DT} {V} {I} {UT}, where O, D, and T are defined as before, V refers to the scale values under Model II*, I refers to the standard occupation-specific inheritance parameters, and U refers to the uniform inheritance effect.[64] The test statistics reported in Table 3.4 indicate that a significant contrast can indeed be secured under this specification (see Line B1, Table 3.4). According to the point estimates from Model A3, the first stage of the take-off (1821–46) produced a 10 per cent decline in the densities of inheritance, while the second stage (1846–69) produced a further decline of another 14 per cent. What we are seeing, then, is an incremental growth in fluidity within *each* of the two stages of the take-off period. At the same time, we would emphasise that the estimates from Model A3 should be interpreted cautiously, since our prior results (see Figure 3.4) are by no means consistent with the assumption of a *uniform* shift on the main diagonal.

We will conclude our analyses by testing for 'global shifts' in the overall level of off-diagonal association. This type of test can be carried out by fitting the following model:

$$m_{ijk} = \alpha_k \beta_{ik} \gamma_{jk} \delta_{ij} e^{\phi_k \mu_i \nu_j} \qquad [2]$$

where k indexes the three time periods, ϕ_k refers to the overall association parameter in the k^{th} time period, and δ_{ij} refers to a set of inheritance parameters that vary across occupations but not across time (i.e., $\delta_{ij} = \delta_i$ if

Table 3.4 **Tests of trend in uniform inheritance and in global row-by-column association**

Model or contrast	L^2	*df*	L^2_p/L^2_t	Δ	*BIC*
A. Models					
1. {OT} {DT}	3,193	243	100.0	28.5	1,099
2. {OT} {DT} {V} {I}	323	224	10.1	7.0	−1,607
3. {OT} {DT} {V} {I} {UT}	316	222	9.9	6.7	−1,597
4. {OT} {DT} {V} {I} {PT}	320	222	10.0	6.9	−1,593
B. Contrasts					
1. Inheritance variation					
Model 3 *vs.* Model 2	7	2	0.2	–	–
2. Association variation					
Model 4 *vs.* Model 2	3	2	0.1	–	–

Note: O = origins; D = destinations; I = inheritance; V = homogeneous scale values; T = time; U = uniform inheritance; P = global row-by-column association.

i = j; $\delta_{ij} = 0$ otherwise).[65] The distinctive feature of this specification is that it requires the year-by-year variability in off-diagonal interaction to be absorbed in a single set of global shift effects (ϕ_k). Whereas prior analysts (e.g., Yamaguchi) have typically parameterised shift effects in additive form, we will follow Xie and others (e.g., Clogg) in adopting a simple multiplicative specification.[66] The advantage in doing so is that the resulting model is invariant under all possible reorderings of the row, column, and level categories.[67]

Although this approach makes it possible to carry out an extremely powerful test of change, we are still unable to tease out a significant test statistic with the Marseille data. As shown in Line B2 of Table 3.4, the shift effects are not significant at $\alpha = 0.05$: the contrast between Models A2 and A4 yields an L^2 value of 3 (with 2 degrees of freedom).[68] It is worth noting, however, that the point estimates for ϕ_k imply a gradual *weakening* of the row-by-column association. According to Model A4, the association parameter declined by approximately 7 per cent during the first stage of economic development (1821–46), while the second stage (1846–69) generated a further reduction of another 9 per cent. If the population parameters are indeed close to these estimates, then the early-industrial period experienced a gradual increase in fluidity that is consistent with the trend lines reported by contemporary analysts.[69]

Conclusions

We began this chapter by noting that the current literature on mobility trends is not as bland or uncontroversial as some observers would perhaps

assume. There are, in fact, two competing viewpoints that can be found within this literature: the thesis of industrialism implies that class-based differences in life chances will gradually wither away, whereas the LZ and FJH hypotheses suggest a one-time increase in mobility during the early economic take-off. These two viewpoints have existed side-by-side in the field for decades, yet the differences between them have not been directly addressed by contemporary researchers.[70] The tendency, instead, has been to examine the basic contours of mobility *well after* the transition to advanced industrialism occurred and a modern mobility regime was presumably in place. In the present chapter, our objective is to take the idea of a threshold effect more seriously; we have done so by monitoring the basic parameters of mobility within a population that experienced a 'genuine industrial revolution'.[71] If there was a threshold effect in the mobility regime, we would surely expect to find some evidence of it here.

The results that we have secured are of a largely negative kind. After estimating dozens of mobility models and examining a host of parameters, the only changes that could be found were purely incremental trends in the propensities for inheritance. We can therefore advance the provisional conclusion that the basic contours of mobility were *largely* unchanged by a half-century of economic development. Moreover, given the rather extreme levels of inequality and disadvantage that prevailed within Marseille (see, e.g., Figure 3.2), we might wish to question the functionalist position that modern industrialism *requires* a fluid mobility regime. The latter conclusions imply, of course, that Sewell was correct in arguing that the economic take-off failed to produce a 'dramatic opening' in the stratification system.[72] If these results are replicated elsewhere, the burden of proof should begin to shift back to those analysts who originally posited a threshold effect.

The question that naturally arises is whether a mobility threshold might possibly be detected at some subsequent point in the developmental process. It could well be argued that the requisite social changes tend to 'lag behind' the economic take-off; we might posit, for example, a secondary stage of industrialisation in which class-based differences in mobility begin to wither away under the combined force of mass education and bureaucratic personnel policies.[73] While this suggestion surely bears further study, the post-transition data from other countries (e.g., the United States) are not overly encouraging on this score.[74] The latter evidence leads us, instead, to the conclusion that the underlying contours of social fluidity remained 'roughly similar' throughout the post-transition period and beyond.[75] Although the necessary evidence for France is unavailable, we have no reason to believe that it would tell a substantially different

story, if only because most of the important 'mobility-inducing' institutions (e.g., mass education) were already in place by the close of the take-off period. We would note, for example, that secondary education expanded rapidly throughout the Second Empire, since it was a prerequisite both for higher education and professional careers.[76]

It would be a mistake to dismiss the importance of the incremental trends that we *did* observe. Whereas Thernstrom has argued for a 'remarkable, almost eerie, continuity' in the structure of early-industrial mobility, the present results suggest that the origin-by-destination association may have declined by roughly 10–15 per cent every twenty-five years.[77] There is surely nothing trivial about these changes; in fact, if trends of this magnitude continue unabated, it would only take 100–150 years to trim away half of the intergenerational association [i.e., $(.90)^6 = .53$; $(.85)^4 = .52$]. It may not be entirely misleading to extrapolate the trend line in this fashion; indeed, according to the preliminary results from a major comparative project led by Ganzeboom, the global association parameter is declining at the rate of 1–2 per cent per year in dozens of industrial countries.[78] It is worth noting that these contemporary trend lines are somewhat steeper than those estimated under our association models for early-industrial Marseille (i.e., see Models A3 and A4, Table 4). This reinforces our earlier conclusion that a simple threshold formulation cannot be sustained; if anything, the rate of change has *accelerated* with the transition to advanced industrialism, and we must therefore look to sources of trend that extend beyond the economic take-off and its immediate correlates.

The latter results should force us to think more seriously about the types of social and institutional processes that can generate incremental trends. We might begin such a task by asking whether it continues to make conceptual sense to treat intergenerational reproduction as the central rationale or 'dynamic' underlying the modern class system and its affiliated institutions.[79] It would seem that such accounts must now be questioned; after all, if the class structure is gradually opening up as industrialism proceeds, it becomes rather difficult to argue that the institutions of industrialism are 'tailor-made' for the purposes of reproduction.[80] What must be recognised, instead, is that the universalistic institutions of industrialism are in fact hostile to the claims of kinship, and consequently the dominant classes can only fight a rearguard action when it comes to transmitting their privileges intergenerationally. There is perhaps something to the point that modern institutional forms are 'more dedicated to the perpetuation of bourgeois values than bourgeois blood'.[81]

We might still wish to ask why these 'rearguard efforts' are being waged

with *diminishing* effectiveness. The prevailing viewpoint, at least among mobility analysts, has been that explicit political reforms (e.g., 'social democratic' policies) provide the only reliable basis for reducing class-based differences in life chances and producing a more open society.[82] It would seem, however, that such accounts can only provide a partial explanation of the historical record; indeed, unless reform efforts are defined in an exceedingly broad fashion, one would be hard-pressed to fully explain the world-wide pattern of decline in such limited terms. The present results speak, instead, to an additional *endogenous* source of change embedded in the industrial system itself. This is not to say that modern industrialism is governed by an 'immanent logic' or that the emergence of class-neutral mobility regimes is functional in some global sense. There is obviously no need to posit higher-level dynamics of this sort; it should suffice to note that economic development is associated with a host of institutional processes (e.g., credentialism, bureaucratisation, etc.) that might gradually loosen the bonds between origin and destination. It would clearly be premature to attempt to identify the leading institutional forces underlying this transition. However, as additional data on the contours of early-industrial mobility begin to accumulate, it should become possible to eliminate some explanations and thereby fashion a preliminary theory of long-term change.

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Notes

1 For a relevant review, see John H. Goldthorpe, 'On economic development and social mobility', *British Journal of Sociology*, XXXVI, 1985, pp. 549–73.

2 There are, of course, some notable exceptions to this claim. See Michael Hout, *Following in Father's Footsteps*, Cambridge, 1989; Avery M. Guest, Nancy S. Landale and James C. McCann, 'Intergenerational occupational mobility in the late 19th century United States', *Social Forces*, 68, 1989, pp. 351–78.

3 See Stephan Thernstrom, *Poverty and Progress*, New York, 1964; Stephan Thernstrom, *The Other Bostonians*, Cambridge, 1973; Hartmut Kaelble, *Social Mobility in America and Europe: A Comparison of Nineteenth-century Cities*, New York, 1981; Hartmut Kaelble, *Social Mobility in the 19th and 20th Centuries*, New York, 1986.

4 The principal exception here is the work of Leeuwen and Maas (see Marco H. D. van Leeuwen and Ineke Maas, 'Log-linear analysis of changes in mobility patterns', *Historical Methods*, 24, 1991, pp. 66–79).

5 There is clearly much to be gained by studying countries in which the economic take-off occurred *after* the development of survey methods (see Hout, *Following in Father's Footsteps*). It would be a mistake, however, to assume that the transition to industrialism for such 'late-developers' is an exact replicate of the earlier historical experience.

6 Peter M. Blau and Otis D. Duncan, *The American Occupational Structure*, New York, 1967; Donald J. Treiman, 'Industrialization and social stratification', *Social Stratification: Research and Theory for the 1970s*, Edward O. Laumann, ed., New York, 1970, pp. 207–34.

7 This point is also emphasised by Goldthorpe ('On economic development and social mobility', p. 552).

8 See, e.g., David B. Grusky and Robert M. Hauser, 'Comparative social mobility revisited: models of convergence and divergence in 16 countries', *American Sociological Review*, 49, 1984, pp. 19–38; Robert M. Hauser and David B. Grusky, 'Cross-national variation in occupational distributions, relative mobility chances, and intergenerational shifts in occupational distributions', *American Sociological Review*, 53, 1988, pp. 723–48; Thomas A. DiPrete and David B. Grusky, 'Structure and trend in the process of stratification for American men and women', *American Journal of Sociology*, 96, 1990, pp. 107–43.

9 Michael Hout, 'Status, autonomy, and training in occupational mobility', *American Journal of Sociology*, 89, 1984, pp. 1379–1409; Michael Hout, 'More universalism, less structural mobility: The American occupational structure in the 1980s', *American Journal of Sociology*, 93, 1988, pp. 1358–1400; Harry B. G. Ganzeboom, Ruud Luijkx and Donald J. Treiman, 'Intergenerational class mobility in comparative perspective', *Research in Social Stratification and Mobility*, Arne L. Kalleberg, ed., 1989, pp. 3–84; Keith Hope, 'Trends in the openness of British society in the present century', *Research in Social Stratification and Mobility*, Donald J. Treiman and Robert V. Robinson, eds., 1981, pp. 127–70; Goldthorpe, 'On economic development and social mobility', p. 552; Hiroshi Ishida, Robert Erikson and John H. Goldthorpe, 'Intergenerational class mobility in post-war Japan: Conformity or peculiarity in cross-national perspective?', *Comparative Analysis of Social Mobility in Industrial Nations Working Paper*, No. 11, 1987, Universität Mannheim; Robert Erikson and John H. Goldthorpe, 'Trends in class mobility: A test of hypotheses against the European experience', *Comparative Analysis of Social Mobility in Industrial Nations Working Paper*, No. 13, 1988, Universität Mannheim.

10 Hout, *Following in Father's Footsteps*, pp. 7–8; Erikson and Goldthorpe, 'Trends in class mobility', p. 33.

11 Seymour M. Lipset and Hans L. Zetterberg, 'Social mobility in industrial societies', *Social Mobility in Industrial Society*, Seymour M. Lipset and Reinhard Bendix,

Berkeley, 1959, pp. 11–75; Seymour M. Lipset and Hans L. Zetterberg, 'A theory of social mobility', *Transactions of the Third World Congress of Sociology*, International Sociological Association, London, 1956, pp. 155–77.

12 David L. Featherman, Frank L. Jones and Robert M. Hauser, 'Assumptions of social mobility research in the United States: The case of occupational status', *Social Science Research*, 4, 1975, pp. 329–60.

13 Grusky and Hauser, 'Comparative social mobility revisited', p. 20. See, also, Hauser and Grusky, 'Cross-national variation in occupational distributions, relative mobility chances, and intergenerational shifts in occupational distributions', pp. 723–48.

14 The discussion presented here develops a theoretical account for the 'one-time' developmental effect, but not for the (alleged) stability in the subsequent post-industrial era.

15 Kingsley Davis, 'The role of class mobility in economic development', *Population Review*, 6, 1962, pp. 67–73; David Landes, *The Unbound Prometheus*, London, 1969; Tom Kemp, *Industrialization in Nineteenth-Century Europe*, London, 1969. See, also, Franklin F. Mendels, 'Social mobility and phases of industrialization', *The Journal of Interdisciplinary History*, VII, 1976, p. 194.

16 Davis, 'The role of class mobility in economic development', p. 67 (emphasis added).

17 Hout, *Following in Father's Footsteps*, p. 2.

18 The work of Erikson and Goldthorpe is an important exception in this regard (i.e., Erikson and Goldthorpe, 'Trends in class mobility', p. 33).

19 William H. Sewell, Jr., *Structure and Mobility: The Men and Women of Marseille, 1820–1870*, Cambridge, 1985.

20 The following discussion relies almost exclusively on the work of Sewell (*Structure and Mobility*, pp. 15–43).

21 Sewell, *Structure and Mobility*, p. 23.

22 Sewell, *Structure and Mobility*, pp. 24, 30.

23 Sewell, *Structure and Mobility*, p. 42.

24 Sewell, *Structure and Mobility*, pp. 234–69.

25 Sewell, *Structure and Mobility*, p. 10.

26 Sewell, *Structure and Mobility*, p. xv.

27 J. G. Upton, 'A note on log-linear analysis of contingency tables', *Historical Methods*, 18, 1985, pp. 147–54; David B. Grusky and Ivan K. Fukumoto, 'A sociological approach to historical social mobility', *Journal of Social History*, 23, 1989, pp. 221–32; Leeuwen and Maas, 'Log-linear analysis of changes in mobility patterns', pp. 66–79; J. Morgan Kousser, Gary W. Cox and David W. Galenson, 'Log-linear analysis of contingency tables: An introduction for historians with an application to Thernstrom on the "floating proletariat"', *Historical Methods*, 15, 1982, 152–69.

28 Sewell, *Structure and Mobility*, p. xv.

29 Although Sewell relied principally on outflow rates in his analyses, he also calculated the index of dissimilarity and occupation-specific measures of 'excess demand' (*Structure and Mobility*, p. 238).

30 Sewell, *Structure and Mobility*, pp. 10, 240, 247.

31 We have made a similar point elsewhere (see Grusky and Fukumoto, 'A sociological approach to historical social mobility', pp. 221–32).

32 The results reported in the following tables pertain to data that were *not* corrected for potential errors in the classification of master artisans. The same data are featured in the analyses reported by Sewell (*Structure and Mobility*, pp. 240–2).

33 It was necessary, of course, to exclude those cases in which the occupation of the father was not reported (Sewell, *Structure and Mobility*, pp. 166–7, 235). The entries in Appendix A may also be affected by small rounding errors, since the counts had to be reconstructed from outflow percentages.

34 The occupational categories are described in more detail by Sewell (*Structure and Mobility*, pp. 45–51).

35 We will not be analysing data on female mobility in this chapter (see Sewell, *Structure and Mobility*, pp. 270–312).

36 In the analyses that follow, we will be adding a small constant (0.5) to each cell of the three mobility tables. We have done so because some of our association models (see Table 3.2) fail to converge when the original data are employed.

37 The *BIC* statistic was introduced to sociologists by Raftery (see, e.g., Adrian Raftery, 'Choosing models for cross-classifications', *American Sociological Review*, 51, 1986, pp. 145–6).

38 For a similar argument, see Hartmut Kaelble, 'Eras of social mobility in 19th and 20th century Europe', *Journal of Social History*, Spring, 1984, pp. 489–504.

39 Sewell, *Structure and Mobility*, pp. 240–9.

40 See Sewell, *Structure and Mobility*, p. 247.

41 The references to statistical significance in the text will always be based on $\alpha = .05$.

42 See Jonathan Kelley, 'The failure of a paradigm: Log-linear models of social mobility', *John H. Goldthorpe: Consensus and Controversy*, Jon Clark, Celia Modgil and Sohan Modgil, eds., London, 1990, pp. 319–46; Bernice A. Pescosolido and Jonathan Kelley, 'Confronting sociological theory with data: regression analysis, Goodman's log-linear models and comparative research', *Sociology*, 17, 1983, pp. 359–79.

43 For further details on association models, see Leo A. Goodman, 'Simple models for the analysis of association in cross-classifications having ordered categories', *Journal of the American Statistical Association*, 70, 1979, pp. 755–68. Also, see Leo A. Goodman, 'Multiplicative models for the analysis of occupational mobility tables and other kinds of cross-classification tables', *American Journal of Sociology*, 84, 1979, pp. 804–19; Leo A. Goodman, 'Association models and canonical correlation in the analysis of cross-classifications having ordered categories', *Journal of the American Statistical Association*, 76, 1981, pp. 320–34; Leo A. Goodman, 'Criteria for determining whether certain categories in a cross-classification table should be combined, with special reference to occupational categories in an occupational mobility table', *American Journal of Sociology*, 87, 1981, pp. 612–50; Otis D. Duncan, 'How destination depends on origin in the occupational mobility table', *American Journal of Sociology*, 4, 1979, pp. 793–803.

44 We have also blocked out the main diagonal of the mobility table in Models 2 through 4.

45 See Robert M. Hauser, 'Hope for the mobility ratio', *Social Forces*, 60, 1981, pp. 572–84.

46 The test statistics under the model of quasi-symmetry are 41.3 for the 1821 table, 42.3 for the 1846 table, and 36.3 for the 1869 table (all with 36 degrees of freedom).

47 If we employ the original data (rather than adding 0.5 to each cell), the global contrast in Line B3 becomes significant ($L^2 = 56$, with 38 degrees of freedom). The remaining tests are unchanged when the original data are used.

48 There are, of course, some preliminary descriptive efforts in the literature. See Grusky and Fukumoto, 'A sociological approach to historical social mobility', pp. 221–32; Guest, Landale and McCann, 'Intergenerational occupational mobility in the late 19th century United States', pp. 351–78; Leeuwen and Maas, 'Log-linear analysis of changes in mobility patterns', pp. 66–79.

49 These parameters are also presented in Appendix B.

50 Max Weber, *Economy and Society, Volume 1*, Guenther Roth and Claus Wittich, eds., Berkeley, 1978 [1922], p. 302; see, also, Ronald L. Breiger, 'The social class structure of occupational mobility', *American Journal of Sociology*, 87, 1981, pp. 578–611. Although the classes defined by Breiger rest explicitly on the Weberian definition cited here, the scale values generated under Model II* are also affected by patterns of inter-class exchange (see Goodman, 'Criteria for determining whether certain categories in a cross-classification table should be combined', pp. 612–50).

51 The outflow rates presented by Sewell suggested that 'artisans stood significantly higher than unskilled and maritime workers in the social structure of nineteenth-century Marseille' (*Structure and Mobility*, p. 248).
52 The category of unskilled employees includes factory workers, day labourers (*journaliers*), and 'an assortment of other occupations' (Sewell, *Structure and Mobility*, p. 51).
53 We use the symbol s_{ij} to refer to the expected counts in the ij^{th} cell after the forces of supply and demand have been purged from the data.
54 The raw outflow rates presented by Sewell suggest a somewhat different story (*Structure and Mobility*, pp. 247–8).
55 See Grusky and Hauser, 'Comparative social mobility revisited', p. 24; Leo A. Goodman, 'On the statistical analysis of mobility tables', *American Journal of Sociology*, 70, 1965, p. 575.
56 The position taken by Katz, for example, is that 'the distinction between ... manual and nonmanual work did not exist [in the mid-19th century] with anything like the sharpness it has since assumed' (Michael Katz, *The People of Hamilton, Canada West*, Cambridge, 1975, p. 9).
57 For a similar description, see David L. Featherman and Robert M. Hauser, *Opportunity and Change*, New York, 1978, p. 152.
58 We reached a similar conclusion in our reanalysis of American data (see Grusky and Fukumoto, 'A sociological approach to historical social mobility', pp. 221–32).
59 The parameter estimates for Model A2 are also presented in Appendix C.
60 Karl Marx, 'Manifesto of the Communist Party', *The Marx–Engels Reader*, Robert C. Tucker, ed., New York, 1978 [1894], pp. 469–500; see also Ronald Aminzade and Randy Hodson, 'Social mobility in a mid-nineteenth century French city', *American Sociological Review*, 47, 1982, p. 453.
61 This reference to statistical significance refers to changes in the social distance between the artisan and sales-clerical categories. The null hypothesis of 'no change' cannot be rejected (at $\alpha = 0.05$) when we carry out the three pairwise tests of change for the years 1821, 1846 and 1869.
62 For a related discussion, see Harry Braverman, *Labor and Monopoly Capitalism*, New York, 1974.
63 Although the densities on the main diagonal are generated by the *combined effects* of diagonal parameters and row-column scale values, our pairwise tests of significance pertain to changes in the diagonal parameters alone.
64 For a similar model, see Grusky and Hauser, 'Comparative social mobility revisited', p. 30.
65 We will continue to impose an equality constraint on the scale values for corresponding rows and columns.
66 Kazuo Yamaguchi, 'Models for comparing mobility tables: Toward parsimony and substance', *American Sociological Review*, 52, 1987, pp. 482–94; Yu Xie, 'New models for comparing mobility tables: a log-multiplicative approach', Unpublished working paper, Department of Sociology, University of Michigan, Ann Arbor, 1991; Clifford C. Clogg, 'Using association models in sociological research: some examples', *American Journal of Sociology*, 88, 1982, pp. 114–34.
67 This model was estimated by modifying GLIM code that was kindly provided by Yu Xie.
68 The results reported here pertain, as always, to mobility tables that have been supplemented with a small constant of 0.5. If the same tests are carried out with the *original* data, the relevant likelihood-ratio contrast is barely significant ($L^2 = 6.7$, with 2 degrees of freedom).
69 We have also experimented with models that allow for a global increase in the densities above or below the main diagonal. When this asymmetric 'shift effect' is overlaid on top of our baseline specification (Model A2, Table 3.4), the point

estimates indicate that the amount of upward mobility was gradually increasing during the economic take-off. However, the shift effects for 1846 and 1869 were both quite weak, and the associated test statistics were therefore too small to be significant.
70 We would again cite Goldthorpe ('On economic development and social mobility', pp. 549–73) as a notable exception in this regard.
71 Sewell, *Structure and Mobility*, p. 23.
72 Although Sewell reached this conclusion *without* estimating the requisite multiplicative models, there is obviously no guarantee that the outcome of such exercises will always be so benign.
73 For a related argument, see Kaelble, 'Eras of social mobility in 19th and 20th century Europe', 1984.
74 See Guest, Landale and McCann, 'Intergenerational occupational mobility in the late 19th century United States', pp. 351–78.
75 Guest, Landale and McCann, 'Intergenerational occupational mobility in the late 19th century United States', p. 375.
76 The baccalauréat had become a 'social institution ... necessary for most careers in social and political life' (A. Delfau, *Napoléon 1^er^ et l'instruction publique*, Paris, 1902, p. 62). See, also, Patrick J. Harrigan, *Mobility, Elites, and Education in French Society of the Second Empire*, Waterloo, 1980.
77 Thernstrom, *The Other Bostonians*, p. 110.
78 Ganzeboom, Luijkx and Treiman, 'Intergenerational class mobility in comparative perspective', pp. 3–84.
79 See, e.g., Pierre Bourdieu and Jean-Claude Passeron, *Reproduction in Education, Society, and Culture*, London, 1977.
80 See Frank Parkin, *Marxism and Class Theory: A Bourgeois Critique*, New York, 1979.
81 Parkin, *Marxism and Class Theory*, p. 63.
82 Robert Erikson and John H. Goldthorpe, 'Commonality and variation in social fluidity in industrial nations. Part II: The model of core social fluidity applied', *European Sociological Review*, 3, 1987, pp. 145–66; see, also, Grusky and Hauser, 'Comparative social mobility revisited', pp. 19–38; Hauser and Grusky, 'Cross-national variation in occupational distributions, relative mobility chances, and intergenerational shifts in occupational distributions', pp. 723–48.

Appendices

Appendix A. Cross-classification of father's occupation by son's occupation for 1821, 1846 and 1869 Marseille

	Destinations									
Origins	*(a)*	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*	*(i)*	*(j)*
A. 1821 Marseille										
(a) Business & prof.	40	6	21	6	1	0	11	5	0	0
(b) Rentier	12	12	19	10	0	1	12	1	0	2
(c) Sales & clerical	2	0	15	2	0	0	18	1	0	3
(d) Small business	6	1	14	28	2	3	37	2	0	0
(e) Soldier & other	1	0	3	1	4	0	15	4	3	5
(f) Service	0	0	3	0	1	1	8	2	0	0
(g) Artisan	4	0	18	18	0	4	355	18	0	26
(h) Maritime	0	0	2	2	0	0	27	42	0	16
(i) Agriculture	0	0	4	8	3	2	50	2	18	18
(j) Unskilled	0	0	2	1	1	3	25	1	0	27

Origins	Destinations (a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
B. 1846 Marseille										
(a) Business & prof.	73	16	34	6	5	0	16	3	0	2
(b) Rentier	39	23	41	27	4	6	55	4	0	4
(c) Sales & clerical	12	3	41	9	1	4	53	5	0	4
(d) Small business	8	5	24	55	0	3	55	7	2	8
(e) Soldier & other	5	0	12	9	6	11	53	7	2	17
(f) Service	0	0	6	3	1	3	19	1	0	7
(g) Artisan	8	8	42	51	8	17	620	25	0	59
(h) Maritime	3	3	4	3	0	1	44	65	0	12
(i) Agriculture	0	5	56	31	10	26	195	15	36	133
(j) Unskilled	0	2	7	7	5	5	94	7	0	111
C. 1869 Marseille										
(a) Business & prof.	48	5	18	4	0	2	9	0	0	1
(b) Rentier	40	14	35	20	0	7	23	1	0	3
(c) Sales & clerical	4	0	38	8	1	4	34	5	0	0
(d) Small business	11	2	17	36	3	5	32	2	2	5
(e) Soldier & other	1	2	17	7	0	3	32	9	1	14
(f) Service	0	0	2	1	0	5	12	1	0	2
(g) Artisan	10	5	69	35	0	20	312	15	0	30
(h) Maritime	2	0	4	2	0	1	25	37	0	5
(i) Agriculture	4	4	93	31	4	49	138	18	13	93
(j) Unskilled	2	0	13	11	2	9	92	11	2	79

Note: These data are drawn from Sewell (1985, pp. 243–5). Because the counts were reconstructed from percentages, there may be small rounding errors in some cells. See text for details.

Appendix B. Selected parameters from model of constant inheritance and interclass distance

Occupation	Scale values	Diagonal parameters	Total inheritance
1. Business & prof.	−1.67	1.23	20.07
2. Rentier	−1.06	1.96	5.98
3. Sales & clerical	−0.43	1.82	2.18
4. Small business	−0.27	3.57	3.84
5. Soldier, student & pedler	0.29	2.40	2.61
6. Service	0.29	2.33	2.53
7. Artisan	0.31	3.32	3.65
8. Maritime	0.35	15.12	17.05
9. Agriculture	0.70	7.32	11.98
10. Unskilled	1.49	0.81	7.47

Note: The estimates were taken from Model A5, Table 3.3. See text for details.

*Appendix C. Selected parameters from unconstrained Model II**

Occupation	Year 1821	1846	1869
A. Row-column scores			
1. Business & prof.	−1.35	−1.89	−1.57
2. Rentier	−1.31	−0.90	−1.20
3. Sales & clerical	−0.60	−0.45	−0.31
4. Small business	−0.36	−0.17	−0.31
5. Soldier & other	0.37	0.19	0.41
6. Service	0.23	0.38	0.20
7. Artisan	0.44	0.32	0.23
8. Maritime	0.62	0.23	0.40
9. Agriculture	0.68	0.78	0.65
10. Unskilled	1.28	1.52	1.50
B. Diagonal parameters			
1. Business & prof.	2.81	0.57	1.85
2. Rentier	2.53	1.89	1.48
3. Sales & clerical	1.85	1.81	1.84
4. Small business	3.12	3.93	3.29
5. Soldier & other	5.51	2.14	0.48
6. Service	2.70	1.72	2.92
7. Artisan	3.81	3.35	2.81
8. Maritime	9.41	17.24	16.37
9. Agriculture	11.93	9.31	2.71
10. Unskilled	1.73	0.86	0.65

Note: The estimates were taken from Model A2, Table 3.3. See text for details.