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Educational Field of Study and Social Mobility: Disaggregating Social Origin and Education

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ABSTRACT
We examine the relationship between social origin and education by looking at it in more detail than is usually done. Rather than seeing origin and education as hierarchical characteristics, we argue that both should be disentangled in more detailed combinations of hierarchical levels and horizontal fields. Using Dutch survey data for men, we show that children often choose fields of study in which affinity is found with the class fraction of their father. This way, social selection into fields of study is guided by the domain of the father's occupation. Importantly, affinity in domains across generations hampers intergenerational social mobility.

KEY WORDS
college major / education / field of study / social mobility / stratification

Introduction

It has long been known that inequality of educational opportunity is prevalent in many western and non-western societies. For a large part, social advantage is reproduced from parents to children through education (e.g. Blau and Duncan, 1967; Breen, 2004; Jencks et al., 1972; Shavit and Blossfeld, 1993). In addition, it has been shown that social class also affects enrolment into different tracks within levels of education, where children of advantaged backgrounds more often enrol in academic tracks, and children of lower social origins in vocational tracks (Breen and Jonsson, 2000; Gamoran and Mare, 1989; Lucas, 1999, 2001).

More recently it has been argued that not only educational tracks but also educational fields of study are relevant in processes of social stratification (Davies and Guppy, 1997; Hansen, 1997; Van de Werfhorst et al., 2000, 2003). Most of these studies have looked at the impact of parents' social class and educational level on children's educational field of study, thereby linking vertically ranked positions of parents to horizontally different positions of children. However, to understand educational field choices, we think it is particularly relevant to also disaggregate social origin in vertically and horizontally different locations in the class structure. According to recent scholarship, social class action often takes place at the occupational, rather than 'big class' level (Grusky and Sørensen, 1998; Grusky and Weeden, 2001; Weeden and Grusky, 2005). Being primarily concerned with issues of collective action, big classes have become less relevant to understand 'class as a life chance' (Sørensen, 2000). Instead, Grusky and associates argue that, to understand the contemporary impact of social class, sociologists should look at occupations as bases for identity formation, lifestyle differentiation, and selection on training. One domain where occupation-based class action takes place could be the educational choices of children.

The analysis of occupations and educational fields of study brings in a much needed horizontal dimension in the social differentiations of contemporary society. Such horizontal differentiations become relevant for social stratification and mobility if they translate into vertical advantage or disadvantage. Hence, we study the impact of class on education by disaggregating social classes into sub-classes of occupational groups along lines of horizontal specialization. We investigate whether, and aim to explain why, educational field choices are influenced by the occupational domain of the parents. Furthermore, we analyse whether such patterns of association between parents' occupation and children's educational field promote the chance for children to attain the same vertical position in the class structure as their parents. We do this for a country where educational specialization takes place relatively early – the Netherlands. This implies that we can observe horizontal educational choices for a much wider group than for the elites in institutions of higher education.

Horizontal and Vertical Dimensions of Stratification

It is a well-known fact that academic and scientific subjects are more highly regarded than vocational or utilitarian ones, and that social class affects children's track (or subject) placement (e.g. Alexander et al., 1978; Ayalon and Gamoran, 2000; Gamoran and Berends, 1987; Lucas, 1999, 2001).

Lucas (2001) coined the mechanism of Effectively Maintained Inequality (EMI) to explain why differential tracking choices are made by children of different social origins. The EMI thesis states that, if a particular level of education becomes very common to attain, middle-class families seek ways to keep their offspring ahead within those levels, and send their children to the academic tracks. Because children of less advantaged social origins often enrol in vocational courses, inequalities persist within levels of education even when a particular level of education becomes 'saturated'. This means that inequality does not necessarily reduce when saturation occurs, which was the general claim of the Maximally Maintained Inequality thesis (Raftery and Hout, 1993).

According to the EMI thesis, social origin affects tracking in two ways. First, middle-class parents actively maintain the tracking system and secure the best places for their offspring. Parents are in this way actively involved in the institutionalization of tracking (Lucas, 1999). Second, social background affects individual track placements of children through various resources that children may benefit from, and also because middle-class parents know, through personal experience, how important it is for their children to be enrolled in a particular programme in order to improve further chances in life.

The EMI approach is a useful starting point for our purposes, as it is aimed at explaining parental influence on 'qualitative differences in schooling' that are 'not collinear with the level of study' (Lucas, 2001: 1648). Despite the focus of the EMI approach on tracking in secondary schools, it is, with one important extension, helpful to understand how social selection in educational fields of study takes place. This extension involves the level of aggregation at which social origin influences choices for fields of study. In particular, in order to understand how social origin affects children's educational field of study we may learn from recent developments in class theory stressing that class action takes place at the occupational level rather than at the level of 'big classes' (Grusky and Sørensen, 1998; Grusky and Weeden, 2001; Jonsson et al., 2009; Weeden and Grusky, 2005). Such a bridge between the EMI framework and occupational class theory is as yet unseen in the literature.

If class action takes place at the level of occupations, it is evident that studying social mobility cannot be limited to the analysis of educational choices that are explicitly or implicitly hierarchically structured. Instead, such an analysis must look into the choices that are made for occupational specialization in fields of study. Moreover, studying choices for educational fields reveals the educational process through which occupations are intergenerationally reproduced (cf. Jonsson et al., 2009).

According to Weeden and Grusky (2005), classes are formed through three homogeneity-inducing mechanisms. First, within-group homogeneity is affected through processes of allocation. On the demand side, employers function as gatekeepers that grant access to social positions. On the supply side, workers select themselves into those positions that they feel connected to, for example in terms of attitudes, beliefs, and demographic attributes (cf. Hout, 1984; Kohn, 1977[1969]). The second mechanism concerns social conditioning processes, which are inherently causal to increasing homogeneity. Social conditioning takes place through four sub-mechanisms: training, interactional closure (through human interaction), interest formation, and learning generalization. The third mechanism focuses on the institutionalization of conditions, embracing 'processes by which work is typically structured and rewarded' (Weeden and Grusky, 2005: 154).

For all three processes of class formation, education is important, and, we argue, in particular in terms of horizontal educational differentiations. Resources that result from occupational positions of parents are both hierarchically and horizontally structured. Social origin affects not only the amount of parental resources that children can benefit from, but also the type, such as economic or cultural capital (Davies and Guppy, 1997; Hansen, 1997). And on a more disaggregate level, it is plausible that parents can provide their children with detailed information about study programmes strongly connected to their occupation (see e.g. Laband and Lentz, 1992, for lawyers; and Elder, 1963, for farmers). Jonsson et al. (2009) furthermore argued that intergenerational mobility often occurs at the level of occupations because of the intergenerational transmission of occupational skills, occupational cultural capital and social networks.

Following this line of reasoning, parental resources affect the allocation and the social conditioning mechanisms of class formation partly through the fields of study that children choose. The choice of educational field of study can be seen as generating a labour market supply of workers who:

> … self-select into positions based not only on their perceptions about which occupations are remunerative and intrinsically rewarding […], but also on their beliefs about which occupations provide a good fit in terms of their pre-existing beliefs, attitudes, lifestyle predilections, and demographic attributes. (Weeden and Grusky, 2005: 149)

Obviously parents play an important role in this [self-]selection process.

In addition to these 'resource explanations', parents can affect horizontal educational stratification through the mechanism of institutionalization at the (occupational) class level. It is plausible that occupational groups are responsible for the institutionalization of the structure of work, and ultimately of the structure in which persons get educated to be prepared for the working life. This clearly occurs at the level of the professions, where access to occupations is regulated by field of study. These regulations (in terms of licensing or certification) imply that the workplace is structured by imposing hard distinctions among occupations (e.g. lawyer versus assistant, doctor versus nurse). But also in less credentialized fields, such as in finance and insurance, the wider system of skills acquisition is actively created and maintained and hence institutionalizes a particular stratification. Certainly in the Netherlands, where certification and licensing of occupations is likely to be relatively dominant given the strong links between employers and vocational school organizations, the institutionalization explanation is an important complement to resource explanations.

Research Strategy

In order to analyse the impact of (disaggregated) social classes on educational outcomes we follow the approach taken by Weeden and Grusky (2005) and Jonsson et al. (2009), by comparing aggregate measures of father's social class and the son's educational attainment with disaggregated ones. We start from a standard educational stratification model that essentially examines the relationship between parental social class and educational attainment. We then allow disaggregations of both class of origin and education, by distinguishing occupational groups within social classes (parents) and by distinguishing fields of study within levels of education, and see whether the fit of the model increases. In distinguishing horizontal variations, we furthermore focus in particular on one horizontal outcome: whether the field of study chosen is similar to the type of occupation that the father has. We call such similarity ‘affinity’. Based on the literature above, it is likely that children are over-represented in fields similar to their parents’ occupation.

Because we use cross-sectional surveys, we can employ a synthetic cohort design to study trends across time in the association between social origin and educational choices. Therefore, our study puts horizontal choices in a dynamic empirical framework, unlike the single-cohort studies of Lucas (2001) and Ayalon and Yogev (2005). There is consistent empirical proof of decreased origin effects on educational outcomes across time in the Netherlands (Ganzeboom and Luijkx, 2004; Shavit and Blossfeld, 1993). In this light it is relevant to see if other educational differentiations are also decreasingly affected by social origin, or that horizontal affinities are far more consistent (cf. Van de Werfhorst et al., 2000).

After we have investigated the patterns of association between social origin and educational choices, it is also important to see whether affinities between types of occupations and educational fields of study help people in terms of the position they take in the vertical stratification of society. Goldthorpe (2002), criticizing the disaggregated class approach, states that occupational closure does not necessarily say anything about social stratification. We adhere to this vigilance concerning the relevance of occupational class theory for social stratification. For ‘affinity’ in disciplinary choices to be relevant for the sociological understanding of social mobility and inequality, it is required that it helps people in reaching particular positions in the vertical hierarchy of contemporary societies. Given the theoretical framework above it is likely that children who choose a field that is affiliated to their parents’ type of occupation are more likely to land in the (big) social class of their parents than children who chose differently. For example, children of health professionals who choose a health-related discipline are more likely to achieve a professional or managerial position than children of health professionals who choose a different discipline. Similarly, manual working-class children who choose technical study programmes at the lower levels of schooling will be more likely to become manual working-class members themselves than working-class children who do not choose technical subjects.

Disaggregating Social Class and Education

In developing a disaggregated scheme for social origin and education, we are guided by several theoretical and empirical considerations. First, given our interest in educational field choice, our disaggregation starts from the fields of study back to the social origin.

Second, looking at educational fields, the crucial question is, at which aggregation level do the mechanisms of strengthening within-group homogeneity operate? At which level do attitudes, interests, and demographic preferences affect the likelihood to choose one domain of study rather than another? It is likely that homogeneity should be sought at the level of more disaggregated groups, such as the humanities, engineering, business and economics, or social sciences. Children of a psychologist may develop a preference for psychology, but also for educational studies or sociology. However, it is much less likely that they develop attitudes and preferences that would direct them into the field of engineering. So, substantially there is much to say for a disaggregated version of social origin and educational choice that allows variation at a level more aggregated than at the level of occupations.

A third consideration for developing a disaggregated classification starts from the aggregation level at which institutionalization and social closure patterns take place. Thinking of the interactional closure that takes place in the workplace, which induces occupational social class formation, it is likely that interactional patterns include a more diverse group than those in one single occupation. For instance, in medicine it is unlikely that a 'class' of surgeons would be much different from a 'class' of paediatricians. Additionally, a large part of the labour market consists of jobs that are not as highly credentialized. Job advertisements often demand a quite aggregated type of field, such as 'business', 'social studies' or 'humanities'. Hence, the training process through which class formation takes place is often situated at the level of aggregate fields of study.

Fourth, our focus on education as the basis for disaggregating both education and social origin implies that much of the horizontal variation is found at higher levels of education, and not below. In the Dutch context this means that we study horizontal variations from the intermediate vocational school and higher, and limit distinctions at the lower secondary level between vocational and general programmes. This may have the downside that our classification is 'top heavy' (Weeden and Grusky, 2005: 146) where variation is mainly found at the higher levels of the distribution. Although we acknowledge that we cannot distinguish occupations at the lower levels, it is less relevant for our purposes of studying affinity between social origin and educational choice. If children of the skilled manual working classes wish to enroll in a study programme that is affiliated to the occupation of their father, they may choose the lower vocational school, whether their father is a car mechanic or a carpenter. The carpenter's and the car mechanic's children have no differential schooling options at the lower secondary level.

Data and Variables

Data

We use survey data from the Netherlands. The Netherlands is an interesting test case of the relationship between social origin and detailed educational choices, as choice of field of study takes place from the intermediate vocational level upwards. This means that we can study horizontal choices of a broad group of persons, and are not limited to focus on the educational elite in tertiary level institutions.

We merge data from several surveys: the Supplementary Use of Services Research of 1999 ('Aanvullend Voorzieningengebruik Onderzoek', (AVO)1999); three Family Surveys of the Dutch Population –1992, 1998 and, 2000 (De Graaf et al., 1998, 2000; Ultee and Ganzeboom, 1993), and the Households in the Netherlands (HIN) survey of 1995 (Weesie and Kalmijn, 1995). We restricted our analyses to men between the ages of 25 and 74, with a total of $N = 6892$.[1]

Variables

We distinguish the following birth cohorts (k): 1919–1930; 1931–1941; 1942–1952; 1953–1963; 1964–1975.

Social class and education are both measured in an aggregate and a disaggregate way. In an aggregated way commonly used to study the origin–education relationship, social origin class (l) corresponds to the eight-class version of the Erikson and Goldthorpe class schema (higher service class I, lower service class II, routine non-manual III, self-employed with no or few employees IVab, farmers IVc, skilled manual working class V/VI, unskilled manual working class VIIa, farm laborers VIIb).[2] Father's class refers to the situation when the respondent (child) was around 15 years old. Education is, in its aggregate measure, operationalized in seven levels of schooling (m): primary, lower vocational (known as LBO/VBO); lower general (MAVO); higher general (HAVO/VWO); intermediate vocational (MBO); vocational college (HBO); and university.

Disaggregated, social origin (i) and education (j) are both operationalized in 24-category variables. This disaggregation was done within the aggregate groups, on the basis of the field of study (in education) and in terms of the field of occupation (in origin). Given the volume of the data we had to collapse some fields of study into one. In Table 1 the two variables are shown (summed over cohort), as well as the contingency table cross-classifying both.[3]

Models and Results

Given the categorical nature of the main variables in our analysis (parents' occupational group and detailed educational attainment), we employ a log-linear analysis. One of the advantages of log-linear models is that the strength of the association between two variables does not depend on the marginal distributions of these variables. This is particularly important given our dynamic focus (comparing the Origin-Education association over Cohorts). The general log-linear model looks as follows:[4]

$$\ln F_{ijk} = \lambda + \lambda_i^{O} + \lambda_j^{E} + \lambda_k^{T} + \lambda_{ik}^{OT} + \lambda_{jk}^{ET} + \lambda_{ij}^{OE} + \lambda_{ijk}^{OET}, \text{ for all } i = 1,\dots, 24; \; j = 1,\dots, 24; \; k = 1,\dots, 5$$

Table 1 Cross-classification of social origin and education (Men only)

	Education								
	level 1	*level 2*	*level 3*	*level 4*	*level 5*				
	Primary	*Lower vocational*	*Lower general*	*Higher general*	*Intermediate vocational agriculture*	*Intermediate vocational technical*	*Intermediate vocational health/care*	*Intermediate vocational economic & law*	*Intermediate vocational other*
class I education	0	0	2	2	2	1	0	2	1
class I tech/agr/transp	9	22	17	10	1	28	0	10	3
class I health & care	0	2	2	3	0	5	2	2	3
class I economic/admini	2	9	17	13	1	10	2	11	4
class I law/public admin	2	5	8	7	1	7	1	6	1
class I social/behavioural	3	0	0	1	2	2	0	0	1
class I management	28	26	27	28	5	32	0	17	9
class II education	4	8	9	16	1	9	1	1	3
class II tech/agr/transp	14	22	9	10	4	31	6	14	4
class II economic/admin	7	30	29	25	3	17	4	17	5
class II law/public admin	2	7	6	9	2	20	1	6	5
class II social/behavioural	5	8	8	6	1	14	1	4	3
class II management	4	11	13	14	2	13	0	10	4
class III tech/agr/transp	4	9	4	5	1	4	0	6	3
class III econ/admin	30	83	33	50	2	49	8	37	11
class III law/public admin	0	12	8	3	1	3	2	1	3
class IVab other	4	8	0	1	1	3	1	0	1
class IVab tech/agr/transp	30	71	31	21	0	39	4	22	14
class IVab econ/admin	21	63	36	15	3	34	10	23	6
class IVab health/care	4	12	7	7	0	4	0	5	2
class IVc (farmers)	81	216	41	23	88	63	7	23	8
class V VI (skilled manual)	140	323	135	61	11	197	19	82	41
class VIIa (semi/unsk. man)	213	536	163	51	22	140	17	69	46
class VIIb (farm workers)	55	83	14	6	9	25	1	1	5
TOTAL	662	1566	619	387	163	750	87	369	186

Table 1 *(Continued)*

	Education							
	level 6							
	Vocational college education	*Vocational college humanities*	*Vocational college agriculture*	*Vocational college technical*	*Vocational college health/care*	*Vocational college economic/law*	*Vocational college Social-cultural*	*Vocational college other*
class I education	2	1	0	2	0	0	0	1
class I tech/agr/transp	4	2	1	33	3	14	5	1
class I health & care	1	4	0	4	0	6	2	1
class I economic/admin	1	3	1	10	2	6	2	1
class I law/public admin	6	3	0	5	0	12	1	0
class I social/behavioural	4	0	0	3	2	2	0	0
class I management	17	3	2	25	8	21	2	3
class II education	13	3	3	26	2	9	4	0
class II tech/agr/transp	5	1	1	21	4	10	2	2
class II economic/admin	13	4	2	21	1	25	5	0
class II law/public admin	10	1	1	3	3	8	1	0
class II social/behavioural	5	5	1	11	4	12	0	1
class II management	3	3	2	13	0	14	1	1
class III tech/agr/transp	2	0	0	7	1	5	2	2
class III econ/admin	22	9	1	38	9	24	3	7
class III law/public admin	4	2	0	4	0	5	0	2
class IVab other	1	0	0	2	0	1	1	1
class IVab tech/agr/transp	20	4	3	23	5	13	5	2
class IVab econ/admin	11	2	2	14	0	18	4	3
class IVab heath/care	4	0	0	3	0	4	0	0
class IVc (farmers)	17	1	21	32	6	19	1	3
class V VI (skilled manual)	42	12	4	105	10	69	17	10
class VIIa (semi/unsk. man)	26	6	2	54	10	44	7	3
class VIIb (farm workers)	6	1	1	11	1	9	0	0
TOTAL	239	70	48	470	71	350	65	44

(Continued)

Table 1 *(Continued)*

	Education							
	level 7							
	University humanities	*University agriculture*	*University technical*	*University health/care*	*University economics*	*University law*	*University social-cultural/education*	
class I education	1	1	2	2	3	1	1	27
class I tech/agr/transp	5	3	14	6	10	0	6	207
class I health & care	3	1	11	8	3	3	2	68
class I economic/admin	6	1	9	4	16	8	4	143
class I law/public admin	1	0	7	0	2	5	3	83
class I social/behavioural	0	1	0	0	1	1	2	25
class I management	6	1	19	4	11	10	9	313
class II education	4	0	18	3	10	7	7	161
class II tech/agr/transp	0	0	10	4	2	4	2	182
class II economic/admin	4	1	19	7	15	6	8	268
class II law/public admin	4	1	6	0	4	2	1	103
class II social/behavioural	3	0	5	2	1	2	4	106
class II management	0	1	3	0	1	1	0	114
class III tech/agr/transp	0	0	2	1	1	0	1	60
class III econ/admin	9	0	27	3	12	6	13	486
class III law/public admin	1	1	7	0	0	2	1	62
class IVab other	1	0	0	0	1	0	0	27
class IVab tech/agr/transp	2	0	16	2	4	4	6	341
class IVab econ/admin	4	2	9	2	7	7	6	302
class IVab heath/care	1	0	1	0	0	0	1	55
class IVc (farmers)	8	5	13	5	6	4	2	693
class V VI (skilled manual)	11	5	43	6	14	8	10	1375
class VIIa (semi/unsk. man)	9	1	13	3	6	5	12	1458
class VIIb (farm workers)	1	0	1	1	0	1	1	233
TOTAL	84	25	255	63	130	87	102	6892

Source: Aanvullend Voorzieningengebruik Onderzoek, 1999; Family Surveys of the Dutch Population 1992, 1998, 2000; Households in the Netherlands 1995 (own calculations).

Where F_{ijk} is the expected frequency in the *ijk*th cell of the table, given the model. λ being the grand mean; λ_i°, λ_j^{E}, and λ_k^{T} being the one-variable effects pertaining to the Origin, Education, and Table(=cohort)-variable; λ_{ik}^{OT} and λ_{jk}^{ET} are the two-variable effects pertaining to the origin and education distributions for each cohort; λ_{ij}^{OE} being the origin-education association; and a three-variable effect λ_{ijk}^{OET} pertaining to the variation in origin-education association for the different cohort tables. As fit measure, we use the conventional log-likelihood ratio χ^2 statistic (G^2). Because a sample of this size ($N = 6892$) is rather small for the analysis of very detailed tables (24 by 24 by 5), we mainly rely on the conditional tests to compare the different models. The model fit parameters are shown in Table 2.

Table 2 Fit statistics of log-linear models (Men only, $N = 6892$)

Model	*Description*	*G2*	*df*	*BIC*	*Sig. (against model)*
Set 1: OE unscaled					
1a	8 × 7 'vertical' constraints on 24 × 24 table[a]	2320.8	2589	−20561.1	
1b	Model 1a + Cohort trend (Unidiff)	2313.4	2585	−20533.1	0.116 (1a)
1c	Model 1a + Field affinity[b]	2270.3	2588	−20602.8	0.000 (1a)
1d	Model 1c + Cohort trend in field affinity (Unidiff)	2267.4	2584	−20570.3	0.575 (1c)
1e	Model 1c + Field-specific field affinities[c]	2265.7	2585	−20580.8	0.204 (1c)
1f	Model 1c + Class-specific field affinities[d]	2218.9	2581	−20592.3	0.000 (1c)
1g	Model 1f + Cohort trend in class-specific affinity (Unidiff)	2210.4	2577	−20565.4	0.075 (1f)
1h	Model 1b + Cohort trend in class-specific affinity (Unidiff)	2202.7	2573	−20537.8	0.000 (1b); 0.040 (1f)
Set 2: Scaled association models OE (8 × 7 constraints)[e]					
2a	Scaled O and E without Cohort trend	2403.4	2633	−20867.4	0.000 (1a)
2b	Model 2a + Cohort trend (Unidiff)	2397.9	2629	−20837.5	0.000 (1b); 0.240 (2a)
2c	Model 2a + Class-specific field affinities	2293.6	2625	−20906.5	0.000 (2a)
2d	Model 2c + Cohort trend in class-specific field affinities (Unidiff)	2282.3	2621	−20882.4	0.023 (2c)

Notes: [a] 24 origin and 24 education categories constrained to eight EGP classes and seven educational levels
[b] Affinity measures across-class affinity between horizontal origin position and horizontal education position (affinity versus no affinity)
[c] Field-specific field affinity allows for different association levels for different horizontal positions. There are four levels of affinity (versus non-affinity): health; technical/agricultural/transport; economic/law; and humanities/social studies
[d] Class-specific field affinity lets the dichotomous affinity parameter (affinity versus no affinity without levels for different fields) vary across eight origin EGP classes
[e] 8 × 7 classification used for Origin and Education, as in model 1a
Source: Aanvullend Voorzieningengebruik Onderzoek, 1999; Family Surveys of the Dutch Population 1992, 1998, 2000; Households in the Netherlands 1995 (own calculations).

In the modelling strategy it is crucial to put equality constraints on different sets of association parameters pertaining to groups of cells in the origin-by-education table that represent affinity between class origin and education, and see which specification fits the data best. In our base model, we study the association between standard EGP (Erikson and Goldthorpe) classes and educational level assuming all association parameters within EGP classes and within educational levels to be equal. We then relax this model by incorporating an 'affinity' parameter for the occupational domain of the father and the educational field of the son, and see whether the model fit improves. In the next stage, we investigate whether affinity differs across fields (field-specific affinity), between social classes (class-specific affinity), and across cohorts. This is all done in two different ways, based on how the origin-by-education association is modelled: unscaled, and scaled on the basis of the 'big' classes and educational level using the Goodman-Hauser model (Goodman, 1979; Hauser, 1984).[5]

Set 1: Adding Affinity to Unscaled OE Models

We will start with a base model assuming only 'vertical' association, i.e. non-zero association is only allowed between the eight EGP-classes and the seven educational levels, but not between 'horizontal' distinctions within classes and educational level. Formally:

$$\text{In } F_{ijk} = \lambda + \lambda_i^O + \lambda_j^E + \lambda_k^T + \lambda_{ik}^{OT} + \lambda_{jk}^{ET} + \lambda_{ij}^{OE}$$

where $\lambda_{ij}^{OE} = \lambda_{im}^{OE}$ *for* $l \in (i)$ and $l = 1,...,8 \vee$ for $m \in (j)$ and $m = 1,...,7$

Instead of having 23*23 independent λ^{OE}-parameters, we have only 7*6 independent λ^{OE} parameters. This base model (model 1a) does overfit the data. (G2 = 2320.8; df = 2589, BIC = –20,561.1).

In model 1b, we assume a trend in the constrained OE association: $\beta_k \lambda_{ij}{}^{OE}$, i.e. the association between Origin and Education differs by a scalar β_k('unidiff'). This model does not improve on model 1a, implying no statistically significant change over cohorts in the origin by education association.[6] Model 1c adds field affinity to model 1a. This model indicates whether children choose fields in similar domains as their parents' occupation. We see that this model improves on model 1a. Thus, in substantive terms, controlling for the relationship between social class and educational level, children often choose fields with affinity to the occupational domain of their parents.

In model 1d we analyse whether there is a trend in this horizontal affinity. Given that this model does not improve on model 1c, this model shows that field affinity does not vary across cohorts.

Model 1e leaves aside this trend, and investigates whether the affinity between the domains of social origin and educational field of study varies across fields of study ('field-specific field affinity'). Is the likelihood to choose an educational programme related to one's parents' occupation similar across domains, or stronger in some domains compared to others? The domains that were distinguished are: technical, agricultural, transport; health; economics, law; and humanities, social studies. The fit of this model is not better than that of model 1c, which leads to the conclusion that field affinity is similar across these four domains.

Model 1f examines whether field affinity is stronger for some social classes than it is for others. (Note that here field affinity is not variable across domains, as this was refuted in model 1e.) This 'class-specific field affinity' model (1f) improves on model 1c, indicating that the likelihood to choose educational domains related to one's parents' occupation varies across social classes.

Starting from this model with class-specific field affinities, model 1g analyses whether class-specific field affinities vary across cohorts. This model does not improve on model 1f (p = 0.075). However, allowing for a cohort trend in the OE association as well as in class-specific field affinities (model 1h) improves on a model with only a OE trend (1b) and on a model with no field affinity trend (1f).

Summarizing the most important results from models 1a to 1h, we conclude that people often choose fields in domains related to their social origin, and that this field affinity varies across (big) social classes.

Set 2: Scaled Association Models on Constrained 8 x 7 Table

In the second set of models, we make a start with modelling the OE-association in a more parsimonious way. We start with the Goodman-Hauser model of scaled association (Goodman, 1979; Hauser, 1984). These models are based on the very restricted Uniform Association Model that assumes all contiguous associations in a table to be identical (In $\theta = \varphi; \theta_{ij}$ being the odds ratio). This stringent assumption can be meaningfully relaxed by scaling the distances between the row/occupational (μ_i) and column/educational (ν_j) categories: (In $\theta = \varphi\mu_{i+1}-\mu_i)(\nu_{j+1}-\nu_j)$, where μ_i and ν_j are scaling parameters, while φ is the scaled uniform association parameter that describes the association throughout the table, conditional upon the scaling parameters; the category scalings μ_i and ν_j can be interpreted as measures of distance between or similarity among occupational and educational categories with respect to the class–education relationship. If categories were identically scaled, this suggests that they can be regarded as a single class (e.g. μ_1=μ_2) or educational level (e.g. ν_1=ν_2). In formula:

$$\text{In } F_{ijk} = \lambda + \lambda_i^O + \lambda_j^E + \lambda_k^T + \lambda_{ik}^{OT} + \lambda_{jk}^{ET} + \varphi\,\mu_i\nu_j$$

where $\mu_i = \mu_1$ *for* $l \in (i)$ and l = 1,...8; $\nu_j = \nu_m$ for $m \in (j)$ and m = 1,..., 7

In this scaled association model, we assume equal scaling parameters within classes and educational levels. This is our model 2a. If we compare this to the unscaled model without a cohort trend (1a) we see that 2a is a deterioration in terms of G2 (G2 = 82.6, df = 44). The Bayesian Information Criterion (BIC) is, however, more strongly negative, indicating a better fit.

Allowing for a different association for each birth cohort (φ_k), we obtain model 2b, which does not improve on model 2a, and deteriorates relative to model 1b in terms of G2. Thus, there is no significant trend in the scaled OE association. However, if we compare the cohort-variation in terms of unidiff we get similar unidiffs as found in Dutch studies using more data (Breen et al., 2009); see Table 3.

When adding the class-specific affinity (model 2c), there is an improvement over model 2a (G2 = 109.8;df = 8); and when then adding a unidiff cohort trend parameter to it, the model is again improved further (model 2d; G2 = 11.3;df = 4). This last model seems to be a reasonable description of the data.

Thus, as expected, allowing for affinity in the origin-education table improves on a model without affinity. Children often choose fields affiliated to their father's occupational domain. This pattern is different across social classes and across cohorts, but similar across the different fields. It is therefore not the case that children more often choose fields related to their parents' occupation in some fields than in other fields.

Parameter estimates

Parameter estimates of model 2d are given in Table 3. Both the category scalings for social class and educational level follow the expected pattern. The class-specific affinity parameters show that affinity is likely in all classes except for the routine non-manual class and the unskilled working class. The strongest affinity – given the scaled association pattern based on EGP class and educational level – is found in the agricultural class. Sons of farmers are more than twice as likely to choose the agricultural field than any other field (e 0.817 = 2.26).

Table 3 Parameters for Model 2d

Class	*Affinity*	*Category Scalings (μ_i)*	*Cohort*	*Affinity over cohort (unidiff)*	*Education*	*Category Scalings v_j*	*Scaled OE Unidiffs model 2b*
I	0.430	0.185	1919–30	1.000	Primary	–0.422	1.000
II	0.430	0.117	1931–41	1.058	Lower vocational	–0.463	0.879
III	–0.043	–0.011	1942–52	0.399	Lower general	–0.207	0.825
IVab	0.212	–0.117	1953–63	0.996	Higher general	0.045	0.737
IVc	0.817	–0.260	1964–75	1.084	Intermediate vocat.	–0.173	0.781
V+VI	0.181	–0.233			Vocational college	0.028	
VIIa	–0.023	–0.509			University	0.241	
VIIb	0.212	–0.493					

Source: Aanvullend Voorzieningengebruik Onderzoek, 1999; Family Surveys of the Dutch Population 1992, 1998, 2000; Households in the Netherlands, 1995 (own calculations).

Children of the service classes are about 1.5 times as likely to choose affinity versus non-affinity. With the exception of the agricultural field, we clearly see that affinity is more often found among higher social classes than among lower social classes.

Looking at the affinity parameters across cohorts, we see that the 1942–1952 birth cohort stands out. Children of the 1942–1952 birth cohort chose educational fields of study related to their social origin class far less often than children born in other years. If we compare the unidiff parameters of affinity of model 2d with the unidiff parameters of the Origin-Education association there is a much more continuous trend in the OE association than in the class-specific field affinities. The trends are plotted in Figures 1 and 2. It can be seen that affinity follows a U-shaped pattern (Figure 2). Evidently the baby-boom cohort has relatively often made field choices which showed no affinity with their parents' occupation; whereas later cohorts have the same level of horizontal affinity as the earlier cohorts.

Affinity and Social Mobility

As argued earlier, choosing a field of study related to the occupational domain of one's parents may be helpful in reaching the same social class as one's parents. To analyse to what extent this is the case, we identify whether 'affinity' increases the odds of obtaining the same vertical class position as the parents. Through this additional analysis we can judge whether the findings about field choice are relevant not only from the perspective of occupational preferences,

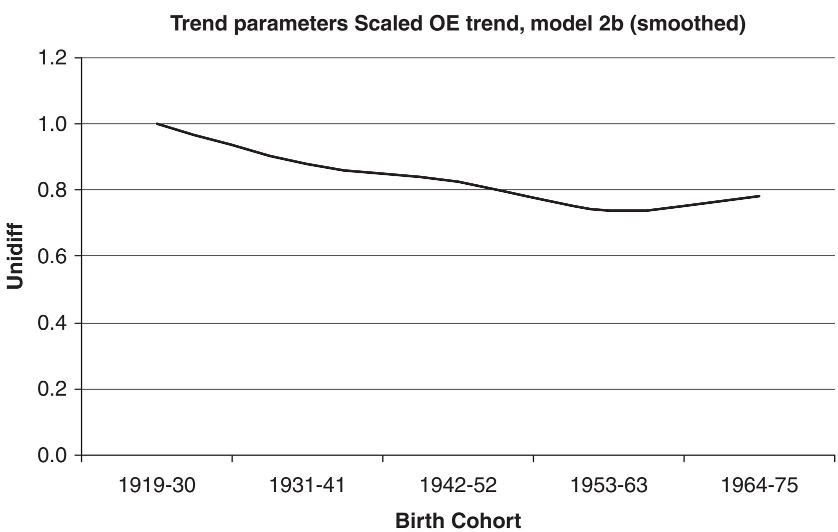

Figure 1 Trends in OE association

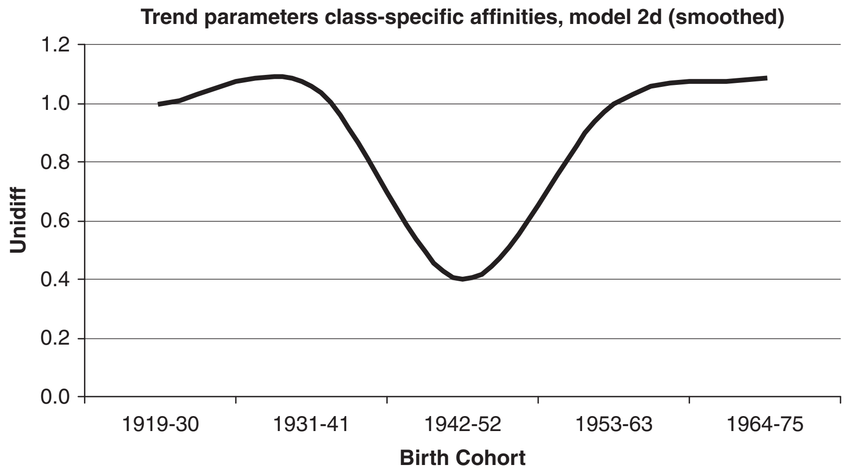

Figure 2 Trends in class-specific affinities

but also from the perspective of social mobility. In Table 4 we show odds ratios of being immobile conditional on choosing affinity. These odds ratios are relative to non-affinity. It can be seen that affinity helps children from all social classes to reach a similar class position as the parents. It is worth noting that, among children of the routine non-manual working class, where affinity was much less often found than in other classes, it contributes to finding a similar class position as the parents.

Table 4 The impact of affinity on EGP class immobility[a]

Class-specific affinity (versus no affinity)	*Odds ratio immobility versus mobility*
Affinity coming from origin class I (higher service class)	1.57 ***
Affinity coming from origin class II (lower service class)	1.44 ***
Affinity coming from origin class III (routine non-manual)	2.03 ***
Affinity coming from origin class IVab (self-employed)	1.02 ***
Affinity coming from origin class IVc (farmers)	5.12 ***
Affinity coming from origin class V/VI (skilled manual)	5.07 ***
Affinity coming from origin class VIIa (unskilled manual)	2.04 ***
Affinity coming from origin class VIIb (farm labourers)	2.99 ***

Notes: *** $p < 0.001$

[a] The odds ratios indicate to what extent affinity per origin class leads to a higher likelihood to achieve the same EGP class. These odds ratios are controlled for the distributions of origin and destination in 24 categories.

Source: Aanvullend Voorzieningengebruik Onderzoek, 1999; Family Surveys of the Dutch Population 1992, 1998, 2000; Households in the Netherlands, 1995 (own calculations).

We should note that class variations in the impact of affinity on mobility are partially a consequence of the fact that the disaggregation within classes could not be done equally detailed for all classes. This is caused by the fact that the broad field of technical education matches various kinds of work in the working classes; whereas within the higher social classes a more diverse set of educational fields could match the kinds of work done by parents. It should be stressed that this reflects the kinds of institutionalization that are apparent in the Dutch schooling system. Educational options for children of skilled manual working classes who wish to reach the same social class are limited, and imply basically choosing the technical secondary vocational colleges. In any case, we should pay less attention to the variation across classes in the impact of affinity on immobility than to the fact that all odds ratios are larger than 1.

Summary and Conclusions

In this article we have examined the relationship between social origin and education by looking at it in more detail than is usually done. Rather than seeing both origin and education as hierarchical characteristics, we argue that both should be disentangled in more detailed combinations of hierarchical levels and horizontal fields. This implies that well-known studies on the impact of social class on educational decision-making have only told one side of the story: the higher one's origin, the better one's scholastic achievements and attainments. They have ignored that educational choices of individuals are guided by the horizontally different positions of parents as well. A bridge between the theory of Effectively Maintained Inequality (Lucas, 2001) and the occupational class theory of Grusky and associates has proven useful to understanding how educational choices are affected by social origin, and how such choices affect social mobility. The EMI thesis states that social origin affects choices of education that are unrelated to the level of schooling. Yet, to understand how preferences for and institutionalization of fields of study develop, we should follow the suggestion of the microlevel class approach to look at occupations as sources of class formation. Given that field of study does not mediate the effect of (big) class of origin on (big) class of destination (Jackson et al., 2008), and given that we show that affinity helps in reaching the same (big) class as the parents, we need to disaggregate both social origin and educational choice in order to fully understand the impact of horizontal differentiation for vertical stratification.

Telling only one side of the story is not problematic, as long as it does not lead to misunderstandings of the social world. However, especially when it comes to trends in the impact of origin on educational decision-making, we think that the single-sided focus on vertical achievements has partly led to misunderstandings of reality. It has been shown for a number of countries that educational inequality is decreasing, using methods that separate educational expansion from 'true' inequality (Breen et al., 2009; Jonsson et al., 1996; Shavit and Blossfeld, 1993). However, as associations between parental and children's horizontal choices have become stronger, and certainly not weaker, in recent decades, educational decision-making is not unequivocally becoming less dependent on social origin. Certainly, given that differences between educational fields of study in terms of labour market outcomes are stable or even on the rise, studying educational stratification in a more detailed way is highly relevant to understanding the social mobility process.

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Notes

1 Given the complexity of our arguments, the fact that we build upon earlier findings for men, and the fact that we study cohorts born as far back as 1919, we decided not to analyse women's educational choices at this stage. It has been shown that field choices of daughters are affected by parents in a different way from the field choices of sons (Dryler, 1998).

2 Sub-classes IIIa and IIIb can not be distinguished. We identified all main class categories, and only pooled them together when the educational recruitment is expected to be very similar (V and VI) and separated main class categories when the educational recruitment is expected to be different (VIIa and VIIb, with VIIb selecting on agricultural fields of study at the lower level).

3 Although we acknowledge that parental education appears more important for children's education than parental social class in most Dutch empirical studies, our design requires that we are able to disaggregate parental social position in a vertical and horizontal dimension. As parents' educational field is not available in all the datasets, we used father's class instead. Given the limited number of cases in our log-linear models we could not add parents' education as an additional dimension to the table.

4 Because we are dealing with rather sparse data (6892 observations for 2880 cells), we follow Firth's (1993) advice to use a bias reducing adjustment for the estimates in loglinear models by adding a small constant equal to the number of parameters in the model divided by twice the number of cells in the table. We will use 0.05 for all models, because this will still give us the opportunity to carry out conditional tests. Further note that our modelling strategy implies a simplified version of the full origin by education table, allowing us to estimate the models with sparse cells.

5 A third way of modelling used scalings on the basis of the detailed origin by education categorizations (both in 24 categories). These models yielded very similar parameter estimates compared to the presented scaled association models, but had a slightly worse fit (in terms of BIC). Analyses available on request.

6 This is probably due to the much smaller dataset analysed than in other Dutch studies on educational stratification, where usually a downward trend is found (Breen et al., 2009; De Graaf and Ganzeboom, 1993). The estimated trend parameters are of comparable size to those found in these studies.

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