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# Occupational career attainment during modernization. A study of Dutch men in 841 municipalities between 1865 and 1928

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## Abstract

This paper addresses the effects of modernization processes on occupational career attainment. We ask whether modernization processes increased the success of occupational careers, and whether the effect of social background varies by regional level of modernization. We analyse a unique data set with information about the careers of around 7000 men who were active in the labour market in the Netherlands between 1865 and 1928. Modernization processes are measured at the municipality level (e.g. presence of post office and train station, educational expansion). The results of cross-classified multilevel growth models show that in municipalities with more advanced modernization, men enjoy higher social status at the beginning of their career, but that their status grows more slowly over the course of their career. The effect of social background hardly varies in response to modernization processes. Our results indicate that regional modernization processes have had restricted impact on individual mobility outcomes.

**Keywords:** Careers, Modernization, Status Attainment, Industrialism. (← 5)

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## **Introduction**

In this article we study the effects of modernization processes on individual career success in Dutch municipalities in the late 19th and early 20th centuries. This was a period of tremendous social and economic change, rapid industrialization and continued urbanization. At the same time, modern transport, communication and meritocratization were spreading rapidly. These processes are assumed to have caused major changes in social mobility. Industrialization is understood to have brought many individuals economic and social success, and to have increased mobility rates (Inkeles, 1960; Kaelble, 1985; Kerr et al., 1973; Mitch et al., 2004). The average occupational status of the population is assumed to have increased and individuals are believed to have enjoyed more successful careers, a higher level of status and income, and increased upward mobility (Brown et al., 2004; Hauser et al., 1975; Treiman, 1970), although certain classes, most notably artisans, lost their relatively privileged position (Hobsbawm, 1964).

It remains unclear if 19th century modernization processes indeed led to an increase in career success across the population at large. Historians of economics and labour sociologists have performed relatively few analyses on this subject. They performed case studies, mostly relating to careers in well-regulated segments of the labour market such as banks and insurance companies (Jacoby, 1984; Miles and Savage, 2004; Owen, 2004; Seltzer and Simons, 2001; Stovel et al., 1996; Vincent, 1993), but it is difficult to generalize their results to the total population.

In addition to this first strand of research, a second branch (also composed of a limited number of studies) modelled occupational careers, notably via log-linear modelling (Boonstra, 1993; Featherman and Hauser, 1978; Kaelble, 1985) and sequence analyses (Abbott and Hrycak, 1990). A disadvantage of log-linear modelling is that only a few explanatory variables can be included in the model, making it less suitable to assess the influence of various modernization processes. Sequence analyses demand detailed information on the timing of occupational changes, which historical data seldom provide.

Finally, there is the vast body of literature by stratification sociologists (Carroll and Mayer, 1986; Mayer and Carroll, 1987; Spilerman, 1977; and more recently Barone et al., 2011; Blossfeld et al., 2006; Manzoni et al., 2014). It, however, focuses on cohorts who had their career mainly after WWII and it studies careers against the light of other macro developments, such as globalization and economic crises. Research focuses on life-cycle destandardization

(Blossfeld et al., 2006) and the role of social origins for career attainment (Barone et al., 2011).

The few studies of careers during industrialization do not point unequivocally toward an increase in career success. Maas and van Leeuwen (2004) find increasing career mobility during industrialization in Sweden; however, this finding reflects mostly lateral movements of unskilled farm workers who became unskilled factory workers. Schulz and Maas (2012) find only a slight increase in career success in the Netherlands in the late 19th and early 20th centuries, suggesting an upward shift of the entire occupational structure, rather than greater upward mobility over the life course. Notably, a trend toward increased success has also not been found for formal careers in bureaucracies and other internal labour markets (Miles and Savage, 2004; Vincent, 1993).

This article will demonstrate another approach that has only recently become feasible. Our study models careers of a sample of the male labour force nationwide. We take advantage of recent advances in the field of history – the rise of large databases and common occupational coding schemes. We use data from the Historical Sample of the Netherlands (HSN). The HSN contains information on the occupational careers of 7000 men who were on the labour market between 1865 and 1928. Because the data stem from a random sample of all the birth certificates from this period, and also include information from marriage and population registers, many types of occupations are captured. We analyse between one and 21 measurements of the occupational status of each individual. The data include upward, downward and lateral occupational moves over the life course. Regrettably, we can only study the occupational careers of men, because the multilevel growth models that we will employ assume that individuals are active in the labour market in periods that they are not observed. Due to childbirth, (← 6) childrearing and household responsibilities women often had interrupted careers and therefore did not always meet these assumptions (Schulz and Maas, 2010).

Research on careers sometimes studies temporal differences (e.g. Barone et al., 2011; Maas and van Leeuwen, 2004), but regional differences have been almost completely ignored. We employ a multilevel research design, where the theoretical indicators – such as communication, transport and values – are measured at the level of municipalities, and may vary yearly. It is challenging to systematically capture such indicators for hundreds of municipalities over a long period. Yet such work is essential, because without it, classical theories cannot, or can at best only partially, be empirically tested. Some of the macro-societal

processes that we study are not bound to the 19th and 20th centuries. For example, some aspects of the Dutch economy have been described as modern well before the onset of industrialization (de Vries and van der Woude, 1997). However, the most fundamental changes in the economy and society took place during the period we study, and therefore the Netherlands provide a case in point to test modernization theory.

In addition to studying the influence of modernization processes at large on career success, we specifically study one central claim of the logic of industrialism, namely that the mechanisms of status attainment changed owing to modernization processes. We will assess whether the effect of social background on career attainment is smaller in more modern regions and periods. This question has some bearing with the concept of relative mobility. Whereas main effects of modernization processes on career success relate to absolute mobility, i.e. mobility possible due to changes in the occupational structure, changes in the mechanisms of status attainment relate to relative mobility and address the question of whether the determinants of status over the life course changed in response to modernization processes. The research questions we pose are as follows: Are men in more modernized areas more likely to have successful careers? Does the influence of social background on career success vary according to regional and temporal differences in modernization?

## **Theory and hypotheses**

### ***Socio-technological modernization and career success***

The well-known ‘logic of industrialism’ thesis states that a number of socio-technological changes have impacted the occupational structure and logic of the workplace in general: industrialization, educational expansion, mass transportation and mass communication (Inkeles, 1960; Kerr et al., 1973; Mitch et al., 2004; Treiman, 1970). There are two ways in which these processes potentially increased individuals’ career success. First, men were able to begin their careers in higher-status first jobs, which had a strong effect on subsequent occupational positions (Blau and Duncan, 1967). Second, those already active on the labour market in industrializing countries may have benefited by advancing to higher-status positions. Below we will elaborate on the specific mechanisms through which the four modernization processes may have affected the two dimensions of career success.

Industrialization describes the increasing use of mechanical equipment and mechanized

energy (Davis, 1955). These changes in the mode of production created higher-status jobs (Kaelble 1985; Mitch et al., 2004). Increasingly, mechanized mass production took place in large enterprises (Bloemen et al., 1993; Chandler, 1990). The more complex organization of work in these large firms demanded more supervisory positions and administrative staff to organize recruitment and personnel management. Industrialization also led to the obsolescence of certain traditional forms of employment, e.g. artisans and craft workers (Hobsbawm, 1964; Kuznets, 1957). Although this may have caused downward mobility for some, overall the shifts in the occupational structure are believed to have enabled men to start their career in higher-status occupations and to be upwardly mobile during their career (Hauser et al., 1975). Technological change is often associated with negative outcomes for older workers. However, when formal training for new job skills is not yet widely available, older workers may benefit from technological change by learning on the job and advancing to more complex (← 7) and higher-status positions (Bartel et al., 2005; Mincer and Ofek, 1982). Obviously, not all municipalities industrialized at the same moment in time, creating different career opportunities for men living in more and in less industrialized places.

The changing occupational structure caused an increasing demand for literate and trained personnel. This motivated parents to let their children stay in school longer. The government responded to these developments by financing more schools and slowly raising the school age. The resulting educational expansion enabled more people to begin their careers in higher-status jobs. In the rapidly changing labour market, expanded education also granted individuals easier access to additional training throughout the life course, enabling upward social mobility. Living in a municipality with better schooling opportunities thus positively affected career opportunities.

Industrialization and educational expansion coincided with the rise of mass communication and mass transport. The latter processes furthered industrialization, and vice versa, industrialization and educational expansion accelerated the development of new modes of transport and communication. Mass communication enabled people to access information about job opportunities outside their social networks. For example, post offices began to distribute newspapers with job advertisements to a greater geographical area (Zijdeman, 2010). Mass transport, via trains and later private cars, reduced the cost of travel, allowing people to seek employment across a broader geographical area. Men living in municipalities with access to mass transport and mass communication thus had better opportunities to find higher-status jobs than men living in other municipalities, furthering both their career start and

their career development.

In the Netherlands, the second half of the 19th century was a time of accelerated changes brought about by the mechanization of work. Between 1850 and 1896, the horse power of steam engines rose from 3000 to 122,000 (Van Zanden and Van Riel, 2000: 290). Between 1860 and 1930 the primary sector decreased from 40% to 20%, the secondary sector increased from 31% to 40%, and the tertiary sector increased from 29% to 40% of the working population (Centraal Bureau voor de Statistiek, 2010). In 1863, a new law on secondary schooling was passed with the aim of reaching children of ordinary workers (Boekholt and de Booy, 1987: 182). In 1860, only three rail tracks existed, whereas by 1940, all parts of the country were serviced (Figure 1). Thus, in the period we study, there was a large contextual variation with respect to the four modernization processes – contexts defined as a certain municipality in a certain year, e.g. Utrecht in 1880, Amsterdam in 1881. We hypothesize:

**Hypothesis 1:** In contexts that were socio-technologically more advanced, individuals had more successful occupational careers.

### *Modernization processes and the effect of social background on career success*

The ‘logic of industrialism’ thesis (Kerr et al., 1973) predicts that with increasing modernization – specifically industrialization – the association between father’s occupational status and son’s occupational status decreased. Parents’ direct influence on their children’s occupational decisions is believed to have decreased due to specialization of labour. With new demands for specialized and longer training, parents become unable to qualify their children for work on the job market (Treiman, 1970). Sons could no longer follow in their father’s footsteps. Moreover, for efficiency reasons employers increasingly chose on the basis of merit, rather than social background. Educational expansion strengthened this development. In general education children acquired skills that they could use in many occupations, and in vocational schools they were prepared for specific occupations, not necessarily similar to that of their father. Information-sharing about job opportunities also changed. With the rise of mass communication, e.g. the spread of newspapers, people became less dependent on their relatives for information about job opportunities. In addition, mass transport made it affordable to travel to places where their (low) social background was not known to potential employers. (← 8)



**Figure 1.** Black lines represent the Dutch railway network in 1860; grey lines represent the railway network in 1940 (Stationsweb, n.d.).

In sum, the four modernization processes contributed to a decrease in the influence of social background on career success.

**Hypothesis 2:** In contexts that were socio-technologically more advanced, high-status social background was less related to successful occupational careers.

According to Treiman (1970), industrialization not only changed the occupational structure and the organization of work, but was also accompanied by a spread of universalistic values. Universalistic values stress that all individuals are equally worthy and should be judged on their efforts and skills rather than on ascriptive characteristics such as social background. The spread of universalistic values was not discussed before, because it is not expected to cause a general change in career success. However, we do predict changes in values to influence career attainment by decreasing the impact of social background.

Non-industrial societies often are described as traditional and static. In such societies, social



background was a primary determinant of individual career success (Kerr et al., 1973). In industrializing societies, people are believed to have embraced universalistic values stressing the importance of achieved characteristics for personal success. On the one hand this probably happened for efficiency reasons: an increase in the demand for better-skilled workers prompted employers to recruit efficiently based on workers' achievement instead of social background. On the other hand, the separation of household and workplace is thought to have weakened the influence of family members on individual decision-making and as a consequence changed their values. Classical modernization theorists such as Inkeles and Smith (1974: 311) describe this development as follows: (← 9)

The modern man's sense of efficacy is reflected in his belief that, either alone or in concert with others, he may take actions which can affect the course of his life and that of his community ... and in personal matters by his choosing the job and the bride he prefers even if his parents prefer some other position or some other person.

Do we observe a spread of universalistic values in the Netherlands between 1865 and 1928? Measuring individuals' values in the past is notoriously difficult. We try to capture the spread of universalistic values by the school attendance of girls relative to boys in a municipality in a certain year. According to Treiman (1970), a main proponent of modernization theory, the schooling of boys and girls together was a consequence of the spread of beliefs that individuals should be judged upon their merits rather than their social background or gender. From the 1860s onwards girls in the Netherlands were admitted to regular schools, formerly only accessible to boys. A clear increase of the girls to boys ratio in school children is visible between 1865 and 1928 (Boekholt and De Booy, 1987). We hypothesize:

**Hypothesis 3:** In contexts where universalistic values were more widely adopted, high-status social background was less related to successful occupational careers.

## **Data, methods and variables**

### *Data*

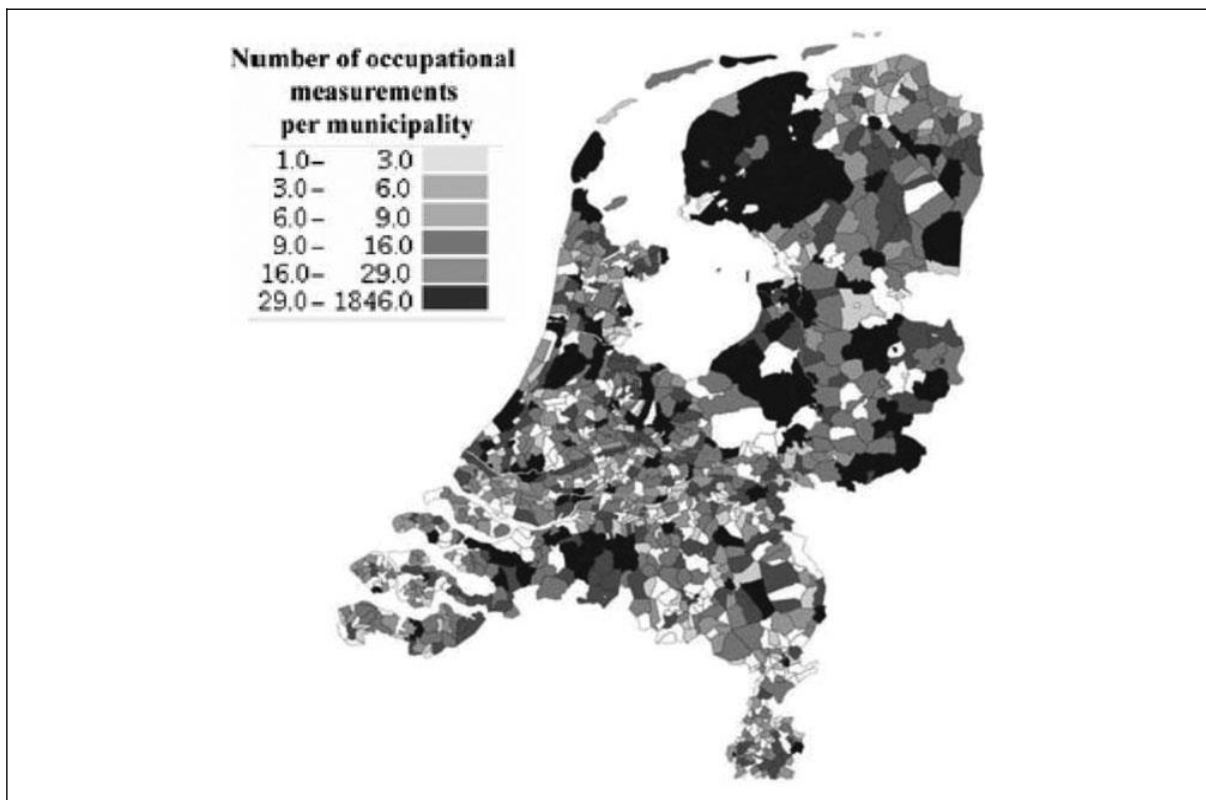
The HSN provides information about the occupational careers of the Dutch population in the 19th and 20th centuries. The HSN is an excellent source for the study of men's careers in different regions and over time. It starts from a random sample of Dutch birth registers in the period 1812–1922. For the periods 1812–1872, 1873–1902 and 1903–1922, samples that

cover 0.75%, 0.50% and 0.25% respectively of all birth certificates have been taken. The HSN will eventually include the life courses of 78,000 individuals.

For all individuals in the sample, additional information is gathered from vital registers and population registers. This data collection is on-going. Therefore, we will use a sub-sample (HSN Data Set Life Courses Release 2010.01), which consists of individuals born between 1850 and 1922. The sub-sample is not completely representative of the Dutch population for two reasons. First, in some provinces, data collection went faster than in other provinces. For example, Figure 2 shows that in the province of Friesland in the north of the Netherlands more data have been collected than in other provinces. We don't expect this to affect the results, because the selection of cases that have been processed in slower provinces should not be selective. Secondly, in all provinces there is a small over representation of 'easy to collect' life courses. The more often men migrated, the longer it takes to gather data on the complete life course, because more archives need to be inspected. Previous analyses of this dataset, however, showed no effect of migration on career success (Schulz and Maas, 2012).

The main individual level data sources are birth certificates, death certificates and marriage certificates. In addition, information from population registers has been included. Population registers were, in principle, continuously updated to document household composition and the place of residence of each individual living in the Netherlands. They also include information on the current occupations of all household members. This means that the amount of occupational information available for a given individual depends on the number of vital events and residential moves the individual experienced, and not on the occupational career itself (e.g. number of different occupations held). We will investigate whether our results are affected by this particularity of the data by performing additional separate analyses for men with few and many occupational measurements.

We restrict our sample to individuals belonging to the working population defined as those aged 15 years and above. We studied the period from 1865–1928. For the first part of our observation period until approximately 1885, most of the data refer to men aged 15–35, who are in the first half of their careers. The data from later in the observation period reflect the careers of men of all age groups. Some (← 10)



**Figure 2.** Geographical distribution of individual occupational information. Source: Historical Sample of the Netherlands.

of the men observed in the later time period had not completed their occupational careers by 1928 (see Figure 3). In the following sections we will return to this issue and discuss possible consequences.

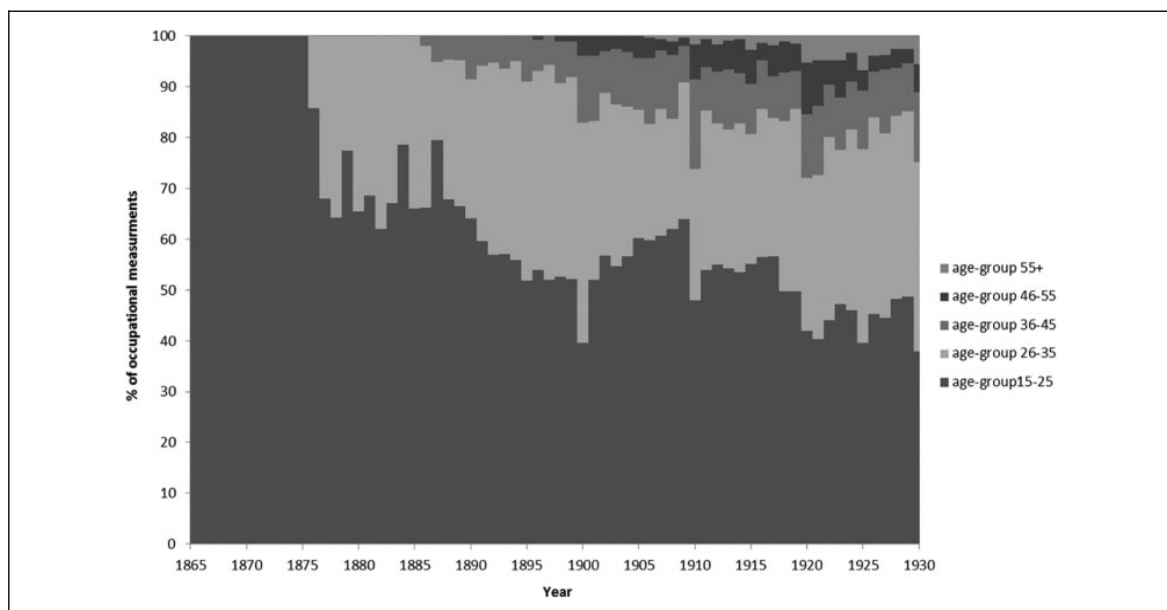
## Methods

### *Data structure and model*

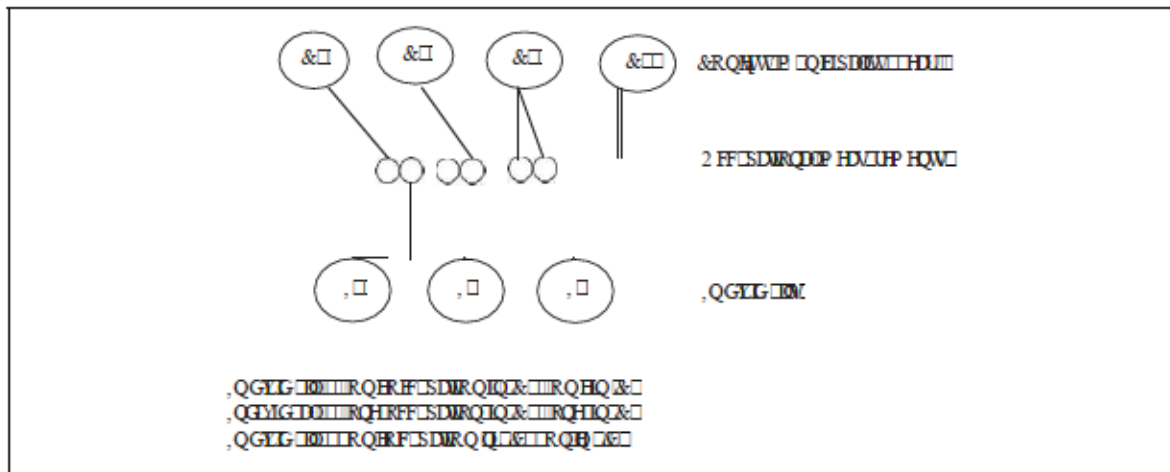
We estimate growth models in which we predict that career success is affected by individual and contextual determinants (Schulz and Maas, 2010). We expect career success to increase with age until a certain point toward the end the career. We differentiate two aspects of career success: (1) at which level of occupational status the career starts and (2) how fast occupational status grows over the course of the career. These two aspects are affected by time constant individual characteristics, e.g. social background, and time-varying regional characteristics,

such as levels of industrialization and educational expansion.

We created a ‘context’ variable that reflects in which year a man had a certain occupation and in which municipality this man lived at that time. Residential location was recorded every time an occupational measurement was registered. Note that the registers do not provide any information on whether the residential location was also the place of work. However, it is unlikely that people lived far from their work. The expansion of the railway system made travelling easier, yet given the costs and the time-consuming character of travelling, not many men would commute on a daily basis. In our analyses, we include indicators of modernization at the context level: for example, the number of students pursuing secondary education in Utrecht in 1888 or whether there was a train station in The Hague in 1865. We use cross-classified models because our measurements of occupational status are both nested in individuals and in varying contexts. We cannot employ a classical hierarchical nesting structure because (← 11)



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2 QHRIDWHQGEDRW R I P R C H Q D W R Q S U H M V R Q K W R Q W W E Y O E D U G H W R Q FRYH V D S D W R I W H H H D F K S H R G H F D V H I Q R W D W R Q R C H Q P E H U R I S H R Q D E D V M R Q O I Y D E O H R P R Q I G V K H H R U P H R I W H I Q D V M R Q O I O G H I D V D F W R Q R I P H Q

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development of the HISCAM-scale as for the contemporary Cambridge Social Interaction and Stratification scales (CAMSIS). These scales are built with the assumption that patterns of social interaction (e.g. marriages) between people from different occupational strata are representative of the overall structure of occupational stratification. The HISCAM-scale was developed using 1.5 million marriage records from six different countries (Britain, Canada, France, Germany, the Netherlands and Sweden) from 1800 to 1938. It ranges from 1 to 99, with higher values indicating higher occupational status. Servants, for example, are assigned a HISCAM-score of 10.6. Lawyers receive the highest possible score of 99.0 and tailors are assigned a middle position with a score of 49.7.<sup>1</sup>

### ***Independent variables***

*Experience.* We approximate occupational experience using age. The data do not contain information on when men started their occupational career. We assume that men did so at the age of 15. For most men this will be accurate because they only completed elementary education (until approximately age 14) or they attained some form of secondary education taking an additional few years. Only men with higher education experience will be overestimated by up to 10 years. However, at the time this was only around 2% of all men. To calculate experience we subtracted 15 from age and divided the result by 10. We added a quadratic term of experience to test whether the effect of work experience on social status declined over a man's career.

*Father's occupational status.* As with men's occupations, the occupations of fathers were coded into HISCO and then assigned a HISCAM-score. If a father is known to have held more than one occupation, the data on father's employment taken closest to the son's birth was used.

### ***Individual level control variables***

Marital status and basic schooling were important predictors for men's occupational attainment in the 19th and early 20th century (Boonstra, 1993; Schulz and Maas, 2012). Accordingly, we control for these variables.

*Marital status.* Being married is treated as a time variant characteristic. We coded all points in time before marriage as 0, and all points after marriage as 1.

*Basic schooling.* As a proxy for whether a given respondent received at least primary education, we created a variable showing whether he was able to sign his marriage certificate (1) or not (0). One limitation of this variable is that it is undefined for people who never married. We added a dummy variable indicating individuals who were never married in order to avoid losing these cases. In our models, we treated this variable as a time-invariant characteristic.

### *Contextual characteristics<sup>2</sup>*

*Post office.* We study the spread of mass communication with a variable reflecting whether or not a post office was present in a municipality in a given year. Letters, telegrams, fashion brochures and newspapers were distributed by post offices. Because the volume of work of post offices was highly correlated with the number of inhabitants in a municipality we used the presence of a post office as an indicator for mass communication. We derived data on post office locations from annual reports by (← 13) the Staatsbedrijf der Posterijen, Telegrafie en Telefonie (PTT) [Public Enterprise Post office, Telegraphs and Telephone] (see also Zijdeman, 2010).<sup>3</sup>

*Industrial companies.* To capture the presence of industrial companies we use information on the locations of the top 100 Dutch companies, the best proxy available. The top 100 companies are enterprises which in terms of total assets are the 100 most successful companies in the Netherlands. Bloemen et al.'s (1993) study of the top 100 Dutch companies provides this information for 1913 and 1930. They argue that the top 100 companies were most likely industrial companies with a human resource management in the form of unified hiring strategies, acting incidentally as role models for other companies. We added the founding years and locations of the main establishments of all top 100 companies. These were used to decide whether the company was present in a municipality in a certain year.<sup>4</sup> We use two indicators for mass transport that refer to mechanized transport in our analyses. For the whole period, we employed data on the presence of train stations; from 1900 onward, we used information on car density.

*Train station.* We retrieved data on the years that each train station in the Netherlands opened and closed from the Stationsweb website (Stationsweb, n.d.). The data reflect the period from 1865 to 1928. Using this information, we created a variable that indicates

whether there was a train station present (1) or not (0) in a given year.<sup>5</sup>

*Car density.* This variable counts the number of cars per 1000 inhabitants in a given municipality. We retrieved this information from Statistics Netherlands (Wolf, 2010). The variable refers to the years 1900, 1905 and 1928, using linear interpolation for years in between. These interpolations are the weighted means of the number of personal cars from the years for which information is available. For example, our estimate of the number of cars in 1902 is equivalent to the sum of three times the number of cars in 1900 and twice the number of cars in 1905, divided by five.

*Educational expansion.* We used a municipality-level measure of the number of students enrolled in secondary education per 100 inhabitants. Even before the first mandatory schooling law was introduced in 1901, participation in basic schooling was high in the Netherlands. Therefore, rates in secondary education are a better indicator for educational expansion than participation in basic schooling. We consulted the annual reviews ‘Verslagen voor het hoger, middelbaar en lager onderwijs’ (Scholen, 1865–1928) on Dutch education for the period from 1860 to 1930.<sup>6</sup> Although Gymnasia (secondary school) students are registered in a different source, the reviews of ‘higher education’, we included them, because they too prepare for higher education (Mandemakers, 1996).

*Percentage of female students.* As described previously, we capture the spread of universalistic values by the percentage of pupils in a municipality in a certain year that are female.

### ***Contextual control variables***

*Urbanization.* We measured urbanization by taking the number of inhabitants of an individual’s municipality of residence in thousands. We derived these data from the Historical Ecological Database and the Historical Database for Dutch Municipalities for the period between 1865 and 1928 (Beekink et al., 2003). In all of our models that include indicators of modernization, we control for urbanization.

*Year/10.* We controlled for year divided by 10 in all of our models.

See Tables 1 and 2 for descriptive information on the variables we used in our analyses and correlations between the contextual variables. (← 14)



**Table 1.** Summary statistics for time-invariant and time-varying variables.

<b>Time-invariant variables (N=7023)</b>	<b>Period</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean/%</b>	<b>S.d.</b>
Father's occupational status (HISCAM)	1865–1928	10.60	99.00	46.81	11.79
<i>Control variable</i>					
Basic schooling	1865–1928				
No				1.06	
Yes				68.41	
Not known (never married)				30.51	
<b>Time-varying variables (N=19127)</b>					
Dependent variable: occupational status (HISCAM)	1865–1928	10.60	99.00	49.51	13.94
Experience/10	1865–1928	0	6.00	1.18	0.96
Experience/10 <sup>2</sup>	1865–1928	0	36.00	2.32	3.70
<i>Control variable</i>					
Married	1865–1928			38.62	
<b>Regional indicators (N=7994)</b>					
<i>Communication</i>					
Post office (1/0)	1865–1928			44.73	
<i>Educational expansion</i>					
Number of students per 100 inhabitants	1865–1928	0	17.01	0.60	1.08
<i>Transport</i>					
Train station (1/0)	1865–1928			47.96	
Car density/1000 inhabitants	1900–1928	0	31.08	2.82	3.01
<i>Industrialization</i>					
Top 100 company (1/0)	1865–1928			10.23	
<i>Community values</i>					
% female students	1865–1928	0	100.00	4.09	11.17
<i>Control variable</i>					
Urbanization in 1000	1865–1928	0.30	743.40	17.93	57.96

Note: The sample includes 19127 occupational measurements of 7023 men nested in 7994 contexts (see Figure 4). Because car density is measured from 1900 onwards the number of contexts drops to 5638.

**Table 2.** Correlations between contextual indicators of modernization (N = 7994).

	Post office (1/0)	Number of students per 100 inhabitants	Train station (1/0)	Car density per 1000 inhabitants	Top 100 company (1/0)	% female students
Number of students	0.499*					
Train station (1/0)	0.554*	0.425*				
Car density	0.185*	0.296*	0.175*			



Year/municipality	10.411	1.038	5.955	0.739	4.563	0.834	2.216	0.801
Individuals	143.475	2.862	107.129	2.229	102.514	2.176	102.666	2.253
Occupational measurements	40.382	0.747	41.096	0.715	42.322	0.793	37.984	0.821
-2 log-likelihood	132684.510		132250.719		132536.279		99633.057	
# of units:								
Year/municipality	7994		7994		7994		5638	
Individuals	7023		7023		7023		6303	
Occupational measurements	19127		19127		19127		14534	

Note: Experience starts to count at age 15, year starts to count at 1865. \* denotes significance at the 0.01 level.

(21%) in the occupational status of a given individual over the course of his working life ('within individuals'). Five percent of the variance in men's occupational status can be attributed to context. Although variance at the context level is quite small, it is statistically significant, as is the variance at the other two levels.

Model 1 shows that men gained status with increasing job experience. For every 10 years of career experience, men's status on average increased by 1.6 status points. In addition, the squared experience term has a negative effect, indicating that men's occupational status decreases toward the end of their careers. The estimated top of the occupational careers of men was reached at age 38  $[(1.605/0.698)*10+15]$ . An increase of father's status is associated with a half-point increase of his son's status. This rather strong effect indicates that a father's status had an important influence on his son's status attainment. Men who did not complete basic schooling had on average five points lower status than men who did pursue primary education. Being married had no effect on the occupational status of men.

In all the models except model 0, we included the variable 'year/10' as a control. The significant positive effect of 'year/10' indicates that if we take the characteristics of men into account, there is some evidence for an overall movement towards more successful careers.

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**Table 4.** Interaction effects of experience and father's status on men's occupational status.

	Model 4 (1865–1928)		Model 5 (1865–1928)		Model 6 (1900–1928)	
	b	s.e.	b	s.e.	b	s.e.
<b>Fixed part</b>						
Constant	47.019*	0.279	46.365*	0.325	47.790*	0.415
Experience/10	1.691*	0.209	2.348*	0.259	1.600*	0.324
Experience/10 <sup>2</sup>	-0.363*	0.046	-0.384*	0.048	-0.319*	0.064
Status Father	0.497*	0.014	0.520*	0.022	0.523*	0.025
Married (1/0)	-0.188	0.192	-0.173	0.190	-0.479*	0.219
<i>Basic schooling</i>						
Yes	Ref.		Ref.		Ref.	
No basic schooling	-4.497*	1.325	-4.409*	1.264	-4.391	1.472
Not known (never married)	-0.275	0.302	-0.220	0.310	-0.533	0.342
<b>Modernization indicators</b>						
Year/10	1.139*	0.103	1.064*	0.105	0.721*	0.181
Post office (1/0)	0.942*	0.280	2.007*	0.387	1.439*	0.462
Train station (1/0)	0.392	0.275	0.092	0.382	-0.440	0.459
Education/100inhab	0.385*	0.110	0.392*	0.164	0.455*	0.175
% female students	-0.009	0.009	0.003	0.013	-0.000	0.014
Top 100 company (1/0)	0.897	0.322	1.201*	0.393	1.368*	0.433
Car density/1000inhab					0.056	0.076
Population in 1000s	0.004*	0.001	0.004*	0.001	0.003*	0.001
<b>Trend of father's status over life course and time</b>						
Age/10*status father	0.009	0.009	0.016	0.009	0.015	0.010
Year/10*status father	-0.038*	0.008	-0.038*	0.008	-0.048*	0.015
<b>Interactions – age/10</b>						
Post office (1/0)			-0.898*	0.210	-0.616*	0.254
Train station (1/0)			0.103	0.202	0.488	0.244
Education/100inhab			0.027	0.084	-0.002	0.094
% female students			-0.004	0.007	-0.003	0.008
Top 100 company (1/0)			-0.337	0.200	-0.306	0.240
Car density/1000inhab					0.008	0.034
<b>Interactions – father's status</b>						
Post office (1/0)			0.018	0.026	0.041	0.030
Train station (1/0)			-0.046	0.025	-0.068*	0.028
Education/100inhab			0.004	0.009	0.002	0.009
% female students			-0.000	0.001	-0.000	0.001
Top 100 company (1/0)			-0.030	0.020	-0.033	0.022
Car density/1000inhab					0.007	0.004
<b>Random part</b>						
Year/municipality	4.435	0.855	4.086	0.807	2.449	0.525
Individuals	102.627	2.201	102.003	2.139	102.129	2.330
Occupational measurements	42.268	0.778	42.446	0.811	37.815	0.711
-2 log-likelihood	132501.351		132525.079		99607.582	

# of units: Year/municipality	7994	7994	5638
Individuals	7023	7023	6303
Occupational measurements	19127	19127	14534

Note: Experience starts to count at age 15, year starts to count at 1865, and the variables in the interaction terms are mean-centred, except for the variable experience/10. \* denotes significance at the 0.01 level. (← 17)

10 years, the average occupational status increased by 1.3 status points. Adding individual predictors reduced the variance between individuals' career status scores from 143 to 107 and the variance at the context level from almost 10 to 6. The variation within individuals slightly increased from model 0 to model 1 from 40 to 41.<sup>8</sup>

In model 2, we add the modernization indicators. The presence of a post office, the presence of an industrial company, and educational expansion were associated with higher occupational status; however, the effects were rather small. In municipalities with a post office or an industrial company, men's occupational status scores were on average one point higher than in municipalities without. Every additional secondary school student per 100 inhabitants was associated with an increase of men's status by one third of a point. The percentage of girls among all students was not expected to affect men's occupational status, and we did not find such an effect.

In model 3 we only analyse the years after 1900 because the car density indicator is not available for earlier years. The number of occupational measurements drops to 14,534. Car density did not affect men's social status between 1900 and 1928.

The second way to test hypothesis 1 is to analyse the effects of modernization indicators on the speed of growth of men's status over the course of their careers. Models 5–6 in Table 4 include interaction terms of the indicators of modernization and experience. Men in contexts with a post office (model 5) enjoy a higher occupational status at the beginning of their careers but a slower increase in status over the course of their careers. The presence of a post office, which has a positive main effect of around two (2.007) status points, decreased the speed of growth in status by 0.898 points per 10 years. Thus, over a period of 22 years ( $2.007/0.898=2.2$ ), men in contexts with a post office lost the advantage in status they enjoyed over men who began their careers in a context without a post office. The other indicators of modernization are not significantly related to the speed of growth of men's status. Hypothesis 1, which states that men in contexts with greater socio-technological

changes have more successful occupational careers, is only partially supported. A number of modernization indicators indeed had positive significant effects on the occupational status of men at the beginning of their career. However, the second aspect of career success, the faster increase in status over the working life, was not found. On the contrary, men's status in contexts with a post office grew slower than in contexts without a post office.

Models 5 and 6 also include tests of hypotheses 2 and 3, which predict that the effect of father's status decreased with socio-technological modernization and value change. Before we discuss the models that test hypothesis 2, we present in model 4 the trend of the effect of father's status over historical time as well as on the speed of growth of men's careers. The effect of father's status decreased with historical time; with every additional 10 years the effect of father's status decreased by almost 0.04 points. This is a substantial effect. In the middle of the observed period (around 1895) the estimated effect of father's status was 0.50. In the 60 years around 1895 the effect of father's status thus is estimated to have declined from 0.62 to 0.38. Father's status had no effect on the speed at which status grew over the career.

To test hypothesis 2, which states that the effect of father's status decreases with socio-technological modernization processes, we turn to models 5 and 6. Only the interaction between father's status and the presence of a train station is significant, but the effect is very small. In a context with a train station, the effect of father's status was 0.068 points less than in a context without a train station. The time trend of the effect of father's status remains the same (see model 6). Thus, the interactions of socio-technological modernization processes with father's status do not explain the reduction in the effect of father's status over time.

Hypothesis 3, which predicts that the spread of universalistic values is associated with a decrease in the effect of the father's status, is not supported. In models 5 and 6 a change in the percentage of girls among all students was not associated with a change in the effect of father's status. In sum, when we control for trends over historical time and over the course of men's careers, modernization processes hardly changed the effect of father's status on men's statuses. (← 18)

## **Discussion and conclusion**

We studied effects of modernization processes on career success in the Netherlands in the

late 19th and early 20th centuries. We posed two research questions. First, we asked whether men in more modernized municipalities had higher-status careers and second, to what extent the influence of social background on career success varied according to regional and temporal differences in modernization. We used the HSN to analyse the careers of more than 7000 men in 841 municipalities over 63 years. The data refer to the careers of men from all regions in the Netherlands and reflect a broad range of occupations. We measured modernization processes at the municipality level. Socio-technological modernization processes included mass communication, mass transport, educational expansion and industrialization. We also analysed the effects of an increase in universalistic values, indicated by the school attendance of girls relative to that of boys.

We addressed our first research question by studying whether individuals began their careers with higher social status and whether their status grew faster over the course of their lives in contexts with more socio-technological advancement. In municipalities with an industrial company, with larger numbers of children attending secondary education, and with a post office, men had on average over their career a higher status than in municipalities that were less advanced in these respects. In municipalities with more possibilities for mass transportation, be it trains or cars, men did not have higher-status careers. This could indicate that the hypotheses on mass transportation were incomplete. Mass transportation allowed people to search for jobs in a larger area. However, in order to acquire a higher-status job, they probably had to migrate to a municipality with better job opportunities, for example one with an industrial company. When we take this into account, mass transportation itself may not have an effect.

With the exception of mass communication, socio-technological developments were not related to career growth. In municipalities with a post office careers began at a higher-status level, but over the course of men's careers this comparative advantage disappeared. Although men started their careers on a relatively higher level, their social status grew slower over the course of their career than that of men in less advanced municipalities, which was not what we expected. It seems that an overall upgrade across the occupational structure increased the level of status with which individuals began their careers, but did not continue to provide more opportunities for individuals to increase their occupational status over the course of their careers. On average, mobility over the life course was rather limited, as men reached their career tops in their late thirties after gaining only a few points in status.

The second research question referred to variations in the effect of social background on career success due to modernization. The effect of a father's status on his son's occupational career decreased substantially over time. Because our measure of education was rather crude, the true change may have been even larger than we observed. The shift from ascription to achievement may therefore be obscured because part of the effect of education was included in the effect of father's status. The reduction of the effect of father's status over time was not explained by variations in the modernization processes. The effect of father's status was weaker in municipalities with a train station. However, we found no effect of the other modernization indicators (presence of an industrial company, a post office, educational expansion, school attendance of girls relative to boys, and car density). The process of status attainment over the life course seemed to be untouched by modernization processes. In more modernized locations, individuals from higher-status backgrounds still had an advantage over individuals from lower-status backgrounds. Nevertheless, this advantage decreased over time.

In sum, we can support the claim of the logic of industrialism that modernization processes led to an increase in the average occupational status of men, but this increase was rather small and occurred only at the start of occupational careers. Our findings suggest that societal changes in terms of regional modernization processes have had restricted impact on individual mobility outcomes. We can likewise support the claim that the effect of the social background decreased over time, but our measures of modernization processes did not explain this reduction. (← 19)

Future research could aim to revise and specify the classical theoretical ideas by including the motives of actors, for example parents' motives for investing in their children's careers. The application of status maintenance theory might help. This theory states that higher-status families will seek alternative ways to secure an advanced position for their offspring when current strategies are challenged (Bourdieu and Passeron, 1977; Grusky, 1983). Status maintenance theory assumes that modernization processes compromised mechanisms of direct status transfer over generations but that higher-status parents found alternative ways to facilitate the success of their offspring.

Our results provide two more interesting points for discussion. The first is the counterintuitive finding that socio-technological modernization decreased the speed at which occupational status grew over the career, which may be due to the type of occupations that men in further advanced municipalities had. We found this to be true in municipalities with a post office



and not in places with industrial facilities. Nevertheless, this finding might hint towards the role of different employment relations in official bureaucracies that developed in the period under study. Men who start working in bureaucracies may have had lower chances for upwardly mobile careers compared to men in less advanced areas in which an apprentice–master trajectory may have been more common. The skills of workers trained in an apprentice–master trajectory offered more chances for upwardly mobile careers. In addition, those workers bore the costs for their training so they had an incentive to recoup their investments by means of reaching higher-status occupations during their career. In the more advanced regions, growing shares of the industrial labour force were probably filled by semiskilled workers who were working in mass production in factories. They gained firm-specific skills, and companies wanted to recoup their investments in these workers by offering incentives to stay (Owen, 2004). Thus, our findings may indicate that modernization changed other aspects of a successful working life, notably job security and tenure. Research on formal careers in internal labour markets, such as in banks or other bureaucracies, shows that tenure provided an important incentive for individuals to commit to working for a given company for a longer period, even when doing so meant accepting few chances for upward mobility (see Stovel et al., 1996).

The second discussion point is the explanation of the decreasing influence of a father's occupation on the career of his son. This decrease could not be explained by our measures of modernization. The most probable explanation is that our measure of industrialization only captures a small part of all the changes in the labour market and workplace that industrialization brought about. If we could better measure the growing demand for skilled work, the hiring motives and procedures of companies, and the presence of internal labour markets, we could perform a more direct test of the central hypotheses of modernization theory. But as argued above, it is extremely difficult to find indicators that cover a long time-span at a level as detailed as the municipality. Future research should nevertheless try to improve on this study by searching for better indicators.

Progress can also be made by using gravity or spatial models (Wegener, 2011) which take into account the levels of modernization in surrounding municipalities. These models could, for example, improve upon our measures of mass transportation by taking into account how well a municipality, by means of the connections of surrounding municipalities, is connected to the railway network.

In sum, we conclude that recent advances in historical sociology now allow better testing of

classical theories of status attainment during modernization. This study benefits from the advances, as we analysed career trajectories of a sample of the male labour force nationwide. We demonstrated that looking at the influence of regional and temporal differences in modernization on career attainment is a fruitful approach. While modernization processes increased men's status at the beginning of their career, they have hardly impacted the processes of status attainment over the life course.

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## **Notes**

1. In the HISCAM-scale it is assumed that the relative status positions of occupational groups do not change over time. A test of this assumption showed that changes in status are relatively small and unsystematic (see Lambert et al., 2013).
2. More details on the contextual characteristics can be found in the codebook, which can be requested from the corresponding author.
3. The data on the presence of post offices cover the period up to 1918. By then almost all of the municipalities had a post office and it was only after 1930 that some of the post offices closed down again (Hogesteeger and Kramer, 1995).
4. Chandler (1990) argues that it was only after 1880, with the second industrial revolution and its technological innovations, that companies began to grow and change their form

of organization and hiring strategies. We therefore tried out alternative specifications of this variable, for instance regarding the years prior to 1880 as having no industrial companies. Analyses with the different variables resulted in substantially very similar results.

5. We have conducted additional analyses using a measure that takes into account the presence of a train station and post office in surrounding municipalities. The effects of these variables are very similar to the effects of the dummy variables but the standard errors are much larger. This indicates that creating such complex variables in a valid and reliable way is a difficult task.
6. The school types included are: Gymnasium, Burger Avond School, Hogere Burger School, Middelbare Meisjes School, Tekenen Ambachtscholen, Vakscholen, Kookscholen, Kunstscholen, Hogere Burger School-Lyceum.
7. As an additional check, we reran analyses with subsamples of men with few and with many observations. The results remain the same. Some of the more complex models show convergence problems, but overall the results were robust.
8. In contrast to standard regression models in multilevel models, the variance can increase when predictors are added. More variation in occupational status over the course of the career becomes visible after adding predictors on the individual level (Gelman and Hill, 2007: 480).

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