Occupational career attainment during modernization: the influence of modernization processes on career success in Dutch municipalities, 1865-1940

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Introduction

In this paper we study the effect of regional modernization processes in Dutch municipalities on individual career success in the late 19th and early 20th century. The period under study was a time of tremendous social and economic change. It saw modernization processes such as industrialization, further urbanization, the spread of modern transport and meritocratization. These processes are assumed to be responsible for major changes in individual mobility outcomes. The transition from pre-industrial to industrial societies is seen as the period offering economic and social success for many and mobility rates which rose above the level of pre-industrial societies (Kaelble 1985). The average occupational status of the population is assumed to have increased, making careers more successful and on a higher level (of status and income) and more often upwardly mobile (Brown, Mitch and van Leeuwen 2004). Whether indeed modernization caused careers of a large part of the population to become more successful is not comprehensively answered. Studies on careers during industrialization do not point unequivocal towards an increase in career success. Maas and van Leeuwen (2008) found that in Sweden during industrialization there was more career mobility, however it was mostly lateral, from unskilled farm workers to unskilled factory workers. Schulz and Maas (2011) found only a slight increase in career success in the Netherlands in the late 19th and early 20th century that points towards a general upgrade of the occupational structure rather than immense upward mobility during the life course. Most historical studies of careers have focused on formal careers, for example in formally defined internal labor markets such as bureaucracies (Vincent 1993, Miles & Savage 2004, Van Leeuwen & Lesger 2005). A general trend towards increasing career success was also not found for formal careers. Earlier research shows that differentials in career success can to some extent be attributed to individual characteristics. Schulz and Maas (2010) show that basic schooling and father's social class facilitated the acquisition of occupational status, as did getting married.

A common disadvantage of earlier research on careers is the lack of considering regional and temporal differences in modernization processes. Whereas most of the empirical findings consider time as indicator

for socio-economic developments we will capture actual differences on a municipality level by measuring industrialization, educational expansion and other processes. We include all kinds of municipalities, larger, smaller, newer and ancient, protestant and catholic.

Furthermore, we use an excellent database, the Historical Sample of the Netherlands (HSN), to study careers in a long-term perspective (HSN release life courses 2010_10). In comparison to data sources based on specific occupations or regions the dataset is relatively large, containing information on occupational careers of 7000 men who were on the labor market between 1865 and 1940. Since the data are a sample from all birth certificates from this period, extended with information from marriage and population registers, all kinds of occupations are included. For all individuals there is at least one and at most 21 measurements of occupational status.

We address the role of modernization processes for individual career success and the interplay between modernization processes and individual career factors. We ask: *Are individuals in more modernized areas more likely to have successful careers? To what extent does the influence of individual characteristics vary according to regional differences in modernization processes?*

Theory & Hypotheses

In the following hypotheses on the effect of modernization processes, in particular socio-technological processes and value modernization will be formulated. By socio-technological changes we refer to the expansion of mass communication, mass transport, educational expansion and industrialisation. In the following, first hypotheses on the effect of socio-technological changes on career attainment will be formulated. Subsequently, hypotheses will be formulated on how the effect of individual career factors varies according to socio-technological changes.

No direct effect of value modernization on career success is expected, changes in norms and values are expected to influence career attainment by influencing the impact that individual characteristics have. In particular, we examine the following individual characteristics: work experience, basic schooling, parental status and marital status.

Socio-technological modernization & career success

The logic of industrialism thesis states that a number of socio-economic changes have impacted the occupational structure and the logic of the workplace in general (Inkeles, 1960; Kerr 1960; Mitch, Brown and van Leeuwen 2004). The thesis formulates the expectation that modernization processes such as

industrialization, educational expansion, mass transport and mass communication create an increased demand for people in higher status jobs. On the other hand modernization processes likewise provide people with the infrastructure to get the necessary qualifications and enable to act on the new possibilities and make use of the occupational opportunities.

Research on the impact of modernization processes on intergenerational mobility has found general support for the industrialism thesis. Zijdeman (2010) found that a number of different modernization processes lead to an increase in intergenerational mobility in the Netherlands in the 19th and 20th century. This paper addresses the question whether individuals likewise profited from socio-technological modernization processes during their career. The shift from production of goods to the production of services and a growing demand for administrative and clerical workers in public bureaucracies have created jobs in which better trained employees are needed (Mitch et al. 2004; Kaelble 1983). The emergence of more complex and higher status occupations made some of the traditional occupations superfluous (Kuznets 1957). Those shifts in the occupational structure are seen as a major source of increasing mobility (Hauser, Dickinson, Travis, Koffel 1975).

Educational expansion enabled more children from different social strata to take advantage of the education system. Thus, a larger number of people were able take a higher status first job. In labor markets with continuously changing production methods schooling also allows people to more easily get additional training later in their life. The rise of mass communication in the form of e.g. post offices enabled people to get information on job opportunities, technological advancement etc. through channels which are different from their own restricted social networks. For instance post offices distributed newspaper in which jobs advertisements for greater geographical area have been placed (Zijdeman 2010). The mechanization of mass transport made traveling for more people more affordable. Likewise more people from outside would be able to come into one's place of residence, bringing new information in too. Thus, the spread of mass mobility in the form of an extending train network and later an increasing number of cars made it possible for people to actually take jobs in a broader geographical area. In the Netherlands the second half of the 19th century was a time in which the described progresses happened or accelerated. For example, the mechanization of work made progress. Between 1850 and 1896 the number of steam engines (in horse power per 1000 inhabitants) rose from 3.3 to 122.6 (Van Zanden & Riel, 2000: 290). In 1863 a new law on secondary schooling was passed aiming at increasing the participation in schooling across social groups (Boekholt & de Booy 1987:182). In 1860 only three rail tracks existed in the Netherlands, in 1940 in all parts of the country the rail network was expanded (see figure 1).

In two ways individuals can profit in terms of a successful career from the described socio-technological changes. First, men in the early years of their career were able to take higher first jobs which have a strong effect on subsequent occupational positions (Blau & Duncan 1967). Second, we also expect men

active on the labour market to benefit from rapidly changing science and technology in industrialising countries. Technological change is often associated with negative employment outcomes for older workers. However, in rapid changing modes of production in which formal education to catch up with a fast changing skill demand is not implemented yet also older workers benefit from technological change by having more complex and therefore often higher status jobs (Bartel & Sicherman 1993, Mincer 1989).
H1: In periods/ municipalities with more advanced socio-technological modernization, individuals have more successful occupational careers.

Figure 1 approximately here

Modernization processes & individual career success factors

The logic of industrialism (Kerr et al. 1960) expects that with increasing modernization, and in particular industrialization the association between father's occupational status and son's status decreases. The direct influence of parents on the occupational decisions of their children is assumed to have become restricted due to the specialization of labor which involved the demand for specialized and longer training which families could no longer provide (Treimann 1970). Likewise as some of the old, more traditional occupations disappeared and new, more complex occupations emerged sons could not follow up their father's anymore. Moreover, in a labor market in which skills and achievements become more important employers would increasingly choose on the basis of an individual's merit, rather than his social background. Educational expansion is according to Treiman (1970) a concomitant of industrialization. The chances for children from lower social backgrounds to get training and therewith a chance to choose an occupation different from that of their fathers increased with educational expansion. Modernization processes also changed the way people gained information on job opportunities. By means of mass communication, e.g. the spread of newspapers, people could get informed about opportunities in a broader range as compared to their own local social network (Schneider 1968). Hence, children had better chances to take a job different from that of their fathers. Finally mass transport makes it affordable to a larger number of people to take the opportunities by covering larger distances and make use of the developments discussed before.

In sum, the described processes contribute to the decreasing importance of one's social background for men's career success.

H2: In periods/ municipalities with more advanced socio-technological modernization a high status background is less related to a successful occupational career.

Pre-industrial societies are described as traditional, ascribed characteristics play a major role in determining individual's chances and opportunities (Kerr et al. 1960). Industrial(-ising) societies in contrast are seen as societies where people embrace modern universal values. The spread of universalistic values is associated with a lessened importance of one's social background (Kerr et al. 1973 [1960], Inkeles 1960, Form 1979). Both, workers and employers are assumed to be to a lesser extent influenced by social background. Employers were due to technological changes and therewith an increase in the demand for better skilled workers prompted to recruit efficiently based on worker's achievement, rather than on characteristics less related to someone's performance. As a consequence people with high status background are assumed to forfeit to some extent their occupational advantage to some extent over people from less high backgrounds. Also workers themselves are more inclined to choose an occupation different from that of their fathers. Modernization theory assumes that the separation of household and workplace weakens the normative influence of family head on the individual decisions of the family members. Classical modernization theorist such as Inekles framed this development as the "triumph of individualism over familialism: modern man stands alone, well informed, independent of familial obligations and traditional ties" (Inekles 1960). Children who worked outside of the parental household are able to make a living for themselves and therefore are more easily able to build their own household, and family and realize their own occupational wishes.

These theoretical ideas describe an increase in personal autonomy of individuals which we expect to lessen the influence of social background on men's career success.

H3: In periods/ municipalities with more modern community values a high status background is less related to a successful occupational career.

Basic schooling was an important career factor, because enabled people to be more productive and to carry out a wider range of tasks in comparison to those lacking any basic schooling (Boonstra 1993; Knippenberg 1986). Educational expansion is one of the important developments which started in the second half of the 19th century. In the Netherlands already before the first mandatory schooling law was introduced in 1901 participation in basic schooling was high. Participation in secondary education was still very rare in this period (Mandemakers 1996).

The lack of basic education made it more difficult for people to find a first job with a relatively high status. Moreover, education serves as a signal for less training costs in comparison to unschooled workers (Kerckhoff 1995; Sicherman & Galor 1990). Basic schooling is a positional good, and therefore lacking basic schooling while the majority of others around has basic schooling is more detrimental than if basic schooling is a rare qualification. In communities in which work in general became more complex due to modernization processes the demand of skilled labour increased. With industrialisation people who lack basic schooling were hindered not only to find a first job with a high status, also on the job training and

other ways to improve their status over the life course are more difficult to realize. People without basic schooling also had to miss out on the new information channels that mass communication offered and therewith missed new ways of getting information about labor markets, vacancies and so on. *H4: In periods/ municipalities with more advanced socio-technological modernization, lacking basic schooling is hampering a successful occupational career more.*

The idea that marriage was a career success factor is inherent in many theories on the male bread winner model (Pfau-Effinger 2004). According to this model, an increase in occupational status is to be expected for men after marriage. First, once men get married and have children they get a greater responsibility and society expects them to function as the (often only) family provider. Due to the increased responsibility men are assumed to invest more time and effort in their work and therefore become more productive (Horrell & Humphries 1995; Kalmijn & Luijkx 2005; Lewis 2001). Second, employers would positively discriminate married men: married men are favored by employers since they are believed to be more committed to their jobs. Employers are also less prone to fire married men as this is considered less fair then firing men with fewer responsibilities. On ground of these ideas, married men can be expected to have more successful careers than non-married men (Korenman & Neumark 1991). The role model of the male bread winner was especially pronounced in the time before industrialization. During modernization the role of the family changed. The family is emphasized as a central institution which the value changes took place and influenced the (occupational) life of its members (Haveren 1976). In pre-industrial societies the separation between the household and the workplace was less pronounced. The separation of household and workplace weakens the normative influence of the family on the individual decisions of the family members. We expext that the less pronounced traditional values, e.g. the focus on the family, the focus on the responsibility of the bread winner the less men would feel responsible themselves and second, also employers would to a lesser extent positively discriminate on the basis of someone's family situation.

Thus in municipalities in which values towards marriage and the family were more modern, we expect the effect of being married on career success to be weaker.

H5: In periods/ municipalities with more modern community values, being married is less related to a successful occupational career.

Data, methods, and variables

Data

The Historical Sample of the Netherlands (HSN) provides us with information on occupational careers of individuals representative of the Dutch population of the nineteenth and twentieth century. The HSN is an excellent data base to study careers of men, in different regions, and over time.

The HSN starts from a sample of birth registers from the period 1812-1922 (n=78,000). The main data sources for individual life histories are birth certificates, death certificates, marriage certificates and the population registers, which were introduced to obtain a continuous registration of the composition of households and the place of residence of each individual in the Netherlands. Every time a vital event occurred (e.g. marriage, birth of a child, move to another municipality) information on the individual and if applicable his/her family was recorded and updated respectively. That means that the amount of occupational information we have about an individual is dependent on the number of vital events such as moving and birth of a child, and not on the occupational career itself (e.g. number of different occupations). Previous research shows that women's careers cannot be studied in the same way as male careers due to selective labor market drop out (see Schulz & Maas, 2011). Therefore we restrict our analyses to the study of male careers.

Figure 2 and 3 approximately here

The collection of the data is still underway, therefore we will use a sub-sample of the data (HSN release life courses 2010.01) which consists of life courses of individuals born between 1850 and 1922. The data comprise information on the respondents' date of birth, marital status, literacy, father's occupation, all migrations, as well as occupations of the respondents. Figure 2 illustrates that the occupational information come from almost all part of the Netherlands, the amount of occupational measurements differ across municipalities. Because we aim at studying occupational careers we restricted the sample to the ages in which most people belonged to the working population, i.e. people who are at least 15 years old without any maximum age. We study the period 1865-1940. In 1940 a change in the population registers made them less useful for studying occupational careers. Early in our observation period, until approximately 1885 we are mostly observing the careers of men in the first half of their career, aged between 15-35. Later in the observation period we are observing the careers men of all age groups. Of the

men observed in later time periods some probably did not yet complete their occupational career by 1940 (see figure 3).

Methods

Data structure and model

We estimate growth models that enable us to model that differential career success is affected by several types of individual and contextual determinants. The older someone gets, the more successful his or her career gets, but the increase in career success is expected to level off towards the end of a career. How successful a career develops i.e. at which level the careers starts and how fast it grows, is further affected by time constant individual characteristics, e.g. basic schooling, and time varying characteristics, such as marital status and time varying contextual characteristics, such as industrialization, educational expansion.

figure 4 approximately here

The HSN data include multiple measurements of an individuals' occupational status over the life course. Moreover, we know for every time when an occupational measurement was registered where the individual used to live. We created a variable "context" which is a combination of year and municipality. In the analyses we will include modernization indicators on the context level, for instance the number of students enrolled in secondary education in Utrecht in 1888.

We use cross-classified models because the (multiple) measurements of occupational status are nested within individuals as well as in a certain context. However, we do not have a hierarchical nesting structure as not all occupational measurements of one individual are nested in the same context. Thus some occupational measurements share a certain context but do not belong to the same individual.

Figure 1 illustrates a simplified version of our data structure. Imagine each individual has 2 occupational measurements in different contexts. One occupational measurement of individual number one shares the same context with one occupational information of individual number four (context C4).

Strictly speaking the nesting of occupational measurements in municipalities and years is a cross-classified structure in itself. One municipality in different years is more similar to each other than two different municipalities. Also two succeeding years have probably more in common in terms of modernization processes than two time points ten years apart. However, estimating models which take

this structure into account is difficult because it sets high demands to the software. Therefore we chose to neglect this additional structure (see also Zijdeman 2010).

Dependent variable

Occupational Status: Assigning social positions to individuals at a certain point in the individual's career is a difficult task in itself. Doing so over two centuries and across different regions (national or international) is even more so. Differing occupational terminology hindered international and over time comparisons of occupational status for a long time (Van Leeuwen, Maas & Miles 2004). Such comparisons became possible after the development of the Historical International Standard Classification of Occupations (HISCO) (Van Leeuwen et al. 2004), based on the International Standard Classification of Occupations 1968 of the International Labour Office (ISCO68 1969). All occupational information we use has been classified in HISCO. In order to analyze occupational status, we will make use of the recently developed historical status scale HISCAM (Lambert, Zijdeman, Maas, Prandy, and van Leeuwen 2008). For the development of the HISCAM scale the same scale estimation techniques were used as for the contemporary versions; the so-called CAMSIS scales. These scales are built on the assumption that patterns of social interaction (e.g. marriages) between people from different occupational strata are representative of the overall occupational stratification structure. The HISCAM scale is an estimation of the occupational stratification structure, based on 1.5 million marriage records from 6 different countries (Britain, Canada, France, Germany, the Netherlands and Sweden) covering the period 1800-1938. The dependent variable in our analyses is the occupational status of the respondent, measured on the HISCAM scale which ranges from 1 to 99, where a higher value indicates a higher occupational status. A servant for example has a HISCAM-score of 10.6, a lawyer a score of 99.0 and a tailor takes a middle position with a score of 49.7.

Independent variables

Experience: Occupational experience will be approximated using the age of the respondent. Every time information has been updated in the original sources (e.g. marriage or death certificates) also the age of the respondent has been noted. We assume that occupational careers start from the age of 15 onwards, thus 15 was subtracted from the age of the respondent. The result was divided by ten. A quadratic term of experience was added to the analyses in order to test the hypothesis that the effect of experience declines over the occupational career.

Basic schooling: as a proxy for whether the respondent attended basic schooling we use information on whether the respondent was able to sign the marriage certificate (1) or not (0). A drawback

of this variable is that it is only defined for people who ever married. We add a dummy variable to the analyses, indicating who is never married, in order not to lose these cases. Information on the signature is added to the analyses as a time invariant characteristic.

Father's occupational status: Like respondent's occupation also the occupations of the fathers have been coded into HISCO and then given a HISCAM-score. If more than one occupation of the father is known the occupational information about the father which is closest to the respondent's birth was chosen.

Marital status: Through information from wedding certificates we reconstruct who married when. Being married is treated as a time variant characteristic. To all points in time before marriage at which an occupation is observed the value 0 was assigned, and to all points in time after marriage a 1.

Contextual characteristics:

Urbanization: Urbanization is measured by the size of the population of the municipality per thousand inhabitants at the year of the registration of the occupation. Data on urbanization is derived from the historical ecological database (HED) and the Historical Database for Dutch Municipalities (HDNG) for the period between 1865 and 1940. In all models which include modernization indicators, urbanization will be included as a control.

Communication: The spread of mass communication is included in the analysis by an indication whether a post office was present in a certain municipality in a certain year. Post offices were of special importance in the Netherlands in the late 19th and early 20th century. Letters, telegrams and fashion brochures and also newspaper were distributed via post offices. The data are derived from the annual reports of the Staatsbedrijf der Posterijen,Telegrafie en Telefonie (PTT) (see Zijdeman 2010).

Mass Transport: From the website http://www.stationsweb.nl/ the opening and closing years of all train stations of all train lines of the Netherlands in the years 1865 to 1940 were retrieved and coded into a variable that indicates whether in a given year there was train station present (1) or not (0).

Educational expansion: As a measure of educational expansion we use the number of students enrolled in secondary education in the municipality per 100 inhabitants. The annual reviews "Verslagen voor het hoger, middelbaar en lager onderwijs" on Dutch education for the period 1860-1930 were consulted to attain information on educational expansion. In each municipality and for every five years, the number of students registered for all types of secondary education including Gymnasia students was recorded. Although Gymnasia students are registered in the reviews of 'higher education', we included them, because they prepare for higher education (Mandemakers 1996). For years in which no information on student enrolment was retrieved, estimates were used in order to utilize the occupational measurements from these years as well. The estimates are weighted means of years for which information on student

enrolment was retrieved. For example the number of students in 1902 is equivalent of three times the number of students in 1900 and twice the number of students in 1905, divided by five.

Car density: The variable car density provides the number of cars in a municipality per 1000 inhabitants. This information stems from Statistics Netherlands (see Wolf 2010) and is available for the years 1900, 1905, 1928 and 1930. Estimates for the years between 1900 and 1930 in which no numbers were available were retrieved in the same way as estimates for number of secondary students.

Industrialization: We use two indicators for industrialization in the analyses. For the period 1865 to 1890 information on steam engines are used, from 1900 onwards we use municipality earning on industrial facilities.

Information on steam engines was found in the "Registers of the Dutch Department for Steam Engineering", which are security reports on steam engines. A description of the registers can be found in Lintsen and Nieuwkoop (1989-1991). The registers provide information on steam engines up to the year 1890. It was not possible to calculate the actual amount of horse power or number of steam engines in use in the municipality in a certain year, because the registers do not provide detailed information on the power of the machine or on the period in which a steam engine was in use. We therefore follow Zijdeman (2010) and use the number of steam engines ever purchased in a given municipality in a given year.

For the period after 1900 we use information on municipality investments on industrial facilities as indicator for industrialization. The data stem from municipality budget investments in different industrial facilities are listed for the years 1900, 1905, 1910, 1915, 1920, 1925, 1928. These facilities include amongst others Gasworks (gas house), electricity, wastepipes, and telephone. Estimates for the years between 1900 and 1928 in which no numbers were available were retrieved in the same way as estimates for number of secondary students and car density. These statistics were published by Statistic Netherlands in "Bijdragen tot de statistiek van Nederland CBS" (CBS 1900-1928).

Non-denominationalists: In order to measure community values we sue the number of people who indicate that they have no denominalisation. In the period under study in the Netherlands religious orientation was an important factor in people's life. The family and their role in transmitting norms and values is emphasized in Christian communities composed of families (Wilson & Sandomirsky 1991). Also in the Netherlands religion and religious denominations played an important role for value orientation in daily life. The different Christian denominations differed regarding the strength by which religious beliefs were translated into rules for daily behavior (van Bavel & Kok 2004), however common to them all was the value of the family. Till the end of the 19th century religion was an undisputed force in Dutch society. Since the 1880 an increase in the number of people who give themselves up as not belonging to any religious denomination took place. Knippenberg (1999) explains the process of non-denanomlistaion by a number of modernization processes. Knippenberg argues that institutional

differentiation such as the educational expansion; poor relief and the rise of the modern welfare state are processes which led a decrease in the importance of religion for the Dutch society. This variable was derived from the Historical Ecological Data base of Dutch municipalities[1].

See table 1 and table 2 for descriptive information and correlations on the variables used in the analyses.

Results

Tables 3 to 6 present the results of the cross-classified multilevel models on men's occupational status.

The so called null model (model 0 in table 3) informs about the variance in occupational status at the different levels. Most of the variance, namely 73% is found between men (143.798/9.395+143.798+43.115). Considerably less variance is found within men, thus between the different occupational measurements of one men, 21%. On the municipality[2] level 5% of the variance in occupational status of men is to be found. Although the variance at this level is rather small it is statistically significant as are the variances at the other two levels.

Model 1 includes only the individual predictors. With increasing experience men gain status. With every 10 years of experience men's status increases by around 2.5 status points. In addition, a significant effect of experience squared is found, meaning that towards the end of men's career status is decreasing. Every additional status point of the father is associated with half a point increase in son's status. Lacking basic schooling reduces men's status by around 7.2 points as compared to men with basic schooling. Likewise men with no information on basic schooling (because they never married) have a very small but significantly lower status as compared to men with basic schooling. Being married at the time of the registration of the occupation does not significantly influence men's status. Adding the individual predictors reduces the variance between individual from 143 to 110, the variance at the context level reduces from almost 9.5 to around 5. In model 2 and 3 in addition to the individual predictors indicator all modernization indicators are added. Because information on steam engines are only available for the time period up to 1890 and industrial investments and car density is available only for the period after 1900 model 2 presents the results for the period before 1890 and model 3 for the period after 1900. In model 2 we see that men in municipalities with more educational expansion and more steam engines have a higher occupational status, with every additional student per 100 inhabitants men's status increases by 1.4 status points. An additional steam engine per 100 inhabitants increases men's status by around 1 status point. In model 3 the presence of a post office, of a train station and car density are positively related to men's status.

[1] For a description of the data see Beeking et al. 2003.

[2] For the sake of simplicity, when discussing the results we refer to the context level that captures municipalities in different years to 'municipality'.

As discussed earlier, the data in the first part of our research period mostly cover careers of younger men, whereas the later period careers of men of all ages. Including the industrialization indicators in all models would mean we would also only study the effect of the other modernization indicators for the earlier or later period[3]. To avoid this we test the effects of number of steam engines and industrial investments separately (see models 12 to 17) and do not control for industrialization when testing the other indicators.

Hypothesis one states that with more socio-technological modernization men have more successful careers. This hypothesis was tested in two ways. First the direct effect of the modernization indicators is tested. A number socio-technological modernization processes have a positive effect on the occupational status of men. In municipalities with post office men's status is 2 points higher (model 4). The presence of a train station is associated with a 0.5 higher status. Every additional pupil in secondary education per 100 inhabitants increases men's status by 0.7 point.

The second approach to hypothesis 1 is to test whether occupational status increases faster in municipalities with more modernization. The presence of a post office, of a train station, educational expansion (models 4 to 6), number of steam engines (model 12) and car density (model 14 and 16) have a positive effect on the level of occupational status at the begin of men's career. However, besides car density, all these indicators let men status grow slower over men's career. Men in municipalities with post office start their career on a 2 point higher level of status, with every 10 years the increase in status is almost one point slower (model 4). That means over a period of 22 years (2.048/0.939=2.18) men loose their head start as compared to men in a municipality without post office. Also in a municipality with an average amount of students in secondary schooling men start their career on a higher level (1.084) but the increase per 10 years decreases by 0.3 status points. The same effect, a higher start but slower increase in status is also found for number of steam engines (model 12). Car density has a positive main effect (0.300) but the interaction of car density with experience is not significant. In sum, hypothesis one is only partly supported. In municipalities with more socio-technological modernization, men start their career on a higher level, however, this effect cancels out after some time. Or put differently, men start their career on a higher level of status but their growth in status is slower.

Hypothesis 2 states that a higher status background is less influential for career success in more socio-technological advanced contexts. This hypothesis has been tested in models 4 to 6 and models 12, 14 and 16. The positive main effect of father's status of half a point decreases by 0.06 points in municipalities with a train station. Likewise are the returns for father's status 0.02 points smaller, in a municipality with

[3] We have tried to combine the two measures of industrialization to create a variable that covers the whole period under study. However, the two measures do not highly correlate. Investments into industrial facilities such as electricity might not have replaced steam engines by 1900 but supplemented steam engines. Therefore although measuring the same concept they do not correlate.

an average number of students enrolled in secondary education. Whereas number of steam engines also decreases the returns of father's status (model 12) by 0.13 status points, the amount of industrial investment as well as car density do not significantly influence the effect of father's status (model 14 & 16).

A modernization of values is likewise expected to lessen the effect of father's status on the status of the son, as formulated in hypothesis 3. This hypothesis is supported, for a municipality with an average number of non-denominationalists the effect of father's status reduces by 0.003(model 7).

Whether the effect of lacking basic schooling is more severe for men's status in socio-technological more advanced contexts is test in models 8 to 11 and 13 15 and 17. None of the interactions of modernization indicators with basic schooling are significant. Finally, hypothesis 5 formulates the expectation that with more modern values the positive effect of being married for men's career would decrease. In model 11 the main effect of being married is negative and not significant. However, the interaction between the number of non-denominationalists and being married is negative and significant, thus, the more non-denominationalists the more negative the effect of being married becomes.

Discussion and Conclusion

In this article, we studied the effect of modernization processes on career success in the late 19th and early 20th century in the Netherlands. We aimed at answering two research questions. First, we asked whether individuals in more modernized municipalities have more successful careers and second, to what extent the influence of individual career factors varies according to regional differences in modernization processes. We use an excellent data set, The Historical Sample of the Netherlands (HSN) to analyze careers of almost 8000 men in 871 municipalities over 75 years. The data include careers of men from various regions in the Netherlands and cover a broad range of occupations. Earlier research showed that a number of different modernization processes affects status attainment and we therefore made use of different indicators (Zijdeman 2010). Modernization indicators for socio-technological processes include mass communication, mass transport, educational expansion and industrialization. In addition an indicator for value modernization, the number of inhabitants without denomination is included.

The first research question was approached by studying whether careers start on a higher level of status and whether status grows faster over the life course depending on modernization processes.

Socio-technological modernization makes careers to start on a higher level, but over several decades the advantage vanishes. Although people start their career on a relatively high level, over the life course the rate at which status grows is smaller in more advanced municipalities. The results indicate that socio-technological modernization does not yield to the impressive increase in career success as often assumed.

It seems that a general upgrade of the occupational structure increased the starting level of career success but does not provide more opportunities for increasing career success later in life.

The second question concerned possible differences in the effect of modernization processes for individual career factors. It was approached by formulating hypotheses on the effect that modernization processes have on individual factors for career success. We considered social background, lacking basic schooling and being married as career success factors. Mass communication, mass mobility, educational expansion and industrialization decrease the influence of social background on men's career success. Also a modernization in values does reduce the impact of social background for career success, the modern the values in a municipality, the weaker the influence of father's status on men's occupational status.

Lacking basic schooling was expected to have more severe consequences for men's status attainment in more socio-technologically advanced municipalities, however, none of the modernization indicators did increase the negative effect of lacking basic schooling on career success. The finding that with more modern values being married is more negative for men's career is puzzling.

Some of the results provide interesting points for discussion. The finding that socio-technological modernization slows down the rate at which status grows might indicate that other aspects of a successful working life might have changed during modernization and created the idea of the successful career. Research on formal careers in internal labor markets as in banks or other bureaucracies shows that tenure was an important incentive for people to commit to a company for a longer period, albeit taking into account there were little chances for upward mobility (Stovel, Savage, and Bearman 1996).

In conclusion, we sought to systematically test the influence of a number of modernization processes on careers.

In sum, we showed that, contrary to what has been assumed, in the case for the late 19th and early 20th century modernization processes did not lead to the clear increase in career success. Moreover, we showed that a theoretical framework that underscores not only the direct effect of modernization on career success but also the interplay between modernization and individual career factors can explain part the differences in career success over the life course.

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Figure 1 The black lines represent the railway network in 1860, the grey lines the railways in 1940.

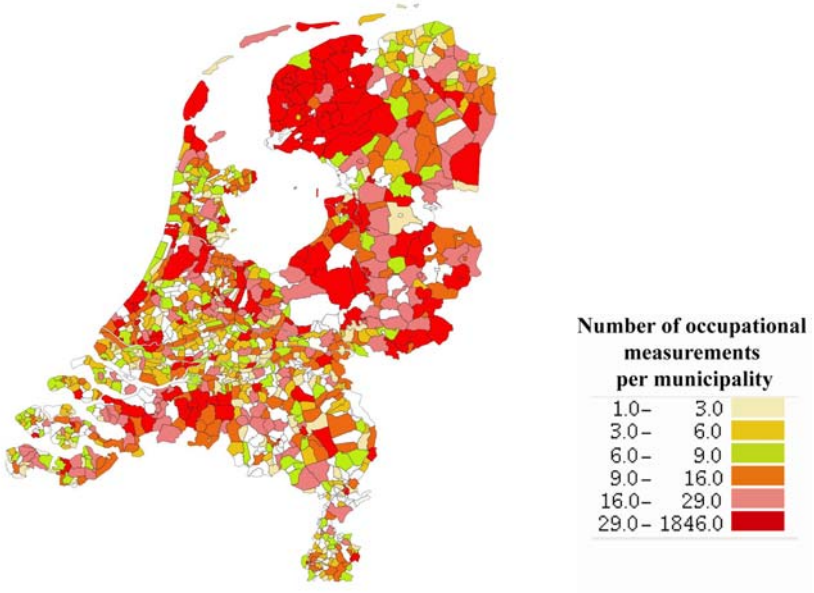


Figure 2 Geographical distribution of individual occupational information from the HSN data

Figure 3 Age distribution of sample per year, source: HSN

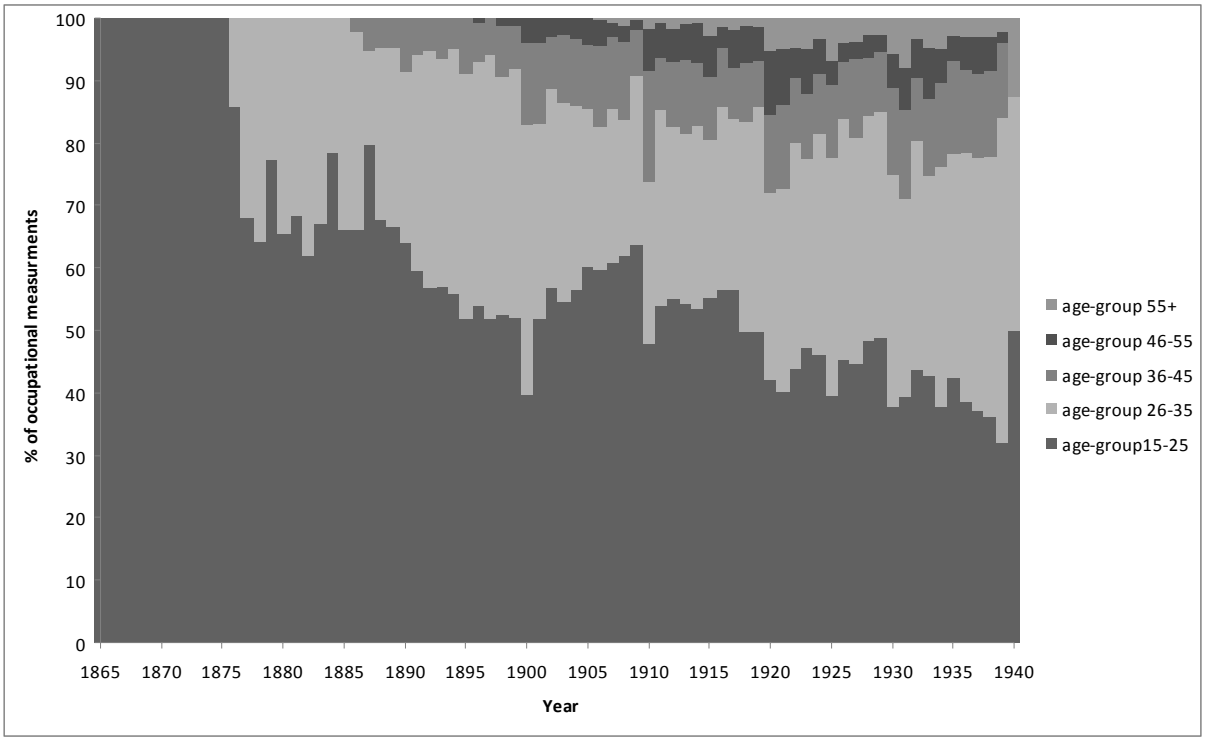
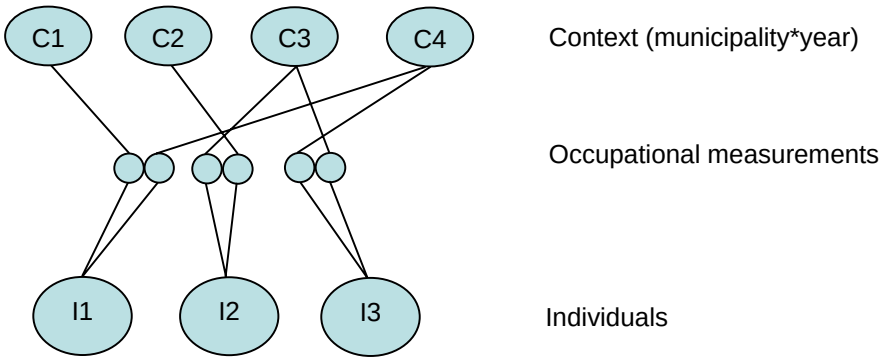


**********figure 4 approximately here*********

Figure 4 Three individuals with each two occupational observations in a total of four contexts



Individual 1: one occupation in C1, one in C4
Individual 2: one occupation in C3, one in C2
Individual 3: one occupation in C3, one in C4

Table 1 Correlation matrix of indicators at the contextual level

	Population	Post office	Train station	Non-denominat.	Industrial investments	Educational expansion	Steam engines	Car density
Population	1.000 (N=9737)	0.233** (N=9737)	0.228** (N=9737)	0.207** (N=9660)	0.078** (N=1136)	0.175** (N=8427)	0.220** (N=1157)	0.066** (N=6181)
Post office	0.233** (N=9737)	1.000 (N=9737)	0.487** (N=9737)	0.184** (N=9660)	0.068* (N=1136)	0.447** (N=8427)	0.437** (N=1157)	0.178** (N=6181)
Train station	0.228** (N=9737)	0.487** (N=9737)	1.000 (N=9737)	0.133** (N=9660)	0.048 (N=1136)	0.411** (N=8427)	0.388** (N=1157)	0.162** (N=6181)
Non-denominationalists	0.207** (N=9660)	0.184** (N=9660)	0.133** (N=9660)	1.000 (N=9660)	0.029 (N=1136)	0.155** (N=8351)	0.038 (N=1328)	0.214** (N=6142)
Industrial investments	0.078** (N=1136)	0.068* (N=1136)	0.048 (N=1136)	0.029 (N=1136)	1.000 (N=1136)	0.268** (N=899)		0.223** (N=928)
Educational expansion	0.175** (N=8427)	0.447** (N=8427)	0.411** (N=8427)	0.155** (N=8351)	0.268** (N=899)	1.000 (N=8427)	0.382** (N=1157)	0.290** (N=5961)
Steam engines	0.199** (N=1328)	0.437** (N=1157)	0.388** (N=1157)	0.038 (N=1328)		0.382** (N=1157)	1.000 (N=1157)	
Car density	0.066** (N=6181)	0.178** (N=6181)	0.162** (N=6181)	0.214** (N=6142)	0.223** (N=928)	0.290** (N=5961)		1.000 (N=6181)

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 Descriptives of time invariant and varying variables

Time invariant variables (N=7856)	**Period**	**Min**	**Max**	**Mean/%**	**S.D.**
Basic Schooling	1865-1940				
No				3.0%	
Yes				71.1%	
Not known (never married)				25.8%	
Father's Occupational Status (HISCAM)	1865-1940	10.6	99.0	46.4	12.8
Time varying variables (N=22634)					
Dependent variable: Occupational status (HISCAM)	1865-1940	10.6	99.0	48.8	14.5
Experience/10	1865-1940	0	5.7	1.98	1.3
$(Experience/10)^2$	1865-1940	0	32.5	5.4	6.1
Married	1865-1940	0	1	61.0%	
Regional Indicators (N=9660)					
Urbanization in 1000	1865-1940	0	793.53	19.21	63.35
Communication					
Post office (1/0)	1865-1940	0	1	48%	
Educational expansion					
# of students per 100 inhabitants	1865-1930	0	14.14	0.49	0.91
Community Values					
Non-denominationalists per 100 inhabitants	1865-1940	0	56	4.25	7.1
Transport					
Train station (1/0)	1865-1940	0	1	47%	0.50
Car density per 1000 inhabitants	1900-1930	0	50.28	3.10	3.42
Industrialization					
Steam engines per 100 inhabitants	1865-1890	0	1.65	0.15	0.28
Investments into industrial establishments per 100 inhabitants (in 1000 Gulders)	1900-1928	0	95.47	3.55	6.37
Group size					
Observations per context	1865-1940	1	137	2.32	4.50

Bold = P<0.01

Italics = P<0.05

Table 3 Cross-classified multilevel analyses on men's occupational status

	Model 0	Model 1	Model 2	Model 3
Constant	**49.751**	**23.748**	**18.158**	**21.759**
Experience/10		**2.458**	**4.330**	**1.502**
Experience/10²		**-0.294**	**-1.142**	**-0.270**
Father's status		**0.517**	**0.508**	**0.412**
Basic Schooling				
Yes		**Ref.**		
No Basic schooling		**-7.263**	**-7.662**	**-4.144**
Unknown (never married)		**-0.064**	*-1.232*	-0.802
Married (1/0)		0.112	-0.289	**-1.109**
Modernization indicators				
Population in 1000			**0.008**	**0.003**
Post office (1/0)			0.879	**4.001**
Train station (1/0)			0.778	**5.631**
Educational expansion per 100 inhabitants			**1.423**	0.477
Non-denominationalists			-0.014	0.023
Steam engines per 100 inhabitants			*1.153*	
Industrial investments				-0.037
Car density				*0.265*
Random Part				
Year/municipality	9.395	5.169	0.034	0.117
Between individuals	143.798	110.788	128.411	115.591
Within individuals	43.115	42.816	36.517	34.329
-2*loglikelihood:	157968.076	155869.248	16572.969	36555.709
# of units Year/municipality	9178	9178	1274	899
# of units Individuals	7834	7834	1172	2548
# of units Occupational measurements	22634	22634	2421	5397

Table 4 Cross-classified multilevel analyses on men's occupational status

	Model 4	Model 5	Model 6	Model 7
Constant	**45.097**	**45.401**	**46.446**	**46.093**
Experience/10	**3.106**	**2.912**	**2.426**	**2.346**
Experience/10²	**-0.354**	**-0.356**	**-0.333**	**-0.330**
Father's status	**0.524**	**0.537**	**0.500**	**0.496**
Married (1/0)	-0.161	-0.166	-0.161	-0.162
Basic Schooling				
Yes	ref.	ref.	ref.	ref.
No basic schooling	**-6.850**	**-6.876**	**-6.819**	-6.834
Not know (never married)	-0.196	-0.208	-0.216	-0.211
Modernization indicators				
Population in 1000	**0.005**	**0.005**	**0.005**	**0.005**
Post office (1/0)	**2.048**	**0.915**	*0.900*	*0.949*
Train station (1/0)	*0.547*	**1.330**	*0.542*	*0.592*
Educational expansion per 100 inhabitants	**0.682**	0.664	**1.084**	**0.632**
Non-denominationalists	0.020	0.020	0.017	0.083
Interactions with Experience /10				
Post office (1/0)*Experience/10	*-0.939*			
Train station (1/0)*Experience/10		**-0.668**		
Educational expansion*Experience/10			**-0.296**	
Non-denominationalists*Experience/10				*-0.047*
Interactions with Father's status				
Train station (1/0)*Father's status		*-0.057*		
Post Office (1/0)*Father's Status	-0.036			
Educational expansion*Father's Status			*-0.017*	
Non-denominationalists *Father's status				*-0.003*
Random Part				
Year/municipality	0.021	0.017	0.046	0.024
Between individuals	103.596	103.582	107.984	103.579
Within individuals	46.616	46.617	47.810	46.665
-2*loglikelihood:	138187.832	138207.944	138212.087	138230.712
# of units Year/municipality	7918	7918	7918	7918
# of units Individuals	7216	7216	7216	7216
# of units Occupational measurements	19808	19808	19808	19808

In interactions the predictors are centered, except for Experience/10.

Table 5 Cross-classified multilevel analyses on men's occupational status

	Model 8	Model 9	Model 10	Model 11
Constant	**22.016**	**22.419**	**23.159**	**22.737**
Experience/10	**2.447**	**2.449**	**2.414**	**2.439**
Experience/10²	**-0.340**	**-0.339**	**-0.332**	**-0.335**
Father's Status	**0.499**	**0.500**	**0.499**	**0.500**
Married (1/0)	**1.068**	-0.155	-0.149	-0.270
Basic Schooling				
Yes	ref.	ref.	ref.	ref.
No basic schooling	**-6.050**	**-7.247**	**-6.764**	**-7.105**
Not know (never married)	-0.634	-0.455	-0.202	-0.217
Modernization indicators				
Population in 1000	**0.005**	**0.005**	**0.005**	**0.005**
Post office (1/0)	**0.843**	*0.969*	**0.916**	**0.965**
Train station (1/0)	**0.632**	*0.374*	*0.570*	*0.609*
Educational expansion per 100 inhabitants	**0.615**	**0.618**	0.542	*0.624*
Non-denominationalists	0.018	0.018	0.018	0.050
Interactions with married				
Non-denominationalists*married				*-0.073*
Interactions with basic schooling				
Train station*yes		ref.		
Train station*No basic schooling		0.953		
Train station (1/0)_Not known (never married)		0.398		
Post office*Yes	ref.			
Post office (1/0)*No basic schooling	-1.233			
Post office (1/0)*Not known (never married)	-0.318			
Educational expansion*Yes			ref.	
Educational expansion*No basic schooling			0.370	
Educational expansion*Not known (never married)			0.259	
Non-denominationalists*Yes				ref.
Non-denominationalists*No basic schooling				-0.089
Non-denominationalists*Not known (never married)				-0.004
Random Part				
Year/municipality	0.064	3.011	0.019	0.271
Between individuals	103.826	108.830	103.103	103.906
Within individuals	46.482	47.480	47.737	46.445
-2*loglikelihood:	138231.219	138229.885	138185.498	138200.418
# of units Year/municipality	7918	7918	7918	7918
# of units Individuals	7216	7216	7216	7216
# of units Occupational measurements	19808	19808	19808	19808

In interactions the predictors are centered, except for Experience/10.

Table 6 Cross-classified multilevel analyses on men's occupational status

	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17
Constant	**18.675**	**18.434**	**21.669**	**21.392**	**22.117**	**22.260**
Experience/10	**4.124**	**4.349**	**1.482**	**1.482**	**1.437**	**1.535**
Experience/10²	*-1.145*	*-1.147*	*-0.268*	*-0.260*	*-0.254*	*-0.279*
Father's status	**0.508**	**0.508**	**0.413**	**0.412**	**0.413**	**0.412**
Married (1/0)	-0.333	-0.270	*-1.080*	*-1.093*	**-1.098**	*-1.218*
Basic Schooling						
Yes	ref.	ref.	ref.	ref.	ref.	ref.
No basic schooling	**-7.366**	**-7.941**	**-4.455**	*-4.371*	***-4.240***	**-4.209**
Not know (never married)	-1.355	-1.318	-0.772	-0.717	-0.799	-0.766
Modernization Indicators						
Population in 1000	**0.010**	**0.009**	**0.003**	**0.003**	**0.003**	**0.003**
Post office (1/0)	0.805	0.879	3.794	**3.731**	**4.106**	**4.061**
Train station (1/0)	0.737	0.652	**5.754**	**5.722**	**6.125**	**6.076**
Educational expansion per 100 inhabitants	***1.403***	*1.506*	*0.519*	*0.494*	0.315	0.317
Non-denominationalists	-0.025	0.004	0.022	0.012	0.013	0.012
Steam engines per 100 inhabitants	**5.301**	-0.255				
Industrial investments			-0.042	-0.000	-0.038	-0.040
Car density			*0.262*	*0.260*	**0.300**	**0.325**
Interactions with experience						
Steam engines per 100*Experience/10	**-5.323**					
Industrial investments_Experience/10			0.000			
Car density *Experience/10					-0.018	
Interactions with Father's status						
Steam engines per 100*Father's status	*-0.130*					
Industrial investments*Father's status			-0.004			
Car density*Father's status					-0.001	
Interactions with Basic Schooling						
Steam engines per 100*Yes		ref.				
Steam engines per 100*No basic schooling		-0.563				
Steam engines per 100 inhabitants*Not known (never married)		4.347				
Industrial investments*Yes				ref.		
Industrial investments*No basic schooling				-0.114		
Industrial investments*Not known (never married)				-0.163		
Car density*Yes						Ref.
Car density*No basic schooling						0.041
Car density*Not known (never married)						-0.169
Random Part						
Year/municipality	0.470	0.041	0.003	0.003	0.003	0.003
Between individuals	128.425	108.332	1115.731	115.554	115.617	115.471
Within individuals	35.711	47.925	34.402	34.480	36.517	34.494
-2*loglikelihood:	16530.401	16199.391	36561.307	36572.308	36572.850	36574.019
# of units Year/municipality	1274	1274	899	899	899	899
# of units Individuals	1172	1172	2548	2548	2548	2548
# of units Occupational measurements	2421	2421	5397	5397	5397	5397

In interactions the predictors are centered, except for Experience/10.