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Zijdeman, Richard L.

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Intergenerational transfer of occupational status in nineteenth century Zeeland, The Netherlands

A test of the influence of industrialisation, mass communication and urbanisation in 117 municipalities

Richard L. Zijdeman

Department of Sociology, ICS/Utrecht University, Utrecht, The Netherlands

Abstract

Purpose – This paper seeks to study the influence of industrialisation, urbanisation and means of communication on the association between father's and son's occupational status in all 117 municipalities in the province of Zeeland, The Netherlands from 1811 to 1890.

Design/methodology/approach – Hypotheses from both the logic of industrialism thesis and reproduction theory are tested with multi-level analyses on data on the individual as well as the contextual level. First, the paper studies the influence of contextual factors on intergenerational occupational status attainment. Second, it uses relatively large-scale individual and contextual historical data over a long period of time.

Findings – The paper adds to the current literature by showing that the association of father's and son's occupational status differs between municipalities and over time and that these differences are partly explained by industrialisation, urbanisation and means of communication. All findings point in one direction, that the province of Zeeland became a more closed society in the nineteenth century. This finding goes against claims that the increasing openness in Dutch society, found after the Second World War, is a trend that came about with the rise of industrialisation.

Originality/value – The results provide support for the reproduction theory and they refute the logic of the industrialism thesis.

Keywords Social status, Social mobility, Industrialised economies, Mass communications, Urban economies

Paper type Research paper

Introduction

Ever since the rise of industrialisation researchers have shown an interest in describing and explaining its impact on society. Although this is one of the main topics in sociological as well as historical stratification research, there still is no consensus among researchers on whether and to what extent industrialisation influenced the process of status attainment, and especially, the extent to which the occupational

status of the son is determined by the status of his father (Maas and van Leeuwen,
2002; Ganzeboom *et al.*, 1991).

Contemporary comparative studies provided mixed results on changes in the
association between father's occupational status (FOCC) and son's occupational status
(SOCC) in space and time (van Leeuwen and Maas, 1996). In an analysis of 12 countries
covering cohorts born between 1905 and 1945, Erikson and Goldthorpe (1992) report
only small differences in relative mobility in the European nations under study and
conclude that there is no trend towards more relative mobility in industrial societies.
This conclusion goes against the findings of Ganzeboom *et al.* (1989) in a study of 149
intergenerational class mobility tables from 35 countries covering the period of circa
1958 until 1985. They conclude that there are substantial differences between countries
and "that within countries the extent of inequality in mobility chances is on average
decreasing at about one percent per year" (p. 3). Apart from the mixed results, only few
comparative studies relate their findings on the association between FOCC and SOCC
with industrialisation, or other contextual indicators. In a review of the entire field of
comparative stratification research, Ganzeboom *et al.* (1991) conclude that although
"there has been a slow but systematic trend towards increasing relative mobility in the
years since the Second World War", there is "no conclusive evidence regarding the
contextual factors that determine these changes and differences" (p. 296). To my
knowledge, this view has until now not been opposed in the literature.

The question to what extent contextual factors, especially industrialisation, affected
the association between FOCC and SOCC is studied in social history and historical
sociology as well. An advantage of studies using historical data over more
contemporary studies is that these studies do not need to extrapolate their findings to
the era of early-industrialisation (e.g. Mitch, 1993; Miles, 1999; Maas and van Leeuwen,
2002). However, most historical studies are difficult to compare among one another. For
one, many historical stratification studies are limited to a particular region (e.g. a few
cities), a particular era (comparing a small number of years) or a specific population
(e.g. the elite, farmers). Furthermore, various occupational class and prestige schemes
are utilised, even making a comparison of studies of the same country and period
difficult.

Recent developments however, have made large-scale and more uniform historical
studies possible (e.g. van Leeuwen *et al.*, 2005). A historical international scheme of
classifications of occupations (HISCO) was developed, taking historical, lingual and
regional differences in occupational titles into account (van Leeuwen *et al.*, 2002). Also
conversion tools to link HISCO encoded data to historical class schemes (HISCLASS
(van Leeuwen *et al.*, 2005) SOCPO (van de Putte and Miles, 2005)) and occupational
stratification scales have been developed (HIS-CAM Maas *et al.*, 2006). Finally,
digitalisation of nineteenth century personal records, marriage records and census
data now makes it possible to study populations that are socially, geographically and
time-wise less constrained.

This paper builds on these developments and tries to add to both historical and
contemporary research on status attainment, by raising the following questions:

(1) To what extent does the relation between FOCC and SOCC vary across time
    and between regions in the Dutch province Zeeland in the nineteenth century
    (1811-1890)?

(2) How can changes and regional differences in the relation between FOCC and SOCC in the Dutch province Zeeland and in the nineteenth century (1811-1890) be explained?

This study adds to the existing research literature a direct test of the influence of contextual factors: industrialisation, mass communication and urbanisation on the association between FOCC and SOCC. The in comparison with other studies large-scale of this study provides some advantages. By studying all 117 municipalities in the Dutch province of Zeeland, this study compares intergenerational status attainment in both urban and rural municipalities. Since industrialisation is often related with urbanisation, this study is therefore less likely to overestimate the effect of industrialisation in comparison with studies only looking at urban municipalities (cities). By using all available marriage registers of the municipalities ($n = 38,499$), the generalisability of this study is large in comparison to studies that single out a specific social group, such as the elite or farmers. By studying a period of 80 years (1811-1890), also small trends that have been found so far (Miles, 1993; Fukumoto and Grusky, 1993; Ganzeboom, *et al.*, 1989) are likely to be discovered, unlike in studies covering a small period of time. Finally, by using multi-level analyses, differences and changes in the bivariate relation of FOCC and SOCC will be related to the context in which this relation was shaped.

Theory

Literature on the impact of industrialisation on status attainment draws mainly on two opposing theories: the logic of industrialism thesis (Parsons and Shils, 1951; Kerr *et al.*, 1960; Blau and Duncan, 1967; Treiman, 1970) and social reproduction theory (Bourdieu and Passeron, 1977; Collins, 1971). Both theories state that before industrialisation individuals were dependent on their (extended) family to attain an occupation. They differ with respect to their expectations of the influence of industrialisation on the total association between FOCC and SOCC.

Like Treiman one accepts Davis's definition of industrialisation as "the use of mechanical contrivances and inanimate energy (fossil fuels and water power) to replace or augment human power in the extraction, processing, and distribution of natural resources or products derived there from" (Davis, 1955, p. 255). According to the logic of industrialism thesis, industrialisation induced changes in the occupational structure, decreasing the influence of family characteristics on occupational careers (ascription), while enhancing the importance of individual characteristics (achievement) (Blau and Duncan, 1967). In their status attainment model, Blau and Duncan decompose the association between FOCC and SOCC into a direct and indirect relationship.

The direct influence of FOCC and SOCC is expected to have declined with industrialisation. First, mechanisation of labour decreased the need for manual labour in the agricultural sector (Kuznets, 1957; Treiman, 1970), making some of the more traditional occupations superfluous and sons unable to follow in their father's footsteps. Second, a demand for non-manual occupations arose due to the shift in the production of goods to the production of services (Kuznets, 1957, pp. 28-31) and to a growing demand for administrative and clerical workers in public bureaucracies (Hurd and Johnson, 1967, pp. 60-1). This newly created demand offered sons the possibility to uptake different occupations than their fathers.

The indirect association between FOCC and SOCC, exists of two components. First the association between FOCC and son's education (SEDU), second the association between SEDU and SOCC. According to the logic of industrialism both associations changed with industrialisation. Before industrialisation, the association between FOCC and SEDU was strong. While only the more wealthy could afford education, others received occupational training from family members. This changed however with the rise of industrialisation. First, industrialisation created a large-scale demand for labourers that required occupational skills other than the skills passed on in the family. To meet the demand of labourers with the proper occupational skills, mass education was set up. The rise of education therefore decreased the association between FOCC and SEDU. Another reason why the first indirect component, the association between FOCC and SEDU decreased is a shift in people's values. With industrialisation people became decreasingly valued on basis of their origin, while increasingly valued for their accomplishments (Parsons and Shils, 1951). This change in values also affected the second indirect component, increasing the association between SEDU and SOCC.

In sum, according to the logic of industrialism, industrialisation caused a decrease in the direct association between FOCC and SOCC. Furthermore, it changed the indirect association between FOCC and SOCC. It decreased the association between FOCC and SEDU, while it enhanced the association between SEDU and SOCC. Unfortunately, since the size of the changes in the three associations is unknown, it is not possible to deduct an hypothesis on the total (both direct and indirect) association between FOCC and SOCC (Treiman, 1970, p. 219).

Treiman (1970) nevertheless argues that there are theoretical grounds for expecting that the total association between FOCC and SOCC diminishes with industrialisation. The afore mentioned changes in the occupational structure allow for upward (structural) mobility. Furthermore, Treiman argues that processes related to industrialisation increase net mobility rates too. Education, mass communication, urbanisation and geographical mobility "break down the rigidity of the class structure of traditional society, and thus [to] increase the ease of mobility" (Treiman, 1970, p. 219). Although this actually is an indirect effect of industrialisation Treiman poses that:

H1a. The total influence of FOCC on SOCC is weaker, the more industrialised a society.

The argumentation of the logic of industrialism thesis has been extended to domains other than that of the occupational structure and educational system. The rise of mass communication that came with industrialisation would have lead to the development of "a common culture and the diminution of regional, ethnic and class differences in attitudes and behavior" (Treiman, 1970, p. 219). This leads to the hypothesis that:

H2. The total influence of FOCC on SOCC is weaker in societies that have more means of communication.

Urbanisation is yet another development that would have reduced the ascriptive component of industrial society (Treiman, 1970, p. 220). First, children in urbanised areas would receive less pressure to leave school at an early age, or to temporarily leave school to help out generate family income. Second, due to the size of urbanised municipalities and partially as a result of migration, in more urbanised areas people must achieve success based on their own skills not hampered or advantaged by their background status, as is the case in smaller municipalities, where inhabitants know one another (Treiman, 1970). The logic of industrialism thesis states that:

H3. The total influence of FOCC on SOCC is weaker, the more urbanised a society.

Unlike the logic of industrialism thesis, reproduction theory argues that people are able to pass on their status positions to their children through education. Those with higher status positions often have more economic resources and are able to invest in higher quality and more years of education of their children (Bourdieu and Passeron, 1977). Reproduction theory therefore argues that even if industrialisation blocks traditional ways to pass on status positions from one generation to the next, education helps individuals with high-occupational status to pass on their status positions to their children.

From reproduction theory, it follows that the change in the influence of FOCC through education on SOCC, the indirect influence, is as large (or even larger) as the diminishing direct influence of FOCC on SOCC. Hence, the term reproduction. Therefore, I hypothesise that:

H1b. The total influence of FOCC on SOCC in industrialised societies is as large (or even larger) as in pre-industrialised societies.

Method
To test the hypotheses, multi-level analysis is used. A theoretical reason to apply multi-level models is that the hypotheses in this paper distinguish between the individual and contextual level and testing these hypotheses thus requires a technique that appreciates differences between individuals and context. Multi-level analysis does so by allowing for group specific ("random") estimates of the intercept, i.e. the mean of the dependent variable, and effects of independent variables. A statistical argument for using multi-level analysis is that the observations in the data are not sampled independently from each other. The individual level data are derived from marriage acts and therewith the observations are grouped in space (municipalities) and time (years). Ignoring this dependence leads to estimates of standard errors that are too small, producing spurious "significant" results (Hox, 2002; Snijders and Bosker, 1999).

To analyse the data, first a specification of the multi-level structure is needed. Space (municipalities) and time (years) are the dimensions on which the individuals in the data can be grouped. However, the theoretical interest of this paper especially lies in the combination of the two dimensions. Therefore, the group structure is defined as space × time. All individuals are grouped to the municipality and year their marriage record stems from (e.g. Middelburg, 1811, 1880; Vlissingen, 1880). Furthermore, the intercept and the effect of FOCC are allowed to be "random" across groups. That is, the estimates of intercept and effect of FOCC can differ between municipalities in the same year, and between years within the same municipality. By relating (interacting) FOCC with contextual variables that vary between municipalities and over time, the "randomness" of the effect of FOCC can be explained. Next, an elaboration of the measurement of these contextual variables and the measurement of occupational status follows.

Data and measurement
The data used here are on the individual as well as on the municipality level and are derived from various sources. Characteristics on the individual level such as father's and son's occupation, are derived from all marriage records registered in Zeeland in the period 1811-1922. The database of these records is located at the "Zeeuws Archief" in Middelburg[1]. Only marriage acts of sons' first marriages were taken into account: in

total 86,008 in Zeeland between 1811 and 1890. Unfortunately, only 36,056 (41.92 per cent) marriage records provides both an occupational title for father and son. To measure occupational status of fathers and sons, occupational titles were first coded into HISCO (van Leeuwen *et al.*, 2002), and next into a historical occupational stratification scale HIS-CAM (Maas *et al.*, 2006). The estimation of the HIS-CAM scale is based on the techniques that are used to derive contemporary CAMSIS scales (Prandy, 2000). FOCC is centered on the grand mean over the period 1811-1890.

The hypotheses derived in the theory section distinguish between three contextual processes, being industrialisation, mass communication and urbanisation. The number of steam engines ever purchased in the municipality relative to the size of the population (per ten inhabitants) at year of marriage is used as the indicator of industrialisation. Information on characteristics and ownership of steam engines for the period up to 1890 is found in "Registers of the Dutch Department for Steam engineering" downloadable from the data archiving and networked services (DANS)[2].

Mass communication as such developed only at the end of the nineteenth century in The Netherlands. However, letters, telegrams, fashion brochures and newspapers also informed people about cultures and regions other than their own. Unfortunately, information on the municipality level on these means of communication is only available for a small number of municipalities over a short period in the nineteenth century. However, the delivery of these items was directed through post offices. Therefore, lacking other information, the presence of a post office in a municipality at the year of marriage is used as an indicator for mass communication. Information on the existence of post offices is derived from the annual reports of the Staatsbedrijf der Posterijen, Telegrafie en Telefonie (PTT) located at the archive of the Museum of Communication, The Hague[3].

Urbanisation is measured by the size of the population per thousand inhabitants of the municipality at the year of marriage. These data are derived from the historical ecological database for the period 1851-1880 and from the historical database of Dutch municipalities for the period 1811-1850 and 1880-1890[4]. Descriptives of all variables are provided in Table I.

The models also contain control variables on the individual as well as the contextual level. Since FOCC and SOCC change over the life course, age of the groom centered on the grand mean is controlled for. Age of the father is not recorded in the data. Since occupational status may be different for those living in a municipality their entire life

Variable	Mean	SD	Minimum	Maximum
Groom's age	25.992	4.278	16	64
Groom's age centered	0.000	4.278	−9.992	38.008
Groom's mother deceased	0.403	0.491	0	1
Groom is a migrant	0.472	0.499	0	1
Groom's occupational status	42.571	12.919	10.6	99
Father's occupational status	44.962	12.930	10.6	99
Father's occupational status centered	0.000	12.930	−34.362	54.038
Decade	5.857	2.167	1.1	9
Communication	0.269	0.443	0	1
Industrialisation	0.0217	0.057	0	0.751
Urbanisation	3.586	4.380	0.103	17.362
Group size	29.994	35.566	1	165

Table I.
Descriptives: mean, SD,
minimum and maximum
value ($N = 36,056$)

and those who migrated into a municipality later in their life, sons being a migrant or not is controlled for. This measure is derived by comparing the name of the municipality at birth and the name of the municipality a son gets married in. More information on places of residence is not available. Finally, on the individual level, whether a son's mother is still alive at marriage is controlled for. Miles reports for nineteenth and early twentieth century England that fathers were the most dominant facilitators of a "boy's transition into regular work", but also shows that other family members were important for both the transition into regular work and for later job transitions (Miles, 1999, pp. 121-6). Since an occupation of a deceased father was not recorded on the marriage act, whether a father was alive at marriage of the son cannot be controlled for: all deceased fathers are left out of the analyses.

On the contextual level, decade and urbanisation is controlled for. The value of decade is equal to the number of decades since 1800. The use of urbanisation as a control variable deserves elaboration. The number of observations per group (marriage records per municipality per year) differs and needs to be controlled for. This is especially the case if there is a theoretical argument on why group sizes are different (Snijders and Bosker, 1999). In a time where most people still engaged in marriage, the number of marriages is expected to be closely related to urbanisation (measured by the size of the population). The correlation matrix in Table II indeed shows a high correlation between group size and urbanisation. Therefore, urbanisation is controlled for, rather than group size itself.

The correlation matrix in Table II not only shows a high correlation between urbanisation and group size, but also between urbanisation and communication. Although unfortunate with regard to comparability, to avoid multi-collinearity, urbanisation in models that include means of communication is not controlled for.

Results

Table III provides results on the multi-level (hierarchical linear) analysis of SOCC on individual and contextual level variables. Model 1 is a baseline model, with a fixed and random effect for FOCC. The fixed effect of FOCC indicates that for each point increase of FOCC – on average across all groups – SOCC increases with 0.552. This effect is significant. The random effect of FOCC, a variance component of 0.065 is significant as well. This means that the effect of FOCC on that of his son differs between groups, i.e. municipalities in a certain year. To gain insight in the size of the variance component, the groups with the 2.5 per cent highest and 2.5 per cent lowest effects of FOCC (Snijders and Bosker, 1999) are compared. The predicted size of the effect of FOCC in these groups is the sum of the fixed effect of FOCC plus or minus two times the slope's SD (the square root of the random effect) of FOCC. It appears that the effect of FOCC varies between 1.061 in certain groups and 0.042 in other groups. In the groups with strong father effects, a son gains more than ten status points for every ten status points

	Decade	Communication	Urbanisation	Industrialisation	Group size
Decade	1.0000				
Communication	0.0472	1.0000			
Urbanisation	0.0790	0.0790	1.0000		
Industrialisation	0.3552	0.3055	0.2991	1.0000	
Group size	0.0410	0.7556	0.9733	0.2605	1.0000

Table II.
Correlation matrix of several indicators on the contextual level

Fixed effects	1: Baseline Effect	Error	2: Decade Effect	Error	3: Industrialisation Effect	Error	4: Communication Effect	Error	5: Urbanisation Effect	Error	6: Combined Effect	Error
FOCC	0.552	0.006	0.484	0.016	0.544	0.006	0.531	0.007	0.527	0.007	40.430	0.203
No. of steam engines per ten inhabitants					7.216	1.174					6.288	1.186
FOCC × steam engines					0.471	0.105					0.256	0.112
post office							5.279	0.167			0.588	0.021
FOCC × post office							0.084	0.015			0.009	0.002
population per 1000 inhabitants	0.537	0.016	0.538	0.016	0.524	0.016	–	–	0.610	0.021	0.066	0.030
FOCC × population									0.010	0.002		
decade (since 1800)	0.054	0.026	0.117	0.029	0.019	0.027	0.088	0.026	0.054	0.026	0.010	0.003
FOCC × decade			0.012	0.003								
son's age (centered)	0.099	0.012	0.097	0.012	0.099	0.011	0.102	0.012	0.098	0.012	0.097	0.012
son is a migrant	1.142	0.098	1.141	0.098	1.139	0.098	1.132	0.098	1.152	0.098	1.147	0.098
son's mother deceased	−0.028	0.104	−0.015	0.104	−0.024	0.104	−0.038	0.104	−0.024	0.104	−0.010	0.104
constant	40.669	0.183	40.349	0.199	40.812	0.187	40.963	0.182	40.545	0.185	40.430	0.203
Random effects												
variance (cons)	7.094	0.416	7.053	0.417	6.917	0.413	6.682	0.406	7.057	0.415	6.897	0.413
variance (FOCC)	0.065	0.003	0.065	0.003	0.064	0.003	0.063	0.003	0.064	0.003	0.064	0.003
covariance(FOCC, cons)	0.676	0.029	0.678	0.029	0.670	0.028	0.633	0.028	0.670	0.028	0.669	0.028
variance (residual)	78.031	0.659	78.021	0.658	78.081	0.658	78.126	0.659	78.026	0.658	78.046	0.658
Deviance ($-2 \times$ log likelihood)	263,201.000		263,180.500		263,159.900		263,158.500		263,170.500		263,125.300	
N	36,056		36,056		36,056		36,056		36,056		36,056	

Table III.
Hierarchical linear regression of son's occupational status

of his father, while in groups with weak father effects a son gains less than a single additional status point for every ten status points of his father.

The control variables show that older sons have higher status although the effect is very small. For every ten years, sons are expected to have one additional status point. Sons whose mother was deceased at their marriage are not found to have had different occupational status as sons whose mother was still alive at marriage. Migrant sons have on average one point of status more than non-migrant sons. On the contextual level, it shows that SOCC hardly increased over time, half a point over the entire nineteenth century, while the effect is only borderline significant. Sons in larger municipalities have on average higher status scores of about half a point for every thousand inhabitants.

Finally, the fit of Model 1 is compared with the fit of a model that is exactly like Model 1, but lacks a random effect for FOCC (not shown in Table III). The difference in the deviance score is highly significant ($\chi^2 = 1,926.9$, df $= 1$), again showing that the association between FOCC and SOCC differs across groups.

Model 2 adds to Model 1 an interaction effect between FOCC and decade. The effect is significant and positive. Contrary to the literature assuming an increasing openness in society over time, the association between occupational status of father and son is estimated to have become stronger in Zeeland throughout the nineteenth century. Between 1811 and 1890 the effect of FOCC on that of his son increased from 0.497 to 0.592, an increase of somewhat more than 19 per cent in the period under study. The addition of the interaction effect of FOCC and decade significantly improves the model ($\chi^2 = 20.5$, df $= 1$).

To explain the increase over time in the effect of FOCC and the differences between municipalities, in Model 3 an interaction with industrialisation (number of steam engines) is added (along side the main effect). The interaction is significant and positive indicating that the effect of FOCC is estimated to have been larger in more industrialised areas. This finding provides support for the reproduction hypothesis (*H1b*), although it must be noted that the effect size is rather small. There are only five cities in which the ratio of steam engines to inhabitants was ever larger than 1:2,500. In these cities, since 1872 each point of FOCC above average is predicted to provide sons 0.3 more status than in municipalities without any steam engines. By far the two largest cities in Zeeland, Middelburg and Vlissingen never reached a ratio of number of steam engines to inhabitants of 1:20,000 and 1:25,000, respectively. According to this model, the association between FOCC and SOCC is thus stronger in these smaller industrialised municipalities as it is in the two largest cites.

The influence of mass communication, measured by the presence of a post office in a municipality is presented in Model 4. As noted, this model differs from Model 1 in the sense that it controls only indirectly for group size (through the main effect of post office, which correlates highly with urbanisation). The interaction between FOCC and the presence of a post office is positive and significant. Unlike hypothesised, the predicted association between FOCC and SOCC is stronger in cities with a post office. Every point of FOCC increases SOCC with nearly 16 per cent more in cities where a post office is present.

Model 5 adds to Model 1 an interaction of FOCC and urbanisation measured as the size of the population (per thousand) of a municipality. Contrary to *H3*, in more urbanised municipalities and periods, the effect of FOCC is estimated to have been larger. The cities of Middelburg and Vlissingen had more than 10,000 inhabitants since the beginning of the study and 1858, respectively. In these cities and periods, the effect

of a point of FOCC was at least 17 per cent larger than in cities with 1,000 inhabitants (or less).

Models 3-5 testing the theoretical changes in the association between FOCC and SOCC, all provide a better model fit than the model in which time is used to explain differentiation in the father-son association. However, the best model fit is found when both the theoretical indicators and time are modelled. (The presence of a post office could not be included in this model to avoid collinearity.) In this model, the effects found for the interaction of FOCC and industrialisation, urbanisation and time all remain significant and positive. The association between FOCC and SOCC was larger in more industrialised and urbanised areas. But even when controlling for these differences and changes, the association between FOCC and SOCC became stronger over time, indicating that still other contextual indicators account for changes in the association.

Conclusion and discussion

This article, like many others, focused on the influence of industrialisation on the status attainment process. Did the association of FOCC and SOCC decrease with industrialisation, urbanisation and means of communication? Unlike many others, historical data were used on a large scale on both the individual and the contextual level. By doing so, it was found that the association between FOCC and SOCC not only differs over time, but between municipalities as well. Future research could therefore benefit from studying both regional differences as well as differences over time.

The two major theories in the field, the logic of industrialism thesis and reproduction theory, are best distinguished by their arguments on the indirect effect of FOCC and SEDU. However, the theories also differ in their expectations of the total (both direct and indirect) association between FOCC and SOCC. According to the logic of industrialism thesis, this association declines with industrialisation, while according to reproduction theory the association remains the same or increases.

The results show that the association between FOCC and SOCC in Zeeland in the nineteenth century increased, rather than decreased refuting the logic of industrialism thesis and confirming reproduction theory. Additional hypotheses derived from the logic of industrialism thesis stating that the total association between FOCC and SOCC decreases with mass communication and urbanisation are refuted by the data as well.

The analyses of the effects of indicators of industrialisation, urbanisation and means of communication on the municipality level also showed that some precision is lost, and sometimes even error is added, when dichotomising larger cities as "urban and industrialised" and the smaller municipalities as "rural". The municipalities that were most industrialised were some of the smaller cities and not in by far the largest two cities.

Although the size and the level of detail of the data derived from marriage records is large, these data come with some bias as well. First, when comparing intergenerational mobility, usually the occupational status of fathers and sons at the same age is compared. In our data, fathers are older and therefore expected to have a higher occupational status than their sons. The association between FOCC and SOCC is therefore likely to be underestimated when using marriage records.

Second, the data only consist of those sons getting married and those sons whose fathers were alive at marriage. Especially, the latter might prove to be an issue if family members were "occupational brokers" as is reported by Miles (1999). Although the analyses showed that SOCC was not influenced by whether a son's mother was

deceased before marriage, this might be different for fathers. Theoretically, one would expect sons of deceased fathers to reach a lower status than sons of fathers who are alive. Since only occupational titles of fathers that are alive are registered on the marriage record, and increasing number of fathers are alive over time, the observed association between status of father and son is a better estimate of the "real" association in later periods. In early periods, this association may be underestimated. Especially, fathers with lower status are likely to have died early due to bad working conditions. Their sons are expected to have had a very low status themselves. These low-status fathers with low-status sons are not observed and consequently the association between FOCC and SOCC is underestimated.

Third, to test the influence of contextual effects on the status attainment process, multi-level analysis was used and not log-linear analysis as is common in research on (historical) stratification. Therefore, changes in occupational structure could not be explicitly controlled for as is done in analysis of relative mobility. Nevertheless, correlations do control for these to some extent, and some of the indicators used, e.g. industrialisation, are in fact determinants of changes in the occupational structure. Furthermore, the use of a continuous measurement of occupational status appreciates that occupations are not only hierarchically structured between classes, but also within classes (Blackburn and Prandy, 1997).

Despite these difficulties with the data all findings in this paper point in the direction of nineteenth century Zeeland being a closing society. The association between FOCC and SOCC increases with industrialisation, mass communication and urbanisation and it increases over time (even when controlling for the afore mentioned processes). This adds to the literature a refutation of the logic of industrialism thesis based on early-industrial individual and contextual data. It also adds to the discussion on how the trend towards a more open society as found in research after the Second World War has started. In Britain, the openness of contemporary society seems to be the result of a small but steady ongoing trend (Miles, 1999; Lambert, *et al.*, 2007). But in The Netherlands, like van Leeuwen and Maas (1996) and van Dijk *et al.* (1984), no evidence is found for the claim that the increasing openness is "the tail of a long movement towards a more open society" (van Leeuwen and Maas, 1996, p. 637).

Notes

1. The author is grateful to the volunteers who input the data from 1997-2001 and to Leo Hollestelle for making the data available.

2. URL DANS: www.dans.knaw.nl/en/. The author thanks Harry Lintsen for making the data publicly available. A description of the registers can be found in Lintsen and Nieuwkoop, 1989-1991).

3. The author would like to thank Saskia Spiekman of the archive of the Museum of Communication for her advice and support.

4. For a description of the data, see Beekink *et al.* (2003).

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Corresponding author
Richard L. Zijdeman can be contacted at: r.l.zijdeman@uu.nl