

*Original Research Article***Relatives as Spouses: Preferences and Opportunities for Kin Marriage in a Western Society**HILDE BRAS,^{1*} FRANS VAN POPPEL,² AND KEES MANDEMAKERS³¹*Vrije Universiteit Amsterdam, Department of Social Research Methodology, 1081 HV Amsterdam, The Netherlands*²*Netherlands Interdisciplinary Demographic Institute, 2511 CV The Hague, The Netherlands*³*International Institute for Social History, 1019 AT Amsterdam, The Netherlands*

ABSTRACT This article investigates the determinants of kin marriage on the basis of a large-scale database covering a major rural part of The Netherlands during the period 1840–1922. We studied three types of kin marriage: first cousin marriage, deceased spouse's sibling marriage, and sibling set exchange marriage. Almost 2% of all marriages were between first cousins, 0.85% concerned the sibling of a former spouse, while 4.14% were sibling set exchange marriages. While the first two types generally declined across the study period, sibling set exchange marriage reached a high point of almost 5% between 1890 and 1900. We found evidence for three mechanisms explaining the choice for relatives as spouses, centering both on preferences and on opportunities for kin marriage. Among the higher and middle strata and among farmers, kin marriages were commonly practiced and played an important role in the process of social class formation in the late nineteenth century. An increased choice for cousin marriage as a means of enculturation was observed among orthodox Protestants in the Bible Belt area of The Netherlands. Finally, all studied types of kin marriage took place more often in the relatively isolated, inland provinces of The Netherlands. Sibling set exchange marriages were a consequence of the enlarged supply of same-generation kin as a result of the demographic transition. *Am. J. Hum. Biol.* 21:793–804, 2009. © 2009 Wiley-Liss, Inc.

Kin marriages, or alliances between blood or affinity relations, are common in many parts of the world. In Muslim countries in North Africa, and in Central and West Asia, consanguineous marriages between people related to each other as second cousins or closer comprise between 20% and over 50% of all marriages. In Buddhist and Hindu South Asia, such unions are equally widespread (Bittles, 1994). Moreover, during the last few decades, kin alliances have become more frequent in Western societies as a high percentage of the marriages contracted by their migrant populations were between blood relatives (Esveldt and van Poppel, 2005; Gardner, 2006; Reniers, 2001; Shaw, 2001). These marriages, which are often arranged by the parents and involve brides or grooms from the country of origin, are controversial, instigating not only health-related concerns (Garssen et al., 2003) but also fear of continued ethnic group formation and hampered social integration. In The Netherlands, for example, an article by Schulpen et al. (2001) showing the detrimental effects on child mortality of consanguineous marriages by Turkish and Moroccan parents generated considerable political upheaval and heated debate for a short period in 2003. Although kin marriage has become very rare in native Western populations today, the phenomenon was not exceptional in the past.

Previous genetic, anthropological, and historical studies have shown that in most Western societies rates of kin marriage started to rise steadily but consistently from the beginning of the nineteenth century to reach a peak between the second half of the nineteenth and the first decades of the twentieth centuries. This peak in the incidence of kin marriage was followed by a regular or abrupt decline to some point in the 1950s or 1960s when such marriages became almost non-existent. Strikingly, the growth and decline of kin marriage occurred almost simultaneously in highly different localities and regions across

Catholic and Protestant Europe and America (Bittles and Egerbladh, 2005; Bittles and Smith, 1994; Bourgoin and Khang, 1978; Cavalli-Sforza et al., 2004; Deraemaeker, 1958; Gouesse, 1986; Hall, 1977; Ottenheimer, 1990; Pettener, 1985; Polman, 1951; Sabeian, 1998; Saugstad, 1977; Smith, 2001; Sutter, 1968; Sutter and Lévy, 1959; Van Straaten, 1966, 1986; Zei et al., 2005).

Although the similarity in trends of kin marriage has been described, much less is known, however, about the causes of its incidence. Different explanations have been put forward, ranging from the demographic transition (Cavalli-Sforza et al., 2004; Sutter, 1968; Zei et al., 2005), processes of social class formation (Delille, 1985; Hall, 1977; Sabeian, 1998; Segalen, 1991), and preservation of minority cultures (Ottenheimer, 1986, 1990, 1996). However, these explanations have not yet been put to a rigorous test. The main problems hampering this have been the narrow focus of previous studies and the lack of suitable data. Geneticists and biologists have been mainly interested in consanguineous marriages. They have focused mostly on isolates and mountain populations, and in order to study the frequency of kin marriages, they have made use of so-called dispensation registers or have applied methods of isonymy (Abelson, 1978; Boëtsch et al., 2002; Pettener, 1985; Rabino-Massa et al., 2005). Although historians and anthropologists have dealt both

Contract grant sponsor: The Netherlands Organization for Scientific Research; Contract grant number: 275-53-001.

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Received 1 October 2008; Revision received 22 December 2008; Accepted 13 January 2009

DOI 10.1002/ajhb.20896

Published online 4 March 2009 in Wiley InterScience (www.interscience.wiley.com).

with unions between blood and affinal kin, their in-depth studies were mostly based on family reconstitutions and were for that reason small-scale by necessity as well. In order to properly study the relative role of different mechanisms possibly involved in kin marriage, a comparative study that systematically traces the antecedents of unions among consanguineous and affinal kin in communities with divergent opportunity structures is needed.

In this article, we study kin marriage on the basis of a unique database, named GENLIAS, which contains essential information on more than one million marriage certificates related to 5 of the 11 Dutch provinces during the period 1812–1922. Through an intricate linking procedure, the database has been made fit to identify eleven types of kin marriage. Furthermore, macro-level information on the communities in which marriages were contracted was added. The dataset thus allows for a large-scale, comparative, multilevel approach of kin marriage for a substantial part of a European population for almost a century.

In the next section, we start by presenting three possible mechanisms, which could have accounted for the occurrence of kin marriage during the long nineteenth century. We then briefly describe the legal and socio-economic context of The Netherlands and formulate specific hypotheses for the Dutch case. Next, our data is introduced and we describe our measures and methods. In order to get a first impression of the occurrence of kin marriage in The Netherlands, we map frequencies of different types of kin marriage and trace their rates over time. Through a series of multilevel logistic regressions we then test our hypotheses and find an answer to the question of what the determinants of different types of kin marriage were. Finally, we summarize and discuss our findings.

UNDERSTANDING KIN MARRIAGE

Patterns of partner choice result from the interplay of the preferences of individuals for certain characteristics in a spouse, the influence of the social group of which they are members, and the opportunities of the marriage market (Kalmijn, 1998). Two mechanisms that tap preferences for kin endogamy are distinguished: social class formation, and cultural continuity and enculturation. A third mechanism, focusing on geographic isolation and kin availability, stresses opportunities on the marriage market as an explanation of kin marriage. We will now turn to each of these.

Social class formation

First of all, kin marriage has been interpreted in a framework, which links changes in kinship organization and alliance building with economic development, social differentiation and the process of social class formation (Delille, 1985; Hall, 1977; Sabeau, 1998; Segalen, 1991). With the growth of capitalism in Western societies during the 18th and 19th centuries, land markets developed and industrialization and urbanization gained momentum, while population pressure and social differentiation caused a process of strata formation. As a consequence of these transformations, so it is argued, lateral ties connecting families of similar social standing became increasingly important.

The transfer of dowries played an important role in the process of social class formation during the nineteenth century. Since the dowry that the family of the bride was able to pay was needed as a starting capital for a new farm or business, children were supposed to marry a partner of at least similar social status, if they did not want to move downward (Van Cruyningen, 2000). Dowries were also the key mechanism behind the frequently occurring hypergamous marriages (i.e., women marrying upward), regulating wealth transfers between the middle classes that generated wealth and classes of higher status (i.e., aristocracy) with more fixed resources (Sabeau, 1998). According to Sabeau, “dowries appear to have become ever more substantial for the middle class and played an ever greater role in determining which groups and individuals were open to each other at any particular time (...) dowries thus functioned as regulators for providing social access, integration and differentiation” (Sabeau, 1998). Kin marriage was of course of crucial importance in this respect for it kept property and wealth transferring, via dowries, between different family branches within the larger kin group.

For farmers, the rapid development of land markets meant that the way resources were allocated changed; different assets were needed if they were to impose some control on the market (Sabeau, 1998). Kin marriage was beneficial in this respect because it connected families that were already related to each other, enabling them to piece plots of land together, to consolidate property or accumulate wealth. In a study of South Brittany it was shown that linking of families through affinal marriage was closely tied up with the development of an increasing social differentiation resulting in the formation of a farm hierarchy in which the wealthier strata were the closest integrated (Segalen, 1991). Among the higher and middle strata, re-establishing relations through kin marriage, enabled families to generate capital, gain access to credit, coordinate management skills, and secure succession to office (Sabeau, 1998). According to Davidoff (2006), “kin alliances created a dense matrix of overlapping and doubling of in-laws at a time when there was a dearth of economic and financial infrastructure so that familial relations became a touchstone of probity and trustworthiness.”

With the introduction of new systems of credit, the growth of limited liability companies, and the rise of the managerial class in the twentieth century, the use of kin in building enterprises, managing property and coordinating trade networks, and therefore also the practice of kin marriage, would have gradually waned.

Enculturation and cultural continuity

Whereas the marriage strategy underlying the class formation hypothesis can be characterized as dynamic, emphasizing the alliance building qualities of kin marriage, a second explanation stresses the idea of kin marriage as a strategy of conservation. Ottenheimer (1986, 1990, 1996) argues that cousin marriage can be explained because of it providing excellent opportunities for the transmission of cultural values and of ensuring cultural continuity. He starts from the assumption that the family is the primary mechanism for transmitting cultural values from generation to generation. In societies with patrilineal descent groups—such as in many Muslim coun-

tries—patrilateral parallel cousin marriage (a man marrying his father's brother's daughter) often occurs because it unites members of the same descent group, keeping the education of offspring within the family line. According to Ottenheimer (1996) kin unions, and particularly cousin marriages, serve as a strategy of enculturation not only in patrilineal descent groups, but also in other minority groups, such as in royal families and among the European nobility. In the same line, it has been suggested that certain ethnic groups, emigrant communities, refugees (Davidoff, 2006; Molloy, 1986), and small religious denominations (Kuper, 2002; Reid, 1988) have practiced kin marriage for reasons of cultural conservation. In times of increased group formation for example as a consequence of processes of segregation and pluralization on the basis of religious or ethnic grounds, the occurrence of kin marriage as a means of identity preservation can be expected to rise.

Isolation and the supply of kin

Whereas the previous mechanisms centered on individuals' preferences, other authors have emphasized the opportunities on the marriage market as an explanation of kin marriage (Cavalli-Sforza et al., 2004; Sutter, 1968; Zei et al., 2005). First of all, it has been argued that high rates of kin marriage were the result of the isolated, peripheral location of some places, such as for instance mountain villages, or communities cut off from the main channels of transportation and infrastructure. Isolation as a cause of kin marriage would have disappeared with economic development and the concomitant improvement of infrastructure and possibilities for individual travel.

Secondly, it has been suggested that the rate of kin marriage was related to the supply of relatives, which depends on the demographic structure of an area: on its population size, fertility, mortality and migration rates (Zei et al., 2005). In this respect, the rise and decline of kin marriage would have been a by-product of the demographic transition. Its onset characterized by declining mortality but high or highly differential fertility, produced families with increased numbers of children surviving into adulthood. With enlarged sibling sets and cousin groups, opportunities to marry a relative amplified as well. If there is a preference for a marriage to a close relative, which previously could not be realized due to a lack of suitable partners, the survival of larger numbers of kin will lead to higher proportions of kin marriages even when the numbers of non-consanguineous kin would increase in the same proportion. In particular sibling exchange marriages are strongly dependent on the presence of sufficient numbers of siblings. When family size became smaller at the completion of the demographic transition, rates of kin marriage would have dwindled accordingly (Davidoff, 2006; Kuper, 2002; Sutter, 1968).

THE CASE OF THE NETHERLANDS

During the nineteenth century, Civil Codes provided rules on matrimonial matters in The Netherlands. An adapted version of the Code Napoleon was first introduced in The Netherlands in 1809. In 1811, the Code Napoleon was replaced by the French Civil Code which in its turn was replaced in 1838 by a Dutch Civil Code, stipulating regulations on kin marriage. By Civil Law, cousins were



Fig. 1. Map of The Netherlands by province around 1920.

not forbidden to marry, but marriages between brothers and sisters and between uncles and aunts with their nieces and nephews were prohibited. Moreover, husband and wife occupied the position of being "as one" and as a consequence they took on each other's relationships. Therefore, for those related by affinity the same prohibitions applied (Haks, 1982). However, by Royal decree dispensations could be granted for these kin marriages.

The Civil Code determined the forbidden degrees that applied to the population as a whole. In certain groups, however, more strict rules were followed and one might accordingly expect lower frequencies of kin marriages within these groups. In the Roman Catholic Church, the Canonical decrees in force as from the fourth Lateran Council in 1215 forbade marriages with third cousins or closer and equal affinity relations (Goody, 1983). These rules were reduced in 1918 to the marriages of first cousins, first cousins once removed, second cousins, and equivalent affinal kin (Ottenheimer, 1996). The Reformed Church took the Old Testament (Leviticus 18) as a guidance (Van Straaten, 1966): uncle-niece, aunt-nephew and deceased spouse's sibling alliances were considered illegal, but unions among cousins were permitted.

Industrialization came relatively late to The Netherlands. It started off around 1860 in the eastern region of Twente and the southern city of Maastricht (Van Zanden and Van Riel, 2004). In the five provinces under study—Groningen, Overijssel, Gelderland, Zeeland, and Limburg (see Fig. 1)—the pace of industrialization and the growth of the tertiary sector was considerably slower than in urbanized Holland. In the provincial towns, the services sector grew and a number of (rural) industries developed.

The economic development of the five regions diverged in important ways. In the coastal rural provinces of Groningen and Zeeland, large-scale productive farms producing specialized primary products for the market had dominated since the sixteenth and seventeenth centuries (De Vries, 1974). Social structure was highly polarized with a small layer of rich farmers and a mass of landless laborers. In the eastern provinces of Gelderland and Overijssel agriculture was less dominant than in Zeeland and Groningen and farms were much smaller, less specialized, and the productivity of land and labor was almost half that of the coastal provinces (Van Zanden and Van Riel, 2004). Cultivated land consisted of a mixture of pastureland and arable farming. Many farmers owned some wasteland, the exploitation of which was an integral part of the farming process. The agricultural orientation of the southern province of Limburg was comparable to that in the east, with mixed farming predominating. However, farms were even smaller here as a result of high population pressure and a constant division of land.

Although in the coastal regions agriculture remained large-scale and market-oriented, the agricultural economy on the eastern and southern sandy soils drastically altered during the nineteenth century. Farming was intensified as a result of better methods of fertilization. Moreover, after the division of the commons during the first half of the nineteenth century, wasteland was sold and brought under cultivation. This "open frontier" agriculture led to the creation of many new small-sized farms run by owner-occupiers. Accompanying the high mobility of land resources in the inland provinces was the development of an active land market (De Haan, 1994).

The Netherlands was a country of mixed religion: the southern provinces were almost completely Catholic, while to the north of the big rivers the Reformed Church dominated, albeit with sizable Catholic enclaves. In 1886, a major schism in the Reformed Church took place, with many orthodox Protestants following the political entrepreneur Abraham Kuypers. They formed their own congregation and set up their own political party, newspaper, schools and university (Van Zanden and Van Riel, 2004). The Church split occurred most clearly in the Protestant Belt, an area with high proportions of orthodox Protestants stretching across The Netherlands from Zeeland in the southwest to the northwestern part of Overijssel in the east, almost exactly along the dividing line between Catholic and Protestant Netherlands (Knippenberg et al., 1989). A study of a village in the Protestant belt area showed that the orthodox Protestants were a minority group prone to preserve their cultural identity; they married within their own group, developed a collective social life, acted politically as one and maintained strict order. This strengthened their solidarity and made them a closely-knit group among whom there existed numerous blood and affinity relations (Verrips, 2000). When a process of religious segregation, known as pillarization, started in the mid-nineteenth century, it gave rise to an increase in religiously homogeneous marriages (Beekink et al., 1998). A rise in the occurrence of kin marriage as a means of identity preservation could be expected in these circumstances as well.

In terms of infrastructure, regional differences abounded. The provinces of Groningen and Zeeland had intensive contacts with the outside world through their well-developed transportation network, their seaports,

and their highly market-oriented agricultural activities. In the inland provinces of Overijssel, Gelderland and Limburg, the road and rail network was much less developed. Moreover, the extensive network of waterways that connected farmers in Groningen and Zeeland with outside markets was missing in the peripheral inland provinces (Van Zanden and Van Riel, 2004).

During the nineteenth century, the supply of kin increased in The Netherlands as a result of unchanged high fertility levels and declining mortality rates. Post et al. (1997) showed that the number of siblings of Dutch aged 20–40 increased from 2.1 in 1830, rising steeply as from 1890, to a high point of 3.7 in 1920. The average number of cousins increased from 9.5 in 1830 to more than 12 in 1930, the number of nieces and nephews from 5 to 6 and the number of aunts and uncles from 1 to more than 3 (Post et al., 1997). However until the last quarter of the nineteenth century, mortality was much higher in the coastal than in the inland provinces. This turned around in the 1870s when mortality rates declined drastically in the coastal areas, but the same development lagged behind in the inland provinces (Van Poppel and Beekink, 2003). The fall of birth rates began in the extreme Northwest of the country and gradually spread from there gradually to the Southeast (Boonstra and Van der Woude, 1984). Particularly in the south fertility remained very high well into the twentieth century. Thus, in the eastern provinces of Gelderland and Overijssel and particularly in the southern region of Limburg, lateral kin was more abundant than in the coastal provinces.

To summarize, it might be expected that in the study region, which covers a major, albeit mostly rural part of The Netherlands, just as in other Western societies, the upper classes, the middle classes, and the farming class were more prone to marry kin as a result of economic development and social class formation. Kin marriages might also have happened more often among the seceded group of orthodox Protestants in The Netherlands who might have practiced it as strategy of identity conservation and enculturation. We expect more kin marriages in isolated places, i.e., in small villages, in places with little in- and out-migration, and among sedentary people.

Although in The Netherlands changing demographic parameters and regional differences in the demographic regime might have been less important as factors determining the rate of kin marriages than in Asian or African countries, the strong degree of variation between provinces and the steep changes since the 1870s in the expectation of life, the number of children and ages at marriage have affected the availability of kin here as well. We expect to find more kin marriages in places with a large supply of kin of the same or the previous generation. Given the enclosure of the commons, the growth of small-sized farms, the process of intensification of agriculture, the relative isolation and lack of infrastructure, and the greater availability of kin in the inland provinces, the propensity to marry kin might have been more pronounced in these regions than in the coastal areas.

DATA

Our study uses as its main source material a large-scale database, GENLIAS, with data extracted from marriage certificates. The following data were entered into the database: the date and place of marriage, the surnames and

Christian names of bridegroom and bride, their places of birth, ages and occupations, the names of former brides and grooms in case the marriage was a remarriage, the surnames and Christian names of the parents of the couple, and the occupations of the parents of the couple. In The Netherlands, the vital registration system was nation-wide introduced in the years 1811–1812. In those parts of The Netherlands that were an integral part of the French Empire during the Napoleonic era (such as the province of Limburg, and parts of Zeeland (Zeeuws-Vlaanderen, or “Dutch Flanders”) the vital registration of birth, death and marriages was introduced even in 1796. As the registration system was functioning flawlessly only after several years had elapsed, we included only information for the years 1812 and later, 1812 being the year in which the whole country had a functioning registration system.

As according to the law, marriage records enter the public domain only after 75 years in bundles of 10 years, data could only be used for marriages contracted no later than 1922. Complete datasets could be used for 5 of the 11 Dutch provinces: Zeeland, Limburg, Gelderland, Groningen and Overijssel. The total number of marriages in the database GENLIAS (version 2007_3) was 1,110,878 of which approximately 208,000 in Groningen, 221,000 in Overijssel, 327,000 in Gelderland, 190,000 in Limburg and 164,000 in Zeeland. The database can provide a fairly accurate description of Dutch marriages because it relates to around 35% of all marriages contracted in The Netherlands in the period 1812–1922. This coverage rate is more or less constant over the sample period.

For all persons for whom we had a marriage record we tried to link this record to the marriage record of their parents. This linkage was based on the combination of first and last names of both parents, as given in the child’s and the parents’ marriage certificate, allowing for small deviations. Both age at marriage and year of marriage of the child were utilized to reduce the number of pairs of parents that were eligible for linkage. We tried to link parents and children both within and between provinces.

We constructed two analytic samples: a two-generation sample and a three-generation sample. In each record of the two-generation sample information is stored on the bride, groom and on their parents; the three-generation sample includes those marriages for which also additional information about all of the grandparents of the marriage couple is available. The matching rate for the two-generation sample was 47.7% and that of the three-generation sample 17.8%. It stands to reason that information on two generations, and even more so on three generations, is most common for people marrying in the last part of the period and that this kind of information is not available for people marrying in the beginning of the registration period. In other words, the chance of linking is higher for children whose parents married most recently (because marriages before 1796/1812 are not in the registry). This could bias our results and we therefore study kin marriage from 1841 onwards for the two-generation sample, allowing 30 years for linkage and from 1871 onwards for the three-generation sample allowing 60 years for linkage. This resulted in a final number of cases of 517,862 marriages in the two-generation sample and 139,447 marriages in the three-generation sample.

To the GENLIAS database, we linked data from the Historical Data Base of Dutch Municipalities (HDNG), which stores information from several sources, among others the

decennial censuses and provincial reports. We used variables indicating the religious composition, proportions of orthodox Protestant voters, migration, and the demographic structure of communities.

MEASURES

On the basis of the two- and three-generation samples, we identified eleven types of kin marriage. The four main kinds were first cousin marriages, aunt-nephew and uncle-niece marriages, marriages with a deceased spouse’s sibling, and sibling set exchange marriages. Cousin marriages were further subdivided in double cousin marriages of which both pairs of grandparents were the same, patrilineal parallel cousin marriages, in which a man married his father’s brother’s daughter (FBD), matrilineal parallel cousin marriages where a man married his mother’s sister’s daughter (MZD), patrilineal cross-cousin marriages, which is a man’s marriage to his father’s sister’s daughter (FZD), and finally matrilineal cross-cousin marriages where a man married his mother’s brother’s daughter (MBD). Marriage to a deceased spouse’s sibling could be either marriages where a man married his deceased’s wife’s sister (sororate) or alliances between women and their deceased spouses’ brothers (levirate). Finally, we distinguished those sibling set exchange marriages where same-sex sibling pairs exchanged from those where a brother and sister married to a sister and brother from another family. In the multivariate regression we analyze three kin marriage types: cousin marriage, deceased spouse’s sibling marriage, and sibling set exchange marriage for which we constructed dichotomous variables indicating whether a marriage was of the respective type or not. Because the numbers of aunt-nephew and uncle-niece marriages were so small, we did not include them as dependent variables in the regression analyses.

To test the three groups of hypotheses on the determinants of kin marriage we constructed a series of indicators tapping the variables relevant for the social class formation explanation, the enculturation explanation and the geographical isolation and supply of kin hypothesis. We first consider a set of indicators of the social class formation explanation:

Social class

The social class of the marriage couple was charted on the basis of the occupation of the groom as given in the marriage record. We coded all occupations by a coding scheme called HISCO (Historical International Standard Classification of Occupations) (Van Leeuwen et al., 2002), which is compatible with the International Labor Organization’s International Standard Classification of Occupations (ISCO68) scheme. The occupational categories were further classified into an abridged version of a historical social class scheme proposed by Van Leeuwen and Maas (2005), known as HISCLASS. We employ the following seven categories in our analyses: higher managers and professionals, lower managers and professionals combined with clerical and sales people, foremen and skilled workers, farmers and fishermen, lower skilled workers, unskilled workers, and farm workers.

Impartible inheritance

We also included a measure of the type of inheritance system practiced in the marriage community on the basis of information on property devolution (Best, 1941; Van Blom, 1915). Although Civil Law prescribed partible inheritance, in some regions in the east, farmers transmitted their property according to customs of impartible inheritance. A dichotomous variable was created indicating whether the marriage took place in a community with impartible inheritance or not.

We subsequently include indicators that are related to the enculturation explanation.

Proportion of Orthodox Protestants

Unfortunately we do not have the religious affiliation of the bride and groom. Instead we calculated the proportion of eligible voters for the main orthodox Protestant parties in the marriage community in the year 1933, the year when it became first possible to chart voters for political parties (Knippenberg, 2003).

Proportion of Catholics

We also included the proportion of Catholics in the marriage community based on information for 10-year periods.

A third set of measures is related to opportunities on the marriage market. First, we included a number of variables indicating the extent of isolation of marriage communities.

Province

The province in which the marriage was contracted was used as a first proxy of the degree of isolation. A series of dummy variables were created for each of the provinces: Groningen, Overijssel, Gelderland, Zeeland, and Limburg.

Relative mobility

An indicator of the fluidity of a marriage place is its relative mobility: the relative number of people that migrate in and out. It totals in- and out-migration per 10-year period per 1,000 inhabitants.

Net migration

Net migration is another indicator of isolation and shows whether a community is attracting or dispelling migrants. It is calculated as the number of immigrants minus the number of emigrants per 10-year period per 1,000 of the population.

Bride and groom born in the same place

A dichotomous variable was created charting whether the bride and groom were born in the same place or not.

Bride migrated/bridegroom migrated

Two dichotomous variables were constructed indicating whether the bride and the groom had migrated between place of birth and marriage place or not.

A number of variables were included that measure the supply of kin.

Birth rate

The birth rate gives a first indication of the development of supply of kin in a community. The birth rate for the year of marriage based on information for 10-year periods was included.

Natural growth rate

The birth and death rates of the previous generation affect the chance of kin marriage through the relative abundance of siblings and cousins. The natural growth rate of the population was calculated as a function of the difference between decennial birth and death rates of the previous generation, which we operationalized as 25 years before the year of marriage.

Population size

Population size of the marriage place was measured as the number of inhabitants per 100 based on 10-yearly census information.

Urban

Marriages were also classified according to the rural or urban character of the marriage place. A dichotomous variable was created classifying municipalities into urban or rural based on the percentage of the population working in agriculture in 1889 and the historical designation of a municipality as a town or village.

Ages at marriage and rank order of marriage

Various studies have observed a rather strong relationship between age at marriage and the frequency of kin marriage (see for example Bittles, 1994) whereas deceased spouses' sibling marriage by definition involved remarriages. Given the strong provincial differences in ages at marriage and frequencies of remarriage, and the changes therein over time, the marriage ages of the bride and the groom and a dichotomous variable indicating whether a marriage was a second or higher marriage or not were included as control variables.

Table 1 gives an overview of the characteristics of the two- and three-generation samples. Couples living in a rural community at the time of their marriage dominated; only 15% married in a city. Note also how the social class compositions of the samples testify to the agricultural orientation of the regions under study. One fifth of the grooms were working as a farmer, while farm workers made up a quarter of all grooms. The distribution of men over the social groups shows that about half of all grooms belonged to the unskilled laboring classes. The upper classes comprised less than 10% of the total samples.

METHOD

We start examining kin marriage in The Netherlands by presenting a cross-tabulation of all eleven types of unions among relatives that we were able to identify. This cross-tabulation shows how often relatives married and what the relative importance was of each type of kin marriage. Next, in order to describe the development of kin marriage over time, the incidence of each of the three main types of kin marriage is broken down by period and time trends are presented in a graphical form. Finally, a series of multilevel

TABLE 1. Means and percentages of independent variables

	Two-generation file		Three-generation file	
	Means/percentages	Standard deviation	Means/percentages	Standard deviation
Marriage year	1892	21	1907	11
<i>Characteristics of the marriage community in the marriage year</i>				
Groningen	21%		23%	
Overijssel	22%		21%	
Gelderland	28%		25%	
Zeeland	16%		22%	
Limburg	13%		9%	
Proportion of Roman-Catholics	0.26	0.34	0.15	0.28
Proportion of Orthodox Protestants	0.16	0.24	0.20	0.27
Natural growth rate	0.11	0.07	0.13	0.06
Birth rate	0.31	0.06	0.29	0.05
Population size	0.12	0.17	0.13	0.18
Relative mobility	1.13	0.54	1.24	0.49
Net migration	-0.02	0.11	-0.03	0.11
Urban (0-1)	15%		14%	
Impartible inheritance (0-1)	21%		20%	
<i>Characteristics of the marriage couple</i>				
Age bride	26.07	6.17	24.71	4.87
Age groom	28.53	6.87	26.91	5.37
Second or higher marriage	8%		4%	
<i>Occupation bridegroom</i>				
Higher managers and professionals	1%		1%	
Lower managers and professionals, clerical and sales	8%		9%	
Foremen and skilled workers	18%		18%	
Farmers and fishermen	20%		21%	
Lower skilled workers	13%		12%	
Unskilled workers	9%		11%	
Farm workers	25%		24%	
Occupation missing	4%		4%	
Bride and groom born in same place (0-1)	38%		42%	
Bride migrated (0-1)	42%		37%	
Bridegroom migrated (0-1)	51%		48%	
Number of marriages	517,862		139,447	
Number of communities	465		455	

Source: Database GENLIAS_2007_3.

logistic regression analyses of the three main types of kin marriage is performed. We have contemplated the use of one multilevel, *multinomial* logistic regression model of all types of kin marriages at the same time, in which the underlying assumption is that the various types of kin marriage are competitors. Yet, the fact that cousin marriages are based on a population differing from the one from which the other types of kin marriages are extracted (namely the three-generation database), and that deceased spouse's sibling marriages always involve a remarriage make this assumption untenable. Besides, given the very small numbers of sibling-set exchange and deceased spouses' sibling marriages one can hardly speak of "competing events."

Our data has a hierarchical structure, that is, marriage couples are nested within marriage communities. Communities may differ in the opportunities offered for certain types of kin marriage. This may affect the odds of contracting a kin marriage of people marrying in a certain community in the same way. Because of this lack of independence within communities (i.e., homogeneity) we applied multilevel analysis (Hox, 2002). If we had applied ordinary regression analysis, not only would the assumption of the independence of the error terms have been violated, but—since large communities would have been represented in larger numbers than communities with only a few marriage couples—also the number of degrees of freedom and the significance of the effects would have been overestimated. Multilevel analysis takes both levels, of the community and of the marriage couple, into account simultaneously. Because

the dependent variables in the three models are discrete rather than continuous, multilevel logistic regression models are estimated (Snijders and Bosker, 1999).

In our models, variation in the dependent variable is modeled to originate from variation at the community-level (i.e., sources of variation shared by couples marrying in the same community), and variation on the level of individual marriage couples:

$$\text{logit}(P_{ijk}) = \mathbf{x}'_{ij}\beta + \mathbf{z}'_j\gamma_k + u_{jk} + e_{ijk}$$

The probability that a couple i , marrying in a community j , contracts a kin marriage k is modeled to be a function of a vector of couple-specific characteristics (e.g., marriage ages, rank number of the marriage, occupation of the bridegroom, geographical endogamy of birth, migration experience) \mathbf{x}_{ij} with associated, kin marriage type specific slopes, and of a vector of community-specific characteristics (e.g., proportion of Roman-Catholics, proportion of Orthodox Protestants, natural growth rate, birth rate, population size, relative mobility, net migration, degree of urbanization, impartible inheritance, province) \mathbf{z}_j , again with associated kin marriage type specific slopes γ_k .

For each kin marriage type multilevel binary logistic regression models were conducted, calculating the chance of contracting that type of marriage conditional on the chance of an alliance with a non-kin related person. In the regressions of deceased spouse's sibling and of sibling set exchange marriages, quadratic terms for marriage year

are included to control for non-linear time trends. All models give the logistic regression coefficients.

RESULTS

Frequency of kin marriage

We start by showing the proportions of all types of blood and affinal marriages that could be identified (Table 2). Until 1970, Civil Law officially prohibited marriages between uncles and nieces and between aunts and nephews. This constraint is reflected in the marriage practices of Dutch people, since they hardly contracted these unions. Though first cousin marriages required dispensation by the Catholic Church, Civil Law and the Reformed Church did not forbid these marriages. They indeed occurred more often, comprising almost 2% of all marriages of the three-gen-

eration sample during the period 1870–1922, a rate comparable to what has been found for other European regions, villages and cities (Sabeau, 1998).

Kin marriage in The Netherlands pertained mostly to bonds between affines. Marriage exchanges of pairs of siblings constituted more than 4% of all marriages in the two-generation sample. Most frequently, two brothers from one family married two girls from another family, indicating that same-sex siblings were important brokers in marriage partner choice. Remarriage to a sibling of one's deceased spouse was of lesser importance, comprising only 0.85% all marriages in the two-generation sample, which is not surprising as such unions were formally forbidden and could only be contracted after written Royal permission. More than two thirds of these marriages were so-called sororate marriages, where a man married his former wife's sister. In terms of taking care of orphaned children, a mother was of course most important.

TABLE 2. *Distribution of different types of kin marriage*

	Percentage	N
Consanguineous marriages		
First cousin marriages	1.94	2708
Double cousins	0.06	77
Matrilateral parallel cousins	0.50	700
Matrilateral cross cousins	0.51	708
Patrilateral parallel cousins	0.46	646
Patrilateral cross cousins	0.41	577
Uncle–niece marriages	0.00	69
Aunt–nephew marriages	0.00	4
<i>Total three-generation sample</i>	139,447	
Affinal kin marriages		
Marriages with a sibling of one's deceased spouse	0.85	4395
With a deceased wife's sister	0.59	1344
With a deceased husband's brother	0.26	3051
Sibling exchange marriages	4.14	21443
Brothers with sisters	2.36	12206
Brother/sister with sister/brother	1.78	9237
<i>Total two-generation sample</i>	517,862	

Source: Database GENLIAS_2007_3.

Trends over time

Strikingly, for the period for which reliable information is available, i.e., 1871–1922, rates of cousin marriage do not show a pattern of rise and fall (see Fig. 2). The incidence of cousin marriage declines over the period for which we can observe it. The rate of marriage to a deceased spouse's sibling, which we can observe as from 1841, does increase, although only barely, to just over one percent between 1841 and 1856. After this period it falls slowly but consistently to around a half percent in 1922, a fall which is in line with the decrease in remarriage rates, brought about by receding mortality (Van Poppel, 1995). This decrease runs almost exactly parallel to the decline of cousin marriage, thus showing a general decline of these types of close kin marriage during the second half of the nineteenth century. We do observe, however, a clear pattern of rise and fall for sibling set exchange marriages, corroborating evidence found in other European locations. Its peak lies between 1890 and 1900 when sibling set

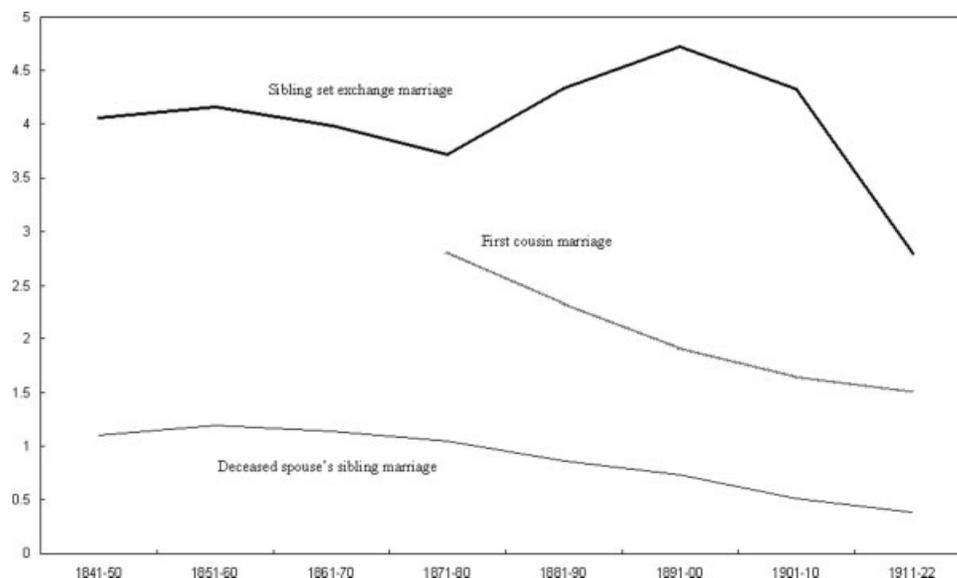


Fig. 2. Rates of first cousin marriage, deceased spouse's sibling marriage, and sibling set exchange marriage in The Netherlands during the period 1841/1871–1922.

TABLE 3. Binary logistic regression effects of multilevel models of first cousin marriage, deceased spouse's sibling marriage, and sibling set exchange marriage among Dutch married couples

Variable	Cousin marriage (Model 1)		Deceased sibling marriage (Model 2)		Sibling set exchange marriage (Model 3)	
	b	s.e. b	b	s.e. b	B	s.e. b
Intercept	54.76 ^{***}	4.82	-1303.10 ^{***}	174.66	-547.99 ^{***}	77.06
Year of marriage	-0.03 ^{***}	0.00	1.39 ^{***}	0.19	0.58 ^{***}	0.08
Year of marriage squared	0.00 ^{***}	0.00	0.00 ^{***}	0.00		
Social class formation						
Occupation bridegroom						
Higher managers and professionals (foremen and skilled workers = ref.)	0.71 ^{***}	0.20	0.21	0.15	0.17 [*]	0.08
Lower managers and professionals, clerical and sales	0.28 ^{**}	0.10	0.00	0.07	0.07 [~]	0.04
Farmers and fishermen	0.60 ^{***}	0.07	0.06	0.06	0.53 ^{***}	0.03
Lower skilled workers	-0.05	0.10	-0.13 [*]	0.07	-0.01	0.03
Unskilled workers	-0.05	0.10	-0.11	0.07	0.10 ^{**}	0.03
Farm workers	0.05	0.08	-0.22 ^{***}	0.06	0.08 ^{**}	0.03
Occupation missing	0.72 ^{***}	0.11	0.02	0.09	0.37 ^{***}	0.04
Impartible inheritance (vs. partible)	-0.01	0.12	0.38 ^{***}	0.10	-0.13 [*]	0.06
Enculturation and cultural continuity						
Proportion Orthodox Protestants	0.58 ^{***}	0.16	-0.07	0.15	-0.02	0.07
Proportion Roman-Catholics	-0.59 ^{***}	0.15	-0.48 ^{***}	0.10	0.05	0.04
Isolation and supply of kin						
Province						
Overijssel (Groningen = ref.)	0.08	0.14	-0.09	0.11	0.04	0.06
Gelderland	0.46 ^{***}	0.11	0.26 ^{**}	0.09	0.21 ^{***}	0.05
Zeeland	-0.78 ^{***}	0.14	-0.39 ^{***}	0.12	-0.01	0.06
Limburg	-0.71 ^{***}	0.18	0.71 ^{***}	0.13	-0.01	0.06
Relative mobility	0.02	0.06	-0.17 ^{**}	0.06	-0.02	0.02
Net migration	0.10	0.30	0.39 [~]	0.23	0.32 ^{***}	0.10
Bride and groom born in same place	0.87 ^{***}	0.06	0.15 ^{**}	0.05	0.25 ^{***}	0.02
Bride migrated (vs. not migrated)	0.06	0.06	-0.08 [~]	0.04	-0.09 ^{***}	0.20
Bridegroom migrated (vs. not migrat)	0.41 ^{***}	0.06	-0.09 [~]	0.05	-0.03	0.02
Birth rate	-0.87	0.59	0.45	0.41	-0.05	0.18
Natural growth rate	0.25	0.41	0.05	0.03	0.41 ^{***}	0.13
Population size	-0.24	0.35	-0.22	0.28	-0.96 ^{***}	0.14
Urban (vs. rural)	-0.25 [~]	0.14	-0.05	0.11	-0.10	0.06
Controls						
Marriage age bride	0.03 ^{***}	0.01	-0.02 ^{***}	0.00	0.00	0.00
Marriage age bridegroom	0.01 [*]	0.01	0.01 ^{***}	0.00	-0.02 ^{***}	0.00
Second marriage or higher	-0.01	0.11	20.00 ^{***}	0.05	-0.47 ^{***}	0.04
N	108,460		401,351		401,351	
Log likelihood	-9,919		-18,238		-68,936	
Model χ^2	783.63 ^{***}		2649.54 ^{***}		1860.30 ^{***}	
Degrees of freedom	27		28		28	

Source: Database GENLIAS_2007_3.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; ~ $P < 0.10$.

exchange marriages comprise almost 5% of all marriages in the two-generation file. During the first two decades of the twentieth century, the incidence of sibling set exchange marriage declines rather quickly to about 2.5% in 1922, corresponding to the decline in family size which had set in The Netherlands after 1880.

Determinants of kin marriage

We now turn to our main question. To what extent do social class formation, religious enculturation, and isolation and supply of kin explain the choice for relatives as marriage partners in nineteenth-century Netherlands? We answer these questions for each of the different kinds of kin marriage.

Cousin marriage

The hypothesis of social class formation stated that kin marriage served to integrate families in strata of equal social standing during the process of industrialization and

the development of a capitalist market economy. Our results confirm this hypothesis in that the upper and higher middle classes, the farmers, and to a lesser extent also the lower middle classes significantly more often married cousins than other social groups (Table 3, Model 1). For these social classes cousin marriage both served economic and political purposes. We further expected that kin marriage might have been a means to ensure religious and cultural continuity among the group of orthodox Protestants who seceded from the main Reformed Church in 1886. Our findings indeed show that the higher the percentage of orthodox Protestants in the community where the marriage was contracted, the higher the chance of marrying a cousin.

Our third explanation emphasized the role of isolation and kin availability. Results show that in the inland province of Gelderland the propensity to marry a cousin was significantly higher than in the market-oriented coastal regions of Groningen and particularly Zeeland. Although we controlled for the percentage of Catholics in the marriage community, the variable of Limburg most likely also

picked up the negative effect of living in a Catholic-dominated region, resulting in minimal chances of marrying a cousin in this province. The provincial ranking of the prevalence of cousin marriage exactly corroborates with what Polman (1951) found for The Netherlands for the period 1906–1918 on the basis of individual enumeration cards. Cousin marriages occurred more often in villages than in urban areas. Moreover, couples that were born in the same place had higher chances of contracting a cousin marriage. However, the idea that marriages between relatives were contracted mainly among sedentary people is not corroborated by our findings. Migrated grooms more often married a cousin than grooms that married in their birthplace. Also Polman (1951) found that partners in cousin marriage were significantly more often born in different provinces than average marriage partners. Perhaps the settlement of the groom in the bride's place of residence had to do with occupational opportunities in a family-in-law's business or farm. Finally, our findings point out that kin availability did not play a role in explaining cousin marriage.

Marriage to a deceased spouse's sibling

We do not find evidence supporting the mechanism of social class formation in the case of marriage to a deceased spouse's sibling (Table 3, Model 2). Property-holding groups did not have heightened chances to contract such marriages. Remarriage to a brother or a sister-in-law appears to have been strongly avoided by lower skilled workers and farm workers. In places where impartible inheritance was practiced, remarriage to a sibling of one's late spouse was more common than in places with partible inheritance. The particular composition of personal social networks might have been a reason for this discrepancy. A study of the social networks of Dutch farmers showed that in communities with impartible inheritance farmers' networks were closer-knit and contained more blood and affinal kin than in places where partible inheritance was practiced (Bras and Van Tilburg, 2007). Marriage to a deceased sibling's spouse seems neither to have been important as a means of religious group formation; it did not take place more often in communities with high proportions of orthodox Protestants.

Conversely, the evidence supports isolation as an important explanatory factor. Sororate and levirate marriages occurred more often in the inland provinces. It happened more frequently in "static" places, with a low turnover of migrants. In communities with relatively high shares of in-migrants, however, former spouse's sibling marriages were significantly more common. Finally, brides and grooms that married a sibling-in-law were significantly more frequently born in the same place.

Sibling set exchange marriage

Finally, we turn to the antecedents of sibling set exchange marriage (Table 3, Model 3). Just as what we expected and also found for cousin marriage, farmers, the upper classes, the higher middle classes, and to some extent also the lower middle classes practiced this type of marriage more often. Interestingly, however, also unskilled workers and particularly farm workers regularly contracted sibling set exchange marriage. Couples that married in communities where property devolution

stressed equal division, more often contracted a sibling set exchange marriage, confirming evidence for Brittany. In this impartible inheritance region, repeated interweaving among distant affinity relations spread over a large region brought coherence in the form of recognizable kindreds (Segalen, 1991; Segalen and Richard, 1986). Again, no evidence for the religious enculturation explanation was found.

Both isolation and supply of kin were important factors in explaining sibling set exchange marriage in The Netherlands. It first of all occurred more often in isolated communities: in the inland province of Gelderland, in small-sized communities, and in communities with mostly immigrants. Moreover, couples that were born in the same place had higher probabilities to wed a sibling-in-law. When the bride had migrated, the likelihood of contracting such a marriage was lower. However, most intriguing is the fact that the supply of kin played such an important role. In communities with soaring natural growth rates, i.e., with high levels of population growth within the previous generation thus generating an abundance of siblings, sibling set exchange marriages took place significantly more often than in places with a relatively small supply of relatives.

Table 3 binary logistic regression effects of multilevel models of first cousin marriage, deceased spouse's sibling marriage and sibling set exchange marriage among Dutch married couples.

If we compare determinants across different kin marriage types, we generally find similar patterns, but certain variables showed very different patterns. The effect of marrying in the province of Limburg, for instance, varied substantially across the three types of marriage. The odds of marrying a cousin in this predominantly Catholic province were extremely small, while high marital fertility contributed to increased chances of marrying a sibling of one's deceased spouse.

CONCLUSION

Our analysis of a large-scale database covering a major proportion of The Netherlands for almost a century points to a systematic exchange of kin. Almost 2% of all marriages that could be linked over three generations were between first cousins. What stands out most clearly however is the affinal orientation of kin endogamy, and particularly the importance of intertwined sibling sets. Sibling set exchange marriage comprised on average more than 4% during the period 1840–1920, and rose to a high point of almost 5% between 1890 and 1900. The hypothesis of Segalen and Richard (1986) that European peasant societies were deeply bilateral and that affinal connections through marriage were of great importance is confirmed by our Dutch data. In the "kinship hot" society of the late nineteenth century, as Sabeian et al. (2007) have called it, connections between relatives abounded but pertained by and large to affinity relations.

We subsequently examined the role of preferences and opportunities as forces that come into play when explaining the occurrence of any type of marriage endogamy. Three mechanisms for the choice of relatives as spouses were put forward, centering on the preferences to marry within one's socio-economic or religious group on the one hand and on the opportunities on the marriage market on the other hand. First of all, reasons to enter kin marriage

varied from class to class, as Morris (1991) has also argued. Among farmers, all sorts of blood and affinal kin marriages were commonly practiced and they mainly served to safeguard economic and political power. In the highest and middle strata, cousin marriage and sibling set exchange were prevalent as well; involvement in family enterprises, accumulation of wealth, transfer of dowries, and political nepotism were important motives to marry kin. We also found an increased choice for cousin marriage in the Protestant Bible Belt area of The Netherlands. Transmission of cultural values and preservation of their religious identity likely played a role for the adherents of the seceded Dutch Reformed congregation, which found itself situated in a flux of Protestant groups and increasing fragmentation within the Reformed Church. Apart from preferences, opportunities to marry kin played an important role. All three types of kin marriage occurred more often in the more isolated, inland provinces of The Netherlands. Moreover, sibling set exchange marriages were the result of the sheer availability of lateral kin of one's own generation, which soared during the second half of the nineteenth century as a result of the demographic transition.

It is important to note that the factors that we used to explain the time trends and differences in kin marriage rates in The Netherlands have found to be playing a role in non-European contexts as well. They are therefore hardly suited to explain the enormous differences in the rates of kin marriages between historical European and present-day Asian and African populations. An ambitious conceptual framework focusing on these global differences in kin marriage rates was proposed by Todd (1985). The essential elements in his analysis are the opposition between liberty versus authority and equality versus inequality as values underlying family systems and the existence of prescriptions for choosing a marriage partner within or outside the family group.

In this study, we have focused on the choice for kin as spouses by focusing on the preferences and opportunities of individual marriage couples. Eventually, however, we also need to look at kin marriage from the perspective of the strategies of whole families. A group of siblings might marry in different directions, one marrying a cousin, others marrying via sibling set exchange, and through these marriages different lineages might be brought together over a very long time. Thus, future research should investigate how and to what extent kin marriage choices were clustered in larger families and kin groupings and for what purposes.

Finally, patterns of partner choice reveal the group boundaries that make up social structure. Whereas intermarriage points to intimate links between social groups, endogamy might be regarded as a form of group closure. Sociological research on marriage endogamy is usually carried out within three main traditions, i.e., ethnic and racial intermarriage, religious intermarriage and socio-economic homogamy (Kalmijn, 1998). In this article we dealt with another type of characteristic defining patterns of group closure, one, which is usually overlooked: that of kin endogamy. Our study thus extends the field of sociological research on endogamy by focusing on a different characteristic of partner relations, that is, whether spouses are relatives. And yet kin marriage is not inseparable from the three main strands. When specific social classes, religious groups or ethnicities relatively more often practice kin endogamy, examples of which were

shown in our study, knowledge of the conditions under which these marriages take place deepens our understanding not only of kin marriage itself, but also of the other forms of group closure. In our present-day multicultural societies, with large groups of immigrants still practicing kin marriage, knowledge about this phenomenon in our own past might help in understanding broader processes of integration and assimilation. It has become clear that in the heated contemporary public debates about the assumed negative health effects on children stemming from these marriages, politicians and the general public lack insight into the actual frequency with which kin marriage took place in Western societies in the recent past and in the factors affecting the frequency and the changes therein over time.

ACKNOWLEDGMENTS

We thank the Gelders Archief (province of Gelderland), the Groninger Archieven (province of Groningen), the Rijksarchief Limburg (province of Limburg), the Historisch Centrum Overijssel (province of Overijssel), and the Zeeuws Archief (province of Zeeland) for putting their data at our disposal. We are also grateful to David W. Sabeau for his valuable comments on an earlier version of this paper.

LITERATURE CITED

- Abelson A. 1978. Population structure in the western Pyrenees: social class, migration and the frequency of consanguineous marriage, 1850–1910. *Ann Hum Biol* 5:167–178.
- Beekink E, Liefbroer AC, Van Poppel F. 1998. Changes in choice of spouse as an indicator of a society in a state of transition: Woerden, 1830–1930. *Historical Social Res* 23:231–253.
- Best J. 1941. Boerenerfrecht in Overijssel. *Volk en Bodem. Maandblad voor volkspolitiek, volkscultuur en agrarisch leven*. 1:263–274.
- Bittles AH. 1994. The role and significance of consanguinity as a demographic variable. *Pop Dev Rev* 20:561–584.
- Bittles AH, Egerbladh I. 2005. The influence of past endogamy and consanguinity on genetic disorders in northern Sweden. *Ann Hum Genet* 69:549–558.
- Bittles AH, Smith MT. 1994. Religious differentials in postfamine marriage patterns, Northern Ireland, 1840–1951. I. Demographic and isonymy analysis. *Hum Biol* 66:59–76.
- Boëtsch G, Prost M, Rabino-Massa E. 2002. Evolution of consanguinity in a French Alpine Valley: the Vallouise in the Briançon Region (17th–19th centuries). *Hum Biol* 74:285–300.
- Boonstra OWA, Van der Woude AM. 1984. Demographic transition in The Netherlands. A statistical analysis of regional differences in the level and development of the birth rate and of fertility, 1850–1890. *A.A.G. Bijdragen* 24:1–57.
- Bourgoin J, Khang VT. 1978. Quelques aspects de l'histoire génétique de quatre villages pyrénées depuis 1740. *Population* 33:633–659.
- Bras H, Van Tilburg TG. 2007. Kinship and social networks: a regional analysis of sibling relations in twentieth-century Netherlands. *J Fam Hist* 32:296–322.
- Cavalli-Sforza LL, Moroni A, Zei G. 2004. *Consanguinity, inbreeding, and genetic drift in Italy*. Princeton and Oxford: Princeton University Press.
- Davidoff L. 2006. "Close marriage" in the nineteenth and twentieth century middle strata. In: Ebtehaj F, Lindley B, Richards M, editors. *Kinship matters*. Oxford and Portland: Hart Publishing. p 19–46.
- De Haan H. 1994. In the shadow of the tree: Kinship, property, and inheritance among farm families. Amsterdam: Het Spinhuis.
- De Vries J. 1974. *The Dutch rural economy in the golden age, 1500–1700*. New Haven, CN: Yale University Press.
- Delille G. 1985. *Famille et propriété dans le Royaume de Naples (XVe–XIXe siècle)*. Rome: Actes de séminaires organisés par l'école française de Rome.
- Deraemaeker R. 1958. Inbreeding in a North Belgium Province. *Acta Genet* 8:128–136.
- Esveldt I, Van Poppel F. 2005. Partnerkeuze van Turken en Marokkanen in Nederland. In: Kok J, Van Leeuwen MHD, editors. *Genegenheid en gelegenheid. Twee eeuwen partnerkeuze en huwelijk*. Amsterdam: Aksant. p 103–134.

- Gardner K. 2006. The transnational work of kinship and caring: Bengali-British marriages in historical perspective. *Global Netw* 6:373–387.
- Garssen J, Bos V, Kunst A, Van der Meulen A. 2003. Sterftekansen en dooorsoorzaken van niet-westerse allochtonen. CBS Bevolkingstrends 51:12–27.
- Goody J. 1983. *The development of the family and marriage in Europe*. Cambridge: Cambridge University Press.
- Gouesse J-M. 1986. Mariages de proches parentes (xvie-xxe siècle): Esquisse d'une conjoncture. In: *Le Modèle familial européen: Normes, déviations, contrôle du pouvoir*. Rome: Actes de séminaires organisés par l'école française de Rome. pp 31–61.
- Gruner ER. 1999. Born and made: sisters, brothers, and the Deceased Wife's Sister Bill. *Signs* 24:423–447.
- Haks D. 1982. Huwelijk en gezin in Holland in de 17de en 18de eeuw. *Procestukken en moralisten over aspecten van het laat 17de- en 18de-eeuwse gezinsleven*. Assen: Van Gorcum.
- Hall PD. 1977. Family structure and economic organization: Massachusetts merchants, 1700–1850. In: Hareven TK, editor. *Family and kin in urban communities, 1700–1930*. New York and London: New Viewpoints. p 38–61.
- Hox J. 2002. *Multilevel analysis: techniques and applications*. Mahwah NJ: Lawrence Erlbaum Associates.
- Kalmijn M. 1998. Inter-marriage and homogamy: causes, patterns, trends. *Annu Rev Sociol* 24:395–421.
- Knippenberg H. 2003. Van verzuilde naar zwevende kiezers. De politieke kaart in de negentiende en twintigste eeuw. In: Beekink E, Boonstra O, Engelen T, Knippenberg H, editors. *Nederland in verandering. Maatschappelijke ontwikkelingen in kaart gebracht 1800–2000*. Amsterdam: Aksant. p 123–151.
- Knippenberg H, Stoppelenburg CM, Van der Wusten H. 1989. De protestantband van Nederland: de geografische spreiding der orthodox-protestanten in 1920 en 1985/86. *KNAG Geografisch Tijdschrift* 23:12–22.
- Kuper A. 2002. Incest, cousin marriage, and the origin of the human sciences in nineteenth-century England. *Past Present* 174:158–183.
- Molloy M. 1986. "No inclination to mix with strangers": marriage patterns among Highland Scot migrants to Cape Breton and New Zealand, 1800–1916. *J Fam Hist* 11:221–243.
- Morris P. 1991. Incest or survival strategy? Plebeian marriage within the prohibited degrees in Somerset, 1730–1835. *J Hist Sexuality* 2:235–265.
- Ottenheimer M. 1986. Complementarity and the structures of parallel-cousin marriage. *Am Anthropol* 88:934–939.
- Ottenheimer M. 1990. Lewis Henry Morgan and the prohibition of cousin marriage in the United States. *J Fam Hist* 15:325–334.
- Ottenheimer M. 1996. *Forbidden relatives. The American myth of cousin marriage*. Urbana: University of Illinois Press.
- Pettener D. 1985. Consanguineous marriages in the Upper Bologna Apennine (1565–1980): Microgeographic variations, pedigree structure and correlation of inbreeding secular trend with changes in population size. *Hum Biol* 57:267–288.
- Polman A. 1951. *Over consanguine huwelijken in Nederland*. Leiden: Stenfert Kroese.
- Post W, Van Poppel F, Van Imhoff E, Kruse E. 1997. Reconstructing the extended kin-network in the Netherlands with genealogical data: methods, problems, and results. *Pop Stud* 51:263–278.
- Rabino-Massa E, Prost P, Boëtsch G. 2005. Social structure and consanguinity in a French mountain population (1550–1849). *Hum Biol* 77:201–212.
- Reid RM. 1988. Church membership, consanguineous marriage, and migration in a Scotch-Irish frontier population. *J Fam Hist* 13:397–414.
- Reniers G. 2001. The post-migration survival of traditional marriage patterns: Consanguineous marriages among Turks and Moroccans in Belgium. *J Comp Fam Stud* 32:21–45.
- Sabeau DW. 1998. *Kinship in Neckarhausen, 1700–1870*. Cambridge: Cambridge University Press.
- Sabeau DW, Teuscher S, Mathieu J. 2007. *Kinship in Europe. Approaches to long-term development (1300–1900)*. Oxford: Berghahn Books.
- Saugstad LF. 1977. Inbreeding in Norway. *Ann Hum Genet* 40:481–491.
- Schulpen TWJ, Van Steenberghe JE, Van Driel HF. 2001. Influences of ethnicity on perinatal and child mortality in the Netherlands. *Arch Dis Child* 84:222–226.
- Segalen M. 1991. *Fifteen generations of Bretons. Kinship and society in Lower Brittany, 1720–1980*. Cambridge: Cambridge University Press.
- Segalen M, Richard P. 1986. Marrying kinsmen in Pays Bigouden Sud, Brittany. *J Fam Hist* 11:109–130.
- Shaw A. 2001. Kinship, cultural preference and immigration: consanguineous marriage among British Pakistanis. *J Royal Anthropol Inst* 7:315–334.
- Smith MT. 2001. Estimates of cousin marriage and mean inbreeding in the United Kingdom from "birth briefs". *J Biosoc Sci* 33:55–66.
- Snijders TAB, Bosker R. 1999. Multilevel analysis. An introduction to basic and advanced multilevel modeling. London: Sage.
- Sutter J. 1968. Fréquence de l'endogamie et ses facteurs au XIXe siècle. *Population* 23:303–324.
- Sutter J, Lévy C. 1959. Les dispenses civiles au mariage en France depuis 1800. *Population* 14:285–303.
- Todd E. 1985. *The explanation of ideology. Family structures and social systems*. Oxford: Basil Blackwell.
- Van Blom D. 1915. Boerenerfrecht (met name in Gelderland en Utrecht). *De Economist* 64:847–896.
- Van Cruyningen P. 2000. *Behoudend mar buigzaam. Boeren in West-Zeeuws-Vlaanderen 1650–1850*. Wageningen: AAG Bijdragen.
- Van Leeuwen MHD, Maas I, Miles A. 2002. *HISCO. Historical International Standard Classification of Occupations*. Leuven: Leuven University Press.
- Van Leeuwen MHD, Maas I. 2005. A short note on HISCLASS. Accessed at <http://historyofwork.iisg.nl/docs/hisclass-brief.doc>, April 5, 2006.
- Van Poppel F. 1995. Widows, widowers and remarriage. *Pop Stud* 49:421–442.
- Van Poppel F, Beekink E. 2003. De "gezondheid" van Nederland. Sterftrends en sterfteverschillen in de negentiende en de twintigste eeuw. In: Beekink E, Boonstra O, Engelen T, Knippenberg H, editors. *Nederland in verandering. Maatschappelijke ontwikkelingen in kaart gebracht 1800–2000*. Amsterdam: Aksant. pp 71–94.
- Van Straaten A. 1966. *Consanguine huwelijken*. Leiden: Stafleu.
- Van Straaten A. 1986. Het verloop van het aantal consanguine huwelijken in Nederland (1906–1982). *Ned Tijdschr Geneesk* 130:1984–1986.
- Van Zanden JL, Van Riel A. 2004. *The strictures of inheritance: the Dutch economy in the nineteenth century*. Princeton, NJ: Princeton University Press.
- Verrips J. 2000 [1977]. *En boven de polder de hemel. Een antropologische studie van een Nederlands dorp 1850–1971*. Amsterdam: Aksant.
- Zei G, Lisa A, Fiorani O, Moroni AG, Cavalli-Sforza LL. 2005. Spatial and temporal variation of consanguinity in Italy. *Hum Evol* 20:201–215.