Clustering and dispersal of siblings in the North-Holland countryside, 1850-1940

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Clustering and Dispersal of Siblings in the North-Holland Countryside, 1850-1940

Jan Kok & Hilde Bras [*]

Abstract: *»Räumliche Nähe und Distanz von Geschwistern im ländlichen Nord-Holland, 1850-1940«*. Why are some families scattered over a larger area than others? In this article we use a dataset with the complete life courses of all children from 210 families, originating from the same village in the commercialized North-western part of The Netherlands. We experiment with multinomial logistic regression on sibling sets to discover the factors behind geographical sibling dispersal. The most important factors turn out to be the survival of the parents, the civil status of the siblings, and the size and gender composition of the sibling set.

Keywords: migration, family territory, siblings, North-Holland, life course, multinomial logistic regression.

Introduction

Siblings are vital and durable elements in one's kinship network. Ties with brothers and sisters are maintained across the life course. To be sure, relationships with siblings are generally perceived to be less important than relationships with parents or children. Also, the strength of ties to siblings diminishes with age. More important than age, however, are life course transitions that alter the family configuration. Thus, marriage loosens ties between siblings whereas, conversely, marriage dissolution is associated with reintensified contacts. Thus, siblings can be seen as "permanent but flexible members of our social networks, whose roles in our networks are renegotiated in light of changing circumstances and competing obligations" (White 2001, p.557). In the analysis of sibling relationships, proximity turns out to be a major factor (Sweetser 1970, p.54; White 2001, p.558; Miner and Uhlenberg 1997; Bras and Van Tilburg 2007, p.316). Distance influences some forms of contact more than others. Contacts such as phone calls (or, in the past, letters) or financial support are not strongly affected by distance. However, with increasing distance the possibilities for all forms of practical support are diminished. In the past, to preserve and enhance one's well-being the support and proximity of

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siblings might have been even more important than today. People may have migrated precisely to be nearer to their siblings. In fact, the support siblings gave to one another in finding accommodation and work is a crucial element in the chain migration that characterizes long-distance migration, in the past as well as in the present (Moch 1992).

Studies of chain migration tend to focus on immigrants and their networks. Little is known on how migration affected sibling proximity (and potential sibling support) in entire families in the sending regions. In fact, we do not know the 'normal' situation. To what extent could people rely on siblings living nearby? What were the patterns of sibling clustering and sibling dispersal? How did these patterns differentiate by social group, by survival of the parents and by the composition of the sibling set itself? Did the patterns change over time?

How can we understand the 'geography of families'? Clearly, we can sketch here only the outlines of a complex of factors that together shape patterns of clustering and dispersal. We will briefly discuss (1) social class; (2) occupational structure and transport infrastructure; (3) leaving home; (4) marriage; (5) inheritance; (6) care provisions; (7) familial 'spatial capital'.

(1) The socio-economic position of the family is very important in determining the odds and distances of the migration of children (Kok 1997; Bras 2003). Migration always entails costs and in opting to move one has to assess potential benefits in terms of work, income, health or housing. Given this fact, a certain clustering of siblings can always be expected (Mulder and Kalmijn, 2006, p.44). In contemporary Netherlands, (higher) education is the strongest predictor of sibling distances. Higher educated brothers and sisters live farther away from each other than those with lesser schooling do (Mulder and Kalmijn 2006, p.55). For past societies, we can expect that (land) ownership tied people to a place, and, depending on inheritance practices, this led to clustered sibling sets. Children from labouring and middle-class families probably left home early, either in order to work as farmhand or servant or to become a domestic servant in a bourgeois household. Although they not always had the skills, the information and the means to participate in permanent long-distance migration, we expect that sibling sets of labouring and middle-class origin lived more dispersed than those of farm background.

(2) Eventual migration and dispersion will also depend on the occupational structure of the area, as well as on the transport infrastructure. Proximity of opportunities for work near the birth place and/or availability of cheap and fast transportation will lower the tendency to out-migrate and will increase clustering of siblings.

(3) Leaving home is a complex phenomenon in itself, and can be seen as a protracted process that involved frequent returns. Dependent on composition, size and social characteristics of the family, children would be send away to work in other households. They remitted their incomes to the parents but would

279

start saving for themselves from a certain age onwards (Van Poppel et al 2003). In the Netherlands, children started leaving home from age 12 onwards, but the mean age was about 18. Thus, in families in which most siblings were of leaving home age, sibling sets likely became gradually more dispersed. But since youngsters moved in and out in the household constantly, they probably lived still more clustered compared to the family cycle situation where most of them had married and swarmed out of the parental home permanently.

(4) Marriage tended to disperse sisters more than brothers. It was common practice that when prospective spouses lived in different localities, the wife would leave for her husband's community. Research on 19th century Northern Sweden confirms that daughters live more scattered than sons (Egerbladh et al. 2007). Even among contemporary farming families it has been noted that this pattern of marriage migration caused sisters to live further away from each other than brothers. This tendency is reversed in non-farming families (Sweetser 1970, p.53).

(5) Inheritance practices can exert a strong influence on residential choices of children. In stem family systems one child took over the parental property, which, depending on local customs, could take place upon retirement or upon the death of the father. The heir, mostly a son, would compensate his siblings but this would generally not amount to their full share. Unmarried siblings could remain on the farm, but many non-inheriting children would leave the area. Thus, areas with stem family systems have been characterized by relatively strong out-migration (Berkner and Mendels 1978; Wegge 1999). In stark contrast with house-centred stem family systems stand those nuclear family systems that are characterized by strictly partible inheritance of property brought in by both spouses. In such as system, property is not 'absolute' in the form of a specific House and a specific plot, but it can be seen as a 'bundle' of transferable rights. To farm and to form a family means to acquire and combine enough rights to plots of land. Farm families would move whenever a more suitable combination of plots was found. Household heads entertained close relations with siblings and cousins for cooperation and an efficient exchange of plots. Thus, the family was of prime importance and kin endogamy (cousin and sibling set exchange marriages) ensured that land remained within the family (Augustins 2002; Segalen 1984; Segalen and Richard 1986). Sibling dispersal patterns in the two types of inheritance systems were likely to be very different. House-centred systems knew little local (land) migration, but the siblings tended to be dispersed by long-distance and permanent out-migration. Egalitarian nuclear family systems had an intense short-distance migration related to land, but we expect relatively more clustering of siblings and, for that matter, also of cousins.

(6) Notwithstanding the strong element of individualism in North-west European family life (Reher 1998), children were still supposed to assist their parents and siblings to help one another. Thus, in the Netherlands, youngest

daughters often remained unmarried to stay with the parents in order to assist them in old age (Kok 1997). It has also been shown that single urban women often lived for shorter or longer periods in the households of siblings, either married or unmarried. 'Income-pooling' with siblings was part of their survival strategies (Dorsman and Stavenuiter 1990). Whereas in the present singles tend to live at relatively long distances from their siblings (Mulder and Kalmijn 2007, pp.49-50), we expect that the opposite was true in the past, when it was more difficult for them to live independently, resulting perhaps in increased clustering when siblings reached old age.

(7) Migration engenders other migrations. This principle of 'cumulative causation' is becoming one of the dominant approaches in migration studies (Massey et al. 1993). Does the migration of one sibling affect the moving or staying of others? And how does this cumulative causation affect the dispersal pattern among siblings? Rosental analyzed the shifting spatial and socio-professional configurations of three generations of a hundred rural French families. He showed that sisters who had moved upon marriage played a vital role in introducing younger brothers to socio-professional alternatives, which included the option of migration (Rosental 1999, pp. 130, 210). Rosental described the area where family members tended to concentrate as the 'family territory', recognizing that it always shifted and expanded with each new generation. Elaborating this concept further, Kesztenbaum (2008) sees the various places in which family members have dwelt as the family's 'portfolio of places' or as the family's 'spatial capital'. In other words, by migrating to different places, a family gradually expands it common fund of knowledge of conditions in places, useful contacts et cetera. To what extent do individual migrants make use of this 'spatial capital'? In his study on French families between 1800 and 1940, Kesztenbaum (2008) concludes that the size and diversity of the portfolio itself increases the chances of migration, but that, in general, many migrants choose destinations outside the 'portfolio'. The notion of 'spatial capital' (or migration-specific social capital) is intuitively appealing, but difficult to test empirically. Migration frequencies and destination choices of siblings may be a consequence of the fact that they share specific characteristics. Thus, it is not their relationship that explains their likelihood to migrate, but their common characteristics.

Palloni et al (2001) developed a rather rigorous methodology to assess the impact of social capital in the form of migrated siblings, while controlling for family background and community characteristics. Using data from 39 communities in Mexico with a high level of migration to the United States, they found that the migration of older siblings significantly increased the chance of younger ones to migrate as well. Some researchers have applied similar methods to historical data. Bras and Neven analyzed the migrations of unmarried women between age twelve and thirty in two rural areas in Belgium and The Netherlands (1829-1940) (Bras and Neven 2007). They could also ascertain

that prior moves of siblings affected one's migration chances, although the mechanism depended on the regional and gender-specific labour markets. In the commercialized rural region of Zeeland, young women who wanted to escape field work opted for domestic service on farms or, even better, in cities. In this respect, the prior experiences of their sisters were helpful, not those of their brothers. In the Belgian Pays d'Herve domestic service was less important and migrating young women mostly left for industrial work in the Walloon cities. In this choice, they were affected equally by their brother's and sister's experiences or 'social capital'. When chain migration plays a role, clustered sibling patterns will be the result. On the other hand, in their study of first migrations *after* marriage (19th century France), Bonneuil et al (2008) found very little evidence that the locations of siblings influenced the chance and distance of migrations. A preliminary conclusion could be that migration experiences of siblings were of particular importance for unmarried persons seeking a livelihood in a 'new' setting. However, more studies of this type are needed to reach firm conclusions on when and how members of families affected each other's migrations.

In this article, we describe and analyze patterns of sibling dispersal and concentrate on the impact of characteristics of the parents and of the sibling set itself. We make use of complete sets of siblings originating from 210 families from a rural region in the North-western part of The Netherlands. As we have reconstructed complete life courses, we are able to assess changes in sibling dispersal at subsequent points in time. In the next section, we will describe our case study. Then, we will compare a number of diagrams that show average distances between siblings by age, social group, survival status of parents et cetera. Finally, a multivariate analysis will allow us to detect the factors that most strongly explained particular patterns of sibling dispersal.

The case: North-Holland 1850-1940

This paper is based on a relatively small, but detailed dataset on two generations of people living in the central area of the province of North-Holland, which is situated in the north-western part of The Netherlands. Our data was collected by the Historical Sample of the Netherlands. This project constructs a large database with historical life courses (Mandemakers 2006). For our research, we have made use of data release GBW02.The first generation was selected from the marriage certificates of the municipality of Akersloot. This municipality is quite representative for the surrounding area, apart from the fact that it has kept a dynamic administration of the population already from 1830 onwards. The population registers recorded marriages, births, migrations and death of individuals, as well as their occupation and religion. In the period 1830-1879 all 298 first marriages (of both partners) in which the husband actually lived in Akersloot were included. Seventeen couples left the parish soon

after the marriage and could not be traced in nearby villages. The remaining 281 couples were followed until the death of the last remaining partner, regardless of where they happened to live. From this dataset, we selected families with, after twenty-five years, at least two surviving children (N=210).

The economy of Akersloot was purely agrarian. In the nineteenth century, cattle-breeding and dairy farming were quite lucrative and the area profited from its favourable geographic position close to expanding cities as well as to the harbours where dairy products could be exported. In addition, from the 1880s onward many residents found employment in bulb-farming that was by that time introduced in the region. Even a small acreage of bulbs could support a family. In our sample of 210 families, about half (47%) are farmers.

The region was characterized by egalitarian inheritance, but this did not lead to fragmentation of property. The profits of farmers were not put entirely into immovable assets, but were often converted into stocks and bonds. This gave them strategic leeway to help their children when the need arose. Akersloot farmers managed to set up many of their children as farmers as well, by forging commercial and endogamous relations with other farmers in a wide area around Akersloot (Damsma and Kok 2005).

People who sought employment outside of agriculture did not have to travel far. In the vicinity, small cities and the industrialized villages of the Zaanstreek offered employment. In fact, from the early 20th century onwards, locals could commute on bicycle to the Zaanstreek. All these 'intervening opportunities' restricted out-migration: based on places of death, we can calculate that of all adult children (N=960) only 1.7% emigrated from the country and a mere 2.8% left the province.

The 210 selected families were traced completely, that is all information on migrations, occupation, marriages and own families of all children was collected and stored in computer files. Thus, we know the whereabouts and distances to each other of all surviving children. We then selected three points in time to compare dispersal patterns between subsequent stages of the family cycle. The first point we selected is twenty-five years after the parents' wedding. By then, few of the children were married but several of them lived as servants in other households. At this stage in the family cycle a lot of movement was going on. Next, we pick forty years after the wedding. At that time, most children were married and had their own families. We may expect that the 'family territory' had become more or less stabilized. The parents may still have formed some kind of nexus, that is, when married children preferred to live near the parents, their distances towards one another will have been limited as well. Furthermore, some unmarried children may still have lived with the parents. Finally, we look at the situation after another twenty years. We expect little difference, although the centripetal force of the parents had waned and widowed persons may have moved to live with their own children.

An exploration of dispersion patterns

The concentric circles displayed in Figure 1 clearly show the widening of family territories – here understood as the area where siblings live – over time. This widening is particularly marked in the period between 25 and 40 years after the parents were married, coinciding for most of the children with the period of marriage and family formation. Interestingly, however, dispersal continues in the next twenty years. Sixty years after the parental wedding, only 21.1% of inter-sibling distances were zero, that is, all brothers and sisters lived in the same community. 11.3% were between zero and five kilometres, whereas a large proportion (44.9) fell in the range of five to twenty kilometres. A further 17.3% of all distances were between twenty and fifty kilometres and only 5.5% covered more than fifty kilometres.

Figure 1: Distance between siblings, by period after the parents' wedding

a=sixty years, b=forty years, c=twenty-five years
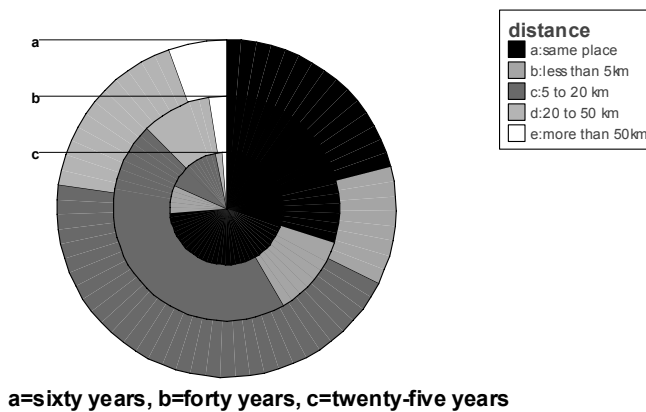
In the next graphs we only look at the dispersal patterns after forty years, in order to detect and describe the broad differences that had become apparent at that time. In the next section a more detailed statistical analysis of each period will take place. How important was the social position of the family of origin? For figure 2, the occupations of the fathers (at their own marriages) were grouped into broad categories: farmers, middle class (mainly shopkeepers and artisans) and labourers. In comparison to the other groups, farmers' children tended to live more often in the same place and also less often at a distance of more than 50 kilometres. In particular, they seem to be located on average at a

284

distance of 5-20 kilometres from one another. Few differences can be found between labourers and the (lower) middle-classes, Children from the first group were relatively often located in adjacent communities.

Figure 2: Distance between siblings (forty years after the parents' wedding), by occupational group of the father

1=labourers, 2=middle class, 3=farmers

In Figure 3, we take a closer look at the children of farmers, who we divide by the size of the father's landholdings. As we have shown in the previous section, children from the wealthiest farmers tended to marry early and to start a farm on their own. This was only possible when both father and father-in-law (provided he was a farmer as well) rented them land or brought in the necessary money. These profitable matches required a regionally extended network (Damsma and Kok 2005). As we can see from Figure 3, children from these families settled predominantly at a distance of 5-20 kilometres from one another. In doing so, they were more dispersed than sibling sets from the two lower farm strata.

Did the 'spatial portfolio' of the parents affect the children's destinations? We group the parents by their migration experience, that is, by the eventual difference between their community of birth and their place of residence at marriage. When both parents had migrated between birth and marriage, we label them in Figure 4 'both mobile', when only one of them had migrated 'one mobile' and when both were born in Akersloot 'none mobile'. Surprisingly, parental mobility had the opposite effect of what we expected. Adult children of parents who had experienced mobility in their youth tended to live closer to one another than children of sedentary parents. The multivariate analysis in the

285

next section will have to disclose whether this is an independent effect or whether it is caused by other factors.

Figure 3: Distance between siblings (children of farmers, forty years after the parents' wedding), by size of father's landholding
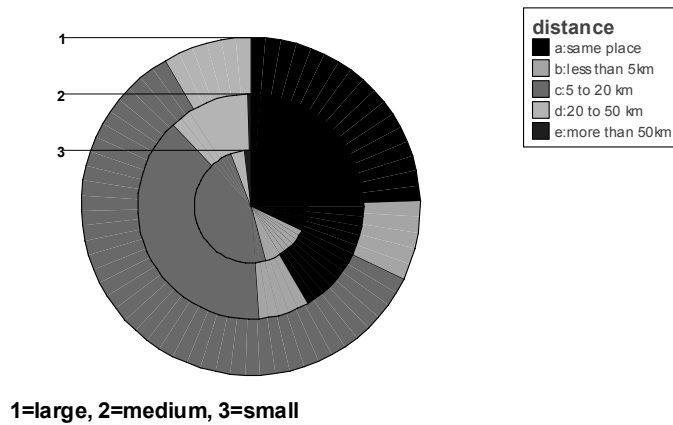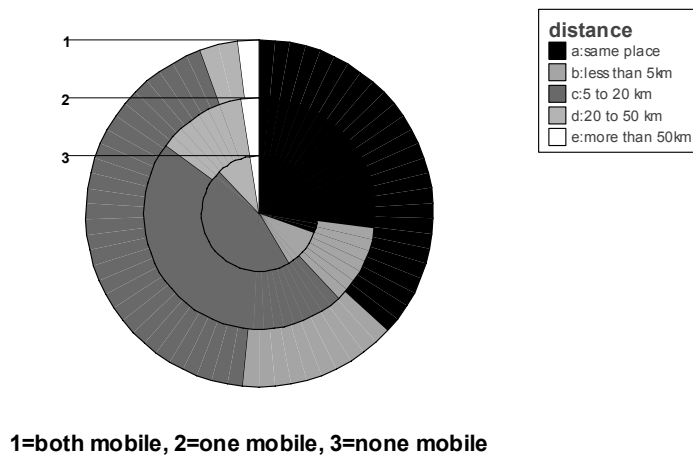

1=large, 2=medium, 3=small

Figure 4: Distance between siblings (forty years after the parents' wedding), by migratory experience of the parents

1=both mobile, 2=one mobile, 3=none mobile

Do living parents exert a 'centripetal' effect on their adult children and does the decease of the parents increase sibling dispersal? We look at this issue in Figure 5 that indeed shows greater dispersal when all parents had died. However, the largest decrease is in the percentage of siblings living in the same place. This may have been caused by the departure of siblings who had co-resided with the last remaining parent.

Figure 5: Distance between siblings (forty years after the parents' wedding), by survival status of the parents
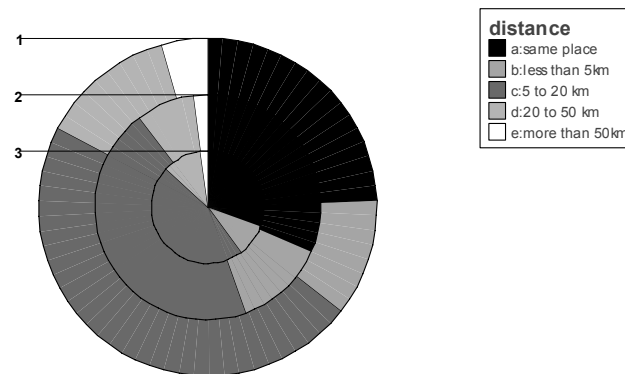
1=no one survives, 2=one survives, 3=both survive

In the province of North-Holland during the final decades of the 19th century and the first half of the 20th century, birth rates were high while infant mortality was falling rapidly (Kok 2003). The size of families increased and it must have become more difficult to find sufficient niches in the area. Although bulb-farming allowed for large-sized families to sustain themselves, population pressure was high and we can expect children to seek alternatives outside agriculture. Indeed, Figure 6 shows a greater dispersal of sibling sets from the parental marriage cohort 1855-1879 (shown here between 1895 and 1919) then of siblings from the marriage cohort 1830-1854. Family size is an important factor in itself. Figure 7 shows that large sibling sets have a different pattern of dispersal than small sibling sets: siblings from large sets tend to live less often in the same place, but also less often at large distances from each other than children from small or medium-sized sibling sets. The graphs have indicated that family characteristics, the family cycle as well as cohort effects produce varying patterns of distances between siblings. In the next section, we make a more systematic effort to understand these patterns.

287

Figure 6: Distance between siblings (forty years after the parents' wedding), by
marriage cohort

distance
- a:same place
- b:less than 5km
- c:5 to 20 km
- d:20 to 50 km
- e:more than 50km

1=1855-1879, 2=1830-1854
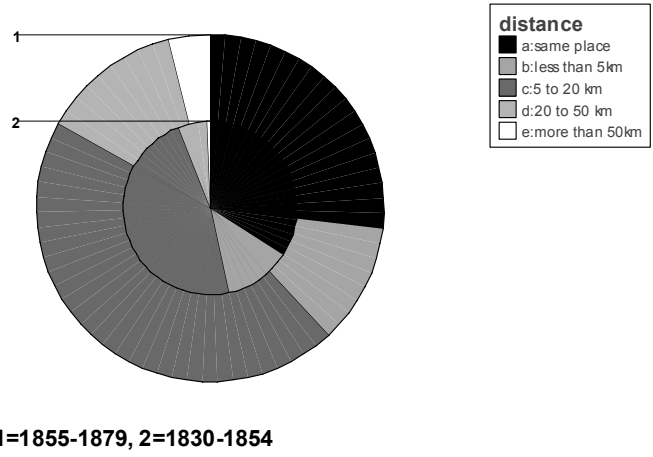
Figure 7: Distance between siblings (forty years after the parents' wedding), by
size of the sibling set

distance
- a:same place
- b:less than 5km
- c:5 to 20 km
- d:20 to 50 km
- e:more than 50km

288
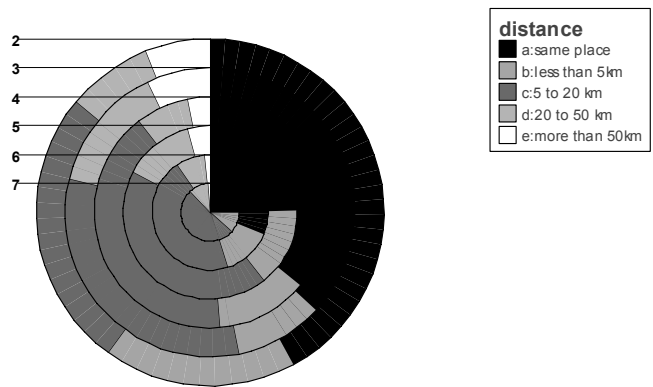
Averages and outliers: exploring dispersal patterns

So far, we have been looking at frequency distributions of distances between individual siblings. To study how patterns differ from one sibling set to another, we will now work with average distances per sibling set. Already, we have excluded siblings that have emigrated, simply because we do not know their actual whereabouts at the selected points in time. However, it is clear that long-distance migration of just one sibling can affect the average distances of the entire sibling set strongly. Thus, an average intersibling distance of a particular sibling set can be caused by all siblings living at mean distances of each other or by one sibling living far away from the rest. Thus, the average distance as such is not a very useful measure. The situation in which all siblings live approximately at equal distances is very different from a clustering pattern where most siblings live close and one or two live rather far away. Yet in both situations, the average intersibling distance could be the same figure. Thus, besides average distance, we take the extent of deviation, or the standard deviation, from the mean into account. We have decided to categorize the 'sibling territories' at 25, 40 and 60 years after the date of the parental wedding into five groups: 1) all siblings live in the same community; 2) the average distance in the siblings set is small (below the average of all sets), but the standard deviation is large (larger than the average of all sets). Thus, the siblings are clustered with the exception of one or a few outliers; 3) the average in the siblings set is small (below the average of all sets), and the standard deviation is small as well (smaller than the average of all sets. Thus, the siblings are evenly spread out in a circumscribed region; 4) the average distance in the siblings set is large (above the average of all sets), and the standard deviation is large as well (above the average of all sets). Thus, the siblings are quite dispersed but this is largely caused by outliers; 5) the average distance in the siblings set is large (below the average of all sets), but the standard deviation is small (below the average of all sets). Thus, the siblings are dispersed in an evenly pattern. In a sense, the categories represent ascending stages of dispersion. Table 1 summarizes these definitions and table 2 give their frequency distribution at the selected points in time.

Table 1: Categorization of dispersion of siblings

Category	Mean of mean distances	Mean of standard deviations
1 all in same place	Zero	Zero
2 clustering with outliers	Below but more than zero	Above
3 clustering no outliers	Below but more than zero	Below
4 dispersal with outliers	Above	Above
5 dispersal no outliers	Above	Below

Table 2: Frequency (%) of dispersal categories by years after the parental marriage (N in brackets)

Category	25 years	40 years	60 years
All in same place	51.4 (108)	19.1 (38)	13.7 (24)
Clustering with outliers	12.9 (27)	24.6 (49)	19.4 (34)
Clustering no outliers	14.8 (31)	25.1 (50)	21.7 (38)
Dispersal with outliers	6.2 (13)	10.0 (20)	14.3 (25)
Dispersal no outliers	14.8 (31)	21.1 (42)	30.9 (54)

In table 2, we observe that 25 years after the parental wedding, the majority of sibling sets are still living in the same community. Within fifteen years, that picture changes drastically: after forty years, 19.1% of the sibling sets all reside in the same place and after 60 years this percentage has declined to 13.7. The categories indicating clustering of siblings within a limited area diminish between forty and sixty years. On the other hand, the last category, in which the sibling set is dispersed evenly, increases from 21.1% (40 years) to 30.9% (60 years).

What characteristics of the parents or the sibling set can explain the chance that a sibling set will fall into one of these categories? With respect to the parents, we take into consideration first of all their **survival status**. We expect children to leave home and migrate earlier once one of their parents had died. The dispersal of the siblings will have been greatest once both parents were deceased. Next, we look at the **socio-occupational group** of the father. What groups managed to find niches for their children in the immediate vicinity? As we have seen in Figure 3, rich farmers were successful in their marriage strategies that provided children with farms of their own, but to a certain extent this tended to disperse them. Probably, farmers with median landholding and the lower middle classes were relatively successful in providing their children with niches (not by definition in the same occupation) that kept them nearby. Children of workers tended to leave home earlier and more frequent to work as farmhand or (domestic) servant (Bras and Kok 2003). After marriage, they probably kept on moving depending on where they could find work and a plot of land to rent (Kok 2004). Then, we take into account **migration experience** of the parents, that is, we look at their places of residence at birth and marriage. Do children from parents with more 'spatial capital' disperse more than children from sedentary and geographically endogamous parents? We also consider **religion**. In the countryside of North-Holland, Roman Catholics formed a sizeable minority in a predominantly protestant region. Religious endogamy might imply that partners were sought and found in a wider area, leading to more dispersal. Finally, we trace changes over **time** by distinguishing between the marriage cohorts 1830-1854 and 1855-1879.

Sibling sets have various characteristics that may account for the way they cluster or disperse as well as for changes in dispersal patterns over time. In our

models we include **mean age** as well as **age spread** (standard deviation around the mean). In our first model that investigates the sibling set after 25 years, we expect that with increasing mean age more children will have migrated. A large standard deviation indicated that the sibling set is composed of children of different ages. In our view, a large age difference between sibling implies different forms of mutual support. More specific, older siblings will have more experience, contacts and means to help younger siblings. Thus, a large age gap is likely to stimulate the outmigration of younger siblings. The **sex composition** of the sibling set is likely to be important as well. Given the custom of women to move to their husband's community, we expect more dispersal with an increasing share of women in the sibling set. In the model, we include the percentage of men among the siblings. This also implies that **marriage** should be included as an independent factor. In this area, nuclear households were strongly predominant, and has been so for hundreds of years (Van der Woude 1983). Co-residence of married children with their parents was very rare. Thus, marriage removed children from their parents and siblings from one another. We operationalize this factor by including the percentage of married siblings in the model. We also include the **size** of the sibling set. As we have seen in figure 7, larger sibling sets tend to be dispersed. At least, we can expect the likelihood of outliers to be greater. Finally, we look at the **occupational variation** within the sibling set (only after forty and sixty years). In network theory, the importance of socially heterogeneous networks is emphasized. In such networks, information on opportunities as well as innovative ideas spread more rapidly than in closely knit networks composed of socially homogenous groups. Thus, we expect more out-migration in occupationally mixed sibling sets (Granovetter 1973; Rosental 1999).

The multinomial (or polytomous) logistic regression is a suitable technique for modelling discrete 'choices'. This technique is a variant of binary (or dichotomous) logistic regression, which was developed to analyse dependent variables with only two outcomes (yes or no). In that situation, a non-linear model is more appropriate than a linear regression. The probability (p) of the dependent variable being a yes or no is calculated in terms of *odds*, that is the probability of a "yes" divided by the probability of a "no" (p/(1-p)). The regression coefficients of the independent variables are the natural logarithms of the odds. By exponentiation we obtain *odds ratios*. These indicate the increase in the odds of the dependent variable of being a yes resulting from an increase of one unit in the independent variable (Menard 1995). In the multinomial variant, the probabilities are calculated in relation to a baseline or reference category. In our models, the reference group is defined as 'all siblings are living in the same community'.

In table 3, we look at dispersion of siblings 25 years after the parents were married. The average age of the children of all sibling sets was 17. Thus, we can expect that the family dynamics and social factors associated with life

cycle service will be foremost in explaining the question if and in what pattern siblings are living in different places. Indeed, the death of the parents is a crucial factor in this stage of the family life cycle. When both parents had died, the children were very likely to be dispersed 'without outliers', that is, all or most of them lived away from one another. Their odds of appearing in this category increased 27 times in relation to staying in the same place. Compared to the 'group of farmers with medium wealth' the chances that at least some children would migrate within the area were higher in all groups, except for the rich farmers. Apparently, children from the latter group did not participate in servant mobility. However, most results are not statistically significant, apart from the siblings whose fathers were poor farmers. The mobility of the parents was, by and large, associated with some form of children's migration. In particular, this is true when only one of the parents was an in-migrant. The association was stronger with the mobility of the mother than with the mobility of the father. Contrary to what we expected, Roman Catholicism was associated with lower odds of out-migration of adolescents. Children born from parents in subsequent marriage cohorts did not display significant differences. Thus, the change we see in Figure 6 was too small to be significant or it was caused by composite effects. The composition of the sibling set was quite important. As we expected, a higher mean age explains why more children had left the household, to live and work elsewhere. Interestingly, when the sibling set had a strong deviation around the mean age, it was more likely to fall in the category 'dispersal without outliers'. Thus, children from a sibling set composed of both (relatively) young and old children are more likely to migrate in various directions. This might suggest that older children introduce a 'culture of migration' into the family, stimulating the younger siblings as well. Rural girls tended to leave home earlier to boys (Kok 1997, 515). Thus, it is not surprising that a higher percentage of men is (significantly) associated with lower odds of out-migration. As expected, marriage stimulated outmigration in a limited area ('clustering without outliers'), that probably corresponded with the 'marriage field', the surrounding area in which most marriage partners were found. Finally, the larger the sibling set itself, the more likely that one or more children left at an early age. Previous research has shown that boys and girls were 'pushed out' by younger siblings of the same sex. Their tasks in the household could be taken over by their younger siblings, and they could be put to work more profitably in other households (Kok 1999, pp. 147-148; Bras and Kok 2003, p.439; Bras and Neven 2007).

Table 3 Multinomial logistic regression of types of sibling dispersal, twenty-five years after the parents married (reference group is all living in same community), odds ratios

	Clustering with outliers	Clustering without outliers	Dispersal with outliers	Dispersal without outliers
Parents				
Survival(both survive=ref)				
Mother deceased	3.68**	1.78	1.81	5.35**
Father deceased	0.38	1.61	2.46	4.12**
Both deceased	3.03	-	-	27.58****
Social class (far-mers with median wealth=ref)				
Rich farmers	0.75	0.17	1.30	0.34
Poor farmers	5.05*	2.26	-	0.93
Lower middle class	1.64	2.66	0.79	0.37
Workers	2.78	2.92	0.80	1.50
Mobility (both sedentary=ref)				
Only mother mo-bile	0.54	3.25*	2.89	2.35
Only father mobile	1.61	1.80	1.18	1.14
Both mobile	0.55	2.59	1.40	0.83
Religion (protes-tant=ref)				
Roman Catholic	0.39*	1.20	1.18	1.69
Cohort (married 1830-54=ref)				
Married 1855-79	0.53	1.11	3.34	1.33
Sibling set				
Mean age	1.38**	1.12	1.20	1.44***
Standard deviation around mean age	1.36	1.32	1,20	1.75***
Percentage male	0.98*	0.99	1.00	0.99
Percentage married	0.98	1.04**	1.00	1.02
Size	1.38**	1.16	1.30	0.82
N	210			
Overall chi-square	111.77****			
Nagelkerke's r-square	0.45			

   * 0.1; ** 0.05; *** 0.01; **** 0.001

293

Table 4: Multinomial logistic regression of types of sibling dispersal, forty years after the parents married (reference group is all living in same community), odds ratios

	Clustering with outliers	Clustering without outliers	Dispersal with outliers	Dispersal without outliers
Parents				
Survival(both survive=ref)				
Mother deceased	0.74	2.08	1.27	1.02
Father deceased	0.55	0.84	0.38	0.43
Both deceased	1.39	1.29	1.99	1.02
Social class (farmers with median wealth=ref)				
Rich farmers	0.74	0.96	1.85	1.65
Poor farmers	1.44	2.62	1.22	1.06
Lower middle class	1.17	0.32	2.00	1.08
Workers	0.91	2.10	2.01	1.33
Mobility (both sedentary=ref)				
Only mother mobile	1.91	3.33	3.52	5.80**
Only father mobile	1.04	2.03	3.47	0.83
Both mobile	0.43	1.08	0.28	0.37
Religion (protestant=ref)				
Roman Catholic	0.53	0.89	0.63	1.39
Cohort (married 1830-54=ref)				
Married 1855-79	0.37	0.68	2.81	0.65
Sibling set				
Mean age	0.96	1.00	1.09	0.92
Standard deviation around mean age	0.95	1.01	0.97	0.98
Percentage male	0.98**	0.99	0.97**	0.98**
Percentage married	1.03**	1.02**	1.01	1.04***
Size	3.64****	1.88***	2.11**	2.35***
Occupational mix (no farmers=ref)				
All farmers	0.30	3.84	-	0.72
Some farmers	1.33	2.64	0.62	0.87
N	199			
Overall chi-square	145.91****			
Nagelkerke's r-square	0.55			

* 0.1; ** 0.05; *** 0.01; **** 0.001

Table 5. Multinomial logistic regression of types of sibling dispersal, sixty years after the parents married (reference group is all living in same community), odds ratios

	Clustering with outliers	Clustering without outliers	Dispersal with outliers	Dispersal without outliers
Parents				
Social class (farmers with median wealth=ref)				
Rich farmers	0.46	0.70	0.70	0.58
Poor farmers	1.58	0.46	0.35	0.73
Lower middle class	0.76	0.19	1.63	0.53
Workers	1.50	1.30	2.31	1.79
Mobility (both sedenta-ry=ref)				
Only mother mobile	0.49	1.34	0.27	1.67
Only father mobile	3.25	3.22	0.76	1.00
Both mobile	0.39	0.30	0.08**	0.18**
Religion (protes-tant=ref)				
Roman Catholic	1.11	1.70	0.38	1.41
Cohort (married 1830-54=ref)				
Married 1855-79	0.68	0.62	1.86	1.00
Sibling set				
Mean age	1.05	0.98	0.93	0.93
Standard deviation around mean age	1.29	1.21	0.93	1.08
Percentage male	0.99	1.00	1.01	0.97
Percentage married	1.04**	1.04***	1.95**	1.03*
Size	4.19***	1.55	3.70***	2.54**
Occupational mix (no farmers=ref)				
All farmers	0.29	0.22	-	0.73
Some farmers	2.95	1.72	1.84	2.09
N	175			
Overall chi-square	138.07****			
Nagelkerke's r-square	0.58			

* 0.1; ** 0.05; *** 0.01; **** 0.001

Table 4 inspects the patterns of dispersal forty years after the parents' wedding date. By then, the average age of the children was 31.8 years and most of them had already married. In general, parental characteristics are far less important in explaining sibling dispersal patterns at this stage of the family cycle

than attributes of the sibling set. Indeed, the table shows that the percentage of married siblings is among the strongest predictors of dispersal, regardless of the type. The same holds true for the gender composition of the sibling set: the more women, the more dispersal. As we have seen in figure 7, large sibling sets are spread out. Apparently, for two or three children niches can be found near the parents, but this is impossible with more children. Apart from the mother's mobility (associated with strong dispersion), we find no other significant effects. Still, the model can account for 55% of the variation in the 'choice' among these five types of clustering/dispersal of sibling sets.

Finally, table 5 analyzes the situation after sixty years (average age of the siblings 51.6 years). Again, the strongest predictors are size of the sibling set and the percentage married. Interestingly, the gender composition no longer has a significant effect. Thus, the patterns of migration after marriage are less mediated by gender than before marriage. Although not statistically significant, the variable indicating the occupational mix of the sibling set suggests that indeed socio-professional variation in the sibling set induces dispersal. A remarkable outcome (confirming the findings of Figure 4) is the negative effect of parental migration experience on children's dispersal, in particular because the effect is 'lagged'. Already visible after forty years (table 5), the effects are even stronger after sixty years. When both parents had in-migrated to Akersloot prior to their marriage, their children tended to cluster. At this point, we cannot provide an adequate explanation for this phenomenon.

Conclusion

In this article we have endeavoured to describe and to understand patterns of sibling dispersal in the late nineteenth and early twentieth centuries. Our case study was formed by 210 families in a rural area in the north-western part of the Netherlands. Outmigration from the area was limited and we therefore did not expect strong dispersal of siblings. The area was characterized by rather intensive, commercialized agriculture that allowed many children of farmers to become farmers themselves. Also, a number of small cities and even industry provided ample employment opportunities in the vicinity. Industrialization and urbanization did not stimulate migration from the area. In fact, these developments were probably counteracted by the increase in transport facilities.

We have analyzed patterns of dispersal at different points in time (twenty-five, forty and sixty years after the marriage of the parents). A marked increase in distances between siblings occurred between twenty-five and forty years. However, the dispersal continued in the next twenty years as well. In the introduction, we discussed the complex of factors behind the dispersion of siblings: social class; regional occupational structure; leaving home; family strategies, care provisions, marriage; inheritance; and familial 'spatial capital'.

In our multivariate analysis, we have found different factors to be responsible for the patterns at subsequent intervals. The social characteristics of the parents were strongest in the early stage of the family life cycle, whereas characteristics of the sibling set became dominant in later stages. After 25 years, the death of (one) of the parents, their social class, migration experience and even religion influenced children's dispersal. Not surprisingly, the first factor was by far the most important. By and large, dispersion at this stage can be explained by the family strategies related to entering life-cycle service at an early age. After forty or sixty years, dispersion is mainly explained by the size and gender composition of the sibling set and the percentage married. Unmarried children often stayed to take care of the parents and also co-resided to support one another. Thus, the more siblings were married, the more dispersion occurred. Marriage migration tended to disperse women more than men, but this effect waned in the period of twenty years after marriage. Provided the family was wealthy, the custom of advancing on the inheritance secured livelihood and marriage for all children for whom partners were found in a wide area. However, the wealth indicators did not yield statistically significant results. Finally, we have found contradictory effects from 'familial spatial capital' that we defined as the migratory experience of the parents between their birth and marriage. When only the mother had migrated, children tended to disperse both after twenty-five and forty years. However, when both parents had in-migrated, children tended to cluster after forty, and in particular after sixty years. A further inspection of the actual moves of both parents and children is needed to solve this contradiction.

In case of need, a 'pool' of nearby siblings that could offer practical support was vital. Some people could count on a large pool, for others siblings lived too far away to be of immediate help. Our explanatory models have managed fairly well to explain when siblings clustered and when they dispersed. Nevertheless, a lot more can be found out. Our study comprised the case of the North-Holland countryside, a commercialised agrarian region where the egalitarian nuclear family system and partible inheritance practices were the rule. Future research should compare patterns of sibling clustering and dispersal between different localities and regions, but also between different occupational groups and across time. Do we indeed find greater dispersal among siblings in House societies? How do siblings in urban areas cluster or disperse during the family cycle; and what in particular happened to the clustering patterns of sibling sets originating in the urban middle-classes during the period of industrialization? Moreover, one might wonder what sibling clustering or dispersal meant in terms of the family's (reproductive) success. Were families that clustered, because they could in potential count on more familial support, more successful in terms of the proportion of children that could be married off, their eventual societal positions, and their survival and longevity chances? Or was dispersal

and the exploitation of different niches and locations – perhaps for some types of families – a more successful strategy?

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