

Siblings in a (neo-)Malthusian town From cross-sectional to longitudinal perspectives *

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Introduction

This paper is a starting point in our research about siblings in Geneva, the "Calvinist Rome", during the first half of the nineteenth century. The topic is original and the place quite peculiar. Sisters and brothers, elder and younger, sharing fraternal love or mortal enemies like Cain and Abel, siblings are present in the essence of most, if not all, cultures of our world (Lett, 2004; Godeau and Troubetzkoy 2003). However, until recently historical demographers and family historians have neglected this type of population and kind of kin tie. Paradoxically a lot of pertinent data has been collected but the question has very rarely been addressed explicitly. In Louis Henry tradition of family reconstitution, hundreds of case studies used parish registers to reconstruct the fertile life of couples at hence as a byproduct, so the sibling groups. The latter however has never been the main concern. There have not been described carefully, for example in simple terms of sex and age distribution (see Flinn, 1981; Brunet and Oris, forthcoming). Originally, Henry was a demographer concerned with the demographic transition. Demographers frequently used and still use a cross-sectional indicator, the Total (Marital) Fertility Rate or average number of children per (married) woman. But it is only in 2001 that Laurent Toulemon showed how the change of reproductive regimes in France along the twentieth century affected the distribution of sibling groups by size¹.

Family historians examined this issue in customary and systemic perspectives, contrasting systems of inequality and exclusion of the non-heirs versus systems of equality and consanguineous marriages (see Lorenzetti and Neven, 2000, 87-88). A more individual approach, looking at competition or cooperation and their changes along the life course, is more recent². Even within the *EurAsian Project for the Comparative History of Population and the Family*, where the sibling composition is used in all the multivariate event-history models and has often a strong explanatory power, the implicit is dominant since such composition is not really described³. This "silent element", as Buisson (2003, 13) calls the sibling group, is even more implicit in one of the major line of development in family history during the last decades, i.e. the study of household forms initiated by Peter Laslett and Richard Wall (1972).

The limited interest for siblings reflects also the limited dialogue between historical demography and family history (Oris, 2003), since this is typically an issue just in-between that requests the mobilization of both disciplines⁴. Nicely, two independent initiatives

* This paper is part of the Swiss National Science Foundation projects 1114-68113 and 100012-105478. This support is gratefully acknowledged.

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¹ see also Toulemon, forthcoming, for an update; Légaré and Alix, forthcoming, for a similar exercise about North America.

² See most of the contributions in van Poppel *et al.*, 2004, as well as Schlumbohm, forthcoming.

³ See the volumes edited by Bengtsson *et al.*, 2004; van Poppel *et al.*, 2004; Derosas and Oris, 2002.

⁴ Interesting enough, the same absence of dialogue existed between demography and family sociology. In 1982 the *International Union for the Scientific Study of Population* created an ad-hoc committee to promote a family

revealed a new interest and contributed to move from an implicit to an explicit study of siblings: the German *Working Group for Historical Demography* organized in Berlin a workshop on *Geschwisterbeziehungen in historisch-demographischer und mikrohistorischer Sicht*, October 31-November 1, 2003, while the *Centre Jacques Cartier* hosted a conference in Lyon, *Frères–Sœurs–Jumeaux. Passé et Présent des Fratries*, Lyon, Institut des Sciences de l'Homme, December 1-2, 2003. The idea of this paper is born when we discovered each other. It is a contribution to this new dynamism and it also wants to valorize the just recently constructed Geneva population data base. In a first essay, we restrain our ambitions to an examination of the sibling question in a cohabitation perspective, which remains one of the most neglected: Did siblings live together? Until which age? In which circumstances? What was the norm? How, when, why did they left a status of cohabitation for another?

Census data are very appropriate to deal with those questions. To look at sibling(s) in a cohabitation perspective, we work on a series of six censuses organized by the cantonal authorities: 1816, 1822, 1828, 1831, 1837, and 1843⁵. Data have been collected by the census agents at an individual level, grouped by household, house by house, street by street. Obviously the 1831 series is incomplete. Among the pertinent information for our purpose is the kin tie to the household head. Sibling relations can be inferred with a relative certitude (same father, but probably sometimes from different marriages) or are explicitly indicated. Our sampling strategy has been an alphabetical one: we took all the persons with a family name beginning with the letter B, i.e. 11% of the population (cf. Bardet, 1983), and living in the city of Geneva (inside the walls). Their cohabitants have also been included in the data base and are used to describe the household type and/or the position of the index individual within his/her domestic unit, but our analyses deal essentially with the 'B' population.

Our results have some general value – at least we hope – but cannot be understood if a peculiar context is not taken into account. In a few words, the demographic regime of Geneva during the first half of the nineteenth century was characterized by a moderate population rise (from 21.327 inhabitants in 1798 to 31.200 in 1850), the very rare combination of a Malthusian pattern (high age at first marriage and high level of final female celibacy) with a neo-Malthusian one (low, obviously controlled marital fertility, and low infant mortality). Such combination explains that the natural balance of births and deaths contributed for less than 6% to the demographic growth during this period, immigration being the real motor of the population expansion, with deep effects on population structures and dynamics. We say more in other papers (Oris and Perroux, forthcoming; Ryczkowska and Perroux, 2005) and below when interpreting the specific results about siblings.

demography, that ten years later was still described as “a recent and relatively underdeveloped branch of population studies” (Berquo and Xenos, 1992, 8). Now, family demography is certainly the most dynamic field in the discipline.

⁵ For a critic of those data, see Cardinaux 1997.

1. Siblings in cohabitation structures

1.1. A typology of cohabitation from a sibling perspective

Our data are originally cross-sectional and we propose first a typology to observe structures. It could seem an outdated approach. Indeed, historical demography of nineteenth century towns has been an active yard of social history in the 1970s and 1980s, when the structural perspective was dominant and censuses the obvious source for a prosopography of growing and changing populations (Farge 1995, 285-286). It is not a surprise that the main debates concerned the tools used to define and describe structures, like occupational classification in a Marxist or non-Marxist perspective (Farge 1995, 283-284), or the typology of household forms initiated by Hammel and Laslett (1978). But from the pioneering works of Alter (1987) on Verviers and Kertzer and Hogan (1989) on Casalecchio di Reno, the 1990s and early 2000s have been marked by a new ambition: the reconstruction of collective biographies, of trajectories "in" and "through" the city⁶. Such transition reflects also the implementation of the life course paradigm in social sciences (see van Wissen and Dykstra 1999; Hareven 1993). With its two parts, this paper is like a summary of this evolution, but we do not perceive the first part as a simple descriptive exercise.

In his analysis of the Castillan town of Cuenca, David Reher (1997, especially chapter 4) demonstrated that although we cannot assume that the age distribution of a given characteristic at a given moment in time provides a life course pattern, such distribution shows anyway how individual life trajectories constructed a population in its diversity. This reconciliation between structural and longitudinal approach has been further elaborated, on richer data, by Muriel Neven (2003a, especially chapter 5). In a previous contribution, we tried to show that the elaboration and description of urban population structures is still an unfinished work, proposing a typology of the various forms of solitude, that highly varied by sex and age in Geneva between 1816 and 1843 (Oris, Ritschard, and Ryczkowska, 2005). Here we propose a very simple but systematic decomposition by cohabitation status in a sibling perspective.

We just created two dummy variables – living with at least one parent and living with at least one sibling – and crossed them. The first modality, F1, concerns those who share table and roof with a father or mother or both, but no sister, no brother. There are the "single children". However this group is clearly a composite one since are here the real single children but also the first child of couples that the census took off at the beginning of their fertile life, and the adult that took care of old parent(s). The third modality of our typology, F3 is defined by the cohabitation with at least one sibling and no parent.

In-between F1 and F3, the second type, F2, includes the children of the "proper families", according to the bourgeois culture that dominated the nineteenth century (Maynes 2002): those who lived with at least one parent and at least one sibling. The last modality, F4, is just a residual category where we can find all the rest of the population. In a cohabitation perspective, they cannot be seen as "sibling" in any sense. Such a negative definition will, at one moment, limit our analyses. Since we did not observe significant differences along the time from 1816 to 1843, we analyze globally the six censuses. All the tables and figures in the

⁶ For a good illustration, see the special issue of the *Annales de Démographie historique*, 1999-1, coordinated by Jean-Luc Pinol.

next section are, however, restricted to the individuals belonging to our alphabetical sample, those with a name beginning with the letter B, i.e. 18,779 persons.

1.2. Life-course pattern and family system from cross-sectional data

Figure 1a. Sibling statuses by age. Men in Geneva, 1816-1843

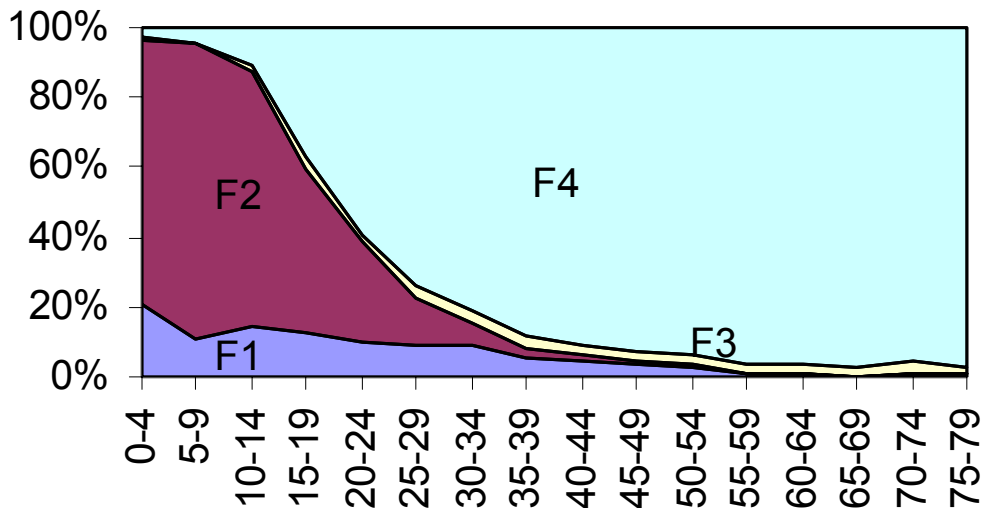
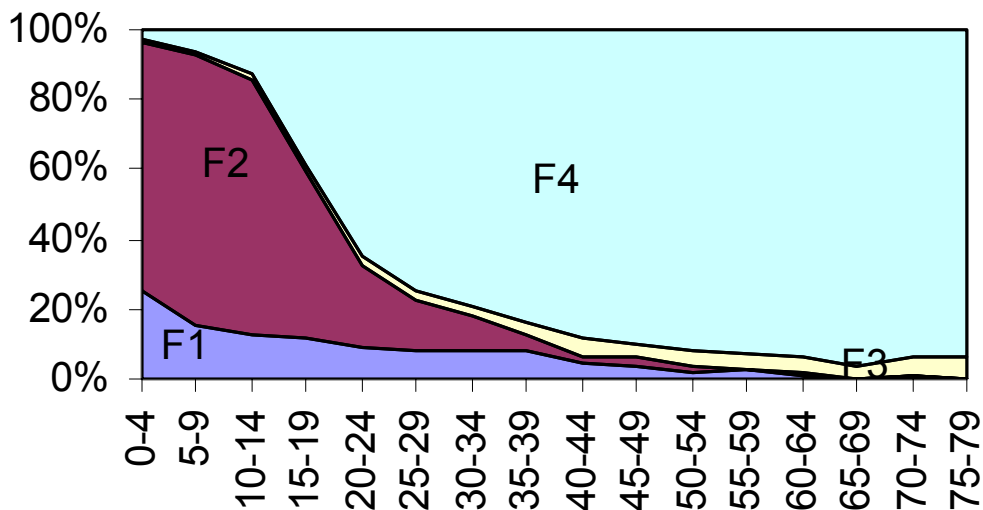


Figure 1b. Sibling statuses by age. Women in Geneva, 1816-1843



Figures 1a and 1b show the distribution by age of the sibling statuses. Without surprise, F2 (the "proper family") and F4 (no parent, no sibling) were the more frequent categories. Sex was not a strong factor of differentiation but age clearly was. For both sexes living with parent(s) and sibling(s) was the normal situation until 10. A slow decrease was observed between 10 and 15, then a sharp decline during 10 years for the females, 15 years for the males. This is between the ages of 20 and 25 that living away from his/her family of origin concerned a majority of the Geneva inhabitants. F2 represents the family cradle, and in Geneva during the first half of the nineteenth century, such cradle is a nuclear one. 84.8% of those belonging to sibling status F2 lived in a nuclear household, of whom 14.6% with only

one parent, usually widowed. The residual 15% were found in extended and complex forms (Table 1).

Table 1. Sibling statuses by household types (Hammel-Laslett typology). Geneva 1816-1843

Siblings Household	F1	F2	F3	F4
Lodgers	0.2	0	3.6	25.4
Solitary	0	0	0.6	10.2
No family	0	0	47.5	2.1
Nuclear without child	0	0	2.6	12.4
Nuclear with child	44.9	70.2	13.1	32.7
Broken couples (nuclear)	25.3	14.6	4.2	5.7
Extended	9.9	5.5	21.1	5.5
Multiple	19.7	9.6	7.4	6.0
Total %	100	100	100	100
N	1627	4969	503	11680

Figure 2. Siblings group with parent(s). Individuals by size of their group. Geneva, 1816-1843

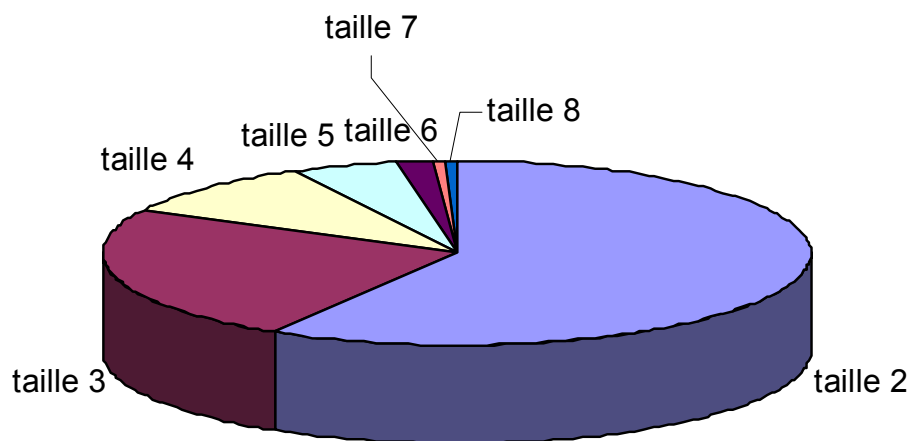


Figure 2 shows that for those who lived with at least one parent and at least one sibling, the siblings group were surprisingly little in Geneva. In nineteenth century rural east Belgium and the Dutch province of Zeeland, Hilde Bras and Muriel Neven (forthcoming, 7) estimated the average size of the sibships for daughters aged 12 between 4 and 5. In Geneva, the model of two children per family, a norm in our contemporary western societies, was already dominant in the first half of the nineteenth century: in the "proper families", 58.5% of the children had only one brother or one sister. Almost one about four belonged to a group of three, but only one about ten to a group of four and one about twenty to a group of five. Such peculiarity of

Calvin city is not a real surprise. Local elites started to restrain their reproduction already during the seventeenth century, the movement spread within the popular masses in the eighteenth century (Perrenoud, 1990), and among the couples formed between 1800 and 1850, the total fertility rate was only 2.32 children per woman (Schumacher, 2002, 58-60). This neo-Malthusian behavior impacted the size of siblings groups.

The impressive proportion of F4 (no parent, no sibling) within the Geneva population (62.2%), also find its explanation in the interrelations between a demographic regime and a family system. We know that within the sex and age structures of Geneva population, the young adults, aged 20 to 29, were clearly in excess because immigration brought new forces at those ages, and even more from the female than from the male side (Ryczkowska and Perroux, 2005). Those movements belonged to the well-known *life-cycle service* that, since Hajnal (1983), is commonly associated with the European system of late marriage and the dominance of nuclear family forms. Young people left their family and "they devoted an important part of their life, living and working in the household of an employer, being physically and socially separated" from their parents and siblings (Bras and Neven, forthcoming, 5). They accumulated experiences, skills, as well as a capital or a dowry. It was an experience of personal responsibility, certainly, but not really of autonomy since most of the young people spent that period working and living indeed in a subordinate position, of service and/or apprenticeship. The target was the establishment of a neo-local household as a self-sufficient microeconomic unit (Laslett 1983; Neven 2003a, chapter 4). Although such circulation of young persons was widespread almost everywhere in northern and western Europe, many variations have been observed in the frequency and duration (van Poppel and Oris, 2004, 4-7). The latter depended of the age at leaving home, which varied throughout the European countryside from 14 to 22 (average values) (van Poppel and Oris, 2004, 5). In Geneva during the first half of the nineteenth century only 11% of the boys aged 10-14 but 37% in the age group 15-19 lived "alone" (i.e. did not cohabit with a parent or a sibling or both). Similar values (respectively 13% and 38.6%) were observed among young women. It is above the 20th birthday that more than a half of the city population was 'emancipated' from parental control and fraternal support. Seven to nine years remained to spent before the average age at first marriage (Ryczkowska, 2003).

However, those results have to be considered with caution, since at this stage we do not disentangle between the leaving home from Geneva families and the contribution brought by immigration, especially through the life cycle service from rural origins. This is clearly a point where cross-sectional structures and life course patterns do not fit each other. But for all that we can already conclude the leaving home process was clearly later in Geneva and its hinterland than in Scandinavia or England (see Dribe 2000, 8-13), similar to the Dutch pattern (see Kok and Bras, 2004) and more precocious than in Belgium, indeed the country where the highest age at emancipation have been observed (Capron and Oris, 2000).

The attraction exerted by Geneva on young adults had a direct impact on the age pyramid, widening the age group of 15 to 35, and even more for women than men. Indirect effects were also important. For example, at 20-24 there were only 70 men for 100 women. Sex ratios impacted the matrimonial market and obviously rose the propensity to final celibacy among women (20% versus 10 among the men). Also widows had very few chances to access to remarriage globally, and especially compared with widowers (Oris, Ritschard and Ryczkowska, 2005). Moreover, the Geneva old people could not count for a support in the last stage of their life on the many young immigrants present in the city, but not tied with them and quite unstable. All the charge of filial piety rested on their few children, if they had

some (Ryczkowska and Perroux, 2005). In our typology of sibling statuses, modalities F1 and F3 resulted from this context. Those who belonged to those types were real actors of a game of which, however, they did not control the rules.

F1 distinguishes those who lived with at least one parent and no sibling. At young ages, there were just the children of couples at the beginning of their fertile life or couples with a real low fertility. But from 20/25 they tended naturally, within the Geneva demographic regime, to cohabit with old parent(s). Surprisingly enough, the age pattern (see Figures 1a and 1b) was the same for both sexes. However, a closer look reveals a gender differentiation. Two "strategies" were used to support old parents. A first solution was to keep a child at home. "Stayers" were those who stayed at home beyond the normal age to take care of their parents in their old age. It is obvious that in nuclear family systems those practices were coherent with the famous "European marriage system" since most of the "stayers" renounced to marriage (Alter 1996; Oris and Ochiai, 2002, 42). "In nineteenth century Europe extended co-residence of unmarried children provided economic support for aging parents. Most parents could expect to have at least one unmarried adult child in the household during the years in which their own strength and earnings would be starting to decline" (Alter and Capron, 2004, 117). Always in cultural areas dominated by the ideals of the nuclear family, a second option was to be received by a married children, usually when physiological, psychological and economical difficulties made really impossible to maintain an autonomous household for the older, the frailer (Oris and Ochiai, 2002, 41).

In Geneva during the first half of the nineteenth century the first solution tended to be based on the "sacrifice" of a daughter who renounced to marriage: 56% of the females belonging to the type F1 were single in the age range 35-44, and 59% at 45 and more. And the second solution concerned mainly men who were married (70% at 35-44 and 67.5% at 45 and more) and head of their household. Those two patterns dominated though minorities – married and widowed daughters, single sons – were not negligible. The structures of the matrimonial market was for sure only one factor behind the dominant patterns. Gender norms, but also individual and family variations in love and hate..., were also at work in the determination of living arrangements that were relatively efficient. Indeed few adults were concerned (5.6% of the men, 5.8% of the women aged 20 and more belonged to the F1 type), but since the top of the age pyramid was not so large, very few Geneva inhabitants faced an "empty nest" in their old age (Ryczkowska and Perroux, 2005). However, the two solutions described above do not explain alone this relative success. Especially, they could not work for those who had sacrificed their chances of marriage for staying with old parents and, in their own old age, had no children as support.

Ten years ago, Olwen Hufton (1995) showed that it was one of the mechanisms behind the formation of "spinsters clustering". In fact, such clusters did not meet only spinsters but also widowed or abandoned women. Alone, they could not maintain an viable household; together, they avoided solitude, shared the cost of lodging and foods (Oris, Ritschard and Ryczkowska 2005). Almost half of the members of our F3 type, i.e. siblings clusters, were engaged in that kind of survival "strategy". There were those that lived in a "no family" household, i.e. a household without a nuclear cell. Table 1 provides this information and also reveals a more nuanced vision of the F3 group. Indeed, we see that in 28.5% of the cases a brother or sister joined the household of a married sibling, usually to create an extended form (21.1% of the cases), more rarely a complex one (7.4%). The presence of sibling clusters in nuclear households seems at first glance incoherent with Hammel-Laslett rules, however we find here a neglected association: typically two brothers or two sisters working together for the same

employer and living in his/her household. A fifth to a quarter of F3 type was implicated in this pattern. The tendency to cluster with a sibling, although resulting from the three different trajectories explained above, was globally limited. Only 2.8% of the adult men, 3.6% of the adult women belonged to F3 type. And in 92% of the cases, the size of the cluster was only 2.

Globally, the cross-sectional analyses ran in this section revealed at which extent the interactions between a peculiar demographic regime and a classic nuclear family system drew a theater play where individuals acted and had a life of their own. Dominant patterns coexisted with statistically marginal but socially important ones. However, population heterogeneity, especially among the young adults, limits our capacities to read structures as reflecting life-course. We need to move to a longitudinal approach.

2. Changing sibling status: a multivariate approach

2.1. Transition between cohabitation types

We consider now a longitudinal approach to gain knowledge on the transition between the cohabitation type (F1, F2, F3, F4) at a given census and the cohabitation type observed six years later. Our alphabetical strategy of sampling implies that if a person was still in Geneva, we took him or her from census to census. A tedious work permitted to link the individual notices and reconstruct trajectories. Table 2 gives the overall transition rates between t and $t + 6$, and Table 3 the distributions by age classes. Here and in all the analyses that follows, our population at risk is our sample at the censuses of 1816, 1822, 1831, and 1837. 1828 has been excluded because the interval with the next census was 3 and not 6 years, and 1843 since we have no census 6 years later. 11'937 individuals are studied. As can be seen from Table 2, about half of the studied population was not registered at the six year later census. These include people that emigrated, either temporally or definitely, as well as those who deceased during the six year period. Unfortunately, we are not yet able to make the distinction.

Table 2. Cohabitation type transition rates between t and $t + 6$

t	$t + 6$					Total Count
	F1	F2	F3	F4	Left	
F1: par, no sibl	52.2%	19.5%	1.8%	26.5%		600
F2: par, sibl	7.0%	79.3%	5.2%	8.6%		1972
F3: no par, sibl	5.1%	12.2%	37.2%	45.5%		156
F4: no par, no sibl	2.5%	1.2%	2.0%	94.3%		2975
Total	9.4%	30.4%	4.1%	56.2%		5703
F1: par, no sibl	29.8%	11.2%	1.0%	15.2%	42.8%	1049
F2: par, sibl	4.3%	48.4%	3.2%	5.2%	38.9%	3230
F3: no par, sibl	2.5%	6.0%	18.2%	22.3%	50.9%	318
F4: no par, no sibl	1.0%	0.5%	.8%	38.2%	59.5%	7340
Total	4.5%	14.5%	1.9%	26.8%	52.2%	11937

Table 3. Cohabitation type transition rates between t and $t + 6$, by age classes

t	F1	F2	$t + 6$ F3	F4	Total Count
Aged 0 – 5					
F1: par, no sibl	43.0%	54.1%	0.7%	2.2%	135
F2: par, sibl	3.7%	93.5%	1.7%	1.1%	463
F3: no par, sibl	-	-	-	-	1
F4: no par, no sibl	-	-	-	-	11
Total	12.8%	83.9%	1.5%	1.8%	610
Aged 6 – 11					
F1: par, no sibl	64.8%	21.6%	3.4%	10.2%	88
F2: par, sibl	5.5%	90.3%	2.4%	1.7%	577
F3: no par, sibl	-	-	-	-	7
F4: no par, no sibl	-	-	-	-	24
Total	13.2%	79.0%	2.7%	5.0%	696
Aged 12 – 17					
F1: par, no sibl	70.7%	12.2%	2.4%	14.6%	82
F2: par, sibl	8.6%	82.3%	4.0%	5.1%	429
F3: no par, sibl	-	-	-	-	13
F4: no par, no sibl	10.2%	11.9%	1.7%	76.3%	59
Total	17.7%	64.3%	3.6%	14.4%	583
Aged 18 – 29					
F1: par, no sibl	54.2%	8.4%	1.3%	36.1%	155
F2: par, sibl	11.4%	53.7%	7.8%	27.1%	395
F3: no par, sibl	-	-	-	-	32
F4: no par, no sibl	4.3%	1.7%	1.4%	92.6%	581
Total	13.3%	20.6%	4.5%	61.6%	1163
Aged 30 and more					
F1: par, no sibl	39.4%	1.5%	2.2%	56.9%	137
F2: par, sibl	6.2%	35.1%	33.0%	25.8%	97
F3: no par, sibl	4.9%	2.9%	43.7%	48.5%	103
F4: no par, no sibl	1.7%	0.4%	2.0%	96.0%	2274
Total	3.9%	1.8%	4.8%	89.4%	2611

The proportion leaving among those living with parent(s) and sibling(s) (F2) is lower than the average for children aged less than 12 (36% for the 0–5 year old and 30% for those aged 6–11). Globally this status is the most conservative. For the whole population of the group, more than 60% were still living in Geneva 6 years later. Among the stayers, i.e. within the "proper families" rooted in Calvin city, more than 90% of the children aged less than 12 and belonging to F2 type remained in the same situation at $t+6$. Those households were obviously the more resistant and protective in the same time. They also tended to delay offspring emancipation. Still in the age group 18-29 at age t , status stability six years later reached a level of 54%. Some 11% stayed alone while their sibling(s) had left, and acted as the support of old parent(s). Only 27% lived in the city without direct parental and fraternal controls⁷. For the children of Geneva stable families also, taking the road of a life of their own implied more often an emigration, temporary or not⁸, as an apprenticeship of life. Through those more or less controlled migrations⁹ young adults could take some distance with the rigid family, social

⁷ It does not mean that ties were broken. When entering data in the computer we observed siblings who established their neo-local household in the same street or adjacent streets, close from the parental home. In future research, we will test this subjective observation.

⁸ When linking the census notices we have been surprised by the number of linkages with census $t+12$, even $t+18$ and $t+24$. This also will require further research.

⁹ In his doctoral thesis, Olivier Perroux (2003, chapter 5) shows at which point the Calvinist elites organized that kind of mobility for their sons, and saw it as decisive in the elaboration of an individual *vocation*.

and religious structures that controlled their life in the "Protestant Rome" (see Perroux and Oris 2004).

Logically those living without parent and without sibling (F4) were the more mobile: almost 60% left in the next 6 years. But from the age of 18, 93 to 96% of those who stayed in Geneva kept the same status that six years before.

Siblings clusters without parent (F3) were numerous enough for a quantitative analysis only from the age of 30. Globally, those fraternal partnerships at adult age were not very enduring. The frailty of this group is attested by the disappearance of 51% in the next 6 years. Among those who stayed in Geneva, in half of the cases the association with a sibling at time t was broken at time $t+6$, leaving each "alone". Less than half of the stayers, less than a quarter of the whole group had still the same status six years later.

Finally, the singles who left brothers and sisters leaving and stayed at home to take care of old parents, or the married who received an old and frail parent in their household (F1), had not the same behaviors in urban Protestant Geneva that the inhabitants of rural Catholic East Belgium studied by Muriel Neven (2003b): it seems they less assumed their filial duty until the end, i.e. until the last parent died. From birth to the age of 17 at time t , the selection of the first group was progressively made. Indeed, higher the age, higher was the probability to stay a single child. From age 18 to 29, below the proper age at marriage, the stayers were still able to make a life of their own, and if they were recruited among the last born children parents were already old. In the next six years, almost half (46%) left Geneva, 20% settled in Geneva and only 29.3% stayed the support of old parent(s). When the children were aged 30, more parents were obviously quite old and the mortality effect stronger. Only 24% had still the same living arrangements six years later, while 39.5 had left Geneva and 34.3% joined the F4 status type. Probably the older singles – who were more frequently females – preferred to stay in Geneva. Being above the proper age at marriage and on a very unfavorable matrimonial market, at least they could be valorized in their immediate living environment, where their sacrifice and their filial piety were known, and were they could count, as a poor reward, to be well received by the local charity institutions and associations.

2.2. From the "normal" family to autonomy

In order to study the factors that may influence these transitions rates we have run a set of logistic regressions. Here we are interested with siblings, and more specifically with siblings living with their parents (cohabitation type F2). Table 4 gives the results for the model that attempts to explain the probability to stay in a F2 cohabitation type when they were still present in Geneva six years later. For comparison purposes, we provide also the results for the model that explains the probability to move from a F2 cohabitation type to a F4 type, while staying in Geneva. The logistic models have been fitted with SPSS. We provide the exponential of the coefficients. These are the factors by which the odd, i.e. the ratio $p/(1-p)$, is multiplied when the associated variable is augmented by one unity all other things being equal. For categorical variables, the exponential of the coefficient is the factor by which the odd of the reference category is multiplied for a case in the associated category. For instance, looking at the first model in Table 4, we see that the odd of the first class age is about 10 times that of the 18-29 old. The stars beneath the coefficients indicate the significance level: * means at 10%, ** at 5% and *** at 1%.

Table 4. Logistic regression for the probability of transiting from F2 to respectively F2 and F4 in $t + 6$

Model	Exponential of coefficients			
	F2 → F2		F2 → F4	
	all ages	age > 11	all ages	age > 11
<i>Age</i>				
0-5	10.66 ***		0.04 ***	
6-11	6.23 ***		0.06 ***	
12-17	3.23 ***	3.38 ***	0.17 ***	0.17 ***
18-29	1.00 ref	1.00 ref	1.00 ref	1.00 ref
> 30	0.54 **	0.56 **	0.81	0.80
man	0.82	0.74 *	1.44 *	1.50 *
single	3.91 ***	3.20 ***	0.62	0.64
other fam struc.	0.53 ***	0.42 ***	1.50	1.56
household size	1.24 ***	1.20 ***	0.99	0.99
servant presence	0.84	0.97	0.79	0.82
<i>Social status</i>				
unknown	0.93	0.97	0.78	0.77
unskilled	0.82	0.85	0.63	0.64
craft	1.00 ref	1.00 ref	1.00 ref	1.00 ref
clock	0.82	0.86	1.17	1.12
white collar	0.90	0.88	0.61	0.62
petty bourg.	0.48 *	0.53	1.02	1.00
elite	1.04	1.05	0.47	0.45
<i>Religion</i>				
protestant	1.00 ref	1.00 ref	1.00 ref	1.00 ref
catholic	1.45	1.37	0.70	0.82
other	0.75 *	1.01	0.74	0.66
<i>District</i>				
College	1.06	1.12	1.09	0.97
Parc	1.17	1.06	0.95	0.92
Douane	0.76	0.67 *	1.03	0.97
St-Gervais	1.00 ref	1.00 ref	1.00 ref	1.00 ref
year	1.02 *	1.01	1.00	1.00
Constant	0.00 **	0.00	2.88	0.00
χ^2	379.96 ***	162.44 ***	245.70 ***	100.62 ***
df	21	19	21	19
Nagelkerke R^2	0.29	0.23	0.282	0.184
n	1845	875	1845	875
missing	1385	774	1385	774

We give also some global fit values at the bottom of the Table. The χ^2 is the chi-square that measures the gain over the independence model, i.e. the model with the constant only. It is accompanied by its degrees of freedom df , which is here just the number of coefficients estimated. The Nagelkerke pseudo R^2 provides some measure of the proportion of reduction in the discrepancy. Finally, we give the number n of valid cases and the number of cases excluded because of missing values¹⁰.

¹⁰ On Table 4 cases excluded are numerous since those who disappeared from the city in the next 6 years were dropped.

In each case we have fitted twice the model: once on the whole F2 sample, and once after excluding the young children aged less than 12, to more properly target the process of staying in or leaving parental home.

We start the discussion with those living in the more standard situation, a household with parent(s) and sibling(s), and look at the factors affecting their probability to stay in the same situation six years later. The demographic variables, which describe individual attributes of the population at risk, have a great explanatory power. Women aged 12 and more had 26% chances more than the men to preserve their living arrangements from one census to the next. The age pattern was extremely pronounced since, compared with the individuals aged 18-29 at time t , the 12-17 were three times more exposed to stay and the 30 and more were two times less! 18-29 clearly contains the proper age at leaving home in Geneva families. This is perfectly coherent with the results accumulated in the previous sections.

Even when controlled by all the other factors used in the model, especially age and sex, the matrimonial status was also effective. Never-married tended four times more than ever-married to stay at home. This is again a confirmation, that those staying while their siblings left, had to remain single and to orientate all their aspirations to parental care.

Other rooting variables are ambiguous. As far as religion is concerned, we showed elsewhere (Oris and Perroux, forthcoming) that among Geneva Catholics singles were numerous and unstable while families were few, and consequently their children had some difficulties to find a spouse on a very limited local matrimonial market. That is one of the reasons why the stabilization of Catholicism in the Calvinist Rome, i.e. the formation of a Catholic community took so long, even while the proportion of Catholic individuals rapidly rose within Geneva population. This dynamic appears on Table 4, columns 1 and 2, but the Catholic families were still not numerous enough and the statistical significance is not reached. It will become more clear on other models in Table 5. Staying now on Table 4, we see that each increase of one unit in the household size rises by 20% the probability for a F2 to maintain its sibling status. This is an important effect that, however, is interesting essentially from a methodological point of view since it reveals a trap in the interpretation of longitudinal results. The first interpretation of this result is that larger households were more efficient in keeping children at home. But it is wrong. The true is the opposite: household size was high when children stayed at home. This is a beautiful case of "inverse causation" (see Alter and Oris, 1999).

Negative results can also be of interest. Socio-economic indicators – presence of servant(s) in the household, or social status – have no clear impact. Such absence of clear social differentiation shows an homogeneous family culture that impregnated all the Geneva social groups.

The right part of Table 4 examines factors behind the transition from F2 to F4, i.e. leaving a normative Geneva family status for a more autonomous life, but still in Geneva. Few results are statistically significant. Sex effect is one. Men had 50% more probabilities than women to settle independently in Geneva, which demonstrates their differential chances on the local matrimonial market and within the selection process of who stayed single and at home with the parents.

Age also clearly impacted the process. The 12-17 were more than four times less at risk to access at $t+6$ to a life in Geneva without parent(s) and sibling(s), compared with those aged

18-29. Such effect is even stronger than the ones observed in the models looking at the propensity to stay in the F2 status. It shows that the F2 who left their family household at the end of their adolescence, beginning of adult age, tended to stay out for a life cycle service outside the city, not to settle in Geneva. But there were very few to do that.

At this stage, we are able to come back on the issue of heterogeneity within the young adult population of Geneva. We can ask a simple question: how many F2 moving to F4 changed in the same time matrimonial status from single to married. Answer is explicit: 95.2% of the F2 aged 18-29 at time t married and founded a neo-local household by time $t+6$, and the proportion was 88% among those aged 30 and more. We can conclude that two systems coexisted within the Geneva urban population of young adults:

- one was a classical pattern of life cycle service in the rural hinterland of Geneva¹¹, that provided single migrants from the age of 15 until 30/35;
- and another one concerned the children from the Geneva families, with a nuclear family system with few life cycle service and a tendency to move late but directly from parental home to his/her own neo-local household, a rare pattern that however has already been observed in East Belgium and in some areas of north France (Capron and Oris, 2000; Ségalen, 1987).

2.3. Disappearing from Geneva: the rooted and the others

With a second set of logistic regressions we have studied the probability to leave (either emigrate or de cease) Geneva. The results are shown in Table 5. The first model attempts to explain the odd of the probability by considering the whole sample together and introducing the cohabitation type as a covariable. The outcome clearly confirms that the cases belonging to F2 had the lower probability to leave, less than half of the one observed among the F4. This first model assumes, however, that the effect of the other considered explanatory factors was the same whatever the cohabitation type. The two other models relax this assumption by considering separately the two main groups, F2 and F4 sub-populations.

Concerning the propensity to leave the city among the F2, those who had parent(s) and sibling(s) in their household, demographic variables are important, like in the preceding analyses. Men were clearly more at risk to disappear from Geneva (48% for the 12 and more). Celibacy rose the risk since singles were 64% more exposed than the ever-married. Age, however, played a significant role only below the age of 12, families with young children moving less, indeed.

Several factors decreased the probability to leave Geneva. First, the effect of family structure is uneasy to interpret. Since, as we have seen, most of the F2 belonged to nuclear households, we just contrasted that form with the extended and multiple ones, the latter preserving more their children from out-migration. It could be an illustration of the nuclear hardship hypothesis that affirms a greater protective efficiency of complex households. But it could also be another case of inverse causation.

¹¹ initially Protestant rural areas of Vaud canton, then from the religiously mixed Geneva countryside, and then the contributions from Catholic Savoie exploded.

Table 5. Logistic regression for the probability of leaving (emigration or death) in $t + 6$ for the whole population and respectively for F2 and F4 only

Model	Exponential of coefficients					
	All → Leave		F2 → Leave		F4 → Leave	
	all ages	age > 11	all ages	age > 11	all ages	age > 11
<i>Cohabitation</i>						
F1	0.49 ***	0.49 ***				
F2	0.40 ***	0.41 ***				
F3	0.67 ***	0.67 ***				
F4	1.00 ref	1.00 ref				
<i>Age</i>						
0-5	0.60 ***		0.67 ***		0.89	
6-11	0.46 ***		0.49 ***		0.65	
12-17	0.88 *	0.88	0.86	0.87	1.22	1.22
18-29	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref
> 30	0.83 ***	0.84 ***	1.23	1.26	0.83 ***	0.83 ***
<i>Man</i>						
Single	1.00 ref	1.00 ref	1.54	1.64 *	1.00 ref	1.00 ref
Married	0.50 ***	0.51 ***			0.51 ***	0.52 ***
<i>Family struct.</i>						
Lone	1.57 ***	1.60 ***			1.51 ***	1.53 ***
Nuclear	1.00 ref	1.00 ref			1.00 ref	1.00 ref
non familial	0.94	0.97			1.00	1.05
other familial	0.97	1.01	0.79 **	0.89	0.97	0.97
household size	1.00	1.00	0.98	0.97	1.01	1.01
servant presence	0.98	0.99	0.99	0.96	0.98	0.98
<i>Social status</i>						
Unknown	1.20 **	1.17 **	0.92	0.91	1.21 **	1.20 **
Unskilled	1.11	1.10	0.87	0.91	1.13	1.12
Craft	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref
Clock	0.73 ***	0.73 ***	0.68 **	0.70 *	0.72 ***	0.72 ***
white collar	1.18	1.22	1.34	1.38	1.13	1.14
petty bourg.	0.80 **	0.80 **	0.70	0.74	0.81 **	0.81 **
Elite	0.86	0.87	1.11	1.33	0.86	0.86
<i>Religion</i>						
Protestant	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref
Catholic	1.38 ***	1.35 ***	1.48 ***	1.44 *	1.33 ***	1.33 ***
other	1.21 ***	1.26 ***	1.16	1.32 **	1.28 ***	1.28 ***
<i>District</i>						
College	1.14 **	1.13 **	1.32 ***	1.58 ***	1.09	1.07
Parc	1.03	0.98	1.21 *	1.10	0.95	0.95
Douane	1.01	1.04	1.23 *	1.53 ***	0.95	0.96
St-Gervais	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref	1.00 ref
Year	0.98 ***	0.98 ***	0.98 ***	0.98 ***	0.99 ***	0.99 ***
Constant	0.00 ***	0.00 ***	0.00 ***	0.00 ***	0.00 ***	0.00 ***
χ^2	1075.20 ***	782.19 ***	110.73 ***	58.45 ***	605.23 ***	601.20 ***
Df	26	24	21	19	23	21
Nagelkerke R^2	0.124	0.109	0.049	0.049	0.115	0.116
N	11066	9163	3015	1557	6774	6680
Missing	871	564	215	92	566	418

Second, and more consistently, one social group belonging rose the chances to stay in Geneva. The clockmakers were important in the city. They formed an aristocracy of blue collars, deeply rooted in the city and transmitting their status from generation to generation. On Table 4, we see that their children stayed more at home and settled more in the city than the other social groups, the level of statistical significance being not reached. In Table 5 however, the difference of behaviors of the clockmakers becomes clearer. They were 30% less at risk to out-migrate from Geneva than the other urban blue collars. These results suggest a system of formation in uncles or other relatives or colleagues household, not in the parental one. The highly specialized skills that characterized the clock production system in Geneva (Babel, 1958) obviously required a long apprenticeship that could not be offered elsewhere, since the other centers of production (like in the mountains of Neuchâtel) were far and competed with the Geneva artisans. A confirmation of the clockmakers rooting capacities can be found in urban social geography. The district where the group was concentrated, Saint-Gervais, was clearly the one that depressed the most the risk of emigration within the F2 sibling status.

Clockmakers formed the troops of the radical party and fought against the conservative elites. The latter also were quite efficient in the inter-generational transmission of their social status but do not exhibit similar results on Table 5, since they combined their roots in Geneva with a relative openness. Using the "Protestant international" (Luethy, 1959) they compensated their little number, locally, spreading their children on international apprenticeship, labor, and matrimonial markets, defined by a common religion and kin ties (Perroux 2003, chapter 5).

Thirdly, the year of census also had an effect. From 1816 to 1837, the propensity to emigrate of siblings from Geneva families decreased by 8%. This higher capacity of the city to conserve those young people resulted from an improvement of the economic conditions. Geneva did not know during that period an industrial growth, but the situation was so bad after the Napoleonic wars that it could only better (Schumacher, 2002; Ryczkowska, 2003).

Finally, we find on Table 5 the confirmation that children of Catholic families, since they pained to find a spouse in Geneva, went out 44% more than offspring of Protestant couples. The "other religions" (a few Jews and a few Orthodox) were in the same situation. With just some differences in intensity, the impact of religion on the disappearance of the F4, those living without parent and without sibling, was identical. Members of the F4 status exhibited also similar results as far as the variable "belonging to the clockmakers group" is concerned. And they also benefited from the economic conditions betterment.

The effects of family situation looks more original. While living alone obviously was an indication of very imperfect integration that rose F4 members probability to disappear from Geneva (by 53%), being married doubled the chances to stay. A family had much better capacities to cope with urban life than an isolate individual¹². We knew that from an abundant contemporary and historical literature about the city dark side, the corrupting town that destroyed especially the naïve rural migrant (Moch 1992, 145-147), and we find here just a nuanced evidence.

¹² The stabilization effect of marriage has already been observed in nineteenth Swedish towns by Brändström et al., 2000; in Belgian towns by Van de Putte et al., forthcoming.

Concluding remarks

Siblings study is an emerging issue, suited for both quantitative and qualitative analyses. Apparently our data are the less appropriate to deal with such a topic, since censuses are classically used to describe structures, and such approach seems outdated. We wanted to demonstrate that new typologies can still be elaborated and fruitfully applied to cross-sectional data. Organized by age and sex, results provide information about the life course, about the different roads siblings leaving the family nest could take in an urban environment like Geneva in the first half of the nineteenth century. However, population heterogeneity, i.e. the presence among the Geneva residents of both the children of urban families and the adolescents and young adults who immigrated in the town, restrains our interpretations and constrains to make a step forward a longitudinal analysis of trajectories, using the linkage between individual census notices.

All those analyses revealed first that between aspirations to autonomy and filial duties, siblings were active actors of a scenario resulting essentially from the interactions between a peculiar demographic regime and a classical nuclear family system. A second major result is indeed diversity. Several patterns dominated, like a sib size 2, the association between marriage and the establishment of a neo-local household, the cohabitation of old parents with or a single daughter, or a married son, etc. Though, minorities were important, usually in size, always for their social functions. Third, this diversity of situations was not hazardous because levels interacted. Demographic behaviors and family dynamics produced and were reproduced through cultural and social norms about a "proper" family, a "proper" age at marriage or age at leaving home, etc. It seems this culture was quite equally shared among Geneva families. Also, at an intermediate level, some factors of social differentiation have been identified: young adults Geneva population resulted indeed from two systems of leaving home, the one that recruited within the rural sib groups through a classic pattern of life cycle service, and the system working within the Geneva families, where leaving parental home and sibling(s) tended to be directly associated with access to marriage and the settling of an independent household. And even within this second system, the social groups that were the more rooted in Geneva, clockmakers and elites, exhibited distinct patterns.

Thought those results are encouraging, a lot of work remains to do. From a methodological but also substantial point of view, it is important to take into account that siblings tended to share characteristics while, in our logistic regressions, each is considered as an isolate individual. Statistical solutions exist to integrate such "sibling effect" in longitudinal analysis and have to be explored. In the future we would like to explore more in-depth the selection processes and the possible competitions, as far as staying home, leaving Geneva or accessing marriage on the local matrimonial market, are concerned. Enduring solidarities – reflected in household establishment in the same or an adjacent street that the parents and/or sibling(s) – need also to be considered. Although the nature of our data will always restrain our ambitions, we will progress in our understanding of choices and actions in past populations, if we are able to see at which point sibling lives were "linked lives".

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