

Geographical endogamy and the kin network
Socio-demographic factors and biological consequences of the marriage pattern in a 19th century Italian community

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Introduction

The mate choice has always represented an interesting issue in many research fields for its specific interdisciplinary nature. Anthropologists, geneticians, demographers, scholars of social sciences and evolutionary biologists have often addressed their attention to the mating pattern of populations. The reasons are clear: the choice of the spouse has quantitative and qualitative consequences on future possible changes in the population structure.

Studying the quantitative effects of marriage on population structure means investigating marital fertility in relation with age, provenience, occupation and other characteristics of spouses. On the other hand, the qualitative changes concern specifically the many facets of the mating structure, going from socio-cultural topics, such as social endogamy (Moring, 1996; Segalen, 1991; Campbell and Lee, 2003; Van Leeuwen and Maas, 2002), to more biologic issues connected to changes in the genetic structure of populations, associated, among others, to the level of geographical exogamy (Mascie-Taylor *et al.*, 1987, Madrigal and Ware, 1999, Castro de Guerra *et al.*, 1999, Lasker, 1988, Lasker *et al.*, 1986, Guerresi *et al.*, 2001, Calderon, 1998, Crow and Mange, 1965, Relethford, 1992).¹

¹ Many of the cited papers dealing with genetic issues make use of surname frequencies as tool to evaluate consanguinity, genetic distance and/or similarity among populations, migration, and so on.

This paper has much to do with this second aspect of the research, investigating to which extent the mate choice pattern, with its impact on the micro-evolutionary process of the population, could be affected and driven by the local kin network in a nineteenth-century Italian community of Tuscany.

It is well known that marriage was seldom an individual choice, and often a family shared decision (Kertzer and Saller, 1993, Barbagli, 1988, Derosas, 2002). This was particularly true in the Italian rural society of the 19th century, where cultural and socio-economic specificities put household and family ties at the heart of people everyday life and everyday choices.

When talking of marriage behavior, the role of kin both within and outside the household could be, in fact, pivotal. In fact, larger kin network and longer permanence on a given territory could somehow facilitate the choice of a local spouse. This conduct could be prompted by the need of a family to consolidate its stability and rootedness through family alliances because of the strategic importance of marriage as a way to set up and establish networks of possible mutual support and to increase social weight within the community.

However, where marriages were arranged by the whole family for social and economic purposes, the mating structure was definitely not panmictic but rather assortative. The partner could have to meet so specific criteria as to provoke a narrowing of the local marriage market that in turn could produce either a delay in getting married or a search for spouse outside the parish territory. These possible constraints could then overlap and interact with other factors more specifically inherent the household structure, since access, frequency and pace of marriages among the members of the same household could be strongly influenced by the number and composition of co-residing kin. Furthermore, Derosas (2002) has provided evidences, for the urban context of Venice, of the importance also of the kin network outside the household in affecting the likelihood of getting married. Unfortunately, though widely recognized (Perrenoud, 1998, Levi, 1992), the relevance of kinship beyond the strict

household limits in influencing demographic behaviors has been only seldom investigated for historical populations, basically on account of the scarcity of available sources providing useful information and the necessary insight (Plakans, 1984; Kertzer *et al.*, 1992).

In this paper, thanks to a careful exploitation of parish documentation, it has been possible to reconstruct not only the entire set of marriages involving the dwellers, but also the local kinship network of a Tuscan community during the 19th century, in which sharecroppers and farm laborers represented the two most important agricultural categories. The purpose is to describe firstly the mate choice pattern there existent, focusing on the geographical endogamy in order to assess the level of reproductive isolation (or openness) of the community studied. In the light of the sharp differences in the kinship structure characterizing the two social groups above mentioned (see next section and Manfredini, forthcoming), the paper will try to investigate possible differential effects of kinship on the mate choice within the two social categories. This will in turn makes possible to draw some conclusions about their potential role in the local micro-evolutionary process.

The community studied: Casalguidi, 1820-58

The parish territory of Casalguidi is included in what is today the province of Pistoia, and throughout the period of analysis, 1819-59, it was part of the Grand Duchy of Tuscany.²

In the period studied, the population rose from 1,906 inhabitants in 1819 to 2,697 in 1859, for the most part, around 70%, living on agricultural labors (Breschi *et al.*, 2004). The two main farm categories, farm laborers and sharecroppers,³ were characterized by different well-being and socioeconomic conditions in consequence of the typology of their agricultural contracts,

² Casalguidi is one of the Italian populations studied within the international *EurAsian Project on Population and Family History* (EAP), collaborative research among teams from different countries across the world (Belgium, Italy, Japan, Sweden and USA) whose main goal is to study demographic behaviours of past populations in a comparative perspective. For details, see the first volume on mortality by Bengtsson, Campbell and Lee (2004).

³ I have to precise that the definition of “sharecropper” was not always clear on parish registers. More often, it was used the indication of “farmer”, generic category including also other peasant figures such as tenants. On the contrary, farm laborers were clearly specified as such.

although both groups were landless (Giorgetti, 1974).⁴ Very schematically, farm laborers lived in simple-family units (4.6 people per household on average, 40.8% of individuals living in complex households), resided in small houses in the village center and followed a neolocal family formation system (table 1). The necessity to move constantly in search of farms where it could be possible to find some job makes this social category more mobile than that of sharecroppers, contractually rooted on the land (Manfredini, 2003). Sharecroppers lived in larger and more complex households than farm laborers did (5.9 persons per household, 54.4% of individuals living in complex households), and were characterized by a typical patrilocal living arrangement after marriage and strong family ties (Kertzer and Hogan, 1991; Barbagli, 1988).

Table 1. Some features of the socio-economic categories of Casalguidi, 1820-58.

	Age at first marriage		Celibacy % of never-married people 45-54 years		% people in complex hh	% with kin outside the hh	HH turnover rate (x 1,000)
	M	F	M	F			
Sharecroppers & farmers	28.5	24.6	17.8	10.1	54.4	55.9	44.3
Farm laborers	27.3	24.9	8.3	6.1	40.8	47.5	88.6
Artisans & tradesmen	27.1	25.4	12.1	5.5	39.4	55.6	54.6
Middle-class	30.9	26.7	7.9	20.0	53.4	46.5	29.0
Total	28.2	24.6	14.5	10.0	49.0	53.4	67.6

This latter feature was also the consequence of the fact that the whole household was bound to landowner as a single working unit. Given that the sharecropping contract provided that the farm produce had to be split evenly between the sharecropping family and the landowner, the structure and size of the household became key factors in guaranteeing the welfare level of the sharecropping family and the renewal of the contract. The equilibrium between household

⁴ It is however not possible to exclude that some farm laborers could own very small plots of land.

size and the resources the household could produce could get so weak that bachelorhood and migration, especially female marriage migration, were not infrequent events (Doveri, 2000; Breschi and Manfredini, 2002; Poni, 1982).

Marriage played a pivotal role in determining this scenario. As clearly pointed out by Kertzer and Hogan (1991), sharecropping men followed a strict patrilocal pattern of living arrangement after marriage, specifically on account of the economic interest of sharecropping households in keeping within the family working adult men. High age at first marriage and high level of celibacy for both genders were the other key features characterizing this nuptiality system (Della Pina, 1990, Rettaroli, 1993, Cocchi *et al.*, 1996), and that made it different from the "Mediterranean marriage pattern" described by Laslett as typical of many areas of Southern Europe (1983). On the other hand, farm laborers followed a neolocal system of family formation, which in turn determined less complex households, probably less constraints within the family with regard to marriage and thus younger age at first marriage, at least on the male side (Breschi *et al.*, 1999; Barbagli and Kertzer 1992; Rettaroli, 1990).

At the end, this community offers the opportunity to analyze the mate choice patterns of two agricultural social classes in the light of the differences in their kinship structure, that, according to Reher's definition (1998), it is possible to synthesize as weak and strong family systems. The question is to understand which role these striking contrasts in the form of living arrangement, mobility, rootedness and kin network size might have on the choice of either foreign or local spouses among, respectively, farm laborers and sharecroppers.

Sources used and the methodology adopted

For this study, we reconstructed the life-histories of the inhabitants of Casalguidi by linking two kinds of parish registers. They are the typical ecclesiastical vital registers – baptism, burial and marriage acts – along with *Status Animarum* (Registers of Souls). The first books are well known and they have been the basis of almost every work in Italian historical

demography, while the second ones need further comments. The *Status Animarum* was a sort of annual census the parish priest recorded on pastoral visits to families during Easter. For each household residing in the parish territory, the parson recorded name, surname, age, marital status and relationship to the head of each of the household's members. Information about the property of the house was present as well. Since the complete series of annual *Status Animarum* for the period studied is available, the nominative linkage of information between the two sources (census and vital registers) allowed us to reconstruct the life-histories of individuals and families for the part of their life they spent in Casalguidi (Manfredini, 1996). By assigning a unique code number to each person and his/her parents and spouse(s) we were able to identify the individual kinship network by tracing relationships both horizontally and vertically in the genealogy line. Thanks to the information on co-residential patterns provided by *Status Animarum*, it is now possible to determine the kinship network of each person year after year, specifying the relatives living at Casalguidi both outside and within the household of the index person. According to this methodology, the reconstruction of non-coresidential kinship is inevitably limited to the local network of kin. As for marriages, the parish registers provide information about the wedding date, name and surname of spouses and parents, marital status at the moment of marriage, current spouses' places of residence and domicile, and sometimes, age at marriage. Traditionally, couples got married in the bride's parish so that parish marriage registers did never contain acts of wife-exogamous unions, and Casalguidi makes no exception (Manfredini, 2003). Since there is no trace of marriages between local men and foreign women, it has been necessary to turn to other sources to fill this gap. Thanks to the good continuity over time of the *Stati Animarum* of Casalguidi (only one year missed in the period studied), it has been possible to remedy to this lack of information. This can be easily accomplished by checking all the men who changed their marital status from 'unmarried' (or 'widowed') to 'married' between two

consecutive *Stati Animarum* (Manfredini, 1996). This is a novelty for Italian studies on historical populations, which are always based on the sole parish marriage registers, and thus open to possible biases in measuring endogamy, especially as far as non-isolated populations are concerned (Manfredini, 2003).

The reconstructed longitudinal data have allowed to adopt statistical tool normally used in contemporary population studies, such as Event History analysis - one of the best and most powerful statistical tools in dealing with this kind of data (Trussell and Guinnane 1983). In this case, a discrete-time approach was used due to annual repeated observations.

The partner choice at Casalguidi. Descriptive analysis.

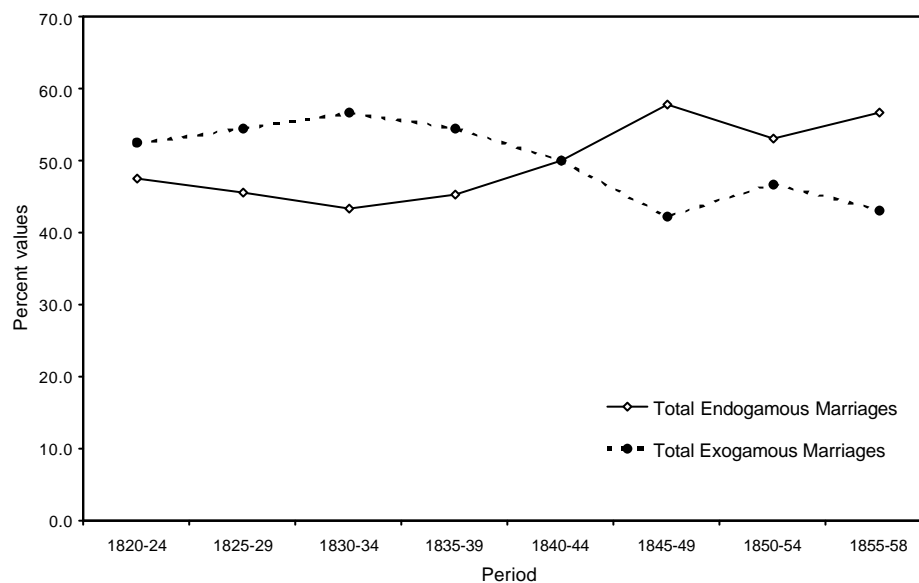
In the period 1820-58, 1028 marriages involving people of Casalguidi took place. Marriages were celebrated mainly in the local parish church, but 235 weddings of them were kept in churches outside the parish territory. The latter were all wife-exogamous unions, that is couples formed by a men from Casalguidi and a woman resident in the village where the ceremony was held. In total, the geographical exogamy rate found in Casalguidi was 49.6%, a figure clearly identifying a non-isolated population.⁵ Further support to the open nature of the studied community is provided by the consanguinity level found among the 1028 marriages. It is well known that high values of consanguinity are peculiar of close and reproductively isolated populations, such as mountain villages (Pettener, 1985) and human groups with a strong cultural identity (Danubio and Pettener, 1997). In Casalguidi estimates of total consanguinity from isonymy, that is spouses carrying the same surname, result in low figures of the inbreeding coefficient ($F_t = 0.005420$), providing evidence of the low level of

⁵ In this paper, endogamy and exogamy measures are always based on the spouses' places of residence at the date of marriage. It is therefore possible that some "foreign spouses" were actually native of Casalguidi.

inbreeding existing at Casalguidi, especially if compared to figures of close communities of the same period, which showed three or four times higher values of F_t .⁶

The temporal evolution of the endo- and exogamy levels in the community is described in figure 1 by using 5-year intervals. To a first period in which exogamous marriages prevailed, namely until 1835-39, it then followed at least one decade characterized by predominance of endogamous unions.

Figure 1. Endogamous and exogamous marriages. Percent values. Casalguidi, 1820-58.



This increase in endogamy is however not associated to a correspondent increase in inbreeding ($F_{t1820-44} = 0.005439$, $F_{t1845-58} = 0.005392$), which was the typical response of close and isolated Italian communities to the rapid population growth of this period in order to avoid dispersal and excessive fractioning of the land (Pettener, 1985; Cavalli-Sforza and Bodmer, 1971). In other words, the population of Casalguidi tended to become less open as its population increased, evidence confirmed by the coefficient of the correlation between endogamy rate and the mean annual population size, $r = 0.620$.

⁶ Actually, total consanguinity is formed by a random (F_r) and a non-random component (F_n). F_n assumes positive values if consanguineous marriages are favored in the studied population, negative ones if they are avoided or forbidden. At the end, all these coefficients resulted very low. For more details on the use of isonymic marriages to estimate inbreeding see Crow and Mange (1965).

The change in the mating structure occurred especially on account of the decrease of husband-exogamous unions, that dropped from 32.3% in the period 1820-44 to 26.2% between 1845 and 1858. However, women remained throughout the period analyzed much more likely to enter exogamous unions than men, with overall figures of, respectively, 29.8% and 19.7%. This evidence is consistent with what Corsini and Salinari (2000) found for early 19th century Florence, pointing out a significant stream of immigrant women from the countryside due to marriage. They explained this finding with the crisis that in this period hit the sharecropping society due to the rapid growth of the rural population. This fact had immediate repercussions over peasant households, especially sharecropping ones, which were forced to re-organize the household structure by allowing some members moving out, especially those whose role in the rural economy was less relevant, namely women. The proximity of Casalguidi to important towns made the rural-to-urban migration particularly easy, to such extent that 43% of husband-exogamous marriages involved grooms resident in the cities of Pistoia, Prato and their suburban districts. As for the other unions, husbands came prevalently from the surrounding rural communities, especially those located South/South-East of Casalguidi. The differential social and economic role of men and women in the peasant society of Casalguidi is confirmed by the different gender pattern of geographical endogamy displayed in table 2. Women present lower figures of endogamy rate in comparison to men in each of the socio-economic categories shown in the table, with the sole exception of farm laborers.

Table 2. Some features of the socio-economic groups of Casalguidi, 1820-58.

	Sharecroppers & farmers	Farm laborers	Artisans & tradesmen	Middle-class	Total
M	77.1	77.5	69.2	71.4	71.8
F	61.7	77.5	58.8	50.0	62.8

Being constantly on the move, having neither land nor properties to pass on to their male heir(s), being landless and not basing their own well-being on household composition, farm

laborers did not differentiate between males and females with regard to marriage unlike the other social groups. Despite this rootless existence, however, the endogamy rates of farm laborers are quite unexpectedly the highest for both genders, but especially among women. Before moving on, it is however important to make some further remarks about the figures of endo- and exogamy levels above reported. It is, in fact, important to stress that these values are not easily comparable to other figures for Italian historical community, especially those not reproductively isolated, whose calculations were based on the sole parish marriage lists. The fact is that the bias introduced by the practice of virilocal residence after marriage on the assessment of geographical exogamy from marriage registers has been often disregarded. In fact, wife-exogamous marriages celebrated elsewhere actually settled down in Casalguidi, thereby contributing to its micro-evolutionary process. On the other hand, husband-exogamous unions, present in the marriage registers of the local church and normally included in the calculations, established usually their residence in the groom's parish soon after marriage and never played a role in the population evolution of Casalguidi. Thus, when taking into account the sole fraction of marriages settled down in Casalguidi, the exogamy rate falls to 37.6% (table 3), clearly indicating the high propensity of local women married to foreign men to leave on marriage and settling down elsewhere. These simple evidences clearly prove that resident couples had a more conservative marriage behavior, and that the local evolutionary process was more dependent than what could be expected on endogamous marriages between local resident persons.

Table 3. Endogamy and exogamy rates. Total and resident marriages, Casalguidi, 1820-58.

	Endogamous	Exogamous	N
Total	50.3	49.7	1028
Resident marriages only	62.4	37.6	723

Table 4 shows to which extent the virilocal living arrangement after marriage was respected. Endogamous and wife-exogamous unions did normally settle down in Casalguidi, with proportions ranging from 87.1% for the former and 96.6% for the latter. These very high percentages are steady across the 5-year periods, going up to figures of 100% in 1820-24 and 1835-44 for marriages between local men and foreign women. Conversely, husband-exogamous unions were much less likely to remain in Casalguidi (24.8%), indication of the higher propensity of local women to leave on marriage.

Table 4. Resident marriages by type and period. Percent values. Casalguidi, 1820-58.

	Endogamous	Wife-exog.	Husband-exog.	Total
1820-24	80.9	100.0	20.9	67.1
1825-29	83.6	96.3	30.4	67.9
1830-34	82.1	94.7	40.6	70.0
1835-39	95.6	100.0	17.6	69.7
1840-44	87.1	100.0	24.4	71.4
1845-49	91.5	96.3	24.2	76.8
1850-54	92.8	96.0	29.2	73.7
1855-58	81.7	87.5	6.7	64.8
Total	87.1	96.6	24.8	70.4

As a consequence, this specific differential gender pattern causes a net migration of married local women from Casalguidi, a constant stream of grooms leaving their families (fed also by some endogamic unions emigrating on marriage). Moreover, looking at table 5 we observe that the socio-demographic behavior above described was not a matter of activity or tie with the land. Sharecroppers, farm laborers and the other non-agricultural occupations show, in fact, the same pattern. Exogamous marriages involving local men were more likely to stay in Casalguidi than those involving local women were. Nonetheless, the pattern exhibited by females presents much more variability across professions ($\chi^2 = 4.263$, $p = 0.234$) than that showed by men ($\chi^2 = 13.488$, $p = 0.004$), although women living in farm laborers' households present the highest percentage of marriages establishing their residence in Casalguidi, 79.8%.

Once more, we are faced with the same paradoxical issue: the poorest, most mobile and less-rooted part of the population, farm laborers, not only was the most endogamic one, but also the most likely to stay in Casalguidi after marriage, at least as far as women are concerned.

Table 5. Resident marriages by gender & household head's occupation. Casalguidi, 1820-58.

	Marriages involving local males			Marriages involving local females		
	Resident	Total	%	Resident	Total	%
Sharecroppers & farmers	374	423	88.4	340	532	63.9
Farm laborers	127	138	92.0	71	89	79.8
Artisans & tradesmen	89	94	94.7	94	165	57.0
Middle-class	13	14	92.9	9	20	45.0
Unknown	44	52	84.6	13	19	68.4
Total	647	721	89.7	527	825	63.9

Limiting the comparison to sharecroppers, one of the possible reasons why people of this social group, and especially women, were more likely to enter exogamic unions, and consequently leaving Casalguidi on marriage, lies in their pattern of mate choice by social status. Sharecroppers and farmers in general showed in fact higher figures of social homogamy with respect to agricultural laborers, respectively, 67.53% and 18.5% among males, 79.7% and 37.1% among females.

Forming new relations and alliances with other peasants and sharecroppers because of marriage could act as a mechanism facilitating the circulation of individuals among households of the same social status, especially in those hard times when the household size required to be cut down. This behavior made possible to avoid emigration and downward social mobility, but a more pronounced rigidity of the local marriage market was the negative feedback consequence, making necessary to turn more frequently to spouses outside the parish.

Nicolini (1991) has advanced another supposition. He found the same unexpected differential pattern in another area of Tuscany, Casentino, and suggested that the higher exogamy among sharecroppers could stem from their practice of applying to “marriage mediators” to search for a spouse, thereby indirectly enlarging the marriage market. This behavior could be again linked to the higher social homogamic tendency of sharecroppers, and therefore with the necessity to use marriage as a mean to establish familial alliances.

The importance of kin in choosing the partner. A multivariate approach.

When discussing of the role of kinship, family structure and SES on the partner choice, the best way to investigate such relationship is to analyze the process in a dynamic perspective. Descriptive analyses provide only partial snapshots of dynamic processes, such as the household cycle structure, and are not useful to arrange and interpret events in the context of individual and family life-histories. Furthermore, the complexity of the explicative framework at the base of the mate choice pattern makes descriptive statistics unfit to take exhaustively account of the multidisciplinary nature of such an issue. For all these reasons, Event History Analysis has been adopted as one of the best statistical technique to deal with longitudinal data such as those employed in this research. Because of the discrete-time nature of the data available, a logistic regression has been used.

I estimated various competing-risk models for endogamous and exogamous marriages, and for males and females separately. The same set of models has been then repeated for sharecroppers and farm laborers independently.

The variables included in the models have been addressed to capture many of the possible factors potentially affecting the risk of marrying. Many of the covariates concern obviously the household composition where the ego lived, with a particular focus on the presence of ever-married and unmarried brothers and sisters. The underlying hypothesis is that more complex the household, lower the risk of marriage as consequence of the strict hierarchy by

age and marital status ruling the access to marriage. This could be obviously the case of sharecroppers and tenants, whose household size and structure had to be calibrated on the landholding size and required that married men remained within the native households. For this reason, the household composition effect is expected to be less pronounced for women than for men. Due to the same differential living arrangement after marriage, farm laborers, which adopted a neolocal family formation system, are expected to be less affected in the risk of marrying by the co-residential pattern of kin.

Another important co-residential factor is the presence of parents. This covariate aims at capturing possible effects of substitution in case one or both the parents were dead or absent since a long time. The purpose is therefore to test to which extent siblings could be encouraged to get married in order to bring into the family a person able to takeover the duties earlier carried out by the absent parent.

A covariate accounting for the number of related households outside the ego's household has been included in the models. In my opinion, this kind of variable provides a more precise picture of the real extension of connections and relations within the parish territory than the simple number of relatives would do.⁷ The rationale is that larger local kin network, often indication of longer permanence on the territory, might help in finding local spouses, also in order to widen and reinforce the local network of family alliances.

Profession and the grain price are the covariates used to describe the socio-economic status at the household and community level. The inclusion of grain price originates from the necessity to take into account the economic nature of marriage due to the burden that this event put upon families and individuals. While men inherited land and properties or were in any case necessary to guarantee or find agricultural contracts, women were provided with a dowry on marriage as a substitute for inheritance. The payment of a dowry to the groom's family was a

⁷ Each household where at least one relatives of ego lived was considered "related". Both close and distant relatives were taken into account, and in particular parents, spouses, children, siblings, grandparents, grandchildren, cousins of whatever order, aunts, uncles, nephews and nieces.

common custom among Italian populations, and in hard times, it could represent a sum parents were unable to guarantee to their daughters. The mean annual grain price aims just at capturing years of meager harvest, when prices went up and farmers might be in some economic troubles. The price has been considered at both year t and $t-1$.

The last two variables concern the migratory experience of individuals, on the one hand, and an indicator of local the marriage market, on the other hand. The former singles out the most mobile part of the population of Casalguidi, trying to understand whether this peculiarity produces some effect on the risk of marriage, especially exogamous ones, in relation to larger networks of connections. The marriage market index has been constructed as the ratio between unmarried men aged 25-35 years and unmarried women 22-28 years old.⁸ The underlying hypothesis is that higher the ratio, lower was the number of eligible spouses with respect to unmarried men, with consequent increase in the likelihood to turn to the foreign marriage market.

Confronting the results relative to endogamous marriages with those of exogamous ones (tables 6-7), it is clear the differential role played by kinship and household composition on the risk of marriage among, respectively, males and females. In particular, it resulted stronger and remarkable among the former, whilst it was weaker and less important among the latter. Analysis of the results will start from men. Particularly evident is the significant depressive effect of the presence of co-resident brothers of whatever age and marital status on both the competing risks of marriage.⁹ Considering that sharecroppers and tenants represent around 65% of total individual observations of males in both models, and that the results in table 6 mirror closely those of table 8 relative to sharecroppers and farmers only, it was not a surprise to find household composition variables to be so responsive in a context of strong

⁸ The age-brackets chosen to construct this indicator of the local marriage market represent the values including the central 50% of the distributions of the observed ages at marriage by gender.

⁹ This pattern was characterized by statistical significance of all the household male compositional factors for endogamous marriages, whilst only a part of them was significant for exogamous marriages, although the coefficients definitely confirm what emerged in the endogamous model.

predominance of a patrilocal pattern of living arrangement after marriage. It is therefore likely that the strong competition for marriage among brothers was due to the possible alteration of the delicate equilibrium between producers and consumers that the acquisition of a new household member on marriage might bring on. This interpretation finds further support in the models relative to farm laborers. Since they left usually the native family on marriage, the effect on the risk of marriage associated to co-residence of brothers is more limited, and restricted to a sort of hierarchy based on age (table 10). The presence of older unmarried brothers reduces by 66% the risk of marriage in the endogamous model, whilst no effect at all has been detected for exogamous marriages.

Returning to general models, the picture is complicated by the presence of other household members. Co-residence with older unmarried sisters decreases the risk of marriage of men by over 50% (table 6). This can be likely explained with the urgency of families to relieve the household economy by freeing it from non-productive members, in particular unmarried women. This behavior was so common and widespread in the rural society of Casalguidi as to find the same depressive effect on the risk of marriage in almost every model here estimated, for men and women, for endogamous and exogamous marriages, for sharecroppers and farm laborers.

As far as only the father is co-resident with the ego, the risk of marriage of sons increases by 40-70%, showing statistical significance in the model relative to the endogamous marriages of sharecroppers (table 8). In this case, the necessity of someone in the household able to takeover the duties of the missing mother could justify the increase in the risk of marriage. Since this argumentation implies a patrilocal residence after marriage, it was not unexpected to find a null effect of the same covariate among women and farm laborers.

On the other hand, the risk associated to the presence of the sole mother presents variations that are trickier to explain. Although non-significant in the models relative to both total

population and farm laborers (table 6-7 and 10-11), among sharecroppers it passes however from a positive and significant effect on the risk of endogamous marriage to a negative one in the exogamous model (tables 8-9). Why the absence of the father could prompt household male members to marry more likely a local girl rather than a foreign one is actually not clear at all.

As for the influence of household structure on the risk of marriage of unmarried women, the almost universal departure from the household on marriage made less central the presence/absence of other co-resident kin. What remains is only a gender-oriented hierarchy rigidly regulating the access to marriage by age and social status, whose main evidence is the almost generalized decrease of the risk of marriage when older unmarried sisters are present in the house. However, once again it is among sharecroppers that household compositional factors seem to be a little bit more responsive, to such a point that one could perceive a sort of family strategy behind marriages of daughters. First of all, women co-residing with younger unmarried sisters show a 69% higher risk of marrying foreign men than those not living with them (table 9). One possible hypothesis is that in presence of more co-resident unmarried daughters, the household head could encourage one of them, in this case the older one, to marry a foreign man, whilst the other remained in the village on marriage. This could be again of great help in creating a strategic network also outside the parish of residence. Conversely, what seems helpful in reinforcing local rather than far-off family alliances is the existence of a large local network of related households. In this context, higher the number of related households in Casalguidi, higher was the likelihood to marry a local man (table 8).

Conversely but not surprisingly, this association is absent in the exogamous model (table 9). Not only a large kinship network outside the household increased local connections, relations and friendships, but it could also encourage endogamous marriage in order to reinforce and make more solid the position of the family in the local reality.

As expected on the basis of descriptive results, the household head's occupation has been found to affect significantly the risk of marriage. Although unmarried men belonging to all the socio-economic categories included in the models were less likely to enter endogamous marriages than farm laborers, only the richest and well-off males show a significant coefficient. As far as exogamous unions are concerned, the pattern is reversed, with artisans showing significant higher risks of marriage compared to farm laborers. These patterns are similar among females.

Finally, some few words about the marriage market index. Men were more responsive than women were to variations in the index, with lower risk of marriage as the index increased. Yet, it was surprising to see such an outcome in both models, regardless the type of marriage. Actually, a rise in the index was expected to be associated with decrease in the unions with local women, whilst the opposite was likely for wife-exogamous marriages. One possible interpretation is that the indicator constructed to measure the marriage market reflects actually the consequences of a nuptiality regime rather than being an explanatory factor for specific marriage behaviors. The excess of unmarried men could be intended as the result of a Malthusian preventive check determined by either increased celibacy or delayed marriage, possible responses to population growth and scarcity of resources. This behavior was typical of the sharecropping Tuscan society during hard times, in which the household head remained unmarried, unlike other household members. The rationale was always the same: on the one hand, preserving a fixed balance between producers and consumers by precluding new arrivals into the household, on the other hand putting at the head of the family a person not directly involved in one of the biological couples co-residing within the household.

Some conclusive remarks

When a population like Casalguidi shows almost 50% of exogamous marriages there is no doubt in defining it as an open community with a large exchange of spouses with neighboring

populations. In micro-evolutionary terms, marriage migration would stand as a major force in determining gene flow and genetic variability. Yet, entering much more in detail in the analysis of the geographical selection of spouses has allowed pointing out a little bit different situation. Actually, only 37% of total marriages were of exogamous nature among those settled down in Casalguidi, that is the sole significant component for the local evolutionary process. Furthermore, this fraction of unions is gender-oriented, for the most part constituted by wife-exogamous marriages. At the end, we are left with an exogamy rate lower than expected and with a gene flow determined only by in-coming just-married women.

If one considers, then, that for ten exogamous couples establishing its residence in the parish territory, about 15 immigrated already married, on average, it is clear that the role of the mate choice in the process of gene flow at the local level has been overestimated and should be therefore reconsidered.

More surprisingly, it resulted that the most mobile and less rooted sector of the population of Casalguidi, namely farm laborers, was also the one to show the highest endogamy rates, especially on the woman side, and the one that was more likely to establish the residence in the parish territory after marriage. The first preliminary results would seem supporting the hypothesis of a less rigidity in the partner choice due to the lowest proportions of social homogamy on marriage, which led farm laborers to be less in need to turn to the non-local marriage market.

Despite the already mentioned profound differences in the household and kinship structure between farm laborers and the other peasants, sharecroppers in particular, the models provided only little support to a direct influence of kinship in determining such a differential geographical pattern of mate choice. It has been possible to prove only a limited degree of family strategy among sharecroppers with regard to female marriages. The simultaneous presence of more unmarried women within the same household might allow the head to

manage different marriage types with regard to the geographical provenience of grooms in order to broaden family alliances and connections both within and outside the parish territory. Thus, the household composition and the pattern of co-residence had only a very partial role in conditioning geographical mate choice, and therefore the gene flow at Casalguidi. This contrasts strikingly with its pivotal role in influencing migration and mobility of individuals to and from Casalguidi, as shown in a previous work (Manfredini, 2003).

It is evident, at this point, that what was key in determining the influence of household composition on the likelihood of marriage was the patrilocal pattern of living arrangement after marriage rather than the geographical mate choice. This was the case specifically of men living in sharecropping and other peasant households living directly on the farm, which had their access to marriage strongly regulated by the household structure and composition. For the rest of the rural population, namely unmarried women in sharecropping households and family members of farm laborers, the neolocal family formation system contributed to relax the constraints imposed by the co-residential pattern. This differential behavior was obviously one of the main reasons for the differential age at first marriage between the two social groups, which resulted higher among sharecroppers than among farm laborers, but quite similar among unmarried women.

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Table 6. Endogamous first marriages, 18-44 years. Casalguidi, 1820-58.

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1815.0	0.999	0.830	1816.1	1.007	0.249
<i>Older brothers Ever- Married (ref. Absent)</i>	81.1	1.000		83.7	1.000	
Present	18.9	0.740	0.049	16.3	1.026	0.859
<i>Older brothers unmarried (ref. Absent)</i>	71.8	1.000		73.0	1.000	
Present	28.2	0.483	0.000	27.0	0.801	0.082
<i>Younger brothers ever-married (ref. Absent)</i>	96.4	1.000		97.5	1.000	
Present	3.6	0.472	0.049	2.5	0.770	0.464
<i>Younger brothers unmarried (ref. Absent)</i>	52.6	1.000		55.6	1.000	
Present	47.4	0.712	0.013	44.4	0.921	0.501
<i>Older sisters Ever- Married (ref. Absent)</i>	99.7	1.000		98.6	1.000	
Present	0.3	1.126	0.874	1.4	1.364	0.412
<i>Older sisters unmarried (ref. Absent)</i>	81.5	1.000		82.1	1.000	
Present	18.5	0.485	0.000	17.9	0.675	0.011
<i>Younger sisters ever-married (ref. Absent)</i>	99.9	1.000				
Present	0.1	1.206	0.857			
<i>Younger sisters unmarried (ref. Absent)</i>	55.1	1.000		59.0	1.000	
Present	44.9	0.958	0.760	41.0	1.039	0.748
<i>Parents (ref. Both present)</i>	44.3	1.000		45.6	1.000	
Only father	12.2	1.648	0.003	11.3	1.110	0.548
Only mother	16.9	1.395	0.054	18.0	1.010	0.950
No parents	26.6	0.860	0.455	25.1	0.905	0.552
<i># of related households</i>	1.4	1.027	0.354	1.2	1.037	0.193
<i>Household Head's occupation (Day labourers)</i>	17.5	1.000		20.5	1.000	
Sharecroppers & farmers	64.1	0.770	0.071	55.6	0.988	0.930
Artisans & other non agricultural activities	12.5	0.785	0.229	15.1	1.104	0.567
Bourgeois & Nobles	2.3	0.279	0.033	3.9	0.427	0.039
Unknown	3.6	0.104	0.002	5.1	0.437	0.022
<i>Migration experience (ref. Non migrant)</i>	38.3	1.000		34.9	1.000	
Migrant	61.7	1.285	0.108	65.1	0.945	0.710
<i>Marriage market (Mu^{25-34}/Fu^{22-28}) at year $t-1$</i>	1.1	0.720	0.052	1.1	0.929	0.670
<i>Logged Price of wheat at year t</i>	3.1	0.596	0.258	3.1	1.301	0.525
<i>Logged Price of wheat at year $t-1$</i>	3.1	0.948	0.901	3.1	0.584	0.181
-2 Log likelihood	2,829.4			3,037.6		
Person-years	9,106			7,059		

Table 7. Exogamous first marriages, 18-44 years. Casalguidi, 1820-58

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1815.0	0.968	0.000	1816.1	0.996	0.649
<i>Older brothers Ever- Married (ref. Absent)</i>	80.9	1.000		83.8	1.000	
Present	19.1	0.425	0.004	16.2	1.649	0.005
<i>Older brothers unmarried (ref. Absent)</i>	71.2	1.000		72.5	1.000	
Present	28.8	0.695	0.102	27.5	0.970	0.854
<i>Younger brothers ever-married (ref. Absent)</i>	96.2	1.000		97.4	1.000	
Present	3.8	0.095	0.022	2.6	1.201	0.669
<i>Younger brothers unmarried (ref. Absent)</i>	51.8	1.000		54.9	1.000	
Present	48.2	0.742	0.154	45.1	1.184	0.323
<i>Older sisters Ever- Married (ref. Absent)</i>				98.7	1.000	
Present				1.3	0.750	0.693
<i>Older sisters unmarried (ref. Absent)</i>	80.9	1.000		81.5	1.000	
Present	19.1	0.636	0.103	18.5	0.521	0.004
<i>Younger sisters ever-married (ref. Absent)</i>				81.5	1.000	
Present				18.5	1.710	0.604
<i>Younger sisters unmarried (ref. Absent)</i>	54.5	1.000		58.5	1.000	
Present	45.5	0.863	0.497	41.5	1.560	0.009
<i>Parents (ref. Both present)</i>	44.9	1.000		46.5	1.000	
Only father	12.3	1.391	0.182	11.3	0.995	0.981
Only mother	17.1	0.825	0.466	18.0	1.081	0.680
No parents	25.6	0.624	0.126	24.3	0.891	0.665
<i># of related households</i>	1.4	1.028	0.568	1.2	0.957	0.320
<i>Household Head's occupation (Day labourers)</i>	17.7	1.000		20.7	1.000	
Sharecroppers & farmers	65.6	1.076	0.737	57.2	1.402	0.084
Artisans & other non agricultural activities	13.0	1.856	0.019	15.5	1.311	0.258
Bourgeois & Nobles	2.3	0.583	0.470	4.0	1.052	0.907
Unknown	1.3	1.380	0.430	2.6	0.517	0.221
<i>Migration experience (ref. Non migrant)</i>	42.6	1.000		39.1	1.000	
Migrant	57.4	1.039	0.859	60.9	0.853	0.398
<i>Marriage market (Mu^{25-34}/Fu^{22-28})</i>	1.2	0.649	0.038	1.2	0.918	0.705
<i>Logged Price of wheat at year t</i>		0.892	0.868		0.592	0.396
<i>Logged Price of wheat at year t-1</i>	3.1	1.552	0.500	3.1	0.804	0.709
-2 Log likelihood		1,557.1			1,927.7	
Person-years		8,844			6,906	

Table 8. Endogamous first marriages, 18-44 years. Casalguidi, 1820-58. Sharecroppers.

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1816.6	1.003	0.710	1818.1	1.014	0.131
<i>Older brothers Ever- Married (ref. Absent)</i>	78.8	1.000		81.0	1.000	
Present	21.2	0.810	0.274	19.0	1.001	0.994
<i>Older brothers unmarried (ref. Absent)</i>	68.2	1.000		66.4	1.000	
Present	31.8	0.481	0.000	33.6	0.763	0.085
<i>Younger brothers ever-married (ref. Absent)</i>	96.0	1.000		96.8	1.000	
Present	4.0	0.422	0.069	3.2	0.571	0.250
<i>Younger brothers unmarried (ref. Absent)</i>	50.0	1.000		47.9	1.000	
Present	50.0	0.585	0.001	52.1	0.948	0.728
<i>Older sisters Ever- Married (ref. Absent)</i>	99.8	1.000		98.4	1.000	
Present	0.2	1.302	0.803	1.6	0.982	0.972
<i>Older sisters unmarried (ref. Absent)</i>	80.4	1.000		80.3	1.000	
Present	19.6	0.495	0.003	19.6	0.616	0.019
<i>Younger sisters ever-married (ref. Absent)</i>						
Present						
<i>Younger sisters unmarried (ref. Absent)</i>	52.4	1.000		54.5	1.000	
Present	47.6	1.024	0.896	45.5	0.845	0.266
<i>Parents (ref. Both present)</i>	46.4	1.000		52.1	1.000	
Only father	13.6	1.754	0.007	12.5	0.984	0.946
Only mother	14.5	1.583	0.037	15.8	1.151	0.469
No parents	25.5	0.862	0.556	19.6	0.902	0.646
<i># of related households</i>	1.5	1.006	0.865	1.5	1.086	0.013
<i>Migration experience (ref. Non migrant)</i>	34.0	1.000		30.8	1.000	
Migrant	66.0	1.199	0.366	69.2	0.831	0.365
<i>Marriage market (Mu^{25-34}/Fu^{22-28})</i>	1.2	0.704	0.208	1.2	1.340	0.340
<i>Logged Price of wheat at year t</i>	3.1	1.107	0.806	3.1	1.183	0.766
<i>Logged Price of wheat at year t-1</i>	3.1	0.879	0.810	3.1	0.784	0.644
-2 Log likelihood		1,763.0			1,723.3	
Person-years		5,836			3,925	

Table 9. Exogamous first marriages, 18-44 years. Casalguidi, 1820-58. Sharecroppers.

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1816.6	0.971	0.010	1818.1	0.998	0.838
<i>Older brothers Ever- Married (ref. Absent)</i>	78.8	1.000		8.8	1.000	
Present	21.2	0.200	0.001	19.2	1.867	0.002
<i>Older brothers unmarried (ref. Absent)</i>	68.2	1.000		66.1	1.000	
Present	31.8	0.690	0.201	33.9	0.967	0.861
<i>Younger brothers ever-married (ref. Absent)</i>				96.7	1.000	
Present				3.3	1.042	0.943
<i>Younger brothers unmarried (ref. Absent)</i>	50.0	1.000		47.5	1.000	
Present	50.0	1.042	0.897	52.5	1.350	0.174
<i>Older sisters Ever- Married (ref. Absent)</i>				98.4	1.000	
Present				1.6	1.201	0.805
<i>Older sisters unmarried (ref. Absent)</i>	80.4	1.000		80.3	1.000	
Present	19.6	0.267	0.007	19.7	0.437	0.005
<i>Younger sisters ever-married (ref. Absent)</i>						
Present						
<i>Younger sisters unmarried (ref. Absent)</i>	52.4	1.000		53.9	1.000	
Present	47.6	0.739	0.325	46.1	1.687	0.017
<i>Parents (ref. Both present)</i>	46.4	1.000		52.3	1.000	
Only father	13.6	1.482	0.231	12.5	0.951	0.856
Only mother	14.5	1.083	0.829	15.7	1.098	0.703
No parents	25.5	0.672	0.427	19.5	1.111	0.749
<i># of related households</i>	1.5	0.974	0.668	1.4	0.993	0.884
<i>Migration experience (ref. Non migrant)</i>	34.0	1.000		30.9	1.000	
Migrant	66.0	1.014	0.960	69.1	0.869	0.551
<i>Marriage market (Mu^{25-34}/Fu^{22-28})</i>	1.2	1.057	0.883	1.2	1.059	0.885
<i>Logged Price of wheat at year t</i>	3.1	0.455	0.403	3.1	1.571	0.542
<i>Logged Price of wheat at year t-1</i>	3.1	5.684	0.051	3.1	0.651	0.563
-2 Log likelihood		845.2			1,178.9	
Person-years		5,469			3,836	

Table 10. Endogamous first marriages, 18-44 years. Casalguidi, 1820-58. Farm laborers.

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1818.5	0.998	0.892	1819.3	1.004	0.793
<i>Older brothers Ever- Married (ref. Absent)</i>	84.5	1.000		85.9	1.000	
Present	15.5	0.829	0.647	14.1	1.120	0.732
<i>Older brothers unmarried (ref. Absent)</i>	77.3	1.000		80.3	1.000	
Present	22.7	0.340	0.009	19.7	0.875	0.665
<i>Younger brothers ever-married (ref. Absent)</i>	98.7	1.000		98.9	1.000	
Present	1.3	0.722	0.702	1.1	1.179	0.825
<i>Younger brothers unmarried (ref. Absent)</i>	57.3	1.000		61.8	1.000	
Present	42.7	1.077	0.826	38.2	0.862	0.554
<i>Older sisters Ever- Married (ref. Absent)</i>	99.7	1.000		99.3	1.000	
Present	0.3	3.896	0.203	0.7	4.888	0.024
<i>Older sisters unmarried (ref. Absent)</i>	84.2	1.000		82.5	1.000	
Present	15.8	0.364	0.041	17.5	1.150	0.628
<i>Younger sisters ever-married (ref. Absent)</i>	99.9	1.000				
Present	0.1	2.764	0.350			
<i>Younger sisters unmarried (ref. Absent)</i>	60.0	1.000		61.8	1.000	
Present	40.0	1.196	0.580	38.2	1.306	0.332
<i>Parents (ref. Both present)</i>	45.2	1.000		49.0	1.000	
Only father	10.7	1.139	0.741	13.2	0.955	0.892
Only mother	13.8	1.971	0.072	12.2	0.854	0.694
No parents	30.3	1.131	0.796	25.6	0.629	0.268
<i># of related households</i>	0.9	0.938	0.479	0.9	0.983	0.792
<i>Migration experience (ref. Non migrant)</i>	40.7	1.000		45.6	1.000	
Migrant	59.3	1.715	0.097	54.4	1.177	0.701
<i>Marriage market (Mu^{25-34}/Fu^{22-28})</i>	1.1	1.109	0.711	1.2	1.066	0.851
<i>Logged Price of wheat at year t</i>	3.0	0.102	0.014	3.1	0.871	0.871
<i>Logged Price of wheat at year t-1</i>	3.0	2.264	0.381	3.1	0.435	0.325
-2 Log likelihood		596.5			632.7	
Person-years		1,593			1,439	

Table 11. Exogamous first marriages, 18-44 years. Casalguidi, 1820-58. Farm laborers.

Covariates	M			F		
	Means	Odds	p-val	Means	Odds	p-val
<i>Year of birth</i>	1818.5	0.943	0.017	1819.3	1.038	0.159
<i>Older brothers Ever- Married (ref. Absent)</i>	84.5	1.000		85.9	1.000	
Present	15.5	0.389	0.230	14.1	1.992	0.126
<i>Older brothers unmarried (ref. Absent)</i>	77.3	1.000		80.3	1.000	
Present	22.7	0.751	0.590	19.7	1.519	0.349
<i>Younger brothers ever-married (ref. Absent)</i>	98.7	1.000		98.9	1.000	
Present	1.3	0.528	0.601	1.1	1.288	0.840
<i>Younger brothers unmarried (ref. Absent)</i>	57.3	1.000		61.8	1.000	
Present	42.7	0.415	0.100	38.2	1.220	0.666
<i>Older sisters Ever- Married (ref. Absent)</i>	99.7			99.3		
Present	0.3			0.7		
<i>Older sisters unmarried (ref. Absent)</i>	84.2	1.000		82.5	1.000	
Present	15.8	1.539	0.432	17.5	0.203	0.027
<i>Younger sisters ever-married (ref. Absent)</i>	99.9					
Present	0.1					
<i>Younger sisters unmarried (ref. Absent)</i>	60.0	1.000		61.8	1.000	
Present	40.0	0.772	0.667	38.2	1.222	0.615
<i>Parents (ref. Both present)</i>	45.2	1.000		49.0	1.000	
Only father	10.7	1.789	0.334	13.2	0.872	0.798
Only mother	13.8	0.794	0.757	12.2	0.169	0.101
No parents	30.3	0.580	0.416	25.6	1.051	0.944
<i># of related households</i>	0.9	1.071	0.689	0.9	0.928	0.546
<i>Migration experience (ref. Non migrant)</i>	40.7	1.000		45.6	1.000	
Migrant	59.3	2.344	0.084	54.4	0.396	0.184
<i>Marriage market (Mu^{25-34}/Fu^{22-28})</i>	1.1	0.423	0.018	1.2	0.616	0.251
<i>Logged Price of wheat at year t</i>	3.0	1.166	0.926	3.1	0.448	0.575
<i>Logged Price of wheat at year t-1</i>	3.0	0.290	0.409	3.1	0.859	0.903
-2 Log likelihood		295.7			321.2	
Person-years		1,537			1,381	