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Wrigley, E. A.

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THE FALL IN MARITAL FERTILITY IN NINETEENTH CENTURY FRANCE

E.A. Wrigley(*)

Abstract: In the over-all sequence of the population transition, France stands out as a special case with a considerably lower growth rate than its European neighbors. This paper explores the pattern of the fall in French marital fertility on the national level. Moreover, it also seeks to explain the causes of the change from controlling fertility by marriage to curbing it within marriage.

The study of the onset of family limitation in Europe owes a great deal to the Princeton fertility project which has collected, analysed and published a huge mass of data in a standard form during the last two decades. In a recent article two of the most distinguished participants in this project, Knodel and van de Walle, have attempted to distil the essence from the plethora of empirical historical data which it has produced in order to discuss their policy implications for countries in which fertility has started to fall recently. They present their conclusions firmly while agreeing that the evidence does not preclude other interpretations, suggesting *inter alia* that "increase in the practice of family limitation and the decline of marital fertility were essentially irreversible processes once under way."⁽¹⁾ This conclusion is closely related to their view that ignorance of an effective method of limiting family size was a main reason for the absence of an earlier fall in marital fertility. They take, in other words, a strongly "innovation" rather than an "adjustment" view of the fertility transition, and argue that developments in the Third World today are following a similar pattern.

One of the two authors of the article, van de Walle, has done more than any other living scholar to describe and explain the fertility history of France in the nineteenth century, and it is therefore interesting that he and Knodel do not regard France as out of conformity with their view of the nature of the European fertility decline. They note that the timing of the start of the fertility decline in France sets it apart from the rest of Europe and that it occurred when France "could hardly be considered very advanced ... in terms of any standard definition of development", but show no inclination to treat it as an exception to their generalised picture.⁽²⁾

In this essay I shall present an alternative interpretation of French population history during the nineteenth century. Instead of treating the period from the earliest decline about 1800 to the ultimate 'bottoming out' in fertility about 1930 as one variant of the normal European pattern differing from other countries only in being unusually long drawn out, I shall argue that it is better regarded as falling into two halves sufficiently dissimilar to be treated as distinct, the earlier having much in common with the "traditional" European systems of population control, the later indistinguishable in character from the changes taking place in most of the rest of Europe.

(*) Address all communications to: E.A. Wrigley, London School of Economics, Houghton Street, Aldwyck, GB-London WC2A 2AZ. This is an abbreviated version of a longer paper published in the first two issues of the *Journal of European Population Studies* (1985).

France and her neighbors

As a background to the consideration of French population history in greater detail, it is convenient to compare French population history with that of other European countries in order to drive home the remarkable extent and the immense general importance of the contrasts between France and her neighbors. Table 1 shows the population totals of France, England, Sweden and Germany 1700, 1800 and 1900. Even in the eighteenth century the rate of growth in France was somewhat lower than in the other three countries, though the differences were not large. But during the nineteenth century the contrast became much more strongly marked for in France the rate of growth rose only fractionally to 38 percent, whereas in the other three countries there was a marked acceleration in growth rates to 252, 119 and 172 percent respectively. In all three countries, moreover, unlike France, there was net emigration.

Table 1: Population totals in France, England, Sweden and Germany (millions)

	1700	1800	1900	1700 - 1800	1800 - 1900
France	21.50	29.10	40.17	35	38
England	5.06	8.66	30.52	71	252
Sweden	1.37	2.35	5.14	72	119
Germany	c. 14.50	c. 20.70	56.37	43	172

Sources: France 1700 and 1800; J. Dupâquier, *La population française aux XVIIIe et XVIIIe siècles* (Paris, 1979), pp. 34, 81. France 1900; B.R. Mitchell, *European historical statistics*, 2nd rev. ed. (Cambridge, 1981), tables B1, B3.

England 1700 and 1800; E.A. Wrigley and R.S. Schofield, *The population history of England 1541-1871. A reconstruction* (Cambridge, 1981), table 7.8, pp. 208-9. England 1900; B.R. Mitchell and P. Deane, *Abstract of British historical statistics* (Cambridge, 1962), pp. 6, 22.

Sweden; E. Hofsten and H. Lundström, *Swedish population history. Main trends from 1750 to 1970*, Urval no. 8 (Stockholm, 1976), table 1.1, p. 13.

Germany 1700; C. McEvedy and R. Jones, *Atlas of World population history* (London, 1978), pp. 67-72. Germany 1800 and 1900, Mitchell, *European historical statistics*, table B 1.

The extent of the divergence of French population history from that of other countries can also be pictured in other ways. From the 1740s onwards the annual totals of births occurring in France are known with only a small margin of error. Surprisingly enough, the French total scarcely varied between the 1740s and the 1870s, declining slowly thereafter. Such growth of population as occurred in France in the later eighteenth and nineteenth centuries, therefore, was due to declining mortality. The base of the popu-

lation pyramid did not vary in breadth but, with falling death rates, it supported a greater weight of numbers above it.

The history of French mortality trends has received much less attention than that of fertility, but might repay greater study since it was also quite distinctive. The trends for France, England and Sweden are set out in table 2,

Table 2: Expectation of life at birth in France, England and Sweden (sexes combined)

	France	England	Sweden
1740-9	24.7	35.3	
1750-9	27.9	37.3	36.0
1760-9	27.7	35.0	35.0
1770-9	28.9	38.2	33.3
1780-9	27.8	35.9	35.2
1790-9	31.3	36.8	37.9
1800-9	34.1	38.7	35.8
1810-9	36.7	37.9	37.0
1820-9	38.8	39.9	40.8
1830-9	39.9	40.2	41.0
1840-9	41.3	39.6	43.8
1850-9	38.9	40.4	42.4
1860-9	41.0	40.3	44.6
1870-9	43.1	42.8	46.9
1880-9	43.3	45.2	50.0
1890-9	46.1	46.4	52.3
1900-9	48.2	50.1	55.7
1910-9	51.5	53.1	57.0
1920-9	54.8	58.8	62.0

Sources: France 1740-9 to 1820-9; Y. Blayo, 'La mortalité en France de 1740 à 1829', *Population*, 30, numéro spécial, *Démographie historique* (Nov. 1975), tables 15 and 16, p. 141. France 1830-9 to 1910-9; J. Bourgeois-Pichat, 'The general development of the population of France since the eighteenth century' in D.V. Glass and D.E.C. Eversley (eds.), *Population in history* (London, 1965), table 2, pp. 504-5.

England 1740-9 to 1860-9; Wrigley and Schofield, *Population history of England*, table A3.1, p. 529. England 1870-9 to 1910-9; R.A.M. Case, C. Coghill, J.L. Harley and J.T. Pearson. *The Chester Beatty Research Institute Serial Abridged Life Tables. England and Wales 1841-1960, Part 1* (London, 1962), pp. 45-56 and 69-80.

Sweden 1750-9 to 1830-9; Hofsten and Lundström, *Swedish population history*, figure 3.8, p. 54. Sweden 1840-9 to 1910-9; *Historisk statistik för Sverige, Del 1. Bevolkning 1720-1967* (Stockholm, 1969), table 42, p. 118.

showing that expectation of life in France did not differ greatly from that in England from about 1820 onwards but before then there were marked differ-

ences for in the middle of the eighteenth century when e_0 in France was by far the lower of the two. It may indeed be thought ironic that the improvement in mortality in England in the later eighteenth century, which has often been cited as the chief reason for the rising rate of population increase, should prove to have been relatively slight, whereas in France the extent of the improvement was much greater even though the population growth rate remained so modest.

The explanation of the absence of any acceleration in the French population growth rate with the fall in mortality lies, of course, in a matching fall in fertility. In table 3 the changing levels of the gross reproduction rates

Table 3: Gross reproduction rates in France, England and Sweden

	France	England	Sweden
1740-9	2.53	2.27	
1750-9	2.56	2.32	2.33
1760-9	2.48	2.39	2.26
1770-9	2.38	2.53	2.15
1780-9	2.28	2.62	2.02
1790-9	2.19	2.76	2.16
1800-9	2.00	2.93	2.04
1810-9	1.94	3.06	2.14
1820-9	1.91	2.86	2.31
1830-9	1.84	2.53	2.22
1840-9	1.77	2.35	2.14
1850-9	1.70	2.34	2.15
1860-9	1.71	2.39	2.15
1870-9	1.65	2.31	2.19
1880-9	1.56	2.16	2.10
1890-9	1.43	1.88	1.99
1900-9	1.32	1.60	1.87
1910-9	1.20	1.41	1.52
1920-9	1.15	1.14	1.14

Sources: France 1740-9 to 1760-9; L. Henry and Y. Blayo, 'La population de la France de 1740 à 1860', *Population*, 30, numéro spécial, *Démographie historique* (Nov. 1975), table 22, p. 109. France 1770-9 to 1920-9; Bourgeois-Pichat, 'The population of France', table 3, p. 506.

England 1740-9 to 1860-9; Wrigley and Schofield, *Population history of England*, table A3.1, p. 529; England 1870-9 to 1920-9; D.V. Glass, 'Changes to fertility in England and Wales, 1851 to 1931', in L. Hogben (ed.), *Political arithmetic* (London, 1938), table 2, p. 168.

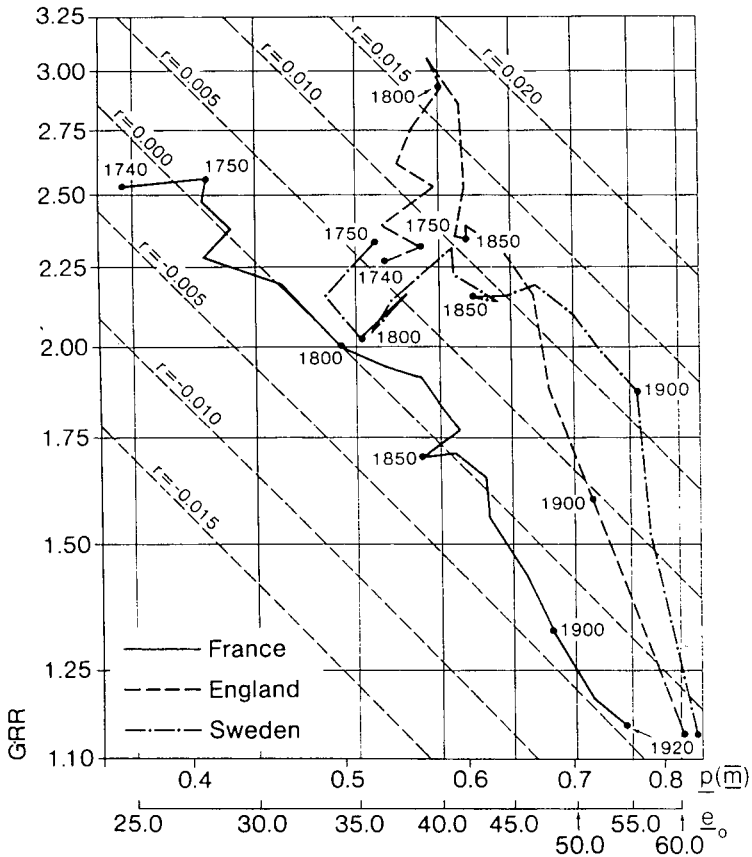
Sweden, *Historisk statistik*, table 34, p. 105.

are set out for the same three countries whose mortality history is described in table 2. The GRR fell uninterruptedly in France from the mid-eighteenth century onwards except for a hesitation about 1860. In England,

on the other hand, the GRR rose strikingly between the 1740s and the 1810s, fell away substantially to the 1840s, stagnated for a generation and then sagged rapidly thereafter. By the 1920s fertility in all three countries had converged to a common level below that necessary for replacement.

The combined effects of the prevailing levels of fertility and mortality serve to determine population growth rates. Every combination of levels of fertility and mortality, if sustained sufficiently long to ensure that a stable age structure supervenes, will result in a particular intrinsic growth rate, r . Figure 1 sets out the vicissitudes of r in France, England and Sweden. It possesses by construction the property that all combinations of fertility and mortality which give rise to a particular level of r will lie on a diagonal line running at 45° between the two axes of the graph, and also that the ratio of the vertical to the horizontal distance between any two points expresses the relative importance of the change in fertility to the change in mortality in altering the intrinsic growth rate.

Figure 1: The intrinsic growth rate in France, England and Sweden



Note: For sources used and other details of the data shown, see the notes to tables 2 and 3. For a full description of the method of presenting the data and its limitations, see Wrigley and Schofield, *Population history of England*, pp. 236-248.

It is easy to appreciate when the data are displayed in this fashion that the intrinsic growth rate in France was never far from zero between 1740 and 1880, and that changes in fertility and mortality contributed in equal measure to the changes in r , causing the set of points relating to France to be strung out along the diagonal representing the zero intrinsic growth rate. Figure 1 underlines the distinctiveness of French population history especially until the closing decades of the nineteenth century.

The behavior of a measure of general fertility such as the GRR is not necessarily a good guide to changes in marital fertility. Changes in the timing and prevalence of marriage may have a powerful influence on general fertility even though marital fertility changes little or not at all. For societies in which marriage is early and virtually universal for women this point has little relevance since marriage may be largely determined by a biological event, the onset of menarche; but the marriage system of early modern western Europe was highly flexible. Age at marriage and proportions never marrying varied substantially both between populations and in the same population over time.(3)

The fall in general fertility in France after 1750 is not in doubt. Reconstitution studies have shown that marital fertility had also begun to fall from the last decade of the eighteenth century or even earlier in many parishes. In some cases the fall was under way before the nineteenth century began.(4) From 1831 onwards van de Walle's work has provided both national and departmental estimates of marital fertility.(5) His national series starts too late to capture the beginnings of the fall but it documents its subsequent behavior and shows that thereafter the fall in marital fertility dominates fertility trends and was so substantial as to drive general fertility downwards in spite of the rise in nuptiality taking place at the same time. Since van de Walle's study formed a part of the Princeton European fertility project, he expressed his findings in the demographic measures devised by Coale to ensure comparability between the data relating to different countries. In table 4 the Princeton measure of marital fertility, I_g is used to show the extent of the difference between France and other West European countries in the course of the nineteenth century. In the late eighteenth century I_g was about 0.75, or 75 percent of that observed among the Hutterites (an I_g equal to 1.00 represents the Hutterite level: this standard was chosen for the Princeton fertility measures as representing the maximum known for any population). It was distinctly higher than that found in England before the transition (about 0.67).

The level of marital fertility before the onset of family limitation, therefore, did not set France apart from other west European countries, but, whereas elsewhere marital fertility showed no tendency to fall until about 1880, in France it fell very sharply in the early decades of the nineteenth century. By 1840 it had already fallen to two-thirds of its level before 1800 and by 1900 was only about half as high as it had been a century earlier. The very much slower rate of population growth occurring in France is principally due to the differences in marital fertility history.

Table 4: Marital fertility in France, England, Sweden and Germany

France		England and Wales		Sweden		Germany	
1740-69	0.775	1851	0.675	1801-10	0.688	1866-8	0.761
1770-89	0.742	1861	0.670	1811-20	0.705	1869-73	0.760
1790-1819	0.658	1871	0.686	1821-30	0.721	1874-77	0.791
1831	0.537	1881	0.674	1831-40	0.695	1878-82	0.735
1836	0.518	1891	0.621	1841-50	0.708	1883-7	0.726
1841	0.515	1901	0.553	1851-60	0.733	1888-92	0.706
1846	0.498	1911	0.467	1861-70	0.726	1898-1902	0.664
1851	0.478	1921	0.375	1871-80	0.751	1908-12	0.542
1856	0.478	1931	0.292	1881-90	0.716	1923-7	0.334
1861	0.478			1891-1900	0.695	1931-5	0.264
1866	0.481			1901-10	0.649		
1871	0.494			1911-20	0.535		
1876	0.471			1921-30	0.406		
1881	0.460			1931-40	0.306		
1886	0.435						
1891	0.410						
1896	0.396						
1901	0.383						
1911	0.315						
1921	0.321						
1931	0.273						

Sources: France 1740-1819; L. Henry, 'La fécondité des mariages dans le quart sud-ouest de la France, de 1720 à 1829 (suite)', *Annales, E.S.C.*, 27 (1972), table 1, p. 979; L. Henry and J. Houdaille, 'Fécondité des mariages dans le quart-nord-ouest de la France de 1670 à 1829', *Population* 28 (1973), table 9 bis, p. 889; J. Houdaille, 'La fécondité des mariages de 1670 à 1829 dans le quart nord-est de la France', *Annales de démographie historique* 1976, table 9, p. 353; L. Henry, 'Fécondité des mariages dans le quart sud-est de la France de 1670 à 1829', *Population*, 33 (1978), table 8, p. 866.

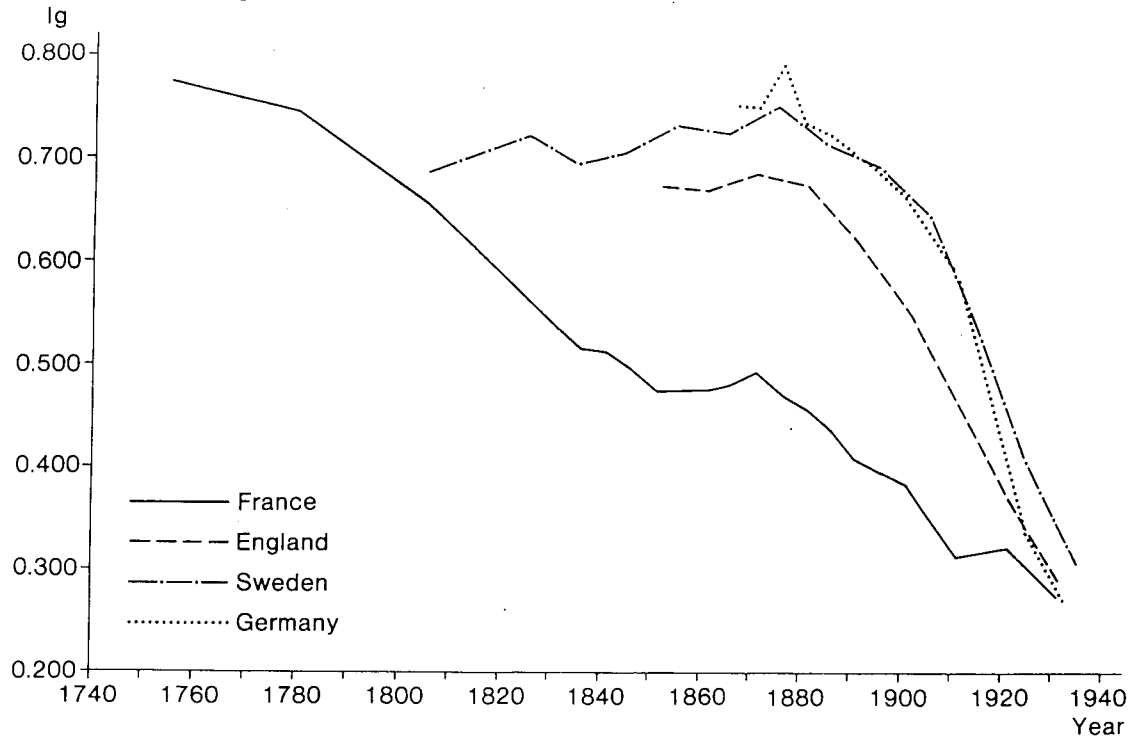
France 1831 to 1901; E. van de Walle, *The female population of France in the nineteenth century* (Princeton, 1974), table 5.5, p. 127. France 1911 to 1931: data supplied by A.J. Coale to whom I should like to record my grateful acknowledgment.

Sweden: Hofsten and Lundström, *Swedish population history*, table 2.3, p. 30.

Germany; J.E. Knodel, *The decline of fertility in Germany, 1871-1939* (Princeton 1974), appendix table 2.1, p. 272.

Figure 2, however, shows why it is difficult to treat France as conforming to the normal model of the fertility transition described by Knodel and van de Walle. The lack of conformity lies in the interruption to a smooth decline in marital fertility which takes place in the middle decades of the century. The fall in marital fertility decelerates sharply after 1830 and is even replaced by a slight rise between 1850 and 1870. After 1870 the fall was resumed and continued until the 1930s, though by then the precipitous fall in fertility elsewhere in western Europe meant that France was no longer significantly different from her neighbors. The view that France

Figure 2: Marital fertility in France, England, Sweden and Germany



Note. For the sources and other details of the data used, see the notes to table 4.

differed from other countries only in starting earlier and taking longer to pass through the fertility transition is therefore difficult to sustain. The problem does not lie in the length of time taken but in the cessation of fall in I_T at a point when experience elsewhere suggests that it should have been falling most rapidly.

France appears to be an exception to the rule suggested by Knodel and van de Walle that "increases in the practice of family limitation and the decline in marital fertility were largely coincident and, once under way, were largely irreversible and gained momentum."(6) In France after a long period of steady and rapid fall, and at just the period when experience in other countries suggests that the fall should have been at its most pronounced, it slowed down sharply, and there was even a recovery lasting for about a generation before the fall was resumed after 1870. This is the phenomenon which van de Walle christened the "ski-jump" effect.(7) Was it simply an aberration, or is it to be regarded as symptomatic of a situation which should cause France before 1870 to be regarded not as an early entrant into a process later to be found throughout Europe, but rather as experiencing a development *sui generis*?

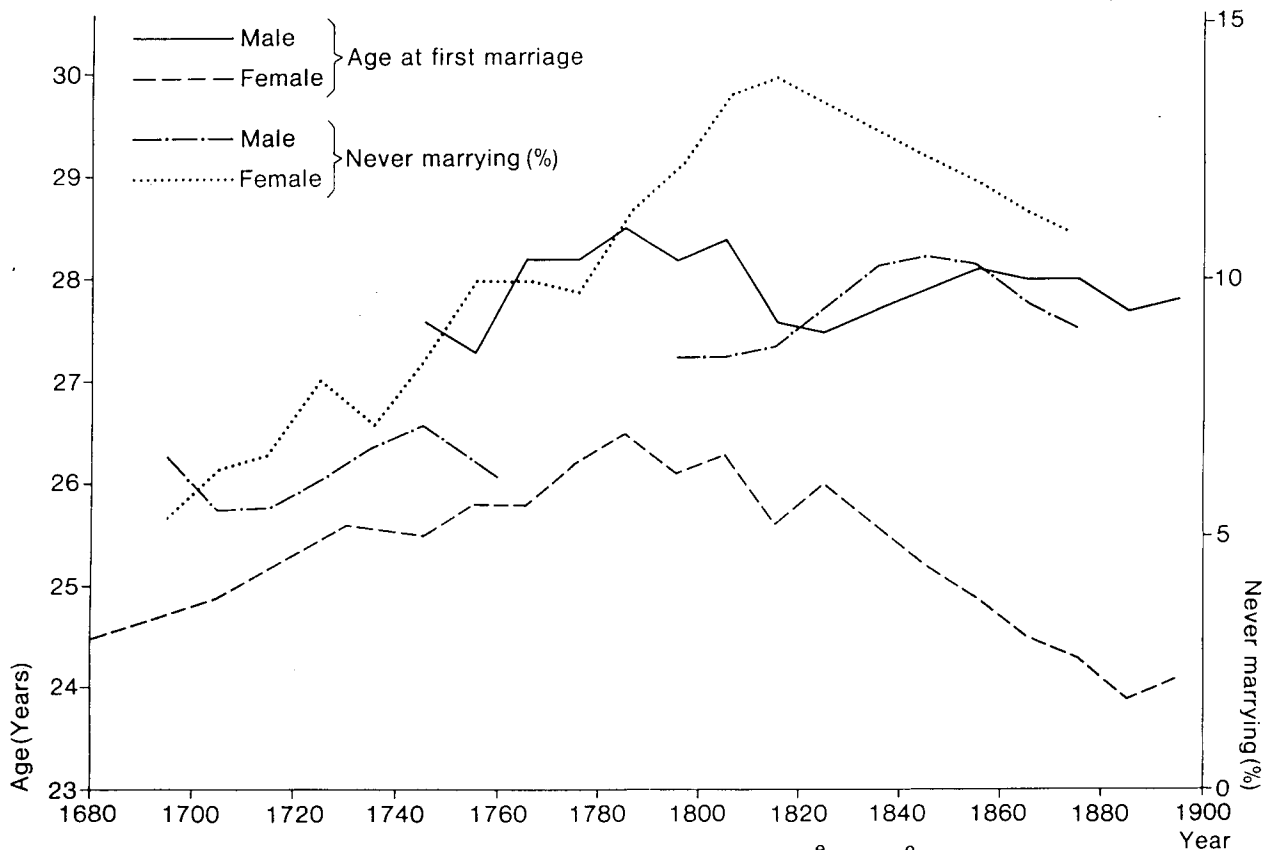
The pattern in France as a whole

The classic regulatory mechanism among west European populations of the early modern period was marriage.(8) Substantial differences in nuptiality existed and whether such differences are found in studies relating to several communities at the same period, or in studies of the same place over a long period of time, the relative levels of nuptiality found often lend themselves to a homeostatic interpretation of the function of marriage in the general demography of the communities under study.(9) Where mortality was unusually high or marital fertility unusually low, nuptiality tended to be high, and vice-versa, resulting in intrinsic growth rates close to zero (or at a level in close adjustment to local economic circumstances). In view of this it is intriguing to note that nuptiality declined substantially in France during the eighteenth century as may be seen in figure 3.

Both age at first marriage and the proportion never marrying rose throughout the eighteenth century. The effect of the changes in female nuptiality on fertility was substantial. If we assume constant age-specific marital fertility at the level obtaining in France among the marriage cohort of 1740-69, a woman marrying at the mean age of first marriage prevailing about 1680, 24.5 years, would have borne 6.48 children by age 50 assuming the marriage was not prematurely ended by the death of one of the spouses. The rise in marriage age that had occurred by about 1780, to 26.5 years, would have cut this total to 5.63 children. This is already a significant fall but it was compounded by a rise in the proportion of women never marrying. Allowing for the fact that 5 percent of all women never married in the earlier period but as many as about 13 percent by the later date, the two figures fall to 6.15 and 4.89 children respectively.(10) Nuptiality changes in the eighteenth century therefore had the effect of reducing fertility by 20 per cent, *ceteris paribus*.

The reduction in fertility brought about by nuptiality changes in eighteenth-century France was substantial and would have sufficed to offset a considerable improvement in mortality without provoking an increase in the population growth rate. For example, assuming that female expectation of life at birth had been 24 years in the late seventeenth century, it would have offset an improvement of about 6 years in expectation of life.

Figure 3: Nuptiality in France



Sources: L. Henry and J. Houdaille, "Celibat et age au mariage aux XVIII^e et XIX^e siècles en France. I. Celibat définitif", in: *Population*, 33 (1978), tables 5 and 6, p. 50 and tables 11 and 12, p. 57; and idem, "Celibat et age au mariage aux XVIII^e et XIX^e siècles en France. II. Age au premier mariage", in: *Population*, 34 (1979), table 9, p. 413.

In the later eighteenth century, however, there were both some indications of "strain" associated with the new nuptiality patterns and other developments in train which suggested the need for additional restraints on fertility if a rapid acceleration in the rate of population growth were not to occur.

As nuptiality declined the illegitimacy ratio rose and the proportion of brides who were pregnant increased. The changes were comparatively slight until the middle of the eighteenth century but then accelerated sharply. It is notable also that the proportion of older brides who were pregnant was higher than among younger brides in France whereas the reverse was true of England (table 6). The trends in illegitimacy and prenuptial pregnancy in

Table 5: Prenuptial pregnancy in France and England (children born/baptised within 0-7 elapsed months after marriage: rate per 1,000)

	France			England			
	Age at marriage		All	Age at marriage		All	
	Under 25	25 and over		Under 25	25 and over		
1690-1719	44	74	62	1650-1699	82	114	95
1720-1739	52	75	64	1700-1749	212	148	178
1740-1769	70	78	72	1750-1799	303	250	283
1770-1789	93	123	107	1800-1849	342	244	314
1790-1819	116	136	124				

Sources: France; Henry, 'La fécondité ... dans le quart sud-ouest', p. 998. Henry and Houdaille, 'Fécondité ... dans le quart nord-ouest', p. 918. Houdaille, 'La fécondité ... dans le quart nord-est', p. 385. Henry, 'Fécondité ... dans le quart sud-est', p. 881.

England; Cambridge Group reconstitutions.

France suggest that a rising marriage age and more widespread celibacy made extra-marital liaisons increasingly hard to resist, and the rise in prenuptial pregnancy with age of bride suggests women in their later twenties felt the tension more acutely than younger women.⁽¹¹⁾ It is especially significant in this connection that van de Walle and Lesthaeghe found that women appeared to enter marriage more freely following the inception of the control of fertility within marriage. They were handicapped in their analysis by their inability to calculate the standard Princeton measures for any period earlier than 1831, by which date the fall in fertility had been under way for a generation or more in many departments, but they concluded: "As early as 1831, the control of fertility made possible the abandonment of the restrictive nuptiality of the ancien regime."⁽¹²⁾ A rise in nuptiality following close on the heels of the beginning of fertility control within marriage suggests an unsatisfied demand for higher nuptiality which found expression in rising illegitimacy and prenuptial pregnancy before the control of fertility in marriage, but thereafter in earlier and more universal marriage for women.

Because of the countervailing movements in illegitimacy and prenuptial

pregnancy the institution of marriage in eighteenth century France was less well attuned than its equivalent in seventeenth-century England to securing a substantial lowering in overall fertility. But if marriage may have been a less effective means of influencing growth rates in France than in England, it is also true that France faced an exceptionally severe test towards the end of the eighteenth century in the form of an improvement in mortality on a scale probably without parallel in earlier French history or in the contemporary experience of other European states. Between the 1780s and the 1820s, as we have seen, expectation of life rose from 28 to 39 years, an enormous improvement. This was a very large absolute gain, but it is more to the point to note that it was a huge proportional rise. As may be seen in figure 1, the effect of any given absolute gain in expectation of life at birth on the intrinsic growth rate decreases as expectation of life itself rises: it is proportional rather than absolute gain which determines the magnitude of its impact. The proportional gain in e_0 between the 1780s and 1820s was as great as the subsequent gain over the next hundred years (about 40 percent). The change taking place in France over the 40 years from the 1780s to the 1820s would have raised the intrinsic growth rate by fully 1.0 percent per annum if fertility had not altered.

Although a change in mortality on this scale would have had a momentous impact on growth rates with unchanged fertility, it is not immediately obvious why it should have constituted a "problem". Had the fertility level in the 1820s remained at its 1780s height the intrinsic growth rate in France would still have been well below the English level and about equal to that found in Sweden (figure 1). Possible answers to this question are at present little more than speculation. Two may warrant further consideration. First, it may prove important to distinguish between changes in the growth rate brought about by changes within the socio-economic circumstances of society and those engendered by exogenous forces. An example of the former might be a rise or fall in the intrinsic growth rate brought about by nuptiality changes which might themselves be regarded as reflecting economic changes.(13) They are evidence of the ability of demographic characteristics to keep in step with economic change rather than a reason for further demographic change. But an exogenously-determined change, such as that brought about by a change in the type of infectious diseases prevalent in a community, or in their virulence, is another matter. In this case an offsetting change in some other element in the community's demography may be needed to preserve an unchanging relationship between a population and its economic environment.

A second consideration which may also have a point in relation to the effect on nuptiality and fertility of the improvement in mortality in France lies in the possible differences between a peasant economy and one in which most workers are wage-paid. In the former the number of "niches" may be either static or capable only of very slow expansion, whereas in the latter there may be greater flexibility. Conceivably, therefore, a sharp fall in mortality in a peasant country like France may engender pressures to reduce fertility commensurately which may have no parallel in a country like England in the early decades of the industrial revolution.(14)

The question of whether the early adoption of family limitation in France took place in areas experiencing exceptionally large or unusually early falls in mortality would repay further investigation. At a slightly later period the data published by van de Walle are consonant with such a pattern but his series begin too late to be more than suggestive in this regard.

It will be clear from the foregoing that I envisage the growing adoption of

family limitation in France about 1800 as a variant form of the classic prudential system of maintaining an equilibrium between population and resources to which Malthus drew attention. Marriage was the lynchpin of the Malthusian preventive check system. The level of fertility was altered through marriage rather than within marriage. Where successful this system made it possible to avoid population growth on a scale that would bring the positive check into operation with mortality rising as misery deepened. That nuptiality could operate very effectively in this role seems evident from the example of England, but the same object could, of course, be realized by controlling fertility directly and within marriage. This alternative was already practised by small populations, both elite and peasant, before the end of the eighteenth century but was first widely visible in France.(15)

The data already presented in figure 1 show that the net reproduction rate in France from the late eighteenth to the late nineteenth century was always close to 1.00. The NRRs for the period 1740-1800 are set out in table 6. They vary only between a minimum of 0.95 and maximum of 1.08, averaging 1.04, equivalent to an intrinsic growth rate of only just over 1 per 1,000 per annum.

Table 6: French net reproduction rates

	NRR		NRR
1740-1749	0.97	1810-1819	1.06
1750-1759	1.07	1820-1829	1.08
1760-1769	1.06	1830-1839	1.07
1770-1779	1.03	1840-1849	1.06
1780-1789	0.95	1850-1859	1.02
1790-1799	1.03	1860-1869	1.04
1800-1809	1.04	1870-1879	1.03

Sources: Gross reproduction rates from table 3. Female life tables; see source notes to table 2.

The tendency of changes in French nuptiality, fertility and mortality to interact in such a way as to keep the NRR very close to unity (and hence the intrinsic growth rate close to zero) is of especial interest given the history of mortality in France as the nineteenth century developed. After the exceptionally rapid improvement in mortality which took place between the 1780s and the 1820s, further progress for the next 60 years was much more gradual (table 2). Expectation of life at birth advanced by an average of 2.75 years per decade between the 1780s and the 1820s but by only 0.75 years per decade between the 1820s and the 1880s, and since the NRR is affected by proportional rather than absolute changes, the contrast between the two periods is even more striking so far as the impact of mortality change on growth rates is concerned. The net reproduction rate is the product of the GRR and the proportion of women reaching the mean age at maternity, $p(m)$. Assuming a mean age at maternity of 31 years and using the female life tables listed in the source notes to table 2, $p(m)$ rose by 36 percent between the 1780s and the 1820s but by only a further 13 percent in the next 60 years.

To preserve a net reproduction rate of 1.00, therefore, the fall in marital fertility needed to decelerate in the middle decades of the nineteenth century since the improvement in mortality had slowed down, *ceteris paribus*.

But nuptiality, the third factor affecting measures such as the NRR or the intrinsic growth rate, was rising during this period. This necessarily increased the scope for further falls in marital fertility to preserve an unchanging NRR. The nuptiality changes shown in figure 3 would have increased fertility by about 13 percent between the 1820s and the 1870s, but even when this effect is added to that deriving from the improvement in mortality, it still implies that an unchanging NRR close to unity could be maintained only by a slackening in the rate of fall in marital fertility.⁽¹⁶⁾ An alteration of this kind is very clear in figure 2. I_e fell by about 25 percent between the 1780s and 1831, but only by a further 15 percent in the following half century, and for part of this period was rising slightly.

The behavior of marital fertility down to the 1870s, therefore, is consistent with the view that it was a part of a system of the social regulation of overall fertility, differing only from the "classic" European pattern in that it operated not only through the timing and incidence of marriage but also through the level of fertility within marriage. As long as the improvement in mortality was comparatively slow and hesitant it was broadly matched by nuptiality changes. This seems to have held true until the 1780s. Thereafter for about 40 years there was a precipitate fall in mortality. Nuptiality fell still further in the early part of this second period, but with the increasingly widespread adoption of fertility control within marriage, the fall in nuptiality flattened out and was reversed. After 1820 mortality rates fell much less swiftly for the next half century. In this third period nuptiality continued to rise moderately, and marital fertility moved downwards fast enough to offset the mortality and nuptiality changes, but less quickly than in the second period. Indeed for part of the third period marital fertility was rising. Throughout all three periods, from the early eighteenth century to 1870, the intrinsic growth was always close to zero.

Social regulation and individual control

In describing and commenting upon the change from control of fertility by marriage in the pre-1780 period to the control of fertility within marriage thereafter, I have drawn attention to the remarkable absence of change in the intrinsic growth rate in spite of the striking changes in mortality, marital fertility and nuptiality which occurred in France, but have largely ignored all but the demographic mechanics of the change. The notion of population homeostasis by the social regulation of marriage is a comparatively well-explored topic.⁽¹⁷⁾ But is it plausible to suppose that the notion is also applicable to a situation in which a similar result arises through fertility control within marriage? When individual couples begin to assume responsibility for the number of their offspring, what might lead them to act in such a way as to produce a similar result to that arising "automatically" from, say, the link between the stock of marriages and the total of suitable economic niches?

It is clearly premature to attempt to answer such questions fully. Their nature and relevance is only just becoming clear with the accumulation of evidence about the regularity and precision with which French regional population under widely varying demographic regimes succeeded in maintaining intrinsic growth rates so close to zero over long periods of time apparently irrespective of the extent and speed of their adoption of fertility control within marriage. Yet some discussion seems in order, if only to clarify the nature of the issues involved.

First, it would not be perverse to argue that the prime question is how rather than whether. The timing of the onset of fertility control within marriage and the pace of its subsequent spread varied so greatly in different parts of France, and yet the intrinsic growth rate varied so little before the last decades of the nineteenth century, that it is difficult to resist the view that changes in nuptiality and marital fertility must have been sensitive, so to speak, to each other's trends, and jointly sensitive to mortality change.(18) It is stretching credulity very far to suppose that individual control of fertility within marriage was not capable of acting homeostatically in the same way as nuptiality appears to have done.

The difficulty in accepting this supposition lies in identifying an element in the decision-making of married couples which might produce the same result as that which may flow from the constraints on entering into marriage in the first place. Either demographic feedback mechanisms, such as that linking a marriage in the current generation of young people to the death of a niche-holder in the previous generation, or similar relationships involving economic variables also, as where the timing and extent of marriage is conditioned by real wage trends, might serve to produce homeostasis where marriage is the key.(19) But if marriage itself ceases to play this regulatory role, why should the decisions of individual couples in "spacing" or "stopping" the haphazard flow of children give rise to a similar result? Control of fertility by marriage may perhaps betray "unconscious rationality", but why should control of fertility within marriage do the same?(20)

Clearly the effect will be visible only in a large number of couples rather than in each separate case. Family size variance declines with family limitation but it does not disappear. Methods of contraception were not infallible, and infant and child mortality levels remained sufficiently high to make "targets" for individual couples hard to hit, or even to define. Equally, conscious and effective planning of family size was not unknown well before its widespread appearance in nineteenth-century France. The Genevan bourgeoisie make an especially clear-cut example of this point. When rising marriage age, sharply increasing female celibacy, and high rates of emigration among young men during the seventeenth century failed to resolve the tensions produced by over-rapid population growth within this select group, they rapidly adopted methods of birth control which resulted in small families and an end of child-bearing at a low average age.(21) Suggestive statistical evidence of family limitation has come to light in a number of other studies of small communities(22), and there is no lack of anthropological evidence of the apparently universal interest in marital fertility and of a wish to control it (both in an upwards and downwards direction), sometimes coupled with the employment of practices likely to be effective in restricting the number of births.(23)

Until more is known about the characteristics of pre-1870 marital fertility behavior in France, it is perhaps unprofitable to spend a great deal of time in speculating about the circumstances which may have triggered the falls that took place. But on the general issue, the following points might be made. First, a major fall in infant and child mortality both increases the total of surviving children and reduces the average interval between them, *ceteris paribus*. The former may result in a stronger incentive to call a halt to the continued flow of births within a family, for example from concern about the subdivision of the patrimony. The latter may enhance the attractiveness of action to lengthen the interval between births if the increased "density" of surviving children too young to earn their own keep had a major impact on the living standards of the family. Any tendency towards "stopping" behavior will also be especially responsive to a move

towards an earlier age at marriage for women.

Second, the relevant unit of analysis may remain a local community and economy rather than the individual family after as well as before a switch from control by marriage to control within marriage. The variance of family size under conditions of natural fertility is so large that a high proportion of families will have "surplus" offspring or be in deficit in relation to their particular, individual needs.⁽²⁴⁾ The movement of young people between families overcomes this difficulty without inducing overall pressure when the rate of growth of the local population and the local economy are in harmony. There is, so to speak, a very high rate of immigration and emigration between individual family enterprises, and this may be supplemented by migration between the local community and the larger world. Where the brake upon excessive population growth depends principally upon the timing and incidence of marriage, any pressure may be mediated in part through direct economic problems, such as finding a vacant holding or workshop, or saving sufficient out of current incomes to enter the "market" for niche suitable for a married couple. But in part it is also likely to be mediated indirectly through community norms about the conventional age at which to begin courtship, or about the family circumstances that justify such an initiative. Similarly, with the advent of a statistically visible level and type of family limitation, some individual couples may be directly conscious of a need to restrict the number of their children or to optimise their spacing in relation to perceived economic problems or opportunities, but others may be carried along by changed behavioral norms which may cause them to wish to avoid being conspicuously different from friends and neighbors in the number of spacing of their offspring, or in the age at which childbearing ceases.

If there has long been homeostasis in the circle of relationships between economic opportunity and demographic behavior, and if a change in some aspect of demographic behavior supervenes, as when fertility within marriage is manipulated in new ways, it is perhaps rather to be expected that homeostasis will continue to be preserved by accommodating adjustments within the system than that the system as a whole should immediately fall into disrepair. Only after a further three-quarters of a century had elapsed did a fundamentally different set of relationships emerge in the last decades of the nineteenth century, but by then the French economy was greatly changed from its state in the revolutionary period.

NOTES

- 1 J. Knodel and E. van de Walle, "Lessons from the past: policy implications of historical fertility studies". In: *Population and Development Review*, 5 (1979), pp. 217-245.
- 2 *Ibid.*, p. 224.
- 3 For English GRRs see E.A. Wrigley and R.S. Schofield, *The population history of England 1541-1871: A reconstruction*, London 1981, table A3.1, pp. 528-529
- 4 The number of French reconstitution studies covering the eighteenth and early nineteenth centuries has become very large. The most authoritative single source of information on the subject of changing marital fertility during the period is the INED study based on a random sample of 1 in 1,000 of the 40,000 French parishes. The resulting data have been published in four articles by Henry and Houdaille covering the four quarters of France, listed in the source notes to table 4. The data have also been published in a convenient, consolidated form by J. Dupâquier in *La population française aux XVIIe et XVIIIe siècles*, Paris 1979, tables 1 and 2,

- pp. 52-53 and 108-109. See also *Population*, numero special, *Demographie historique*, xxx (November 1975).
- 5 E. van de Walle, *The female population of France in the nineteenth century* Princeton 1974.
 - 6 Knodel and van de Walle, "Lessons from the past", pp. 232-235.
 - 7 Van de Walle, *The female population of France*, p. 179.
 - 8 The classic paper setting out the uniqueness of west European marriage characteristics and reintroducing into modern discussion several of the considerations originally examined by Malthus is H.J. Hajnal, "European marriage patterns in perspective". In: D.V. Glass and D.E.C. Eversley (eds.), *Population in history*, London 1965, pp. 101-143.
 - 9 See e.g. D. Scott Smith, "A homeostatic demographic regime: patterns in west European family reconstitution studies". In: R.D. Lee (ed.) *Population patterns in the past*, New York 1977, pp. 19-51; J. Dupâquier, "De l'animal a l'homme: le mecanisme autoregulateur des populations traditionnelles". In: *Revue de l'Institut de Sociologie* xiv (1972), pp. 177-211; R.S.Schofield, "The relationship between demographic structure and environment in pre-industrial Europe". In: W. Conze (ed.), *Sozialgeschichte der Familie in der Neuzeit Europas*, Stuttgart 1976, pp. 147-160; and G. Ohlin, "Mortality, marriage and growth in pre-industrial populations". In: *Population Studies* vix (1961), pp. 190-197.
 - 10 In making these estimates I have ignored the question of the effect on overall fertility of changing age at marriage, that is duration effects on fertility.
 - 11 C. Fairschilds, "Female sexual attitudes and the rise of illegitimacy: a case study". In: *Journal of Interdisciplinary History* viii (1978), p. 652; J. Dupâquier, "Problemes demographiques de la France napoleonnienne". In: *Revue d'histoire moderne et contemporaine* xvii (1970), p. 352; and J.L. Flandrin, *Families in former times. Kinship, household and sexuality*, Cambridge 1979, p. 186.
 - 12 E. van de Walle and R. Lesthaeghe, "Facteurs economiques et decline de la fecondite en France et en Belgique". In: *Colloques Internationaux du CNRS*, no. 550, Valescure (Sept. 1973), table 1, p. 354 and p. 357. Also E. van de Walle, "Alone in Europe: the French fertility decline until 1850". In: C. Tilly (ed.), *Historical studies of changing fertility*, Princeton 1978, pp. 257-288.
 - 13 This appears to have happened to England. In: Wrigley and Schofield, *Population history of England*, esp. chapter 10.
 - 14 L. Henry and J. Houdaille, "Celibat et age au mariage aux XVIIIe et XIXe siècles en France. I. Celibat definitif". In: *Population*, XXXIII (1978), p. 61.
 - 15 J. Dupâquier and M. Lachiver, "Sur les debuts de la contraception en France ou les deux malthusianismes". In: *Annales*, E.S.C., xxiv (1969), 1391-1406. E.A. Wrigley, "Family limitation in pre-industrial England". In: *Economic History Review*, 2nd ser. xix (1966), pp. 82-109; and "Marital fertility in seventeenth-century Colyton: a note". In: *Economic History Review*, 2nd ser. XXXi (1978), pp. 429-436.
 - 16 The fall in age at first marriage was taken to be from 25.7 to 24.2 years, and the decline in the proportion of women never marrying was assumed to be from 13 to 11 per cent. It is worth noting that van de Walle's estimates of the singulate mean age at marriage suggest virtually no change between 1831 and 1871. In: *The female population of France*, table 5.5, p.127.
 - 17 See footnote 9.
 - 18 In the fuller version of this article regional and departmental variations in the onset and pace of the fall in marital fertility are described in some detail.
 - 19 Ohlin, "Mortality, marriage and growth"; R.S. Schofield, *The relationship*

- between demographic structure and environment in pre-industrial western Europe". In: W. Conze (ed.) *Sozialgeschichte der Familie in der Neuzeit Europas*, Stuttgart 1976, pp. 147-160. Wrigley and Schofield. *Population history of England*, chapter 11.
- 20 The concept of "unconscious rationality" is used in E.A. Wrigley, "Fertility strategy for the individual and the group". In: C. Tilly (ed.), *Historical studies of changing fertility*, Princeton 1978, pp. 225-259. Its limitations are discussed in R. Lesthaeghe, "On the social control of human reproduction", in: *Population and Development Review*, VI (1980), pp. 527-548.
- 21 L. Henry, *Anciennes familles genevoises*, Paris 1956, figs. 3, 4 and 6, pp. 53, 56 and 67; and chapter 4.
- 22 See footnote 15.
- 23 There is a vast literature on this topic. Some of it is surveyed, and its implications related to the special case of early modern England in A. Macfarlane, "Modes of reproduction". In: *Journal of Development Studies*, XIV (1978), pp. 100-120. See also Flandrin, *Families in former times*, section 4, "Reproduction and sexual life".
- 24 Wrigley, "Fertility strategy for the individual and the group", esp. pp. 145-152. For a similar interpretation of the French case see M. McInnis, "The fertility transition in Europe and America". In: J. Rogers (ed.), *Family building and family planning in pre-industrial societies*, Reports from the Family History Group, Dept. of History, University of Uppsala, no. 1 (Uppsala 1980), pp. 12-13.