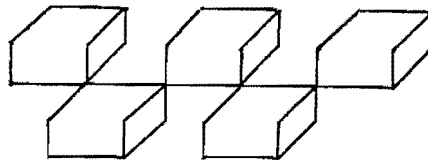


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THE TRANSFORMATION OF THE REPRODUCTIVE REGIMES IN FRANCE AND
BELGIUM IN THE 18TH AND 19TH CENTURIES**

R. Lesthaeghe

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BEYOND ECONOMIC REDUCTIONISM:
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18TH AND 19TH CENTURIES

R. Lesthaeghe

Centrum voor Sociologie

Vrije Universiteit Brussel

1. Introduction

This article gives an overview of the various ways in which the reproductive regime, i.e. nuptiality and marital fertility, has been influenced by material living conditions, strategies of property transmission, types of rural economies on the one hand and by the penetration of the "nouvelle civilité chrétienne" and subsequent secularization on the other hand. We are essentially dealing with a triangular relationship: not only are we concerned with the economics or the sociology of the changes in reproductive regimes, but we also need to explore the basis of the triangle, i.e. the connections between living conditions and the politics of moral patronage.

The choice of the two countries, France and Belgium, is not fortuitous. The puzzle of the early French fertility decline has exerted great attraction among historians and demographers alike. There is no shortage of explanatory theses, and several will be discussed here. Belgium, on the other hand, is a typical example of much of the rest of north-western continental Europe, with a fertility transition starting almost a century later than in France, and experiencing it during the nation's relatively early industrial revolution. Yet, both countries are remarkably heterogeneous with respect to their internal economic and cultural setting, so that the set of regions they contain forms a suitable laboratory for comparative research. Furthermore, the comparison shows that there are many roads that lead to a marital fertility transition. This is the central theme of this paper: for too long have we entertained the notion that fertility transitions can only follow as the byproduct of rising household income and literacy, a decline in infant- and child-mortality, or an overhaul in economic and social relations within households or families associated with industrialization, market integration or technological change.

At the most general level, A.J. Coale (1973) coined the phrase that fertility transitions occur when populations are simultaneously "ready, willing and able". "Readiness" refers to the economic advantage at the household level or to the individual motivation for controlling fertility,

"willingness" encompasses the moral acceptability or the legitimation of such action, and "ability" refers to the efficiency and safety of the available contraceptive methods. Coale stresses the simultaneity of the three requirements, but for the rest many scripts may fit the bill. To start with, the motivations may be provided by a variety of preoccupations, each developing under particular economic and institutional circumstances. Hector Denis (1899) and a century later also Esther Boserup (1985) have envisaged the possibility of a "crisis-led" transition in contrast to the classic demographic transition theory that views rising income and investment in child quality as a prerequisite. Also in this paper we shall document that the French historical fertility decline occurred in a period of deteriorating living standards. Nor should the notion be entertained that legitimation follows automatically in the wake of economic motivation and constitutes therefore a redundant factor. One can, by contrast, envisage an extreme scenario in which action inspired by a particular set of motivations is not immediately legitimized, so that a fertility decline is postponed to a later period. By the time that political and cultural conditions have become more permissive, motivations may have been altered too, and the fertility decline then occurs in an entirely different context. In such cases, opportunities for a fertility decline can be missed as a result of a cultural lag.

Finally, it has also been argued that motivations for fertility control have always existed, but that the demographic outcome failed to materialize for lack of sufficiently safe and reliable methods of contraception. But this thesis begs the question why some populations still persist in their attempts to resort to inefficient methods and in pursuing an early contraceptive breakthrough, while others do not. In other words, the ability issue remains connected to the conditions of motivations and legitimation. As a result we shall concentrate on the latter.

Last but not least, the point of measurement validity and reliability ought to be raised. The task of penetrating into the cluster of individual motivations is already a daunting one in research that deals with present behaviour. It is even more daunting in historical research. Peasants and ordinary townsmen did not record their thoughts and motivations concerning marriage and procreation. Almost all descriptive sources stem from elites: personal correspondence of nobility and bourgeoisie, moralist prescriptions by the clergy, or treatise in political economy. Literary descriptions of village life and peasant psychology are more typical for the late 19th and early 20th than for the 18th century, and at any rate of uncertain representativity.

The social indicator approach is not without problems either. Indicators on wages, prices, standards of living, land tenure, proto-industrial activity etc., and on demographic behaviour are apparently more reliable than cultural indicators concerning language, religion and secularization, but all pose serious problems of validity and interpretation. For instance, what is the meaning of long and regionally comparable time series of the purchasing power of a mason's wages if these wages are only measured in urban settings? What is the meaning of low illegitimacy in villages, if single pregnant women are forced to emigrate to towns? Or even more intriguing, how does one interpret changes and regional disparities in proportions marrying during the closed periods of Lent and Advent in Catholic countries? And how to cope with persistent contrasts in pretransitional levels of marital fertility if there is no information on fecundity and on

the length of the postpartum non-susceptible period? Indicators of social control in particular can be ambiguous if they pertain to public events such as church marriages, or dominical or Easter duty fulfillment. They are better, but also scarcer, if they reflect more private matters (e.g. presence or absence of religious incantations in testaments) or are expressions of political preference in secret ballots. As a result, the measurement of secularization can only be attempted through multiple indicators, thereby eliminating some indicator ideosyncrasy. Unfortunately, the cultural indicators which provide time series prior to the 20th century are typically of the "public" type, so that their meaning may change with time too. In other words, one should be careful not to attach a single interpretation to a particular indicator for which one possesses a convenient long term curve.

The second problem with social indicators is that they may only be available for a specific year or short period. This is often the case for indicators of regional differentiation (e.g. prevailing system of inheritance, extent of endogamous marriage, degree of secularization, land tenure and social stratification...). In such circumstances, one quickly encounters problems of causal interpretation if the presumed cause can only be measured at a date that is later than that of the presumed effect. The common solution for such a conundrum is the assumption that basic institutional and ideational features have a high degree of stability in their geographic patterning. Such an interpretation may occasionally be sustained if different indicators of a common underlying dimension (e.g. secularization), but measured at different times, show a high degree of statistical association. But in most circumstances such tests cannot be performed and the proxy assumption remains a matter of faith.

With these caveats in mind, we shall now turn to the more specific issues and their measurement problems.

2. From the "century of the moralists" to the "century of the philosophers", or the successive transformations of popular cultures

Since the 1930s historians have been increasingly engaged in studying the cultures of the aristocracy, bourgeoisie, townspeople and peasantry. Their effort went beyond the mere description of cultures according to distinct social strata. Rather, it was the degree of mutual influence and interpenetration that was at stake. In other words, historians have been engaging in the study of cultural mobility, or, as Norbert Elias (1969) has called it, in the "sociogenesis of civilization".

In this article we certainly cannot do justice to this voluminous work and we shall restrict ourselves to a sketchy digest.

A classic starting point for the understanding of medioeval town and rural cultures are the imponderabilia of daily life, and particularly the recurrence of harsh winters, famines, epidemics or the passing of devastating armies (F. Braudel, 1979; R. Muchembled, 1978; J. Delumeau and Y. Lequin, 1987). Sin and culpabilisation were firmly grafted onto it (Delumeau, 1983) and there was a flourishing industry of pilgrimages and a plethora of "folk-saints". In addition to such christianized versions, the late Middle Ages still had a remarkable tolerance for magical beliefs (K. Thomas, 1973), and there was no clearcut distinction between the world of the living and that of the dead (M. Vovelle, 1983; R. Muchembled, 1978).

The compensations for insecurity were manifold. Firstly, both towns and villages were organized around what Muchembled has called "une sociabilité épaisse", referring to the layers of solidarity networks that existed in neighbourhood organisations, professional corporations, organizations of age groups, village unions or kinship groups. Secondly, the notion of time was still strongly based on the cyclical concept. Directly connected to this was the Christian calendar and its division of the year in six cycles that regulated feasting and fasting. The periods of celebration often had a marked profane and even pagan character. The May rituals and the Saint John festivities, for instance, had sexual overtones with groups of unmarried young adults of both sexes provoking each other. The Twelve Days and Carnival involved a popular rallying around "fêtes burlesques". There is hardly any need to specify that these periods of public escape involved drink, sex and violence.

The late Middle Ages are also noted for their greater sexual tolerance. The towns had their local prostitution houses, sometimes run by the city officials themselves. The clergy had not been brought under the church's complete control and many kept concubines. Sexual offenses were seldomly prosecuted and witchcraft trials were rare prior to 1500. In short, both state and church did not yet have a firm grip on popular culture.

These matters changed considerably during the 16th century, and the transformation is prolonged during the centuries that followed. Already in the first half of the 16th century, both the French kings and the Habsburg rulers of the Low Countries try to contain the festivities and the violence to persons and property. They also regulate begging and attempt to ban prostitution (C. Lis et al, 1985; L. Otis, 1985). The religious turmoil that accompanies the sharp fall in real wages around the middle of the century leads furthermore to an obsession with heresy in both Catholic and Protestant territories alike. By 1600 both churches and states follow a common line with the following ingredients:

- i) prosecution of sexual offenses (at first for "fornicatio simplex", and later on for concubinage, adultery, and broken marriage promises with and even without seduction) (J. De Brouwer, 1971, L. Roper, 1989);
- ii) prosecution for alleged witchcraft, resulting in several trial waves between 1550 and 1650 (R. Briggs, 1989; R. Muchembled, 1978, 1987) and in the weakening of village solidarity;
- iii) curtailment of festivities, controls over opening hours of inns and taverns (C. Lis et al, 1984);
- iv) strict enforcement of the marriage ban during the closed periods of Lent and Advent in Catholic areas (Lesthaeghe, 1989).

The leading figures of the Counter-Reformation, be they Jesuit or Jansenist by inspiration, and the theologians of the Reformation are essentially moralist who wish to put an end to the expressions of what they called "Medioeval chaos". This is abundantly clear from their organization of the educational system (Ph. Ariès, 1973) and from the support given to public authorities when the latter engage in policing activities and pauper control (see for instance Luther's introduction to the *Liber Vagatorum*) or the roles played by both state and church in the witchcraft trials.

After a short period of greater tolerance, roughly between 1660 and 1725, a new wave of control is gradually being set in motion. After 1725, when economic conditions are worsening, pauper control culminates in France in the "dépôts de mendicité" and the "ateliers de charité". In Belgium, a typical capitalist flavour is added, and paupers are systematically put to work in the towns with manufacturing industries. This approach is particularly favoured during the reign of Joseph II, and it was equally if not more pervasive in 18th century England and its American colonies (C. Lis et al., 1980; C. Vandembroeke, 1985). In Belgium, the index of marriages during the closed periods, which seems to be a good overall indicator of the strength of public moral control, reaches a new low in the period 1750-1780. It is then again at par with the level for 1600-1650, i.e. the period of maximal vigour of the Counter-Reformation (R. Lesthaeghe, 1989).

But during the 18th century, France and Belgium part company with respect to the strength of the reaction to the "nouvelle civilisation chrétienne". The "Age of Reason" has much deeper roots in France than in its northern neighbour. As is well known, Diderot, d'Alembert, Voltaire and Rousseau all have their prime productive time between 1750 and 1770, and the Encyclopedia was also a major commercial success. But this seems to be merely the tip of the iceberg. More recently, historians have been able to document the deeper and earlier roots of the reaction (see M. Vovelle, 1988).

The first element that drew attention was the clear change in the wording and stipulations of testaments in France (M. Vovelle, 1973, 1983; P. Chaunu, 1978). This indicator is not without importance since in many regions more than half the population drew up such a document. First in the Provence and Paris, and later in other regions, the following shifts are noted:

- i) the baroque pomp of funerals is omitted;
- ii) church burial grounds are no longer in great demand;
- iii) religious incantations to the Virgin Mary or references to the Passion of Christ are abbreviated or dropped from testaments;
- iv) the same occurs with stipulations and provisions for commemorative Masses.

Some of the orders of magnitude together with the timing of this change are illustrated by the data of Table 1 for the Mediterranean region of France. The turning point in the Provence is to be situated between 1730 and 1750, i.e. well before the Encyclopedia. Chaunu's large scale analysis of Parisian testaments (the majority drawn up for the middle and lower social strata) dates this point nearer to the beginning of the 18th century. Other indications are also available. M. Agulhon, for instance, shows that the bourgeoisie, once the main patron of religious confraternities, moves to new forms of sociability and interest, and is increasingly found in freemason lodges. Also the literary tastes had changed prior to the Encyclopedia. The publication stream of theological, moralizing and more popular religious literature (on the lives of saints for instance) was gradually being replaced by secular materials on topics such as the arts, sciences, travel, politics and belles lettres.

The sense of religiosity had by no means entirely disappeared in France, but it was increasingly becoming autonomous of official religious

Table 1 : Early secularization in the Provence as indicated by stipulations in testaments, 1690-1790.

	<u>1690-1710</u>	<u>1730-1750</u>	<u>1750-1770</u>	<u>1770-1790</u>
A. <u>Requests for:</u>				
- Commemoration Mass, Men	70%	80	66	51
Women	84	88	75	68
- Intervention by Virgin Mary	90%	64	44	20
B. <u>Absence of religious incantations:</u>				
- Marseille	14%	54	80	86
- Grasse	0	24	37	62
- Toulon	5	3	8	40
- rural area Draguignan	13	53	58	75
- rural area Aix en Provence	9	43	50	65

Source: M. Vovelle, quoted in P. Goubert and D. Roche, 1984: 304.

doctrine. In Vovelle's words: "le ciel se dépeuple". The more distant God leaves room for personal autonomy and the culpabilisation strategy of the Counter-Reformation, even if matched with a dosis of protection and re-assurance (Delumeau, 1989), was faltering.

The indicator of marriages during the closed periods also shed light on this evolution and on the regional disparities. The index itself is defined as the proportion of marriages in March (Lent) and December (Advent) divided by 2/12, or the proportion that would prevail in the absence of any seasonality. The interference with other factors that cause marriage seasonality is negligible: in Protestant areas there is no clear deficit of marriages during these two months.

The values of the seasonality index are presented in Table 2. In the period 1750-75, Belgian values are not basically different from the French ones, but in 1775-1790 the Belgian figures drop to an overall low. This holds especially in Brabant and interior Flanders. The effect of the French Revolution is of course very marked: in the period 1793-99 the indicator soars upward in all French regions. The marriage ban is almost entirely disregarded in the Nord-Est, the Massif Central, the Bassin Parisien and the Rhône-Alpes regions (indices above 80). By contrast, the Belgian values merely move upward to their 1750-74 levels following the French annexation of the country. During the Napoleonic period, the marriage deficit of the closed periods becomes again more pronounced in the French regions, and especially in the Massif Central, Berry, Poitou and Brittany. But in Belgium, there is an upward thrust. It is, however, short-lived in the Dutch-speaking part of the country. In the 1840s the North-South split in Belgium is already very much in evidence and it develops further during the rest of the 19th century as later indicators of secularization also show.

To sum up, the 15th and first half of the 16th century are characterized by an overall trend towards considerable moral and physical control. The reaction against this goes much deeper in France than in Belgium, and there is little doubt that the early secularization in the former country constitutes one of its most distinctive features.

The spirit of Enlightenment and the curtailment of the church's position is definitely exported to Belgium after 1790, but its effects in terms of secularization only emerges in the 19th Century. It takes the form of a North-South distinction, with the Dutch-speaking North adhering much longer to the spirit of the Counter-Reformation and Catholic doctrine.

3. The timing and the age pattern of fertility control in France

Before proceeding with the explanatory hypotheses concerning the early French fertility decline, we must elucidate two issues which have been subject to recent controversy. The first issue is that of the timing of the decline. An American author, D. Weir (1982) asserted that the decline did not really start much before the French Revolution and his point is made on the basis of parity progression probabilities calculated for 40 villages in the INED-sample of L. Henry. According to Weir, it is really the marriage cohort of 1790-1799 in which the proportion of controllers rises rapidly as they approach parities 3 and higher. Numerous French historians, and most recently A. Blum (1989), indicate that control becomes evident at much earlier periods and in Normandy even during the middle of

Table 2: Index of marriages during closed periods in French and Belgian regions, 1740–1885

<hr/>							
A. France	<u>1740–92</u>		<u>1793–99</u>		<u>1800–29</u>		
Provence, Languedoc	30		59		54		
Nord, Picardie	24		73		83		
Nord-Est	24		82		54		
Massif Central	22		95		32		
Bassin Parisien	20		107		78		
Berry, Poitou	16		61		45		
Rhône, Alpes	16		85		51		
Aquitaine, Pyrénées	15		64		55		
Normandie	9		72		52		
Bretagne, Anjou	8		43		32		
<hr/>							
B. Belgium	<u>1750–74</u>	<u>1775–89</u>	<u>1790–99</u>		<u>1800–24</u>	<u>1841–47</u>	<u>1881–84</u>
Coast & Polders	46	27	39		–	16	39
Interior Flanders	21	8	31		55	18	35
Antwerp Campine	11	6	13		–	12	29
Brabant	26	9	17		29	37	57
Industrial villages	19	18	36		64	56	77
Hainaut & Liège							
Other rural Wallonia	27	19	22		47	39	65
<hr/>							

Sources: J. Houdaille (1978); R. Lesthaeghe (1989)

the 18th century. The second issue is that of the strategy and rationality underlying fertility control. Two other American authors, P. David and W. Sanderson (1978) postulate that parity distributions are a mixture of two underlying distributions for controllers and non-controllers respectively. Their model postulates furthermore that these two groups are not gradually being differentiated as couples face each higher parity, but that they are different from the start with respect to the reproductive strategy. For instance, "pure spacers" would already space the first two births in order to alleviate subsequent pressure. "Stock adjustment spacers", on the other hand, would pause when they feel that their earlier tempo of childbearing has been too rapid (P. David, T. Mroz, K. Wachter, 1984). However, such stop-and-go patterns can be implemented at various parities and marriage durations, and it is difficult to distinguish between pure spacing and "stock adjustment spacing" in populations with low contraceptive efficiency. Moreover, final parity distributions can only be compiled for women who have spent their entire reproductive life in the villages, which implies a selection bias. This bias is a resistant one, even if villages are aggregated. For instance, Weir retains only 277 women with known final parity distributions for his innovator marriage cohort of 1790-99 in the entire INED-sample of 40 villages.

The notion of the existence of different strategies is, however, an appealing one. If there is a strategy characterized by deliberate and anticipatory spacing at low parities versus a more abrupt stopping following a faster start, then such a difference must be noticeable in the age pattern of fertility control. There are various ways of establishing the departure from natural fertility (A.J. Coale and J. Trussell, 1974; H. Page, 1977) and we shall use the simplest one for which only age-specific marital fertility rates are needed. Coale and Trussell expressed these age-specific marital fertility rates, $f(a)$, as a function of a level-parameter, M , relative to a standard age schedule of natural fertility, $n(a)$, and a degree-of-control parameter, m , applied to a standard age pattern of deviation from natural fertility, $v(a)$:

$$f(a) = M.n(a) e^{m.v(a)}$$

The question here is whether the Coale and Trussell unique standard age pattern of deviation from the age pattern of natural fertility is really adequate. It should be noted that Coale based the shape of $v(a)$ on 20th century fertility schedules and this may not be a good choice for use in historical contexts and for populations with different spacing and stopping patterns. As a result, rather than relying on Coale's standard $v(a)$, we calculated observed pattern of deviation from natural fertility as

$$v'(a) = \lg [f(a)/M.n(a)]$$

Also, we restricted the analysis to women who married at ages 20-24. The average degree of control, m , is obtained as the ratio between the sum of $v'(a)$ in the age groups between 25 and 44 over -3.602, or the corresponding sum in the standard $v(a)$. The calculations are again performed on the data from the INED-sample of 40 villages. These villages are grouped in 4 regions as identified by L. Henry. As shown in Figure 1, the observed age pattern of deviation from natural fertility ($v'(a)$) and the one that would be produced by m and Coale's standard, i.e. $m.v(a)$, is remarkably close in 3 of the 4 regions. In other words, Coale's standard $v(a)$ is a very good choice for use in much of historical France. Yet, the South-West region has an age pattern of deviation from natural fertility with more control at

**RURAL FRANCE : VILLAGES IN INED-SAMPLE
WOMEN MARRIED AT AGES 20-24**

—○— $v'(a)$: observed schedule of fertility control
 - - -●- - $v(a)$: Coale's schedule of fertility control

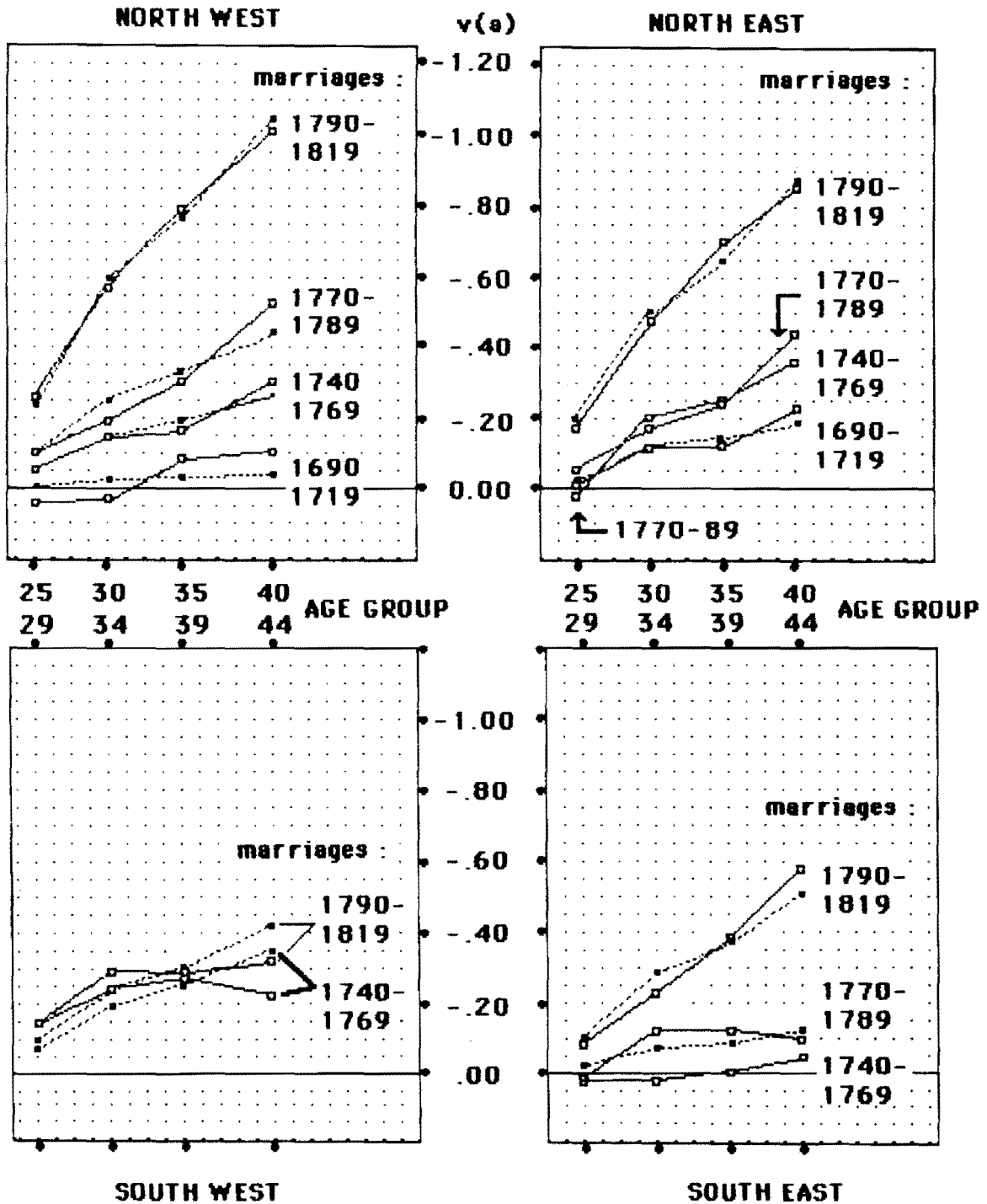


Figure 1: Age-specific patterns of deviation from natural fertility among 18th century marriage cohorts in rural France; comparison of observed schedules with schedules derived from Coale's standard age pattern of fertility control.

the younger ages and less control at the older ages than one would expect on the basis of Coale's standard $v(a)$. The South-West villages, mostly coming from the middle and upper Garonne valley, are reknown for their longer breast-feeding and greater spacing. As a result, less "stock-adjustment" is needed at older ages. But whether the greater apparent "control" at the younger ages is the expression of a conscious strategy of anticipatory spacing as opposed to a mere adherence to a breastfeeding custom seems highly debatable.

The simple technique used here does not elucidate the thesis by P. David and colleagues that there are two groups with different strategies present in the same village or area. But it does show that Coale's age pattern of control $v(a)$ may be less adequate in regions with more outstanding child-spacing traditions at early stages of childbearing and less pressures to control fertility at older ages.

The data in Figure 1 also shed light on the debate on the timing of the onset of the fertility decline. The post-Revolution marriage cohort of 1790-1819 is undoubtedly controlling fertility in 3 of the 4 regions as the steep gradient of $v'(a)$ and $mv(a)$ show. But in the North-West and North-East, also the pre-Revolution marriages of 1770-1789 have a clear upward slope in $v'(a)$. In the South-East villages no such upward slope is evident for the pre-Revolution marriages. Weir's relative late dating of the onset of fertility control seems apt for villages in the INED-sample taken from the Southern half of France, but too conservative for villages drawn from the Northern half. This was checked out for 8 additional rural areas and towns which are not in the INED-sample, but located in Normandy and the Ile de France. These two areas are believed to be the front runners as regards fertility control. The calculations are performed for all married women without the control for age at marriage. Despite this imperfection, the results are in line with those stemming from the INED-sample villages. Figure 2 shows the values of $v'(a)$ and $m.v(a)$. The panel on the left shows the values obtained as the average for the 8 observation areas. The right-hand panel shows trimmed means after eliminating the two highest and the two lowest outliers respectively. Again, there is a good fit between the observed degrees of age-specific control and those that would be inferred from Coale's standard schedule. But more importantly, the gradient of $v'(a)$ is distinctly upward for marriages contracted between 1740 and 1789. With a finer resolution as regards the dating of marriage cohorts, such a distinct slope of $v'(a)$ emerges for the marriages of 1750-79 in the Pays de Merlerault and the Beauvaisis, for the marriages of 1765-79 in Flins, Meulan, Suresnes, and for the marriages of 1770-89 in the Pays d'Arthiès. Only in Verneuil and the East-Parisian villages is the test inconclusive for pre-Revolution marriages. Assuming an average age at marriage of 25 and locating the measurement at the center of the marriage periods reported above, women of the first 5 areas would have marriage durations of more than 15 years and were close to terminating child-bearing at the time of the Revolution. Hence, we feel comfortable with the proposition that fertility control started 10 to 20 years prior to the Revolution in a number of areas.

The conclusion from this section is that D. Weir's dating of the onset of fertility control is too conservative. The discussion of the subject of coitus interruptus (crime of Onan) by the clergymen of the "tribunaux de la pénitence" in Normandy well before the Revolution (J-M.

VILLAGES IN :
ILE DE FRANCE, SOUTH WEST NORMANDY

degree of
fertility
control

$v'(a) = \bar{X}$ of observed schedules

$v'(a) = \text{trimmed } \bar{X}$ of
observed schedules

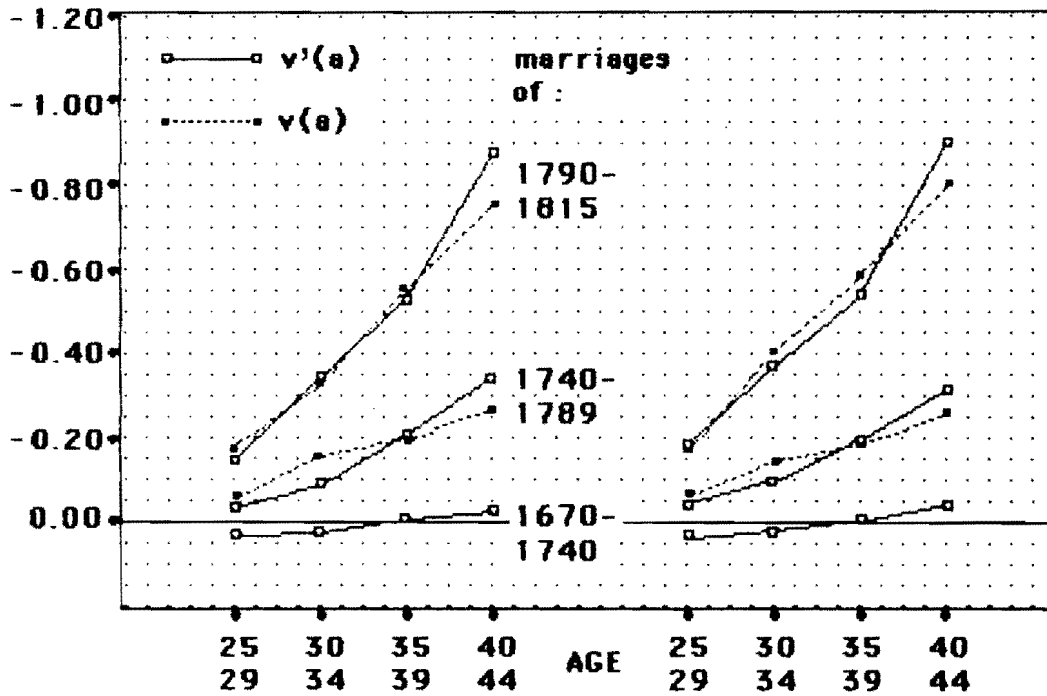


Figure 2: Age specific patterns of deviation from natural fertility among 18th century marriage cohorts (all ages at marriage) in the Ile de France and south-west Normandy; comparison of observed schedules with schedules derived from Coale's standard age pattern of fertility control.

Gouesse, 1973) adds further strength to the thesis of an earlier take-off of contraception.

Finally, the suggestion of distinguishing strategies of spacing versus stopping made by P. David and colleagues proved to be of significance in setting the control pattern of the Garonne valley villages apart from those prevailing in the rest of France. But whether the more marked spacing and less pronounced stopping near the end of the childbearing ages in the former villages corresponded to a deliberately anticipatory strategy remains to be proven. Also, the post-Revolution marriage cohorts in the Garonne area make very little progress in fertility control compared to the pre-Revolution ones, which is again indicative that the low fertility in this area was predominantly due to an older and specifically regional pattern of marked child-spacing.

4. The regional pattern of the French fertility transition

Detailed descriptions of the geography of the fertility decline in France has already been presented by other authors (E. van de Walle, 1974; E.A. Wrigley, 1985), so that this is not repeated here. Instead, we shall concentrate on explanatory hypotheses.

In accordance with what is argued in the introduction, arguments deal with both motivation (willingness) and legitimation (readiness). The key variables involved are the prevailing modes of production and the utility of children, the strength of the nuptiality control, the degree of parental and institutional authority, secularization, inheritance patterns, and regional linguistic particularism. As we shall see, these variables are logically connected and they are clustered according to distinct regional patterns as well.

In earlier articles we had suggested that readiness and willingness would jointly depend on the prevailing mode of production (R. Lesthaeghe, 1980; R. Lesthaeghe and C. Wilson, 1986). By this we meant that familial forms of production such as smallholder or tenant agriculture, whether or not in combination with cottage industry, are characterized by a high economic utility of children and by strong parental control over such family labour. Conversely, both the utility of children and parental control weaken in systems with proletarianization, i.e. with the growth of a wage earning class (either agricultural or industrial) employed outside familial sectors.

The micro-economic theory, as for instance formulated by D. Weir (1982), has a similar starting point. Weir argues that it is the relative value of children over the parents' life cycle that determines fertility. The value of family labour in its turn is a function of the economic situation of the family and of the labour market conditions of the community. Hence, also Weir distinguishes between the areas with traditional peasant agriculture operating on a familial basis and redistributing surplus labour via a domestic service network, and systems with an early rural proletarianization and with a more developed labour market recruiting wage-earning manpower for large agricultural estates. According to these theories, familial forms of production are conducive to the maintenance of high fertility, whereas the growth of agricultural wage labour fosters a fertility decline by virtue of reduced child utility over the parental life cycle. In

this respect, France is a very interesting example as the country contained major areas characterized by a predominance of either sector.

The mode of production argument is of further significance for the nuptiality system as well. The sectors operating with familial labour are characterized by limited opportunities for the establishment of new and independent households, and hence by late marriage. Surplus labour circulates as domestic service, which in its turn contributes to late ages at first marriage (J. Hajnal, 1965, 1982). At this point an interaction with the prevailing inheritance system should be introduced. In regions with unequal division of property and unigeniture, marriage postponement is typical for those who do not inherit or only get the smaller share. These persons also tend to be pushed out of the system and enter other branches such as the clergy or the civil or military service. They are also prime candidates for emigration. Those inheriting the parental enterprise may marry earlier, but in several areas they remain in the parental household and form stem families. One can also expect that families are more heavily involved in arranging their childrens' marriages. A younger son from one family, for instance, would be an ideal match for another family's heiress. One can therefore expect a high degree of consanguinity in areas with peasant agriculture. A predominance of wage labour on the other hand would not lead to marriage postponement as there is little to inherit and to wait for. Independent households can be established more easily on the basis of wages earned outside the familial sector. Consanguinity is also lower.

An additional but indirect connection between the mode of production and marital fertility then exists, with the nuptiality system playing the role of intermediate variable: systems with peasant agriculture can alleviate population pressure through the old Malthusian control operating through late marriage and a higher incidence of celibacy. In other words, there is less pressure to resort to manifest fertility control in areas that have the late marriage option.

So far, we have mainly referred to the arguments dealing with child utility and the existence of the alternative nuptiality strategy. We shall now turn to those connected with parental and institutional authority. E. Todd (1983, 1988, 1990) introduces the parental control variable through a cross-tabulation of two other key variables, i.e. generational coresidence and pattern of inheritance. He distinguishes between four types of family systems:

- i) the nuclear residence pattern with equal division of property,
- ii) the nuclear residence pattern with unequal division,
- iii) the stem-family pattern with a privileged son (primo- or ultimo-geniture) who does not leave the family of origin upon marriage,
- iv) the extended family in which coresidence of parents and married sons is maintained. Upon the death of the older generation, coresidence between brothers remains possible. Inheritance tends to be egalitarian.

In Todd's patterning, the egalitarian nuclear family (type i) with equal division of property is characterized by weak parental control and it is therefore also a weak basis for authoritarian religions or political doctrines. By contrast the stem family (type iii) with its marked inequality between the children and the extended control of the parental generation

over the privileged son is most supportive for strong hierarchical religious structures. Todd's reasoning, although originating from variables other than those connected to the mode of production, bears nevertheless a striking resemblance to our own line of argument. In our view, parental control is strongest in areas with familial forms of production by virtue of the restricted opportunities for adult children to split away from the family of origin. However, we have equally stressed the functional consistency between strong parental authority and the survival of religious authority (R. Lesthaeghe, 1980, R. Lesthaeghe and C. Wilson, 1986): the latter legitimizes the former.

The argument of parental and religious authority is of relevance for the marital fertility decline since it provides the basis of the secularization hypothesis. If the act of consciously controlling fertility depends on the moral legitimation of the act as well as on the calculus of advantage, then areas with strong structural props in favour of institutional moral patronage would lag behind in the fertility transition, while those without these props would be characterized by earlier secularization and an earlier and/or faster fertility transition.

The last argument is of a political nature and deals with the process of nation-building and the impact of regional or linguistic particularism. In contrast to Belgium, France provides an example of early nation-building in which a central government gradually extends its unifying influence. According to S. Watkins (1990), this influence bears an impact upon the geographical spread of new patterns of behaviour, including fertility control. As a result we should expect that characteristics of the core (here, the larger Parisian Bassin with agricultural estates, wage labour, early secularization, early fertility control) would gradually be exported to the structurally and linguistically different periphery. Also Le Bras and Todd (1981) have stressed this feature and its corollary, i.e. the power of linguistic particularism in France in defending the original structural differences of the periphery against the incursions stemming from the core. In Belgium, the linguistic difference between Flanders and Wallonia with respect to the marital fertility transition is very much in evidence a century later (R. Lesthaeghe, 1978), and Flemish resistance to it is equally connected to the opposition of a cultural minority (not a demographic one) towards the dominance of a francophone core.

What is the empirical support for these arguments? Weir's empirical testing (1982) of the relationship between the types of agriculture in France and the onset of the fertility transition proceeds with the fertility levels and changes recorded in the INED-sample of 40 villages during the period 1790-1819, and structural characteristics of the départements in which these villages are located. The latter are measured in the agricultural census of 1851. Hence there is a reversal in the timing of measurement between dependent and independent variables. This problem has been addressed in the introduction, and it will crop up again in much of our empirical testing as well. Weir's fertility indicators are the levels of Coale's index of marital fertility (I_g) for the marriage cohort of 1690-1769 and 1790-1819. These are related to the 1851-proxies which capture the dominance of familial and traditional peasant agriculture versus those indicative of a capitalist agrarian structure with wage labour. Le Bras and Todd (1981) use the I_g -levels of départements for 1831 as calculated by E. van de Walle (1974) and relate them to the data, equally by départements, from the same agricultural census of 1851. Both authors point again

at the importance of the various agricultural systems, but in contrast to Weir, a great deal of attention is also paid to the other structural and cultural variables. Their position can be summarized as follows: fertility control emerges in regions with early secularization, which in its turn is fostered by the existence of a large rural proletariat and by nuclear family systems with equal division of property. Fertility control and secularization are both slowed down by the survival of peasant agriculture with inegalitarian inheritance protecting the family capital from fragmentation, authoritarian family relationships, and with linguistic particularism.

The statistical evidence is presented in Table 3 in the form of simple correlation coefficients. The variable definitions are given in Table 4. On the left side of Table 3, we have reproduced selected results from Weir's analysis that are the most clearly consistent with the thesis. The availability of non-appropriated land (fallow land and commons), a high percentage of owners-cultivators, and the protection of family capital by impartible inheritance are typical for the areas in France which have retained a traditional peasant system. These characteristics are indeed associated with higher marital fertility for the 1790-1819 marriage cohort in the 40 INED-sample villages. They are negatively related to the speed of the marital fertility decline as well. On the other hand, the presence of artificial meadows (cattle and horse raising), of a capitalist land-owning bourgeoisie (rentiers) and a high market value of arable land are correlated negatively with fertility levels and positively with the speed of the fertility decline. Incidentally, Weir also notes that a high proportion of marriages during Advent and Lent, an indicator of secularization measured for each of the 40 villages in 1793-1824, is positively related to the speed of the marital fertility transition.

So far, everything in Weir's analysis is consistent with theory. However, some other results are not. For instance, Weir's indication of wage-earning rural labour (i.e. journaliers and métayers) shows a positive association with marital fertility levels ($r = +.26$) and a negative one with the speed of the fertility decline ($r = -.16$). From Todd's operationalisation, based on the same agricultural census, but correlated with departmental marital fertility levels in 1831, we get the expected negative correlation ($r = -.46$). The other oddity in Weir's correlation matrix is that the annual earnings of children relative to that of an adult labourer are negatively related to both the level of marital fertility ($r = -.22$) and to the decline in fertility ($r = -.15$). The latter is consistent with theory as it seems to indicate that a higher value of children is related to a smaller drop in fertility, but the former is not. I suspect, however, that the indicator used by Weir is a poor proxy for the utility of children, especially in areas with large familial sectors in which no wages are paid to family members.

The results stemming from the departmental maps by van de Walle (1974) and by Le Bras and Todd (1981, Le Bras 1986, Todd 1988) are shown in the righthand panel of Table 3. As already indicated, Todd's dichotomy between smallholders mixed with tenant farming versus journaliers and métayers performs as expected. The same holds for two other indicators of traditional peasant agriculture, i.e. the interfamilial changes of labour via domestiques and the attachment to inegalitarian inheritance. The connections via the nuptiality system are equally in evidence. A high degree of cousin marriage (endogamy and consanguinity) typical for the traditional peasant system is positively related to higher marital fertility in 1831 (r

Table 3 : Correlation coefficients between indicators of the marital fertility decline and selected agricultural, socio-economic and cultural variables, France 1790-1831.

INED-sample of villages (D. Weir)			Départements (E. van de Walle, E. Todd, H. Le Bras)	
Correlates in 1852	marital fertility of marriage cohort 1790-1819 (I) _g	Change in marital fertility from mar. cohort 1690-1769 to mar. cohort 1790-1819 (decline I) _g	Correlates (various dates)	period marital fertility in 1831 (I) _g
<u>A. Mode of production</u>			<u>A. Mode of production</u>	
i) indicators of familial, peasant economy.			i) indicators of familial peasant economy	
- percent fallow land	.04	-.31	- small holders and/or peasant farmers (versus journaliers & métayers), 1852	.46
- percent common land	.30	-.46	- servants in households (domestiques), 1856	.33
- percent owner-cultivators	.27	-.48	- inegalitarian inheritance, 1900	.40
- impartible inheritance (de Brandt)	.32	-.56		
ii) indicators of labour-market oriented agriculture			<u>B. Cultural indicators</u>	
- percent artificial meadows	-.28	.58	- clergy refusing revolut. oath, 1791	.46
- percent absentee-landlords	-.08	.46	- marriages in Germinal, year X	-.11
- percent "rentiers"	-.32	.44	- priests among army recruits, 1825	.31
- price per hectare of first quality arable land	-.19	.40	- vacant vicariates, 1885	-.52
			- patois or language other than French, 1863	.40
			- adults reading, not writing, 1872	.55
<u>B. Cultural indicators</u>			<u>C. Marriage regime</u>	
- marriages Lent & Advent, 1793-1824	n.a.	.23	- index of proportions married women (Im), 1831	-.73
			- index of illegitimacy (Ih), 1831	-.30
			- endogamy (cousin marriage), 1911-13	.47

Sources: D. Weir (1982); raw data départements: H. Le Bras and E. Todd (1981), H. Le Bras (1986), E. Todd (1988), E. van de Walle (1974).

Note: correlates in Weir's analysis are measured at the level of arrondissements, except for marriages during Lent and Advent.

Table 4 : Definition and source of variables used in the analysis of regional reproductive regimes in 19th century France

Ig	Index of marital fertility (1831, 1851, 1876)	E. van de Walle, 1974, pp.226-467
Im	Index of proportions married (1831, 1851, 1876)	E. van de Walle, 1974, pp.226-467
Ih	Index of illegitimate fertility (1831)	E. van de Walle, 1974, pp.226-467
Rise Ig 1851-76	Ig 1876 - Ig 1851	
Endogamy	Rankorder of departements according to percentage cousin marriages among all marriages in 1911-13 (grouped from 0 = lowest to 11 = highest)	H. Le Bras & E. Todd, 1981, pp.215
Age diff. marriage	Husband-wife difference in age at marriage, years 1861-65	H. Le Bras & E. Todd, 1981, p.440
Refusal revol. oath	Refusal of revolutionary oath by clergy in 1791 2 = more than 50 percent of clergy refused, 1 = 40 to 50 percent refused, 0 = less than 40 percent refused	E. Todd, 1988, p.64 (based on T. Tackett, 1986)
Priests among recrutes	Priests per 10,000 army recrutes in 1825	H. Le Bras & E. Todd, 1981, p. 430
Ordinations	Ordinations of priests per 100,000 pop., 1876	H. Le Bras & E. Todd, 1981, p.430
Vacant vicariates	Proportions of vicariates vacant in 1885; grouped values: 0 = less than 6 percent; 1 = 6-15; 2 = 15-21, 3 = 21+	H. Le Bras & E. Todd, 1981, p. 379
Sunday Mass attendance	Percent of population attending Sunday Mass, 1960-70	H. Le Bras & E. Todd, 1981, p.430
Reading without writing	Percent population 20+ reading only, 1872	H. Le Bras & E. Todd, 1981, p.454
Language	Persistence of patois or languages other than French in 1863. Grouping: 0 = all speak French; 1 = traces of patois; 2 = large proportion or entire villages do not speak French; 3 = more than 50 percent non-francophone	H. Le Bras & E. Todd, 1981, p.279
Agricultural system	Areas of large farms operating with journaliers and areas with métayage (14%+ métayers) (=1) versus areas with small holders or tenants (17%+ fermage) (=0)	E. Todd, 1988, p.84
Inheritance system	Inegalitarian system (=1) with primogeniture or other preferential treatment versus egalitarian system (=0)	E. Todd, 1988, p.32 (based on A. de Brandt, 1901)

= +.47). Strong paternal control over partner selection implies furthermore a strong condemnation of mésalliances and illegitimacy. Hence, the region with peasant agriculture had lower illegitimacy levels as measured through van de Walle's I_h -values ($r = -.58$), and lower illegitimacy is then associated with higher marital fertility ($r = -.30$). The connections with the nuptiality system hold further: the most striking relationship in the entire correlation matrix is the negative link between the index of proportions married (Coale's I_m) and the index of marital fertility (I_g) ($r = -.73$). This feature had been spotted earlier by E. van de Walle, and it was then also interpreted as showing that the Malthusian pattern of late marriage was a strong alternative to manifest fertility control (E. van de Walle and R. Lesthaeghe, 1973). France's neighbours, and most evidently Belgium, Germany and Switzerland, clinged much longer to the late marriage strategy and, correspondingly, started their marital fertility transition more than a century later.

There are also linkages between the later marriage pattern in France in areas with traditional peasant agriculture and their greater resistance to secularization. As already indicated, unigeniture or inegalitarian inheritance pushes younger siblings out of the system. They are, for instance, disproportionately recruited into the clergy. The correlations of Table 5 show clearly how such areas had an "overproduction" of clergymen. T. Tackett (1985) also finds in his detailed study of the Dauphiné clergy that priests were overwhelmingly recruited as a corps of younger sons from wealthier families. If these clergymen remained in areas with peasant agriculture, they also remained part of a local elite, but they were not a wealthy group. They had to rely on annuities from the family of origin, often stipulated in wills or contracts with older brothers, and/or on the "portion congrue" or a small salary. They were also local matchmakers, confidants and councillors. As such they remained close to the traditional system, in contrast to the much wealthier clergy in the areas where the church possessed large estates and extracted tithes and taxes. In 1791, a split among the clergy emerges along these lines, as they were confronted with the choice between taking the oath of allegiance to the new revolutionary constitution or remaining faithful to Rome and the old order. Among the former, many would subsequently leave their office and marry. There is no doubt that the choice depended on the financial position of the individual clergymen concerned, but the general outcome is that the refractory clergy (i.e. those refusing the revolutionary oath) is essentially to be found in the areas without revolutionary zeal, i.e. outside the area with large estates and rural proletarianization. The correlation between Tackett's map of the refractory clergy and the prevalence of patois or languages other than French is +.32, and that between the refractory clergy and Todd's maps of traditional peasant agriculture is +.52. The map of the refractory clergy gives furthermore an excellent description of the spread of secularization in 1791: not only does it correlate with other indicators measured during the 19th century (priests among army recruits in 1825, ordinations in 1876, vacant vicariates in 1885), but it bears a striking resemblance to the map of Sunday Mass attendance of 1960 ($r = +.68$).

A congenial way of summarizing the relationships between a set of independent variables (here cultural and structural variables) and a set of dependent variables (here characteristics of fertility and nuptiality) is canonical correlation analysis. This method has been applied to the various indicators measured for départements, and the results are given in

Table 5 : Correlation coefficients between the dominance of peasant economy or inegalitarian inheritance and indicators of recruitment in the clergy, French départements.

	Clergy among army recruits 1825	Ordinations 1876	Vacant vicariates 1885
- Inegalitarian inheritance, ±1900	+ .33	+ .21	- .22
- Small-holders and/or tenants (versus journaliers/métayers), 1852	+ .41	+ .47	- .44

Table 6. The canonical variates bear a similarity to factors in factor analysis in the sense that they constitute underlying dimensions that absorb the common information present in a set of indicators. The best indicators of the canonical variates are chosen as those which correlate at levels of .40 or better. The demographic dimension in the first pair of canonical variates (i.e. Y1 in Table 6) identifies the départements with late marriage, high marital fertility, low illegitimacy and high degree of endogamy. Moreover, it also identifies the areas which had a rise in marital fertility between 1851 and 1875 (see section 6). The explanatory dimension in the first pair (X1) identifies regions with low secularization, peasant agriculture, inegalitarian inheritance and linguistic ideosyncracies. X1 and Y1 exhibit a correlation of +.87. The second pair of canonical variates (X2 and Y2) is unrelated to the information extracted by the first pair, but the correlation between them (+.72) is still strong. The dimensions X2 and Y2 respectively identify regions with high age differences at marriage between husband and wife and non-francophone regions with inegalitarian inheritance. This points at the specificity of the southwest quarter of France where female ages at marriage were earlier and those for males later than average. The larger age gap between the spouses separates the southwestern areas of peasant agriculture from the others.

An analysis of correlation coefficients brings out the general pattern of associations, but it says little about the synergistic or combinatory effects. A Boolean analysis highlights these interactive effects by exploring combinations of explanatory factors and by searching whether conditions are non-redundant, necessary or sufficient (see C. Ragin, 1987). In the present example we have dichotomized the independent variables as follows:

- C: capitalist agriculture with a substantial rural proletariat (journaliers and métayers);
- c: peasant agriculture with a dominance of smallholders and tenants (1852);
- P: mainly partible inheritance (de Brandt's information of 1901);
- p: mainly impartible and inegalitarian inheritance;
- F: french-speaking area (1863);
- f: patois or major non-francophone groups;
- S: more secularized, with 50 percent or more of the clergy taking the revolutionary oath of allegiance in 1791;
- s: less secularized, with less than 50 percent taking the oath.

The dependent variable is equally dichotomized and indicates whether a département has a marital fertility level in 1831 that was larger or smaller than the average for the 84 départements (mean $I_g = 0.56$). With four dichotomous predictors, one can inspect 16 different combinations ranging from cpfs to CPFS. However, two combinations are missing: CFps and CFpS, or simply CFp. In other words, we encounter a case of limited diversity. This is common in the social sciences: systems have a degree of functional consistency and therefore may lack a number of "inconsistent" combinations. Boolean minimizations were performed on the truth tables. This procedure allows us to combine two Boolean expressions that differ only in one condition, yet produce the same outcome, into a new expression without that contrasting condition. For instance, if both cPfs and CPFS produce the same outcome, the contrasting element (c versus C) can be dropped and the two expressions can be simplified to Pfs.

Table 6: Association between indicators of the reproductive regime and socio-economic indicators in France, 19th century, 90 départements. Canonical correlation analysis results

First canonical variate: canonical correlation: .87 ($r_{X_1Y_1}$)
 Wilks lambda: .05
 eigenvalue: .76

Y1: Best indicators reproductive regime (r GT .40)

- proportions married women, Im 1831: -.86
- proportions married women, Im 1876: -.82
- marital fertility, Ig 1876 : .77
- marital fertility, Ig 1831 : .75
- illegitimate fertility, Ih 1831 : -.65
- rise marital fertility, 1851-1876 : .50
- endogamy (cousin marriage) 1911-13: .46

Second canonical variate: canonical correlation: .74 ($r_{X_2Y_2}$)
 Wilks lambda: .21
 eigenvalue: .54

Y2: Best indicators reproductive regime (r GT .40)

- Husband-wife age difference at marriage, 1861-65: .64

X1: Best indicators socio-econ. characteristics (r GT .40)

- Sunday mass attendance, 1960 : .90
- proportion pop. 20+ reading, not writing: .73
- refusal by clergy of revol. oath 1792 : .70
- priest ordinations per 100.000 pop. : .66
- small holder & tenant farming, 1851 : .68
- vacant vicariates, 1855 : -.61
- priests per 1000 army recrutes, 1825-35 : .59
- inegalitarian inheritance, 1900 : .53
- languages other than Franch, 1863 : .50

X2: Best indicators socio-econ. characteristics (r GT .40)

- inegalitarian inheritance, 1900 : .59
 - language other than French, 1863: .49
-

Two types of outcomes are considered. First we want to establish which combinations of conditions are associated with less than a quarter of départements in the 14 cells having I_g -values below the mean. The resulting Boolean expression for strongly lagging behind in the marital fertility transition, rewritten for ease of interpretation, is:

$$LAG = Fcps + Cpfs + Pfc$$

This expression describes the preconditions that prevail in 11 départements. It states that francophone départements (F) failed to experience a significant fertility decline by 1831 if they combined this characteristic with the three counterindicating conditions (peasant agriculture AND egalitarian inheritance AND weak secularization). Similarly, départements with a capitalist agriculture (C) also largely failed if the three obstructing conditions were simultaneously present. Furthermore, départements with partible inheritance (P) also failed if they had peasant proprietors and were non-francophone. If the last term would have been Pfc instead of Pfc, the rule would have been very simple: the effects of respectively F, C, and P, which on their own are propitious for a fertility decline, are neutralized if all three remaining factors operate in the other direction.

The expression for the combinations leading to at least three quarters of the départements having fertility levels below the mean in each of the 14 combinations is:

$$LEAD = CP(s + F) + S(Cpf + Fcp)$$

The first term $CP(s + F)$ describes the prevailing conditions in 21 of the 24 départements which have an early fertility decline. It indicates that the joint presence of a capitalist agriculture and partible inheritance was necessary but not sufficient. These two conditions need to occur in tandem with either low secularization or being francophone. The second term $S(Cpf + Fcp)$ spells out the prevailing conditions in the remaining three départements (Creuze, Dordogne, Lot et Garonne). For them secularization is necessary but not sufficient since it has to occur in combination with another factor that is conducive to a fertility decline (C in Dordogne and Lot et Garonne, and F in Creuze).

The main lessons to be drawn from this analysis are:

- i) The sole difference with respect to type of agriculture, or more specifically the presence of a more developed labour market for wage labour, constitutes by no means a sufficient condition for a lower fertility level in 1831;
- ii) When partible inheritance is added to the combination, the results are much stronger (see CP in the expression for LEAD).
- iii) Cultural variables do interfere. Linguistic particularism or low secularization are often capable of neutralizing the effects of the economic props of fertility control (see the expression for LAG).

It is also of interest to know in which regions the prophecy fails. To this end, a multiple regression was run of I_g in 1831 on the incidence of journaliers and métayers, patois and non-francophone (dummy), egalitarian inheritance (dummy), acceptance of the clergy of the revolutionary oath (dummy), and the percentage of the adult population capable of reading French but not writing it ($R^2 = .39$). Residuals larger than one standard

deviation of I_g were mapped. The regions that proved to be substantially ahead in the transition compared to what their expected position would be are strongly clustered: the Normand départements of Eure and Calvados and the Garonne valley départements of Gironde, Lot et Garonne, Tarn et Garonne, and Gers. The large residuals for a portion of Normandy emerges because of a contrast between low fertility and relatively weak secularization. The large residuals for the Garonne area fits our earlier observation that these areas had low fertility to start with, probably as a result of more marked child-spacing. Pre-revolutionary levels of I_g in the Garonne valley are commonly between .550 and .650. The low levels^g in 1831 are not so much the result of an early fertility decline, but rather the continuation of an existing pattern. The only other département with a much greater lead than expected is Hérault.

The départements that lag substantially behind compared to what was predicted are mainly located at the periphery. In the West, they contain the two Breton départements of Finistère and Morbihan, complemented by the Vendée. These three cases are hardly a surprise. In the north, substantial relative lagging is found in the Vosges, and in the southeast corner, in the départements of Loire, Hautes Alpes, and Bouches du Rhône. When the index of proportions married (I_m) is added to the regression, R^2 increases from .39 to .58, but the large negative residuals of I_g are still found in Eure, Calvados, Lot-et-Garonne and Gers, whereas the large positive residuals prevail in Finistère, Morbihan, Vendée and Loire.

On the whole, the theory that explains the regional pattern of the French fertility decline in terms of the duality of the agricultural system and connects it further to the relative utility of children and the labour market conditions draws ample support from this analysis. However, as the Boolean analysis of the various combinations of predictors shows, other features of the patterning need to be taken into account. This holds particularly with respect to the inheritance pattern, the degree of secularization and linguistic particularism. In addition, the correlation between I_m and I_g is far stronger than that between the economic indicators and marital fertility. Hence, the impact of these variables invalidates any overly reductionist interpretation in terms of just a few economic factors. In other words, the hypothesis of mere endogeneity of inheritance patterns, secularization, nuptiality characteristics and linguistic particularism is too strong, and a more holistic approach is justified.

5. Why was there a fertility decline in France prior to 1800?

So far we have only discussed the roles played by various factors in the shaping of the regional patterning of the French fertility decline. In the adjacent countries - and we are now referring to the period 1870-1920 rather than to 1770-1820 - there was no major inconsistency between results stemming from such cross-sectional analyses and those from time series analyses: all point at the importance of major structural factors such as industrialization, urbanization, decline of familial production sectors, rising real income and to a lesser degree to declining early childhood mortality and rising education. The question is whether or not a similar correspondence exists for late 18th century France between the diagnosis stemming respectively from regional and trend data.

In the previous section we have shown that regional patterns of fertility control were closely associated with the two types of agriculture

and their concomittant patterns of social organization. But was there a spread of the capitalist pattern of rural organization that could account for the sustained fertility decline between 1770 and 1835? Did the Revolution start a major and continuing process of land reform in the direction associated with enhanced fertility control?

The issue of revolutionary land reform, i.e. the confiscation of large estates belonging to nobility and church, and its relation to structural changes in land ownership, size of holdings or rural proletarianization has received an abundant treatment in the literature. On the whole, the following points emerge:

- i) the sale of biens noirs created an active market in land, but it benefitted the bourgeoisie much more than anyone else;
- ii) the abolition of old manorial rights did little to improve the standard of living of the rural population since they were replaced by heavy taxation;
- iii) after the Concordat of 1801, a substantial amount of former church property was restored to its prerevolutionary owners;
- iv) the old physiocratic doctrine survived, with its concentration on wealth extraction from the capitalist sector of agriculture and its relative disregard for industry and commerce, despite the efforts during the Napoleonic period to stimulate the latter sectors;
- v) agricultural technology and productivity did not change in any significant way and continued to lag behind that of France's northern and western neighbours;
- vi) the geographical distinction between areas with a more capitalist and a more traditional peasant agriculture respectively is unaffected by the Revolution and Napoleonic policies. Also the Marxist theory of increasing concentration of land ownership fails to hold and the regional land tenure differences remain remarkably stable throughout the entire 19th century.

A Soboul (1983: 186) sums it up as follows:

"Aussi paradoxalement, la rupture révolutionnaire aboutissait en France à une position conservatrice quant aux structures de l'exploitation agricole, position qui ne fut d'ailleurs, jusqu'à nos jours, jamais explicitement remise en cause".

The conclusion with respect to the fertility transition in France is that the rural structural variables that emerge so prominently in the regional cross-sectional analysis are of little importance in explaining the downward fertility trend between 1780 and 1850. Other driving forces must account for the latter. The literature on the French fertility decline contains a set of possible alternatives.

First, there are theses that stress the growing importance of investment in child-quality rather than quantity. The best known is A. Dumont's theory of social capillarity: parents invest in child-quality whenever there are opportunities for upward social mobility. A. Sauvy (1960) offers an explanation along similar lines and refers to the fertility transition as an expression of parental altruism. P. Ariès (1973, 1980) considers the transition as a breakthrough of child-orientedness and connects it to cul-

tural roots that spring from the "nouvelle civilité chrétienne" during the 17th and 18th centuries.

The problem with the child-quality argument is that it seems to be of considerably greater significance for the second half of the 19th century than for the late 18th. It then account much better for the portion of the fertility decline that France shared with its neighbours after 1875. The following considerations support this conclusion:

- i) At the time of the Revolution and Restoration educational opportunities remained restricted to the bourgeoisie (admittedly including some of its lower echelons during the Napoleonic period);
- ii) standards of living of the rural and urban common people were not at all improving in the period 1770-1820, and consequently the possibilities for greater investment in education remained absent;
- iii) no significant legislation and concomittant restriction on child-labour emerged in this period. In fact, child-labour was being used to a larger extent in the non-agricultural sectors as well after 1800;
- iv) also the bourgeoisie itself had a long way to go in terms of child-orientedness. The "nouvelle civilité chrétienne" did nothing to prevent them from sending infants from being wetnursed in rural areas around cities. This practice is known to have resulted in very high levels of infant mortality (P. Galliano, 1966; E. van de Walle and S. Preston, 1974; C. Rollet, 1978).

Another set of theories, mainly defended by F. Braudel (1979, 1986) and P. Chaunu in his work on Normandy (1972, 1973), points in the direction of a growing Malthusian tension between accelerated demographic growth during the entire 18th century and a stagnant agricultural productivity. The demographic pressure was directly related to the gradual disappearance of mortality crises during the first half of the 18th century (cf. A. Blum and A. Bringé, 1989). The situation of "le monde plain" in the rural areas is aggravated by the late adoption of potato cultivation in many parts of France and by the lack of growth of the proto-industrial sector. According to P. Chaunu, the early disappearance of cottage industries in Normandy is one of the major reasons for the very early fertility decline in parts of this region. Purchasing power in France declines steadily between 1750 and 1820, and political instability and wars add considerably to the deterioration of living conditions between 1789 and 1815. In short, the first part of the French fertility decline fits the image of a crisis-led transition. It seems that a defensive spirit lies at the core of individual motivation. For sure, the initial third of the fertility decline owes little, if anything, to the factors commonly identified by the classic versions of demographic transition theory, such as growing disposable income and new employment opportunities requiring greater investments in child-quality.

However, many other European countries too faced falling standards of living from 1750 onward, without this being accompanied by a decisive fertility decline. Why was there no such crisis-led fertility transition in Belgium, the Netherlands, Germany or Switzerland? I would offer the following reasons:

- i) Major alternative sectors existed, which were admittedly not flourishing any longer, but still provided an outlet from the tension

between population growth and agricultural productivity. The proto-industrial sector in particular is of much greater importance in these countries;

- ii) agricultural productivity was higher in France's neighbours and they had an earlier switch to potato cultivation, thereby also alleviating urban food shortages;
- iii) the proto-industrial sector on the continent is not so clearly associated with the lowering of ages at marriage, as it was in England prior to 1750. After that date cottage industry becomes a sector characterized by very late marriage: labour provided by young adults is retained within the parental household and the establishment of a new but similar unit of production is difficult once the proto-industrial sector is saturated. This becomes even more difficult after 1820 when the industrialization of textile manufacturing squeezes the cottage industry to the point of merely surviving thanks to cheap rural familial labour;
- iv) partly as a result of this, the alternative strategy operating via nuptiality restrictions remained operative for a much longer period in Belgium, Holland, Germany and Switzerland than in France. For instance, the female mean ages at first marriage in France and Flanders (i.e. an area renowned for its proto-industrial development) were identical in 1750: 25.8 and 25.6 years respectively. In 1860, however, the Flemish figure had increased to 28.8 years, whereas the French figure had started a decline to 24.5 years (C. Vandebroek, 1984; Y. Blayo, 1975).
- v) The most striking contrast between France and its neighbours emerged in the political and cultural spheres. As shown in section 2, France provides the example of an early and widespread secularization. As a consequence, Coale's condition of "willingness" is satisfied to a much greater degree. The neighbouring countries have no such early roots of secularization and their populations are well on the way towards internalizing the principles of stricter morality and obedience as set forward by the Reformation and Counter-Reformation. Only a segment of their bourgeoisie adopts secular philosophies, and much of this is due to French influence after 1780.

To sum up, our explanation for the early fertility decline in France rests on the argument of synergy between three factors:

- a deteriorating economy and declining real wages, creating the setting of a crisis-led transition (readiness),
- an early secularization, providing the element of legitimization of fertility control (willingness),
- the lack of a substantial proto-industrial sector with familial production, which reduces the ability for the utilization of the older nuptiality strategy.

There remains at least one unresolved problem: areas in France that had maintained the more traditional forms of peasant agriculture retained the nuptiality controls well into the 19th century, but still started fertility control prior to 1810. In fact, they combined both strategies in contrast to the Belgian, Dutch, German or Swiss families. This early adoption of fertility control in French areas with peasant agriculture may be

connected to the absence of the proto-industrial sector, but it may also be the result of a cultural diffusion pattern originating from the nation's core.

6. The 19th century: ideological fragmentation, the "ski jump" and another fertility decline

It goes without much further explanation that the Revolution of 1789 and the period till the Concordat of 1801 with Rome is of major significance in the history of secularization in France. The index of marriage seasonality in Lent and Advent provides a good idea of the magnitude of the shock. During the period 1740-1792, the index was comprised between 8 in Brittany, meaning a nearly complete observance of the marriage ban, and 30 in the Provence and Languedoc. During the last decade of the 18th century it rose to levels between 33 in Brittany and 107 in the Paris area. The latter figure corresponds with the total disappearance of the ecclesiastic ban. During the Napoleonic period and the first years of the Restoration (1800-1829), the index falls, but this change is again very uneven geographically. The index declines spectacularly in the Massif Central, but it increases in the North and Picardy. The areas where peasantry and church had formed an alliance against the Revolution are among the first to mend the damage. These are the regions where Catholicism maintains a strong populist and particularistic basis during the entire 19th century: rural Brittany and the adjacent western part of Normandy, Anjou and Maine, the Massif Central and the Pyrenees. Other areas were to join and they are mainly located along France's eastern border: Alsace and Lorraine, the Jura, the Franche Comté, the Dauphiné and the southern alpine départements. On the other hand, religious attendance at Easter or on Sundays and recruitment of clergy remain at low levels throughout the 19th century in north-central France and the southwestern Atlantic areas. The northern border of this secularized triangle runs from Picardy to Champagne, the western border from lower Normandy to the Charente and the south-eastern one from Burgundy to the Landes. A second area of profound secularization is found along the Mediterranean coast. Both areas are joined by a narrow strip along the Rhône valley. A remarkable feature of this regional pattern is that Catholicism regained strength during the 19th century in areas where also Protestantism had managed to survive after the revocation of the Edict of Nantes by Louis XIV (G. Cholvy and Y-M. Hilaire, 1985).

In Belgium, the consequences of the French Revolution were less marked and the marriage seasonality index in March and December only gradually rose from the very low levels under the Austrian Habsburgs to a maximum during the Napoleonic and subsequent Dutch periods (i.e. till 1830). Levels comparable to those in France were not reached, with the exception of the city of Liège with an index of 135 for the years 1800-1801. Hence, the submission of the church to the anti-Catholic policies of the French and Dutch state left unmistakable traces, but the majority of Belgian regions did not experience a definitive shift in the direction of irreversible secularization by 1830.

Nevertheless, the foundations were laid for a cleavage which becomes of major significance for Belgium's subsequent political and demographic history. The francophone southern half (Wallonia) had lower values of the marriage seasonality index in March and December than the adjacent French départements, but Walloon levels of secularization are higher than those of

the Flemish-speaking northern part of the country. The dichotomy is already in full view during the 1840s when the index can be computed for all Belgian arrondissements. The early industrialization of Hainaut and Liège provinces in Wallonia contributes to this contrast prior to 1850 (indices higher than 50 in industrial villages, R. Leboutte, 1985; J.P. Bougard, 1978), but industrialization was by no means the sole source of regional variation with respect to the ecclesiastic marriage ban. Strictly rural areas in Wallonia (e.g. the arrondissements of Huy, Waremme, Marche, Dinant and Philippeville) had indices comprised between 40 and 60 during the 1840s, and several other that were equally rural and located in the south-eastern corner of the country had values in excess of 60 (Bastogne, Neufchâteau and Arlon). Mid-century values for the Flemish arrondissements (with the exception of Brussels and Louvain) are all below 40, with several below 20 (Campine region, the cottage-industry belt of West Flanders). Moreover, also the record for Flemish urban parishes located in Ghent, Antwerp and Kortrijk, shows values below 50 during the period 1830-49.

Two conclusions emerge at this point. Firstly, the marriage seasonality index, which is at first a measure of ecclesiastic tolerance versus doctrinal rigour, gradually becomes a genuine measure of secularization of the population itself. Secondly, the regional levels and differentials in secularization are already largely fixed in France prior to 1850, whereas the Belgian regional pattern is still gradually emerging around that date.

The role played by the religious divide in national politics is also different in the two countries. France undergoes a series of changes in political regimes between 1789 and The Third Republic, which causes political cleavages to occur along other lines as well (e.g. republicans, royalists, bonapartists). H. Le Bras (1986) for instance notes that the political maps prior to the Third Republic fail to correspond with the map of secularization, although he equally admits that strongly Catholic areas tend to vote on the right. The political evolution in Belgium follows the secularization dimension much more closely. Already at the independence in 1830, the religious contrast forms an integral part of the initial two-party system (Catholics versus Liberals).

These events of the first half of the 19th century leave an imprint on the evolution of marital fertility in France: between 1787 and 1831 the I_g -index (x 1000) drops rapidly and by almost 5 points per annum. From 1830 to 1860, the pace slows down to 2 points p.a. The first phase corresponds to the economic crisis in France till about 1820 and to the early secularization wave. The slowing down of the marital fertility decline corresponds to the slow rise in purchasing power after 1820 and to the recovery of Catholicism during the Restoration. In Belgium, by contrast, there is no sign of any fertility decline prior to 1860, with the exception of that occurring among a small section of the bourgeoisie.

The developments of the second half of the 19th century add significantly to the ideological fragmentation in both countries. France abandons the monarchy in 1848, and the short-lived Second Republic (1848-52) starts with a radical-republican and socialist experiment inaugurating universal suffrage. The revolution of 1848 is significant as it indicates the emerge of a new political philosophy and vehicles of further secularization. But the reaction against it is even more important during the period 1849-70, i.e. the era starting with the election of Louis-Napoleon and the installment of the Second Empire. The political developments have to be seen

against the backdrop of the financial, agricultural and financial crises of the 1840s, and in the light of the take-off of industrialization and growth of major cities. The dominant political obsession of the Second Empire is that of control and pacification of the new industrial wage earning class. The fear for subordination and strikes orients a part of the bourgeoisie and industrial entrepreneurs to Catholicism, and Napoleon III gives full support to Catholic organizations during his entire reign. The budget for the "cultes" rises quite dramatically, the religious congregations expand from 4,000 priests and nuns in 1851 to 18,000 in 1861 (G. Duby, 1988), and above all, education is virtually entirely handed over to them. Moreover, the church resorts to the populist techniques of reviving pilgrimages and devotions, accentuating the cults of the Virgin Mary, and beatifying local figures as examples of Catholic faith. This populist strategy is given further impetus by Pius IX, especially after the loss of the Papal States. In short, exactly the opposite occurs between 1850 and 1870 from what Vovelle and colleagues observed during the 18th century: now, "le ciel se repeuple".

The consequences of this are visible in the evolution of French marital fertility. The decline of I_g comes to a halt in the 1850s and the aggregate national trend is reversed till the 1870s. In that period the national level of I_g (x 1000) in France increases on average by 1 point per annum. The regional pattern is even more telling. Marital fertility rises that bring the 1876 level of I_g back to the level of 1831 occur in several départements: Finistère, Manche, Corrèze, Aveyron and Basses-Alpes (E. van de Walle, 1974). In other areas, there is no backtracking whatsoever: Loire, Haute Saône, Nièvre, Somme, Oise, Lot-et-Garonne. The first group of départements belongs typically to the Catholic belt, whereas the second falls mainly in the secularized zones. Hence, there is a significant correlation between the magnitude of the increase in I_g between 1851 and 1876 (E. van de Walle coined the term "ski jump" for it since fertility declined again after 1876) and the indicators of Catholic strength (see Table 7). In addition, the "ski jump" was highest in the départements which had the highest marital fertility to start with, in areas with more traditional peasant agriculture, late marriage for women, low illegitimacy and strong linguistic particularism. In short, the correlates of the 19th century fertility bulge are identical to those of the later initial fertility decline in the 18th century (see also the canonical correlation results in Table 6).

The "ski jump" also occurred in several Belgian regions, but the peak is reached slightly later. The data by province are gathered in Table 8, where I_g -levels for 1880 are compared to those of 1802 and 1856. The marital fertility rise occurs in the four homogeneously Flemish provinces that had low marriage seasonality indices (less than 40 in 1860-65), and in none of the Walloon provinces or in linguistically mixed Brabant, that had seasonality indices indicative of greater disregard for the marriage ban during Lent and Advent.

The statistical results brought together in Table 9 confirm our earlier diagnosis (R. Lesthaeghe, 1977) about the link between secularization and the regional pattern of the Belgian fertility decline. The marriage seasonality index for Lent and Advent as measured by arrondissement in 1841-47 already clearly predicts the fertility map of 1880 ($r = -.55$). As the measurements of secularization approach the 1880's, the correlations with fertility and the speed of the marital fertility decline (ΔI_g) between

Table 7: Correlation between the magnitude of the French marital fertility increase ("ski jump") in the period 1851-1876 and selected demographic, socioeconomic and cultural indicators; 83 départements.

	Increase in marital fertility $I_g(1876) - I_g(1851)$
- level of I_g , 1831	+.42
- level of I_g , 1876	+.64
- index of proportions married women I_m , 1831	-.41
- index of illegitimacy I_h , 1831	-.30
- rural proletariat (métayers and journaliers, 1851	-.29
- inegalitarian inheritance, 1900	+.34
- endogamy (cousin marriage)	+.32
- patois and languages other than French, 1863	+.32
- reading without writing, 1872	+.37
- clergy refusing revolutionary oath of 1791	+.32
- clergy among army recruits, 1825-35	+.34
- ordinations, 1876	+.32
- vacant vicariates, 1885	-.06

Table 8: Rise in marital fertility (I_g) in Belgian provinces during the third quarter of the 19th century ("ski jump") and the MLA index in 1860-65.

Province	I_g 1802	I_g 1856	I_g 1850	change I_g (1802 to 1880)	change I_g (1856 to 1880)	MLA 1860-65
West-Flanders	.877	.897	.918	+.041	+.021	20
Limburg	n.a.	.839	.881	n.a.	+.042	28
East-Flanders	.780	.923	.921	+.141	-.002	36
Antwerp	.738	.799	.837	+.099	+.038	38
Namur	.767	.745	.618	-.149	-.127	45
Hainaut	.803	.722	.577	-.226	-.145	55
Brabant	.788	.765	.710	-.078	-.055	56
Liège	.801	.790	.704	-.097	-.086	66
Luxemburg	.854	.768	.733	-.121	-.035	67

Sources: J. Duchêne and R. Lesthaeghe (1975), R. Lesthaeghe (1977).

Table 9: Zero-order correlation coefficients for relationships between measures of secularization and demographic indicators in 41 Belgian arrondissements

	Marital fertility levels (I_g)		Speed of the marital fertility decline	Index of illegitimate fertility (I_h)	Divorce per 100.000 married women, 1967-1970
	1880	1910	ΔI_g (1880-1910)	1880	
<u>Marriage seasonality index in March and December</u>					
- 1841-47	-.55	-.51	.38	-.02	.35
- 1860-65	-.68	-.69	.58	.17	.57
- 1881-84	-.78	-.78	.71	.34	.69
<u>Votes for Socialist + Liberals</u>					
- 1919	-.81	-.93	.89	.42	.82
- 1958	-.72	-.86	.89	.63	.87
<u>Absenteism Sundays Mass</u>					
- 1964	-.70	-.77	.79	.69	.87

Note: ΔI_g is defined as $I_g(1880) - I_g(1910)/I_g(1880) - 0.200$, and it measures the proportion of the total marital fertility decline already accomplished by 1910.

1880 and 1910 improves further. The vote for the secularized parties (Socialist + Liberal) in 1919 is the single best indicator of both marital fertility levels in 1910 and the speed of the decline during the initial thirty years of the transition. Furthermore, the stability of the secularization maps of Belgian arrondissements from the 1860s till the 1960s can also be inferred from the consistent correlation coefficients between each of them and the demographic indicators such as marital fertility, illegitimacy and divorce. These findings clearly rule out any possibility that the link between secularization and fertility control is spurious and caused by economic structural factors. The geography of secularization forms a stable pattern several decades prior to the onset of the marital fertility decline and high secularization levels prevail in many francophone arrondissements that were untouched by the industrial developments (cf. supra). Another noteworthy feature is that there is only a weak negative relationship between literacy levels in Belgium around 1880 and levels of marital fertility, and no relationship between literacy and the speed of the fertility decline. It seems that a cultural ingredient of education, which is normally propitious for a fertility decline, was largely missing. This can be accounted for by the fact that schooling till the 1880s was primarily organized by Catholic orders. Furthermore, the issue of "control over the child's soul" led to open conflicts in the 1880s in several western European countries (in 1879 in Belgium, in 1881-82 and again in 1899 in France). In these periods the system of political patronage emerges fully, and it strengthens regional particularisms. Hence, this context of enhanced ideological "pillarization" is responsible for the strong statistical relations between voting results and demographic behaviour that is so frequently encountered in Western Europe between 1860 and 1960.

7. Conclusions

Several, more general conclusions emerge from the analysis of the two historical examples of France and Belgium. Firstly, institutional factors are not merely passive environments which determine possibilities or constraints for individual choice and action. Instead, they constitute changing settings that are shaped by political and religious agencies who defend their own interests and ideologies, alter their strategies when needed, and compete for influence. Hence, conceptual models of demographic change cannot be restricted to the individual level and household decisions, but need to take institutional agency into account. Secondly, it is the joint or synergistic action of economic and ideational factors that has determined changes in the reproductive regimes of the two examples considered here. We are dealing with interactive models that cannot be simplified to versions with mere "endogeneity of culture". The central issue is that motivation is not enough to trigger off a fundamental change in reproductive strategy, but that legitimation is equally needed. France combines these conditions around 1770, whereas Belgium and several other Western European countries meet them only a century later. Thirdly, there is no unique model that specifies individual motivation. The ingredients of the classic transition theory, such as rising income, investment in child-quality, opening up of new employment opportunities, social progress in the fields of child care and education, industrialization and decline of familial forms of production, are all absent when France starts its initial third of the marital fertility transition. It seems therefore justified to broaden our horizon with respect to the underlying motivations, and to in-

clude scenarios that deviate substantially from the classic script. The defensive or the crisis-led transition, as for instance envisaged by E. Boserup for Sub-Saharan Africa (and possibly operative in other LDC's as well during the 1980s), fits the French experience between 1770 and 1820 in many respects. We have commonly interpreted individual defense against a harsh environment as one of the factors contributing to the maintenance of high fertility (i.e. fertility as risk insurance). But, if returns from investment in particularistic networks diminish, self-defense against deteriorating standards of living can equally result in fertility control, provided that such action is ideologically and morally legitimized. Hence, there are several roads that lead to the same place, and some approach it from opposite sides. The detection of these intricacies seems to be served better by the detailed historical analysis of economic, political and social contexts than by the repeated application of the same, a priori defined and overly standardized micro-economic theory.

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