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Family Economy and Household Dynamics The Liégeoise Industrial Area During the Second Half of the Nineteenth Century

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Abstract: This paper deals with methodological questions concerning how to measure the productive capacity of a household unit; how to evaluate the level of consumption; and how to combine the two sides of the coin. The study is based on a sample of 1.413 households of the Liégeoise BasseMeuse between 1846 and 1900. As the productive capacity is concerned, the low level of occupational diversification among the gunsmiths' households (proto-industrial households) is badly counterbalanced by the presence of lodgers, while the coalminers' households adopt a strategy based on a high diversification of income sources. Secondly, both coalminers' and gunsmiths' households are not engaged in a process of nuclearization of the family group. To evaluate the consumption level of the households, we have applied, in a longitudinal perspective, a scale of consumption units used by experts in nutrition. The number of consumption units dramatically fluctuates according the household cycle. The highest level is reached after 20-25 years of existence. The productive capacity of the household is also maximal between 20 and 30 years of existence. The ratio between consumption units and active units shows that the critical periods in the history of the household is during the 10 first years of existence and at the end (after 35 years).

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Introduction

During the last decade or so, historians have considerably improved their methodological tools and extended our knowledge about the household structure and dynamics, and the family organization. They have rightly stressed the importance of the dynamics of family and household cycles, taking more and more into account the key functions of family units: reproduction, socialization, production and consumption. Moreover, the fresh evidence assembled about the protoindustrialization and the studies on migration spotlight the role of family, household and kinship as institution and process.[1]

Although historians have produced a finer and finer set of methods in order to analyse household dynamics and changes, the interrelations between demographic, socio-economic and cultural factors within the household, nevertheless, remain problematic. Of course, it is partly due to the nature and the quality of the sources available, mainly censuses which can only indirectly inform us about the family structure through time. Statistical methods, like the »event analysis« and the sophisticated use of genealogies, help to escape the primary limitations of the historical sources.[2] But theoretical and methodological problems remain more or less unsolved as the adaptive family economy is concerned, because it is always difficult to link all the factors at work in the household dynamics. Actually very few studies are dedicated to the family structure along the cycle.[3]

This paper intends to question two main topics: the production and consumption capacities of the households in a dynamic perspective. How can we measure the productive capacity of a household unit and the capacity to diversify sources of earnings? How can we evaluate the level of consumption? And, last but not least, how can we combine the two sides of the coin?

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[1] Leboutte R. (éd.), *Proto-industrialisation: Recherches récentes et nouvelles perspectives. Proto-industrialization: Recent Research and New Perspectives,* Centre d'Histoire économique internationale, Université de Genève, Genève, Droz, 1996; CERMAN M., OGILVIE S.C. (eds), *Protoindustrialisierung in Europa; Industrielle Produktion vor dem Fabrikszeitalter,* Wien, 1994 (and Cambridge University Press, 1997); EIRAS ROEL A., REY CASTELAO O. (eds), *Us migrations internes et à moyenne distance en Europe, 1500-1900,* Santiago de Compostela, vol. 1, 1994.

[2] About the use of genealogies: DELILLE G., *Famille et pro priété dans le Royaume de Naples,* Paris-Rome, 1985.

[3] LEBOUTTE R., »La dynamique des ménages au 19e siècle«, paper presented at the *Convegno internazionale «Strutture e rapporti familiari in epoca moderna: esperience italiane e riferimenti europei»,* Trieste, 1983 (unpublished rapport); IDEM, «Ménages et production dans la Basse-Meuse liégeoise au XIXe siècle«, paper presented at the Ninth International Economic History Congress, Bern, 1986 (Session 20. Social and Economic Aspects of the Family-cycle, organized by Richard Wall and Osamu Sarto); ALTER G., *Family and the Female Life Course. The Women ofVerviers, Belgium, 1849-1880,* University of Wisconsin Press, 1988; JANSSENS A., *Family and social change. The household as a process in an industrializing community,* Cambridge University Press, 1993 (especially pp. 69-114).

In order to reduce the difficulties, we will use the best sources available, that is to say the Belgian population registers of the second half of the Nineteenth Century, unanimously recognized as the richest documentation for the demographic studies.

As a huge literature has put forward the potentialities of this source, we only briefly call to mind the nature of the population registers. Created by the French administration during the Napoleonic Empire (based on the ***décret*** of 19-20 July 1791), the population register has been reformulated and improved by Adolphe Quetelet at the time of the first Belgian census in 1846." The population register ideally combines a list of persons (by considering the household as unit, that is to say one folio for one household), that is constantly updated, and a list of events that are happening to each individual as well as to the whole household (migration for instance). In other words, it is a cross between a census, a vital registration, a in- and out-migration register, and policy records.

The problems concerning the quality of the registration and the methods for testing and using the population register have been discussed intensively elsewhere. Thus let us focus on the two main questions mentioned before. To do so, we will focus on the Liégeoise Basse-Meuse in the second half of the Nineteenth Century and, more precisely, we will use the population registers of three important communities (Herstal, Cheratte, Oupeye) between 1846 and 1900 as a set of documentation to explore the family economy in a dynamic perspective. Moreover, we will also limit the analysis on two main occupational subgroups: the coalminers and the gunsmiths. The first clearly represent the proletarian households, while the latter represent the protoindustrial ones.[5]

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[4] LEBOUTTE R., OBOTELA R., »Les registres de population en Belgique. Genèse d'une technique administrative et d'une source de démographie historiques dans le *Bulletin de la Commission royale d'Histoire,* t. CLIV, 3e-4e livraisons, Bruxelles, 1988, pp. 285-305 (paru en 1989); LEBOUTTE R., *Du registre de population au Registre national. 1791-1991. Deux siècles de pratique administrative,* Institut Universitaire Européen, working papers du Département d'Histoire (sous presse).

[5] Further informations about the historical demography and the socio-economic context of these subgroups are available in LEBOUTTE R., *Reconversions de la main-d'oeuvre industrielle et transition démographique. Les bassins industriels en aval de Liège, XVlle-XXe siècles,* (Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, fascicule CCLI), Liège-Paris, 1988; IDEM, »L'apport d'une analyse différentielle des populations ouvrières de la la Basse-Meuse liégeoise«, dans *Population et Famille,* t. 54, 1981, 3, pp. 103-137; IDEM, «Reconstitution des familles et dynamique des ménages: l'apport des registres de population belges«, dans *Archives et Bibliothèques de Belgique,* n° spécial 24 «Sources et méthodes de la démographie historique avant 1850«, Actes de la journée d'étude de Bruxelles, édités par Fr. Daelemans, Bruxelles, 1984, pp. 89-112; IDEM, «Au carrefour des transitions : fécondité, niveau de vie et culture populaire«, dans *Annales de Démographie Historique,* Paris, 1987, pp. 175-212; IDEM, «Adaptation, reconversion, mutation. Le rôle de la proto-industrialisation dans la genèse du bassin

I. Household structure and household dynamics. An overview

Table 1 gives a general picture of the household structures of the Basse-Meuse in 1846 and 1880. The first observation is a clear prevalence of the nuclear family units (category 3 of the Hammel-Laslett typology.[6]). More interesting, however, seems the relative importance of the extended family and multiple family households (15-16% both in 1846 and 1880) and the presence of lodgers among these households (table 2).

In the region of Liège, the ***neolocalism*** is a general rule: every new couple creates its own household and lives in its own individual house or flat.[7] The cohabitation of couples of different cohorts (category 5), if not unkown, remains exceptional and for a limited period of time (less than 5 years). Table 1 also shows no significant change in the distribution between 1846 and 1880. If table 2 indicates a clear reduction of the proportion of households with lodgers, we will see that, in fact, this change does not affect the working class (coalminers and gunsmiths). The change concerns peasant households and households engaged in the tertiary sector.

The relatively low complexity of household arrangements is confirmed by two very simple indexes: the average number of adults per household (APH), and the number of marital units per household (MUH) (table 3). Between 1846 and 1890, the APH tends to diminish indicating a growing importance of the simple family households, meanwhile the MUH is more and more close to 1. As a point of comparison, in 1876, the value of APH in France fluctuated between 2,25 and 3,14, and the MUH, between 0,95 and 1,29. The complexity of households is considered as minimal when APH is about 2,00 and MUH, 0,90[8] As we see in the case of Herstal, since the mid-Ninteenth Century the complexity of household is constantly diminishing and is quite inexistent in 1970 (table 4).

industriel liégeois«, dans Leboutte R. **(edit.)**, *Proto-industrialisation: Recherches récentes et nouvelles perspectives. Proto-industrialization: Recent Research and New Perspectives,* Centre d'Histoire économique internationale, Université de Genève, Genève, Droz, 1996, pp. 263-290.

[6] HAMMEL E.A., LASLETT P., »Comparing household structure over time and between cultures«, dans *Comparative studies in society and history,* t. 16, 1974, 1, pp. 73-109; LASLETT P., »Family and household as work group and kingroup : areas of traditional Europe compared«, dans *Family forms in historic Europe,* Cambridge, 1983, pp. 518-519; WALL R., SCHURER K., «Computing the history of the family : a question of standards«, dans *Archives et Bibliothèques de Belgique,* n° spécial 24, Bruxelles, 1984, pp. 113-133.

[7] MAHAIM E., *Enquête sur la situation hygiénique des habitations ouvrières dans la commune de Herstal. Rapport présenté au Comité de patronage des habitations ouvrières de la Ville de Liège et des communes limitrophes,* Liège, s.d., (1908), p. 53.

[8]. These indexes have been created by W.L. Parish and M. Schwrte; see:WALL R., »Work, welfare and the family : an illustration of the adoptive family economy«, dans *The world we have gained : histories of population and social structure,* édité par L. Bonfield, R.M. Smith, K. Wrightson, Oxford, 1986, pp. 261-294.

Table 1: The households in the Liegeoise Basse-Meuse, 1846-1880. Structure of households by categories and classes.

Category	Class	1846	1880
1. Solitaries	(a) Widowed	1,5	2,0
	(b) Single, or of unknown marital status	2,7	2,9
2. No family	(a) Coresident siblings	1,8	2,5
	(b) Coresident relatives of other kinds	0,7	0,8
	(c) Single women with child(ren)	1,2	0,7
3. Simple family households	(a) Maried couples alone	7,4	8,7
	(b) Maried couples with child(ren)	54,1	51,6
	(c) Widowers with child(ren)	4,4	4,5
	(d) Widows with child(ren)	10,1	10,6
4. Extended family households	(a) Extended upwards	5,7	5,0
	(b) Extended downwards	1,5	3,1
	(c) Extended laterally	4,3	3,8
	(d) Combinations of 4a-4c	0,4	0,5
5. Multiple family households	(a) Secondary unit up	0,7	0,7
	(b) Secondary unit down	2,0	2,2
	(c) Units all on one level	0,4	0,2
	(d) *Frérèche*	0,0	0,0
	(e) Other multiple families	0,4	0,2
6. Indeterminate		0,7	0,0
Total		100,0	100,0
Number of households		3769	4562

Table 2: Proportion of households with lodgers, 1846-1880.

Households with	1846	1880
Servants	4,8	2,2
Workers (lodgers)	5,8	2,7
Orphans	1,6	0,5
Total (% of the households)	12,2	5,4
Number of households with lodgers	462	246

Table 3: Household complexity indexes in the Basse-Meuse, 1846-1890

	APH	MUH
1846	2,76	1,05
1866	2,69	1,05
1880	2,59	1,04
1890	2,59	1,03

APH = average number of adults per household
MUH = number of marital units per household

Table 4: Household complexity indexes in Herstal, 1812-1970

	APH	MUH
1812	2,79	1,08
1830	2,80	1,07
1846	2,80	1,07
1866	2,62	1,04
1880	2,56	1,03
1890	2,56	1,02
1900	2,43	0,98
1910	2,13	0,90
1920	2,15	0,92
1970	1,92	1,01

APH = average number of adults per household
MUH = number of marital units per household

II. Household structure and dynamics by occupation

If we consider the two main occupational subgroups, coalminers and gunsmiths, the picture and above all the changes are more dramatic. Table 5 gives the household structure in 1846 and 1880. In the mid-Nineteenth Century the proportions of extended family households and multiple family households reach 12% among the coalminers and 21% among the gunsmiths.

The more frequent extended family households among the gunsmiths is a characteristic of the cottage-industry organization which is favorable of keeping together offspring and relatives, but also attached lodgers. In fact, as the percentage of extended and multiple family households diminish from one period to another, we observe a growing proportion of gunsmith's households with attached lodgers. Evidences from the late Nineteenth Century confirm that the gunsmiths suffered an increasing economic hardship and that they tried to survive adopting the so-called sweating system.[9]

From 1846 to 1880 we also observe a convergence to a more uniform household distribution between gunsmiths and coalminers. In the last quarter of the century, both subgroups share the same household pattern characterized by a prevalence of extended family (even if, of course, the simple family unit dominates). We observe not only an uniformization of the household structure regardless of the occupation of the household's head, but also an increasing proportion of extended households and of households with attached lodgers, a picture related to the hard economic depression of the 1880s which contradicts the commun opinion of a simplification of household structure during the industrialization. In fact, what we see is a capacity of the household to adapt itself to economic circumstances, as Richard Wall has noticed (»adaptive family economy«).[10]

III. Family structure along the cycle. A longitudinal analysis

The transversal analysis hardly reflects the household dynamics and the actual importance of the extended family household in the successive stages of the family cycle (or more exactly: of the household cycle)." This is the reason why we prefer to adopt the longitudinal perspective, even if it is a more time

[9] ANSIAUX M., *L'industrie armurière liégeoise,* Bruxelles, 1899; JULIN A., «Ouvrier gamisseur de canons de fusils de la fabrique collective d'armes à feu de Liège [...]«, dans *Les Ouvriers des deux mondes,* second series, nr 37, Paris, 1893.

[10] WALL R., »Work, welfare and the family«; IDEM, «Beroeps- en gezinsstructuren : Brugge in het begin van de negentiende eeuw«, dans *Handelingen van het genootschap voor geschiedenis,* Bruges, 123e année, 1986, 1-2, pp. 29-60. See JANSSENS A., *Family,* pp. 69-70.

" BERKNER L.K., »The use and misuse of census data for the historical analysis of family structures dans *Journal of Interdisciplinary History,* t. 5, 1975, 4, pp. 721-738

Table 5: The households of coalminers and gunsmiths in the Liegeoise Basse-Meuse, 1846-1880. Structure of households by categories.

Category	1846		1880	
	Miner	Smith	Miner	Smith
1-2. Solitaries or no family	2,6	3,0	1,4	4,7
3. Simple family households	85,5	76,5	78,6	79,6
4. Extended family households	8,6	18,0	17,1	14,5
5. Multiple family households	3,3	2,5	2,9	1,6
Total	100,0	100,0	100,0	100,0
Number of households	151	201	140	317
% of households with lodgers	1,3	6,0	5,7	9,8

Table 6: The household cycle of Etienne's household, Cheratte, 1851-1895

Duration in years	Category	Mean size
0-7	3	4,4
8-11	5	10,5
12	4	10
13-19	3	4,7
20-21	1	1

Source: Communal Archives, Cheratte, *Population registers, 1846-1900.*

consuming method requiring high quality sources. In the present case, the population registers of Herstal, Cheratte and Oupeye between 1846 and 1900 are complete and reliable enough to reconstruct the household histories in great detail. Moreover, the sources are well documented as to the occupations of the members of the households, even with regard to young children.

On the methodological point of view the longitudinal analysis based on series of population registers could be performed in two ways. The first one consists in the reconstruction of the individual life cycle taking also into account the successive household configurations in which the individual is involved. This approach allows us to link family life time and individual life time. Using such a method it is possible, for instance, to stress the female life course.[12] The second possibility consists in following a sample of households through time. In this case, the focus is on the household as such. Of course, as recent studies have demonstrated, the two approaches are complementary.[13]

Here, we give the preference to this approach. Even with high quality and complete series of population registers, as that of the Basse-Meuse communities, the historian cannot escape the theoretical and methodological problems. Immediately we are confronted with the problem: what is a household? Of course the definition is well known and rather well operative.[14],

; IDEM, »The stem family and the developmental cycle of the peasant household : an eighteenth-century austrian example«, dans *The American Historical Review,* t. 77, 1972, 2, pp. 398-418 ; IDEM, »Peasant household organization and demographic change in Lower Saxony (1689-1766)«, dans *Population patterns in the past.* New York, 1977, pp. 53-70 ; VINOVSKIS M.A., »From household size to the life course. Some observations on recent trends in family history«, dans *American Behavioral Scientist,* t. 21, 1977, pp. 263-287 ; BOUCHARD G., »L'étude des structures familiales pr£industrielles : pour un renversement des perspectives«, dans *Revue d'Histoire moderne et contemporaine,* t. 28, oct.-d6c. 1981, pp. 545-571.

[12] ALTER G., *Family and the Female Life Course,* pp. 25-90. See also: HAREVEN T.K., »Family time and industrial time : family and work in a planned corporation town, 1900-1924«, dans *Family and kin in urban communities, 1700-1930,* New York, Londres, 1977, p. 187-206 ; IDEM, »Cycles, courses and cohorts : reflections on theoretical and methodological approaches to the historical study of family development, dans *Journal of Social History,* t. 12, 1978, 1, pp. 97-109 ; IDEM, »The dynamics of kin in an industrial community, dans Turning points : historical and sociological essays on the family«, dans *American journal of sociology,* vol. 84, supplement, 1978, p. 151-182 ; IDEM, *Family time and industrial time : the relationship between the family and work in a New England industrial community,* Cambridge Mass., 1982, 474 p. ; IDEM, »Modernization and family history : perspectives and social change«, dans *Signs: Journal of women in culture and society,* 1976, 2, 1, p. 190-206; IDEM, »The history of the family as an interdisciplinary field«, dans *Journal of Interdisciplinary History,* t. 1, 1971, 2, pp. 399—414 ; IDEM, »The family as process : the historical study of the family cycle«, dans *Journal of Social History,* t. 7, 1974, 3, pp. 322-329 ; HAREVEN T.K., »Introduction : The historical study of life course«, dans *Transitions. The family and the life course in historical perspective.* New York, 1978, pp. 1-16.

[13] IANSSENS A., *Family, passim.*

[14] PIRON Th., *Des registres de population en Belgique. Manuel pratique,* Lierre, 1901,

but in a dynamical perspective the household appears to be a very flexible institution, the limits of which are not always easy to define.

How can we precise the beginning of a new household? In the case of an extended rule of neolocalism the apparition of a household is clear because a new folio of the population register is attributed to the new unit, even if this one is reduced to an isolate person. The situation is less precise in case of multiple family units because the population registers rarely mention changes of the head within the household. The distinction between category 5a and category 5b seems to be a very artificial one, and we decide to ignore this distinction. As a general rule we consider the inscription of a household on a new folio of the population register as a de facto new unit, even if the exact dating of the new household is not always clear (generally it corresponds to the date of the marriage).

The end of a household is more problematic because it not always corresponds to the disappearance of all the members, but frequently to a new arrangement of the household. In this case, is it a new one or not? The only way to escape such a dilemma is to identify the household with the household head officially registered as such and to consider any change at the top of the household, at the head, as the disappearance of the previous unit and the formation of a new one.

Moreover we cannot consider the migration of a household as a final fact, but it is not always possible to follow households through population registers from one village to another. In other words, we automatically give preference to stable households over more mobile ones, which is an important bias especially in coal mining communities noticed for the high level of turnover.[15] In the case of the Basse-Meuse, this problem is less pronounced than in the case of Seraing for instance, but we must be aware of the fact that we do not know very well the impact of migration on the household structure and dynamics. In this context, the method of reconstructing the individual life cycle seems more appropriate.

In spite of these limitations, we succeeded to reconstruct the household cycle of 1.413 units followed between 1846 and 1900. This sample has also been subdivided in two groups: 960 households headed by a gunsmith and 453 households headed by a coalminer.

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p. 56; KLEP P.M.M., *Bevolking en arbeid in transformatie. Een onderzoek naar de ontwikkelingen in Brabant, 1700-1900,* Nimègues, 1981, pp. 419^21; LACOMBE B., «Ménage et famille en démographie. Concepts, données, méthodes«, in *L'analyse démographique et ses applications,* Ve colloque national de démographie du CNRS, Paris, 20-22 octobre 1975, Paris, 1977, pp. 295-300; SEGALEN M., *Sociologie de la famille,* Paris, 1981, p. 15.

[15] LEBOUTTE R., *Le livret d'ouvrier dans la province de Liège. Une source méconnue en Histoire sociale. Présentation et premiers résultats d'exploitation,* (Collection d'Etudes du Musée de la Vie Wallonne, n°5), Liège, 1988.

Moreover, the event-analysis method has been adopted to combine the individual life cycle and the household cycle. Let us consider the household of Jean Etienne in Cheratte from November 1851 (marriage) until September 1895 (death of the head) (table 6). This household cycle comes to the same results as distributing 21 households observed in a single year. We can thus transform table 6 in this way: 21 household-year (14 of category 3; 4 of category 5; 1 of category 4 and 2 of category 1). In the same way, it is easy to calculate the number of person-year in each configuration (46,6 person-year in the category 3; 10,5 in the category 5; 10 in the category 4 and of course 1 in the last category).[16]

IV. Household dynamics among coalminers and gunsmiths

Tables 7-8 show the distribution of the household-year according to the Hammel-Laslett typology for the households headed by the coalminers and the gunsmiths. The results significally differ from those given in table 5. The frequency of extended and multiple family households among the coalminers and, to a less extend, among the gunsmiths is higher than suspected by the transversal analysis. 27,5% of the household-year correspond to the categories 4-5 among the coalminers (but only 11,9% in the 1846 census) and 17,7% among the gunsmiths (16,6% in 1846).

The proportion of extended households among coalminers and gunsmiths is not only important as such, but also as the mean duration of this configuration is concerned (7 years) and consequently as the number of person-year living in an extended family household during their life is taken into account.

Moreover the comparison of the two tables shows a similar pattern of household cycle for coalminers and gunsmiths (graph 1), except one important difference: the households headed by a gunsmith are more open to attached lodgers than those headed by a coalminer. Moreover, the duration of a household with lodger is remarkably long (more than five years). The presence of attached lodgers, like apprentices and young workers, is in fact a characteristic of the protoindustrial household in the Basse-Meuse, reinforced by the sweating-system.

It is clear that both the proletarian households and the protoindustrial ones offer the same pattern during the second half of the Nineteenth Century, except the presence of lodgers. In other words, the present case does not confirm the sociological theory which postulates that family solidarities in industrial society necessarily had to be restricted to the members of the nuclear family only.

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[16] VAN DE WALLE E., »Household dynamics in a Belgian village, 1847-1866«, dans *Journal of Family History,* t. 1, 1976, 1, pp. 80-94.

Table 7: Households of coalminers, 1846-1890.

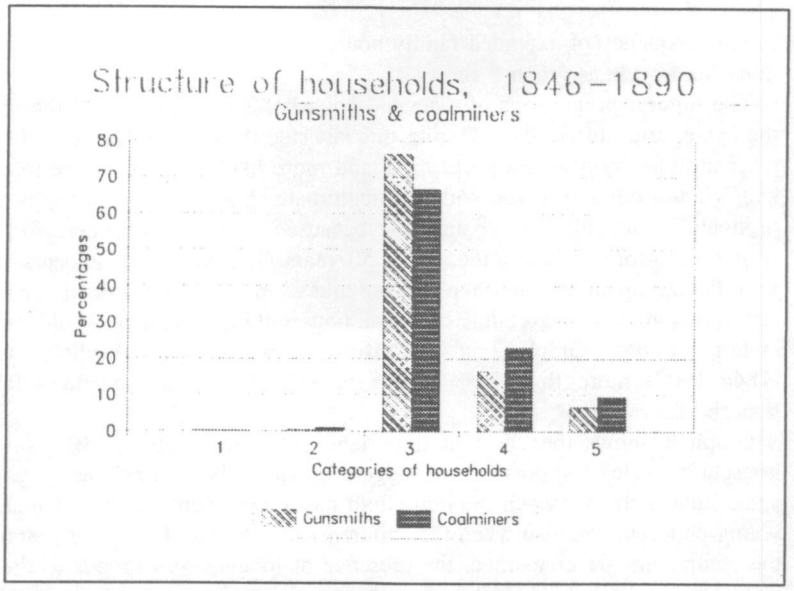
Type	Duration (# years)	Duration (%)	Mean duration	Person Years (#)	Person Year (%)
1	22	0,7	2,0	22	0,1
2	47	1,4	3,1	152	0,8
3	2303	68,5	9,2	12888	65,8
4	701	20,8	6,8	4483	22,9
5	224	6,7	3,7	1702	8,7
L	64	1,9	4,6	341	1,7
#	3361	100,0	7,4	19588	100,0

Note: L = household with lodgers. Number of households = 453.

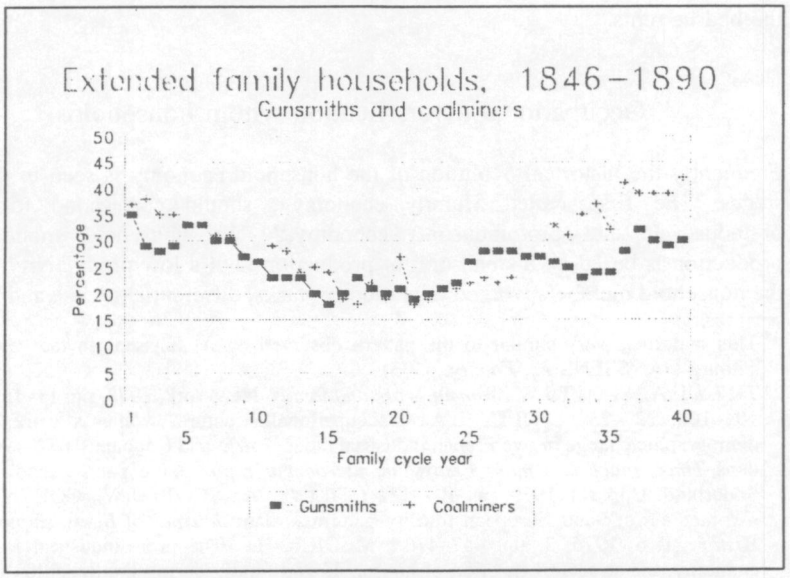
Table 8: Households of gunsmiths, 1846-1890.

Type	Duration (# years)	Duration (%)	Mean duration	Person Years (#)	Person Year (%)
1	72	0,9	4,5	72	0,1
2	41	0,5	4,1	98	0,2
3	6076	73,1	10,8	32224	70,2
4	1130	13,6	7,0	7108	15,5
5	342	4,1	3,5	2588	5,6
L	649	7,8	5,6	3835	8,4
#	8309	100,0	8,7	45925	100,0

Note: number of households = 960.



Graph 1: Structure of households, 1846-1890
Gunsmiths & Coalminers



Graph 2: Extended family households, 1846-1890
Gunsmiths & Coalminers

The frequency of extended family households is also strongly related to the household cycle as graph 2 shows.

The highest proportions of extended households are observed at the end of the cycle, after thirty years. During this last step the households headed by an old couple or by a widower are more and more likely to incorporate relatives and/or adult children (even with an illegitimate child). This tendency is more pronounced among the coalminers because of the disavantages of the wageearning profile above the age of 50 years. The other peak appears at the very beginning of the household cycle and is in fact the result of the same phenomenon. A young couple creates a household but opens it to old parents and/or siblings. Graph 2 also confirms that during the whole period (1846-1900) more than 20% of the household-Year are extended family households.[17]

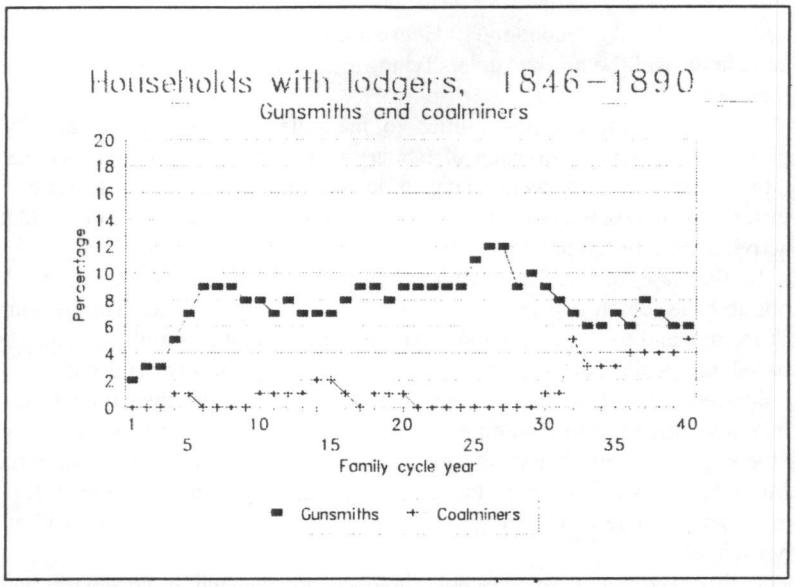
Graph 3 shows the constant importance of lodgers during the gunsmith household cycle. The presence of lodgers is especially high between 5 and 25 years, that is to say, when the household has a maximum number of unactive young children, and also when the children leave the family (25-30 years). As the coalminers are concerned, the presence of lodgers corresponds to the last phase of the household cycle when the standard of life of the household is declining due to the wage-earning profile of coal mining activity. The lodger, who is frequently a young miner, contributes to the survival of the family by the bed he rents.

V. Occupational diversification within households

Frequently the historical evolution of the household economy is seen in three stages. The first, called »family economy«, should correspond to the preindustrial (and protoindustial) economy.[18] The household mode of production is based on a small unit of production with a low productivity. All the household members worked at productive tasks, differential by age and sex.

[17] This pattern is very similar to the pattern observed by A. Janssens in the case of Tilburg (JANSSENS A., *Family,* p. 73).

[18] TILLY L.A., SCOTT J.W., *Women, work and family,* New York, 1978, pp. 13-15, 43, 104-106, 227-232 ; TILLY L.A., »Occupational structure, women's work, and demographic change in two French industrial cities, Anzin and Roubaix, 1872-1906«, dans *Time, space and man. Essays on microdemography,* édité par J. Sundin, E. Sôderlund, Uppsala, 1979, pp. 107-132 ; TILLY LA., SCOTT J.W., COHEN M., »Women's work and European fertility patterns«, dans *Journal of Interdisciplinary History,* t. 6, 1976, 3, pp. 447^176 ; MEDICK H, »The proto-industrial family economy, the structural function of household and family during the transition from peasant society to industrial capitalism«, dans *Social History,* 1976, 3, pp. 291-315; MEDICK H, »The proto-industrial family economy«, dans KRIEDTE, P., MEDICK, H., SCHLUMBOHM, J., *Industrialization before industrialization. Rural industry in the genesis of capitalism,* Cambridge, 1981, pp. 38-73. About the position of



Graph 3: Households with lodgers, 1846-1890
Gunsmiths & Coalminers

The second stage should be the »family wage economy«. The work is performed outside the household and the household economy is based on sharing the wages of the active members. The household members share consumption, not production. The last stage should be characterized by a wider division of labour and tasks within the household. Male members and unmarried children were family wage earners, while wives took care of children and of the household management. This stage is called »family cosumer economy«.

Such a distinction by successive stages never seems to correspond very well with the reality however. Thus Richard Wall prefers to speak about the

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Franklin Mendels regarding the role of family in the economy, see: MENDELS F.F., »Proto-industrialization : the first phase of the industrialization process, dans *Journal of Economic History,* t. 32, mars 1972, pp. 241-261 ; IDEM, «Agriculture and peasant industry in Eighteenthcentury Flanders«, dans *Essays in agrarian economic history,* édité par W.N. Parker et E.J. Jones, Princeton, 1975, pp. 179-204; IDEM, »Des industries rurales à la protoindustrialisation : historique d'un changement de perspective«, dans *Annales, Economies, Sociétés, Civilisation,* n°5, septembre-octobre 1984, pp. 987-994 ; IDEM, »Les temps de l'industrie et les temps de l'agriculture. Logique d'une analyse régionale de la protoindustrialisation«, dans *Revue du Nord,* t. 63, n°248, janvier-mars 1981, pp. 21-34 ; IDEM, »Sur les rapports entre l'artisanat et la révolution industrielle en Flandre«, dans *Symposium international de l'histoire de l'artisanat, Veszprèm 21-26 août 1982,* (Ungarische Akademie der Wissenschaften), Veszprèm, 1983, pp. 19-48.

»adaptive family economy«. Households attempted to maximize their economic well-being by diversifying the employments of the household members.[19]

There are different possibilities to maximize the household capacity of production: a gender division of labour; a diversification through occupation (some male workers were engaged in agriculture, others in factories, for instance); a combination of both cottage industry and factory industry activities; the by-employment and so on.

In the case of the Basse-Meuse, we observe in fact a mixing of these possibilities which appears to be a conscient strategy to maximize the sources of income and to reduce the risks. At the same time, the household economy is based on gender division (the women in the gunsmiths' households were requested to work at the cottage forge and to transport the products to the merchant manufacture), on multiple occupation (some men worked at the forge, others in a small factory or even at the mine) and on by-employment. Moreover, as we have seen, these households were open to lodgers.[20] Table 9 gives an example of maximizing returns by diversification of tasks within the household.

In this example, some household members are engaged in the wage economy (coalminers), others in the »preindustrial« activity (the production of straw-plaits for the hatmakers), while the wife kept a ***cabaret*** and a young child worked in the farms. In case of crisis in the coalmining (as it happened in 1874-1876), the household continued to receive incomes from other activities less affected by unemloyment.

This diversification, including the by-employment, is largely diffused among the Basse-Meuse households in the Nineteenth Century. Of course, it is not possible everywhere: the Basse-Meuse has a long tradition of protoindustrialization and of occupational diversification, which has generated an early diversified local economy.[21]

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[19] WALL R., »Work, welfare and the family : an illustration of the adoptive family economy«, dans *The world we have gained: histories of population and social structure,* édité par L. Bonfield, R.M. Smith, K. Wrightson, Oxford, 1986, pp. 261-294; IDEM, »Beroeps- en gezinsstructuren : Brugge in het begin van de negentiende eeuw«, dans *Handelingen van het genootschap voor geschiedenis,* Bruges, 123e année, 1986, 1-2, pp. 29-60.

[20] LEBOUTTE R., Reconversions, pp. 95-175.

[21] Innumerable evidences in LEBOUTTE R., *L'Archiviste des rumeurs. Chronique de Gaspard Marnette, armurier, Vottem 1857- 1903,* (Collection d'études publiée par le Musée de la Vie Wallonne, n°6), Liège, Editions du Musée de la Vie Wallonne, décembre 1991; IDEM, «Adaptation, reconversion, mutation. Le rôle de la proto-industrialisation dans la genèse du bassin industriel liégeois«, dans Leboutte R. (édit.), *Proto-industrialisation: Recherches récentes et nouvelles perspectives. Protoindustrialization: Recent Research and New Perspectives,* Centre d'Histoire économique internationale, Université de Genève, Genève, Droz, 1996, pp. 263-290. About the protoindustrialization in the region: GUTMANN M.P., LEBOUTTE R.,

Table 9: Occupational diversification within the household. Example, 1866.

Members	Age	Occupation
Head	52	coalminer
Wife	52	innkeeper
Daugther	24	straw-plaiter
Son	23	gunsmith
Daugther	20	straw-plaiter
Daugther	18	straw-plaiter
Son	16	day-labourer
Son	14	coalminer
Son	11	coalminer
Daughter	7	straw-plaiter
Son	5	no occupation

Source: Communal Archives of Oupeye, *Population register 1866-1880*, t. 1, f° 86.

The methological problem posed by the family economy is to appreciate not only the productive capacity of the household unit, but also the extent to which occupations and sources of income are diversified. The only way to correctly measure the actual well-being of the households would be to analyse the family budget, but we have very few budgets for the Nineteenth Century BasseMeuse.[22] We are thus obliged to follow an indirect path. Having at our disposal the occupations of all the household members (as table 9 shows), we propose a scale of household occupational diversification of five levels:

1) no diversification at all: the household head is the only one to be active;
2) elementary diversification: active males with the ***same*** occupation as the

»Rethinking Protoindustrialization and the Family«, in *Journal of Interdisciplinary History,* t. 14, 1984, 3, pp. 587-607.

[22] *Commission du travail instituée par arrêté royal du 15 avril 1886,* 4 volumes, Bruxelles, 1887-1888.

Table 10: Occupational diversitfication inside the household. Households of coalminers, 1846-1890

	1846	1866	1890
1. No active meber excepted the head	56,3	40,0	44,0
2. Active female only or active male with the same occupation as the head and no active female	22,5	31,3	18,9
3. Active female and active male with the same occupation as the head	10,0	14,7	6,8
4. Active male with another occupation as the head and no active female	7,9	6,0	17,4
5. Active male with another occupation as the head and active female	3,3	8,0	12,9
Total	100,0	100,0	100,0
# of households	151	150	132
Index of occupational diversification	0,27	0,40	0,59

head and no active female; or active female only;

3) low diversification: active males with the ***same*** occupation as the head and active female;
4) high diversification: active males with ***another*** occupation compared to the head and ***no*** active female;
5) very high diversification: active males with ***another*** occupation compared to the head and active female.

We also tried to extend the number of levels distinguishing cottage industry and factory industry, and by age, but, at the end, the results did not give a significant different picture. We also created a general index of occupational diversification of the household by dividing the number of households of categories 1 to 3, by the number of households of categories 4—5. The result is very satisfactory as tables 10-11 show. The index of occupational diversification is 0,27 among the households of the coalminers in 1846, but

only 0,09 among the households of the gunsmiths. The diversification dramatically increased among the coalminers between 1846 and 1890, but remained low among the gunsmiths.

Table 11: Occupational diversitfication inside the household. Households of gunsmiths, 1846-1890

	1846	1866	1890
1. No active meber excepted the head	58,2	54,7	41,0
2. Active female only or active male with the same occupation as the head and no active female	32,8	35,7	43,1
3. Active female and active male with the same occupation as the head	3,5	5,4	9,3
4. Active male with another occupation as the head and no active female	4,5	3,1	5,1
5. Active male with another occupation as the head and active female	1,0	1,1	1,5
Total	100,0	100,0	100,0
# of households	201	258	332
Index of occupational diversification	0,09	0,11	0,19

In other words, the proletrian households (coalminers) seems to be more and more likely to diversify sources of income by mixing the wage economy and the family economy. The gunsmiths tried to escape the structural crisis of the cottage industry through the disastrous sweating-system which finally pushed them into the proletarization process clearly at work since the 1880s.[23]

[23] ANDRI A., »L'armurerie liégeoise avant 1914«, in *Le Musée d'Armes,* Liège, 1976, t. 11, pp. 10-12; t. 12, pp. 7-18.

Consumption

The last question we put here is how to measure the actual consumption level of a household. We propose to calculate the number of consumption units per household. We have started by assuming that the needs and consequently the consumption pattern differ according to age and sex. These differences could be standardized using a scale of consumption units established in 1932 by experts in nutrition. According to this scale, the consumption of an adult male is considered as 1 (one unit). All other persons are supposed to have an inferior level of consumption (table 11).

Let us apply this scale to the household of table 9. The household size is eleven, but the consumption unit is only 8,8, which is more realistic because males and females, adults and children have not the same needs.

We have applied this scale to a sample of 202 households of Cheratte in a longitudinal perspective (table 12, graph 4). We see that the number of consumption units dramatically fluctuates according to the household cycle. The highest level is reached after 20-25 years of existence, and slowly declined after 25 years. If we calculate the number of active units per household, we see that the productive capacity of the household is also at its maximal between 20 and 30 years of existence. The ratio between consumption units and active units shows that the critical periods in the history of the household is during the 10 first years of existence and at the end (after 35 years).

Conclusion

In this paper we have tried to measure the occupational diversification among households and the consumption level taking into account the household structure along the cycle. Of course, the methodological tools we propose give only indirect quantitative values, but the results seem very promising. We observe a low level of occupational diversification among the gunsmiths' households which is badly counterbalanced by the presence of lodgers, while the coalminers' households adopt a strategy based on a high diversification of income sources.

Secondly, both coalminers' and gunsmiths' households are not engaged in a process of nuclearization of the family group. In fact, the percentage of simple family households (around 60-70%) is already observed in the mid-Eighteenth Century and was to grow only after the second world war.[24]

Finally, it seems to be very fruitful to measure the other aspect of the family economy in a more refined way: the consumption. The application of the

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[24] LEBOUTTE R., 'La dynamique des ménages aux XVIIIe-XIXe siècles. L'exemple de la Basse-Meuse liégeoise« (forthcoming).

Table 12: Consumption scale

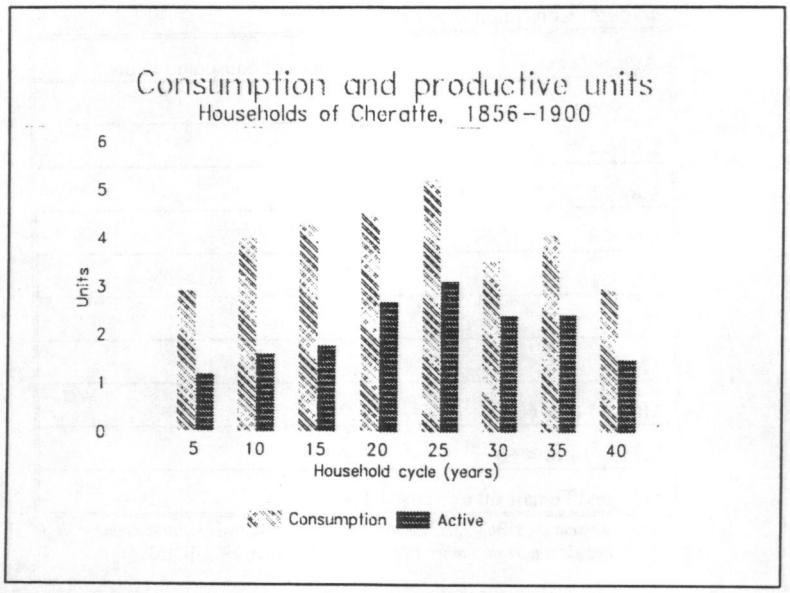
Age and sex	Number of consumption units
< 2 years	0,2
2 to < 4	0,3
4 to < 6	0,4
6 to < 8	0,5
8 to < 10	0,6
10 to < 12	0,7
12 to < 14	0,8
Male 14 to < 60	1,0
Female 14 to < 60	0,8
Male and Female 60 or more	0,8

Source: Royaume de Belgique, Institut National de Statistique, *Recensement de la population 31 décembre 1970*, t. 5 A, Bruxelles, 1974, p. 133.

Table 13. Consumption units per household. 202 households of Cheratte, 1846-1900.

Duration in year	Mean size of household	Number of consumption units per household	Number of active units per household	Number of consump-tion units per active
5	4,6	2,91	1,20	2,43
10	5,5	4,0	1,60	2,50
15	5,8	4,28	1,78	2,41
20	5,3	4,54	2,68	1,69
25	6,1	5,22	3,10	1,68
30	4,2	3,52	2,40	1,47
35	4,6	4,07	2,43	1,67
40	3,4	2,96	1,50	1,97

Source: Communal Archives, Cheratte, *Population registers, 1856-1900.*



Graph 4: Consumption and productive units
Households of Cheratte, 1856-1900

consumption scale is very promising not only as such, but also combined with the measure of the productive capacity of the households.

Of course the methodological tools proposed here must be improved, but they already pave the way to a more comprehensive appreciation of the family and household economy. The only barrier that still remains is the necessity to dispose of very high quality sources.