

## *Demographic and Economic Rhythms: the Rise of the Silk Industry in Krefeld in the Eighteenth Century\**

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In the second volume of Johann Christian Herrman's *Allgemeiner Contorist*, which appeared in 1789, we find the following description of Krefeld: "The Austrian Netherlands and the United Provinces of the Netherlands, especially the cities of Antwerp and Amsterdam, have clearly demonstrated that religious hatred depopulates not only single localities but also entire provinces and regions, and frightens off all trade and insutry, whereas reasonable tolerance can promote and encourage them. In this manner, Crefeld, once a most insignificant spot, has become a respectable manufacturing and trade city. [...] These Mennonites [they settled in Krefeld after being expelled from their hereditary homes], or as they prefer to be called, *Traufgesinnte* [Baptist] have expanded trade in fine linen [...] in the entire region through their beneficent zeal and industry, and in one hundred years have brought Krefeld to the pinnacle of trade, especially in the manufacture of silk, in which they have become the leaders in Germany [...] so that this small city has been enlarged five times during this

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period and now occupies a space of 74 *Morgen* of Cologne and has almost 6.000 inhabitants".<sup>1</sup>

In 1725, the author of a description of the County of Moers could write: "The city of Crefeld enjoys a very sizeable trade in bills as well as in other wares and manufactured goods. Important bankers and merchants conducting a varied and extensive export business reside here. If therefore this town of Crefeld should continue to boom and flourish in like manner for another twenty years, then this small township will acquire a reputation for its commerce and for its business community as one of the well nigh most famous trading and manufacturing cities in the whole of Germany".<sup>2</sup> Although one may ask "whether the prevision of Krefeld's grandeur was based on analytic acumen or on Panglossian hypocrisy widespread among mercantilist bureaucrats" (H. Kisch),<sup>3</sup> there is no doubt that at that time the rise of Krefeld was well under way.

The modern history of Krefeld began after the great fire of 1584 which forced its inhabitants to abandon the city. The initially slow resettlement process quickened its pace only after the city became a possession of the House of Orange in 1601 and its external security was guaranteed by the neutrality treaty of 1607. Under the House of Orange, Krefeld developed into "the religiously free city of the Lower Rhine". Those population groups who had been expelled from neighbouring territories because of their faith found refuge in the tiny city.<sup>4</sup> Its population started to grow. It rose from

<sup>1</sup> JOHANN CHRISTIAN HERRMANN: *Allgemeiner Contorist*, vol. 2, (Leipzig 1790), 66.

<sup>2</sup> Zentrales Staatsarchiv, Dienststelle Merseburg (ZStAM): Rep. 34, no. 243b, fol. 85v-86, draft: Nordrhein-Westfälisches Hauptstaatsarchiv Düsseldorf (HStAD): Reg. Moers I, no. 7, edition: Carl Rembert: Ein amtlicher Bericht über Crefeld und die Burg Cracau vom Jahre 1725, in: *Die Heimat*, 4 (1925), 93-97, here 96-97.

<sup>3</sup> HERBERT KISCH: *Prussian Mercantilism and the Rise of the Krefeld Silk Industry: Variations upon an Eighteenth-century Theme*. Transactions of the American Philosophical Society, New series, vol. 58, part 7, (Philadelphia 1968), 35.

<sup>4</sup> The most important studies on Krefeld and the Krefeld linen and silk industries are: HERMANN KEUSSEN: *Geschichte der Stadt und Herrlichkeit Crefeld mit steter Bezug-*

about 400 (1624/25) to about 1932 inhabitants (1716; including Krefeld's rural area, from ca. 800 to 2500 inhabitants); it increased almost five-fold in less than 100 years. This population growth continued with initially unabated speed in the eighteenth century, and did not slow until the second half of the century. The number of inhabitants rose from 3932 (1750) to 6459 (1793; including the rural area, 5107 to 8780).<sup>5</sup> The city quickly became too small. Its first enlargement occurred in 1692, followed by a second in 1711 — in the meantime Krefeld had become Prussian (1702) —; the original surface area of the city increased by 173.5%. It was not, however, sufficient. A third, fourth and fifth enlargement became necessary in 1738, 1752 and 1766. With the completion of the fifth, and, for the time being last, enlargement in 1786, the surface area of Krefeld had increased almost six-fold in a period of just one hundred years. Plans for a sixth enlargement of the city, which

*nahme auf die Geschichte der Grafschaft Moers* (Krefeld 1865); GOTTFRIED BUSCHBELL: *Geschichte der Stadt Krefeld. Aus dem Nachlaß hrsg. und ergänzt von Karl Heinzelmann*, vol. 1, (Krefeld 1953); LUDWIG FRIESE: *Die Verwaltung der Stadt Krefeld im 18. Jahrhundert: Ein Beitrag zur Geschichte der preußischen Stadtverwaltung* (Diss. phil. Köln 1936); Alphons Thun: *Die Industrie am Niederrhein und ihre Arbeiter*, vol. 1, (Leipzig 1879); WILHELM KURSCHAT: *Das Haus Friedrich & Heinrich von der Leyen in Krefeld. Zur Geschichte der Rheinlande in der Zeit der Fremdherrschaft 1794-1814*, Frankfurt 1933; GERHARD VON BECKERATH: *Die wirtschaftliche Bedeutung der Krefelder Mennoniten und ihrer Vorfahren im 17. und 18. Jahrhundert* (Diss. rer. pol. Bonn 1952 <typescript>); HANS BOTZET: *Die Geschichte der sozialen Verhältnisse in Krefeld und ihre wirtschaftlichen Zusammenhänge* (Diss. rer. pol. Köln 1953 <typescript>); KISCH: *Mercantilism* (cf. n. 3); see also PETER KRIEDTE: *Proto-Industrialisierung und großes Kapital. Das Seidengewerbe in Krefeld und seinem Umland bis zum Ende des Ancien Régime*, in: *Archiv für Sozialgeschichte*, 23 (1983), 219-266; PETER KRIEDTE: *Lebensverhältnisse, Klassenstrukturen und Proto-Industrie in Krefeld während der französischen Zeit*, in: *Mentalitäten und Lebensverhältnisse. Beispiele aus der Sozialgeschichte der Neuzeit. Rudolf Vierhaus zum 60. Geburtstag* (Göttingen 1982), 295-314.

<sup>5</sup> HANS BOTZET: *Kie Krefelder Einwohnerzahlen im 17. und 18. Jahrhundert. Eine bevölkerungstatistische Untersuchung*, in: *Die Heimat*, 36 (1965), 80-97; 1750: ZStAM: Generaldirektorium (GD): Moers, Tit. XCI, no. 15, fol. 226; 1793: Stadtarchiv Krefeld (StAKr) 1 A, no. 29, fol. 54 (town) and Hermann Keussen: *Beiträge zur Geschichte Krefelds und des Niederrheins*, in: *Annalen des historischen Vereins für den Niederhein*, 66 (1898), 94-181, here 157 (country).

Prussian officials drew up, were no longer carried out, and instead suburbs began to form in front of the gates of Krefeld.<sup>6</sup>

The social foundation for the rise of Krefeld was provided by the Mennonites, whereas the linen and, subsequently, the silk industry supplied the economic basis. These were intimately related and one could say that Mennonite immigration created the economic preconditions for the city's rise.

The description of the Country of Moers mentioned earlier had already noted in 1725 that "the rise of the city... [must be] attributed to the linen industry run by the Mennonites".<sup>7</sup> The initial citation of 1789 points in the same direction. Driven from their homes, the majority of the Mennonites who settled in Krefeld came from Gladbach and Rheydt. There they had worked primarily in the linen industry, either as spinners, weavers, merchants or Verleger (putters-out); in their hands lay the control of the industry whose raw material basis was the "Flaxland" between Niers and Rur.<sup>8</sup> When they came to Krefeld they brought the linen industry with them and developed it there on a relatively large scale. Krefeld, which up to that time had been totally insignificant as far as trade was concerned, became the foremost city of the linen industry on the lower Rhine. Not only did export business thrive within its walls — in 1716, there were 87 linen weaver households along with 31 "Linnenreider" (linen merchants and linen Verleger) — the threads of the linen commerce came together here as well.<sup>9</sup> Borchard Wilelm von Kinsky, the bailiff of Moers and Krefeld, with good reason called Krefeld in 1709 a "*ville marchande*", and

<sup>6</sup> CARL REMBERT: *Zur Geschichte der ersten Krefelder Stadterweiterung*, in: *Die Heimat*, 7 (1928), 30-32; MARGARETE HERSING: *Die Krefelder Stadterweiterungen im 18. Jahrhundert unter besonderer Berücksichtigung der preussischen Bodenpolitik*, in: *Die Heimat*, 9 (1930), 151-158, 243-250, 10 (1931), 18-30; BUSCHBELL: *Geschichte* (cf. n. 4), vol. 1, 234-243.

<sup>7</sup> ZStAM: Rep. 34, no. 243b, fol. 50, edition: Rembert: Bericht (cf. n. 2), 93-94.

<sup>8</sup> VON BECKERATH: *Mennoniten* (cf. n. 4), 19-32.

<sup>9</sup> GUIDO ROTTHOFF: *Das Münkerhofverzeichnis*, in: *Die Heimat*, 36 (1965), 65-77, here 73.

the magistrate of Krefeld mentioned, in 1714, the "flourishing trade here".<sup>10</sup>

Based on linen manufacture and linen trade, the Mennonites rose to a dominant economic position in Krefeld. The Calvinists who had controlled city government since the beginning of the seventeenth century were pushed aside and had to be satisfied with participating in the opportunities which the Mennonites had created for Krefeld. The "*Münkerhofverzeichnis*" of 1716, the first population register of Krefeld, and a "small tax" payers' list which has come down to us, makes this quite apparent (see Table 1). On average Mennonites had to pay nearly four times as much "small tax" as the non-Mennonite portion of the population. Although they made up only about 22.5% of all house-holds, they produced ca. 53.7% of the "small tax". Their dominant social status is confirmed by the fact that they had almost twice as many domestic servants as the remaining population. Whereas ca. 31% of the linen weavers belonged to the Mennonite community, 84% of the "*Linnenreider*" (merchants and Verleger) were Mennonites. In other words, the leading economic positions were almost entirely in Mennonite hands.<sup>11</sup>

Table 1  
KREFELD IN 1716<sup>a)</sup>

	Number of house-holds	Mean household size without servants	Mean household size with servants	Mean "small tax" <sup>d)</sup>	Total "small tax" <sup>d)</sup>	
Mennonites <sup>b)</sup>	89 (22.5)	4.32	1.04	5.36	7.0	624 (53.7)
Non-Mennonites <sup>c)</sup>	306 (77.5)	4.18	0.57	4.75	1.8	537 (46.3)
Total population	395 (100)	4.21	0.68	4.89	2.9	1161 (100)

a) In brackets: percentages.

b) Minimum number.

c) Maximum number.

d) In "Heller".

Sources: StAKr 1 A. no. 28 and 78 fol. 19-30; edition Guido Rothhof, in: *Die Heimat*, 36 (1965), 65-77; Mennonites: Walter Risler, in: *Die Heimat*, 28 (1957), 40-43 and von Beckerath: *Mennoniten* (cf. n. 4), 130-133.

<sup>10</sup> ZStAM: Rep. 64, no. 1 (Gen. et Misc.), Konv. 1, fol. 289v and 51v.

<sup>11</sup> KRIEDTE: *Proto-Industrialisierung* and table 1.

The economic dominance of the Mennonites in the business life of Krefeld was further reinforced by the transition to the silk industry which displaced the linen trade with astounding rapidity, especially from the 1720s on, and soon replaced it altogether. In 1716 there were only fourteen "*Lintwirker*" (silk and velvet weavers). By 1735 the relationship between the two occupational groups was almost completely reversed. The number of linen weavers had fallen to 32; that of the ribbon, velvet and silk weavers risen to 95. In 1750, for every linen weaver there were already 6.4 ribbon, velvet and silk weavers. By the beginning of the 1790s, the linen trade had disappeared almost completely from the picture. Instead, in 1791, there were 551 "*Fabrikenmeister*" and "*Fabrikenknechte*" — as the ribbon, velvet and silk master weavers and journeymen were then called — who worked at 604 silk and ribbon looms.<sup>12</sup> The silk industry had triumphed over the linen industry.

This victory, which brought a new economic base to Krefeld, was the work of one family, the von der Leyen. Mennonites who had been expelled in 1656 from Radevormwalde in the Bergische Land, they had settled in Krefeld.<sup>13</sup> At first chiefly occupied with trade in silken goods, they probably went over to manufacturing between 1700 and 1716. The 1720s and early 1730s were decisive years for the establishment of new companies. Enterprises were founded for the centralized operations — throwing and dying — as well as for the decentralized procedures — the production of the fabric; from 1731 on, the main firm bore the name "Friedrich & Heinrich von der Leyen".<sup>14</sup> Until the middle of the century, with

<sup>12</sup> WALTER FÖHL: *Aufsätze aus zwei Jahrzehnten* (Kempfen 1976), 422-424; ZStAM: GD: Moers, Tit. LXXIV, no. 23; StAKr 1 A, no. 31; see Kriedte: Proto-Industrialisierung, table 2.

<sup>13</sup> WILHELM NIÉPOTH: *Zur Frühgeschichte der Familie von der Leyen*, in: *Die Heimat*, 21 (1950), 156-158.

<sup>14</sup> Die preußische Seidenindustrie im 18. Jahrhundert und ihre Begründung durch Friedrich den Großen, bearb. von Gustav Schmoller und Otto Hintze. *Acta Borussica. Denkmäler der preußischen Staatsverwaltung im 18. Jahrhundert. Seidenindustrie*, vol. 1-3 (Berlin 1892) (ABI-III), here vol. 2, 582-585, no. 1144-1145; see KISCII: *Mercantilism* (cf. n. 3), 23-24.

two smaller enterprises which also had their origins in the von der Leyen family, it exercised a virtual though not legally protected monopoly over the manufacture of silk goods in Krefeld. From mid-century on this position became increasingly precarious since the two smaller enterprises passed partly into other hands and new firms arose. But in the ensuing struggle, the von der Leyen were able to obtain a monopoly by resorting to the authority of the state, and their competitors, the firms Heydweiller Brothers, Cornelius & Johannes Flöh and Gerhard Lingen & Co., were restricted to the monopoly-free zone.<sup>15</sup> The monopoly became an obligopoly in which the von der Leyen had undisputed control — in 1779 72.4% of all functioning silk and ribbon looms in Krefeld produced for them.<sup>16</sup> The family determined the fortunes of Krefeld's silk industry which had long since expanded into the countryside and was transforming farming villages into silk-weavers' villages<sup>17</sup> — until the occupation of the city by the French Revolutionary Army in 1794. This marked the end of the Ancien Régime in Krefeld's silk industry.

Meanwhile, with the transition to the silk industry in Krefeld, social class structures had developed. This contributed to the emergence of a class society. A tiny number of mostly Mennonite Verleger — the Flöh and von Beckerath families, the latter owned the firm G. Lingen & Co., were also Mennonites (for the position of Mennonites in Krefeld in 1750/54 see Table 2) - faced the mass of predominantly Catholic silk workers. The "*Fabrikenmeister*" wove at home on looms provided by the Verleger, and for a piece rate, processed the silk which they also received from him. They were, as the von der Leyen wrote in 1798, "*fixement attachés aux fabriques, donts ils dépendent*".<sup>18</sup> The penetration of merchant capital into the production sphere had robbed them of their independence. This was even more so the case for the "*Fabrikenknech-*

<sup>15</sup> KISCH: *Mercantilism* (cf. n. 3), 29-30.

<sup>16</sup> ZStAM: Rep 70, no. 44, fol. 20v; see KRIEDTE: *Proto-Industrialisierung*, table 3.

<sup>17</sup> KRIEDTE: *Proto-Industrialisierung*, part 4.

<sup>18</sup> HStAD: Roer-Departement, no. 3617.

Table 2  
KREFELD IN 1750/54<sup>a)</sup>

	Number of households	Mean household size without servants	Mean household size with servants	Mean house property <sup>d)</sup>	Total house property <sup>d)</sup>	
Mennonites <sup>b)</sup>	82 (8.9)	4.15	1.05	5.20	822.1	67 410.0 (36.0)
Non-Mennonites <sup>c)</sup>	839 (91.1)	3.69	0.49	4.18	143.0	119 955.0 (64.0)
Total population	921 (100)	3.73	0.54	4.27	203.4	187 363.0 (100)

a) In brackets: percentages.

b) Minimum number.

c) Maximum number.

d) In "Reichstaler"; not including the houses with which a household could not be linked.

Sources: ZStAM: GD: Moers Tit. LXXIV, no. 23 (1750) and Tit. XXXVII, no. 8, fol. 20-31 v (1754); Mennonites: Walter Risler, in: *Die Heimat*, 30 (1959), 22-32 (1740).

te" who were dependent on both the Verleger and the "Fabrikenmeister", and for those who were employed in the preparatory and completion stages in the manufactures (centralized workshops) of the Verleger. The domestic production system and its manufacturing annexes had in Krefeld given rise to a society which was, at least in part, organized according to the principles of work and appropriation.<sup>19</sup> In 1716, 29.6% of all Krefeld households were engaged in the linen or silk trade (including the "Linnenreider" and linen merchants 38.0%). By 1750, this figure had risen to 33.3% — with a reversal of proportions of households in the linen or silk industry. This increased further to 46.0% in 1791 (see Table 3). Forty-two of 100 households and 96.6 of 1000 inhabitants worked at silk or ribbon looms. If we follow the "factory tables" the proportion of the silk industry in the production value of the Krefeld export trade amounted to 75% in 1791/3.<sup>20</sup> In 140 years, Krefeld had become a city with an important export industry.

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If seasonal and longer-term fluctuations of demographic and business indicators are considered in the light of the socioeconomic

<sup>19</sup> See KRIEDTE: *Lebensverhältnisse* (cf. n. 4), 311-313.

<sup>20</sup> StAKr 1 A, no. 31 and 60.

Table 3  
HOUSEHOLDS EMPLOYED IN THE LINEN AND SILK  
INDUSTRY IN KREFELD (1716-1791)<sup>a)</sup>

Number of households	1716	1750	1791 <sup>c)</sup>
Employed in the linen industry <sup>b)</sup>	102 (25.8)	37 ( 4.0)	—
Employed in the silk industry <sup>b)</sup>	15 ( 3.8)	270 (29.3)	662 (46.0) <sup>d)</sup>
Employed in both industries <sup>b)</sup>	117 (29.6)	307 (33.3)	662 (46.0)
Total population	395 (100)	921 (100)	1439 (100)

a) In brackets: percentages.

b) Only dependently employed households.

c) Without the "single inhabitants" ("einzelne Bewohner") specified in the population register, the two poorhouses, the monastery and "Scheel's Institute".

d) Without clerks.

Sources: See table 1 (1716), 2 (1750) and StAKr 1 A, no. 31 (1791).

changes which affected Krefeld from the beginning of the seventeenth century, a number of questions arise: To what extent can change be understood through these fluctuations? Do they follow older patterns? Or how far did they depart from them?

Only seasonal indicators of a demographic nature are available. I will limit myself to births (or rather, baptisms)<sup>21</sup> since one can assume that their seasonal distribution reflects long-term socioeconomic changes better than marriages (apart from deaths, where this can be expected only to a very limited extent). By examining Table 4 and Figure 1, it is apparent that the majority of births, whether among Calvinists or Catholics, occurred during the first third of the year (35.6% for the Calvinists and 36.9 for the Catholics). The last third of the year occupied the second place (35.3% and 34.3%). The smallest number of births took place in the middle of the year, in June for the Calvinists and in July for the Catholics. Considered from the point of view of conceptions, most occurred between December and June (with the maximum in

<sup>21</sup> Children were baptized in Krefeld soon after birth; see the parish registers since 1766.

Table 4

MONTHLY INDEXES OF BAPTISMS IN KREFELD 1751-1790<sup>a)</sup>

Baptism (1) or conception (2)

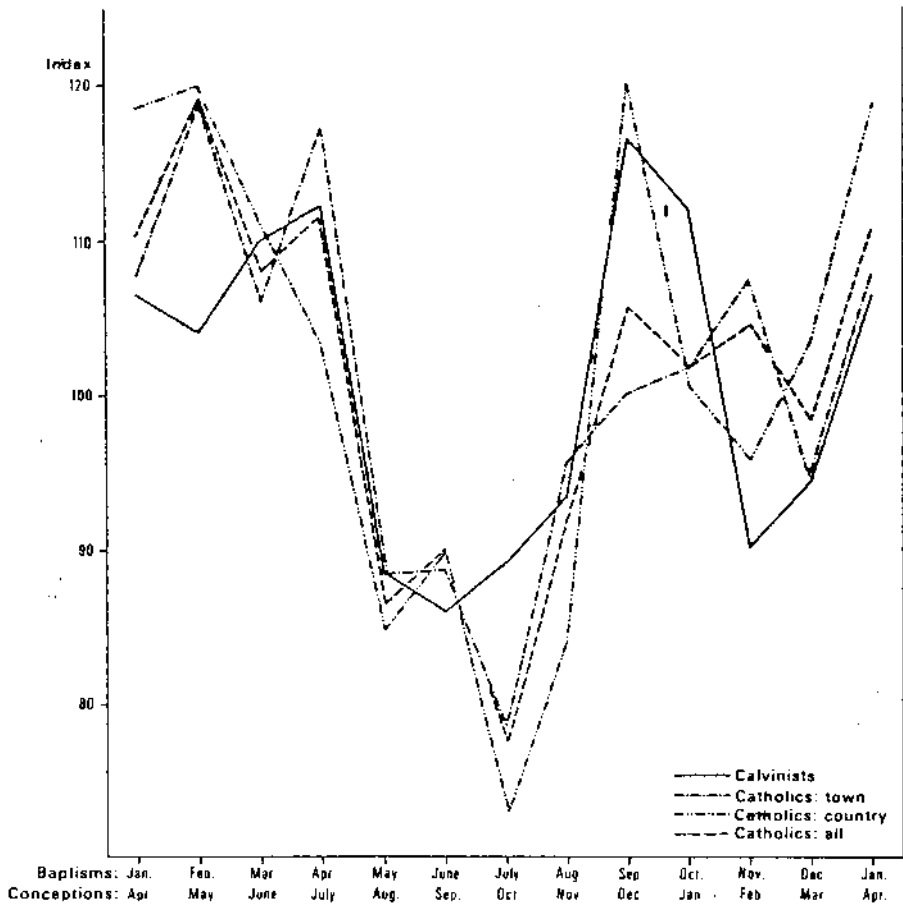
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	1: Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ratio	Standard
	2: April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	max./min.	deviation
Calvinists	106.5	104.0	109.8	112.2	88.5	86.3	89.3	93.5	116.5	111.9	90.2	94.8	1.35	10.94
Catholics:														
town	107.7	118.5	106.1	116.8	88.7	89.0	78.4	95.5	100.0	101.8	107.4	94.6	1.51	11.84
country	118.5	120.1	110.7	103.1	85.0	89.8	73.2	84.3	119.8	100.4	95.8	103.7	1.64	15.33
all Catholics	110.7	118.8	108.1	111.5	86.4	89.7	77.2	91.7	105.5	102.1	104.5	98.3	1.54	12.07

a) Without stillbirths. 100 = all events x number of days in month / 365.25 (February: 28.25 days); see Wrigley, Schofield: *Population History* (cf. n. 22), 286-287.

Sources: Nordrhein-Westfälisches Personenstandsarchiv Rheinland, Brühl: Parish registers of Krefeld.

Figure 1  
MONTHLY INDEXES OF BAPTISMS IN KREFELD 1751-1790<sup>a)</sup>



a) See Table 4, n.a.

Sources: See Table 4.

December for the Calvinists and in May for the Catholics). September was the month with the fewest conceptions for the Calvinists, October for the Catholics. To a large extent, this pattern corresponds to that encountered in agrarian villages. As E.A. Wrigley and R.S. Schofield point out, this had "the advantage of minimizing the number of births occurring during the period of crop-gathering over the summer months when female labour was in great demand, [...]"<sup>22</sup> If one examines the indices individually, it is obvious that the number of conceptions, or rather births, per month among Catholics varied more widely than among the Calvinists, the minimum was far more pronounced and the maximum/minimum quotient was larger. If one differentiates between city and countryside among the Catholics — unfortunately this cannot be done for the Calvinists — one also sees that the July birth index decreased less in urban than in rural Krefeld (cf. also the standard deviation and the maximum/minimum quotients). One could therefore conclude that urban Catholics manifested the first signs of an "oubli des origines rurales" and thereby "des rythmes ruraux" (J.-P. Bardet).<sup>23</sup> The Calvinists detached themselves more strongly from the rural world. This difference can be explained by the fact that most immigrants to Krefeld in the eighteenth century were Catholic (the surrounding countryside was Catholic). In their mentality, they remained relatively strongly attached to their rural origins. The Calvinist part of the population grew far more slowly than the Catholic, indicating that their ratio of immigration must have been relatively minor.<sup>24</sup> One can therefore assume that

<sup>22</sup> E.A. WRIGLEY AND R.S. SCHOFIELD: *The Population of England 1541-1871. A Reconstruction* (London 1981), 286-293, here 291; see also JACQUES DUPÂQUIER: *La population rurale du Bassin Parisien à l'époque de Louis XIV* (Paris 1979), 324-330, 380-381; *Historische Demographie als Sozialgeschichte. Gießen und Umgebung vom 17. zum 19. Jahrhundert*, hrsg. von Arthur E. Imhof, part 1 (Darmstadt and Marburg 1975), 248-249 and ANDRÉ BURGUIRE: *La démographie*, in: *Faire de l'histoire*, sous la direction de Jacques Le Goff et Pierre Nora, vol. 2 (Paris 1974), 74-104, here 84-86.

<sup>23</sup> J.-P. BARDET: *La démographie des villes de la modernité (XVIe-XVIII siècles); mythes et réalités*, in: *Annales de démographie historique* (1974), 101-126, here 123.

<sup>24</sup> The ratio of Calvinist to Catholic births was 1 to 2 in 1766/70 and 1 to 2.4 in 1791/95.

more than the Catholics, the Calvinists, as a fairly stable population group, could develop demographic patterns that left the rural world behind and were typically urban. In Krefeld "indicateurs d'une démographie urbaine spécifique" (Bardet)<sup>25</sup> can be found most readily among the Calvinists.

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Longer-range fluctuations lead into other dimension of historical developments. First we will examine demographic fluctuations. Annual changes in baptisms and burials, as depicted in Figure 2 for the years 1732-1797, show that mortality waves were far more pronounced than fertility waves. The shaded peaks of the mortality curve, i.e. those years in which the number of deaths surpassed the number of births, are especially striking: Krefeld experienced eighteen such mortality crises between 1732 and 1797 (the series of burial registers begins in December 1731). For every crisis year, therefore, there were approximately 2.7 "normal" years. Using the crisis index developed by Jacques Dupâquier — it takes into account only the development of mortality<sup>26</sup> — fifty-three years should be seen as normal (80.3%) and thirteen as crisis years (19.7%). Severe crisis years were 1735 (index: 5.3), 1747 (index: 4.7), 1758/59 (index: 7.0), 1781 (index: 6.8) and 1794/95 (index: 9.9). Moderate crisis years were 1740/41 (index: 2.0 and 1783 (index: 3.8), although it is tempting to count the last as a severe crisis year.<sup>27</sup> There was also a series of years with smaller crises (1743, 1773, 1779 index: between 1 and 2). A survey of the period between 1732 and 1797 reveals no decrease in either the

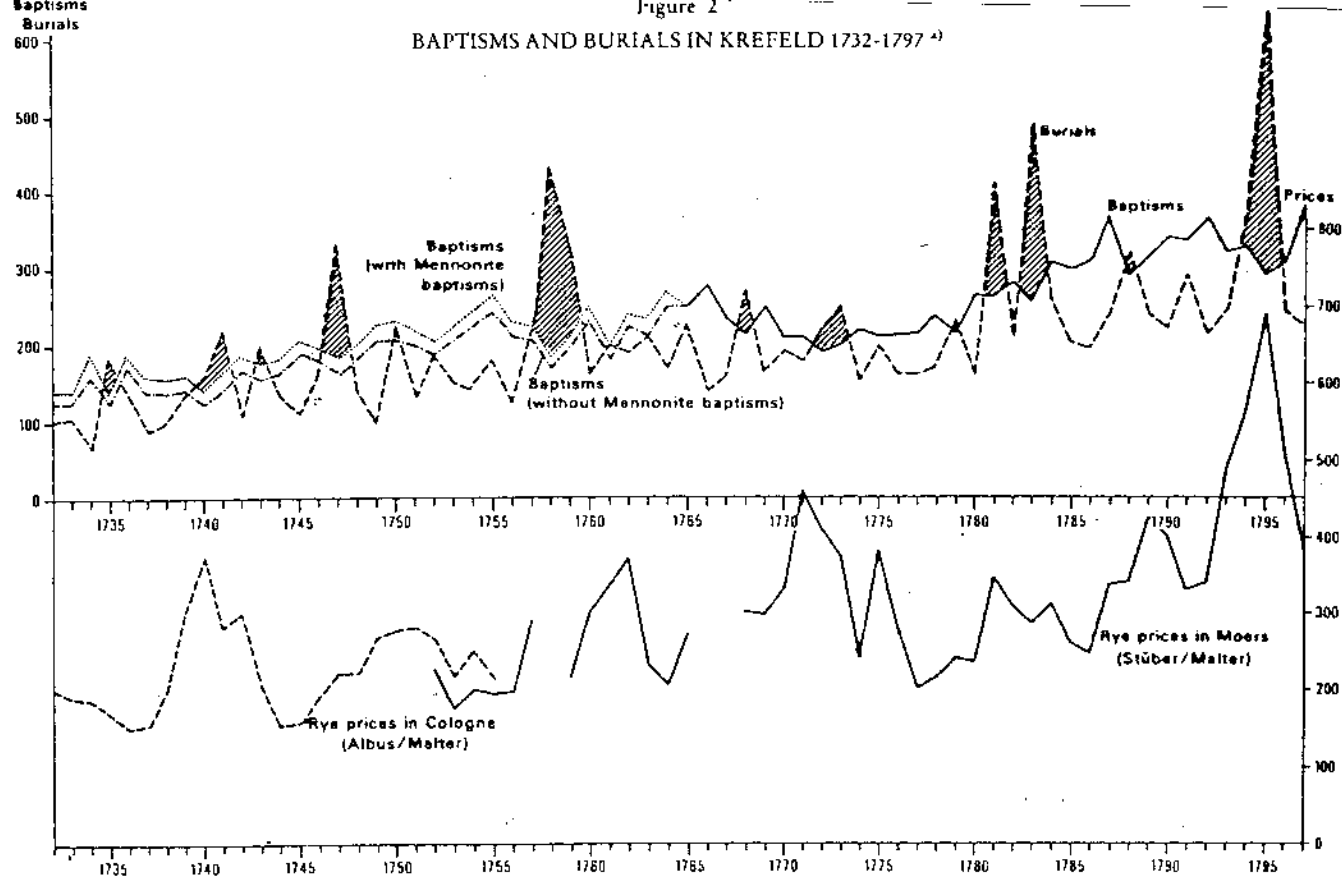
<sup>25</sup> BARDET: *Démographie* (cf. n. 23), 123.

<sup>26</sup> DUPÂQUIER: *Population* (cf. n. 22), 248-250; Dupâquier calculates the index of crisis from the formula: 
$$I_x = \frac{D_x - M_x}{6x}$$
 ( $I_x$ : index for the year  $x$ ,  $D_x$ : number of deaths in the year  $X$ ,  $M_x$ : Mean of deaths in the 10 year before the year  $x$ ,  $6x$ : standard deviation for the 10 reference years).

<sup>27</sup> The comparatively low index is a consequence of the fact that  $M_x$  has increased as a result of the large number of deaths in 1781.

BAPTISMS AND BURIALS IN KREFELD 1732-1797 <sup>a)</sup>

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a) Without stillbirths. The Mennonite births in the years 1732-1764 were estimated at 9.8% of all births (= their percentage in the years 1765-1774).

Sources: Nordrhein-Westfälisches Personenstandsarchiv Rheinland, Brühl: parish registers of Krefeld; EBELING, IRSIGLER: *Getreideumsatz* (cf. n. 51), vol. 1, 630-642 (rye prices in Cologne); Stadtarchiv Moers 81,1 I-V (rye prices in Moers).

frequency or the intensity of the crises. Only French rule brought a fundamental change to Krefeld, after the number of deaths had surpassed the number of births once more in the year 1800.<sup>28</sup>

The attempt to discover the origins of these mortality waves leads directly to the debate over "crises démographiques de type ancien" (P. Goubert), and especially over "crises de mortalité et mortalités de crise" (J. Ruwet) engendered by the work of Jean Meuvret and Pierre Goubert.<sup>29</sup> The controversy arose over the question whether these crises were demographic crises *sui generis*, attributable to epidemics, or if they should be understood only as demographic extensions of subsistence crises set off by crises of agrarian under-production. Two difficulties surface when discussing this question through the example of Krefeld: Death registers for Krefeld begin only at a time when, according to those who defend the "mortalité de crise" theory, the relationships between subsistence crises and demographic crises starts to weaken (with Meuvret, one speaks of "crises larvées").<sup>30</sup> And grain prices for Krefeld are available only since 1786, so that, like it or not, grain prices of Cologne and Moers must be used.

If the mortality curve is compared to the curve of the grain prices, there are only a few instances of correlation between mortality crises and increases in grain prices (see Figures 2). In the case of the severe crises (1735, 1747, 1758/59, 1781 and 1794/95), a clear connection appears only for the last crisis (but see also the crises of 1758/59 and 1781). While there is no correlation for the smaller crises (1743, 1773 and 1779) — the crisis of 1743 even occurs in a

<sup>28</sup> Nordrhein-Westfälisches Personenstandsarchiv Rheinland, Brühl: civil registers of Krefeld.

<sup>29</sup> JEAN MEUVRET: *Les crises de subsistances et la démographie de la France d'Ancien Régime*, in: JEAN MEUVRET: *Etudes d'histoire économique. Recueil d'articles* (Paris 1971), 271-278; PIERRE GOUBERT: *Beauvais et le Beauvaisis de 1600 à 1730*. Contribution à l'histoire sociale de la France du XVIIIe siècle (Paris 1960), 45-49; JOSEPH RUWET: *Crises de mortalité et mortalité de crise à Aix-la-Chapelle (XVIIe-début du XVIIIe siècle)*, in: *Problèmes de mortalité. Méthodes, sources et bibliographie en démographie historique*, Liège 1965, 379-408; DUPÂQUIER: *Population* (cf. n. 22), 248-266.

<sup>30</sup> MEUVRET: *Crises* (cf. n. 29), 275.

period of low prices — among the moderate crises (1740/41 and 1783) only that of 1740/41 has a correlation. But even it was not unambiguous. The general European famine years of 1739/41 are often considered “années charnières” (P. Goubert) between the great demographic crises and the “crises larvées”.<sup>31</sup> In Krefeld, the highest mortality rate did not occur in 1740, when Cologne’s grain prices were at their highest, but in 1741, or more precisely, in the second quarter of the year, at a time when prices had markedly fallen. It may therefore be doubtful if an increase in grain prices was the decisive factor for the mortality crisis: Rather, evidence suggests that the inflation prepared the way for an epidemic which claimed many victims, especially in 1741. The demographic crisis of these years should therefore be included among the “crises larvées”. Only the crisis of 1794/95 remains to be discussed. However, it was exceptional in many respects. In 1794 France occupied the territories on the left bank of the Rhine. Through requisitions, its armies imposed great burdens on the grain markets. In addition, there was an agrarian underproduction crisis. Grain prices reached an unprecedented high for the preceding 60 years. But even then it was not truly the inflation but a dysentery epidemic which unleashed the mortality crisis.<sup>32</sup> How minimal the impact of subsistence crises had become in the meantime can be seen in the only slight traces left by the great European famine of 1770/72 on Krefeld’s mortality curve.<sup>33</sup>

All other mortality crises were of a predominantly epidemic nature. Dysentery was widespread in Krefeld in 1781 and 1783 and

<sup>31</sup> GOUBERT: *Beauvais* (cf. n. 29), 60; see WILHELM ABEL: *Massenarmut und Hungerkrisen im vorindustriellen Europa. Versuch einer Synopsis* (Hamburg, Berlin 1974), 179-187 and DIETRICH EBELING, FRANZ IRSIGLER: *Getreideumsatz, Getreide- und Brotpreise in Köln 1368-1797*, vol. 1-2, Köln, Wien 1976, here vol. 2, XXXIII-XLIV.

<sup>32</sup> See the causes of death specified in the parish registers; see also Etienne François: *Koblenz im 18. Jahrhundert. Zur Sozial- und Bevölkerungsstruktur einer deutschen Residenzstadt* (Göttingen 1982), 32.

<sup>33</sup> See ABEL: *Massenarmut* (cf. n. 31), 191-215; EBELING, IRSIGLER: *Getreideumsatz* (cf. n. 31), vol. 2, XLIV-LII, François: *Population* (cf. n. 32), 306-307 and François: *Koblenz* (cf. n. 32), 31.

claimed an immense number of lives.<sup>34</sup> The great mortality crisis at the beginning of the Seven Year's War could also be attributed to an epidemic brought into Krefeld by the troops operating in the vicinity. The crises of 1735 and 1747 must similarly have had their origin in an epidemic. Subsistence crises only culminated in a mortality crisis when they combined with and possibly encouraged an epidemic crisis. However, the "conjonction des crises de subsistances et des crises épidémiques" (J. Dupâquier), which had produced the great demographic catastrophes at the turn of the seventeenth to the eighteenth century, came to an end in Krefeld by 1740/41.<sup>35</sup> The crisis of 1794/95 was the belated echo of a bygone age at a time when new developments were at hand.

The numerous mortality crises which descended upon Krefeld would have condemned the city to stagnation had it depended upon the natural growth of its population. Between 1733 and 1797, there were about 883 deaths per 1000 births in urban and rural Krefeld. Since its population increased nevertheless, this must be primarily attributed to the city's position as goal of a continuing migration. Population censuses for the period between 1740 and 1793 make this clear. During this time, about 26.6% of Krefeld's (city and country) population increase derives from natural growth, whereas about 73.4% is due to migration. These percentages vary considerably over the 53 years. Increases resulting from migration amount to about 65.0% in 1740/50, 14.5% in 1751/56, 0.6% in 1764/78 and 73.4% in 1778/93. In 1756/63, a period of negative population growth, it even rose to about 147.5%.<sup>36</sup> These figures may still present too positive a picture. It remains to be clarified if Krefeld's demographic structures were determined by a structural population deficit, as was the case in all larger cities, for which only positive migration figures could compensate. Although this was the opinion commonly held, doubts have re-

<sup>34</sup> See the causes of death specified in the parish registers.

<sup>35</sup> DUPÂQUIER: *Population* (cf. n. 22), 266.

<sup>36</sup> Sources: see figure 2 (parish registers); BOTZET: *Einwohnerzahlen* (cf. n. 5), 97 (1740, 1756, 1763); n. 5 (1750, 1793); HStAD: Kleve Kammer, no. 1626, fol. 46 (1778).

cently been raised about the theory of natural population decline in the cities in the early modern period.<sup>37</sup> The fact remains that the commercial rise of Krefeld brought about migration in its closer and distant surroundings. The influx of people looking for bread and work in Krefeld most likely contributed to a worsening of existing hygienic and sanitary conditions. Thereby epidemics found fertile soil. A vicious circle was set into motion which demanded the immigration of ever more people.

\* \* \*

In the pre-industrial age, fluctuations of grain prices were doubtlessly the most important economic indicator. They determined the cost of living and thereby the real wage, thus greatly influencing living conditions, most of all for the lower strata of the population. At the same time they shaped the course of the economy in the commercial sector to a considerable extent. Krefeld's opportunities to influence grain prices were minimal. Its rural area was relatively small which meant that during the course of the eighteenth century it became increasingly dependent on its more distant surroundings for its food supply. On June 23, 1789 the municipal government wrote: "We are ever more in the power of the Cologne peasants who set grain prices".<sup>38</sup> Although the city determined the price of bread, it could not ignore grain prices in doing so. It did not have the means of establishing a provisioning policy which could have enabled it to lower prices in time of crisis. As in 1789, merchants and Verleger occasionally stepped in, bought grain outside of Krefeld and sold it without profit, or at a loss, to the city or directly to its citizens.<sup>39</sup>

<sup>37</sup> ALLAN SHARLIN: *Natural Decrease in Early Modern Cities: A Reconsideration*, in: *Past & Present*, 79 (1978), 126-138; ROGER FINLEY: *Natural Decrease in Early Modern Cities*, in: *Past & Present*, 92 (1981), 169-174; ALLAN SHARLIN: *A Rejoinder*, in: *Past & Present*, 92 (1981), 175-180; see also FRANÇOIS: *Population* (cf. n. 32), 293-304 and FRANÇOIS: *Koblenz* (cf. n. 32), 24-28.

<sup>38</sup> StAKr 1 A, no. 38, fol. 79v, see AB II (cf. n. 14), 656, no. 1186.

<sup>39</sup> StAKr 1 A, no. 38, fol. 79v, see AB II (cf. n. 14), 656, no. 1186.

The riot of 1741, about which unfortunately too little is known, illustrates the explosive consequences of an increase in grain prices. Earlier research has overlooked the fact that, in all probability, this revolt is connected to the famine of 1739/41.<sup>40</sup> Although we have no details about the actual "uprising of the rabble", which must have occurred before July 10, we are better informed about its unpleasant consequences.<sup>41</sup> On July 18, after the Kammerdeputation of Moers instructed the municipal government to seize Ludwig Schmitz, Johann Mons and the wife of Theis Füttings, "who had distinguished themselves during the riot", so that a "commando" could bring them to Moers, the three were summoned to the town hall and placed under "civil" arrest.<sup>42</sup> Thereupon, toward evening, "a large mob" gathered in front of the town hall. A watchman reported that "many people stood in front of the door [of the Rathaus] but he was not able to identify a single individual".<sup>43</sup> When, late in the evening, the watch was to be changed, such confusion ensued that Ludwig Schmitz and Johannes Mons were able to "escape" by means of a roofer's ladder. The first watch testified that Ludwig Schmitz had "been so enraged that he told them he would certainly spill blood if they did not let him out". The captain of the second wach declared that Schmitz "had made a great tumult".<sup>44</sup> The Kammer of Kleve finally gave in. On August 15 it condemned the two "escaped rioters" to eight days of civil arrest. They surrendered and served their sentences. Afterward they were obliged to swear that "in the future they would incite no similar riots and conduct themselves as honorable residents [...]".<sup>45</sup>

<sup>40</sup> See n. 31. KEUSSEN: *Crefeld* (cf. n. 4), 465-466, also THUN: *Industrie* (cf. n. 4), vol. 1, 86 and KISCH: *Mercantilism* (cf. n. 3), 38 held that it was a linen weavers' riot (Kisch: "an act of desperation by a group of men trying to cling to a way of life already in its death throes"), but this assertion has no basis in the sources; more cautious Friese: *Verwaltung* (cf. n. 4), 90.

<sup>41</sup> StAKr 1 A, no. 26, fol. 35.

<sup>42</sup> StAKr 1 A, no. 26, fol. 37-38.

<sup>43</sup> StAKr 1 A, no. 26, fol. 39, 39v.

<sup>44</sup> StAKr 1 A, no. 26, fol. 38-40, here fol. 38, 39, 40.

<sup>45</sup> StAKr 1 A, no. 26, fol. 45-45v, 46v.

Several factors suggest that this was a food riot: the participation of women, here even in a leading role, which is typical for hunger uprisings, the municipal government efforts to import rye from the Moers area — it apparently arrived before July 20 — and disputes between the municipal government and the bakers' guild, the subject of which is not clear (probably it was a question of bread taxes).<sup>46</sup> The expenditures of the poor relief fund of the Calvinist Church rose from 100 (1739) to 114.3 (1740) to 140.0 (1741) before declining to 122.5 (1742).<sup>47</sup> The death rate markedly increased, especially in March; April and May 1741; in May it was three times higher than the monthly average for the preceding year. However, one must not overlook the fact that rye prices in Cologne were relatively low once again in June and July 1741.<sup>48</sup> But this does not necessarily invalidate the relationships established above. Food riots were directed less against grain prices than against the provisioning and price policies of the city governments. It was not without reason that the "taxation populaire" was the highpoint of many hunger uprisings.<sup>49</sup> A further cause for the riot could well have been the worsening of the market and employment situation for the linen and silk industries in the wake of the great provisioning crisis of these years: other regions provide information about this.<sup>50</sup> Small tradesmen were therefore under pressure

<sup>46</sup> StAKr 1 A, no. 26, fol. 18-19v, 26v-27, 31v, 36v, 38v.

<sup>47</sup> Archiv des Gesamtverbandes der evangelischen Kirchengemeinden in Krefeld: "Armenrechnungen" of the Calvinist parish.

<sup>48</sup> EBELING, IRSIGLER: *Getreideumsatz* (cf. n. 31), vol. 1, 634; for the death totals see figure 2.

<sup>49</sup> See E.P. THOMPSON: *The Moral Economy of the English Crowd in the Eighteenth Century*, in: *Past & Present*, 50 (1971), 76-136; LOUISE A. TILLY: *The Food Riot as a Form of Political Conflict in France*, in: *Journal of Interdisciplinary History*, 2 (1971/72), 23-57; WALTER J. SHELTON: *English Hunger and Industrial Disorders. A Study of Social conflict during the First Decade of George III's Reign* (London 1973), 23-131; see also STEVEN L. KAPLAN: *Bread, Politics and Political Economy in the Reign of Louis XV*, vol. 1-2, La Haye 1976.

<sup>50</sup> C.-E. LABROUSSE: *Esquisse du mouvement des prix et des revenus en France au XVIIIe siècle*, vol. 1-2, Paris 1933, here vol. 2, 533-534, 547-549; ABEL: *Massenarmut* (cf. n. 31), 184-185.

from two sides: their cost of living had risen sharply; at the same time they lost all or part of their work. In addition, an epidemic occurred. The pressure which had been building up vented itself in a riot.

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With Krefeld's rise as an export trade city, a number of changes occurred in the basic economic structure:

1. A dual connection became possible between "old type" crises and economic trends in the trade sector: a "crise de sous-production agricole" generally resulted in a "sous-consommation de produits industriels", above all in textile products, thereby creating a "crise de surproduction industrielle relative" (C.-E. Labrousse).<sup>51</sup> In as far as it affected raw materials processed by the related trade, it could drive its prices up, thus intensifying the crisis. This double "blocage par la contraction du marché et par la hausse du prix de la matière première" (P. Cayez) had only a limited effect in the silk industry. Its market was among the relatively well-to-do strata whose purchasing power was not as restricted by agrarian deficit crises, and also in relatively distant places which were not touched by the rise in agricultural prices.<sup>52</sup> Furthermore, only in rare cases did crises of the "old type" coincide with a scarcity of raw silk. When, however, an agrarian under-production crisis did occur at the same time as an under-consumption crisis produced by an increase in the price of raw silk, the silk workers were doubly affected. The cost of living soared and the Verleger reduced the piece rate or gave them less or no work.

<sup>51</sup> C.-E. LABROUSSE: *La crise de l'économie française à la fin de l'Ancien Régime et au début de la Révolution*, vol. 1 (Paris 1944), 172-181, here 175; see also PETER KRIEDTE, HANS MEDICK, JÜRGEN SCHLUMBOHM: *Industrialization before Industrialization. Rural Industry in the Genesis of Capitalism*, transl. Beate Schemp (Cambridge 1981), 32, 117-119.

<sup>52</sup> PIERRE CAYEZ: *Métiers jacquard et hauts fourneaux. Aux origines de l'industrie lyonnaise* (Lyon 1978), 73.

2. The silk industry, a trade which produced for supra-regional or international markets, became dependent on economic fluctuations whose origins were not to be found in "old type" crises but in supra-regional and international relationships. New economic, and especially customs, policies, political crises and war-like conflicts not only disrupted markets but also hampered sales or even brought them to a standstill.<sup>53</sup>

3. Finally, one must remember that the first stages of cyclical over-production crises already took place during this phase. But they probably occurred only rarely in their pure form.<sup>54</sup>

Information about economic trends in Krefeld's silk industry become available relatively late. Figures about the number of silk and ribbon looms in operation start in 1770; accounts of the Krefeld municipal government begin in 1778. These sources dry up temporarily in 1794 with the end of the first period of Prussian rule. According to the above, the economic cycle proceeded as follows: A crisis which must have set in by 1767 continued until the beginning of the seventies. In 1779, a new upswing occurred which broke off abruptly in 1787 with the general European price increase for raw silk. Judging by the number of looms in operation in Krefeld, its silk industry did not recover from this crisis until 1794 (see Figure 3).

The crisis during the second half of the sixties and beginning of the seventies is connected with the crisis at the end of the Seven Year's War, and especially with Berlin's economic crisis of 1763/68 and the protective measures then undertaken by the Berlin government on behalf of the city's silk industry. The conclusion of the peace treaty brought an end to the wartime economic boom.

Bankruptcies multiplied. During 1766 more than half of the velvet and silk looms ceased operation.<sup>55</sup> In order help Berlin's silk

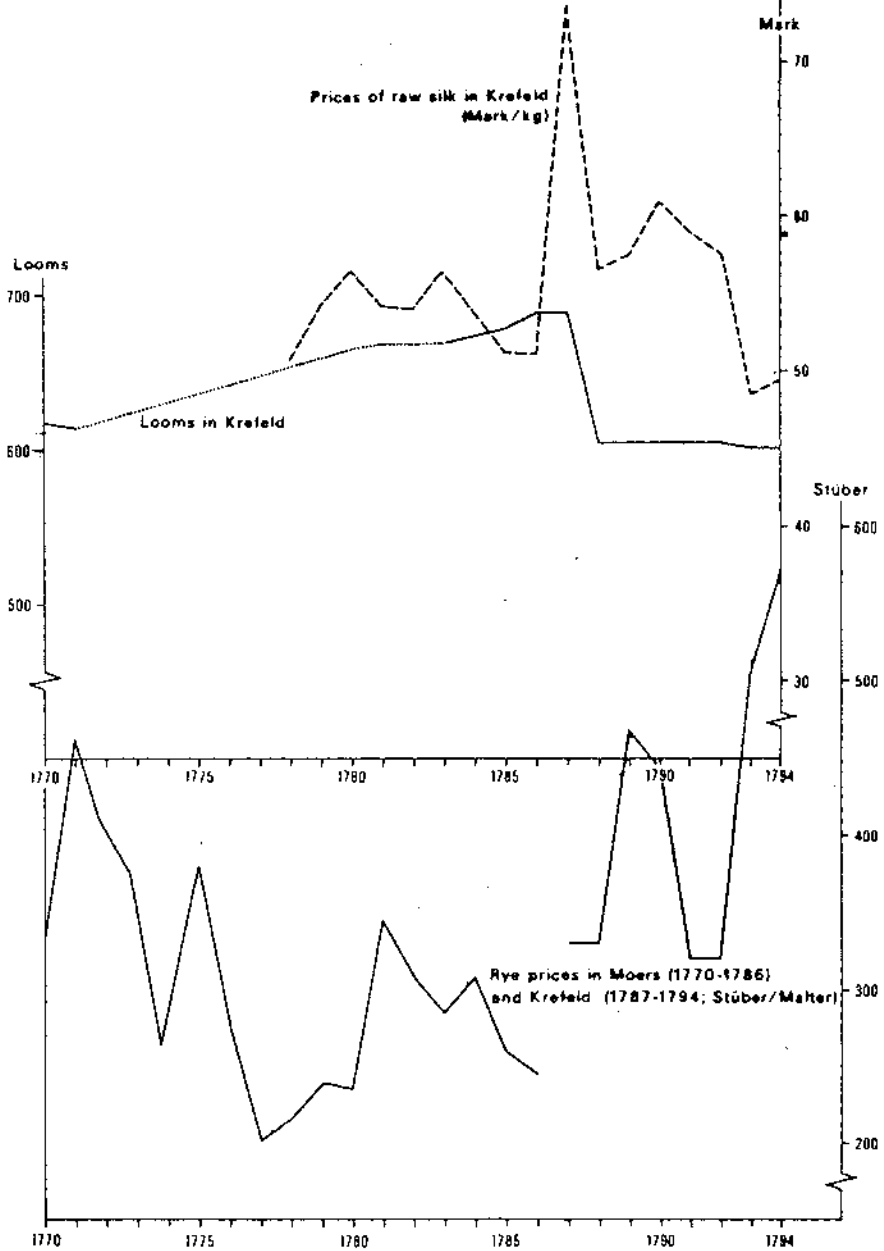
<sup>53</sup> KRIEDTE, MEDICK, SCHLUMBOHM: *Industrialization* (cf. n. 51), 119-120.

<sup>54</sup> KRIEDTE, MEDICK, SCHLUMBOHM: *Industrialization* (cf. n. 51), 120-122.

<sup>55</sup> OTTO Hintze, in: AB III (cf. n. 14), 154-171; STEPHAN SKALWEIT: *Die Berliner Wirtschaftskrise von 1763 und ihre Hintergründe* (Stuttgart 1937); INGRID MITTENZWEI: *Preuß nach dem Siebenjährigen Krieg. Auseinandersetzungen zwischen Bürgertum und Staat um die Wirtschaftspolitik* (Berlin 1979), 9-12.

Figure 3

THE DEVELOPMENT OF THE SILK INDUSTRY IN KREFELD 1770-1794



Sources.

Hoffmann, *Handwerk*, p. 146 (1770, see p. 17); ZSIAM, *Hauserchiv*, Rep. 47, E III, no. 60, p. 38 (1771, see *Stadtarchiv Moers* 90, 3 IV, fol. 32v), ZSIAM, Rep. 70, no. 44, fol. 14v (1779), AB II, p. 287, no. 934 and *Stadtarchiv Moers* 90.3 IV, fol. 117v (1781), *StAr* 7 A, no. 80 (1783-1794); *Jahresbericht der Handelskammer zu Krefeld für 1878*, Krefeld 1879, after p. 32 (prices of raw silk 1778-1793); Alfred Jacobs, Hans Richter, *Die Großhandelspreise in Deutschland von 1792 bis 1834*, Berlin 1935, p. 66 (prices of raw silk 1792-1794); *Stadtarchiv Moers* 81.1 ff-V [rye prices in Moers 1770-1786]; *Stadtarchiv Krefeld* 1 A no. 38 and 58 [rye prices in Krefeld 1787-1794]

industry, state officials tried to protect it from competition. Already in 1749 Krefeld's Verleger, among others, were forbidden to export velvet to the Prussian provinces east of the Weser River. In 1763 they were further prohibited from dealing in velvet at the fairs in Frankfurt an der Oder. A general import embargo on "Rhenish-westphalian manufactured goods" followed in 1768; it also included Krefeld's silken goods.<sup>56</sup> Thereupon, on February 2, 1768, the brothers von der Leyen told the *Generaldirektorium* in Berlin that if the embargo was maintained "the most certain consequence would be that half of our looms and machines [...] would lie idle and have to remain so. The unavoidable result of this would be that since only half of the very skilled artisans and workers brought into our city at great cost could be employed, the rest would leave because there would be neither bread nor work [...]". On August 20 they intimated that they "had found it necessary to leave a large number of their looms unoccupied".<sup>57</sup> In fact, the number of looms which the von der Leyen employed seems to have fallen from 636 to considerably less than 580 between February 1768 and October 1770.<sup>58</sup> Between 1766 and 1767 the production index for goldsilver-floret ribbons had already declined from 100 to 95.1 and for velvet from 100 to 90.9, while only for damask and other silken goods had it risen to 105.2.<sup>59</sup> The total number of silk and ribbon looms in Krefeld fell further between 1770 and 1771, from 618 to 612.<sup>60</sup> On May 12, 1771, the brothers Heydweiler wrote: "At present for a variety of reasons commerce

<sup>56</sup> ABI (cf. n. 14), 164-170, no. 175; ABI, 412, no. 432; ABI, 420-422, no. 440; ABIL, 615-616 no. 1159; ABI, 595-597, no. 582; ABI, 600, no. 586; ABI, 633, no. 616; AB II, 630-635, no. 1174; see Hintze, in: AB III, 267-269.

<sup>57</sup> StAKr 40/32, no. 65 and 91; see AB II (cf. n. 14), 631 and 633, no. 1174.

<sup>58</sup> ABI (cf. n. 14), 609, n. 1, no. 596 (without the silk throwing mills; 70 looms were located outside Krefeld, see AB II, 589, no. 1145) and HILDEGARD HOFFMANN: *Handwerk und Manufaktur in Preußen 1769* (Das Taschenbuch Knyphausen) (Berlin 1969), 146 (see figure 3).

<sup>59</sup> ZStAM: GD: Moers, Tit. CIVa, no. 1, edition: Föhl: Aufsätze (cf. n. 12), 431-432 (Krefeld and Moers) and Stadtarchiv Moers 144,1 (Moers).

<sup>60</sup> HOFFMANN: *Handwerk* (cf. n. 58), 146 and ZStAM: Hausarchiv: Rep. 47, E III, no. 60, p. 38; see figure 3.

has become so unproductive that we would like to abandon 100 looms in our manufactures were it not for the hurt to the poor folk who already [...] have such trouble surviving in these costly times".<sup>61</sup> One can assume that it was the great agrarian underproduction crisis of 1770/72 — in Cologne the price of rye rose by 83.1% between 1769/70 and 1770/71<sup>62</sup> (the letter above appears to refer to this) - which further intensified the crisis of Krefeld's silk industry which had been set off by Prussian economic policy.

The crisis of 1787 was of a different kind. It had its origins in the raw silk underproduction crisis which drove its price up steeply. In comparison with 1786, it rose as high as 72% in Krefeld, with an annual average of 45% (see Figure 3). This crisis affected not only Krefeld but also other European centres of silk production, as Krefeld's municipal government correctly understood.<sup>63</sup> In particular, the latter attributed the crisis to the "enormous and outrageous increase in raw silk prices of 30-40- to 50%" as well as to the war between Turkey, Austria and Russia, but above all the crisis was explained by the fact that "merchants and purchasers of such goods do not place new orders because of higher prices, which results in an extraordinary overstocking of the warehouses, which in turn forces the manufacturers to limit their production, abandon many looms and leave their workers idle".<sup>64</sup>

The number of looms in operation fell by 11.9% between 1787 and 1788. Production amounts and production value decreased even more. In the case of looms producing handkerchiefs and scarves, the number of pieces declined by 11.1%, the production value by 31.2%, for velvet and damask looms by 27.1% or 29.9% respectively, for ribbon looms by 23.8% and 32.1%, for silk-stocking looms by 27.8 and 33.0% and for passementerie looms by

<sup>61</sup> HStAD: Kreisregistratur Xanten, no. 1600.

<sup>62</sup> EBELING, IRSIGLER: *Getreideumsatz* (cf. n. 31), vol. 1, 688.

<sup>63</sup> JUSTIN GODARD: *L'ouvrier en soie. Monographie du tisseur lyonnais. Etude historique, économique et sociale* (Lyon, Paris 1899), 239-245; CAYEZ: *Métiers* (cf. n. 52), 72-76; AB II (cf. n. 14), 483-484, no. 1084.

<sup>64</sup> StAKr I A, no. 60, fol. 101-101 v.

27.4% and 30.3%. The "factory tables" calculated the decline in employment in the silk industry at 28.0%.<sup>65</sup> Accounts of the municipal government reported on January 24, 1788: "Together with wife and child, a worker cannot get enough food". On the 24th of May, we read: "Work has been cut back to such an extent that master and journeyman cannot live on their wage, let alone feed wife and child".<sup>66</sup> It was a blessing for the silk workers that the crisis in the silk industry did not coincide with a full-blown agricultural deficit. Although rye prices tended to rise — between 1786/88 they increased by about 28% in Krefeld, and between 1787/88 and 1788/89 by an additional 4% — a more drastic rise came only in 1789/90: The price of rye increased by ca. 37%.<sup>67</sup> The silk Verleger Cornelius and Johannes Floh were obliged to buy 300 Malter of rye in Holland which they sold in Krefeld below cost.<sup>68</sup> In the meantime, the economic situation of the silk workers had improved, as the production figures of the "factory tables" indicate and accounts of the council suggest, but the number of silk and ribbon looms in operation stagnated.<sup>69</sup> One can therefore assume that the employment situation continued to be unfavourable. Although the agricultural crisis did not coincide directly with the crisis in the silk industry, it nevertheless occurred at a time in which the latter had in no way recovered. It was therefore inevitable that the living conditions of silk workers, especially those who had nothing or little to do or worked for a reduced piece rate, would be more difficult. Reports about poor sales for velvet ribbons and passementerie, relatively inexpensive articles, whose demand was therefore fairly elastic, substantiate the assumption that

<sup>65</sup> StAKr 1 A, no. 60, fol. 65v-66, 84v-85.

<sup>66</sup> StAKr 1 A, no. 38, fol. 37 and 43, edition: AB II (cf. n. 14), 655, no. 1186.

<sup>67</sup> StAKr 1 A, no. 59, fol. 7-8.

<sup>68</sup> StAKr 1 A, no. 38, fol. 79v, edition: AB II (cf. n. 14), 656, no. 1186.

<sup>69</sup> StAKr 1 A, no. 60, fol. 104-105, 119v-120 and no. 38, fol. 48, 51, 54, 57, 60, 63, 67, 68v, 71, 73, 78v, 81v, 85v-86, 87v-88, 90, 92, 94, 96, 98, 100, 102-102v; see AB II (cf. n. 14), 656, no. 1186.

the agricultural crisis also impaired demand, thereby having a double effect.<sup>70</sup>

When "factory table" figures for the number of silk and ribbon looms in operation are compared with the volume and value of production, as unreliable as these data may be, one fact is particularly striking. In the years 1779 and 1784-1794, the number of operating silk and ribbon looms varies less than the production volume and value. In the first instance, the coefficient of variation is only 5.8%, but in the case of velvet and damask it was 14.9% or 10.6% respectively, and for ribbons, 8.8% or 9.8%.<sup>71</sup> These differences reveal the employment strategies of Krefeld's silk Verleger in times of economic crisis. Their goal was primarily to keep the number of silk and ribbon looms relatively constant while expanding or contracting production according to the economic situation by lengthening or shortening the work day.<sup>72</sup> Accounts of January 23, 1779 report: "The situation for silk manufacture has improved. Work is not only being done in the evening, by candlelight, but some workers, especially the shearers, must produce until 10 in the evening. Normally they do so only until 8".<sup>73</sup> On the other hand, the municipal government wrote on September 23, 1781: "[...] a few weeks ago the ribbon workers in the von der Leyen *fabrique* were told, under threat of punishment (and great vigilance is being exercised) that they are to work only from 8 to 12 in the morning and from 1 to 4 in the afternoon".<sup>74</sup> In June 1782, the von der Leyen ribbon workers were limited to 28 hours per week.<sup>75</sup> Of course it is doubtful if, under the conditions of domestic industry, the tool of "work time" could have really functioned in this manner, despite all vigilance. The Verleger were more readily able to control work time through the distribution of raw materials. In

<sup>70</sup> StAKr 1 A, no. 38, fol. 73, 78v, 81v, 96, 98; see AB II, 656, no. 1186.

<sup>71</sup> ZStAM: Rep. 70, no. 44, fol. 14v-15; StAKLr 1 A, no. 60.

<sup>72</sup> See above all BOTZET: *Geschichte* (cf. n. 4), 20-39 and KISCH: *Mercantilism* (cf. 3), 32-34.

<sup>73</sup> StAKr 1 A, no. 36, fol. 5v-6, edition: AB II (cf. n. 14), 651, no. 1186.

<sup>74</sup> StAKr 1 A, no. 37, fol. 63-63v, edition: AB II (cf. n. 14), 652-653, no. 1186.

<sup>75</sup> StAKr 1 A, no. 37, fol. 104, edition: AB II (cf. n. 14), 653, no. 1186.

this manner it was possible to reduce it to nothing, but the attempt to expand it beyond a certain point must have conflicted with the weavers' sense of how much they should produce to fill their needs, especially in times of prosperity.<sup>76</sup> The Verleger complemented their work time policy, especially when sales sharply declined, with a second strategy, which only apparently contradicted the first: in order to keep employment from falling to zero goods were stockpiled. This was also done in order to fill warehouses during periods when a reduced piece rate was paid and to be able to market goods immediately when business conditions improved.<sup>77</sup> The instrument of "work for stock" was especially directed toward the spring and fall fairs in Frankfurt.

The employment policy carried out by Krefeld's Verleger during economic upswings and downturns, demonstrates that they used a modified form of the "high flexibility of domestic production" (W. Sombart), which set it apart from factory industry.<sup>78</sup> Three factors forced them in this direction: their ownership of the looms, the manufacturing parts of their enterprise and the peculiarities of the labour force. The silk and ribbon looms, which stood in the homes of the weavers, as well as the manufactures, were fixed components of the entrepreneurial capital. If the Verleger limited production these lay at least partially idle. On the whole these two factors were still too insignificant to determine the employment policy of the Verleger. The third element, however, was decisive. Silk workers, especially the Fabrikenmeister, were considered highly specialized, skilled workers. In part they had been recruited by the Verleger from other centers of silk production and brought to Krefeld. It would therefore have been highly detrimental to longer-range entrepreneurial policy to leave them without bread and work during times of crisis. Had the

<sup>76</sup> See KRIDTE, MEDICK, SCHLUMBOHM: *Industrialization* (cf. n. 51), 64-67.

<sup>77</sup> See BOTZET: *Geschichte* (cf. n. 4), 26-29, 35-37.

<sup>78</sup> WERNER SOMBART: *Verlagssystem* (Hausindustrie), in: *Handwörterbuch der Staatswissenschaften*, vol. 8 (Jena 1911), 233-261, here 234; see also KRIEDTE: *Proto-Industrialisierung* (cf. n. 4), part. 3.

Verleger done so, they could have counted not only on being left without workers as soon as the business picture improved, but also on the fact that the dismissed silk workers would become "Fabrikverräter", that is they would pass on the manufacturing secrets of Krefeld's Verleger to competitors in the nearby silk production centres. This they feared more than anything else. In order to avoid these dangers, the Verleger markedly restricted the flexibility of the home industry production system in their own interest. Instead of increasing or decreasing the number of workers (and their silk and ribbon looms) according to the business cycle, they tried, in upswing phases, to extend working hours before hiring new workers, if that proved insufficient; during phases of decline they shortened working time and apparently tried to distribute the remaining work evenly. "Our *verleger* divide [...] the work in such a way that everyone has something and even if he is wretched, he can still eat", reported the municipal government on December 24, 1787.<sup>79</sup> "Working for stock" had a similar goal: the Verleger used it, among other reasons, to keep the business cycle from having its full impact on the number of those employed. They passed the crisis in all its severity only on to those workers they considered dispensible. If Krefeld's Verleger thus pursued a somewhat anti-cyclical employment policy, it was not so much out of social solicitude toward their workers but due to their interest in the accumulating policy of their enterprises. This made it appear essential to maintain the existing core of specialists in the labour force, even in times of crisis.<sup>80</sup>

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With the emergence of an export trade which shaped the social structures of the city, a new economic factor made its appearance

<sup>79</sup> StAKr 1 A, no. 38, fol. 34, edition: AB II (cf. n. 14), 655, no. 1186.

<sup>80</sup> It is the merit of BOTZET: *Geschichte* (cf. n. 4), 20-39 to have disproved the contradictory arguments of Kurschat: von der Leyen (cf. n. 4), 77-83; see also KISCH: *Mercantilism* (cf. n. 3), 33-34 and GERHARD ADELMANN: *Die ländlichen Textilgewerbe des Rheinlandes vor der Industrialisierung*, in: *Rheinische Vierteljahrsblätter*, 43 (1979), 260-288, here 284.

which affected the lives of the lower strata no less than the price of grain. Unfortunately it is not easily possible to weight these two factors — as, for instance, in a correlation analysis — since the data on the production volume and value of the silk industry are too unreliable. However, it is striking that cycles in the silk industry are mirrored in marriage figures. The relatively weak inverse correlation between grain prices and marriage figures points in the same direction (for 1770 - 1794r = 0,18).<sup>81</sup> The mortality rate stands outside of this structural relationship since it was relatively “autonomous” (J.D. Chambers).<sup>82</sup> Yet this does not mean that it had less influence on the living conditions of the dependent labour force.

If one attempts to progress from the analysis of business cycles and crises to the determination of long-term trends, one cannot avoid noticing that the secular rise of Krefeld had slowed in the second half of the eighteenth century. The annual growth rate of the population, which had amounted to 2.1% (for the total area of Krefeld, also 2.1%) from 1716 to 1750, fell to 1.2% (for the total area, 1.3%) between 1750 and 1793.<sup>83</sup> Since the sixties the number of silk and ribbon looms in operation in Krefeld fluctuated between 600 and 687; the number of silk throwing mills remained unchanged at 16 (1743: 12, 1763: 15 and 1768: 18).<sup>84</sup> The balance sheet total and the capital shown on the books of the firm of Fr. & H. von der Leyen continued to rise, but the period of great expansion was approaching its end.<sup>85</sup> Therefore, there are many indications that the growth potential of Krefeld had exhausted itself. It continued only in the nearer and more distant surroundings of Krefeld, in the countryside rather than in the city.

<sup>81</sup> Stadtarchiv Moers 81,1 II-V (rye prices in Moers 1770-1786) and StAKr 1 A, no. 38 and 59 (rye prices in Krefeld 1786-1794).

<sup>82</sup> J.D. CHAMBERS: *Population, Economy, and Society in Pre-industrial England* (Oxford 1972), 77-106.

<sup>83</sup> See n. 5.

<sup>84</sup> See figure 3 and AB I (cf. n. 14), 72, no. 67; AB II, 588, no. 1145; ABI, 609, n. 1, no. 596.

<sup>85</sup> AB II (cf. n. 14), 585-588, no. 1145 and StAKr 70, no. 125.

Although Prussian trade policy has been considered the reason for the stagnation of Krefeld's silk industry, this explanation is not satisfactory.<sup>86</sup> The decisive factor was far more its monopolistic-oligopolistic structure, supported by bureaucratic coercion. This suppressed all entrepreneurial initiative which arose outside of the small circle of Krefeld's silk enterprises. For its own protection, "big capital" had entered into a momentous alliance with public authorities. It restricted commercial development within the narrow framework of the old order. Before the proto-industrial process could once more accelerate, this had to be eliminated. The French Revolutionary's Army's occupation of the territories on the left bank of the Rhine in the autumn of 1794 brought about the necessary preconditions.

<sup>86</sup> Hintze, in: *Ab III* (cf. n. 14), 269.

