From Practice to Memory: Bargaining and Remuneration in European Papermaking, 1550–1850

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ABSTRACTS

Dieser Artikel untersucht die Zusammenhänge zwischen dem Arbeitsprozess, der Arbeitsbelastung und den Lohnsystemen der europäischen Papierherstellung von der Reformation bis zum Zeitalter der Revolutionen. Er befasst sich mit der gelebten Erfahrung der Verhandlungen zwischen den Herstellern und den Gesellen, insbesondere mit den Interessen, die sie bewegten und trennten, und mit den Druckmitteln, die beiden zur Verfügung standen. Schließlich untersucht der Artikel die Mechanisierung des Handwerks als Ausweg aus den langjährigen Konventionen und Konflikten der handwerklichen Papierherstellung.

This article explores the connections among the labour process, workloads, and wage systems of European papermaking from the Reformation through the Age of Revolutions. It considers the lived experience of negotiation between the manufacturers and journeymen, particularly the stakes that animated and divided them and the means of exerting pressure available to both. Finally, this article examines the mechanization of the craft as an escape from the long-standing conventions and conflicts of hand papermaking.

1. Introduction

In 1546, Sigismund the Jagiellon, King of Poland and Grand Duke of Lithuania, issued *A Confirmation of the Regulations of the Papermaking Craft*. The title of this document was precise. It affirmed the handiwork of "honest masters and freemen [journeymen] of the papermaking craft", who had "submitted to Us articles regulating their craft approved

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and accepted by unanimous agreement, custom, and practice".[1] Perhaps the masters and men made their pact after debate in a setting akin to the English "bull ring". There the paper manufacturer sat on a box surrounded by his workers, and the circle was not broken until the dispute was resolved. Once the issue was settled, the side that called the meeting provided drink for all. In the close environment of a small paper mill, the clash of hard feelings over wages and customary expectations no doubt had to be cooled with beer.

The *Confirmation* ranged across a wide variety of matters. It did not set the hours of labour, but it announced that each production team should turn out six reams of medium-sized paper per day – a figure reduced to five reams on days of religious "vigil". It mandated that every master papermaker had the right to engage two apprentices, while each freeman could enroll one. The *Confirmation* also issued standards for tramping and the journeyman's customary "Welcome", the mastery of the craft required of millmasters, the handling of the theft of paper, and contributions to the craft's community chest, which aided impoverished, sick, and aged hands.[2]

The comprehensiveness of the *Confirmation* led to problems during the second half of the sixteenth century, a high time for the Polish economy, Polish humanism, and the heart of Polish papermaking, the mills in and around Cracow. As the demand for paper spiraled, Sigismund's prescription for productivity had become a dead letter. As a result, a compromise between Cracow's masters and men appeared in the city's Council Register on July 1, 1557. Its central provision permitted Cracow's master papermakers to engage as many apprentices as they desired. In exchange, the journeymen would receive additional pay for any reams they furnished above the *Confirmation*'s daily standard of six. Put simply, the freemen exchanged whatever control they had over their craft's labour market for fattened purses. But in their thriving trade, there would be work for everyone. Twenty Cracow journeymen pledged to accept the revised code.[3]

This article explores the connections among the labour process, workloads, and wage systems of European papermaking from the Reformation through the Age of Revolutions. In doing so, it considers the lived experience of negotiation between the manufacturers and journeymen, particularly the stakes that animated and divided them and the means of exerting pressure available to both. Of course, this haggling did not take place on a level playing field. But the master papermakers' latitude was narrowed by their reliance on the journeymen's skills, the many vulnerabilities of the production process, and the delicate nature of the product.

In a justly famous study, Sidney Pollard treated "the adaptation of the [British] labour force" to industrial work as an outcome of the mechanization of textile production and

1 Quoted in J. Dąbrowski/J. S. G. Simmons, Ad perpetuam rei memoriam …: The Royal Regulation of Polish Papermaking in 1546, in: International Paper History 10 (1994), p. 46.

2 Ibid., pp. 47–48.

3 Ibid., p. 50, n. 9.

the rise of industrial engineering at Boulton and Watt's Soho Foundry.[4] But the relatively balanced powers of papermaking's masters and men meant that they ceaselessly had to adapt to each other. Consequently, the manufacturers' pursuit of a papermaking machine at the end of the eighteenth century rested on more than the prospect of heightened productivity. It also seemed to offer the producers more command and control over their workshops and less heated bargaining within them.

Despite the paper manufacturers' dependence on the sweat and hard-won tacit knowledge of skilled men rather than the repetitive actions of a machine, hand papermaking was a capitalist industry cloaked in a corporate idiom. Its system of production was well organized to mobilize capital, labour, and material and technological resources in response to market signals. The journeymen fashioned reams for markets near and far rather than for their own use, and did so under the watchful gaze of a millmaster. They depended on monetary wages as well as the provision of food. Accordingly, E. P. Thompson's famous depiction of the moral economy of craft work before a "wave of gadgets" washed over English production did not include the complex market dimensions of trades like papermaking.[5] Equally, Jan de Vries's account of a *new* market orientation in worker households after the Peace of Westphalia fails to capture the earlier arrival of this mentality in the paper mills of Ambert and Cracow.[6]

Nevertheless, during the twilight of the Old Regime, the paper trade still spoke of masters, journeymen, and apprentices, limited recruitment to members of the industry's acceptable families, and celebrated the workers' routine passages, such as time on the road or climbs up the craft ladder. These were conventions in many pre-Revolutionary trades. But they had fused with the advanced features of hand papermaking's capitalism. These encompassed a refined labour process refreshed by novel methods and instruments; established hours, output quotas, and sophisticated incentives; and the calculating search by masters and men for collective and individual advantage. If Enlightened optimism tempted entrepreneurs and tinkerers to dream of a papermaking machine, so did the ferment and frustration of workshops honeycombed with both time-honored custom and innovative demands by the journeymen.[7] Remarkably, in 1801, England's paper manufacturers found themselves defending familiar practices against the workers' "adoption of a *regular system of constant encroachment* on the *fair* and *established* customs and usages of the trade". As the journeymen's "wanton unnecessary and *extortionate demands*" mount-

4 S. Pollard, The Genesis of Modern Management: A Study of the Industrial Revolution in Great Britain, Cambridge, MA 1965, pp. 160–208.

5 E. P. Thompson, Customs in Common: Studies in Traditional Popular Culture, New York 1991, pp. 185–403. For the quoted phrase "wave of gadgets", see T. S. Ashton, The Industrial Revolution, Oxford 1997, p. 48.

6 J. de Vries, The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the present, Cambridge, UK 2008. See also J. de Vries, The Industrial Revolution and the Industrious Revolution, in: The Journal of Economic History 54 (1994), pp. 249–270.

7 For the Enlightenment's influence on the British economy and the industrial revolution, see J. Mokyr, The Enlightened Economy: An Economic History of Britain, 1700–1850, New Haven 2009.

ed, risk-averse producers of six reams of paper per day installed papermaking machines to enhance their mills' output and turn their industry's capitalism in their own favour.[8] To explore the origins of this transformation, this article first depicts the techniques of hand paper production and the life-cycle of the workers who turned out the reams. It then examines the workloads and wage systems that grew out of and governed the exigencies of making paper. Finally, this article considers the mechanization of the craft as an escape from the long-standing conventions and conflicts of hand papermaking.

2. Making Paper and Its Discontents

In 1766, Georg Christoph Keferstein, an important paper manufacturer located near Halle, explained that the German paper mills of his day were "like small republics".[9] Five years later, an embittered French observer, one Lescourre of Libos, declared that "The journeymen paperworkers form a sort of small republican state in the midst of the monarchy."[10] Whether in the intimate setting of a single mill or a kingdom-wide trade, manufacturers and their allies like Lescourre believed that paper production had been turned upside down. Alongside the legitimate custom of papermaking, they maintained, the journeymen had created an illicit custom that often rendered them the true masters of the mills.[11] Moreover, the journeymen guarded their liberties with jealous energy, much as prickly ancient republics had defended their territories. "Nothing", Pierre Montgolfier, a leading French papermaker fumed, "is more revolting than the tyrannical power that the worker wields with respect to his master, nothing more degenerate than this wretched bunch of urchins, and by the same token nothing so urgently requires the attention of the [King's] Council than these seditious upstarts."[12]

In fact, the journeymen possessed several assets that bolstered their "republican" challenge. The essential features of their durable, self-styled array of customs and rights had made their way across Europe long before the era of Keferstein and Montgolfier. Their strikes, and even the threat to withdraw their labour, humbled even the most stiff-necked manufacturers, especially when lively production seasons were accompanied by vatfuls of perishing pulp. In France, the journeymen's inevitable time on the road and circular letters, which enabled them to expose their grievances to "leaders and senators" elevated from their own ranks, rendered any producer who crossed them liable to a truly injurious

8 Quoted in D. C. Coleman, The British Paper Industry, 1495–1860: A Study in Industrial Growth, Oxford 1958, pp. 272–273.

9 Quoted in A. Renker, Some Curious Customs of Old-Time Papermaking in Germany, in: The Paper Maker 30 (1961), p. 7.

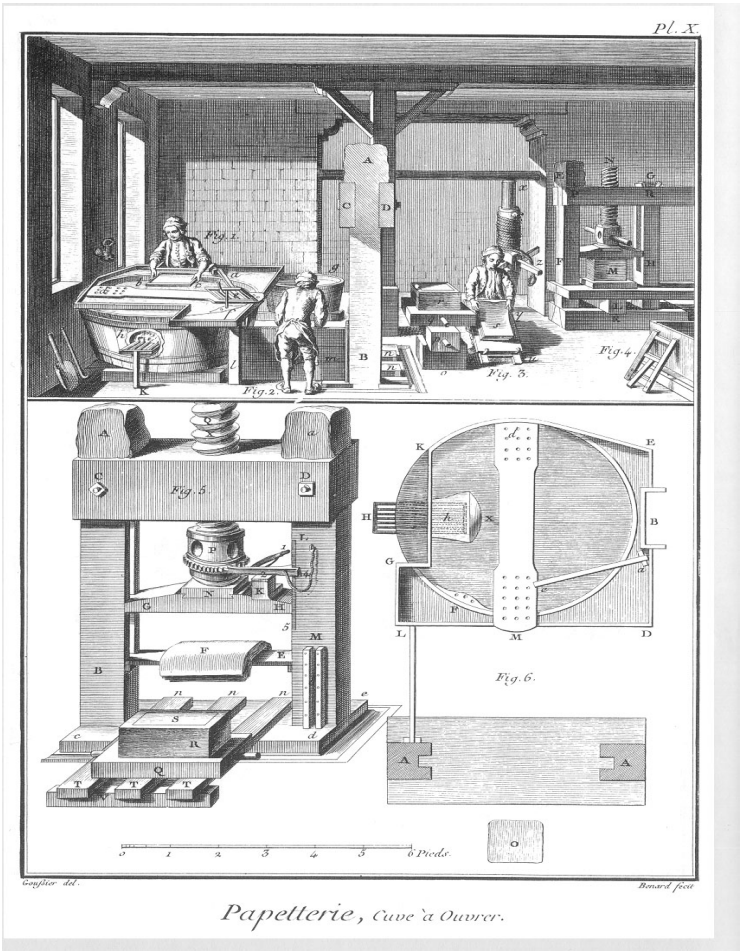
10 Quoted in A. Nicolaï, Histoire des moulins à papier du Sud-Ouest de la France, 1300–1800, vol. 1, Bordeaux 1935, p. 64.

11 For similar claims concerning other French trades, see S. L. Kaplan, Réflexions sur la police du monde du travail, 1700–1815, in: Revue Historique 261 (1979), pp. 17–77.

12 Quoted in C. C. Gillispie, The Montgolfier Brothers and the Invention of Aviation, Princeton 1983, p. 17.

penalty – the "damnation", or shuttering of his mill.[13] How could master papermakers, Lescourre asked, avoid the "complaints, cabals, and revolts that reign among this *breed of men*"? How could paper producers negotiate with this "unruly mob" and secure timely accords?[14]

Fig. 1: Papeterie (Details of skills and tools of papermaking)[15]



13 On the circular letters and "leaders and senators", see Lescourre, quoted in Nicolaï, Histoire des moulins à papier, p. 64. On the practice of "damnation", see L. N. Rosenband, Papermaking in Eighteenth-Century France: Management, Labor, and Revolution at the Montgolfier Mill, 1761–1805, Baltimore 2000, p. 57.

14 Quoted in Nicolaï, Histoire des moulins à papier, pp. 63–64.

15 Plate X, in: Denis Diderot/Jean le Rond d'Alembert, Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers. Planches, vol. 5, Paris 1751–1752.

In practice, hand papermaking's masters and men haggled endlessly about hiring, training, hours, wages, bonuses, and the quality of the journeymen's food. Their bargaining was tough-minded, informed, and precise. After all, time-discipline, carefully constructed output quotas, downtime payments and overtime premiums, and a seat at the "master's table" were widely established features of European papermaking. Of course, the devil was always in the details, but the manufacturers' heated rhetoric often gave way to cool assessment of these details. Thus the compact of 1557 in Cracow. Equally, in a later parallel, the Montgolfiers' feverish public assessments of their workers were markedly different than their private accounts. They evaluated many departing workers for rehire during the 1780s. Despite frequent stormy or sullen endings to the workers' time with the Montgolfiers, they found considerably more hands worthy of another stint in their mill than not.[16] Both master papermakers and workers, then, were frequently more clear-eyed and calculating about the value and terms of their relationship than "damnation" and fiery rhetoric might suggest.

To understand the ties that bound hand papermaking's custom, workloads, wage formats, and production techniques, it is essential to explore the daily activity in a paper mill. These enterprises generally consisted of two buildings, with an upper story in at least one structure. On the ground level, discarded linen, unraveling ropes, and stained, torn sails were sorted, paper was made, and newly minted sheets were glazed; the elevated workshop served as a drying loft. The creaking of carts loaded down with baskets of these dusty or sodden materials signaled the beginning of the papermaking season. The rag merchants who brought the cast-off linen to the mills knew they had a valuable commodity. In 1784–1785, James Whatman II, England's premier papermaker, observed that rags accounted for 47.5 per cent of his production costs. At the same time, the wages Whatman paid added up to 14 per cent of his expenses.[17] Before large-scale mechanization, materials were inevitably more expensive than men, even those with polished skills. Rising wages, then, amounted to only one impulse behind the manufacturers' search for a papermaking machine.

The division of labour and basic manipulations of hand papermaking were shared in mills throughout Europe. Effectively, production consisted of three stages: the rotting and mechanical reduction of discarded linen into pulp, the creation of the paper, and the preparation of the infant sheets for ink and transport. Female hands divided white rags from gray, removed caked dirt, and cut away matted patches. If their work was hasty or indifferent, the women could damage the pulp, so the master papermakers of Bern prescribed the maximum weight of rags they should "cut" each day.[18] An experienced man

16 Rosenband, Papermaking, pp. 130–131.

17 Coleman, British Paper Industry, pp. 169 and 170, n. 1. According to Coleman, in 1765, Keferstein's expenditures on labour, including a salary for his wife and himself "vor die Direction", amounted to 21 per cent of production costs.

18 J. Lindt, The Paper-Mills of Berne and their Watermarks, 1465–1859, Hilversum 1964, p. 49 Table (Prices of Rags, Paper, and Wages at the Worblaufen and Zu Thal Mills during the Eighteenth and Nineteenth Centuries), double-starred note.

watched over rows of stamping mallets that separated the linen, already weakened by a customary period of fermentation, into cellulose filaments. He knew that the fermentation had proceeded sufficiently when he could feel the proper degree of heat in a handful of pulp. By the close of the eighteenth century, Dutch, English, many Scandinavian, and some French manufacturers had dispensed with fermentation and turned to a machine, the Hollander beater, that macerated old linen quickly. This device sped up the preparation of the pulp, but the journeymen who used this material still turned out the familiar six reams of paper each day.

The vatman, who actually created the sheets, first evaluated the color and consistency of the pulp, the surest guide to the final weight of the ream. Then he dipped his mold, a rectangular wire mesh bounded by a wooden frame, into a tub partially filled with warm, watery material. He lifted the mold quickly and shook it in a time-honored pattern so that the fibers of the infant sheet "shut". Depending on the scale of the mold and its stringing (and hence the size and weight of the paper), he generally performed this task about 3000 times per day. As every vatman knew, he had to both "hurry up" and "slow down" to produce this fatiguing total of quality paper.[19] After fashioning each sheet, the vatman passed the mold, with the fresh paper clinging to its wires, to the coucher, whose primary tool was a stack of hairy felts. He needed steady hands and good timing, since he transferred six or seven sheets of paper per minute from wire to felt. Once his pile of woolen felts, each now bearing a moist sheet of paper, reached a certain height, it was known as a post. Then it was pressed. Next, the layman separated the paper from the felts, a delicate task that resulted in many ruined sheets. More pressing followed and the paper was draped over cords to dry. The sizerman collected the still moist sheets and immersed them in an emulsion of hides, hoofs, tripe, and alum. This gelatin bath filled the paper's pores, thereby preventing ink blots. The sizerman tested his work with his tongue: if it left a balanced impression on the sheet that resembled a fan or a butterfly's wing, the glaze was good. Finally, women sorted and smoothed the paper, excised stained and clotted swatches, and assisted the loftsman in wrapping the reams.

Though rich in custom and lore, papermaking was always an exacting industry. The romantic image of the languid, self-directed pace of the independent artisan misses much of the activity in pre-mechanized paper mills. Here journeymen and women workers laboured at closely integrated tasks. Although certain hands still exercised some control over the rhythm of their toil, the lowly apprentice who failed to stir the pulp at the base of the vat at regular intervals put the quality of the paper at risk. If the supervisor of the stamping mallets failed to rouse himself from sleep during heavy rains, turbulent, muddy water flooded the troughs and discolored the pulp. Precise time-discipline had always been a feature of papermaking; its presence showed in every sheet. Moments mat-

19 Early American Papermaking: Two Treatises on Manufacturing Techniques, Reprinted from James Cutbush's American Artist's Manual (1814) with an Introduction by John Bidwell, New Castle, DE 1990, p. 31. The quoted phrases are Bidwell's. On the general issue of early modern European worktime, see C. Maitte/D. Terrier, Une question (re)devenue central: Le temps de travail, in: Genèses 85 (2011), pp. 156–170.

tered. So exhausting workdays, synchronized production, and intensive time-discipline characterized hand papermaking centuries before the "modern" rhythm of mechanized production.

How, then, did youngsters learn the art of making paper by hand? In a word: slowly. Very young children gathered the scraps of rags and ropes that slipped out of the sorters' bins and crossed shopfloors puddled with spilled finish and littered with flawed, crumpled sheets. Along the way, the greenhorns absorbed the colorful jargon of their craft. For example, French masters and men labeled wrinkles in the paper "goat's feet" and uneven swells of pulp *andouilles*, sausages or perhaps turds. There was also, however, a dark side to the apprentice's education. German papermakers reserved the right "to treat the apprentice with blows to correct his errors".[20] In Spain, apprentices as young as five or ten years old were undressed, washed, and then carried on the shoulders of older hands to the vats and the troughs of the stamping hammers. There they removed the slightest strands of fiber that might otherwise mar the paper's surface. It was said that the noise made by the boys' chattering teeth rivaled that of the iron-tipped stampers pounding on the metal troughs.[21] Small wonder that the Polish *Confirmation* mandated an onerous fine against the apprentice who skipped out before he completed his indentures.[22]

In early modern France, apprenticeships in papermaking ranged from three to six years, with four years as the term specified by royal edict in 1739. According to one authority, German paperworkers endured indentures of "4 years and 14 days".[23] Even after the legal basis for the prosecution of violators of apprenticeship law disappeared in England in 1814, the journeymen paperworkers mandated that "No one shall be entitled to the business unless he has served a legal apprenticeship of seven years and can produce his lawful indenture." The exception: "the eldest son of a paper-maker, who is deemed to be a worthy member at the age of twenty-one, provided that he is brought up to the trade".[24]

In time, the skilled apprentice might become a sort of bound journeyman. Perhaps old hands recognized these maturing novices as low-priced competition. Consequently, the master papermakers of the Auvergne had to concede, in 1688, that apprentice vatmen, couchers, and laymen would enjoy the same perquisites as the journeymen who performed these tasks.[25] Meanwhile, the fully fledged journeymen taxed newcomers often, claiming these fees were compensation for the clumsiness of the youths and the hours spent instructing them in the tricks of the trade. There was always a trade-off between teaching and working, but one producer, doubtless echoing many others, lamented that these indemnities were "legitimately due to the master", since "no worker has ever taken

20 Quoted in Renker, Some Curious Customs, p. 4.
21 O. Valls I Subirà, The History of Paper in Spain, XVII–XIX Centuries, vol. 3, S. Nicholson (trans.), Madrid 1982, p. 16.
22 Dąbrowski/Simmons, Royal Regulation of Polish Papermaking, p. 47.
23 Quoted in E. J. Labarre, Dictionary and Encyclopaedia of Paper and Paper-Making, 2d edn revised and enlarged, Amsterdam 1952, p. 41.
24 Quoted in M. Chase, Early Trade Unionism: Fraternity, Skill, and the Politics of Labour, Aldershot 2000, p. 114.
25 Rosenband, Papermaking, p. 97.

the pain, even once, to demonstrate the craft to [an] apprentice".[26] The manufacturer's bitterness aside, the journeymen *were* quick to demonstrate their elevated status to the indentured: a Parisian apprentice courted trouble when he refused to open the doors for the veterans, "as is customary".[27] And in 1797, some German journeymen paperworkers taught a lesson to both an apprentice and his master. When the daring greenhorn tied his hair into a braid, the privilege of masters and journeymen alone, the veteran workers made his master suffer for this outrage. Thus did newcomers to the trade learn the rules within the old hands' unruliness.[28]

Above all, hand papermaking's apprentices and journeymen came from papermaking families. To control the labour market and the rewards for their work (to the extent they could), journeymen paperworkers laboured tirelessly to keep their ranks thin, familial, and initiated in the workers' custom, known in France as their *modes*. The men engaged in the trade in Angoumois reserved apprenticeships for their sons and brothers, and "formed a race distinct from the population in the midst of which they lived".[29] Veteran French hands evidently refused to labour without additional compensation beside skilled men who had not been born into the trade. Every English paperworker was expected to carry his "card of freedom", the credential his trade union issued to acceptable journeymen, or else find work in another craft.[30] Even the millmasters, said the journeymen, had to possess the proper pedigree, or pay the company of workers for its absence. No doubt the journeymen squeezed their bosses for every possible shilling or *sou*, but this custom also ensured that the mill tenant knew his trade and knew when to bow to the workers' self-styled ways. Put simply, skill, family ties, and a firm grasp of his brothers' custom earned a journeyman his welcome and keep. The paperworkers' skill served as the cornerstone of their custom, this custom sheltered the journeymen's skill, and custom and skill together ensured the workers' collective mastery of the labour market.

Successful paper production depended on accessible markets, favourable weather, a full storeroom of old linen, the absence of catastrophic disruptions, and a ready supply of capable journeymen. Few manufacturers could count on this array of assets for long. While some paperworkers and their families took to the road to avoid tight-fisted or abusive masters, the manufacturers also turned them out quickly when production ceased. Whether a journeyman relied on his card of freedom or his *livret* (an internal passport signed by a recent French boss) to land his spot, he could not depend on the job lasting long. So, the paperworker on the tramp made his way by "raising his rent". When he arrived at a mill, he generally received some combination of bread, wine or beer, a place to sleep, and a quire of broken sheets. If he was fortunate, he might get an audition for a place around the vats. Even if nothing came of this chance, an Auvergnat manufacturer

26 Quoted in ibid., p. 54.
27 Quoted in M. Sonenscher, Work and Wages: Natural Law, Politics and the Eighteenth-Century French Trades, Cambridge, UK 1989, pp. 250–251.
28 Renker, Some Curious Customs, p. 6.
29 Quoted in Rosenband, Papermaking, p. 53.
30 Quoted in Chase, Early Trade Unionism, p. 114.

complained that he had to let the itinerant "pass and pass and even pass again" through his mill, or watch his own skilled hands depart *en masse*.[31] Across the German lands, papermakers also grumbled about this elaborate custom, especially since it undercut some of their sway over hiring and firing.[32] This practice operated beneath the "propositional knowledge" of Enlightened science, but it figured in the tacit knowledge that enabled vulnerable journeymen to survive the grueling, familiar tribulations of their trade.[33]

Journeymen paperworkers were well aware that death came early and suddenly in their trade. At the close of the seventeenth century, rag-collectors caught the eye of the Italian physician Bernardino Ramazzini. As they hauled their "filthy wares" to the paper mills, he wrote, they were tormented by "coughs, asthma, nausea, and vertigo", the same afflictions known to plague paperworkers. Red arms, missing fingernails, and rheumatism were the lot of every vatman and coucher. Stooped backs often hobbled these skilled men, who sometimes switched stations to ease their pain. Ramazzini prescribed vinegar and water for the rag-collectors' ailments. Both the journeymen paperworkers and the millwomen, however, had little respite from the discomforts and toll of their work.[34] (In a rare mention of the distress of labour in a paper mill, the *Encyclopaedia Britannica* observed that the recent invention of the duster, a mechanical device that shook the debris from the rags before they were sorted, rendered this noxious toil "less pernicious to the selectors".[35]) Battered by long hours in the mills and long hours on the road when mills went silent, only hardy journeymen fashioned paper once they turned forty; indeed, paperworkers above this age had to prove that they had a smooth and steady "vatman's shake". Often, however, even mastery proved insufficient to secure a spot for an aged hand. In 1804, a 63-year-old Austrian, who possessed a "warm recommendation" from a former boss, failed to catch on as a foreman at a major mill due to his age.[36] Perhaps his potential employer had too much experience with venerable workers who enjoyed seats at the master's table but produced little.

Proud of their art and gradually enfeebled by it, journeymen paperworkers did everything in their power to ensure that their skills paid off. They forged local, regional, and national unions in many, though not all, European centers of paper production.[37]

31 Quoted in Rosenband, Papermaking, p. 57.

32 Renker, Some Curious Customs, p. 6. One source quoted by Renker (p. 6) reported that "the strange companion can stay in the mill as long as he likes. He is given lodging, meals and drinks."

33 On "propositional knowledge" during the Enlightenment, see J. Mokyr, The Gifts of Athena: Historical Origins of the Knowledge Economy, Princeton 2002.

34 B. Ramazzini, Diseases of Workers, W. C. Wright (trans.), Chicago 1940 (1713, 2nd enlarged edn), p. 291. The first edition of Ramazzini, De Morbis Artificum, was published in Modena in 1700. Wright "revised" Ramazzini's text and added "notes", but the present author cannot evaluate her efforts.

35 Encyclopaedia Britannica, 3rd edn, Edinburgh 1797, p. 709.

36 G. Eineder, The Ancient Paper-Mills of the Former Austro-Hungarian Empire and Their Watermarks, E. J. Labarre (trans.), Hilversum 1960, p. 47.

37 The historical literature on the collective organizations, powers, and actions of early modern Europe's journeymen is extensive. Two useful starting points are: E. Coornaert, Les Compagnonnages en France, du Moyen Âge à Nos Jours, 4th edn, Paris 1966; and J. A. Farr, Artisans in Europe, 1300–1914, Cambridge, UK 2000. See also J.-L. Ménétra, Journal of My Life, D. Roche (ed.), A. Goldhammer (trans.), New York 1986.

Kings and master papermakers declared the workers' cabals and combinations illegal, but the journeymen jointly preserved "their self-styled, chimerical independence", as one eighteenth-century French official put it.[38] These *associations* boasted a wide range of tactics. German paperworkers "reprimanded" manufacturers who stood up to *their* custom and assembled might, and then collectively abandoned these producers. Apparently state officials failed to undo the worker-imposed sanctions. Instead, they were adjudicated at craft conventions, such as the gathering at Wangen in 1695, which included twenty-one masters and twenty-three journeymen.[39] In England, the journeymen turned to the "rolling strike", in which they singled out a particular mill as an example to proprietors and millmasters elsewhere. Moreover, paper mills surrounded by mountains of rags and stuffed with paper and chemicals were inviting targets for the threat of arson as well as boycotts. Thus paperworkers leveled the bargaining power between masters and men.

3. Custom, Wages, and Workloads

In hand papermaking, the conceptualization of time as money emerged long before the mechanization of the art, not as a result of it. As a rule of thumb, manufacturers and journeymen were well aware that the remuneration for a week's worth of a skilled man's work equaled the price of a single ream of good paper. Consequently, masters and men placed a premium on the command of this work, its time, and its compensation.

Labour and economic historians have put in a great deal of time examining past worktime. Their studies have emphasized stages and eras, with elegant formulations like "merchant's time" and depictions of hard-lived rotations between fatiguing bouts of labour and leisure.[40] But these comprehensive distillations, however revealing, tend to obscure the distinctive patterns of time use forged within the labour process of every trade. The press of necessity in papermaking, for example, took many forms, including heroic efforts to take advantage of favourable stream flows and to meet rush orders, as well as routine attempts to drain a vatful of pulp before it spoiled.

Currently, two concepts, "leisure preference" and the "industrious revolution", dominate the discussion of worktime in early modern Europe. They are intimately linked, since historians of the industrious revolution contend that workers laboured longer and harder to consume more material goods, a practice that undermined leisure preference. Those scholars who emphasize leisure preference, however, argue that once workers in artisanal shops and even mills earned their sufficiency, they immediately dropped their tools and headed to alehouses, carnivals, and wakes. Until their pockets emptied, they remained in brothels and fairgrounds and then staggered back to their benches and sheds.[41] This cycle

38 Quoted in Rosenband, Papermaking, pp. 59–60.

39 Renker, Some Curious Customs, p. 6.

40 On "merchant's time", see J. Le Goff, Time, Work, and Culture in the Middle Ages, A. Goldhammer (trans.), Chicago 1980, pp. 29–42. On patterns of labour and leisure, see Thompson, Customs in Common, pp. 370–382.

41 The historical literature about "leisure preference" is vast. Two useful starting points are P. Mathias, The Transfor-

vexed manufacturers, who turned to Puritan teachings, novel systems of work discipline, and state regulations in desperate attempts to inure workers to regular, lengthy hours of toil.[42] For the most part, however, it remains a commonplace among scholars that leisure preference prevailed before being overcome by the rhythms of mechanized production. Certainly, journeymen paperworkers enlivened their workdays with indelicate slang and knew the way to the local tavern. But they also toiled within expectations about productivity that had diffused from Cracow to Kent and lasted for centuries. After all, the vatmen in sixteenth-century Poland and at a large Austrian mill in 1799 were both expected to furnish six reams of paper per day.[43] Moreover, paperworkers had always laboured industriously for bonuses that rewarded both quota-making and overtime sweat. They did not need to be abject maximizers to recognize the cost of time away from the production vats. Even the absence of one skilled man, they knew, resulted in the sacrifice of a day's pay of an entire vat team. Sure of the value of their time and talent, it is unlikely that paperworkers were inevitably mesmerized by the lure of leisure – especially leisure activities untethered from the celebration of their custom or the humiliation of a boss.

At the moment, the most dynamic debates about worktime in early modern Europe's cottage industries and concentrated sites of production center on the concept of an industrious revolution. Originally developed by Akira Hayami, this formula was adapted by Jan de Vries to explain a newfound work ethic among northwestern Europe's labouring poor. De Vries claimed that worker families there *chose* to spend more days at work and labour longer hours, often at greater intensity, in order to consume ever increasing amounts of imported commodities and manufactured goods. Consequently, the ache and desires of modern consumerism, de Vries believes, did as much to transform work patterns as did the manufacturers' imposition of time-discipline, if not more. Implicitly then, leisure preference gave way to spiraling popular demand for sugar, coffee, razors, mirrors, and stationery.[44] Emboldened by this heightened demand, manufacturers in many industries intensified the division of labour in their shops and embraced the costs of mechanization.

But Europe's paper manufacturers could not reduce complex skills into simple tasks and thereby enhance the output of their hands. In addition, the fatiguing hours required to fashion 3000 sheets of paper every day left little time for added industriousness, much less a full-fledged industrious revolution. To profit from the workers' routinely daunting efforts, both master papermakers and journeymen relied on the industry's sharply etched wage formats. Their rewards and penalties brought together hand papermaking's labour process, workloads, and market-tuned custom. These links permitted paperworkers to weigh the temptations of the tavern or tea against yet more hours of fashioning foolscap.

mation of England: Essays in the Economic and Social History of England in the Eighteenth Century, New York 1979, pp. 148–167; and P. Bailey, Leisure, Culture and the Historian, in: Leisure Studies 8 (1989), pp. 107–128.

42 For the attack on "leisure preference", see Thompson, Customs in Common, pp. 382–390.

43 For Poland, see Dąbrowski/Simmons, Royal Regulation of Polish Papermaking, p. 48; for the Austrian mill, see Eineder, Ancient Paper-Mills, p. 45.

44 De Vries, Industrious Revolution; and idem., Industrial Revolution and Industrious Revolution.

Their choices amounted to hand papermaking's capitalism from below as workers decided whether to sell their skilled labour or spend its fruits.

The Polish *Confirmation* of 1546 set precise standards for the journeymen's daily output, but asked only that they fashion this paper "in due time".[45] Elsewhere in Europe, paperworkers laboured to meet equally exact production quotas within closely drawn workdays. Much of this effort took place between midnight and the early afternoon, but the reasons why night work prevailed for centuries in hand papermaking remain unclear. At the large Rannersdorf mill in Austria, the vatmen picked up their molds at 4:00 a.m., a half-hour later than their Dutch counterparts routinely started their work.[46] Auvergnat paperworkers began their efforts at midnight or 1:00 a.m. and did not cast down their tools until they exhausted the pulp "around noon or an hour later at most".[47] At the Worblaufen and Zu Thal mills of Bern, where the journeymen evidently started their labours at 3:00 a.m., workdays (and nights) stretched from twelve to fourteen hours, with some sort of "break" for the vatmen and couchers.[48] Étienne Montgolfier's claim that thirteen hours was the "effective" workday in his family's mill fit squarely within this range.[49] Of course, the duration of the workday in the paper mills of Europe was sometimes less precise than it appeared. In 1792, the English manufacturer James Whatman II paid the workers at his Turkey Mill for a twelve-hour workday.[50] Yet English paperworkers, who often enjoyed an hour and one-half break for meals, were also known to eat while labouring at the vats. So, Turkey Mill's taxing hours likely had a certain flexibility, especially when skilled hands had empty bellies.

Masters and men were keenly aware of the hour when work was supposed to begin, and it was the bold producer who tried to alter it. In 1772, the paper manufacturers of Thiers, an Auvergnat center of some significance, decided to open their mills for work one hour closer to sunrise. They intended to reduce the cost of candles, threat of fire, theft of rags and reams, and piles of speckled sheets produced before first light. A difference of one hour apparently made all the difference for the journeymen. They walked out *en masse* and quickly won the day: their work continued to start at 3:00 a.m. The journeymen understood that time was money, and that the potential loss of an hour of labour might cut into their daily bonuses. So, they abandoned the town's paper mills in the name of custom and overcame the manufacturers' desire to produce more of their paper in sunlight.[51] The journeymen had underlined the value of their skill and affirmed their control over their worktime by bargaining with their feet.

45 Dąbrowski/Simmons, Royal Regulation of Polish Papermaking, pp. 47–48.

46 Eineder, Ancient Paper-Mills, p. 52; and for Dutch papermaking, see D. Hunter, Papermaking: The History and Technique of an Ancient Craft, rev. 2nd edn, New York 1978 (1947), p. 243.

47 H. Gazel, Les anciens ouvriers papetiers d'Auvergne, Clermont-Ferrand 1910, p. 71.

48 Lindt, Paper-Mills of Berne, p. 49, Table, starred note. On the "break", see p. 56.

49 Archives Nationales, Paris, 131 MI 53 AQ 23, document 16.

50 Coleman, British Paper Industry, p. 297.

51 C.-M. Briquet, Associations et grèves des ouvriers papetiers en France aux XVIIe et XVIIIe siècles, in: Revue Internationale de Sociologie 5 (1897), pp. 177–178.

If a certain flexibility persisted at the margin of the workday, there was generally much less give in the journeymen's "day's work". In 1788, Nicolas Desmarest, an informed French inspector of manufactures, explained that in Angoumois the day's work "always" amounted to twenty posts of paper.[52] As noted above, the post was the measure of newly made sheets still attached to the felts and ready for pressing. Across the Channel, the customary day's work was also twenty posts. This quota was so deeply ingrained in English papermaking that the Combination Act of 1796, which threatened much of the industry's contested custom, still specified that "twenty of which posts shall and do make a day's work". Over time, the seasoned vatman learned how often *per minute* he had to dip his mold in the pulp to build a proper post. While he shook his mold to smooth the infant sheet and drain it, the coucher returned a second mold to him, which had just been freed of its newly minted sheet. These gestures formed an intense, familiar time-discipline. The Combination Act had not embraced an abstraction when it mandated that "the time of working by journeymen at the vat […] shall be half an hour about each post".[53] The Montgolfiers' hands even launched a complaint by indicating *themselves* the exact amount of time it took to produce a post.[54] Perhaps masters once had to impose the day's work of twenty posts on recalcitrant journeymen; but by the eighteenth century, the paperworkers in England, France, and the German states had internalized this standard. It provided them with a firm base from which to haggle with their bosses and insulated them from the boundless ambitions of predatory masters. And it blended time and piece-rate compensation, an apt reflection of their synchronized toil.

To make this system effective, the time and effort necessary for the creation of every post had to be held constant. Since printers and stationers demanded many types of paper, the number of sheets in each post was the subject of careful consideration. Accordingly, in England, twenty posts of the lightweight paper known as "pott" produced slightly more than thirteen reams, while twenty posts of the demanding "imperial" furnished slightly less than three and one-half reams. In Angoumois, the posts included as few as 53 to as many as 264 sheets (and the felts that separated them), permitting a foreman to measure output at a glance.[55] Whether he was located in Kent or the Vivarais, the foreman would have known that his distant competitors' posts ordinarily matched his in size and content. The everyday mathematization of the killing work of hand papermaking and its industrious demands took shape within a fabric of durable, customary measures. At the end of the eighteenth century, English paperworkers expected to produce as much as eight day's work in six or six and one-half workdays. Seemingly contradictory, this balance rested on the precise understanding of the day's work as the fabrication of twenty posts. But as James Whatman II explained in December 1792,

52 N. Desmarest, Papier: Art de faire le, in: Encyclopédie méthodique: arts et métiers mécaniques, vol. 5, Paris 1788, p. 510.
53 The Statutes at Large, 36 George III, c. 111, vol. XL, p. 814.
54 Archives Nationales, 131 MI 53 AQ 23, document 39.
55 Early American Papermaking, Bidwell's introduction, p. 33.

> *at some mills (as mine) no overwork is made, at others from one to three and even, as I have been informed, four days a week have been made over at a vat. In this latter way it of course follows that bad work is done, and enormous wages earned at the same time.*

Worse yet, Whatman recognized that customs often became rights. "One man", he lamented, "who at that period [Christmas] thanked me much for [a gift of] two guineas, the next year demanded four as a right."[56] Even the women who laboured on call and day wages ("worked by agreement") in Bern's paper mills enjoyed access to "overwork" payments.[57] Meanwhile, Rannersdorf's masters thought nothing of pressing the journeymen for superhuman efforts in order to take advantage of seasonal waters free of sand.[58] All overtime labour, then, should not be attributed to a newfound industriousness among the workers. In practice, the boundaries of choice and coercion were often blurred by necessity. And the journeymen were more likely to be consumed by this extra labour than use it to consume novel goods.

Since journeymen paperworkers were highly conscious of the value of their time and their overtime, they expected compensation when the everyday troubles of their trade stopped their work. Kent's producers "agreed to find work for their men for six days per week and 'when short of water to find them other employment equivalent thereto'".[59] At Rannersdorf, when "some hitch" stopped papermaking, the vat crews received their regular weekly wages as well as an extra payment of twenty *Kreutzers*, since they were "deprived of the advantage of piecework", that is, the reward for every post of paper they turned out.[60] In the Vosges, paperworkers at one mill received a half-day's wage when a drought or a freeze idled them. When the problem was scarce rags, a man-made deficiency, the journeymen were entitled to a full day's pay.[61] Such compensation, even makework, was unusual in an era when shutdowns generally drove both the skilled and the unskilled to the road. But rags rotting in the *pourrissoir*, the promise of seasonal rains, and the journeymen's successful efforts to limit their numbers sometimes compelled papermakers to cling to their core hands. As one inspector of manufactures explained, "Want of a single [member of the vat crew] halts the work of three."[62] To anchor key men, the manufacturers paid idle hands and hoped for the speedy end of a drought or the quick repair of a cracked vat. This bargain could be pricey for millmasters, but sustained access to the most skilled workers (and their quality output) won markets for paper producers.

Through custom, journeymen paperworkers protected their collective standing and rights. But the workers also cut individual deals that rested on their skills and stability at

56 Quoted in T. Balston, James Whatman, Father and Son, London 1957, pp. 118–119.
57 Lindt, Paper-Mills of Berne, p. 49, Table, double-starred note.
58 Eineder, Ancient Paper-Mills, pp. 52–53.
59 Quoted in Coleman, British Paper Industry, p. 298.
60 Eineder, Ancient Paper-Mills, p. 53.
61 J.-M. Janot, Les Moulins à papier de la région vosgienne, vol. 1, Nancy 1952, p. 83.
62 Quoted in P. Léon, Morcellement et émergence du monde ouvrier, in: F. Braudel/E. Labrousse (eds.), Histoire économique et sociale de la France, vol. 2, Paris 1970, p. 660.

a particular mill. Finch Hollingsworth, a paper manufacturer in Maidstone, understood the utility of prompting "Emulation amongst the Workmen". He reported that

> *it has been usual with the Petitioner, and other Owners of Paper Mills and Works* [in Kent]*, to give extraordinary Reward and Encouragement to such of their Workmen as are most skilful, sober, and industrious, from which Practice the Petitioner and others have reaped great Advantages.*[63]

In short, Hollingsworth and his Kentish allies were willing to pay premium wages for premium skills, and as a potential added benefit, dent the journeymen's solidarity.

Daily wage figures reveal little about the journeymen paperworkers' standard of living. This was especially so because the master's table, that is, the provision of meals, bulked large in their earnings. To Pierre Montgolfier, this practice amounted to a "surcharge" on his budget. Still, he preserved the master's table as an aid in recruiting "choice" hands, although many of his fellow *fabricants* had commuted this traditional compensation into a monetary allowance.[64] And the master's table may have been less of a surcharge and recruiting tool than he claimed, since the Montgolfiers' workers complained that the bacon he provided was "scrap from the sack" and the diluted wine he offered resulted in "a lot of diarrhea".[65] Even the vatman Mathias Bartlme's daily wage of 10½ *Kreutzer* and food and wine allowance of 10½ *Kreutzers* at an Austrian mill in 1804 remained an incomplete accounting of his daily earnings, since work on writing paper, for instance, would net him an additional 20 *Kreutzers* per week.[66] Throughout European papermaking, wage formats were intimately linked to the contours of the workday and the tasks at hand. In addition to Christmas guineas, Whatman paid

> *a vatman* 13s 6d *per week for six days working twelve hours, with the usual customs in addition of half holydays, felt and vat working, with small beer or* 6d *per week in lieu of the latter, and occasionally letting a man have a guinea or two as a matter of favor.*[67]

In sum, the earnings of skilled vatmen and couchers probably placed them towards the top of the middling rank of artisans during the Old Regime. Nevertheless, their individual purses depended on the success of the mill (or mills) in which they toiled as well as a particular vatman's health or coucher's experience.

As they tramped in search of work, journeymen paperworkers formed moral communities within market economies. They defended their turf against other craftsmen, which led to a brawl and the death of a tinsmith in sixteenth-century Poland.[68] In the German states, the journeymen delighted in upbraiding those masters who excluded their custom

63 Journals of the House of Commons, 28 April 1796, p. 631.

64 Archives Nationales, 131 MI 53 AQ 23, document 3; and Archives Nationales, F12 1477, Mémoire du sieur Montgolfier fabricant et propriétaire d'une fabrique à Annonay.

65 Archives Nationales, 131 MI 53 AQ 23, document 41.

66 Eineder, Ancient Paper-Mills, p. 53.

67 Quoted in Balston, James Whatman, p. 118.

68 J. Marchlewska, A Short Outline of Polish Papermaking History from 1491 to 1945, in: The Paper Maker 39 (1970), p. 27.

from the mills. If a manufacturer refused to give ground, experienced hands refused to set foot in his mill.[69] Paperworkers honored their tramping brothers and newly minted journeyman who joined their company, so long as the former apprentice provided them with a lavish feast. And the journeymen were scrupulous interrogators of those women who would marry into their republics. In the German states, a woman who wished to marry a master or journeyman paperworker had to be three generations removed from her ancestors in "dishonest" trades, such as bondsmen, hangmen, and shepherds.[70] Often adrift among the floating population of labourers and their families, paperworkers had engineered a custom that provided them with a sense of uniqueness and belonging, and at least for a time, some degree of solvency. These compensations were as real as the satisfactions of a good smoke or the ownership of a handsome knife.

A durable labour process, the paperworkers' little republics, a vigorous and broadly shared trade culture, and the preponderance of small producers yoked to limited, and often niche, markets might seem to be a formula for a stagnant industry. But in the years after the Combination Act of 1796, English paper manufacturers continued to lament the workers' "encroachments" on their craft's established practices, and especially their press for higher wages. Furthermore, the trade's technology was also being retooled and refined. Around 1800, Matthias Koops was experimenting with a straw-based paper, and earlier, René de Réamur, the keen observer of wasps, had advocated wood-based papers. On the shopfloors, change took many forms: development and rapid diffusion of Hollander beaters; displacement of vat-stirrers by mechanical agitators; incorporation of hydraulic presses into advanced mills; and abandonment of polishing stones and glazing hammers to cover irregular grain in the sheets. As masters and men alike pursued opportunities for gain, they blended firm conventions and established production techniques with a growing array of innovations.

As these shifts took place, millmasters and journeymen spread the word about fresh tools and shopfloor practices. Many of these men chose to move on their own, while others were brought from afar to participate in import substitution schemes. French and Italian millmasters restlessly refreshed Spanish papermaking.[71] In 1753, an Austrian producer enticed "specialists" from Augsburg and France to his mill in order to mimic their metallic papers. Fourteen years later, a second Austrian manufacturer paid two journeymen to expand their expertise by labouring in Dutch mills. An Austrian millowner himself even traveled to France and Holland in a desperate effort to improve his reams; he evidently met with success. Of course, the importation of workers from abroad had its risks: in 1764, an Austrian millmaster was "deprived of the services of an indentured workman from Holland on account of the death of the latter".[72] And there was always the danger that foreign customs might accompany foreign techniques. Nevertheless, the

69 Renker, Some Curious Customs, p. 6.
70 Ibid.
71 Valls I Subirà, History of Paper in Spain, p. 17.
72 Eineder, Ancient Paper-Mills, pp. 43, 53, 76, and 140.

transnational transfer of know-how and instruments persisted. Indeed, such exchanges were so common that Cracow's papermakers had created a committee as early as 1581 "to investigate why foreign masters did not wish to employ freemen who had learned the art of papermaking from Cracow masters". Apparently, nothing came of this project.[73]
One improving Austrian papermaker, Ignaz Theodor von Pachner, tried a different strategy. To make the Empire "independent of the seemingly indispensable 'foreign' types and qualities" of papers, he founded a large mill in Klein-Neusiedl in 1793. He furnished this enterprise with the best hardware of the day, including Hollander beaters. He expected his hands to turn out six reams of medium-sized paper per day, the familiar rate throughout the European craft. But he concluded that too many of these reams were inferior as a result of too much work by the light of flickering candles or the burning of soot-laden woodchips. So, he reduced the workday in Klein-Neusiedl. Previously these hours had apparently matched one old Austrian formula of labour from 2:00 a.m. to 7:00 p.m., with a two-hour midday break. Under Pachner, the mill's work regimen lasted twelve hours, from 6:00 a.m. to 6:00 p.m. The work in his shops intensified as the hours of labour diminished. And the Emperor found the elegant features of his paper convincing; he converted the working hours of the industry across his realm at 6:00 a.m. to 6:00 p.m.[74] Had the workers been consulted about these changes? Did they rebel against the new regime? There is no evidence on either count. Pachner had embraced one facet of de Vries's industrious revolution – intensified work – at the expense of another when he cut the journeymen's hours.
In many ways, master papermakers and journeymen throughout Europe had long adapted to each other's pursuit of advantage. But during the twilight of the Old Regime, rising demand for paper, increasing prices for cast-off linen, and inflating labour costs confronted master papermakers and journeymen with fresh opportunities and intensifying pressures.[75] Challenged by this promise and these burdens, in 1808 Johann Adolph Engels, a Rhenish papermaker, advocated that his counterparts face their workers with an iron fist tempered by Enlightened steeliness:

> *It is totally dependent upon the clever, firm and good behavior of the principal, whether he will have good men and good order in his mill. Here we know how to tame recalcitrant companions. I advise my colleagues to do away with the old abuses, whatever they may be, and any other thing which resembles guilds.*[76]

A decade earlier, Nicolas-Louis Robert, an "inspector of personnel" in a large French paper mill, took a different approach to unravel the links among the industry's custom, wages, workloads, and production process.

73 Dąbrowski/Simmons, Royal Regulation of Polish Papermaking, p. 50, n. 11.
74 Eineder, Ancient Paper-Mills, pp. 45–46.
75 On the rising costs of English paper production at the close of the eighteenth century, see Coleman, British Paper Industry, ch. 6 and 10.
76 Renker, Some Curious Customs, p. 7.

4. Conclusion

Robert secured a patent for his papermaking machine from the French state in 1799. Seven years later, a much improved version of Robert's prototype, which was located in a Hertfordshire mill, revealed the device's technical and economic promise. Meanwhile, those seven years in English papermaking were an intense microcosm of the bargaining and adaptation that characterized centuries of hand papermaking. The conflicts of this period also disclosed precisely what was at stake in the shift to mechanized papermaking. The coming of the machine threatened to unravel the web of necessity that tied together hand papermaking's labour process, the custom and assumptions wired into its wage formats, and the mutual adaptations woven through venerable workloads. This transition did not mark the arrival of capitalism in the manufacture of paper; instead, it constituted another turn in capitalism's restless remaking of an industry's organization of production and its social relationships.

As his former employer, Saint-Léger Didot, explained, Robert had not crafted the device solely, or even primarily, to increase output. Rather, Didot concluded that Robert, "Disgusted, like me, by the bad conduct of the *corporation* of paperworkers", decided "to seek the means of fabricating paper without their aid".[77] A look across the Channel explains why Robert wanted to oust skilled men from the mills. To reduce their workers' earnings, especially in the high-wage papermaking center of Kent, the manufacturers "laid still" (closed) their mills. They took this risky action to drain the finances of the journeymen's combination and to burden the family resources of individual workers. The short-term results of this strategy favoured the manufacturers, but their gains did not last. By 1804, the Kentish vatman turning out first-class paper had a daily nominal wage of 4 shillings 1 pence, plus a weekly premium known as "beer money" of 6 pence, close to double his rate in 1792.[78] So, the producers had failed to bring the paperworkers' wages and "dangerous Combination" to heel.[79] As long as English journeymen laboured in familiar ways and closed mills of *their* choice in rolling strikes, the unalloyed control that manufacturers sought over their craft's conventions and rewards eluded them. Hence the producers' rapid embrace of the papermaking machine.

In 1837, an English producer testified that formerly the hand manufacturers had been "very much at the mercy of the men".[80] Yet in 1816, the Original Society of Papermakers, the English journeymen's trade union, already demanded that Parliament act to control the mechanization of their craft.[81] (This was a desperate twist, since the Combination Act of 1796 had outlawed their trade union.) By 1853, a beleaguered English master,

77 Quoted in Henri Gachet, Les Grèves d'ouvriers papetiers en France au XVIIIème siècle jusqu'à la Révolution, in: Papers of the Twelfth International Conference of the International Association of Paper Historians, Haarlem 1972, p. 140.

78 Coleman, British Paper Industry, Table XXIII, Vatmen's Daily Wages in Kent, 1792–1865, p. 299.

79 Journals of the House of Commons, LI, 19 April 1796, p. 585, testimony of W. Phipps.

80 Quoted in Coleman, British Paper Industry, p. 258.

81 Chase, Early Trade Unionism, p. 108.

still clinging to his vat, maintained that the contest of his day was no longer "Men *versus* Masters, but it is Men *versus* Machines".[82] In Robert's native land, the paperworkers of the Vaucluse reasoned in 1830 that his machine had been "invented with the aim of ruining the working class rather than the increase of the proprietors' profits". As a result, they despaired, a "great number" of paperworkers now traversed the Midi "without finding a single day's work there".[83] The days of master papermakers and skilled journeymen negotiating agreements had passed. More than seventy years earlier, the astute German paper manufacturer Georg Christoph Keferstein had informed his sons that

> *Really, the customs of the papermakers can be compared with watermarks. As silently as these are embedded in the paperstuff, and as constantly as these have stretched their life through centuries, the customs are observed in the German countries and kept in the same shape as this was done by our forefathers.*[84]

In the era of mechanized papermaking, this durable custom, despite its maturation in the market, was becoming more memory than practice.

82 Proceedings at a Meeting of the Vat Paper Makers held at The Bell Hotel, Maidstone on Tuesday, 8th March 1853, p. 5. Facsimile in the author's possession.

83 Archives Nationales, F12 2281, petition addressed to the Minister of the Interior by diverse paperworkers from the Vaucluse, 1830.

84 Quoted in Renker, Some Curious Customs, p. 7.