



From Toscolano to Vienna: Production and Transalpine Trade of Venetian Music Paper

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Abstract: Most of the paper used for Viennese opera scores in the 1760s and 1770s originated from the region around the Toscolano River near Lake Garda, one of Italy's most significant centers of paper production. Cadastral records and notarial documents provide insights into the conditions of production, the location of the mills, and the extensive, interwoven networks of papermaking families. Some of these, including the Calcinardi, Fondrieschi, Zuanelli, Fossati, and Seguino families, dominated the market. Each had its own distinctive watermarks, often featuring similar motifs as a form of branding.

The large number of surviving scores from this period offers valuable information about the production cycle of paper. Every two to three years, as the moulds wore out and had to be replaced, new paper with updated watermarks entered the market.

Before reaching Vienna, blank paper from the *Valle delle Cartiere* ("Valley of the Paper Mills") was likely transformed into music paper in Venice, where specialized *rigatori* added staff lines. These craftsmen used special ruling devices that enabled them to draw all lines on a sheet simultaneously. An analysis of staff ruling patterns indicates a rising demand in the 1770s, prompting *rigatori* to employ multiple ruling devices at once to increase output.

The transport of Venetian music paper to Vienna was rarely handled by specialized paper merchants. By the late eighteenth century, paper was often imported alongside other goods. As a result, not only music publishers and booksellers but also Viennese merchants dealing in a broad range of imported wares made Venetian music paper available to composers and copyists.

Keywords: Eighteenth century; Music Manuscripts; Music Paper; Watermarks; Paper makers; Staff ruling; Venice; Vienna

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From Toscolano to Vienna

Music paper from Veneto, which was widely used in the eighteenth century, has remained a little-noticed area of research, although it appears to be relevant for various disciplines. Paper and watermark research traditionally focused on paper from the Middle Ages and the early modern period up to 1600. In studies and projects considering later paper, other regions were the focus. In his encyclopedic study of the paper mills of the Habsburg Monarchy, Georg Eineder concentrated on the areas north of the Alps.¹ With reference to the eighteenth century, the large digital watermark project WZIS draws primarily from sources in German collections, in which Italian paper plays a subordinate role.²

In the field of musicology, hardly any significant research specifically addresses North Italian paper. After all, there is preliminary work in Mozart research, such as Alan Tyson’s catalog of watermarks in Mozart’s autographs and Dexter Edge’s voluminous dissertation.³ Source-oriented studies also offer many individual finds of various northern Italian papers, without, however, attempting to provide an overview of the production and distribution of these papers.

The rich paper production in Toscolano and the adjoining “Valley of the paper mills” (*Valle delle cartiere*), where many mills were crowded in a very small space, has hardly ever been examined in detail, even though the area is a center of paper production in Veneto, from where paper was delivered to many European countries, as well as to the Ottoman Empire.⁴ In the case of music paper, information about the production and distribution of the paper allows music manuscripts to be dated more precisely. This specifically applies to Vienna, where paper from Toscolano was often used for manuscripts of the highest quality.

The research project *Paper and Copyists in Viennese Opera Scores* (funded by FWF), from which the following observations are drawn, examined such sources. The richness of scores considered creates a good basis for dating

manuscripts from the period under investigation: the papers circulating in Vienna between 1760 and 1775 are likely to be fully recorded.⁵ From the perspective of paper research, the project has the advantage that the papers are depicted completely, in entire sheets and with both twins. The material examined in the project not only sheds light on the work of professional scribes in Vienna but also allows conclusions to be drawn about those parts of the value chain that precede the arrival of the paper in Vienna. This article focuses on precisely that. It covers the production of paper, the ruling of staff lines, and finally the transport and trade of paper, more specifically: its journey from Toscolano to Vienna.

Geographical, Historical and Legal Framework

The region of Salò stretches along the western shore of Lake Garda, northeast of Brescia. The existence of papermakers in this area has been documented since the fourteenth century.⁶ Most of the paper mills in the region were clustered around the small river Toscolano, which originates in *Val Vestino*, about forty kilometers northeast of Brescia, and separates the towns of Toscolano and Maderno on the shore of Lake Garda.

Like other important paper-producing regions in Northern Italy, such as those around the cities of Bergamo or Treviso, this was also a region located at the foot of a mountain range, “where the hydraulic power, clarity and quality of the stream waters, topographical conditions favorable to the construction of irrigation ditches and small canals, climate and the possibility of connections not too uncomfortable with consumer areas better corresponded to the needs of the paper manufacturing industry.”⁷ And not without pride did the paper producers of the region note in 1769 in a petition to the *Cinque Savi della Mercanzia* (“Five wise men on trade”), a magistracy of Venice responsible for overseeing trade and production:

“The paper of the Riviera di Salò is the most distinguished in the Venetian state for the quality of its buildings, the clarity of its waters, and the purity of its air ... The other paper mills in the state have tried several times to imitate the aforementioned papers, but because they lack the above-mentioned benefits, they have never reached the same perfection.”⁸

Along the Toscolano River in 1782, thirty-six paper mills with their approximately one hundred wheels and orchards stood close together, employing more than 200 skilled workers:⁹ hydraulic engineers, construction

workers, machine builders, form makers, rag carriers and many more.¹⁰ Small places with a high density of mills emerged:¹¹ in places like Luseti and Contrada, there were about six mills each, in Maina and Caneto five each,¹² and the paper factories followed the river all the way to Lake Garda, where on a peninsula, in places called Religione and Promontorio¹³, near the towns of Toscolano and Maderno, the last factories were situated. In 1599, the poet from Salò, Bongianni Gratarolo, wrote in his *Storia della Riviera di Salò*:

“The Commune of Toscolano is composed of ten lands, where above the river of the same name, there is a beautiful stone bridge with a single arch, with very strong sides, and many paper mills, or as they call them, folli, where women and children also work; with this paper, they supply many distant and nearby provinces, not only in Christendom but even in Turkey.”¹⁴

Gratarolo highlights the large number of paper mills, the typical involvement of women and children in the work in this region,¹⁵ and the paper export, which not only supplied the offices and printers of Venice but also the Levant.¹⁶ Venice, as the largest marketplace for all types of paper in the region, held a special position, as the *Serenissima* was not only responsible for export but also a center of high consumption due to its bureaucracy, trade, and publishers.¹⁷ While in the regions further east of the state, 33 out of 49 mills were owned by Venetian patricians or nobles of the *terraferma*, who leased their factories,¹⁸ the paper producers of the Salò region generally belonged to the middle class. However, even in the Toscolano region, there was nobility involved in paper production, such as the factories of the Fratelli Andreoli, the Fratelli Zuanelli, or the firm Orazio Alberti.

After a decline in Venetian paper production in the seventeenth century,¹⁹ primarily due to the devastating plague epidemic of 1630/1631, which curtailed both production and demand, the paper industry in the region began to recover around 1720, reaching its productive peak in the 1780s. An indication of the industry's expansion during this period is not only the construction of new mills (especially between 1725 and 1767) but also the enlargement and modernization (starting in 1768) of existing mills.²⁰ The expansion can be seen in the addition of new wheels and vats (*tini*).²¹ Modernization is evidenced by the use of the so-called *cilindro olandese* (Hollander beater),²² a machine developed in the Netherlands around 1680 for the faster production of *pasta di carta* from rags, which Jérôme de La Lande still referred to in 1761 as a “new form of mills with a cylinder/beater.”²³

However, it is no secret that the quality of the successful product, paper, deteriorated over the course of the century despite the increase in production. Particularly the paper delivered to the Levant was regularly criticized after 1761. Among the dozens of different paper types, the quality of the following five particularly fine types was especially complained about: *imperiale*, *sottimperiale*, *reale lunga*, *mezzana lunga*, and *tre lune*;²⁴ types that were primarily produced in the Salò region.²⁵ In 1761, the Venetian consul in Aleppo still wrote that Venetian paper was superior to French paper in “whiteness, cleanliness, and fineness”, “no other nation has been able to match it so far, because they cannot produce such quality.”²⁶ However, in a shipment from 1778, some reams of paper, presumably of the inferior *mezzapasta* type, were criticized as “crude, brown, lumpy, or full of small stones and sand.”²⁷

The *Arte dei Carteri*, the paper guild of Venice, attributed the quality deficiency to increased demand, which necessitated the hiring of more inexperienced personnel, and not least to the shortage of rags, the most important raw material for paper production.²⁸ The Salò region was completely dependent on the supply of rags from other areas of the state and also to a significant extent from abroad.²⁹ The state repeatedly felt compelled to intervene publicly in matters concerning paper, an important good for the government itself:³⁰ domestically, tariffs on raw materials had been abolished since 1725,³¹ but tariffs on imports from abroad—if export bans did not exist at all—could be exorbitant, and the speculative tendencies of rag sellers, who stood between the *stracciaioli*, the rag collectors, and the producers further drove up prices and opened the door to smuggling. In 1767, the *Cinque Savi alla Mercanzia* dealt with paper production: rag prices had risen by 20%, and rents for buildings in the Salò region had doubled, while paper prices had barely changed. In 1769, tariffs on the finished product, paper, also fell.³²

However, the complaints from overseas had an immediate consequence, which is a blessing for paper research: in 1767, producers were required by a Venetian decree to mark their papers with watermarks, which had to include in the form of initials the first and last names of the owners and/or producers.³³ This was a measure intended to help identify the producers of defective goods at the time and today helps identify paper manufacturers and attribute papers. A list of initials was published in 1768 in a *Terminazione degli Illustrissimi ed eccellentissimi signori Cinque Savi alla Mercanzia ed Inquisitor alla carta, concernente le marche indicanti il nome e cognome de' fabbricanti della carta*.³⁴ The fact that the Venetian authorities deemed it necessary to print a

list of these abbreviations underscores the importance of such indicators of origin in watermarks. The signatures were carefully inspected by customs in Venice, and violations of regulations led to penalties: after finding paper in 1768 with the previously unregistered letter sequence CS/C – M, six bales of paper were confiscated by the authorities.³⁵ This is a considerable amount; it equates to sixty reams, approximately the amount needed for 150 scores.

The rules were gradually tightened: in 1774, another decree specified the exact sizes of five high-quality paper types, *carta imperiale*, *sottimperiale*, *real lunga*, *mezzana*, and *tre lune*, and once again emphasized the requirement to affix names and labels in the watermarks.³⁶ Determining the format and weight of paper types at a specific time and place is not easy, as even the formats of the most prestigious papers, with names like *carta imperiale*, *carta reale*, or *carta mezzana*, fluctuated over time, and papers bound together into booklets or books were generally trimmed.³⁷ In the eighteenth century, there were dozens of different types of paper, whose names were based partly on the size and quality of the paper, and partly on their watermarks.³⁸ The bewildering variety of paper types was particularly large in the eighteenth century; in France, for instance, at least sixty different types circulated by the mid-century, and around hundred in Amsterdam.³⁹ The variety of names given to these papers led historian Emile Joseph Labarre, who was responsible for a *Dictionary of Paper Terms*, to summarize in frustration: “The most confusing series of terms in the paper industry is certainly that of the names of the sizes in which the product is made and sold.”⁴⁰

The earliest source in which paper formats were defined is a marble slab from the fourteenth century, now kept in the *Museo Civico* in Bologna, on which dimensions for the four most common paper formats of the time are engraved in the form of rectangles: the *Carta imperiale (Imperialle)* measures 500x740 mm, the *Carta reale (Realle)* 445x615 mm, the *Carta mezzana (Meçane)* 345x515 mm, and the *Carta rezzuta (Reçute)* 315x450 mm.⁴¹ The terms *Imperiale* and *Reale* for large-format, high-quality papers are likely as old as European paper production itself and were imported from Italy to other papermaking nations. The smaller *Mezzana* was, at least in the first three centuries of European papermaking, the standard size for paper, while the *Rezzuta* format likely corresponds to chancery paper.⁴²

Referring to the Decree of the *Cinque Savi* from 1774, Dexter Edge lists the following formats for the most common paper types in Venice: *Imperiale*

measured 782x550 mm, *Sottimperiale* 739x514 mm, *Reale lunga* 638x456 mm, *Mezzana lunga* 580x413 mm, and *Tre lune* 464x333 mm.⁴³ In the 1760s and 70s, Viennese scores from the Imperial collection generally measured around 310x220 mm, equaling a trimmed half of a bifolio in the *Reale lunga* format.

Motifs as trademarks

Upon a superficial review of the paper used in mid-eighteenth-century Viennese opera scores, several letter combinations stand out that frequently appear in the watermarks, such as AS, GF, or FC. As indicated by the *Terminazione* of 1768 and some other documents considered by Ivo Mattozzi in the *Archivio di Stato di Venezia*,⁴⁴ the initials correspond to the names of the operators or owners of a mill. Precisely locating the mills is difficult. The currently available sources do not allow for the reconstruction of either the exact locations of the mills or their respective ownership structures. Notarial records and cadastral documents show that entire mills or shares of them were frequently sold, and often had multiple owners simultaneously.⁴⁵ Frequently, the company name comprises several people, including terms like “fratelli” (brothers) and “compagni” (partners). Individuals and companies could operate several mills; determining from which specific mill a paper originated is impossible without additional sources. As a matter of fact, certain family names appear multiple times in Toscolano; branches of these families could operate different mills.

As a principle, we may assume that paper with the same initials in the watermark comes from the same company, that is, from the same mill or mill network. Sometimes we also find different initials at mills where ownership changed, yet they can still be identified as one company. The identification of a mill as an economic unit is possible under the following conditions: (1) when the initials indicate a close relationship, such as “heredi” (heirs) or “vedova” (widow); (2) when direct lineage can be proven through other sources, for example, when the father’s initials appear in older paper and the son’s initials in more recent paper; (3) when a trademark, which many companies add to the initials (comet, three stars, crossbow, etc.), links the papers.

Such trademarks can be more or less specific and have varying degrees of evidential value when it comes to assigning papers to a particular mill. The initials GF are always placed under a crown in the papers known to us (see Fig. 1). The motif is not quite specific; it can also be found on other papers.

Similarly, the initials AS occasionally appear under a lily, another popular motif in the watermarks of Venetian papers (Fig. 2).⁴⁶ With FC, we find a cascading ornament between the letters and, here and there, a heart (Fig. 3). The trademarks of another two companies are more specific: Francesco Fondrieschi (FF) used a comet in his watermarks (Fig. 4), which was already noted in Venetian administrative records.⁴⁷ A document from 1768 regarding the initials AZ / C, assigned to Antonio Zuanelli e Compagni, points to the crossbow as countermark in the watermark (Fig. 5).⁴⁸

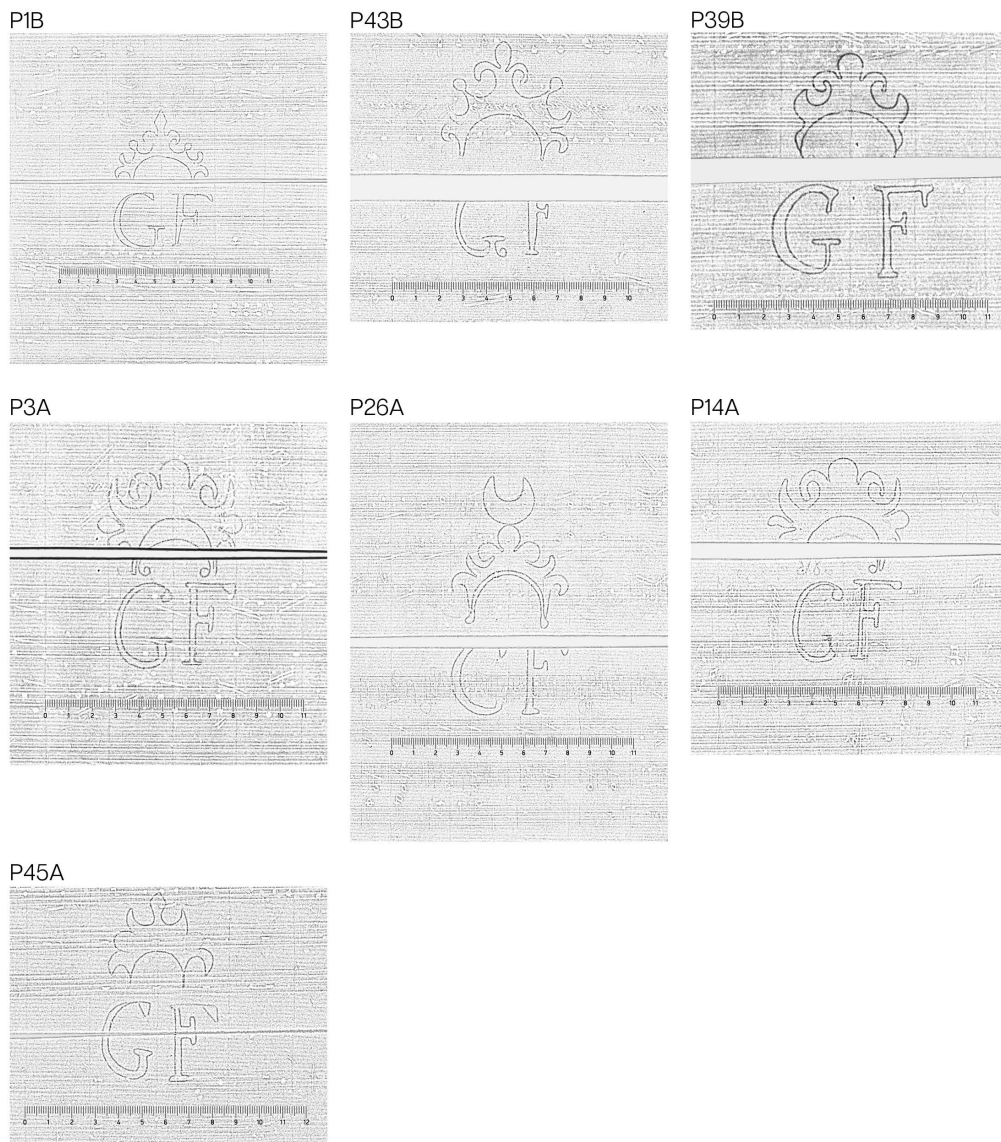


Figure 1: The initials GF under a crown (P1B, P3A, P43B, P26A, P39B, P14A, P45A).

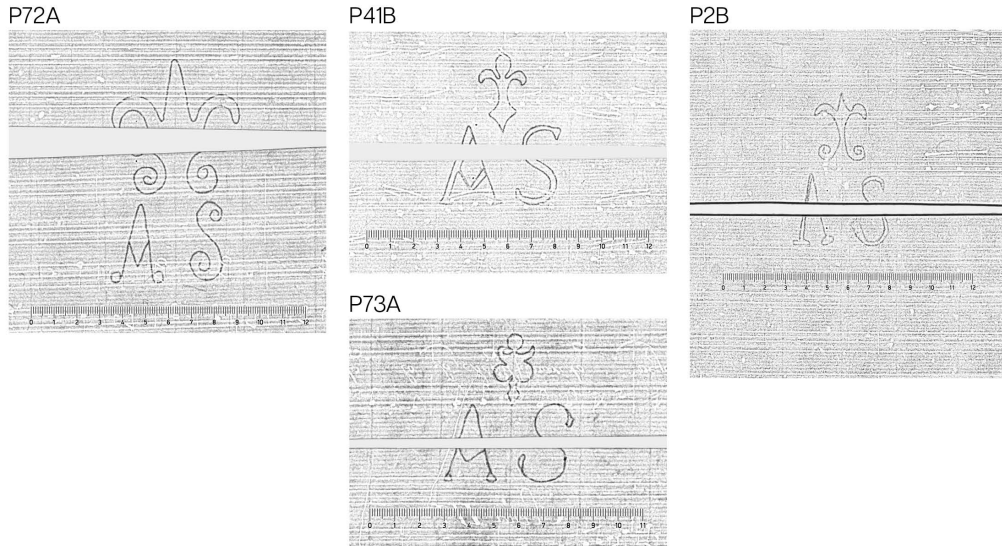


Figure 2: The French lily above the letter AS (P72A P73A P41B P2B).

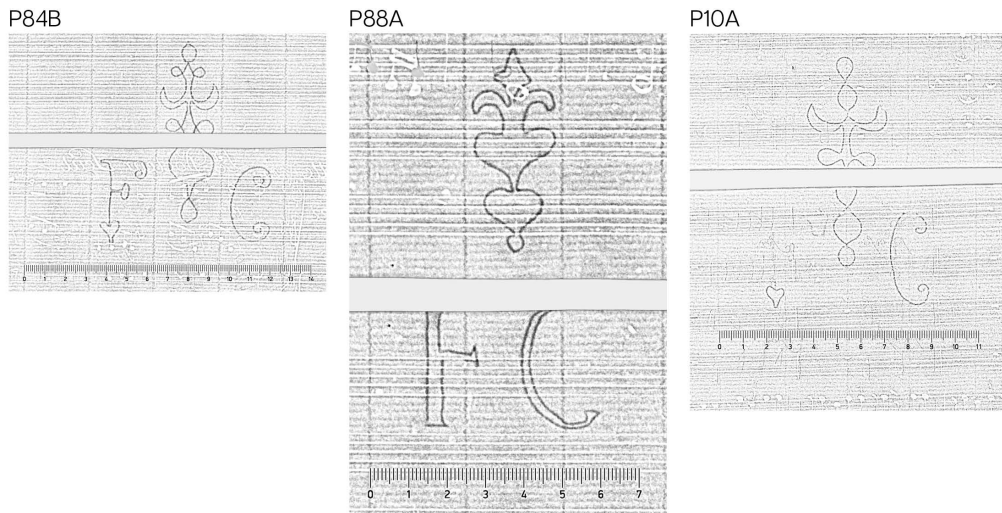


Figure 3: Cascading ornament over the letters FC and the heart motif (P84B P88A P10A).

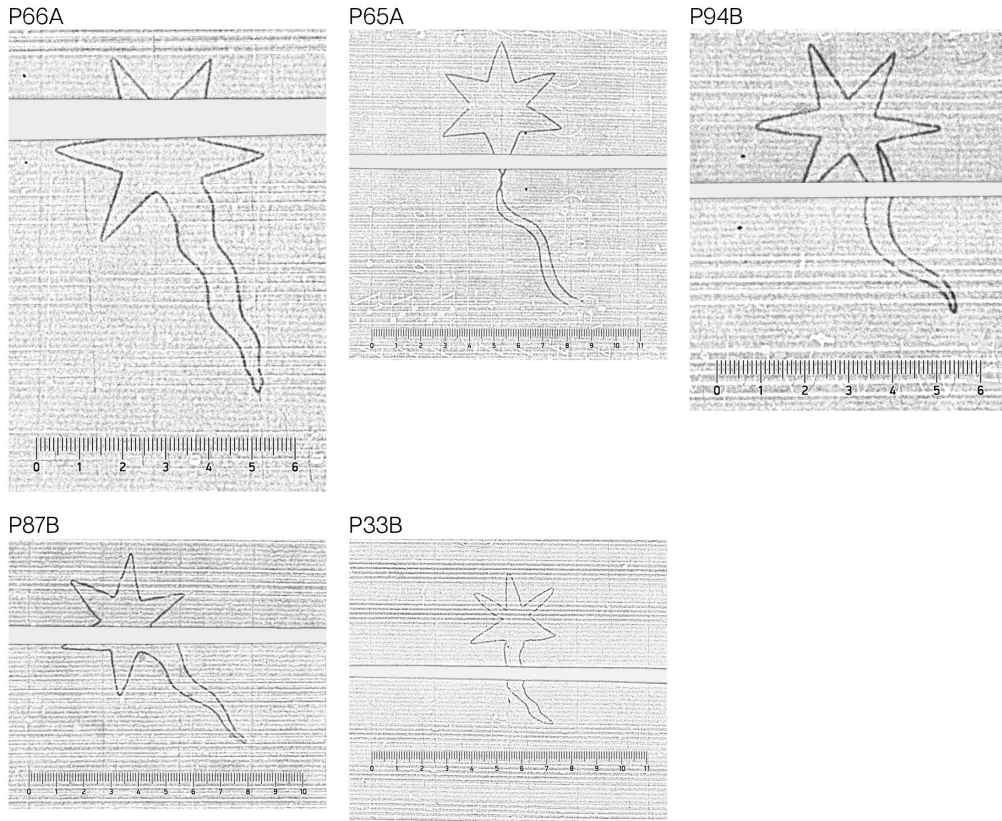


Figure 4: The comet as a counter mark in the papers from Francesco Fondrieschi (P66A P65A P87B P94B P33B).

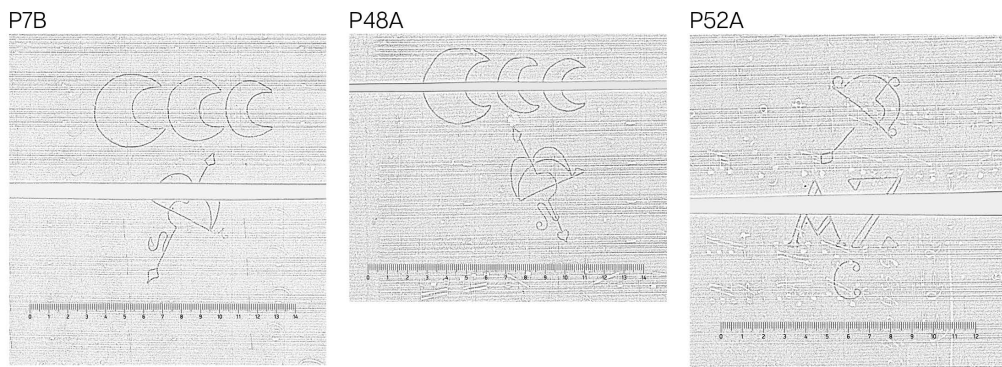


Figure 5: The crossbow as a counter mark in the papers from Antonio Zuanelli (P7B P48A P52A).

Paper maker families

Some mills retained their name even after a son or another relative had taken over the company. For example, the initials FC appear throughout almost the entire period under investigation by *Paper & Copyists*. They stand for Faustin (or Faustino) Calcinardi, whose son Giovanni ran the company in the 1760s. Giovanni Calcinardi conducted numerous legal transactions with the notary Bortolo Setti in Maderno from 1763 onwards.⁴⁹ He also appeared as the managing director in the *Terminazione* of 1768 and in other documents from the archive of the Cinque Savi alla Mercanzia analyzed by Mattozzi.⁵⁰ The same applies to the company Antonio Seguito (AS), whose papers frequently appear in Viennese opera scores. In the *Terminazione*, Gaetano Seguito is listed as the company's representative. In the case of the company Vincenzo Vicario (VV or W), Baldassare Vicario is named as the owner in 1768, and Giacomo Vicario in 1782.⁵¹ In all the mentioned cases, the initials of the former owner were retained in the watermark.

In other families, the initials changed when the mill was taken over by children or other relatives. The connection is particularly evident when, as in the case of Andrea Fossati, his initials AF (P12) were replaced by the letter combination HAF for *Heredi Andrea Fossati* (P95, P31, P47). Gaudenzio Fossati (GF), whose papers were prominently featured in Viennese opera scores of the 1770s, seems to belong to a different branch of the family. His father, like his son, was named Pietro; moreover, both mills, HAF and GF, were listed separately in the *Terminazione* of 1768.⁵² To provide another example of a generational transition that led to a change in the watermark: when Giovan Battista Fondrieschi (GBF) took over his father's mill, his initials replaced those of his father Francesco (FF).⁵³ While the initials of the father frequently appear in the examined opera scores (see Table 2 below), papers from the mill of his son and successor are missing.

The connection between Carlo and Pietro Samuelli appears uncertain. Although Carlo's father was named Pietro, the *Terminazione* of 1768 lists the initials of both companies (CS/C and PS) separately.⁵⁴ Furthermore, in the scores examined, papers from both companies appear together in the years 1762 (P83 and P82) and 1785 (P17 and P27), making a sequence of the initials PS (grandfather, P82), CS/C (son, P83, P5, P11, P20, P17), and PS (possibly the grandson, P27) within a single company unlikely. A similar case exists with the Tadeotis, where we have a late record from 1814 confirming that Giovanni

Battista is the son of Bortolo Tadeoti.⁵⁵ The initials BT (P68) and GBT (as T/GB in P54 and as B/GT in P21) are each placed under a crown. However, P54 appears as early as 1768, the same year that BT is listed in the *Terminazione*, making it possible for the two companies to produce simultaneously. It is also not proven that the two individuals mentioned in the cadastral records of 1814 are identical to the papermakers.

The *Terminazione* of 1768 lists under the letter sequence FA/C “Fratelli Andrioli [sic] e compagno”; five years later, the initials GFA appear in Venetian documents, referring to “Giovanni e fratelli Andreoli.”⁵⁶ It is possible that this refers to new ownership of the same mill. In the 1720 cadaster of Maderno, Giacomo, Pietro, and Giovanni are mentioned as the sons of the mill owner Donato Andreoli from Toscolano.⁵⁷ Notarial records from the 1770s mention a Giovanni Andrioli, the son of Giacomo. The assumption that this Giacomo, together with his brothers, belonged to the founding generation of the *Fratelli Andrioli*, and that his son Giovanni took over his share after his death, is speculative at best. Further sources would need to be found to support it.

In 1768, two independent mills were linked with the name Zuanelli in Venetian documents: Giovan Battista e Fratelli Zuanelli (FZ) and Antonio Zuanelli e compagni (AZ/C).⁵⁸ Papers with the initials AZ/C, which appear in opera scores from the early 1770s, are all distinguished by a watermark featuring a crossbow (P7/P40, P48, P52), making it quite likely that two other papers used in Vienna in 1760, which combine the crossbow with a Z in the initials, can also be attributed to the Antonio Zuanelli mill: ZC, likely standing for “Zuanelli e compagni” (P60), and VZ/C, where the “V” could represent a first name like Valentino, Vincenzo, Vittorio, or something similar, or possibly “Vedova” (widow) (P63). Antonio Zuanelli’s father was named Stefano, and notarial records from 1764 mention his heirs;⁵⁹ Stefano must have already passed away by this time. Therefore, “V” in VZ/C cannot refer to Antonio Zuanelli’s father, but it could possibly refer to his mother as the widow.

The initials of the owners of a mill are occasionally supplemented by an additional letter. It appears beneath the three crescent moons and represents the name of the current operator of the mill. Contemporary documents refer to this person as the “fabbricante” (producer), “cartaro” (papermaker), or “affittuario” (tenant).⁶⁰ Sometimes the names are specified in Venetian documents, such as with the initials CS/C – M, where “M” stands for P. Maffizzoli, a tenant of the mill Carlo Samuelli e Compagni, or in the case of

papers from the two mills of Faustin Calcinardi, one of which was operated in 1767 by Cristoforo Fondrieschi (FC – F) and the other by Giovanni e Fratelli Calappi (FC – C).⁶¹

Sequences of paper from the same mill

Of the twenty paper mills from Toscolano and Maderno whose products were used in Viennese opera scores, fourteen are represented between 1759 and 1775 by only a small number of papers (three or fewer). These may have been small mills with low production, perhaps they did not focus on the specific quality needed for music paper, or they lacked the necessary trade channels to export their paper abroad on a large scale. The companies most frequently represented in the Viennese scores show a certain continuity and relatively regular intervals of new papers. On average, new papers appear approximately every three years—the first appearance being crucial, rather than how long the paper was used in Vienna. Since *Paper & Copyists* starts its systematic investigations in 1760, it is not surprising that the earliest papers from Faustin Calcinardi and Francesco Fondrieschi (Table 1 and 2) both first appear in the same year. If one were to go back to the 1750s, new evidence might emerge, potentially identifying one of the two papers as the older one.

Table 1: Paper from the mill of Faustin Calcinardi, Maina, Maderno

paper	initials	in use
P80	FC	1759–60
P61	FC	1759–64
P84	FC-F	1763–65
P88	FC-F	1764–66
P10	FC-C	1767–72
P35	FC-R	1772

Table 2: Paper from the mill of Francesco Fondrieschi, Toscolano

paper	initials	in use
P66	FF	1762–63
P65	FF	1762–65
P87	FF	1764–65
P94	FF	1768
P33	FF	1772–73

The papers from Antonio Zuanelli’s mill show a slightly different pattern. Here, papers with the initials AZ appear in rapid succession in the early 1770s. Additionally, there are two isolated early finds of paper that also bear a “Z” along with the crossbow in the watermark (P60, P63), which, as mentioned, serves as the trademark of this mill.

Table 3: Paper from the mill of Antonio Zuanelli, Toscolano
(P40 is a variant of P7.)

paper	initials	in use
P60	ZC	1760
P63	VZ / C	1760
P7	AZ / C	1770–75
P40	AZ / C	1772–75
P48	AZ / C	1773
P52	AZ / C	1774–75

The mill of Antonio Seguito was by far the most represented in the Viennese scores. The company operated two paper mills, and the parallel production can be inferred from the density of their output (see Table 4). A document from 1768 reads: “[...] the company Antonio Seguito: two paper mills under the direction of two manufacturers whose initials are A and P”.⁶² It is quite likely that the papers can be assigned separately to the two mills: P59 (1760), P85 (1763), P73 (1764), P41 (1769) and P2 (1770) showing the initials AS-A and AS to the first, P93 (1759), P71 (1761), P72 (1764), P89 (1765) and P79 (1767) to the second (AS-F, AS-M). In both mills, the papers would have changed with an average frequency of two to three years. When making such calculations, it should be noted that the use of paper in Vienna does not directly reflect production in Toscolano; rather, shifts can occur through the paper trade, causing one paper to arrive in Vienna very quickly after production, while another may experience a delay. Furthermore, we do not know the average time gap between the production of the paper and its use in Vienna. The “fabbricante” “M” (in AS-M) was presumably the successor to “F” and the predecessor to “P,” who is mentioned in the cited document.⁶³

Table 4: Paper from the mill of Antonio Seguino, Lusetti, Toscolano
(P79 is a variant of P89.)

paper	initials	in use
P93	AS-F	1759
P59	AS-A	1760–64
P71	AS-M	1761–64 ⁶⁴
P85	AS	1763
P72	AS-M	1764–67
P73	AS-A	1764–71
P89	AS-M	1765–69
P79	AS-M	1767–70
P41	AS-A	1769–71
P2	AS-A	1770–75

Paper from Gaudenzio Fossati, another company that was well represented in the Viennese scores, appears exclusively in the last third of the investigation period from 1770 to 1775.⁶⁵ The close succession suggests that Fossati also produced at least two papers in parallel: two papers first appear in 1770, two papers in 1772, followed by another in the following year.

Table 5: Paper from the mill of Gaudenzio Fossati, Toscolano

paper	initials	in use
P1	GF	1770–73
P3	GF	1770–75
P43	GF	1772
P26	GF	1772–75
P39	GF	1773–74

Their close connection is also evident in the occasional mixing of papers, which likely occurred before the ruling, that is, still within the paper mill itself. We know that over the course of the eighteenth century, the number of vats (*tini*) in Veneto increased more significantly than the number of paper mills, resulting in a rise in the number of vats per mill.⁶⁶ It is quite possible that Fossati operated multiple vats to meet the increasing demand. In addition to such documentary and statistical evidence, the Viennese manuscripts themselves suggest an intensification of production. To recognize this, one must also consider the ruling of the paper. Where was the paper lined with staves, in other words, where did the paper become music paper?

Staff ruling

In the *Paper & Copyists* sample the paper was professionally ruled, with very few exceptions. For this, ten- or twelve-stave compound rastra were employed, which were elaborate precision devices that few people likely owned. Jean K. Wolf and Eugene K. Wolf dedicated a significant portion of their foundational article “Rastrology and Its Use in Eighteenth-Century Manuscript Studies” (1990) to the technology of ruling, as far as we can know and deduce. They distinguish between simple and compound rastra.⁶⁷ We have only limited knowledge about compound rastra and relatively late information, primarily from the early nineteenth century. Devices of this kind have, to our current knowledge, not been preserved. In principle, there were three ways to draw multiple staff lines on the paper in a single operation: First, the lines are created by wheels on an axle over which the paper is drawn; a corresponding invention was patented by John Tetlow in 1770. In a book published in Paris in 1828 about the art of lining and ruling, A. B. Méguin describes a second method of ruling: the lines are produced by a combination of thin brass pens, with the paper being drawn underneath.⁶⁸ Wolf and Wolf devote most attention to a third method of ruling, which is also common in Germany and Italy. In the first two methods, the paper is moved, while in this method, the paper remains clamped in place while the ruling device is drawn over it.

The identification and analysis of compound rastra from the eighteenth century were advanced in the 1970s and 1980s, particularly in two areas: Mozart research (Alan Tyson, Dexter Edge)⁶⁹ and research on the Mannheim court (Jean K. Wolf, Eugene K. Wolf)⁷⁰. The focus was on dating Mozart’s autographs and, in the case of Mannheim, on the provenance and dating of musical manuscripts. The project *Paper & Copyists* has a different perspective; the provenance of the manuscripts is known, and their selection was made precisely because they can be dated. For us, the research question related to the paper used is: What conclusions can be drawn from the composition of papers and rulings regarding the production and distribution of music paper in the eighteenth century?

In Viennese opera scores from the early 1760s, 10-line rulings are by far the most common. Rulings with eight staff lines occur very rarely, mostly on scores of opéra comique with its rather simple musical structure. Following Wolf and Edge, *Paper & Copyists* encodes the rulings by indicating the number of staves, the total span (the distance between the outermost lines at the top and

bottom, abbreviated as TS), and a letter representing a specific sequence of the distances between the staves (DS), for example, 10/189B (ten lines, TS=189, B for 11+_11_11.5_11+_11+_11_11.5_11.5_11).⁷¹ In one respect, the project goes beyond Wolf and Edge: *Paper & Copyists* distinguishes between unstable and stable rulings. A ruling is considered unstable when the elements of the compound ruling had some play due to wear, producing slightly varying TS and DS. This is denoted, for example, as 10/c.185. The sheer number of rulings in the examined scores illustrates the dominance of the 10-line ruling. *Paper & Copyists* identified fifty-six such rulings (eight of which are unstable), compared to sixteen 12-line rulings (three of which are unstable) and eight 8-line rulings: in the papers from northern Italy, over two-thirds of the rulings have ten lines.

The 12-line ruling was usually used for the finales at the end of each act. As can be seen from the scores, a greater demand for this ruling did not begin until around 1770. Since the ruled papers were sold in commercially standard units (a quire consists of twenty-four bifolios, and twenty quires make a ream)⁷² and were presumably sold in a consistent quality, a ream of 12-line ruled paper (960 leaves) lasted significantly longer than the corresponding amount of 10-line ruled paper. This can be seen in the scores: for example, P12 appears with 10-line ruling for the last time in a score from 1771 ([Sacchini_1057](#)) and with 12-line ruling still in 1774 ([Gazzaniga_17777](#)). An even more striking and unusual example is P25, which appears in 10-line ruling in 1760 ([Gluck_17878](#)) and only reappears in 1772 and 1773 in a few scattered gatherings with an old 12-line ruling ([Salieri_10072](#), [Salieri_10073](#)) that was already available in 1760,⁷³ evidently an old stock.

Ruling the paper was a step in the value chain, where plain paper was turned into sheet music before becoming a manuscript through the composers' or the copyists' handwriting. In his study on Mozart's Viennese copyists Dexter Edge discusses the question of where Viennese music manuscripts were ruled in detail, identifying four main possibilities: at the paper producer, at the merchant, at specialized ruling businesses, or where the music was copied and written—in this case, by the copyists themselves.⁷⁴ A simple observation from the *Paper & Copyists* sample shows that the ruling was generally not done by the copyists. As mentioned, the copyists usually wrote on 10-line paper, while only the finales required 12-line paper. In many cases, the 12-line paper displays a different watermark than the rest of the paper in a score.⁷⁵

There is no reason for such a switch when the copyists themselves were responsible for the ruling; they would only need to change the rastrum, not the paper at the same time.

A score of *L'amor soldato* by Alessandro Felici (Mus.Hs.18059) leads to the same conclusion through a different approach. There are four different 10-line rulings (10/184N, 10/189K, 10/191B, 10/193C); the copyists themselves would likely have used only one ruling tool. The presence of different rulings within a single manuscript—a common occurrence in the examined scores—indicates that the copyists did not draw the staff lines themselves but instead used pre-ruled paper.

Conversely, the occurrence of the same ruling on paper from different manufacturers is a sign that the paper was not ruled at the paper mill.⁷⁶ This is also evident in the score of Felici's opera. P3 and P38 came from different mills but were both processed with the same 10-stave rastrum (see Table 6). Numerous similar cases are found in the examined manuscripts, where no correlation between the ruling and the paper mills is evident. The fact that papers appear with various rulings also shows that ruling was carried out without any connection to a mill. For P2, we count seven different rulings, for P3 eight, and for P26 ten. If Seguino and Fossati had done the ruling themselves, significantly fewer staff-liners would have sufficed.

Table 6: Paper and Rulings in Mus.Hs. 18059, Felici, *L'amor soldato*, Act I-II (Volume 2 with Act 3 features different paper and is therefore not included here. I,1-12 means: Volume I, gathering 1-12.)

	10/184N	10/189K	10/193C
P3	I,1-12; II,6-8, 12, 18-19		II,1-3, 5, 17, 20-21
P38	II,9-11	I,13-18; II,13-18	

If the ruling did not take place either on-site with the copyists or at the paper mill, then where did it occur? For the music paper of the 1780s, Dexter Edge assumes that the ruling was likely done in Vienna. He seems to consider only these two alternatives: either at the paper mill or in Vienna: „Considerable evidence points to the conclusion that the music papers used in Vienna in the late eighteenth century were likewise ruled in Vienna, rather than by the paper-makers.”⁷⁷ Edge provides two examples to support his thesis: Mozart used the same paper (Tyson 53) in Munich and Vienna shortly thereafter in

1781. In Munich, where 12-stave paper presumably did not exist, he used 10-stave paper, while in Vienna, he used 12-stave paper. Building on Tyson's observations, Edge speculates that Mozart brought a remaining stock of unruled paper from Munich and had it ruled in Vienna. As a second example, the author notes that he discovered the same rastrum on two papers from different manufacturers in at least four manuscripts. Such papers were also used by Sukowaty; Edge concludes that he either owned such a ruling device himself or that he and Mozart purchased from the same dealer.⁷⁸

However, the two examples do not hold much weight. On the one hand, we have no evidence that Mozart ever had paper ruled in Vienna. Moreover, the fact that the same papers circulated in different rulings is not extraordinary and does not necessarily indicate a change of location. On the other hand, the same ruling appearing on different papers is also quite common. There is no indication that the ruling occurred specifically in Vienna and not earlier on the way from Toscolano to Vienna. The *Paper & Copyists* project surveys a significantly larger collection of scores, papers, and rulings; it shows, in fact, that the ruling likely did not take place in Vienna. This thesis can be supported by four observations.

First, there is a clear difference in the ruling between German and Italian papers, which suggests that Italian papers arrived in Vienna already ruled. Only four papers in the examined opera scores came from paper mills in the German-speaking region, from Upper Swabia (Joseph Anton Unold, Wolfegg, P19, P67, P75) and Lower Austria (Purtscher, St. Pölten, P64). They were used in small quantities and merely as substitutes, apparently when Italian paper was not available. Only with these papers do we encounter composite rulings, such as five and five lines (P67 and P75), four and four and two (P64), or even a ruling of single lines, one staff at a time, executed with a simple ruler (P19). If the ruling of music paper occurred only in Vienna, and Italian paper typically arrived in Vienna unruled, it would be difficult to explain why German paper was ruled in a different manner than Italian one. In this case, one would expect that a paper from Upper Swabia would have been made into music paper with a 10-line ruling or that Italian paper would occasionally have been lined with two 5-line rulings. However, there are no examples of this.

Secondly, the ruling of music paper in Vienna is documented very late. The earliest evidence for a ruler in Vienna dates back to 1826. Dexter Edge cites a reference to the "Linir- und Rastrir-Anstalt" of a C. G. Jasper in a suburb of

Vienna.⁷⁹ In Italy, however, we already know the names of some “Rigatori di carta di musica” (ruling workshops) from the eighteenth century: Giovanni Chiari and Antonio Brazzini from Florence, and Giovanni Colameo from Naples.⁸⁰

Thirdly, the quantity of simultaneously or successively used ruling devices argues against their use in Vienna. The Viennese market in the 1760s and 70s was not large enough to necessitate more than four 10-stave rastra at the same time. If *rigatori* had been active in Vienna so early, a few rulings would have dominated the manuscripts. However, the Viennese opera scores show a wide panorama of different staff rulings. Many devices are required where there is a large market of consumers. On the way from Toscolano to Vienna, Venice is the place where the turnover of paper and music paper is the highest. Therefore, Venice is the city where a variety of rastra was most likely.

Finally, we find, fourthly, staff ruling that appears in Viennese manuscripts also in contemporary scores from Venice. Given that it is unlikely that paper circulated in Venice that had been ruled in Vienna, the probability is high that, conversely, Venetian music paper regularly made its way to Vienna. The music collection of the Vienna National Library houses several scores in the hand of the copyist Giuseppe Baldan, which were brought to Vienna in the 1750s and 1760s as actual or potential templates for local copies. Possible channels for these transfers include the network of the opera composer Florian Gassmann, who moved from Venice to Vienna in 1763, or diplomatic contacts to the lagoon city. Some of these scores from the early 1760s contain P65 in the ruling 10/184D.⁸¹ The exact same paper in the same ruling can be found in five Viennese scores; the oldest of these comes from the workshop of Theresia Ziss and preserves Gluck's *Orfeo ed Euridice*, which premiered in the autumn of 1762.⁸² Two further scores from Venice contain P94 in the ruling 10/193A,⁸³ a combination that first appeared in Vienna in a score from 1768 with Galuppi's *Il filosofo di campagna*.⁸⁴

Pairing of staff rulings

Based on a broad data set, insights into the size and development of the music paper market can be gained from the number and distribution of staff rulings. Moreover, the specific combinations of ruling and paper provides insights into the working methods of the *rigatori* and their development. It appears that paper arrived in larger shipments to Vienna, during the 1760s sufficient for

about a year, with one paper or a group of papers dominating alongside a specific staff ruling. Clearly, the paper came from a single *rigatore* who used both a 10-stave and a 12-stave rastrum, one of each. In addition to the large shipment, there was a small quantity of other papers and rulings that likely originated from other *rigatori*. In 1764, almost all scores from the workshop of Theresia Ziss feature P69 in the staff ruling 10/191A. Seven scores relied exclusively on this paper.⁸⁵ Only in the autumn of that year did P87 with the ruling 10/190E mix in, presumably as part of another delivery.⁸⁶ The paper delivery did not solely serve the Ziss workshop; P69 was also used in scores that cannot be attributed to this workshop.⁸⁷ Together with the remaining stock of P69, which was still used in 1765, current research indicates that we can account for around 3,200 leaves of this paper, more than three reams weighing nearly 30 kg.⁸⁸ Even in a time when goods were transported over the Alps by horse-drawn vehicles, this is a manageable quantity that a trader could certainly transport at once.

The paper predominant in 1763 also came from only one staff ruling workshop. It consisted of two types of paper from different mills, P22 (FA) and P65 (FF), both with the same ruling, 10/184D (see Table 7). This paper, as previously mentioned, was also used by the Venetian copyist Giuseppe Baldan and is notably dominant in the scores of the Ziss workshop. Initially, a few remaining stocks of the previous batch, delivered in the spring of 1762 or earlier (P59, P66, P71), can still be found. The picture is so clear that another score, which at first glance also appears to have been produced in 1763, cannot be included in this compilation due to the ruling of its paper. Giuseppe Scarlatti's comic opera *La serva scaltra* had its Viennese premiere or revival on August 8, 1763. The score preserved at the Imperial collection contains P22 and P65, but with a different ruling.⁸⁹ The ruling of P65 (10/191A) is known from the aforementioned paper P69, which was frequently used in 1764; the five gatherings of P65 used here thus appear to come from a later delivery. P22 appears in the unstable ruling 10/c.184, which otherwise shows up in some scores from 1765.⁹⁰ And P68, the third type of paper included in this score, is known with the ruling 10/187A from only two scores from 1765. Taken together, this suggests that the Viennese copy of Scarlatti's opera was created in 1765.

Table 7: Scores from 1763
(Galuppi_18067 was revised in 1768; only the older layer is considered here. Gluck_CS-3971 was included because P65 appears in this score for the first time.)

Dating	Score	P65 & P22 with ruling 10/184D	Further papers	Workshop
1762-10-05	Gluck_CS-3971	P65	P71 P66	Ziss
1763-01-04	Scarlatti_17851	P65	P71 P66	Ziss
1763-01-15	Gaviniès_17889	P65		Ziss
1763-05-08	Monsigny_17893	--	P22: 8/184B P59 P84 P85	Champée
1763-05-12	Bonno_18291	--	P59	Ziss
1763-06-15	Scolari_18042	P22 P65		Ziss
1763-06-18	Philidor_17896	P22		Ziss
1763-09-12	Galuppi_18067	P22		Ziss
1763-10-04	Traetta_10008	P22 P65		Ziss
1763-10-04	Traetta_17853	P22		Ziss
1763-10-18	Monsigny_1924	--	P86: 8/183B	--
1763	Gassmann_18081	P22		Ziss
1763	Blaise_18766	P22		Ziss
1763	Philidor_17897	P22		Ziss

In a score like [Scarlatti_17851](#), where paper from multiple deliveries was used (see Table 7), various rulings are present, each associated with its own type of paper. In this specific case, these are P65 (10/184D), P66 (10/184C), and P71 with an unstable ruling (10/c.184). Using uppercase letters for papers and lowercase letters for rulings, the structure of the first volume of the score can be abstractly represented as: Aa – Bb – Cc – Bb – Cc – Bb – Aa. When scores were composed of papers from different sources, this could be identified by the ruling. Paper with different rulings available on the market at the same time most likely came from different *rigatori*. The mixture of papers in the scores could be attributed either to the copyists or to the merchants who transported the paper from the *rigatori* to the copyists. If we find papers alternating irregularly but with the same ruling, the mixture must be traced back to the *rigatore*, especially when the papers come from different mills.⁹¹ The *rigatore* took paper from one or multiple mills and drew staff lines on it using a compound rastrum. For each type—whether 8, 10, or 12 staves—he had exactly one such tool.

The examined opera scores from the collections of the Viennese court show a noticeable change around 1770 concerning paper and ruling practices. A shift in the previous method becomes apparent, which could be explained by increased demand: *rigatori* now used two rastra of the same type (e.g. 10-staves), operated simultaneously by (at least) two people. The resulting pattern in the scores is correspondingly more complex. Previously, we had

the combination of one paper with one ruling—what Alan Tyson defined a “paper-type.”⁹² Now, however, two rulings are applied to one, often multiple, papers. This leads to various combinations of one element from the set of papers {A, B, C} with one element from the set of rulings {a, b}, such as Ab, Ca, Cb, Bb, etc.

In theory, when three different papers are used, this results in six possible paper-types, but the term loses its meaning here. A paper-type is not only defined by the combination of a specific paper with a specific ruling but also by a specific point in time when it was produced. Tyson's concept of a paper-type is a tool for dating. A paper-type differs from the next by the moment of its creation. However, if *rigatori* were working on several papers with multiple rastra at the same time, one could only speak of a “hybrid paper-type,” which encompasses all of these papers and rulings with all possible combinations.

The first pair of staff rulings to appear in a series of examined scores are the rulings 10/184K and 10/192D. In a score from 1768, they briefly surface for a moment with P73.⁹³ Shortly thereafter, however, they appear more continuously as a pair, used with P10 and P41 and occasionally other papers.⁹⁴ Compare columns 3 and 4 in Table 8, and note the papers that appear in both columns: these are papers with two rulings within the same score.

Table 8: Staff ruling pair 10/184K & 10/192D (first appearance 1768)
(The involved papers comprise P73 (including variant 1), P41, P10 and P11. P73 with the ruling 10/193A is likely an older remnant.)

Dating		10/184K	10/192D	Further papers	Workshop
1766-10-25	Gassmann_18083	P89	--		Ziss
1767-09-09	Galuppi_10026	P5	--	P73: 10/193A	--
1768	Gassmann_18080	P5 P73	P73	P73: 10/193A	Ziss
1769-01-23	Piccinni_17811	P89	--	P73: 10/184J, 10/193A P73_var1: 10/184J P92	--
1769	Guglielmi_10031	P73 P73_var1	--		Ziss
1769	Piccinni_1056	--	P11 P54 P73	P5: 10/c.192 P73: 8/183A P90 P96 P97	Champée
1769	Sacchini_17830	P10 P41 P73 P73_var1	P41 P73	P5: 10/c.192 P73: 10/c.191 P73_var1: 10/c.192	WK71F
1770-01-10	Salieri_17833	P10 P41 P73 P73_var1	P2 P10 P41 P73 P73_var1	P73_var1: 10/c.183	WK71F
1770-09-xx	Hasse_17261	P11	--	P1&P3: 10/189G	--
1770	Galuppi_18073	P10_var1	P2 P11 P73		WK71F
1770	Piccinni_17816	--	P2 P11	P2: 10/c.190 P71A_var3: 10/c.187	WK71F
1771-04-14	Sacchini_17869	P11 P41 P73_var1	P10 P11 P41 P73_var1		--

One can imagine how various papers were stacked in the workshop of the *rigatore*; these came from the firm Antonio Seguito (P41, P73), from Faustin Calcinardi (P10), and Carlo Samuelli (P11). They were lined with two rulings, both sequentially and in a mixed manner, before being sent out in a wild assortment to merchants and consumers. In the scores listed in Table 8, the paper appears once in one ruling and once in another. In four cases, the scores show the same paper in two different rulings.

It is important to recognize that this seemingly chaotic situation was not created by the copyists simply working through a stack of paper but was already established by the ruling of different papers with two types of rulings. The second volume of [Sacchini_17869](#) is abstractly structured as follows: Aa Ba Aa Ba Ca Ba Da Aa Ba Ca Ba Ca Ba Ca Ba Da Cb Bb Da Cb Bb Cb Da. The copyists who wrote this volume had no reason to change the paper; they simply took it from a stack that contained two rulings and four papers mixed. The complex sequence reflects not the working process of the copyists but rather that of the ruling workshop.

Over a period of just over a year, another pair of rulings can be traced, indicating a further expansion of the production method. Here, an additional ruling is introduced, demonstrating the use of three similar types of rulings (Table 9). In some scores, we find only one of these rulings, in others two; in two manuscripts, all three rulings are present, which were apparently produced side by side and simultaneously in a ruling workshop. It seems that this trio of rulings comes from a different workshop than the previously discussed pair. In any case, there are no overlaps, neither in the papers nor in the rulings.

The dominant papers this time come from the mills Fratelli Andrioli (P38) and Gaudenzio Fossati (P1, P3), with the frequent close succession of P1 and P3 suggesting that the papers may have already been mixed at the mill, rather than at the *rigatore*. Nonetheless, there are general parallels between the two hybrid paper types: once again, the papers appear in wild mixtures. As in previous cases (Table 7 and Table 8), several Viennese copyist workshops drew from the same specific mixture of papers and rulings, indicating that the paper was available on a somewhat organized market and that its transport to Vienna did not stem from individual orders placed by specific copyists.

Table 9: Staff ruling trio 10/184N, 10/189B & 10/193C (first appearance 1770) (The involved papers comprise P38, P1 and P3.)

Dating		10/184N	10/189B	10/193C	Further papers	Workshop
1770-09-xx	Gassmann_17773	P38	P38	--		Ziss
1770-10-21	Gluck_9948	P1 P3 P38	--	--	P7 P95	Ziss
1770-11-01	Gluck_17781	--	P2 P3	P3	P2: 10/184M	WK71F
1771-01-05	Gassmann_18076	P3 P9 P38	P3	P1 P3	P2 P7 P71A_var3	WK71F
1771-xx-xx	Piccinni_17813	P3 P9	--	--		Ziss
1771-04-14	Sacchini_1057	P1 P3 P38 P44	--	--	P12 P38: 10/189G	Ziss
1771-xx-xx	Piccinni_OE-28	--	P38	P1 P3		Ziss
1771-06-02	Salieri_17837	P3 P38	P3 P38	--		WK71F
1771-12-31	Deller_17857	P38	--	--	P2: 10/184M	WK71F
1772-01-21	Gassmann_18082	P38	P38	--		Ziss
1772-01-29	Salieri_1048	P3 P26	--	--	P26: 10/185D	--
1772-01-29	Salieri_17838	P3	P1 P3	P20	P20: 10/c.185 P20&P38: 10/189G	WK71F
1772-01-29	Salieri_10072	--	P38	--		--

Another delivery from the ruling workshop referenced in Table 9 arrived in Vienna in 1772; in addition to the rulings mentioned in Table 9, 10/183B is included. This forms a quartet of rulings that, although they never appear together in a single score, nonetheless suggests a further expansion of operations. P26 is the dominant paper in this delivery.⁹⁵

Trading paper

The fact that music paper in Vienna mainly came from Venice is evident from various clues in the second half of the eighteenth century. There are scattered references to the use of Venetian music paper in Vienna at this time: Johann Michael Schadlbauer, a Viennese merchant of various imported goods, sold strings and “venet[ianisches] Notten Pappier”⁹⁶ (“venetian music paper”) to the court of Prince Esterhazy around 1780. A year later, the art dealers and music publishers Artaria included strings and ruled music paper in their assortment;⁹⁷ the paper was again explicitly described as “Venetianisches.” And in 1799, the firm “Andre Huebmer Söhne” promoted “sugar, fine powdered sugar, coffee, fine oils, and all other types of spices, as well as the finest Venetian music paper.”⁹⁸

We know little about the paper trade between Venice and Vienna, as the paper trade in general “has received little attention from historiography so far”.⁹⁹ The profession of a paper merchant who was exclusively specialized in paper and did not sell other goods alongside it, was a phenomenon that only emerged in

the eighteenth century. He often was financially involved in paper mills.¹⁰⁰ In many other cases, paper was offered by a variety of merchants; in addition to printers, publishers, bookbinders, and even pharmacies, booksellers in particular sold paper.¹⁰¹ It is therefore not surprising that in Venice, even at the beginning of the nineteenth century, a business register lists only one paper merchant (“negoziante di carta”).¹⁰² It can be assumed that the booksellers and printers included in this register also sold all kinds of paper.

The trade of Viennese merchants with Venice was already considerable in the late Middle Ages; the route over the Semmering toward Venice was then exclusively reserved for Viennese merchants and those from neighboring towns.¹⁰³ In Vienna itself, since 1515, after the lifting of the guest trade ban by Maximilian I, the so-called “Niederleger,” foreign merchants, had special privileges concerning long-distance and wholesale trade.¹⁰⁴ In addition, twice a year, in May and November, “grosse privilegierte freye Messen” (“large privileged free fairs”) were held, as Johann Basilius Küchelbecker called them, “attended by both domestic and foreign merchants, where one can find the most beautiful, precious, and elegant goods of all kinds and varieties imaginable.”¹⁰⁵ There is no doubt that among the goods was Venetian paper, and this can even be substantiated by contemporary witnesses, as Vienna even had a certain reputation as a hub for Venetian paper. In his *Osservazioni storiche, naturali, e politiche intorno la Valachia, e Moldavia*, the Austrian diplomat Ignaz Raicevich notes that Greeks not only purchased Venetian paper at the fairs in Leipzig, but also in the Imperial city: “Other Greeks travel twice a year to the fairs of Leipzig and Vienna, from where they transport by land a considerable quantity of fine cloths of all kinds, Saxon wool fabrics, velvets, satins, and other silks, printed textiles, galloons, and embroidery from Vienna, ironwork from Styria, *Venetian paper* [emphasis by the authors], drugs, refined sugar from Fiume, coffee from America, lead, tin, &c.”¹⁰⁶ It can be assumed that the “Venetian paper” also included ruled paper.

Paper was transported either by cart overland or by ship via water routes.¹⁰⁷ It is likely that a large portion of the shipments to Vienna arrived through the port of Trieste. From a report in the *Wiener Zeitung*, we know that in January 1779, a ship from Venice carrying cotton, oil, and paper docked at the port of Trieste.¹⁰⁸ The entrepreneur Valentino Galvani (+1796), who operated paper mills in Cordenons and San Valentino in Friuli, had been seeking permission from the Venetian authorities since 1769 to deliver paper directly to Trieste, bypassing Venice. In 1788, he finally received permission and opened a paper

shop and warehouse in Trieste.¹⁰⁹ Galvani is one of the few producers of paper in the *Paper & Copyists* sample that did not originate from the Valley of the Mills near Lake Garda (P9 and P53). Galvani's paper did not play a significant role in the Viennese music paper market. However, Galvani is an example of how papermakers also could take on the role of merchants. Galvani owned a shop in his hometown of Pordenone and, as mentioned, expanded as a wholesaler to Trieste, where he sold not only his own paper but also that of others.¹¹⁰ Whether he was also involved in transporting his goods overland from Trieste to Vienna is uncertain, but it cannot be ruled out.

The names of paper merchants in Vienna in the second half of the eighteenth century are known to us in only a few cases. Like Galvani, these merchants operated as entrepreneur-merchants and at least in part brought their self-produced paper to the market. Noteworthy among them is Ignaz Theodor Pachner von Eggenstorf (1760–1814), who was born into a family of paper manufacturers.¹¹¹ His father, Johann Georg, established a paper mill in Krumau in 1750, which supplied paper as far as Vienna and Linz.¹¹² Ignaz Theodor himself also owned a paper mill in Klein Neusiedl, near Fischamend.¹¹³ Like another Viennese paper merchant, Ignaz Hadaun, who owned a large paper trading business at the Fleischmarkt by the end of the century, explicitly offering “alle Gattungen Papier” (“all kinds of paper”),¹¹⁴ Pachner also dealt in rags, which he sold to paper mills in exchange for paper to be delivered under specific conditions.¹¹⁵ Hadaun distributed paper from 74 paper mills.¹¹⁶ Another name in the field of Viennese paper trade is the court printer Johann Thomas Edler von Trattner (1717–1798), who had bookshops and printing houses from Trieste to Warsaw and acquired and modernized a paper mill in Ebergassing in 1767.¹¹⁷ By 1790, Trattner’s paper production already employed over 150 workers.¹¹⁸ In a “Handelstands-Kalender” (“Commercial Calendar”) from 1799, both Trattner and Pachner are listed as paper merchants in Vienna; Hadaun (still) as the owner of an exchange office and a not specified “Niederlage am alten Fleischmarkt” (“depot at the old Fleischmarkt”).¹¹⁹

Final remarks

On its way from Toscolano to Vienna, paper went through many hands. The process involved the paper maker and his team of workers, the *rigatore* and his team, adding the staff ruling, and traders who took the paper from one place to the other, and finally offered it to the local sellers in Vienna or perhaps even

directly to the copyists. The increasing number of papers included, and the mixture of staff rulings suggest that between 1760 and 1775 the production of music paper boomed in Venice and the *terraferma*. Even though the opera scores in Vienna reflect this development, they probably only cover a part of the entire production. To unearth further papers from this period, we would have to systematically examine, for example, the manuscripts of the Venetian copyist Baldassare Baldan, which are widespread in Europe, or some coherent collections of manuscripts from this period in Venice itself.

To place the development in a larger historical context, an extension of the time period would be desirable. The Viennese court sourced paper from the Republic of Venice throughout the entire eighteenth century. An examination of Viennese opera scores before 1760, many of which have been preserved from the imperial collection, will shed light on the production in Toscolano in earlier decades. Until 1755, the court did not buy opera scores from independent copyists in Vienna, but rather employed court copyists to produce such manuscripts. Paper from Venice was purchased directly from traders. If documents of these purchases were preserved in the archives, new conclusions could be drawn about paper trade.

The study of material after 1775, a period of rich musical production in which many composers, Mozart, Beethoven, and many others participated, would contribute significantly to clarifying the dates of manuscripts. The systematic examination of papers on a broad basis could also provide important clues for the reconstruction of composition processes where the parts of works were not created at the same time. This is a period in which handmade paper from Venice gradually lost its market dominance and was replaced by machine-made paper at the beginning of the nineteenth century, thus ending an era of music distribution and starting a new one.

Notes

1. Georg Eineder, *The Ancient Paper-Mills of the Former Austro-Hungarian Empire and Their Watermarks* (Hilversum: The Paper Publications Society, 1960).
2. Wasserzeichen-Informationssystem (WZIS), <https://www.wasserzeichen-online.de/wzis/index.php> (14.12.2024). A query for "Toscolano" or "Seguito", one of the most important paper makers in the region, did not produce a single hit in December 2024.
3. Alan Tyson, *Wolfgang Amadeus Mozart. Neue Ausgabe sämtlicher Werke. Serie X: Supplement. Werkgruppe 33: Dokumentation der autographen Überlieferung. Bündel I, Abteilung 2: Wasserzeichen-Katalog*, 2 vols. (Kassel: Bärenreiter, 1992). Dexter Edge, "Mozart's Viennese Copyists" (Dissertation, University of Southern California, 2001); for paper production, including the provenance of paper in Vienna and various paper formats, see 324–54.
4. Some studies by Ivo Mattozzi provide essential foundations for further research: *Produzione e commercio della carta nello stato Veneziano Settecentesco: Lineamenti e problemi* (Bologna: Università degli studi di Bologna, 1975); "Il distretto cartario dello stato veneziano: Lavoro e produzione nella Valle del Toscolano dal XIV al XVIII secolo," in *Cartai e stampatori a Toscolano: Vicende, uomini, paesaggi di una tradizione produttiva*, ed. Carlo Simoni (Brescia: Grafo 1995), 1–41; "Le filigrane e la questione della qualità della carta nella Repubblica Veneta della fine del '700: Con un catalogo di marchi di filigrane dal 1767 al 1797," in *Produzione e uso delle carte filigranate in Europa (secoli XIII–XX)*, ed. Giancarlo Castagnari (Fabriano: Pia Università dei Cartai, 1996), 309–39; "Le radici, il tronco e le diramazioni della produzione cartaria nella Valle delle Cartiere di Toscolano," *La Bibliofilia* 118, no. 3 (2016), 389–408.
5. As of December 2024, 166 scores from the period between 1759 and 1775 were examined.
6. Mattozzi, "Le radici," 389. For the primordial times of the paper mills in this region see Giovanni Zalin, "Origini e sviluppo dell'industria cartaria nella 'Riviera' bresciana del Garda," *Archivio Storico Italiano* 143, no. 4 (1985): 595–610; Mattozzi, "Distretto," 4–6
7. Mattozzi, *Produzione*, 68: "dove forza idrica, limpidezza e qualità delle acque torrentizie, condizioni topografiche favorevoli alla costruzione di rogge e seriole, clima e possibilità di collegamenti non troppo disagiati con le aree di consumo corrispondevano meglio alle esigenze della manifattura cartaria."
8. As cited in Mattozzi, *Produzione*, 69: "La carta della Riviera di Salò è la più distinta dello stato veneto per la qualità degli edifici, per la limpidezza delle acque e per la purezza dell'aria ... L'altre cartiere dello stato tentarono varie volte d'imitare le suddette carte, ma perché mancano loro i sopraesposti benefici non sono mai arrivate ad ugual perfezione."
9. Mattozzi, "Le radici," 292–93. In the 1740s a papermill equipped with one vat needed five men and six to eight women or children for production. See Renzo Sabbatini, "La manifattura cartaria in età moderna: Imprenditorialità, rapporti di produzione e occupazione," in *Produzione e commercio della carta e del libro: Secc. XIII–XVIII*, ed. Simonetta Cavaciocchi (Florence: Le Monnier, 1992), 136.
10. Mattozzi, "Le radici," 394.
11. See, for instance, the maps in Flavio Piardi, "L'evoluzione degli insediamenti e delle proprietà: Le fonti catastali," in *Cartai e stampatori a Toscolano: Vicende, uomini, paesaggi di una tradizione produttiva*, ed. Carlo Simoni (Brescia: Grafo, 1995), 160–62.

12. Mattozzi, "Le radici," 393.
13. "Promontorio" in Italian simply means "cape" or "foreland". In the eighteenth century this term could refer to the area outside of the *Valle delle Cartiere* or specifically an area next to Maderno on the peninsula at lake Garda. Many thanks to Silvia Merigo, Director of the *Museo della Carta di Toscolano Maderno*, for specifying this.
14. Bongianni Grattarolo, *Storia della riviera di Salò*, reprint, ed. Piercarlo Belotti, Gianfranco Ligasacchi, and Giuseppe Scarazzini (Salò: Ateneo di Salò, Associazione il Sommolago, 2000), 149, <https://www.archividelgarda.it/wp-content/uploads/2017/06/Storia-della-Riviera-Grattarolo.pdf>: "Il Commun di Toscolano, è di diece Terre, dove sopra il fiume del medesimo nome, ha un bel Ponte di pietra di un'Arco solo, con fianchi gagliardissimi, e molte officine da carta, o come essi le dicono folli, dove medesimamente, lavorano, et le donne, e i fanciulli; della qual carta forniscono molte lontane e vicine Provincie, non solo di christianità, ma di Turchia ancora."
15. Regarding women and children as workforces in paper mills, see Sabbatini, "Manifattura," 130–38.
16. See Mattozzi, *Produzione*, 38–58.
17. Mattozzi, *Produzione*, 72.
18. Mattozzi, *Produzione*, 78. Regarding noblemen as papermill owners see also Ivo Mattozzi, "Investimenti aristocratici nelle cartiere venete: Che ruolo nella espansione produttiva," in *Produzione e uso delle carte filigranate in Europa (secoli XIII-XX)*, ed. Giancarlo Castagnari (Fabriano: Pia Università dei Cartai, 1996), 269–78.
19. See Mattozzi, *Produzione*, 5–17.
20. See Mattozzi, *Produzione*, 34–36, and Mattozzi, "Distretto," 21–26.
21. For the development of these variables throughout the eighteenth century see table 5 in Mattozzi, *Produzione*, 34.
22. Leonard N. Rosenband, "Formazione ed evoluzione dei centri della produzione della carta," in *Produzione e commercio della carta e del libro: Secc. XIII-XVIII*, ed. Simonetta Cavaciocchi (Florence: Le Monnier, 1992), 60–61. See also Günter Bayerl, *Die Papiermühle: Vorindustrielle Papiermacherei auf dem Gebiet des alten deutschen Reiches: Technologie, Arbeitsverhältnisse, Umwelt*, vol. 1 (Frankfurt: Lang, 1987), 230–52.
23. Jérôme de La Lande, *Art de faire le papier* (Paris: Saillant & Nyon, Desaint, 1761), I, 27–31, <https://gallica.bnf.fr/ark:/12148/bpt6k10671841>: "nouvelle forme des Moulins à cylindre".
24. For a discussion of these different types of paper see below.
25. Mattozzi, *Produzione*, 49.
26. As cited in Mattozzi, *Produzione*, 42: "bianchezza, nettezza e finezza," "alcuna altra nazione sino ad ora non ha potuto farli fronte, perché di simili qualità non ne possono fabbricare."

27. As cited in Mattozzi, *Produzione*, 39: "cruda, bruna, gropolosa o sia piena di piccole pietre e sabione."
28. Mattozzi, *Produzione*, 41–42.
29. Mattozzi, *Produzione*, 59.
30. See Sabbatini, "Manifattura," 123–30.
31. Mattozzi, *Produzione*, 60.
32. Mattozzi, *Produzione*, 45 and 85.
33. Mattozzi, "Filigrane," 309–10. The watermark collection in Leonardo Mazzoldi, *Filigrane di cartiere Bresciane*, vol. 1 (Brescia: Ateneo di scienze lettere ed arti, 1990), has little value for our purposes, as only three out of over a thousand watermarks date from the eighteenth century.
34. Mattozzi, "Le radici," 314–15 and 319. The *Terminazione* is the basis for the watermark catalogue that can be found in Mattozzi, "Filigrane," 323–39.
35. Mattozzi, "Filigrane," 327 (referring to a document from 31.08.1768).
36. Mattozzi, "Filigrane," 314.
37. [Sandra Schultz, *Papierherstellung im deutschen Südwesten: Ein neues Gewerbe im späten Mittelalter*, *Materiale Textkulturen* 18 \(Berlin: De Gruyter, 2018\), 113.](#)
38. [Schultz, *Papierherstellung*, 110–11.](#) See, for instance, the classifications of "the paper most common" in Venice in Giovanfrancesco Pivati, art. "carta," in *Dizionario universale*, vol. 3 (Venice: Monti, 1744), 379–80.
39. Daniel Bellingradt, *Vernetzte Papiermärkte: Einblicke in den Amsterdamer Handel mit Papier im 18. Jahrhundert* (Köln: Halem, 2020), 41.
40. Emile Joseph Labarre, "The Sizes of Paper, Their Names, Origin & History," in *Buch und Papier: Buchkundliche und papiergeschichtliche Arbeiten: Hans H. Bockwitz zum 65. Geburtstag dargebracht* (Leipzig: Harrassowitz, 1949), 35.
41. Gerhard Piccard, "Papiererzeugung und Buchdruck in Basel bis zum Beginn des 16. Jahrhunderts: Ein wissenschaftsgeschichtlicher Beitrag," *Archiv für Geschichte des Buchwesens* 8 (1966): 275; [Schultz, *Papierherstellung*, 109.](#)
42. Labarre, "The Sizes," 50–51.
43. [Edge, "Copyists," 332.](#)
44. Archivio di Stato di Venezia (ASV), Cinque Savi alla Mercanzia (VSM), s. I, b. 464–465, see Mattozzi, "Filigrani," 310.
45. The relevant cadasters of Toscolano and Maderno, kept at the Archivio di stato di Brescia, begin in 1720. The records consulted for Maderno cover the period from 1720 to 1783, while the

cadasters for Toscolano span the years 1720 to 1744: Archivio di Stato, Brescia (ASB), registro 1083–1084 and 1104–1105, Catasto antico (estime e catasti): 1841–1853. These registers list all properties and real estate owned by the residents of the communities: houses, fields, gardens, and, aside from the cadaster of 1744, explicitly also paper mills, along with the regions where they were located. On the one hand, the monetary amounts that had to be ceded for the mills are recorded; on the other hand, at times ownership details (including co-owners) and sales are noted as well. Since the early volumes from 1720 sometimes still mention legal transactions up to 1810, the year a new cadaster for Maderno (registro 1085) was created, and since sometimes no date is given for sales and ownership details, it is often difficult or even impossible to determine the exact timing of ownership changes for a paper mill. Sales are often noted on the following page but sometimes also dozens or hundreds of pages later, making the indices at the beginning of the volumes indispensable for working with them.

46. Cf. the crowned initials on [P54](#), [P21](#), [P38](#), and [P49](#); initials beneath a lily in [P22](#), [P90/P50](#), [P58](#), [P56/P91](#), and [P96](#). The paper numbers refer to https://www.mdw.ac.at/imi/ctmv/p_und_c/paper-list.php.
47. Mattozzi, "Filigrane," 328: "Countermark a comet" ("contromarca una stella cometa").
48. Mattozzi, "Filigrane," 324: "Countermark the crossbow" ("contromarca la BALESTRA").
49. ASB, filza 1825, Bortolo Setti, Index, ff. 58v, 116r and 132v. The notarial records begin in 1743 and extend into the early nineteenth century (filze 1820 to 1835). The index details these records, which are stored in dozens of volumes. Due to the possibility of confusion, individuals are often identified by their father's name here. Unfortunately, only a small portion of the records themselves are accessible for conservation reasons. The first entry on f. 58 of the index refers to Volume VI from 1763. – Further legal transactions are documented in the 1720 cadaster of Maderno: ASB, registro 1083, Catasto del Comune di Maderno dell'anno 1720, 194 and 199.
50. Mattozzi, "Filigrane," 328, documents from 1767 and 1782.
51. Mattozzi, "Filigrane," 324 and 339.
52. ASB, filza 1825, Bortolo Setti, Index, f. 69v: "Toscolano Gaudenzio Fossati q[uonda]m Pietro [...] Pietro suo figlio"; Mattozzi, "Filigrane," 332 and 334.
53. VSM 464, IA 23, 27.10.1773, after Mattozzi, "Filigrane," 332.
54. ASB, filza 1825, Bortolo Setti, Index, f. 120r ("Toscolano Carlo Samuelli di Pietro") and 151v ("Toscolano Carlo Samuelli q[uonda]m Pietro"); Mattozzi, "Filigrane," 326 ("Carlo Samuelli e Compagni") and 337 ("Fratelli Samuelli per la ditta Pietro Samuelli").
55. ASB, registro 1106, Toscolano: Estratto catastale 1814, 18.
56. Mattozzi, "Filigrane," 328 and 333.
57. ASB, registro 1083, 375.
58. Mattozzi, "Filigrane," 330 and 324.

59. ASB, filza 1825, Bortolo Setti, Index, f. 122v ("Toscolano Ant.o Zuanelli q[uonda]m Stefano") and 63r ("Eredi q.m Stefano Zuanelli", referring to vol. 7 of the files from 1764).
60. Mattozzi, "Filigrane," 324, 330, 332 ("fabbricante"); 330 ("cartaro"); 327 ("affittuario"). On the relationship between owner and papermaker, see Mattozzi, "Distretto," 29–38.
61. Mattozzi, "Filigrane," 327 and 328. Similar annotations can also be found with the mills of Fratelli Vezzoli (with mention of names) and Antonio Seguito (without mention), see *ibid.* 330 and 324.
62. Mattozzi, "Filigrane," 324: "la ditta Antonio Seguito: due cartiere sotto la direzione di 2 fabbricanti le cui iniziali sono A e P".
63. Two papers from the firm Antonio Seguito with the initials AS – P in the watermark were not included in Table 4. Since they only appear sporadically and scattered in Viennese opera scores, their chronological placement is uncertain. P97 is found in just a single gathering of a score from 1769 (Piccinni, *La pescatrice*, Mus.Hs. 1056). P25 appears in one gathering of a score from 1760 (Gluck, *L'ivrogne corrigé*, Mus.Hs. 17878) and in ten gatherings from two scores dated 1772 and 1773 (Salieri, *La fiera di Venezia* and *La locandiera*, Mus.Hs. 10072 and 10073). These may be remnants from an earlier production. Confer the remarks on P25 below.
64. In several variants used until 1771.
65. The assignment of the initials GF to Fossati is based on the *Terminazione* 1768; Mattozzi ("Filigrane," 332–33) cites additional, albeit later, resolutions of the initials: Giacomo Florian Pezzan, Treviso – is a P mistakenly missing in the initials here? – and Giuseppe Filippini, Nave, Brescia (evidence from 1782). A record from the nineteenth century refers to Fratelli Gava, San Giacomo de Veglia, Ceneda, Treviso; see Antonio Fedrigoni, *L'industria veneta della carta dalla seconda dominazione Austriaca all'unità d'Italia*, Archivio economico dell'unificazione italiana (Turin: Industria Libreria Tipografica Editrice, 1966), Tav. B ("Filigrane di carte venete fabbricate tra il 1816 e il 1868"), after p. 40, here GF with a watermark from 1815, very similar to ours (see Fig. 1); Edge, "Copyists," 333, fn. 292, follows this resolution for paper from the 1780s. – Following the other examples, "Fratelli Gava" should actually be abbreviated as FG; it is not excluded that the Gava brothers consciously oriented themselves to the watermarks of Gaudenzio Fossati.
66. Mattozzi, *Produzione*, 33–37.
67. Jean K. Wolf and Eugene K. Wolf, "Rastrology and Its Use in Eighteenth-Century Manuscript Studies," in *Studies in Musical Sources and Style: Essays in Honor of Jan LaRue*, ed. Eugene K. Wolf and Edward H. Roesner (Madison: A-R Editions, 1990), 255–67; cf. Edge, "Copyists," 354–356; Erich Duda, "Wie wurden Notenblätter im 18. Jahrhundert liniert?," *Mozart Studien* 16 (2007): 301–22; with a focus on the early nineteenth century: Anette Müller, *Komponist und Kopist. Notenschreiber im Dienste Robert Schumanns*, Studien und Materialien zur Musikwissenschaft 57 (Hildesheim: Olms, 2010), 78–97.
68. A. B. Méguin, *Art de la réglure des registres et des papiers de musique: Méthode simple et facile pour apprendre à régler* (Paris: Audot, 1828), cited after Wolf and Wolf, "Rastrology," 259.
69. Alan Tyson, *Mozart: Studies of the Autograph Scores* (Cambridge, MA: Harvard University Press, 1987); Edge, "Copyists," 354–81.
70. Wolf and Wolf, "Rastrology;" Eugene K. Wolf, *Manuscripts from Mannheim, ca. 1730-1778: A*

Study in the Methodology of Musical Source Research (Frankfurt am Main: Lang, 2002).

71. *Paper & Copyists* measures from top to bottom; the unit of measurement is millimeter. In 10/189B the distances between the staves vary from 11 millimeters to 11.5; "11+" is slightly more than 11 millimeters, up to 11.25. The method is based on Wolf and Wolf, "Rastrology," 272–75, and Edge, "Copyists," 367–68. For a detailed explanation and a list of DS chains see: https://www.mdw.ac.at/imi/ctmv/p_und_c/staff_ruling.php.
72. In local contemporary usage, "Bogen" referred to a bifolio, meaning a half sheet of paper, see Edge, "Copyists," 119–34.
73. The ruling 12/189C first appears on P63 in [Gluck_3030-F9](#).
74. Edge, "Copyists," 354–81, especially 356f.
75. See e.g. [Gazzaniga_10029](#), [Piccinni_1087](#), [Piccinni_17811](#), [Salieri_10072](#), and [Salieri_10073](#).
76. Paul Everett, *The Manchester Concerto Partbooks*, Outstanding Dissertations in Music from British Universities (New York: Garland, 1989), 108; Edge, "Copyists," 358.
77. Edge, "Copyists," 376 and 391–92.
78. Edge, "Copyists," 378–79; Alan Tyson, "Mozart's Use of 10-Staff and 12-Staff Paper," in *Mozart: Studies of the Autograph Scores* (Cambridge: Harvard University Press, 1987), 227.
79. Johann Pezzl, *Beschreibung von Wien*, 7th ed. (Vienna: Armbruster, 1826), 266, referred to by Edge, "Copyists," 358. The announcement specifically mentions music sheets, while in Franz Heinrich Böckh's *Schriftsteller- und Künstler-Handbuch* from 1821, only paper for business books is offered in connection with Jasper's ruling machine ("Rastrir-Maschine"): Franz Heinrich Böckh, *Wiens lebende Schriftsteller, Künstler und Dilettanten im Kunstfache: Dann Bücher-, Kunst- und Naturschätze und andere Sehenswürdigkeiten dieser Haupt- und Residenz-Stadt: Ein Handbuch für Einheimische und Fremde* (Wien: Bauer, 1821), 413.
80. The oldest datable reference to Giovanni Chiari, who sold music paper but apparently also manuscripts, comes from 1786 in an advertisement for flute quartets by Antonio Nenini: "These manuscripts are made of excellent paper and are very legible, and they are available for sale in this city at Gio. Chiari, a ruler of music paper, in the Condotta." ("Sono questi manoscritti in ottima carta e bene intelligibili, è [sic] si trovano vendibili in questa Città appresso Gio. Chiari rigatore di carta da musica nella Condotta [...].") *Gazzetta toscana* 21, no. 42 (October 1786): 168. For Brazzini see *Gazzetta universale* 16, no. 55 (July 1789): 440: "Anton Brazzini, bookseller and ruler of music paper in the Condotta" ("Anton Brazzini Librajo, e Rigatore di carta da Musica nella condotta.") He was also a bookseller and publisher of musical works. All three of them had title-page passe-partouts printed for manuscripts, which left space for the title of the work and the incipit. Corresponding sources can be found abundantly under their names in RISM online.
81. Salvatore Perillo, *La buona figliola* (Venice 1760), Mus.Hs. 17819; Baldassare Galuppi, *Li tre amanti ridicoli* (Venice 1761), Mus.Hs. 18054; Mattia Vento, *L'Egiziana* (Venice 1763), Mus.Hs. 17870.
82. Today the score is housed in the Bibliothèque-Musée de l'Opéra, Paris, F-Po CS-3971, see [Gluck_CS-3971](#).

83. Tommaso Traetta, *Il Bovo d'Antona* (Venice 1758), Mus. Hs. 17858; Pietro Alessandro Guglielmi, *La sposa fedele* (Venice 1767), Mus.Hs. 17789.
84. [Galuppi_1060](#).
85. [Hasse_18280](#), [Piccinni_17821](#), [Majo_17187](#), [Fischietti_18063](#), [Piccinni_17823](#), [Scarlatti_10004](#) and [Galuppi_18071](#).
86. [Fischietti_18064](#) and [Gassmann_18074](#) combining P69 and P87;
87. [Piccinni_10063](#), [Fischietti_1051](#).
88. The calculation is based on a weight of 36.2g per complete sheet (four leaves), cf. [Edge](#), "Copyists," 332.
89. [Scarlatti_17849](#).
90. [Pergolesi_18034](#), [Piccinni_17812](#), [Gluck_17782](#).
91. Examples include, for instance, [Hasse_17297](#) (1762), vol. 3: P66 and P71 (FF, AS), ruling 10/c.184; [Galuppi_18073](#) (1770), vols. 1, 4 and 5: P2, P11 and P73 (AS, CS), 10/192D; [Gazzaniga_10029](#) (1774), vol. 2: P31 and P51 (HAF, VV), 10/189E.
92. Alan Tyson, "La clemenza di Tito and Its Chronology," in *Mozart: Studies of the Autograph Scores* (Cambridge: Harvard University Press, 1987), 51–52; [Edge](#), "Copyists," 382–84.
93. [Gassmann_18080](#), vol. 2, gathering 15.
94. [Sacchini_17830](#) (1769), [Salieri_17833](#) (1770) and [Sacchini_17869](#) (1771).
95. In this group, 10/183B and 10/184N usually appear together, see [Piccinni_17828](#), [Salieri_17834](#), [Gassmann_17775](#), [Piccinni_17825](#), [Gazzaniga_1058](#), [Salieri_17841](#), [Salieri_10075](#), [Salieri_17842](#). 10/193C is very rare.
96. János Harich, "Haydn Documenta (II)," *Haydn Yearbook* 3 (1965): 146, as cited in [Edge](#), "Copyists," 389.
97. "The frequent requests for good Italian violin strings and ruled music paper gave us all the more reason to stock these items, as they align perfectly with our already well-established musical trade." ("Die häufigen Anfragen nach guten italienischen Geigensaiten und rastrirten Notenpapier gaben uns um so mehr Anlaß, uns damit zu versehen, als diese Artikel sich zu unsern [sic] ohnehin bekannten musikalischen Comerz schicken.") *Wiener Zeitung* 28 (April 7, 1781): [11]. As cited in [Edge](#), "Copyists," 122.
98. *Wiener Zeitung* 54 (July 6, 1799): [26]: "Zucker, feinen [sic] Zuckermehl, Caffee, feine Oele, und allem übrigen Spezereywaaren, wie auch besten [sic] Venetianer Notenpapier."
99. Bellingradt, *Papiermärkte*, 10: "von der Geschichtsschreibung bislang relativ unthematisiert geblieben".

100. Sandra Zawrel, "Papierhandel im Europa der Frühen Neuzeit: Ein Forschungsbericht," *Jahrbuch für Kommunikationsgeschichte* 19 (2017): 102 and 108.
101. Bellingradt, *Papiermärkte*, 104, 93–4, and 97. See also Zawrel, "Papierhandel," 108–12.
102. *Almanacco cronologico, genealogico, geografico, postale, poetico, sentenzioso, erotico e commerciale* (Venice: Andreola, 1820), 303–25; quote from 304.
103. Peter Rauscher, "Wege des Handels – Orte des Konsums: Die nieder- und innerösterreichischen Jahrmärkte vom Mittelalter bis ins 19. Jahrhundert," in *Europäische Messegeschichte: 9.–19. Jahrhundert*, ed. Markus A. Denzel (Köln: Böhlau, 2018), 231.
104. Peter Rauscher and Andrea Serles, "Die Wiener Niederleger um 1700: Eine kaufmännische Elite zwischen Handel, Staatsfinanzen und Gewerbe," *Österreichische Zeitschrift für Geschichtswissenschaften* 26, no. 1 (2015): 156.
105. Johann Basilius Küchelbecker, *Allerneueste Nachricht vom Römisch-Kayserl. Hof* (Hannover: Förster, 1730), 706: "so beyde von in= und ausländischen Kaufleuten besucht werden, und auf solchen sind die schönsten, kostbarsten und galantesten Waaren von allerhand Art und Sorten, so man nur erdencken kan, anzutreffen"
106. Ignaz Raicevich, *Osservazioni storiche, naturali, e politiche intorno la Valachia, e Moldavia* (Naples: Raimondi, 1788), 134: "Altri Greci vanno due volte l'anno alle Fiere di Lipsia, e di Vienna, da dove conducono per terra una quantità considerabile di panni fini d'ogni sorte, Sajoni, o Saje in lana, Velluti, Rasi, ed altre seterie, tele stampate, galloni, e ricami di Vienna, lavori di ferro della Stiria, carta di Venezia [emphasis by the authors], Droghe, Zucchero rafinato di Fiume, Caffè dell'America, piombo, stagno, &c."
107. Zawrel, "Papierhandel," 106.
108. *Wienerisches Diarium* 11 (February 6, 1779), 9: "Among the ships that arrived in the free port of Trieste between January 17 and 23, a Venetian vessel from Venice stood out in particular, carrying calicoes, oil, and paper" ("Unter denen vom 17. bis 23. Jäner [sic] in den Triestiner Freyhäven eingelaufenen Schiffen zeichneten sich vorzüglich aus [...] Ein Venetianisches von Venedig mit Kattunen, Oel und Papier.")
109. Ivo Mattozzi, "I Galvani, Fabbricanti di Carta (1744–1855): Un Modello di Formazione dell'Imprenditorialità?," in *Andrea Galvani: 1797–1855: Cultura e Industria nell'Ottocento a Pordenone*, ed. Gilberto Ganzer (Pordenone: Edizioni Studio Tesi, 1994), 17–39, especially 18 and 24–29.
110. Ibid., 24.
111. See Eineder, *Ancient Paper-Mills*, 45.
112. Johann Markowich, *Die Oesterreichische Papier-Industrie, Die Gross-Industrie Oesterreichs* 5 (Vienna: Weiss, 1898), 6.
113. Ibid.
114. *Adreßbuch der jetzt bestehenden Kaufleute und Fabrikanten in Europa*, vol. 2, 2nd ed. (Nuremberg: Kontor der Königlich-privilegirten allgemeinen Handlungs-Zeitung, 1817), 6.

115. Viktor Thiel, "Papierzeugung und Papierhandel in Niederösterreich," *Jahrbuch der österreichischen Leo-Gesellschaft* (1932): 136. Regarding Hadaun, see also Eineder, *Ancient Paper-Mills*, 138.
116. Ingrid Mittenzwei, *Zwischen gestern und morgen: Wiens frühe Bourgeoisie an der Wende vom 18. zum 19. Jahrhundert*, Bürgertum in der Habsburgermonarchie 7 (Vienna: Böhlau, 1998), 60.
117. See Christoph Augustynowicz and Johannes Frimmel, eds., *Der Buchdrucker Maria Theresias: Johann Thomas Trattner (1719–1798) und sein Medienimperium*, Buchforschung: Beiträge zum Buchwesen in Österreich 10 (Wiesbaden: Harrassowitz, 2019).
118. Mittenzwei, *Zwischen gestern und morgen*, 154.
119. *Handelstands-Kalender der k. k. Haupt und Residenz Stadt Wien für das Jahr 1799* (Vienna: Trattner, 1799), 13 and 70.