

The Pinned Barrel as Music Archive

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The impulse for this research project on pinned barrels began when Jan Ling (1934–2013) initiated a reconstruction of the organ clock that stands in one of the dining rooms at the Royal Swedish Academy of Letters, History, and Antiquities in Stockholm.¹ The organ clock was built by Pehr² Strand (ca. 1758–1826). Strand also built music automata into other types of furniture, as well as cranked positives. An inventory of Strand's production was initiated after the reconstruction project, focusing on preserved organ clocks. Currently some 165 barrels from sixteen clocks have been documented and studied, and this material constitutes the archive of pinned barrels, a part of which will be discussed here.

Grove Music Online defines an archive, in its strictest meaning, as “the totality of documents produced or received by a person or an organization in the course of administrative activity and the transaction of affairs.”³ One of Sweden's best-known music archives, or rather collections, is the Düben Collection of music manuscripts and prints, now in Uppsala.⁴

1 Johan Norrback and Jan Ling, “Flöjturet Och Tiden,” in *Kungl. Vitterhets Historie Och Antikvitetsakademiens Årsbok* (2013). See also the 2016 documentary “The Organ Clock Plays Again,” <https://youtu.be/KgCX8gZtQaE>. For an introduction to the subject please see Grove Music Online, s.v. “Mechanical instruments” by Arthur W. J. G. Ord-Hume, accessed October 12, 2018, <https://doi.org/10.1093/gmo/9781561592630.article.18229>.

2 Several forms of his given name (Petrus, Petter, Pehr, Per) are used in the sources in accordance with contemporary praxis. The present author has chosen “Pehr” as this is the spelling used on some clocks as well as in the estate inventory (Stockholms stadsarkiv [SSA], Justitiekollegium 1637–1856, Förmyndarkammaren 1667–1924, Rådhusrättens 1:a avdelning 1850–1924, Bouppteckningar, F 1 A: 449 [1827], 13.) and in the record of his passing (SSA, Kungsholms kyrkoarkiv, Död- och begravningsböcker, F I: 4 [1826–1849], 1).

3 See Grove Music Online, s.v. “Archives and music,” by François Lesure, Roger Bowers, Barbara H. Haggh and André Vanrie, accessed October 12, 2018, <https://doi.org/10.1093/gmo/9781561592630.article.01180>.

4 For an introduction to, and a searchable database of the Düben Collection, see “DCDC – Düben Collection Database Catalogue,” accessed October 12, 2018, <http://www2.musik.uu.se/duben/Duben.php>.



Figure 1. The organ clock at the Royal Swedish Academy of Letters, History, and Antiquities. Photo: Alf Åslund.

The Düben Collection was not collected by a single person, but rather by a family. However, an archive in a wider sense, such as the Düben Collection, is a common situation for a music scholar. Pinned barrels, for organ clocks, do not readily meet the strict definition of an archive, not even in the wider sense. Still it is useful to use the word “archive” to describe the surviving clocks and their barrels, since it gives us a common understanding of tools and methods to ask questions of the information mediated by them. Questions like: which music was popular; who chose the music; who pinned the barrel; who was the owner; how was the organ clock used?

From Apprentice to “Directeur”

“Mr. Strand is a noteworthy instrument builder, who has already (by February 1, 1797) built fourteen organ clocks, most of them according to the Berlin tradition, with traverse flutes.”⁵

This contemporary notice by Pehr Tham (1737–1820) is taken from his diary describing a journey from western Sweden to Stockholm as was the fashion when making study trips, following in the footsteps of more famous persons like the botanist Linnaeus (Carl von Linné, 1707–78). Tham, a court functionary with a strong interest in archeology, was from the social circles where Pehr Strand found his customers when it comes to organ clocks.

Pehr Strand was born in Arnäs Parish, just outside Örnköldsvik in Ångermanland on the east coast in central Sweden. His parents were Jonas Strandman (1728–1809), later Strand, and Malin Pärsson (1733–1818). Pehr’s birth is not noted in the parish register,⁶ and when he appears in the parish catechetical meetings as Petrus,⁷ together with his family, his

5 “Herr Strand är en märkelig Instrumentmakare, som nu (d. 1 Febr. 1797) redan förfärdigat 14 Spel-Ur, de flesta efter Berlinske Methoden, såsom Fleute-traversierer.” Pehr Tham, *Anteckningar under Och i Anledning Af En Resa Ifrån Westergöthland Til Stockholm, Gjord Åren 1796 Och 1797: Notes Made during a Journey from Westergöthland to Stockholm in the Years 1796 and 1797* (Stockholm: Rediviva, 1980), 78.

6 Hännösand landsarkiv (HLA), Arnäs kyrkoarkiv, Födelse- och dopböcker, C: 2 (1750–1786). I am grateful for the valuable help I received from professor Anders Jarlert in evaluating the sources in the Arnäs Parish Register.

7 HLA, Arnäs kyrkoarkiv, Husförhörslängder, A I:1 (1749–1766), 56 and HLA, Arnäs kyrkoarkiv, Husförhörslängder, A I:2 (1767–1783), 276.

birth year is somewhat confusing. The birth month seems to be January (Jan), but the last figure in the year is unclear. In both volumes (the first covering the years 1749–66, and the second, the years 1767–83), the last figure seems to be a 6 overwritten with a 7 (see figure 2). No day is given, as with the rest of the family. The information about the Strandman family, based on the similarity of the handwriting and the ink, seems to have been entered in 1766. This is the heading of the third column on the right-hand page, containing the annotations for Pehr's mother and grandmother. In the left-hand margin next to Pehr's name is a note that he is nine years of age. This points to the year of 1757. In 1757 Pehr's parents had a son Johan, who sadly passed of smallpox in April of the same year, only three weeks old.⁸ Taking this into consideration, there is no possibility that Pehr was born in January of 1757, because his mother was already pregnant. Perhaps this explains the confusion reflected in the register. Obviously, we have to look for the birth date of Pehr Strand in other sources. If we approach the question of his date of birth from the other direction, "Orgelbyggeri Directeur Pehr Strand" is 68 years of age according to the estate inventory, when he passes away on August 19, 1826.⁹ Even more precisely, according to a notice in the newspaper *Post- och Inrikestidningar* in Stockholm, September 8, 1826, he was 68½ years of age when he died.¹⁰ Following these later sources January of 1758 then seems most likely.

Pehr Strand's father was enrolled in the Swedish Navy. This meant that, according to Swedish regulations, he was provided with a tenement soldier's cottage in his home village of Strandnyland in Arnäs Parish. Pehr grew up in modest circumstances and seems to have moved to Stockholm as a teenager to become a sculptor. From 1777, or probably already in 1776, he studied as an apprentice with Johan Ljung (1717–87), one of the established sculptors in Stockholm. Ljung was highly regarded and worked, among other things, with the interior decorations of the Royal Palace in Stockholm.

In October of 1784, Pehr Strand married Rebecca Norström, and as

8 HLA, Arnäs kyrkoarkiv, Begravningsbok, C:2 (1748–1788), 178.

9 SSA, Justitiekollegium 1637–1856, Förmyndarkammaren 1667–1924, Rådhusrättens 1:a avdelning 1850–1924, F 1 A:449.

10 *Post- och Inrikestidningar*, September 8, 1826. Resources for researching Swedish Newspapers may be found in a separate section in the bibliography.

Wid.	Opplysnings manning	Opplysnings tid	Opplysnings ställe	Opplysnings dag	Opplysnings mängd	Opplysnings status	Opplysnings notiser
...	...	1749 20 Nov	...	...	...	x	x
...	...	1750 28 Nov	...	...	...	x	x
...	...	1752 11 Maj	...	...	...	x	x
...	...	1755 18 Sep	...	...	...	x	x
...	...	1757 16 Aug	...	...	...	x	x
...	...	1759 20 Dec	...	...	...	x	x
...	...	1760 29 Sep	...	...	...	x	x
...	...	1761 17 Feb	...	...	...	x	x
...	...	1748	...	...	...
...	...	1753 21 Jan	...	...	...
...	...	1748 17 Jul	...	...	...
...	...	1741 Wron	...	...	...
...	...	1764 9 Dec	...	...	...
...	...	1760	...	...	...
...	...	1758	...	...	...
...	...	1758	...	...	...
...	...	1761	...	...	...
...	...	1765	...	...	...

Figure 2. Arnäs Parish, catechetical meetings 1749–66. The Strandman family is listed at the bottom of the page. Photo: Riksarkivet, Landsarkivet in Härnösand.

witnesses we find Johan Ljung and his son Pehr Ljung (1743–1819).¹¹ Pehr Strand and Pehr Ljung studied together, and it seems as though they stayed in contact throughout their lives. Pehr and Rebecca Strand had seven children, but only three survived their childhood: Jonas Samuel (1786–1860), Pehr Zacharias (1797–1844), and Magdalena Henriette (1800–84).

Pehr Strand not only studied to become a sculptor. He is best known as a builder of organ clocks and pipe organs. In 1791 he applied for privileges to establish a factory for building organ clocks.¹² In his application he had to prove his competence, and the decision by the court states that he had shown necessary certificates of his ability. Unfortunately, these certificates are not preserved, so we have no direct information about how and where he acquired these skills. The most plausible interpretation is that

11 SSA, Klara kyrkoarkiv, Lysnings- och vigselböcker, E I:3 (1773–1790), [n.p.].

12 "drifva en Fabrique til förfärdigande af Musicaliske Spel-uhr," Riksarkivet (RA), Kommerskollegium, Huvudarkivet, Konzept, huvudserie, B II a:46 (1791), 901.

he learned the necessary mechanical skills in Stockholm, perhaps from an established clockmaker, some of whom also built musical clocks. Strand's organ clocks share many characteristics of the clocks by Christian Ernst Kleemeyer (1739–99) from Berlin.¹³ This is in line with the comment by Pehr Tham that Strand built within the Berlin tradition. However, we have no information regarding contacts between Strand and Kleemeyer. Kleemeyer was clockmaker to the court of Frederick the Great (1712–86).

Frederick was very interested in music, and in musical clocks.¹⁴ In 1781, an organ clock was sent to Stockholm as a gift from him to his sister Queen Louisa Ulrika (1720–82), perhaps in conjunction with the thirtieth anniversary of her coronation.¹⁵ This was not the only organ clock at the Royal Palace, but perhaps an important indicator of the growing interest in automatic music in Stockholm towards the end of the eighteenth century. In any case, it is another example of the connections between Berlin and Stockholm. A conceivable answer to the similarities between the organ clocks of Kleemeyer and Strand could be explained by the economic circumstances. The Swedish economy was in decline after a long period of warfare, and in line with the ideas of mercantilism, an effort was made to support and develop Swedish craft and production by protecting it through import duties. Import was allowed by permission only with the goal of providing models to improve Swedish instrument building. This has been shown by Eva Helenius-Öberg's research on Swedish instrument building.¹⁶ Of special interest here is the case from 1771 where the furniture dealer Carl Adolph Grevesmühl (1744–1827), on behalf of the clockmaker and builder of stringed musical clocks Johann Christian Knoop (ca.1733–1808),¹⁷ asked for permission to import a musical clock from Danzig. The clock was to be

13 Herbert Heyde, *Musikinstrumentenbau in Preussen* (Tutzing: Hans Schneider, 1994), 16.

14 For a presentation of the preserved organ clocks of Frederick the Great, see Silke Kiesant, *Prunkuhren am brandenburgisch-preussischen Hof im 18. Jahrhundert: mit einem Katalog ausgewählter Uhren Friedrichs II. und Friedrich Wilhelms II. von Preußen* (Petersberg: Imhof, 2013).

15 Kiesant, *Prunkuhren*, 161. The clock is now in Nationalmuseum, Stockholm (catalogue no. NMK 7/2004).

16 See Eva Helenius-Öberg, "Svenskt instrumentmakeri 1720–1800. En preliminär översikt," *Svensk tidskrift för musikforskning* 1 (1977): 11–15, and Eva Helenius-Öberg, *Svenskt klavikordbygge 1720–1820* (Stockholm: Almqvist & Wiksell, 1986), 195–202.

17 I am grateful to Jonas Wallin, Stockholm, who kindly shared his recent research results on Knoop (or Knop) with me.

used as model for building other clocks.¹⁸ Permission was denied in this case, but the event gives us a model for how an organ clock from Berlin could have ended up in Stockholm.¹⁹

In his application for privileges Strand promised not to build the clockwork himself, but to turn to other masters for this part. However, Strand still signed the dial of some of his organ clocks. Perhaps signing the dial is an indication of a clock built later in Strand's production, when, towards the end of the eighteenth century, the weakening of the clockmakers' guild allowed him some freedom from his initial promise not to be involved in the actual clock building. There is also an example of a wall clock signed by him, belonging to his daughter Henriette, still in the possession of the family. It is obvious that Strand could build clocks.

Less well-known is the second set of privileges that Strand was granted. In 1789 he applied for, and was granted, privileges to establish cork cutting, next to his lacquer production, which is only mentioned in passing.²⁰ According to the documentation in the *Fabriksberättelser* (an annual account of production listed by city), Strand had actually been involved with lacquer production since 1777.²¹ By 1791 Strand obviously was a productive and inventive craftsman enrolled in many activities, as sculptor, producer of lacquer, and cutting cork. Now he also establishes himself as a builder of organ clocks.

In Sweden, Strand is well known as an organ builder, but his emergence as a pipe organ builder has not been thoroughly investigated. We have no sources about whether he studied with any of the better-known builders in Stockholm, such as Olof Schwan (1744–1812), or perhaps Jonas Ekengren (1736–93). Ekengren also built small cranked positives. The oldest preserved pipe organ by Strand is currently in Sundals-Ryr Old Church, north of Trollhättan in western Sweden. The organ, a small chamber organ with three stops, is signed on the windchest and dated 1795. Two other

18 Helenius-Öberg, "Svenskt instrumentmakeri," 36.

19 There is an unsigned organ clock (catalogue no. M2086) in the collections of Scenkonstmuseet, Stockholm, that bears some strong characteristics of Kleemeyer's organ clocks.

20 "2 September 1789. Uti ingifwen Skrift anhölt ... om Tillstånd att, jemte Lacktillverkningen, äfwen få drifwa Korkskärer." SSA, Hall- och manufakturätten, Privilegieböcker [sic!], E 3:4 (1757–1767), 254.

21 Riksarkivet (RA), Kommerskollegium kammarkontoret, Årsberättelser fabriker serie 1, Da1 (1777), 167.



Figure 3. The organ in Sundals-Ryr Old Church. Built by Pehr Strand, 1795.
Photo: Johan Norrback

older organs are attributed to Strand, but they are not preserved. The oldest was from 1789 in Tysslinge Church, just west of Örebro. Altogether, Strand built some thirty pipe organs.²²

After being granted privileges, you had to report your production volume and number of employees to the authorities yearly. We can follow Pehr Strand's tenure as an organ-clock builder through the archives from 1791 until 1824²³ when he retired, and his son Pehr Zacharias took over the pipe organ workshop. In 1791, Pehr Strand is listed under the heading "clockmaker." No production is reported and no employees. For the rest of his active period Strand is listed either as a clockmaker or an instrument builder without any apparent consistency. It is obvious that an organ clock is a hybrid between a clock and a music instrument, thus one could argue that both choices are correct. Strand is mostly listed as a clockmaker, and perhaps this is an indication that he learned his mechanical skills with a clockmaker.

When Pehr Strand retired in 1824, the production of organ clocks also came to an end. Other types of music automata had already entered the scene. Only two years later he passed away of "old age" according to the church records,²⁴ marking the end of an important handcraft tradition in Sweden that earned him the title "Orgelbyggeri Directeur."²⁵

Pinned Barrels

The Benedictine monk and organ builder François Bédos de Celles (1709–79) describes how to build a mechanical organ in the fourth and last volume of his well-known *L'art du facteur d'orgues*²⁶ published 1766–78.²⁷ This

22 Einar Erici and R. Axel Unnerbäck, *Orgelinventarium: Bevarade klassiska kyrkorglar i Sverige* (Stockholm: Proprius förlag, 1988), 495.

23 SSA, Hall- och manufakturrätten, Fabriksberättelser, B III:17–46 (1791–1824).

24 "Ålderdom," SSA, Kungsholms kyrkoarkiv, Död- och begravningsböcker, F I:4 (1826–1849), 1.

25 SSA, Justitiekollegium 1637–1856, Förmyndarkammaren 1667–1924, Rådhusrättens 1:a avdelning 1850–1924, Bouppteckningar, F 1 A: 449 (1827), 13.

26 François Bédos de Celles, *The Organ-Builder*, trans. Charles Ferguson (Raleigh: The Sunbury, 1977).

27 For an interesting discussion on the concept of *l'art*, please see Robin Blanton, "Johann Andreas Stein's 1781 Clavichord and the Construction of Art in Eighteenth-Cen-

is one of the most important historical sources on the subject. He carefully describes the tools as well as the process of preparing the music to be pinned.²⁸ On this subject, he relies completely on his colleague and the Augustinian Marie-Dominique-Joseph Engramelle (1727–1805) who called the method *Tonotechnie*.²⁹ According to Dom Bédos, Engramelle was involved in the publication of the passage in *L'art du facteur d'orgues* as well as the illustrations. It is interesting to note how carefully they proceeded with the preparation of the music example used to illustrate the method. After selecting the music, a Romance by the organist and harpsichordist Claude Balbastre (1724–99), they timed the composer himself playing his music – three times. The duration was 165 seconds, and that gave them the point of departure for the preparation of the music. After counting the bars, and dividing the circumference of the barrel according to the beat, they continued with the pinning of the barrels.³⁰ According to Dom Bédos all methods of pinning a barrel can be divided into two main groups: using a division-disc for cranked instruments such as the serinette; and using a scaled piece of paper wrapped around the barrel. The practice of using a division-disc is continued in the famous Bruder family in Schwartzwald, and described in Bruder's workshop book, written for his successors.³¹

In clocks by Strand, we find some barrels with a grid carved or cut on the wooden surface dividing the barrel into bars and smaller units, unlike the method described by Dom Bédos. The grid is used to place the pins and bridges. The lines along the axis of the barrel mark the division of bars and their subdivisions. Smaller units are placed freehand. The tracks of the notes usually run six laps on barrels in Strand's clocks, in a helicoidal

ture Augsburg" (PhD diss., University of Gothenburg, 2012), 107–10, <http://hdl.handle.net/2077/28876>.

28 Dom Bedos, *The Organ-Builder* (vol. 4, chap. 4), 325–44. The description is well known in the field of performance practice research and has been analyzed by several scholars. See for example Jan Jacob Haspels, "Automatic musical instruments: their mechanics and their music 1580–1820" (PhD diss., Utrecht University, 1987).

29 Dominique-Joseph Engramelle, *La Tonotechnie ou l'art de noter les cylindres*, 1775, facs. ed. (Paris: Hermann, 1993).

30 Dom Bedos, *The Organ-Builder*, 330.

31 For a thorough presentation of Ignaz Bruder and his work see Karl Bormann, *Orgel- und Spieluhrenbau: kommentierte Aufzeichnungen des Orgel- und Musikwerkmachers Ignaz Bruder (1829) und die Entwicklung der Walzenorgeln* (Zürich: Sanssouci-Verlag, 1968). For a facsimile of the workshop book see Ignaz Blasius Bruder and Hermann Brommer, *Handbuch der Orgelbaukunst* (Waldkirch: Waldkircher Orgelstiftung, 2006).



Figure 4. A pinned barrel with grid, and handwritten numbering. Photo: Johan Norrback.

pattern. This invention by Jacques Vaucanson presented in print in 1738, was a new paradigm in automatic music instruments. Shifting the barrel sidewise for every revolution extended the total playing time to several minutes. Pinning from a grid seems to be a long tradition in Germany, which can be traced back at least to the printed descriptions by Salomon de Caus³² (1576–1626) and Athanasius Kircher³³ (1602–80), and further to Augsburg and the early mechanical instruments by builders like Veit Langenbacher (1587–1631) and Samuel Bidermann (1540–1622).³⁴ Kircher describes in his *Musurgia Universalis* how to wrap a paper, with a grid drawn on it around the barrel as a guide for pinning the music.³⁵ Using a paper

32 Salomon de Caus, *Les raisons des forces mouvantes*, 1615, <https://doi.org/10.11588/diglit.1445>. There is also a German version from 1615, *Von gewaltsamen Bewegungen*, <https://doi.org/10.11588/diglit.16267>.

33 Athanasius Kircher, *Musurgia Universalis*, vol. 1 (1650), <https://doi.org/10.11588/diglit.27668> and vol. 2 (1650), <https://doi.org/10.11588/diglit.27669>. A German translation (2018) by Günter Scheibel is available at <https://www.hmt-leipzig.de/de/home/fachrichtungen/institut-fuer-musikwissenschaft/forschung/musurgia-universalis/volltextseite>.

34 See for example Albert Protz, *Mechanische Musikinstrumente* (Kassel, 1943).

35 “Diesen Gesang kann man entweder unmittelbar auf den Zylinder übertragen oder erst separat auf Papier abschreiben. Das ist zum einen sehr einfach, zum anderen hat man

wrapped around the barrel is a variant of the same basic principle, with its own problems. It is difficult to fit the paper perfectly around the barrel when applying glue. Examples of traces of what could be paper can be seen on a barrel with no visible grid. This barrel belongs to the organ clock of the Royal Swedish Academy of Letters, History, and Antiquities.

Some barrels in clocks by Strand that make use of the grid carved into the surface, also have a numbering system written on the surface marking the bars and beats on the grid, clearly showing the careful planning of the pinning process. These markings can be written both on wood or on a paper wrapped around the barrel. But many barrels have no visible grid on the surface. It would seem very difficult to place the pins in polyphonic music on a barrel revolving six turns in a helicoidal pattern without a clear reference system. At any rate, the differing styles of construction seem to indicate that there were different persons involved in producing pinned barrels in Stockholm at this time. An interesting Swedish source regarding pinning barrels is preserved in the archive of Tobias Lang (1730–1836) in Visby.³⁶ Tobias Lang, originally from Hungary, is best known for his cotton prints, but he was also very much involved in several other fields such as farming, chemistry, dyeing, mechanics, etc. Among his surviving personal papers there is a text and a drawing on how to pin a music barrel.³⁷ No references are made to any builder of organ clocks, but we know that Lang traveled both in Sweden and on the European continent, and was well informed about, and interested in, technical and mechanical inventions. Lang describes how to mark a paper with a grid, and to wrap it around a barrel. But he continues: “then [the paper] is tightly wrapped around the barrel and pricked with an engraving tool dipped in iron vitriol. This leaves a grey mark on the aspen barrel, so it is clear when all the markings are made. And when the paper is taken away, all the pins are placed with a hol-

auch die gesamte Komposition vor Augen, die man auf der glatten Fläche des Zylinders auftragen muss.

Danach gehe man wie folgt vor: Man bereite ein dünnes Blatt Papier vor von der Größe, dass es genau der konvexen Oberfläche des Zylinders entspricht. Das gelingt, wenn man es genau an den Zylinder anpasst, dessen Größe man zuvor genau abgemessen hat.“ Kircher, *Musurgia*, Buch IX (2018), 172–73.

36 I am grateful to Eva Helenius for guiding me to this source.

37 Visby landsarkiv (ViLA), Tobias Langs arkiv, Ämnesordnade handlingar, Fysikaliska, kemiska och färgtekniska rön, F 1:6 (1801–1834) and F 1:9 (1813–1834).



Figure 5. A pinned barrel belonging to the organ clock of the Royal Swedish Academy of Letters, History, and Antiquities, with traces of paper. Photo: Johan Norrback.

low tool so that they all have the same height.”³⁸ At the bottom of one of the pages containing the grid with pin markings, the title “Snus Wisan” is written, followed by the year 1819. The description of how to mark a barrel for pinning is therefore probably from the period between 1819 and 1834. This description about removing the paper seems to explain the barrels we find in Strand’s organ clocks without any visible grid. Lang is not claiming that this description is innovative in any aspect, as he did with other matters. It seems as if this is a description that he experienced as normal procedure.

In preparing music to be pinned on a barrel, some adaptations need to be made, mainly due to the compass of the organ and the capacity of the wind system. Since the wind system has a limited capacity, the arranger needs to be careful not to write musical textures that are too

38 “så lindas dett på Waltzen, lindas på tätt och stickas med En Jern Griffel, hvilken ud doppas hvargång uti en Uplösning av Jern Vitriol i Watten, hvarefter blir uti Waltzen som är af Asprträd En grå punkt, så at den kan synas när alla puncter äro tecknade, tagas paperet ifrån, och in=slås med En dertil gjord ihålig Stålstift, Messing, eller Stålstiftarne, så at de alla bly Lika Långa.” VILA, Tobias Langs arkiv, Ämmesordnade handlingar, Fysikaliska, kemiska och färgtekniska rön, F 1:6, n.p.

dense. These instrument-idiomatic parameters require knowledge of composition and arranging of music. In eighteenth-century Berlin this competence had developed into the concept of a *Walzensetzer* that indicated the specialization.³⁹ Thomas Reid (1746–1841) from Edinburgh describes the same profession: “We are not acquainted with the method adopted by those workmen in London who practice the pricking of music on clock barrels; but having had occasion to construct some musical clocks above thirty years ago, and having no opportunity of getting music pricked on the barrels by any professional [NB!] person, it become necessary to contrive some methods for this purpose.”⁴⁰ Here he notes that in Edinburgh he had to develop a method of his own, since he could not contract a professional barrel “pricker” that were still obviously available in London. Part of Reid’s solution is a stable holder of a tool to mark the barrel, before placing the pins.

Later in the nineteenth century pinned barrels were mass produced resulting in the development of more efficient methods of programming them. The so-called *Zeichenstuhl* was a working bench with a barrel holder, and a separate dividing disc as the reference system for marking the positions of the pins and bridges.⁴¹

The pinner, or perhaps pinners, of the barrels in Strand’s clocks are unknown to us. When Strand was granted privileges in 1791 he probably had to rely on a partner to prepare the music for his organ clocks, and this would be in line with the production practice in Sweden at the time.⁴² We have no information claiming Strand had the necessary musical skills for this task. However, both of Strand’s sons were musicians and organ builders, so they may later have been involved in the craft as they grew up, and as the workshop grew larger. Actually, Strand’s oldest son Jonas Samuel is listed as having “finished his apprenticeship in the same profession” in the taxation records of 1810, where Pehr Strand is listed as “Maker of Organ Clocks.”⁴³

39 See Heyde, *Musikinstrumentenbau*, 330.

40 Thomas Reid, *Treatise on Clock and Watch Making, Theoretical and Practical* (Edinburgh: John Fairbairn, 1826), <https://archive.org/download/treatiseonclock00reidgoog/treatiseonclock00reidgoog.pdf>.

41 See for example Herbert Jüttemann, *Mechanische Musikinstrumente: Einführung in Technik und Geschichte* (Frankfurt/M.: Bochinsky, 1987), 93–4.

42 Helenius-Öberg, *Svenskt klavikordbygge*, 59–68.

43 “utlärning av samma yrke...” and “Spel Ursfabriqeuern Pehr Strand” respectively. Överståhållarämbetet för uppbördsärenden, G 1 BA:27/5 (1810), 110.

The Music on the Barrels

As an example of the music an organ clock could provide, we will take a closer look at the fifteen barrels of the Strand clock at Årsta, a well-preserved seventeenth century castle in the Haninge municipality, south of Stockholm. The organ clock, still at the castle, is one of the few organ clocks with an established dating. The clock is signed “Petter Strand / STOCKHOLM” on the dial. On the leather covering the underside of the windchest of the clock we find a handwritten signature and a date: “Made in Stockholm / By Petter Strand / 1th May 1794. / No 11.”⁴⁴ The clock also bears the typical characteristics of an organ clock by Strand: on top of a base the main part is pylon shaped, crowned by the dial. Based on the proportions between the lower and middle parts one can usually determine where the mechanical organ is placed. In Årsta, the mechanical organ is placed behind the clockwork, since the base is too small to hold the organ. The clock cases are usually decorated with wood carving in the Gustavian style of the late eighteenth and early nineteenth centuries.

Årsta Castle was owned by the Fleming family when the organ clock was built. However, there is no organ clock in the state inventory after Colonel Fredrik Fleming af Liebelitz. The inventory was created in late January 1801, two months after he passed, 7 November 1800.⁴⁵ In 1805 Årsta was purchased from Fleming’s widow by Carl Fredrik Bremer (1770–1830). Bremer had moved to Stockholm from Åbo (Turku), Finland, and in addition to the family’s apartment in Stockholm they bought Årsta as their summer residence. Carl Fredrik Bremer passed away on July 22, 1830, and the inventory was made on October 22nd. In the inventory of Bremer, we find the organ clock: “1 Organ clock by Strand [NB!] with 15 barrels.”⁴⁶ It seems from this information that the clock was bought by Bremer, either already in Åbo, when they moved to Stockholm, or when they bought Årsta. On the leather where the clock is signed, we also find a note about a repair made in 1805: “Repaired 1805 / 28 March by P. St[rand].”⁴⁷ The year

44 “Förfärdigat i Stockholm / Af Petter Strand / Den 1. Majj 1794. / No 11.” The picture of the signature kindly provided by organ builder Mats Arvidsson, Stallarholmen.

45 RA, Svea Hovrätt, Adelns bouppteckningar, E IX b:161 (1801), inventory number 11.

46 “1 st Spelur av Strand med 15 walsar.” SSA, Sotholms häradsrätt, Bouppteckningar, F2:24 (1830–1831), 292.

47 “Reparerat 1805. / D 28 Martij af P. St[rand].” Photo from restoration carried out by organ builder Mats Arvidsson.



Figure 6. The organ clock at Årsta Castle. Photo: Johan Norrback.



Figure 7. Fourteen pinned barrels at Årsta Castle in their chest. The fifteenth barrel is mounted in the clock. Photo: Johan Norrback.

1805 strengthens the connection to the Bremer family since this is the year they acquired Årsta, and obviously the clock needed some maintenance after being placed at Årsta Castle.

The music on the fifteen barrels (see Table 1) mirrors the popular composers of the time. Joseph Haydn (1732–1809) is represented with four titles and Ignaz Joseph Pleyel (1757–1831) with three titles. Christoph Willibald Gluck (1714–87), Joseph Schuster (1748–1812), and Johann Baptist Wanhal (1739–1813) are all represented with one title each.

The remaining five titles are shared between composers that are Swedish or had a prominent position in Swedish musical life: two titles by Georg Joseph Vogler (1749–1814), organist and Music Director during two periods between 1786 and 1799 at the Royal Swedish Opera in Stockholm; one by Johan Wikmanson (1753–1800), organist and appreciated music pedagogue; one by Johan Zander (1752–1796), violinist; and finally, one by Olof Åhlström (1756–1835), organist, secretary of the Royal Swedish Academy of Music, and holder of the royal privileges for printing music.

The most important source for domestic music making in Sweden

Table 1: The Music on the Barrels at Årsta Castle

Title on Label	Composer	MT	Original Work
Andante Cantabili af Haydn	Joseph Haydn (1732–1809)	–	–
Andante Convariatione af Haydn	Joseph Haydn (1732–1809)	–	–
Roxolance [sic] af Haydn	Joseph Haydn (1732–1809)	Published 1786 in "Favorit-Piecer utur H:r Haydns Sinfonier Lämpade till Claver af Ol. Åhlström".	Symphony No. 63, (Hob. I/63), second movement.
Symphonie Allegro af Haydn	Joseph Haydn (1732–1809)	Two possible candidates in MT 1791.	Symphony No. 47, (Hob. I/47), or Symphony 62 (Hob. I/62).
Andante Conveariatione [sic] af Pleyel	Ignaz Joseph Pleyel (1757–1831)	MT 1791, 57–59.	From String Quartet in G major (B. 349).
Sonata 1 de Amorossa Rondo Allegretto af Pleyel	Ignaz Joseph Pleyel (1757–1831)	–	–
Sonata Vide Andante quasi af Pleyel Allegretto	Ignaz Joseph Pleyel (1757–1831)	–	–
L'Ouverture de L'opra Iphigenie Aulide af Gluck	Christoph Willibald Gluck (1714–87)	MT 1794, 97–104.	<i>Iphigénie en Aulide</i> , Wq. 40 (1774).

Title on Label	Composer	MT	Original Work
Overture Till Opran Gustaf Adolph Allegro Moderato af Abbe Vogler	Georg Joseph Vogler (1749–1814)	MT 1790, 45–55; and MT 1815 37–48.	<i>Gustav Adolf och Ebba Brahe</i> , (1788).
Polonese Contrio af abbe Vogler	Georg Joseph Vogler (1749–1814)	?MT 1793, 25–28.	–
Menuette Contrio af Wickmanson	Johan Wikmanson (1753–1800)	?MT 1790, 20; 40; 80.	–
Polonese Con trio af Zander	Johan Zander (1752–1796)	MT 1790, 75–76.	–
Rondo Alla Pällacka af Schiuster	Joseph Schuster (1748–1812)	–	–
Andante Convariatione Melod: af Åhlström Wariationer 4[:]a af Grenser	Olof Åhlström (1756–1835)	Melody in MT 1789, 46–47; with variations in MT 1798, 33–37.	–
Rondo Allegro af Vanhald	Johann Baptist Wanhal (1739–1813)	MT 1789, 17–20.	Rondo from Capricio No 2, Op. 36.

Columns contain the original spelling of the title on the label; composer; original work if identified; corresponding entry in Musikaliskt Tidsfördrif (MT). A “?” before the MT-entry marks a possible candidate.

around 1800 is *Musikaliskt Tidsfördrif* (MT) published by Olof Åhlström (1756–1835) between 1789 and 1834. Åhlström held exclusive royal privileges for printing music. MT was issued as booklets, and these booklets could then be bound into a book. In 1789 there were fourteen numbered booklets with a total of twenty-nine titles. The music is mainly popular music arranged for keyboard, but there are also some newly composed pieces. The repertoire is typical for the different musical stages in Stockholm around 1800.⁴⁸ Comparing the music on the barrels to the content of MT reveals some interesting details. In a compilation of all readable labels of music barrels within the present project, we find that the most popular title is the overture to Christoph Willibald Gluck's opera *Iphigénie en Aulide* (1774). This opera was very popular in Stockholm, and was played fifty-seven times between 1778 and 1824.⁴⁹ This title – # 1 on the “Billboard Chart” of Strand Organ Clocks – is found with nine of the sixteen organ clocks in this study, including, as expected, in Årsta.⁵⁰

All labels on the barrels at Årsta are readable, thus all composers can be identified. A comparison between the music on the barrels and the music in MT, shows some interesting correlations. The titles that seem to have a correlating piece in MT are all printed in 1794 or before: altogether six to eight titles, or about half of the total. The organ clock in Årsta was signed and dated May 1, 1794. Nos. 25 and 26 of the 1794 volume contain the overture to Gluck's *Iphigénie en Aulide*. It happens that the first notice in the newspapers regarding the release of Nos. 25–27 is December 5, 1794 in *Stockholms Posten*,⁵¹ well after the clock was signed, which means the printed version appearing in MT could not have been the source for the barrel version.

As can be seen in table 1, there is a striking overlap in repertory between the Årsta barrels and MT. But, if we look at the “Andante / Convariatione Melod: af Åhlström / Variationer 4[:]a / af Grenser” we find an interesting exception. The melody *Ungdom du hvars hjerta hyser* appears already in MT 1789, but the melody with the variations by Johan Fredrik

48 See for example Fredrik August Dahlgren, *Anteckningar om Stockholms Theatrar* (Stockholm: P. A. Nordstedts & Söner, 1866) and Patrik Vretblad, *Konsertlivet i Stockholm under 1700-talet* (Stockholm: P. A. Nordstedts & Söners förlag, 1918).

49 Dahlgren, *Anteckningar*, 251.

50 Status in June 2019.

51 *Stockholms Posten* (December 5, 1794), 4.

Grener (1758–1795)⁵² was not published until MT 1798. This means that MT could not be the only source for the music on the barrels, unless Åhlström himself was the personal connection between Strand and the music on the barrels. In any circumstance, there is some interesting connection between the repertoire on the organ clock and Åhlström's MT. The music scene in Stockholm was a small community, so personal friendships must have formed a part of how the music was prepared and chosen.

The music to be pinned on a barrel must be adapted to the small organ in the clock. Primarily it is the compass that affects the musical texture, but there is also the aspect of the capacity of the wind system in the clock. An example is the opera *La Caravane du Caire* by André Ernest Modeste Grétry (1741–1813), first performed in 1783 at the castle in *Fontainebleau*. Grétry was popular in Stockholm, and when Gustav Adolf IV (1778–1837) formally became King of Sweden, this opera was part of the celebrations. A beautiful manuscript of the translated opera, now titled *Caravanen*, is preserved in the archives of the opera in Stockholm. The full score bears a handwritten year "1793." This is not the year the opera was performed. It is either the year of the translation, or a mistake. The celebrations took place in 1796, which is also the year when the libretto was printed.⁵³

The overture, adapted for keyboard, was published in MT (1819, 61–66). When comparing the original orchestra score with the printed version in MT, we see that the initial chords of the full orchestra were adapted to the keyboard. An instrument-idiomatic approach renders arpeggiated full chords in both hands in the version in MT. This is probably a good rendering of the effect of a full orchestra, with cymbals. When playing the same music on the clock belonging to the Royal Swedish Academy of Letters, History, and Antiquities we see a similar idiomatic approach. The arranger for this barrel chose a running scale as the idiomatic representation of the full chords in the opening of the Overture (music example 1). Due to the limited compass, the music is transposed to F major.

52 Johan Fredrik Grener was born in Dresden but worked as oboist and flute player in the Royal Court Orchestra, Stockholm.

53 André Grétry, *Caravanen til Cairo: Opera Ballet i Tre Acter*, trans. Johan Magnus Lanerstierna, 1793 [1796].

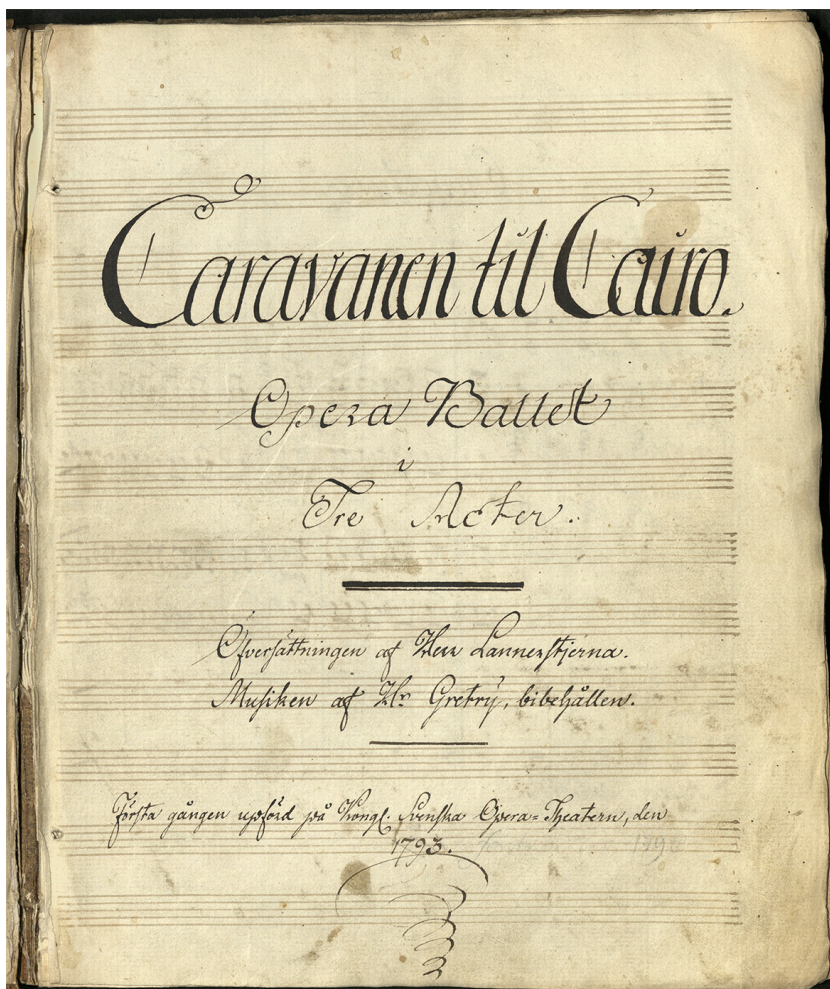


Figure 8. The title page of *Caravanen*. Photo: Musik- och teaterbiblioteket, Stockholm.



Figure 9. The first bars of the Overture to Caravanen. Photo by Musik- och teaterbiblioteket, Statens musikverk.



Figure 10. Caravanen adapted for keyboard in Musikaliskt Tidsfördrif 1819. Photo by Johan Norrback.

Music example 1. A transcription of the first bars of *Caravanen* from the organ clock at The Royal Swedish Academy of Letters, History, and Antiquities.



Regarding the music on the barrels by Haydn, we see that the first two generic titles, “Andante Cantabli” and “Andante Convariazione,” make identifying the music more complicated. In the case with the “Roxolance [sic],” the identification is easy, and in the case of the fourth title, we have two possible candidates printed in MT. Two of the titles by Pleyel are also difficult to identify, but the “Andante” with variations is, again, printed in MT. It is no surprise that music by composers with a strong connection to the musical life in Stockholm towards the end of the eighteenth century – Vogler, Wikmanson, Zander and Åhlström himself – are all published in MT.

Joseph Schuster and Johann Baptist Wanhal are lesser-known composers in our musical context. In all of MT, Schuster has no entries, and Wanhal (Vanhal) only two. To try to get an impression if and where these composers were performed, other Swedish collections of music serve as a good starting point. When looking for titles by these continental composers in the catalogs of the Musik- och teaterbiblioteket (formerly the library of the Royal Swedish Academy of Music), such as the Alströmer collection⁵⁴ or the Östanå collection,⁵⁵ we find only a few occurrences. What this might indicate is difficult to guess, but these composers could be examples of when the personal taste of the customers came into consideration regarding the choice of music on the barrels for a specific clock. Reusing already prepared arrangements was probably a good solution for Strand as the builder, but in some instances the customers probably had to have a say about what music they wanted on their organ clock.

The customers also had things to say about their own organ clock

54 See the on-line catalogue of the Musik- och teaterbiblioteket (<https://musikverket.se/musikochteaterbiblioteket>).

55 Now in the Herbert Blomstedt Collection at the Gothenburg University Library.

repertoire as can be seen from the secondary notes we find on the labels, with differing handwriting, both in ink and pencil. There are comments on the quality of music and the key of the music, which clearly establishes a connection between the music and the listener. We also find comments on how to operate the clock, for example that you have to adjust the height of the keyframe to the pins, which is done by turning a thumbscrew.

Other written sources that can provide some information about the use of the organ clocks can be found in estate inventories. Here you often find organ clocks listed as furniture, as in the case of Årsta Castle, where the organ clock is listed under “Furniture and Household Utensils.”⁵⁶ In other cases, we find the inventories listed according to their placement in the house. In the inventories of Christina (née Wittfoth) and Samuel af Ugglas (1811 and 1812)⁵⁷ we find the organ clock in the dining room. And, at Sölje Manor, near Karlstad in Värmland, we find the organ clock, not in the main drawing room or in the dining room, but in a smaller room together with a piano, a guitar, and a cabinet for music.⁵⁸ This seems to have been at the musical heart of the Nordström family at Sölje.

Among the types of furniture in which one can incorporate a mechanical instrument, an interesting example is found in the instrument collection of Scenkonstmuseet, Stockholm. Here we find two spinning wheels with automatic organs, showing a use of the automatic instrument as musical accompaniment to chores.⁵⁹

A more unexpected use is described in some advertisements in newspapers. Johann Christian Knoop traveled widely with his clock, including: Falun (1789), Karlskrona (1775), and Gothenburg (1774). In Gothenburg on July 16, 1774, he invited people to come and listen to his clock. Tickets were sold for the occasion at the inn, but he also offered to bring the clock to private homes for display. In this case we also have an interesting report about how the visit was received. Ten days later, on July 26, there is a notice

56 Listed under the heading “Meubler och Husgeråd”. Sotholms häradsrätt, Bouppteckningar, F2:24 (1830–1831), 292.

57 Svea hovrätt, Adliga bouppteckningar, E IX b: 188 (1811) and Svea hovrätt, Adels bouppteckningar E IX b: 190 (1812).

58 J. N. Nordström’s inventory book, 1845. Värmlandsarkiv, Familjen Nordström från Sölje 1764–1929.

59 Scenkonstmuseet, Stockholm, catalogue no. M390 and N67882. Both are attributed to Pehr Strand.

in the newspaper. It seems as if Knoop was disappointed by the reception, perhaps he didn't sell many tickets. It also seems that he complained openly about this, since there is a response in the newspaper:

It is almost incomprehensible, I heard Mr. Knoop say, that a work that his Majesty himself found worth his attention, and which both in Stockholm and other cities of the kingdom by high and low have been admired, cannot win the attention of the Gothenburgers; but be assured, Mr Knoop! That your clock, however splendid, had the considerable fault in Gothenburg, to be Swedish and built by a Swede. You should not have advertised that in your invitations. I guess, that, if you brought a great work by a Frenchman, German, Italian, or Englishman, you would have made a better livelihood of it here. I blushed to hear, that one of the smallest cities in the neighborhood showed more reason.

[Signed] Friend of Swedish Handicraft.⁶⁰

* * *

Even if the titles on the barrels do not bring any fundamentally new information about the repertoire popular in Sweden around 1800, the organ clock and other automata give us a unique glimpse into the musical life of the upper class. The use of organ clocks – both for everyday and festive occasions – is very similar to how we use music today. We listen to music actively, through speakers in a living room or in a study. We maybe have a radio or Bluetooth speaker connected to our phone in the kitchen, or we might play soft music as a background for a candlelight dinner. Even if the technology has changed immensely, the use and function of music seems to be rather similar, despite the two hundred years that separate us. We

60 "Det är nästan obegripligt, hörde jag Hr Knoop säga, at et arbete som H:s Maj:t sjelf funnet wärdt sin nådige attention, och som både i Stockholm och andre Rikets Städer af högre och lägre blifwet beundrat, ej kan winna Götheborgares upmärksamhet; Men wet, Hr Knoop! At Edert Ur, ehuru förträffeligt, hade det betydliga felet i Götheborg, at det war Swenskt och förfärdigat af Swensk man. I skullen intet hafwa satt sådant ut i edra intimationer. Jag gifbar, at I, som Fransos, Tysk, Italianare eller Ängelsman, stor sak hwad konst I medbragt, funnet bättre utkomst härstädes. Jag blygdes höra, at en av de minsta Städerne i granskpet wisat mera raisonabilité. [signatur] Swensk Slögde-Wän." *Götheborghs Allehanda* (July 26, 1774), 4.

listen to music for our recreation, but also to accompany chores that might feel boring. Even the Billboard List seems to be a shared concept.

However, unanswered questions remain. Where Strand learned the necessary skills is still a mystery, but perhaps further (traditional) archival research can help us answer the question. Personally, I am very curious about the as yet anonymous pinner of barrels in Pehr Strand's workshop at Kungsholmen in Stockholm. It is much like trying to identify the unknown hand one observes on a manuscript in an archive.⁶¹

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