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Sonderdruck für Marieke Lefeber
Problems of identifying the musical sounds of eighteenth-century Dutch bell clocks

The recordings that will be described here are probably much older than the recordings that most papers in this book deal with. This paper is about recordings that were already made in the eighteenth century; it deals with bell-playing clocks, domestic clocks that, apart from showing the time, played a melody on a series of tuned bells every hour, half an hour, or even quarter of an hour. First, a little history.

Bell-playing clocks probably derived from the tower carillons that sounded in the Low Countries from the fourteenth century.1 A bit later bell-playing clocks were also made for domestic use. However, in this period these clocks were still unique pieces for, say, kings and emperors.2 From the end of the seventeenth century, bell-playing clocks became more and more popular and this trend continued through the eighteenth century.3 This popularity is relative, as they were only accessible to a small elite of rich people, mostly regents; these clock possessors will be described in more detail below. Bell-playing mechanisms were hidden in luxury longcase and table clocks. Quite a few of these eighteenth-century bell-playing clocks have survived, their musical programs included. Therefore we know a lot about the melodies that were heard in the houses of the wealthy eighteenth-century Dutchmen. They are a rich source for research into the eighteenth-century musical repertoire and the musical taste of the well-to-do citizens of the time.

This paper began by comparing the sounding material from these clocks to recordings. In a strict sense this comparison is false; it is not the same performance that is replayed over and over again; in contrast, a new performance is created each time; in the clock there is a musical instrument on which specific melodies are repeatedly played. The clockwork sets a musical train into motion at given times. Then a musical cylinder starts rotating. Mounted on this musical cylinder are many small pins, which together form the musical program. These pins “play” the keys, which are linked to the hammers that strike the bells. It goes without saying that most eighteenth-century clocks do not perform today exactly in the same way as they did when they were just built – apart from the fact that we cannot know precisely how the clocks did sound in the eighteenth century. The wear and tear of time have resulted in the clocks playing differently – quicker, slower, sloppier, and so on – than they did at that time.

2 Haspels (see n. 1), 27.
3 For instance Jaap Zeeman, *De Nederlandse staande klok* (Assen 1977), IX.
One of my main questions is: What is this eighteenth-century bell-playing clock repertoire that was listened to by these affluent Dutch citizens? In order to answer this question, it is necessary to collect as many data as possible. One way to analyze the repertoire of bell-playing clocks is to physically visit the clocks and transcribe the musical cylinders manually. To do this with a great number of clocks would take far too much time. I was fortunate to have a great source at my disposal: the collection of recordings of musical clocks of Melgert Spaander. Spaander is a Dutch clock restorer, who specializes in the restoration of musical clocks. Whenever Spaander restores a musical clock, he also makes a recording of the musical performance of the clock. Over the past decades he has built an extensive collection, which contains about 1,500 recordings of bell-playing clock tunes, and made this collection available for the present research. Added to this collection were about fifty tunes from the clocks of Museum Speelklok (Utrecht). These two collections of recordings are the starting point for identifying the clock melodies.

The quest for identification started in the Dutch Song Database. There are several ways to search for the clock melodies in the Dutch Song Database. On many clocks the titles of the different tunes are marked on a dial or a plate. Melodies in the database with the same or comparable titles could be looked up and compared to the recordings. This method was quite fruitful, but as there were also many clocks with no melody titles indicated, it didn’t work for the whole corpus. In those cases the only available data were the sound recordings.

Fortunately, it is possible to search with audio files in the Dutch Song Database. In the WITCHCRAFT project (What Is Topical in Cultural Heritage: Content-based Retrieval among Folksong Tunes), Peter van Kranenburg (Meertens Institute) developed a search algorithm for melodies from the oral tradition. Bell sounds are not directly usable in this algorithm, because of their acoustic properties. Therefore, Matija Marolt (University of Ljubljana) made a transcription algorithm. This method has been published in the Tijdschrift van de Koninklijke Vereniging voor Nederlandse Muziekgeschiedenis.

To process a large number of melodies, both automatic pitch recognition and a similarity measure of the melodies are necessary. Both problems have been re-

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4 Museum Speelklok collects, preserves, exhibits, and restores an extensive and internationally renowned array of self-playing mechanical musical instruments. The museum houses one of the world’s foremost collections of automatic musical instruments and one of its major roles lies in spreading its knowledge of the collection to a wider audience <www.museumspeelklok.nl> (5.5.2012).

5 <www.liederenbank.nl> (5.5.2012); The Dutch Song Database (Nederlandse Liederenbank in Dutch) contains more than 150,000 songs in the Dutch and Flemish languages, from the Middle Ages through the twentieth century. For every song the source where the text and/or the melody can be found is indicated. In some cases one can click directly on the complete text, or on the music, or on a recording. The Dutch Song Database was compiled at the Meertens Institute in Amsterdam and is maintained and developed further by its Center for Documentation and Research of Dutch Songs, in cooperation with several partners.
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searched within the field of Music Information Retrieval before. Until now no algorithm exists that is able to perform pitch and onset recognition in bell melodies. We developed an algorithm to transcribe a musical clock recording into a sequence of pitch-onset pairs. We analyzed a set of manually annotated bell sounds and developed a model for estimating the locations of the inharmonic bell partials based on positions of the fundamental and the fourth harmonic.

Once the melodies were available as sequences of pitch-onset pairs, we computed the similarities between melodies using a variant of the Needleman-Wunsch sequence alignment algorithm. This algorithm finds an optimal alignment of two sequences of symbols according to a similarity measure for the symbols. In our case, we used the pitch-distance as a similarity measure for symbols. A score is computed for the alignment, which we interpreted as a similarity measure for melodies. This method enabled us to identify a large number of melodies and increased our insight into the musical clock repertoire.6

To illustrate this, I would like to present the example of a clock with usable and unusable titles: the “De Vries-Buyskes clock,” named after its first owners. This is one of the few clocks for which we know something of its provenance. On a plate mounted in the clock the following text is engraved:

Nicolaas Hendrik de Vries
14 Oct. 1764
Johanna Margaretha Buyskes

It is known that this couple married in Enkhuizen on the cited date.7 There is another plate in the clock, the melody plate. On this plate the following twelve melody titles are mentioned:

1a. Menuet
1b. Warom Verlaat
2a. Pistolet
2b. Aria
3a. Allegro
3b. Allemanda
4a. Gavotte
4b. Aria
5a. Pollonoise
5b. Bachus Feest
6a. Menuet
6b. Haagse ofsier

Not all titles refer to specific melodies; most of them are genre indications like “minuet” or “gavotte.” There are four useful titles on the plate, namely Warom verlaat, Pistolet, Bachus Feest, and Haagse Ofsier. The standard titles for these melodies, according to the Dutch Song Database, are Pourquoi vous plaignez vous, Pistolet, Feest van Bacchus, and Het Haagse officertje. Although the Allemanda has no “real” title, I recognized it as being the Allemande ik prees wel eer. So, five out of twelve melodies of the De Vries-Buyskes clock have been identified by this method.

For the remaining melodies, the transcription algorithm and melody search engine were used. The following table shows the beginning of a result list of the query on the recording of the Aria, no. 4b. In the first column we see the rank; the first melody is, according to the algorithm, most similar to ours. In the second column, the standard name of the melody is mentioned. In the third column one can find the source of the melody. This can be a paper source (a manuscript or a printed work) or another musical clock. The “distance” in the fourth column represents the distance to the query; the smaller this number, the more similar it is to our clock tune. In the incipit-column, a transcription of the first bars of the melody is given. There are only transcriptions available of the melodies from paper sources (table 1).

According to the algorithm our query is most similar to the standard melody Schoon dat ik onder het groen. Comparing the recording to a full transcription of this melody indeed confirmed that it is one and the same melody. In the same way, the first minuet on the De Vries-Buyskes clock was identified as Que vous trompettez. This method was applied on every clock in the corpus. This led to more than 150 new identifications, in addition to the 580 that were already made via the melody titles.

After having described the method of identifying clock melodies I would like to recall the question I started this paper with: what is the eighteenth-century bell-playing clock repertoire that was listened to by affluent Dutch citizens? Here again, the De Vries-Buyskes clock is used as a starting point. On this clock are several dance tunes: two minuets, an allemande, a gavotte, and a polonaise. In general we can say that about half of the total repertoire consists of dance melodies. Minuets and marches are most popular.

It is striking that three tunes on our clock have French standard names: Pourquoi vous plaignez, Pistolet, and Que vous trompettez. It is a broader observation that quite a lot of the eighteenth-century clock melodies are French in origin. Especially French opera airs were very popular. But we also find popular Dutch songs on eighteenth-century bell-playing clocks. This is also the case with the De Vries-Buyskes clock: the standard titles Feest van Bacchus, Het Haagse officertjes, and Allemande ik prees wel eer are Dutch. Moreover, the French Pourquoi vous plaignez vous is indicated as Waarom verlaat on this clock. Apparently this song was also known in Dutch. And indeed, in the Dutch Song Database several exam-
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Table 1:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Standard name of the melody</th>
<th>Source</th>
<th>Distance</th>
<th>Incipit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schoon dat ik onder het groen</td>
<td>“Zangwijzen van Oud-Nederlandse Volksliederen”, Handschrift Maatschappij tot bevordering der Toonkunst, ca. 1730</td>
<td>0,583784</td>
<td><img src="image1" alt="Incipit" /></td>
</tr>
<tr>
<td>2</td>
<td>Schoon dat ik onder het groen</td>
<td>Handschrift voor 1 instrument [fluit of viool]</td>
<td>0,604054</td>
<td><img src="image2" alt="Incipit" /></td>
</tr>
<tr>
<td>3</td>
<td>Schoon dat ik onder het groen</td>
<td>“Zangwijzen van Oud-Nederlandse Volksliederen”, Handschrift Maatschappij tot bevordering der Toonkunst, ca. 1730</td>
<td>0,647407</td>
<td><img src="image3" alt="Incipit" /></td>
</tr>
<tr>
<td>4</td>
<td>Schoon dat ik onder het groen</td>
<td>clock 83eyg</td>
<td>0,651748</td>
<td><img src="image4" alt="Incipit" /></td>
</tr>
<tr>
<td>5</td>
<td>Schoon dat ik onder het groen</td>
<td>clock 200313</td>
<td>0,68</td>
<td><img src="image5" alt="Incipit" /></td>
</tr>
<tr>
<td>6</td>
<td>Schoon dat ik onder het groen</td>
<td>clock 35wied</td>
<td>0,704</td>
<td><img src="image6" alt="Incipit" /></td>
</tr>
<tr>
<td>7</td>
<td>Schoon dat ik onder het groen</td>
<td>clock 81ong</td>
<td>0,752542</td>
<td><img src="image7" alt="Incipit" /></td>
</tr>
<tr>
<td>8</td>
<td>Boerenballet</td>
<td>clock 118kroes</td>
<td>0,754839</td>
<td><img src="image8" alt="Incipit" /></td>
</tr>
<tr>
<td>9</td>
<td>Unclassified</td>
<td>clock 67dub1767</td>
<td>0,760811</td>
<td><img src="image9" alt="Incipit" /></td>
</tr>
<tr>
<td>10</td>
<td>Boerenballet</td>
<td>clock 154gip</td>
<td>0,773469</td>
<td><img src="image10" alt="Incipit" /></td>
</tr>
<tr>
<td>11</td>
<td>Boerenballet</td>
<td>clock 181viet</td>
<td>0,776744</td>
<td><img src="image11" alt="Incipit" /></td>
</tr>
<tr>
<td>12</td>
<td>Boerenballet</td>
<td>clock 47dijk</td>
<td>0,779245</td>
<td><img src="image12" alt="Incipit" /></td>
</tr>
<tr>
<td>13</td>
<td>Wel wat zeg je van mijn kippen</td>
<td>clock 158buys</td>
<td>0,783908</td>
<td><img src="image13" alt="Incipit" /></td>
</tr>
</tbody>
</table>
amples of this song with Dutch lyrics can be found. Apart from French and Dutch songs, English tunes also occur on bell-playing clocks.

If we take a look at the contents of the songs on clocks, it is striking that the lyrics are most of the times not as distinguished as the clock possessors were. Feest van Bacchus (Bacchus’ party) for instance, deals with the gaiety caused by drinking a good glass of wine. Het Haagse officierje (the officer from The Hague) is a so-called “pluggedans,” a dance for “pluggen,” which are in fact eighteenth-century rakes. Apart from “pluggen,” “boeren” (peasants) were also a popular theme of the songs. On many clocks, there are songs such as Boerenballet (Peasant’s ballet), De boer op klompen (The peasant on wooden shoes) or Altijd zijn de boeren dronken (The peasants are always drunk). In general we can say that these themes refer to a relatively simple way of life with frolicsome aspects.

The origins of the repertoire can be found in several different places. It was performed in the theatres, but also at fairs and in so-called “speelhuizen” (playing houses). These “speelhuizen” were actually pubs where people drank, danced, and were accompanied by prostitutes. Here, music was performed by musical professionals. For these “musical craftsmen,” this represented one of the many ways they made money.

The above-mentioned “pluggen,” for instance, frequented these places. Thus, a large part of the repertoire we are dealing with refers to the lower social strata. It was thus long assumed that only people from the lower classes used this repertoire. D. J. Balfoort, for instance, at the time curator at the music department of the Haags Gemeentemuseum, argued:

“In de zeer voorname herbergen, deftige hotels, werd de muziek geheel en al geweerd, maar in de minder voorname vonden de speellieden een gretig gehoor. … Het spreekt vanzelf dat de muziek die in deze omgeving gemaakt werd, op zeer laag peil moet hebben gestaan.”

The idea was that a member of the rich elite could never enjoy such a repertoire. But, as I stated earlier, bell-playing clocks were luxury objects, possessed by rich citizens. The De Vries-Buyskes family serves as a good example for this. We know that Nicolaas Hendrik de Vries had some quite respectable jobs; he was, for instance, “commissaris der kleine regtbank” (commissioner of the small court), “schepen” (deputy mayor), “schutter-kapitein vendel A” (marksman-captain banner A) and “raad” (counselor). In 1795 he took part in a voluntary loan

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8 Jos Koning, De nieuwe Hollandsche schouwburg 1751-1771: het einde van een tijdperk in de Amsterdamse muziek (Nijmegen 2009), p. 32.
9 Koning (see n. 8), 13, 14.
10 Dirk Jacobus Balfoort, Het muziekleven in Nederland in de 17de en 18de eeuw (Amsterdam 1938), 51, 52 (In the most important inns, posh hotels, the music was entirely excluded, but in the less prominent, musicians found an eager audience … It goes without saying that the music that was made in this environment must have been at a very low level.)
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for £10,000. The family lived in an extraordinarily big house on the Breedstraat 51 in Enkhuizen. Nicolaas Hendrik de Vries bequeathed a substantial capital and an art collection. We can conclude that the De Vries-Buyskes family was wealthy. Moreover they belonged to the upper class of statesmen.

But this is, of course, not the only family who owned a bell-playing clock. In the Amsterdamsche Courant of 20 February 1757 we find the following announcement:

“Op Maendag den 7 Maer en volgende dagen, zal men ten sterfhuyze van den Overleedene op de Turfmarkt binnen de stad Gouda verkopen, een deftige Inboel, bestaende in (...) een fraey staend Horlogie speelende differente airtjes (...), alles nagelaten by den Heer en Mr. Govert Suys, in zyn leven Raed en Oud Burgermeester der stad Gouda.“

In this advertisement the sale of the belongings of the deceased Govert Suijs is announced; part of these belongings is a musical clock. The estate inventory of this Govert Suijs provides us with more information about this clock:

“In de Kleijne Goud Leer Caamer
1 staande Orologie speelende differente Airties gemaakt door Steeven Hoogendijk tot Rotterdam.”

Apparently the clock was made by Steven Hoogendijk (1698–1788), who was a very skilled clockmaker, and was placed in the “goudleerkamer” (golden leather room). During his lifetime Govert Suijs had many governor functions in the city of Gouda. Several times he possessed the post of deputy mayor or even mayor. When his mother died in 1751, he inherited a great sum of money. In 1752 Govert Suijs bought a great house at the Turfmarkt in Gouda. It seems probable that he also bought his bell-playing clock in this period or that the clock was in the inheritance of his mother.

The possession of a “goudleerkamer” – a room with a wall covering of golden leather – was only achievable for the rich. Govert Suijs even had even two “goudleerkamers,” a small one and a great one. His bell-playing clock is the first object mentioned on the inventory list of the small “goudleerkamer.” Just as with the De Vries-Buyskes family, Govert Suijs was a rich governor during the last part of his life.

1 P. C. Molhuysen, P. J. Blok, Nieuw Nederlandsch Biografisch Woordenboek (Leiden 1911–37), 1362.
12 “On Monday March 7 and the following days, at the house of the deceased at the Turfmarkt within the city of Gouda, a fine inventory will be sold, consisting of ... a fine longcase clock playing different airs ... all bequeathed by Mr. Govert Suys, in life Councilor and former Mayor in the city of Gouda.”

“In the small gilt leather room / 1 longcase clock playing different airs, made by Steeven Hoogendijk from Rotterdam.” Gouda, Groene Hart Archieven. AWG 1201, Boedelbeschrijving Govert Suijs, 9 apr. 1756.
There are many more examples that show that luxury musical bell-playing clocks were possessed by a rich elite of governors. During the Second Stadholderless Period (1702–47) and even afterwards, the Dutch cities were reigned by governors. These governors presented themselves more and more as an aristocratic elite. They created a luxury lifestyle in order to acquire a place in society. This lifestyle was expressed through various things: manorial estates, personnel, coaches, music lessons, art collections and so on. Expensive bell-playing clocks would have fit in this picture.

We have seen that the melodies that were performed by bell-playing clocks are quite simple. Moreover, they derived from a realm of musical craftsmen performing in playing houses and unruly theatres. We have also seen that the possessors of the clocks were rich and affluent citizens, who often belonged to the upper classes. Why would these upper-class people listen to lower-class music?

It could be that the elite did not feel the need to distinguish themselves at all as far as their musical taste was concerned, because the concepts of “folk music” and “elite music” did not exist in the eighteenth century. Matthew Gelbart, for instance, suggested that the idea of high and low culture in music is a nineteenth-century invention, which is falsely applied to earlier music. He argued that in the eighteenth century there were no conceptions of “low” folk music and “high” art music. In contrast, music was classified by its function. Gelbart follows earlier studies in which the idea of a shared culture was introduced and applies this to eighteenth-century music. There was a shared musical repertoire in a certain society, which was used in different ways by different layers of this society. Gelbart argued that “the elite culture that existed at the time tended to build on and supplement this universal material rather than displace it, making the shared layer a truly communal ‘popular’ culture in a sense of the word that disappeared later.” The music is the same but its use varies from “low” to “high,” from a musical craftsman in an unruly playing house to a luxury bell-playing clock in a richly decorated room in the house of an affluent mayor.

The idea that the elite clock possessors were probably not ashamed of this “lower” musical repertoire does not explain exactly why they chose to listen to this repertoire. The elite must have been attracted by the frivolous atmosphere that surrounded these melodies. Jos Koning, for instance, argued that the connection with farmers and “pluggen,” the simple rural life, the frivolity, and the bottom of society made the music attractive for the new user groups. The eighteenth-century historian Le Francq van Berkhey felt that farmers were the real Dutch, genuine

\[13 \text{ Jacob Johannes de Jong, } \text{Met goed fatsoen: de elite in een Hollandse stad, Gouda 1700-1780 (Amsterdam 1985), chapter 5.} \]

\[14 \text{ Matthew Gelbart, } \text{The Invention of “Folk Music” and “Art Music”: Emerging Categories from Ossian to Wagner (Cambridge 2007), 15–20.} \]

\[15 \text{ For instance Peter Burke, } \text{Popular Culture in Early Modern Europe (London 1978).} \]

\[16 \text{ Gelbart (see n. 14), 17.} \]

\[17 \text{ Koning, see note 8.} \]
Batavians, who lived uncorrupted and happily in the rural countryside. This was in contrast to townspeople, who were a mixture of different nations.\textsuperscript{18} So by hearing a musical repertoire that referred to a simple world of authentic Batavians, the listeners found a way to flee to that world, which represented a welcome distraction from the daily concerns.

\textsuperscript{18} Joannes Le Francq van Berkhey, \textit{Natuurlyke historie van Holland III}, Amsterdam 1769–1811, p. 1025.