

## **Blankenburg: Equal or unequal temperament during J.S. Bach's life.**

Quirinus (Gerbrandzoon) van Blankenburg (ca.1654 – 1739), a Dutch contemporary of J.S. Bach, was one of the opponents to the practice of tuning instruments using equal temperament.

Blankenburg was born in Gouda and received his first music lessons from his father. Initially he was inspector of organs and bells and from 1687 was named organist at the de Waalse church in Den Haag and then from 1702 at the Nieuwe Kerk, Den Haag, in the Netherlands.

In the first part of our article: [18th Century Quotes on J.S. Bach's Temperament](#)<sup>1</sup> we gave a large number of period-contemporary quotations and a comprehensive overview of the temperaments that were well known and in use before and during the lifetime of J.S. Bach. The most common temperaments were the meantone, the almost equal temperament and equal temperament. For those organists that did not need to modulate through all keys, nor wanted to convert their instruments to allow for equal temperament, Werckmeister<sup>2</sup> and Neidhardt<sup>3</sup> published compromise temperaments.

A number of modern-day, 20<sup>th</sup>-century musicians who perform on historical or period instruments have assumed that the equal temperament was an invention of the 19th century. But this theory proved unsubstantiated after musicologists went back in time to find the origins of the equal temperament. The quotations in our article show that equal temperament was well known during Bach's lifetime and that it was used, but that some musicians at the time of Bach disagreed, or had different opinions, about the choice of temperaments.

According to a number of writers in the Baroque period,<sup>4</sup> equal temperament was tuned by ear<sup>5</sup> as described by Aristoxenus in the classical antiquity. During the 16<sup>th</sup> century both meantone and equal temperament were described and used. Vincenzo Galilei (c. 1520 – 1591) explained the logic of equal semitones on lutes and how the use of frets on lutes and stringed instruments resulted in these instruments being able to play in equal temperament. Vincenzio (1511 – 1575 or 1576) referred to the problem of using meantone for keyboard instruments which played together with lutes in equal temperament caused problems. And Giovanni Lanfranco (around 1490-1545) gave one of the earliest examples of harpsichords tuned (almost) equal tempered.

Blankenburg participated in the discussions on tunings systems during Bach's life. In his *Elementa musica*, published in 1739, Blankenburg explores the music theoretical principles and in the section: *Temperaments and Tuning Methods* (Chapter 23) he gave information on how to tune organs and harpsichords. He starts with (quote): ' *There is a secret in the order of the notes and that no one on Earth will be able to solve this, since with pure fifths, it is impossible to complete a perfect circle of fifths. But, if one had to double the number of keys, it would be possible to replace the conflicting sounds* '. By this he implies the use of 'split' half notes on keyboards.

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<sup>1</sup> [https://www.academia.edu/5210832/18th\\_Century\\_Quotes\\_on\\_J.S.\\_Bachs\\_Temperament](https://www.academia.edu/5210832/18th_Century_Quotes_on_J.S._Bachs_Temperament)

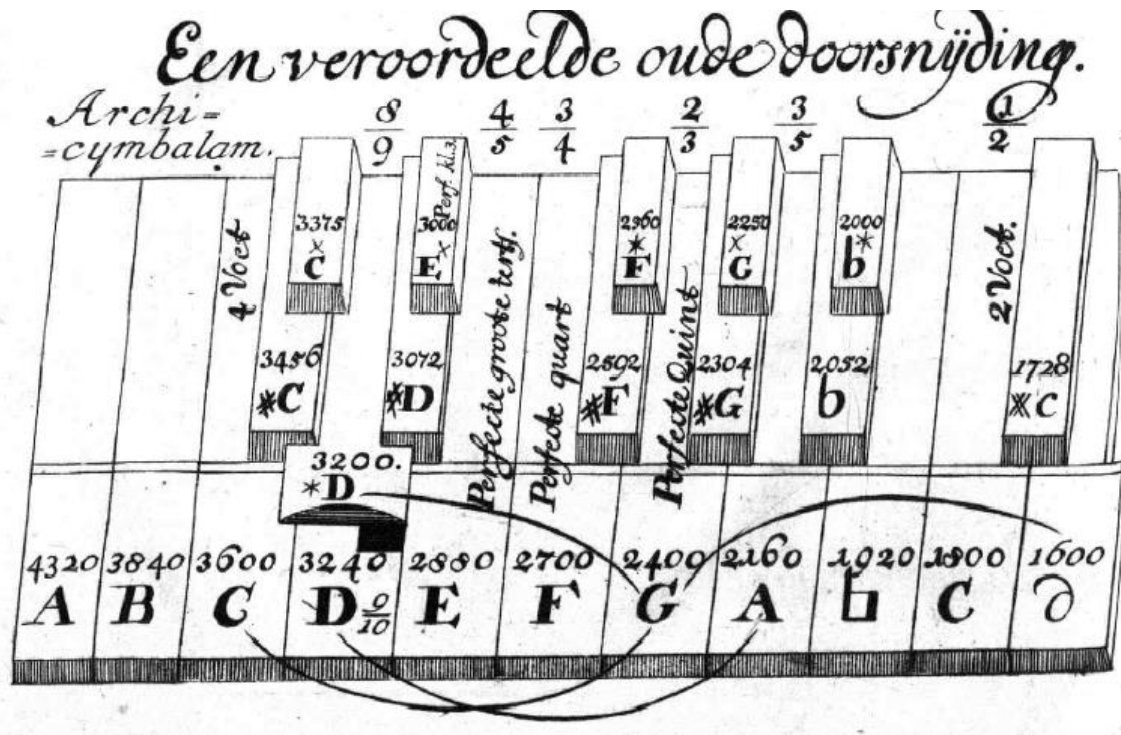
<sup>2</sup> Werckmeister's *Musikalische Temperatur*, 1691

<sup>3</sup> In 1724

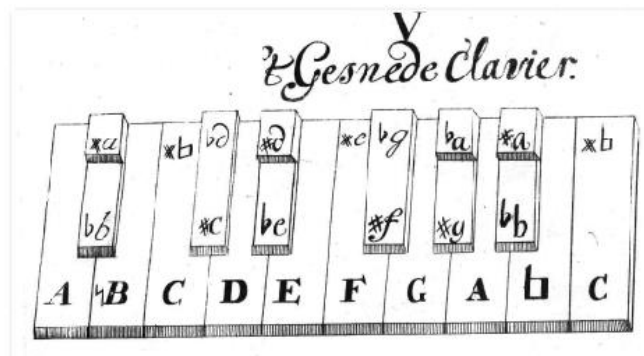
<sup>4</sup> For example, Brossard in his: *Dictionaire de Musique* (1701) and Mattheson *Grosse General-Bass-Schule* (1731) that quotes Brossard about Aristoxenus.

<sup>5</sup> There is a small difference between equal temperament as tuned by ear and equal temperament that is calculated uniform temperament with equal beating fifths. See our article 18<sup>th</sup> century quotes on J.S. Bach's Temperament.

He gives two examples of keyboards: one of an archicembalo which he dismisses as ‘old fashioned’



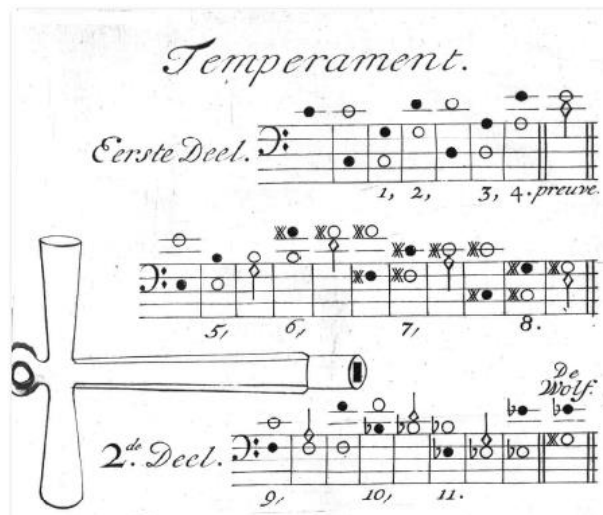
and a keyboard that he describes as ‘t gesnede clavier’, i.e. a keyboard with split halves (split upper keys).



Blankenburg remarks that there is a need for a ‘temperament’ and mentions that Printz<sup>6</sup> had dedicated a whole chapter to different temperaments, but insists that the meantone temperament is the best.

Blankenburg writes that the meantone tuning had been in use for more than a century and then gives, by way of the following example, a method of how the meantone temperament could be tuned on a normal (non-split keys) keyboard:

<sup>6</sup> W.C. Printz, *Phrynis Myrtilenaeus oder der satyrische Componist* (1676)



(Interestingly, Blankenburg filed his tuning hammer so that the tuning hammer could be used as a tuning fork, where the c above middle c on the harpsichord/keyboard could be used as reference point.)

Blankenburg explains that meantone temperament results in a ‘wolf’ fifth and some unacceptable out of tune thirds and says that, according to Salinas<sup>7</sup>, a normal keyboard should have split upper keys (split halves). Blankenburg continues to write that he had seen several organs and Ruckers harpsichords that had these extra keys.

Blankenburg is correct with regard to the organs. In several countries there were organs with ‘split halves’ in use, but regarding Ruckers harpsichords, Blankenburg is not correct. Ruckers never made harpsichords with split halves. Blankenburg probably confused the Ruckers transposing double manual harpsichords that had additional strings that made possible the use of the meantone tuning for the transposing keyboards. But this is something different to notes that have double/split keys.

It was generally known that one could not always transpose when using meantone temperament. Organs in the baroque were, according to Blankenburg, typically either a tone or one and a half tone too high. Blankenburg wrote that the organ builders did this so as to save on the amount of lead and tin used for the pipes. To play with other instruments, organists had to transpose, and this could result in keys that had terrible sounding false intervals if meantone was used, because of the many “wolves”.

Blankenburg wrote, that according to Werckmeister, “*these wolves should be fed to dogs and ravens*”<sup>8</sup>. Neidhardt quotes, according to Blankenburg, the Bible by stating that such an instrument does sound like: “*the howling of the dogs to the corpse of Jezebel.*”<sup>9</sup>

Blankenburg did not follow the equal temperament preference of his famous contemporaries and is against (quote): “*foolish transpositions, which are stupid and unnecessary difficult to play.*” He continues in the following paragraph: “*To make this (transpositions) easier Neidhardt published in 1706 a book with a new temperament invented by himself which drove*

<sup>7</sup> Francisco de Salinas (1513 – 1590)

<sup>8</sup> Page 114, paragraph 18

<sup>9</sup> Ibid.

*off the wolves...which he calls his Equal Temperament...but unfortunately every wolf got three young wolves at his departure, which he (Neidhardt) scattered across the entire keyboard with as result that all that one plays is a concert of young wolves”<sup>10</sup>.*

Blankenburg did not only criticise Neidhardt: Mattheson also gets “a wipe out with the pan” by Blankenburg since Mattheson<sup>11</sup> in his books agreed with Neidhardt and other theorists from his time that equal temperament was found to be the best temperament. Blankenburg describes Neidhardt’s practical method of tuning but says that it is not possible to tune that way.

From the start of the 17<sup>th</sup> century theorists calculated equal temperament with a great number of decimal points, but not all theorists could tune by ear. That Blankenburg himself could not tune equal temperament does not prove that others could also not tune equal temperament. Instrument builders and other musicians from his time could.

Already in the 16<sup>th</sup> century Lanfranco was tuning equal temperament by ear. In 1636 the famous Frenchman Mersenne was tuning equal temperament by ear. After Mersenne, others also started to tune using equal temperament throughout France and England as well as other compatriots: Douwes by 1699. And in 1738, the Dutchman Fischer published his treatise on bell playing with bells that were tuned in equal temperament<sup>12</sup>.

Various German writers from the 18<sup>th</sup> century describe tuning equal temperament by ear. At the start of the 19<sup>th</sup> century even Czerny did, and by the end of the 19<sup>th</sup> century it is cited in the *Grove Dictionary of Music and Musicians* that pianos were tuned in equal temperament by ear. Even though Blankenburg couldn’t, it does not imply that others couldn’t.

In other words, for those quoting Blankenburg, where he states that equal temperament is impossible and unacceptable, is false. And, for those who quote Blankenburg in the context of his time, it also demonstrates that what Blankenburg says is false.

How “out of touch in his time” Blankenburg was, can be seen in the chapter that follows that of the chapter on temperament. In this chapter about the circle of pure, major thirds, he describes how to tune exclusively with pure thirds. He gives the following diagram:

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<sup>10</sup> Page 114, end of paragraph 19, continuing in paragraph 20

<sup>11</sup> Mattheson mentions that Neidhardt was not the first in Germany, but that during the second half of the 17<sup>th</sup> century, there were 2 organs in Germany that were tuned in equal temperament.

<sup>12</sup> Johan Fischer: *Verhandeling van de klokken en het Klokke-spel* (1738)



One starts with middle C and then continues tuning 31 pure thirds until one comes out at the C that one started off with. Unfortunately, normal keyboards did not have 31 keys per octave, but according to Blankenburg it was possible to tune this way on a harpsichord with 2 manuals plus an additional register. The required c-c sharp-d-e flat etc could be kept on the two manuals, and those in-between notes that were not needed, discarded.

For musicians with a trained ear, it was reasonably simple to tune a circle of fifths, with fifths approximately one beat too small as instructed/described by the 17<sup>th</sup> and 18<sup>th</sup> tuning methods. The writer of this article has tuned equal temperament by ear for more than 45 years without the use of an electronic tuner and it takes him not more than 5 minutes to tune a complete register.

To conclude: Quirinus van Blankenburg published his book in 1739 and was a harsh opponent against equal temperament. He writes that composers should limit themselves to keys that sounded good in meantone. J.S. Bach wrote the manuscript of the first part of his WTC in 1721– which would include tonalities which sound horrible in meantone temperament. And in 1731 Mattheson published exercises in all 24 keys, yet Mattheson was criticised by Blankenburg. Blankenburg attempted to stop the march towards the acceptance of equal temperament tuning, yet failed. Although, up until the 19<sup>th</sup> century, some organs have survived that used meantone<sup>13</sup>, the equal temperament became more and more established and was the generally accepted temperament by the first half of the 20<sup>th</sup> century, up until the re-discovery of non-equal temperaments used by the early HIP movement.

<sup>13</sup> In Mark Lindley's article on Temperaments: [www.academia.edu/1134048/Temperaments](http://www.academia.edu/1134048/Temperaments): by the 1870s, by which time even the conservative English cathedrals were won over.

From the middle of the 20<sup>th</sup> century it was generally accepted that equal temperament was not used for Baroque compositions. But by the end of the 20<sup>th</sup> century, slowly but surely, it became clear that equal temperament was known before the 19<sup>th</sup> century and used in practice. With the advent of the easy access to books and sources on music from the Baroque period, it was realised that there were various temperaments in use and that some composers did not like equal temperament and limited themselves by not modulating too far, whereas others, such as Mattheson and Rameau promoted equal temperament and J.S. Bach used all 24 tonalities.

The 20th century has delivered many theories and reconstructions of the temperament of J.S. Bach. Several of them produce good usable temperaments, yet these cannot be traced back to, not supported, by the literature from the Baroque period. Facts are given from all the original 18<sup>th</sup> century sources/quotations on J.S. Bach and his temperament in our article [18th Century Quotes on J.S. Bach's Temperament](#). The authentic quotations from the Baroque period have to be read within the correct context so as to make clear their importance.

Regarding what Blankenburg said about equal temperament, cannot be used to decide which temperament was employed by J.S. Bach. Blankenburg prefers pure thirds and limited modulation. Bach prefers larger thirds and unrestricted possibilities of modulation. The latter is still regarded as one of the greatest geniuses of composition. Blankenburg bemoans in his book, that his contemporaries did not regard him highly as a composer.

Blankenburg's book shows us that there were different opinions about which temperament should be used in the first half of the 18th century, and he makes it clear that books of famous German writers like Werckmeister, Neidhardt and Mattheson, who preferred equal temperament, were read outside Germany as well.

Cape Town, October 2014.

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