



HAL
open science

Plenty of pitches

Fanny Gribenski, Max Planck

► **To cite this version:**

Fanny Gribenski, Max Planck. Plenty of pitches. Nature Physics, 2020, 16 (2), pp.232-232.
10.1038/s41567-019-0707-1 . hal-03005008

HAL Id: hal-03005008

<https://hal.science/hal-03005008>

Submitted on 4 Dec 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Plenty of pitches

Fanny Gribenski, Max Planck Institute for the History of Science, fgribenski@mpiwg-berlin.mpg.de

The note A tuned to 440 hertz only became the norm for musical performance in 1939 after decades of international and interdisciplinary disputes. Fanny Gribenski retraces the rocky path towards the adoption of this unified measure.

Though music is often referred to as “the universal language of mankind,” in the words of American poet Henry Wadsworth Longfellow, for the longest time, the practice of this art was founded on local standards. Now regarded as “natural,” the note A tuned to 440 hertz only became the norm for musical performance following an international conference held in London in 1939. For most of music history, pitches were fluctuating concepts: countries, cities, and individual musical institutions performed music according to their own tones. But with the development of railroads and the resulting integration of musical spaces, and in the context of a rise of experimental acoustics, many voices called for the adoption of a unified musical measure.

France was the first country to create such a standard. In 1859, a state-appointed commission gathering representatives of the worlds of music and science fixed a *diapason normal* at A 435. In the same way as a standard metre had been agreed upon after the revolutionary standardization of the metric system, a model of the musical standard — a tuning fork — was stored at the French Conservatory (pictured). The “French pitch” was subsequently chosen as a first international standard in Vienna in 1885 by several European countries and Russia. But in the interwar period the United States adopted A 440 as standard, which was agreed on by certain European nations in 1939, and became the first acoustic norm issued by the International Standards Organization in 1955 as ISO 16.

Although resembling that of other technical and scientific standards, the history of concert pitch is more complex. Crucially, whereas the metre was principally the product of industrial factories and physics laboratories, pitch was also the concern of opera houses and concert

halls, churches and radio studios, instrument workshops and music schools. For other scientific and technical standards, it was physicists, mathematicians, engineers, and natural philosophers who determined at what measure these were set. In the case of pitch, such authorities were challenged by a diverse body of interested parties — whether composers, performers, piano makers or choir conductors — all with different ideas of what a standard pitch should be. Shaping these ideas were not only considerations about the physics of sound, but also conflicting notions of what sounded aesthetically pleasing, what was physiologically sustainable, and what was historically consistent with the works of celebrated composers.

Whereas in France, the *diapason normal* was fixed in reference to a historical canon of operas with the commission claiming that the choice of A 435 “would render the performance of old masterpieces easier,”¹ these aesthetic considerations were challenged in other countries. In Britain, for instance, in the wake of the French decision, the Society of Arts started investigating “how far it would be practicable to do anything in this country in reference to it,”² but with the aim of putting a greater emphasis on science. Drawing from the recommendations made by natural philosophers such as John Herschel the body created a competing standard in 1860, presented as a compromise between mathematical knowledge and contemporary musical practice: C 528. Following the advice of Giuseppe Verdi, the Italian association of musicians similarly adopted A 432 as standard in 1884, reconciling the demands of science and musical practice. Such a low pitch, it was argued, was more friendly to voices. The following year, however, this measure was defeated by the French pitch A 435 at the conference held in Vienna because of the commercial strength of the *diapason normal*, which had already been adopted by several acclaimed instrument makers. Eventually, the French pitch was superseded by the higher pitch A 440. This standard, already chosen by a congress of natural scientists in Stuttgart in 1834, had been introduced in the United States in 1917, and enforced by means of a radio signal emitted by the Bureau of Standards in 1935.

¹ *Rapport et Arrêtés pour l'établissement en France d'un diapason musical uniforme* (Paris: Imprimerie impériale, 1859), Archives nationales, F/21/768, 24-25.

² *Minutes of the Council*, 122 (May 25th, 1859), Royal Society of Arts, AD/MA/100/12/02/11.

Concert pitch still remains a controversial standard. For several years, numerous blogs have been denouncing the use of A 440 and calling for its replacement by what they regard as the pitch of the “origins”: A 432. Following in the footsteps of activist Lyndon LaRouche who, at the end of the 1980s, claimed that one should “revive Verdi’s tuning [A 432] to bring back great music,”³ the Dutch political party *Vrijzinnige Partij* argues for A 432 as a standard on the unverified grounds that Joseph Goebbels was responsible for the adoption of A 440, and that it causes “disarray” in music and society.⁴ The history of our musical measure is actually one of many pitches, attesting to the great variety of sonic ideas and practices throughout the modern era.

Picture:

³ Lyndon LaRouche, “Revive Verdi’s Tuning to Bring Back Great Music,” *Executive Intelligence Review* 15, no. 32 (1988): 24–34.

⁴ Ariejan Korteweg, “Vrijzinnige Partij: verlaag de grondtoon, deze wekt verdeeldheid en agressie op,” *Volkscrant*, March 3, 2017, <https://www.volkscrant.nl/nieuws-achtergrond/vrijzinnige-partij-verlaag-de-grondtoon-deze-wekt-verdeeldheid-en-agressie-op~b718e98c/>



Diapason, Jules-Antoine Lissajous, France, 1859, E.378
Collections Musée de la musique / Cliché Anglès ; from

<https://collectionsdumusee.philharmoniedeparis.fr/doc/MUSEE/0160708>

References:

- [1] *Rapport et Arrêtés pour l'établissement en France d'un diapason musical uniforme* (Paris: Imprimerie impériale, 1859), Archives nationales, F/21/768, 24-25.
- [2] *Minutes of the Council*, 122 (May 25th, 1859), Royal Society of Arts, AD/MA/100/12/02/11.
- [3] Lyndon LaRouche, "Revive Verdi's Tuning to Bring Back Great Music," *Executive Intelligence Review* 15, no. 32 (1988): 24–34.
- [4] Ariejan Korteweg, "Vrijzinnige Partij: verlaag de grondtoon, deze wekt verdeeldheid en agressie op," *Volkskrant*, March 3, 2017, <https://www.volkskrant.nl/nieuws-achtergrond/vrijzinnige-partij-verlaag-de-grondtoon-deze-wekt-verdeeldheid-en-agressie-op~b718e98c/>