SIDEBAR C

Music for the Record Books

The Lowest, the Longest, the Oldest, and the Weirdest

IN MARCH 2013, the astronomy magazine *Sky and Telescope* reported the discovery of the lowest known musical note in the universe. The source of this note is the galaxy cluster Abell 426, some 250 million light years away. The cluster is surrounded by hot gas at a temperature of about 25,000,000 degrees Celsius, and it shows concentric ripples spreading outward—acoustic waves. From the speed of sound at that temperature—about 1,155 km/sec—and the observed spacing between the ripples—some 36,000 light years—it is easy to find the frequency of the sound: about 3×10^{-15} Hz, which corresponds to the note B-flat nearly 57 octaves below middle C. Says the report: "You'd need to add 635 keys to the left end of your piano keyboard to produce that note! Even a contrabassoon won't go that low."

American avant-garde composer John Cage wrote what would be his most famous—and most controversial—work, *4′33″,* in which a pianist comes on stage, opens the lid of the piano, sits down, and for the next four minutes and thirty-three seconds does exactly nothing. Long regarded as a musical caricature, Cage actually wrote it so that the audience

would be forced to listen to silence or, more precisely, to the ambient background noise of passing traffic, tweeting birds, chirping crickets, or a cough from the crowd. Its premiere took place in an open barn in Woodstock, N.Y., on August 29, 1952, and caused an uproar among the listeners, raising the question of what exactly constitutes music. Cage regarded it as his most important work.

The front page of the *New York Times* of May 5, 2006, reported on a group of musicians in the German town of Halberstadt who were performing a version of Cage's composition called *As Slow as Possible*. The group is taking Cage's call to the extreme: the work is an ongoing project planned to be unfolding for the next 639 years. Adding a note one day, deleting another the next day, and inserting or removing pipes to the St. Burchardi Church organ on which the piece is being performed, the creators are in no hurry to complete the work in their lifetime. There are eight movements, each lasting about 71 years. Says the *New York Times*: "The organ's bellows began their whoosh on September 5, 2001, on what would have been Cage's 89th birthday. But nothing was heard because the musical arrangement begins with a rest—of 20 months. It was only on February 5, 2003, that the first chord, two G-sharps and a B in between, was struck." In response to the article, one reader asked: "Will there be an intermission?" It will be interesting to read the reviews when the work finally comes to its conclusion in the year 2640.

The record for the largest orchestra ever employed in classical music probably goes to Hector Berlioz's 1837 *Requiem*; it calls for 108 string players, twenty woodwinds, twelve French horns, eight cornets, twelve trumpets, sixteen trombones, six tubas and

four ophicleides (a tubalike instrument, now obsolete), ten timpani players, two bass drums, four gongs, and ten pairs of cymbals, plus a choir of at least 200 singers—enough sonic power to make Beethoven's Ninth Symphony sound like chamber music. It is all the more astonishing in light of the fact that Berlioz never learned to play the piano, and—except for two years at the Paris Conservatory—was essentially self-taught.[1]

The Book of Genesis tells us that "Jubal [a seventh-generation descendant of Adam] was the father of all those who play the lyre and the pipe" (Genesis 4, 21). But the earliest actual musical instrument to have come to us was discovered in 2008 by archeologists excavating a cave near the city of Ulm in Germany; they unearthed a wing bone of a griffon vulture with five precisely drilled holes in it—a flute; it was dated to be about 35,000 years old. The relic is "of an early human society that drank beer, played flute and drums and danced around the campfire on winter evenings," wrote Thomas H. Maugh II in an article in the *Chicago Tribune*.[2] Archeologist John Shea is quoted in the article as saying, "Every single society we know of has music." If we only had a musical record of what the owner of that flute played on it 35 millennia ago!

Unlike artistic or literary records, musical preservation goes back only to 1860. On April 9 of that year, Édouard-Léon Scott de Martinville made the first known recording of a musical piece, a woman singing the French folk song "Au Claire de la lune, mon ami Pierrot" scratched on a waxed sheet of paper. De Martinville thus predated Thomas Alva Edison's more famous recording of "Mary Had a Little Lamb" by seventeen years.[3] In 2012, the Museum of

Innovation and Science in Schenectady, N.Y., played a reconstructed version of the original music that Edison had recorded with his phonograph on a sheet of tinfoil in 1878. As reported by the *Chicago Tribune*, "The recording opens with a 23-second cornet solo of an unidentified song, followed by a man's voice reciting 'Mary Had a Little Lamb' and 'Old Mother Hubbard.'"[4] Had the phonograph been invented just one hundred years earlier, perhaps we would have had a record of how Haydn or Mozart played on their keyboard instruments, and music history would have been immeasurably enriched. If only . . .

Now fast forward to 1982, the year that the Sony Corporation issued the world's first compact disc. The company's president and chairman, Norio Ohga, reportedly "pushed for a 12-centimeter format, providing enough storage to allow listeners to hear all of Beethoven's Ninth Symphony without interruption," according to Ohga's obituary.[5] Those specifications are still in use, perhaps marking the Ninth's most endurable record—literally. Ohga's decision was reportedly influenced by his training as a musician.

NOTES

1. Goodall, *The Story of Music*, p. 154.
2. *Chicago Tribune*, June 25, 2009.
3. Goodall, pp. 237–238.
4. *Chicago Tribune*, October 26, 2012.
5. *Chicago Tribune*, April 25, 2011.