PROGRAM NOTES

Moments of transition, moments of revolutionary change, moments when there is a clear line between "the before times" and after.

Most moments like these propel us forward, but what fascinates me about the James Webb Space Telescope and Haydn's *Creation* is that they both use groundbreaking techniques—in science and art, respectively—to look back, way back. I am floored by how closely Haydn's vision depicts musically what thousands of scientists have represented visually.

In overly simplistic terms, the James Webb Space Telescope (JWST) is the largest, most powerful space telescope ever built. It allows scientists to capture images from the early universe, 13.6 billion years ago.[1] Using infrared light, it can study the history of our universe, from the first light after the big bang to the formation of solar systems capable of supporting life on planets like Earth.[2]

Haydn's *The Creation* envisions the beginning of the world, from the dark primordial ooze to the groaning of the whale to the heavens above. One of Haydn's later works, *Creation* is ordered by the six days of creation as described in the Old Testament. Each day is introduced with the Genesis narration, elaborated in an aria using text from Milton's *Paradise Lost*, and celebrated with a chorus singing words from the psalms.

My favorite part of *Creation*, indeed my favorite five minutes of the entire Classical Era, is the extended orchestral introduction, "The Representation of Chaos." This overture sounds more like John Adams or Schoenberg than like Handel and Mozart. Not only is it "without doubt the most modern music written up to that time,"[3] but it describes the beginning of the earth less like the one in the King James Bible and more like the one discovered by JWST. NASA describes the beginning of the world as:

> …like a hot soup of particles (i.e. protons, neutrons, and electrons). When the universe started cooling, the protons and neutrons began combining into ionized atoms of hydrogen (and eventually some helium). These ionized atoms of hydrogen and helium attracted electrons, turning them into neutral atoms — which allowed light to travel freely for the first time, since this light was no longer scattering off free electrons. The universe was no longer opaque![4]

Haydn composes the "Representation of Chaos" with nebulous harmonic movement, swirling shadowy rhythms in the lower strings, and transparent melodic fragments from the winds that evoke a formless void. Haydn's "ionized atoms" that transform the universe from a dark vortex to the first light is a sudden, full ensemble C major chord. This musical moment stunned early audiences:

> And in that moment when light broke out for the first time, one would have said that rays darted from the composer's burning eyes. The enchantment of the electrified Viennese was so general that the orchestra could not proceed for some minutes.[5]

Another connection between the JWST and *Creation* is the detail with which they each present their world. JWST shows us the first stars and galaxies from nearly 13.6 billion years ago, the rings of Uranus, and dust clouds that will become future planets.[6] The third through sixth days of *Creation* describe the formation of flora and fauna, today enhanced by performances by the Flying Gravity Circus. Haydn conjures cooing doves and nightingales with flutes and oboes, the heavy footsteps of beasts on the earth with trombones and contrabassoon, and the "nimble stag" with leaping figures in the strings.

The Economist reports that the JWST is changing the shape of astronomy and how we think about the beginning of the universe.[7] It may be hard for a 21st-century audience to imagine, but the first public performance of *Creation* in Vienna in April of 1798 had a similarly unprecedented impact.[8] *Creation* was seen as the crowning achievement of the greatest living composer, and box office receipts for the premiere broke all records.[9] With tickets hard to come by, market stalls were cleared in front of the theater, and police were hired to control the crowd. Following the Paris premiere, Napoleon—who was nearly assassinated in the plot of the rue Saint-Nicaise on his way to the theater—had a medal struck in honor of the composer.[10]

Clearly, there are many differences between 21st-century astro-technology and 18th-century classical music, but the ability for individual humans to reshape our thinking and inspire our dreaming is still the same.

——— Emily Isaacson

Notes

1. https://webb.nasa.gov/content/science/firstLight.html
2. Casey Dreier. Oct 25, 2021. https://www.planetary.org/articles/cost-of-the-jwst?gclid=Cj0KCQjw6cKiBhD5ARIsAKXUdyYf_D1goeaedKHVhe4S4Jh9lh0jt_LQqhKXicubPmup4vAEUD-jH-fYaAj7UEALw_wcB
3. https://baroque.boston/haydn-the-creation
4. https://webb.nasa.gov/content/science/firstLight.html
5. Georg Feder and James Webster. "Haydn, (Franz) Joseph." *Grove Music Online*, Oxford University Press. Date of access 2 May. 2023,
6. https://pressofatlanticcity.com/news/science/the-james-webb-telescope-just-spotted-the-four-oldest-galaxies-ever-discovered/video_9b1a092a-4c41-5639-9a5d-c61263c58d44.html
7. https://www.economist.com/the-economist-explains/2022/07/29/how-is-the-james-webb-space-telescope-changing-astronomy
8. Georg Feder and James Webster. "Haydn, (Franz) Joseph." *Grove Music Online*, Oxford University Press. Date of access 2 May. 2023, <https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000044593>
9. Martin Pearlman. https://baroque.boston/haydn-the-creation. 2020.
10. Martin Pearlman. https://baroque.boston/haydn-the-creation. 2020.

Image credit: National Aeronautics and Space Administration (NASA) and Space Telescope Science Institute (STScI)