

Music and Architecture

Images and sounds
from the annals of
civilization. Is it frozen
music or melted archi-
tecture?



Music

Architecture

1. Music from Ancient Greece

Greek amphitheaters c. 300 B.C.

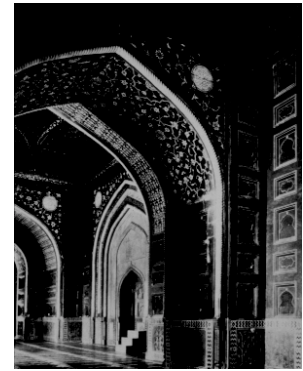


This piece is based on an estimation of what ancient Greek musical notations might sound like. It was written for outdoor performance—taking advantage of free field acoustics with no reverberation and the bodies of the audience which absorb low frequencies more effectively than high frequencies. (This piece was obviously recorded inside.)

2. Paul Horn, "Inside"

Taj Mahal, Agra, India 1630-1648

A jazz flute piece written for and recorded within the Taj Mahal. The building's hard surfaces—characterized by little absorption, long reverberation time, few planar reflective surfaces—cause the sound to reach the listener through multiple paths. The resultant sound is eerie with echo-like reverberation and overlapping—a unique aural environment.



3. Pilgrims' song from "Libre Vermell"

Santiago de Compostella, Spain 1075-1124



Santiago de Compostella has been a famous destination for Christian pilgrimage since the Middle Ages. The pilgrimages originally took about a year "with the huge traveling groups of royalty, clergy, and citizens rich and poor, went also professional minstrels, wastrels, beggars, debtors. . ." The songs were sung in the church, this one with three voices using the long reverberation time to pace phrasing and allow for breathing. The "spaced" rhythm is essential for enrichment of the sound by reverberation and is atypical of voice performance.

4. Dufay, Motet for Six Voices

Santa Maria del Fiore, Florence, Italy 1296-1462

This motet was written for the consecration of the cathedral after the dome was completed on March 15, 1436. The number of parts has increased from the Romanesque song for Santiago de Compostella and the tempo is much more rapid, possibly because the reverberation time is longer and cannot be accommodated by slow pacing. Two tenor parts are taken by trombones in this recording.



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5. Three dances from the English Renaissance

16th century English paintings



These dances were written for Henry VIII. They were performed outside the church in an essentially free-field environment.. The tempo is faster and percussion is added as the walls (and the reverberation time) have disappeared. Percussion instruments are successful in free field situations— Sousa marches are dominated by percussion.

6. Gabrielli, Canzona XVIII, 1615

San Marco, Venice, Italy 11th Century

The composer was appointed by the church in the 17th century to write a canzona for twelve parts in three groups . The church has multiple vaults and, when this piece was written, there were two organs in vaults opposite to each other. The voices and instrument groups were placed in the vaults to get the sounds to mix in the church's nave, enriched by the long reverberation time.



7. "The Bells of Speyer," 16th Century

Speyer Cathedral, Germany circa 1030

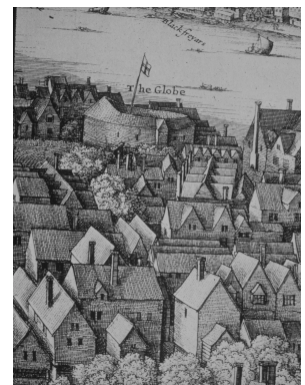


This piece is an imitation of the famous bells of Speyer Cathedral. Beginning in medieval times and until the twentieth century, the environs of Speyer depended on the bells to signal time of day and important civic events. Free field acoustics demand percussion instruments (the bells) to signal important events to the town and nearby countryside. The crisp, high intensity sound needs no enrichment from reverberation to maintain signal integrity over long distances.

8. Robert Johnson, Song for the Tempest

Globe Theater, London, England circa 1600

Words and meaning are more important in the theater than in the cathedrals. Spoken words are rendered unintelligible by long reverberation times (which enriches symphonic music). The wooden finish materials and capacity crowds provide more absorption which reduces reverberation time and a high level of background noise. The theater also is open-air, lacking a ceiling to provide reverberation and serving to dissipate crowd noise.



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9. Masque Dances for Royalty 17th century

English country houses 15th–17th centuries



These masque dances were written for occasions or masquerades, forerunners of Carnival or Mardi Gras celebrations. They were performed for small audiences of royalty, often from a minstrel's loft in a large room. These rooms, smaller than cathedrals and symphony halls, have shorter reverberation times, suitable for small instrumental groups.

10. Grossec, Sinfonia Concertante from "Mirza"

Petit Trianon, Versailles, France 1761-68

This building was given to Marie Antoinette in 1774 and it was said she lived in "simple privacy" and furnished it in the "modern style." This piece was written for her and included two harps and orchestra. This chamber music was performed in smaller rooms for a few people. Furnishings and decoration provided ample absorption and diffusing surfaces, appropriate for chamber music groups of five to ten instruments.



11. Handel, Water Music, 1717

Scenes on the Thames River, London 18th century



Handel wrote this piece for a boating party of King George I. These parties (with musical accompaniment) took place on barges sailing from Whitehall to Chelsea and back. The water's surface provides a reverberant surface, so percussion isn't required for intelligibility of the music in a free field.

12. Otemoyan (geisha party song)

Katsura 17th Century/Japanese prints 18th Century

This is a party song written for performance in Japanese dwellings and sung by geisha about a bride's problem with in-laws. The instruments are samisen (3-string banjo), koto (13-string harp), shakuhachi (bamboo recorder), and Hayasagi band (flute, drums, and gong). Kyoto's Katsura Palace contains typical rooms for musical performance. These rooms had some absorption (tatami mats and shoji panels), some reflective surfaces (plastered walls and paneled ceilings), and often large openings (no reflection) to verandas and gardens. This configuration favors voice and small instrumental groups.



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13. Verdi, La Traviata 1853

La Scala, Milan, Italy 1778



This large hall favors the resonant music in Italian opera of the 19th century. The words needed to be heard and understood and the music moves fast, accommodating sopranos and basses, individual voices, and chorus. La Scala was built for opera and ballet. This large space is full of absorbent people, it seats 2289, and has a reverberation time of 0.2 seconds (extremely dead), favoring voice over instruments. This piece is a toast by Alfredo, declaring his love for Violetta, and her answer of disinterest (Act 1).

14. Wagner, Parsifal 1883

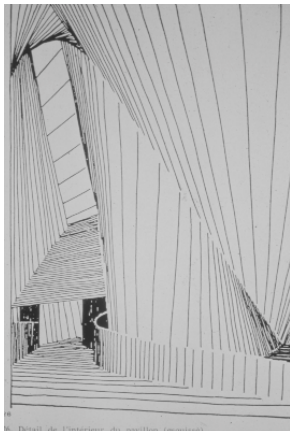
Festival Theater, Bayreuth, Germany 1855

Wagner opera is entirely different than Italian, with a lush, full orchestra, requiring a longer reverberation time. Wagner not only wrote the music, he designed the Festival Theater for a 1.6 second reverberation time. It features ceiling canvas stretched on ropes to control the reverberation, a hidden orchestra pit, fan-shaped seating with aisles next to the walls to free walls for reverberation, and side-wall piers for sound diffusion. This piece is the opera's final scene in which Parsifal is proclaimed keeper of the Holy Grail. Singers were positioned in the loft, stage left, so the angels' voices would sound as if coming from heaven.



15. Varèse, Poème Électronique 1958

Phillips Pavilion, Brussels, Belgium, 1958



This music was composed for Le Corbusier's 1958 World's Fair pavilion, which was equipped with 300 speakers built into the interior walls, lined with absorbing material. The music is both electronically generated and amplified. The building has reinforced concrete ribs peaking at 65, 60, and 42 feet and clothed with a concrete envelope of 12 hyperbolic paraboloids. The sounds are reflected and focused (concave configurations) or diffused (convex configurations) by these surfaces, providing a varying acoustic environment.

Credits:

Music, original slide set, and original program notes compiled and choreographed by Susan Ubbelohde, Department of Architecture, University of California, Berkeley. Additional slides and expanded program notes by Bruce Haglund, Department of Architecture, University of Idaho. Transformation from slides to digital images, Natalie Whitney, University of Idaho. Additional digital images Tisha Egashira, Scaffold, and Bruce Haglund. Program design by Bruce Haglund.