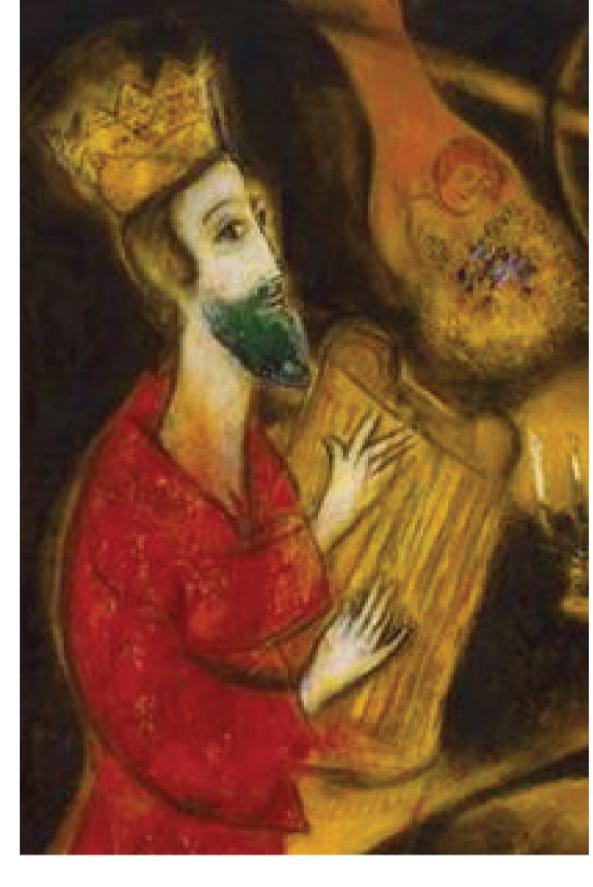


# David's Harp: Realizing Cultural Interpretations

Sam Dvorin / Prof. Victor Coelho / CFA Musicology

"David's Harp: Realizing Cultural Interpretations" explores how King David's harp was depicted in art over a 500-year period, from 1400 to 1900. By examining 87 different artifacts—including tapestries, mosaics, paintings, and sculptures—this project identified three predominant styles of the harp: the lyre, the psaltery, and the Gothic harp. The essence of these visual interpretations was captured through sonic experimentation by constructing harps with modern materials while reflecting the historical designs. Initial prototypes were built from scrap wood found on the streets of Boston, and later models were crafted using poplar wood, basswood soundboards, and guitar strings.

Each instrument had distinct sonic qualities: the lyre, with its smallest resonant chamber, had a soft, bassy tone suited for solo performances, reflecting its early cultural role. The Gothic harp, the loudest and most dynamic, had a wide pitch range, making it ideal for larger, more public performances. The psaltery, with its rich resonance, offered a middle ground and was fitting for chamber settings. This evolution—from the intimate lyre to the grander Gothic harp—mirrored the harps' transition from personal, song-based instruments to those capable of filling larger, more orchestrated spaces with a broader range of sound. This study revealed how string instruments adapted over time, becoming louder and more versatile to meet the demands of changing musical settings, similar to the evolving cultural interpretations of the instrument that David played.



Le roi David  
Marc Chagall, 1951



David  
Monaco Lorenzo, 1408-1410

## Goals

**Sonify Cultural Aspects:** Build harps to represent the sonic interpretations of King David's harp across different cultures.

**Document Iconography:** Identify and analyze depictions of David's harp in art, including construction details and performance settings.

**Quantitative Analysis:** Create a dataset to identify trends in harp depictions

**Create Instruments:** Design and construct harps that reflect the identified trends for acoustic analysis.

## Methods

**Artifact Gathering:** Gather examples of David in art using online resources

**Data Analysis:** Record key details of harp depictions, including string count, material, size, and shape.

**Prototype Design:** Collaborate with a local luthier to build three to four harp prototypes based on the analysis.

**Audio Analysis:** Conduct spectral timbre and envelope tests to refine each harp's sound quality in various environments.

**Synthesizing Audio and Historical Analysis:** Combining historical documentation on harps with acoustic analysis to make conclusion about each harp's societal role



Kong David med sin harpe  
Giovanni Beinaschi, 1636-1688



David, Solomon, Rehoboam  
Lucas van Leyden, 1520

## Conclusions

Over time, harps have transitioned from simple designs (Lyre) to more complex structures (Gothic Harp), reflecting advancements in craftsmanship and acoustic understanding. The introduction of resonant chambers (as seen in the Psaltery and Gothic Harp) enhances sound quality, indicating a growing emphasis on acoustics in instrument building. As the design evolved, the sound profiles of harps changed, with later instruments (e.g., Gothic Harp) capable of producing louder, richer tones suitable for larger audiences, reflecting the evolving nature of musical performance practices. The differences in sound characteristics (e.g., higher frequencies in the Psaltery vs. lower frequencies in the Gothic Harp) represent cultural perceptions of music and the role of instruments in conveying emotion and narrative.

## Cultural Context and Functionality

Each harp type serves a specific cultural and functional purpose, with the Psaltery designed for intimate settings, the Lyre as a solo instrument, and the Gothic Harp suitable for larger performances. The shift in design reflects the changing social contexts and musical practices, such as the increasing complexity of musical compositions and ensemble settings during different periods. The visual representation of each harp in art corresponds to cultural ideals and aesthetics of the time, indicating that instrument design is influenced by artistic trends as well as practical needs.

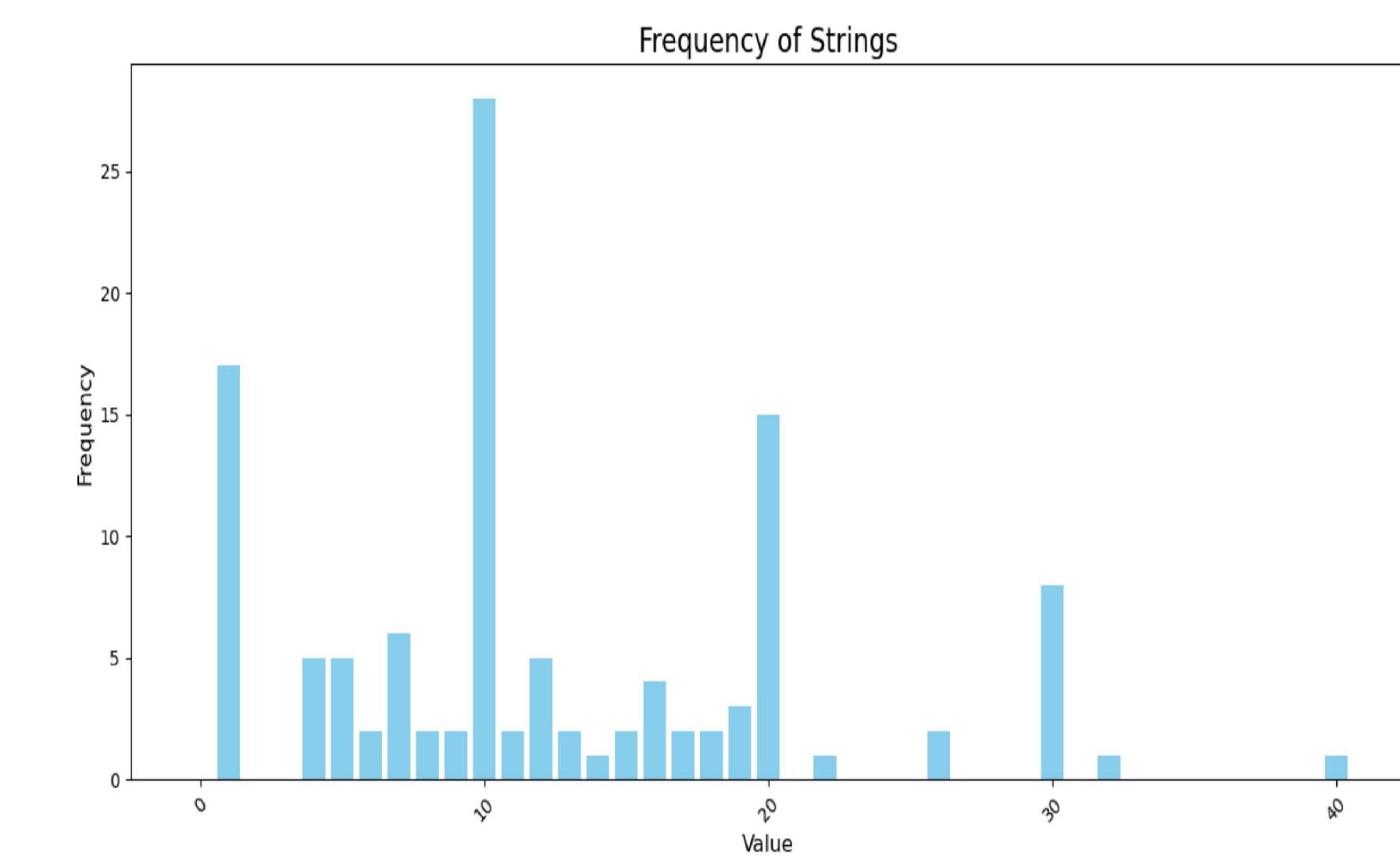
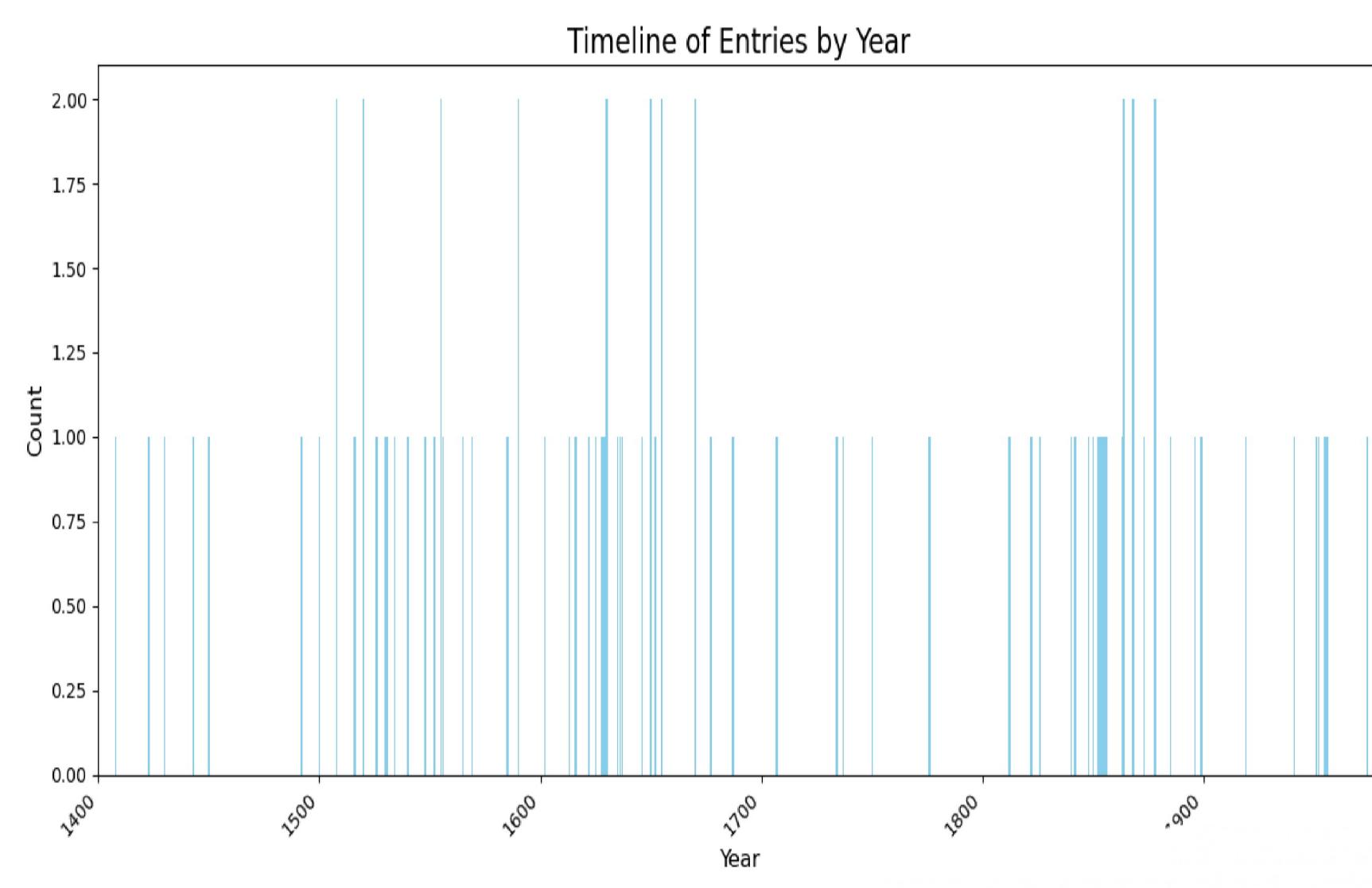
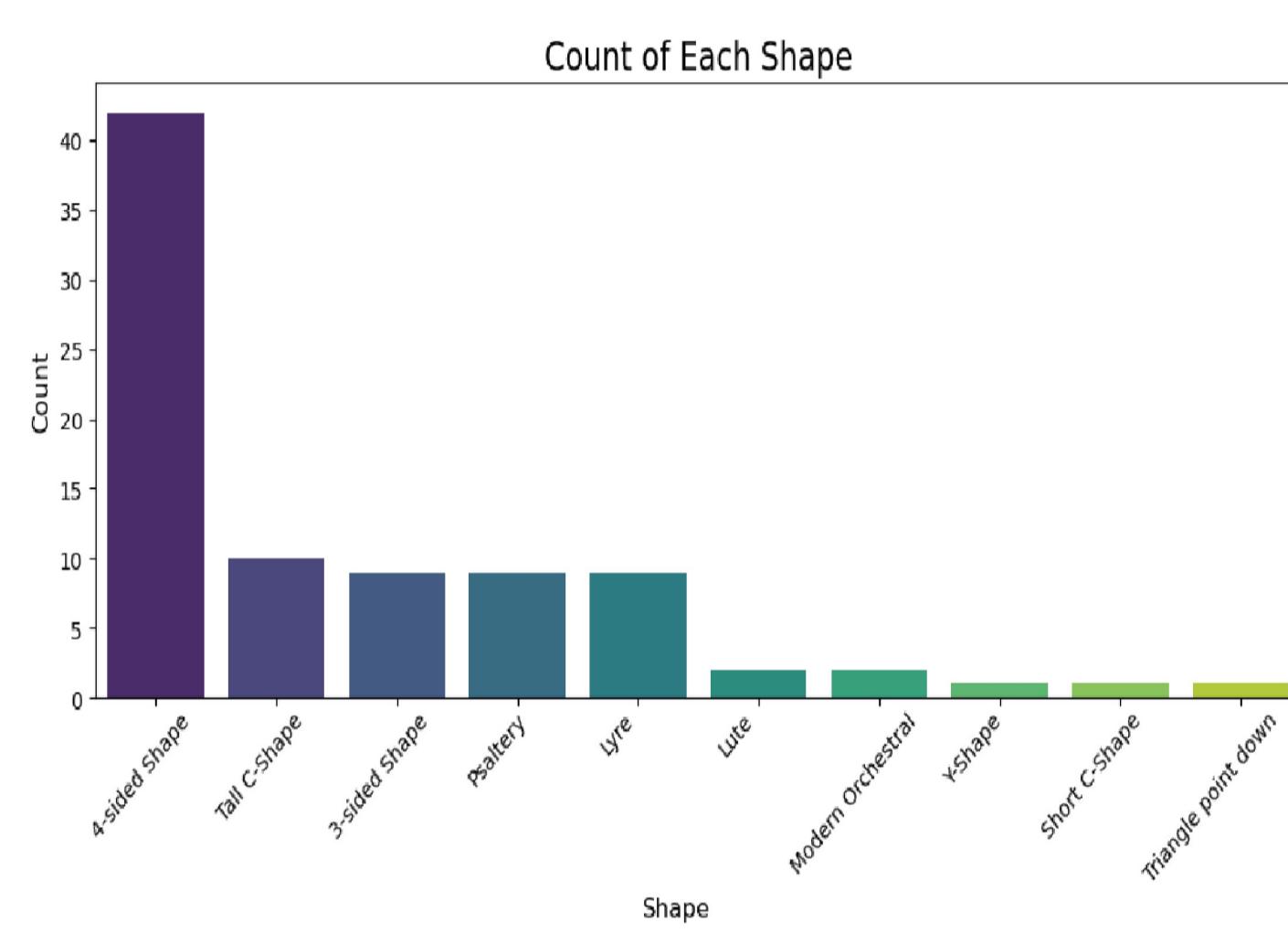


David med harpe  
Giovanni Trottin, 1555-1612

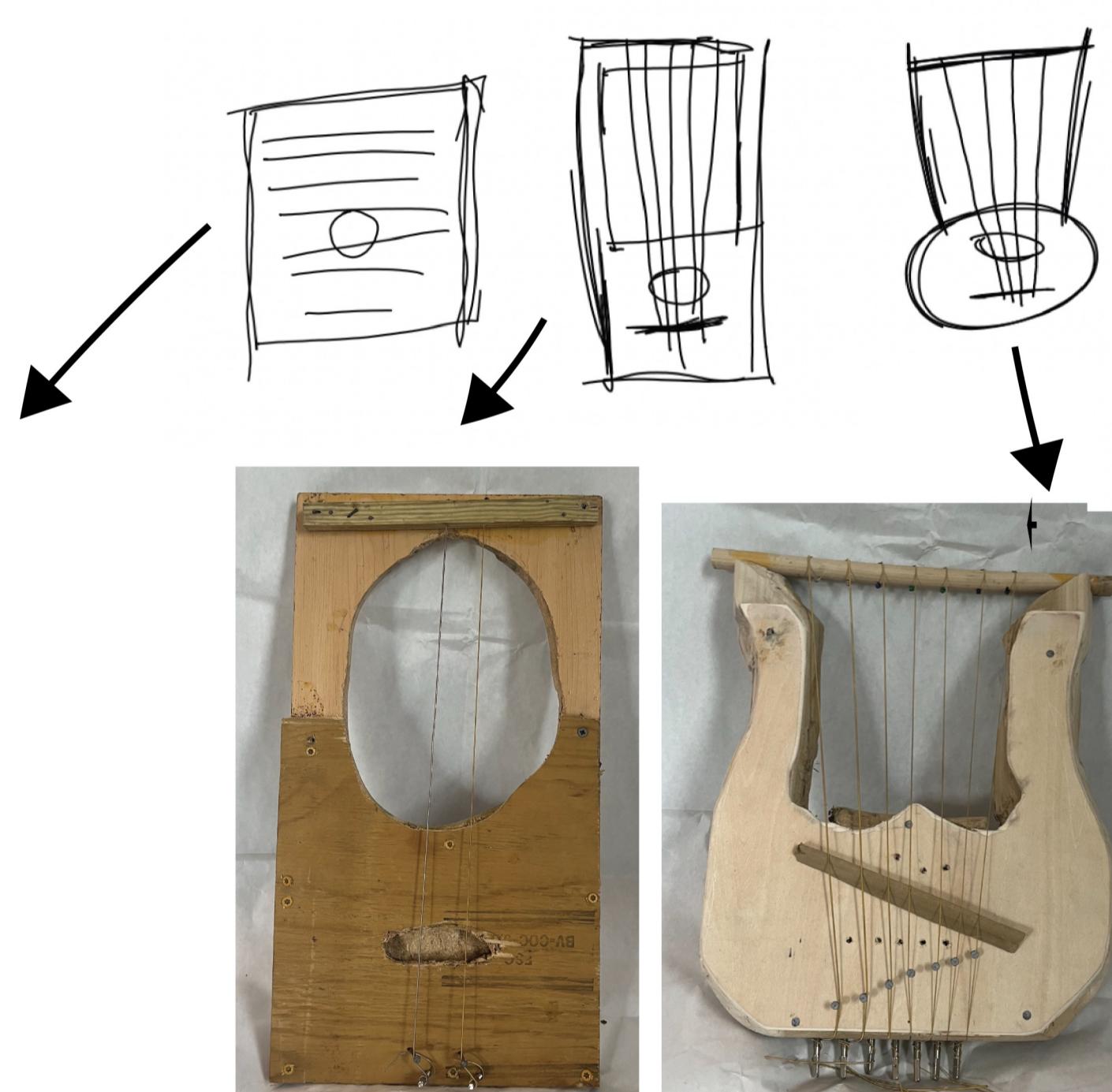


David und Saul  
Christian Rohlfs, 1919

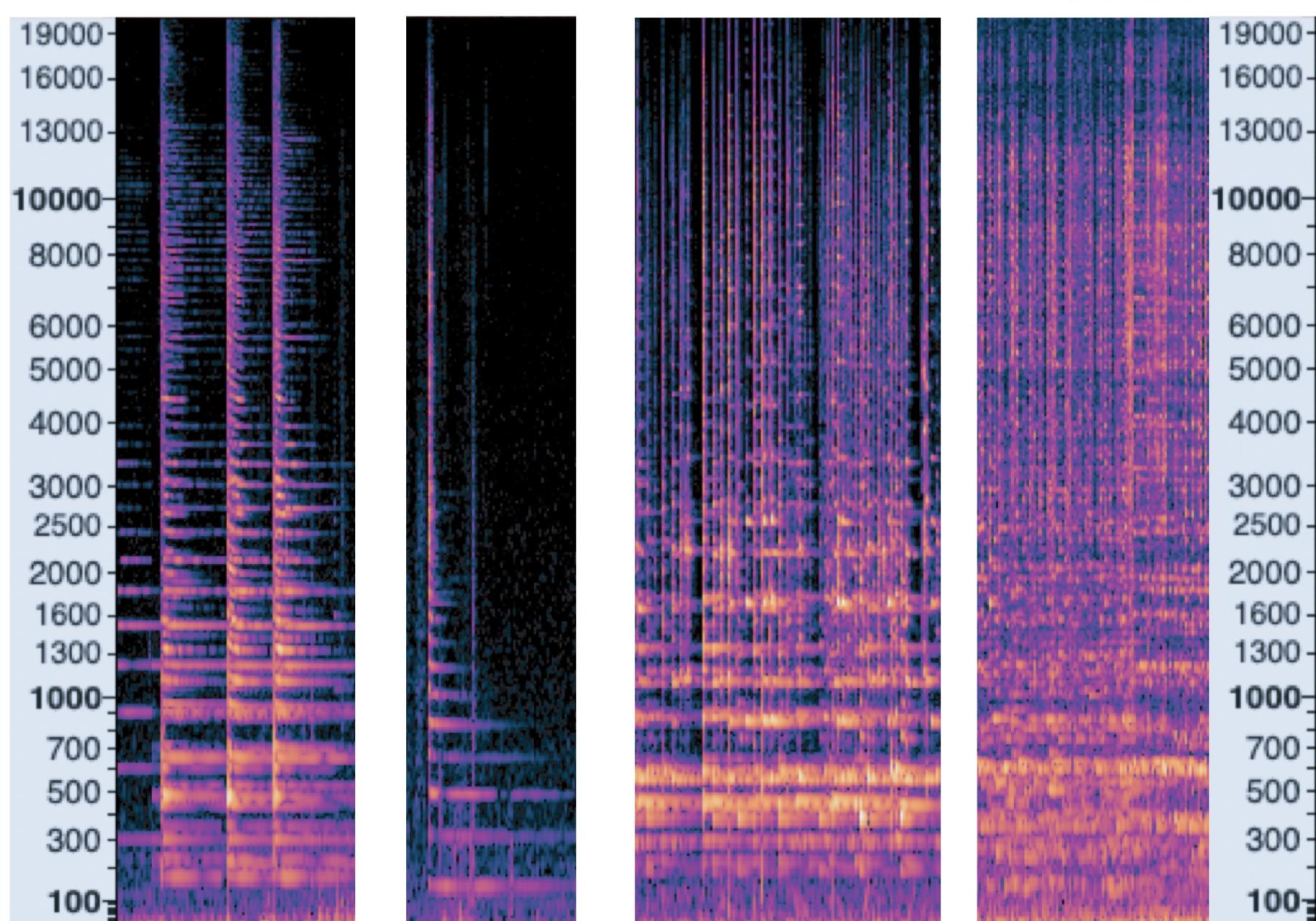
## 1. Artifact Gathering



## 2. Data Analysis

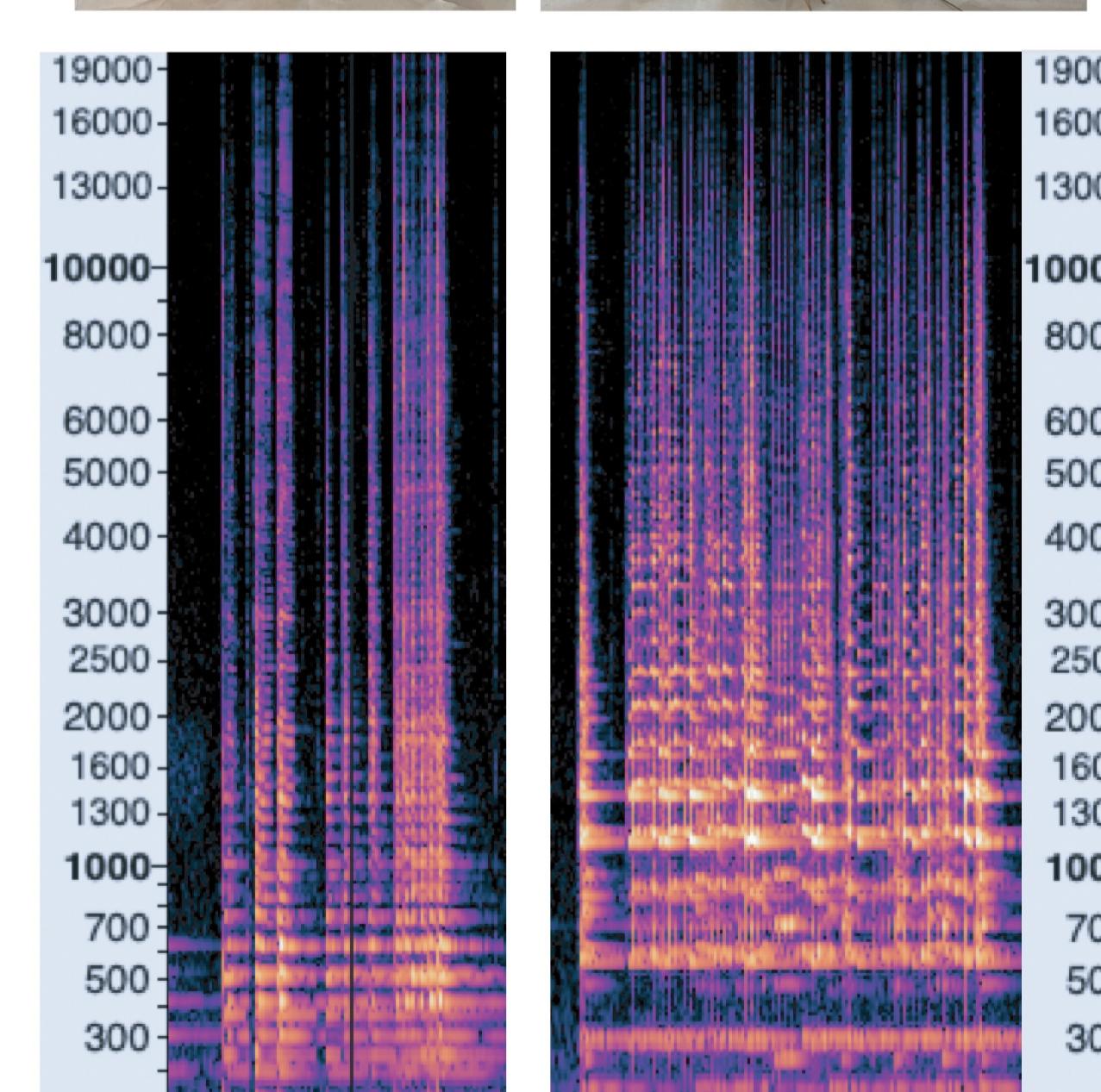


## 3. Prototype Design



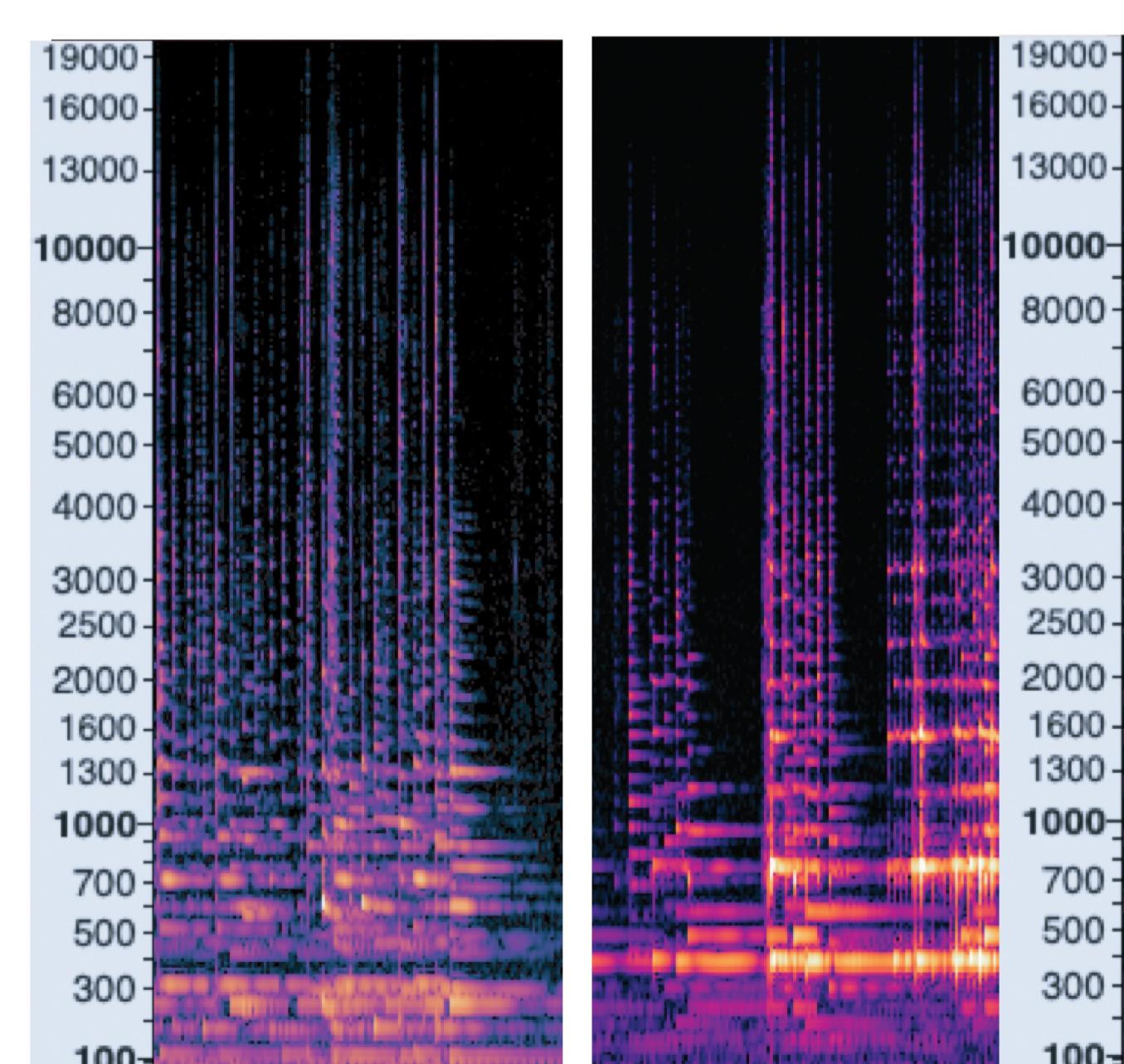
Psaltery (1100-1400 CE)

Early precursor to the dulcimer and zither. Entire instrument functions as a resonating chamber, contributing to its distinct tonal quality. Spectrogram analysis shows a higher concentration of upper frequencies. Increased number of strings allows for a broader range of notes. Typically used in small chamber settings, often accompanying vocals.



Lyre (BCE)

Features a resonant chamber at the bottom of the instrument, amplifying its sound. Spectrogram reveals an emphasis on lower frequencies (lows). Fewer strings limit the instrument's note range, but make it suitable for more intimate performances. Traditionally designed as a solo instrument, often accompanying a singer. Frequently depicted in ancient art due to its classical aesthetic and historical significance.



Gothic Harp (1400-1700 CE)

An evolutionary step towards the modern pedal harp. Characterized by a forepillar joining the neck and soundbox, providing structural stability. Spectrogram displays a greater presence of lower frequencies. Fewer strings compared to later harps, resulting in a more limited range of notes. Designed for both chamber and larger settings, its larger soundbox and lower strings give it a powerful and resonant sound.

## 4. Audio Analysis

## 5. Synthesizing Audio and Historical Analysis