CLASSICAL ANTIQUITY
CLASSICAL ANTIQUITY

The Greek views of music
—such as in Aristotle’s *Poetics* and
Plato’s *The Republic*—
are highly influential in Western thought.
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The Ancient Greeks
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ETHOS

• Music effects character and way of behaving
• Doctrine of imitation—music imitates an ethos, arouses that ethos in the listener
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Plato states music in a particular modes shifts a person’s behaviors:

- Soldiers should listen to music in the “strong” Dorian or Phrygian modes
- Men should avoid music in “feminine” Lydian, Mixolydian or Ionian modes
## Classical Antiquity

<table>
<thead>
<tr>
<th>Firm</th>
<th>Inducing</th>
<th>Soft</th>
<th>Inducing</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Dorian</td>
<td>Courage</td>
<td>(c) Lydian</td>
<td>Sorrow</td>
</tr>
<tr>
<td>Determined</td>
<td>Military use</td>
<td>Grieving</td>
<td>Lamentations</td>
</tr>
<tr>
<td></td>
<td>Determination</td>
<td></td>
<td>Weakening Character</td>
</tr>
<tr>
<td>D - C - B - A</td>
<td>Strengthening</td>
<td></td>
<td>Indolence</td>
</tr>
<tr>
<td></td>
<td>Character</td>
<td></td>
<td>(Modern Maior)</td>
</tr>
<tr>
<td>(b) Phrygian</td>
<td>Temperance</td>
<td>(d) Ionian</td>
<td>Useless</td>
</tr>
<tr>
<td>Prudent</td>
<td></td>
<td>Numbing</td>
<td></td>
</tr>
<tr>
<td>E - D - C - B</td>
<td>Daily use</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tranquility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“And which are the soft harmonies?
The Ionian, he replied, and the Lydian

Well, and are these of any military use?
Quite the reverse, he replied; and if so the Dorian and the Phrygian are the only ones which you have left. The [soft modes] must be banished; even to women they are of no use, and much less to men.”

—Plato, *The Republic*
“Musical training is a more potent instrument than any other, because rhythm and harmony find their way into the inward places of the soul, on which they mightily fasten, imparting grace, and making the soul of him who is rightly educated graceful…and receives into his soul the good, and becomes noble and good, he will justly blame and hate the bad…”

—Plato, *The Republic*
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Plato believed that changes in music would cause a wide-scale social changes.
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Aulos
<table>
<thead>
<tr>
<th>Kind</th>
<th>String</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patron</td>
<td>Apollo</td>
<td>Marsyas</td>
</tr>
<tr>
<td>Instances</td>
<td>Lyre, Harp, Kithara</td>
<td>Flute, Pipe, Aulos</td>
</tr>
<tr>
<td>Faculty</td>
<td>reason</td>
<td>passion</td>
</tr>
<tr>
<td>Principle</td>
<td>order</td>
<td>disorder</td>
</tr>
<tr>
<td>Quality</td>
<td>harmony</td>
<td>disharmony</td>
</tr>
</tbody>
</table>
MELOS

For Plato, melody =

Melody, Text (meter) and *Harmonia*

(relationship between pitches, scales, melodic types, i.e. mode)
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Mousike

MUSIC with WORDS
CLASSICAL ANTIQUITY

Mousike

MUSIC with WORDS

“And the melody and rhythm will
depend upon the words? Certainly.”

—Plato, The Republic
Greek music was MONOPHONIC, with instruments duplicating a melodic line.
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Greek “plays”
Tragedies of Euripides (480–406 BC)
and Sophocles (c. 496-406 BC)
were sung.
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GREEK THEORY

PYTHAGORAS (570-c. 495 BC)

ARISTOXENUS (c. 330 BC)

CLEONIDES (1st century AD)
GREEK THEORY

Where do pitches come from?
CLASSICAL ANTIQUITY

GREEK THEORY

Where do pitches come from?

NUMBERS

Hence, view of music as Science

Music as reflecting the Universe
While many musics derive their notes from the overtone series, Greek theorists, such as the mathematician **Pythagoras** (570-c. 495 BC) discovered and explored the numeric basis.
Legend has it that Pythagoras walked by a forge and noticed different tones emanating from anvils of different sizes as they were struck by the blacksmiths.
Pythagoras conjectured that the **different tones** of the anvils had to do with the **different sizes** of the anvils and their **ratios** between their sizes.
Pythagoras generates a series of musical intervals the “perfect” intervals octave, fifth, fourth, and second whose whole-number ratios could be measured.
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Greek theorists called the octave the DIAPASON (“across all”), the fifth the DIAPENTE (“across five”), the fourth the DIATESSERON (“across four”), and these terms were used up through the Renaissance.
ANTIQUITY

Diapason

Diapente

Diatesseron
A strange phenomenon is revealed, however, when using the Pythagorean ratios.

On an equal-tempered piano, the sum of 7 stacked octaves (CC to c⁴) and the sum of 12 stacked fifths (CC to c⁴) —the “circle of fifths”— should be “equal.”
\[ \left( \frac{3}{2} \right)^{12} = \left( \frac{2}{1} \right)^7 \]
Using the whole-number Pythagorean ratios of 2:1 for octaves and 3:2 for fifths, arithmetic shows that the sum of 7 octaves and of 12 fifths are *not* the same.

\[
\frac{(3/2)^{12}}{(2/1)^7} = \frac{531441}{524288} = 1.01364\ldots
\]
The sum of the circle of fifths overshoots getting to “c” by about a quarter of a semitone, or more accurately, by 21.51 cents
CLASSICAL ANTIQUITY

The sum of the circle of fifths overshoots getting to “c” by about a quarter of a semitone, or more accurately, by 21.51 cents.

That difference is called The PYTHAGOREAN COMMA.
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How then did the Greeks generate a set of musical pitches out of these intervals?

And what *problems* does the comma cause?
With the whole-number ratio of 2:1 we can generate a tone and an octave.

New pitch
From those two pitches (D, D) we can tune up and down by perfect fifths (3:2) to generate two new pitches, A and G.
From those two pitches (G, A) we can tune up and down by perfect fourths (4:3) to generate two new pitches, C and E.
The resulting pitches—so far—produce a pentatonic scale.
Following this pattern, we can again tune up and down by perfect fifths (3:2) from C and E to generate two new pitches, B and F, that are the last two pitches needed to complete the Greek Phrygian scale.

The last two pitches form the **Tritone**

(729 : 512)

which sounds horribly dissonant and audibly reveals the **Pythagorean Comma**

[A comma is the difference between two seemingly enharmonic notes]
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ARISTOXENUS (c. 330 BC)

Theorizes “Diastematic” (intervallic) movement made up of

Tones

and Intervals between those tones
ARISTOXENUS (c. 330 BC)

Constructs “scales” = 4 notes in ascending or descending pattern
These scale 4-note patterns are the **TETRACHORDS**

“4 strings”

A perfect fourth

with two inner pitches
3 Genera (classes) of Tetrachords

Diatonic

Chromatic

Enharmonic
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The Ancient Greeks

Diatonic  Chromatic  Enharmonic
Tetrachords can be stacked into the Greater Perfect System
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(of the extremes) Hyperbolaion

Diezeugmenon (disjunct) // (middle) Meson

Mese (middle) Hypaton (first) Proslambomenos (added on)
CLEONIDES (1st century AD)

Diatonic tetrachords combine

Tones (whole steps) and

Semitones (half steps)

in limited number of ways, or Species
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1. Semitone, Tone, Tone
2. Tone, Tone, Semitone
3. Tone, Semitone, Tone
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These 3 types of Tetrachords are the Species of Fourths
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The Species of Fifth
The Species of **Fourth** (*Diatesseron*)

and the

Species of **Fifth** (*Diapente*)

are combined into

Species of **Octave** (*Diapason*)
TONOS

These octave species (tonoi) acquire ethnic names associated with regional styles.
These octave species (*tonoi*) acquire ethnic names associated with regional styles

Dorian, Lydian, Phrygian
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Surviving Music from
Ancient Greece
**CLASSICAL ANTIQUITY**

Euripides fragments (c. 485-406 BC)

Delphic Hymns (c. 128-127 BC)

Epitaph of Seikilos (first century CE)
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Euripides fragments (c. 485-406 BC)

Orestes (c. 408 BC)
Euripides fragments (c. 485-406 BC)
Rhythm from meter of poetry

DOCHMAIC

6 syllables in pattern of

\[ \cdots \underline{\phantom{\cdot}} \underline{\phantom{\cdot}} \cdots \]

“Ka-to-lo-phi-ro-me”
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Euripides fragments (c. 485-406 BC)

Orestes (c. 408 BC)

Stasimon Chorus

A *stasimon* is sung by chorus standing in place in the orchestra
Greek Amphitheater at Epidaurus
CLASSICAL ANTIQUITY

Euripides fragments (c. 485-406 BC)

*Orestes* (c. 408 BC)

Stasimon Chorus

Women of Argos ask for mercy for Orestes

Chromatic Version (Male Chorus)
Delphic Hymns
(c. 128-127 BC)

Temple of Apollo, Delphi
Delphic Hymn Fragments
Epitaph of Seikilos
(first century CE)

Found in present-day Aydin, Turkey
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The Ancient Greeks

Aydin
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TOMBSTONE

“I am a tombstone. Seikilos placed me here as an everlasting sign of deathless remembrance”
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Epigram (set to music)

“As long as you live, be lighthearted.
Let nothing trouble you.
Life is only too short,
And time takes its toll.”
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Notated music generally considered unuseful for musicians who transmitted their music orally.
However, there were several forms of musical notation, with the

**vocal music notation** *(lexis)*

differing from

**instrumental notation** *(krousis)*
Vocal music (*lexis*) used alphabetic PITCH NOTATION using the Ionic Greek alphabet (dating after the 5th century BCE), with each note having its own symbol.
Line 1 are the diatonic scale (the pitches are approximate). Line 2 raises the line 1 pitches by one diesis (i.e. about a half-step), Line 3 by raised by two dieses.
A diesis is the difference (21.51 cents) between a perfect octave (2:1) and three stacked pure major thirds (5:4)
The rhythm of Greek vocal music generally followed the **rhythm of the poetry**, made of *long* and *short* syllables...
BUT… those rhythms could be notated and modified by various symbols.
Duration signs were placed above the pitch symbol.
Two pitches under one rhythmic sign usually indicates a melisma,

each note getting half the value of the sign, or the unequal “short-long”.
An unmarked duration is the base note value

**PROTOCHRONOS**

while other durational signs indicated a
doubling or tripling of the

*protos chronos*
# Classical Antiquity

<table>
<thead>
<tr>
<th>protos chronos</th>
<th>♩</th>
</tr>
</thead>
<tbody>
<tr>
<td>dieseme</td>
<td>♩</td>
</tr>
<tr>
<td>triseme</td>
<td>♩</td>
</tr>
</tbody>
</table>

The table above illustrates the musical notation for protos chronos, dieseme, and triseme in ancient Greek music.