Astronomy & Music
Introduction to the Duochord

Learning Leaflet: Stand-up Activities
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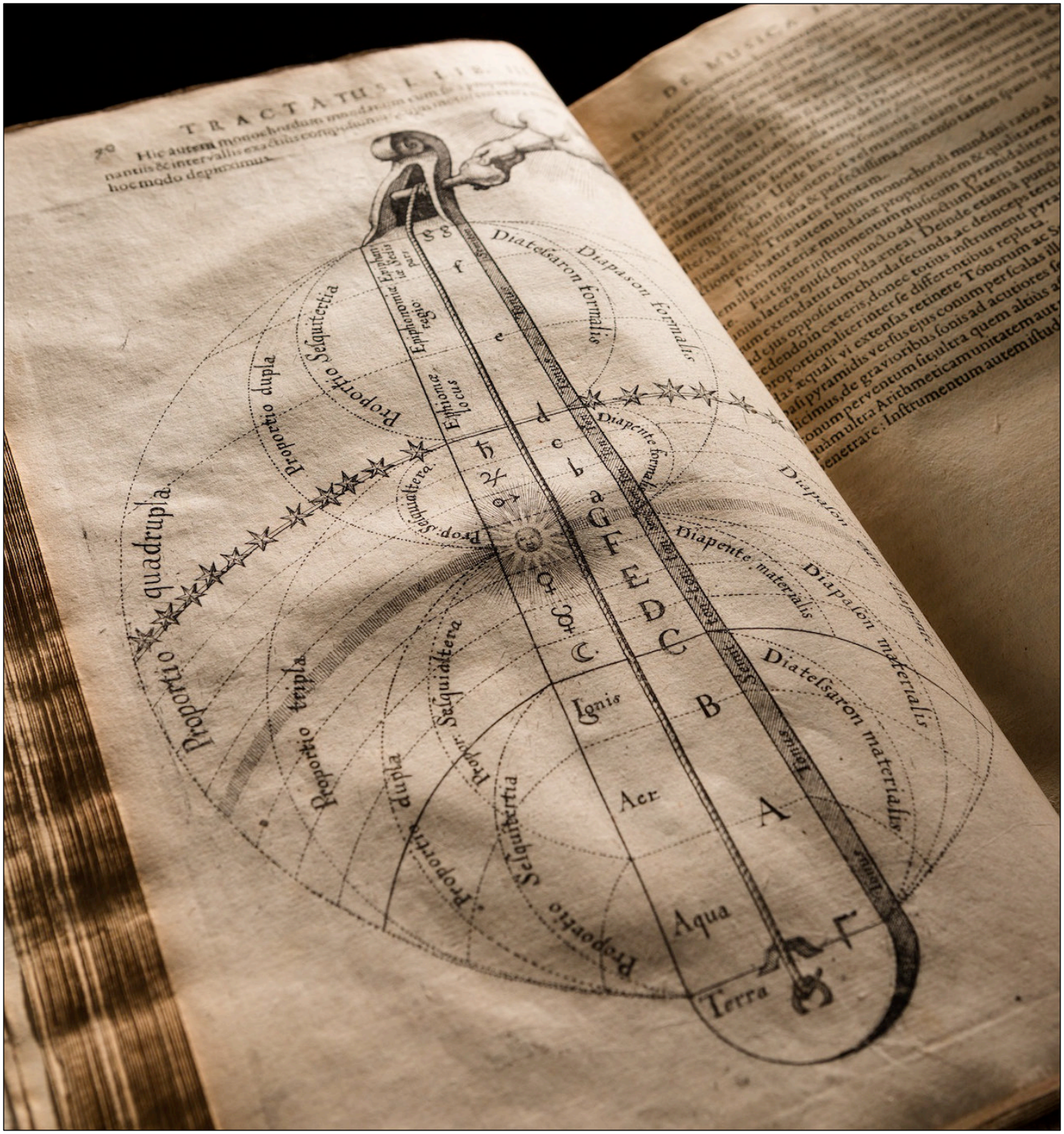
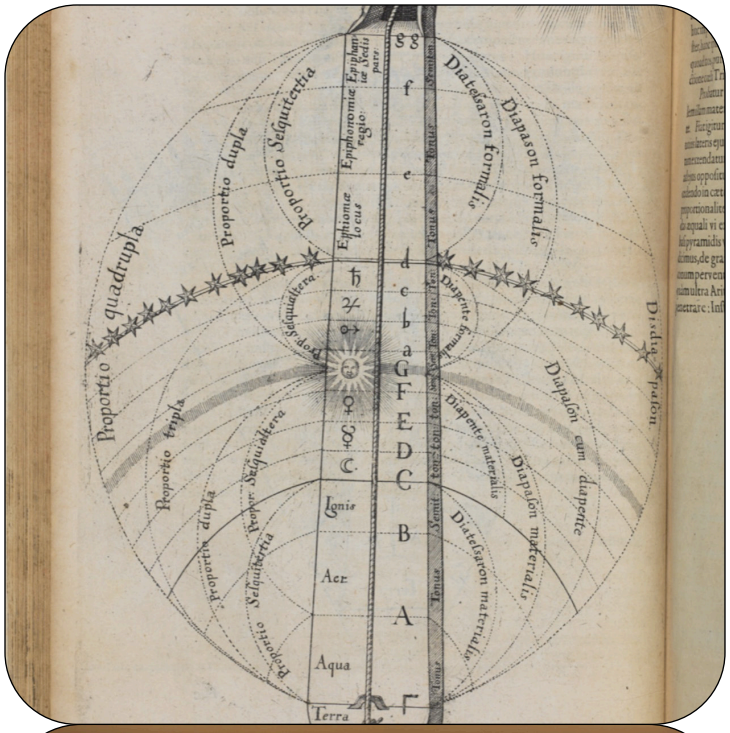


Robert Fludd, *Utriusque cosmi maioris scilicet et minoris* (Oppenheim, 1617–21)
"On the Two Worlds, namely, the Macroscosm and the Microcosm"

Can you identify any intervals below?




Mathematical Octave - 2:1


Mathematical Perfect Fifth - 3:2


Mathematical Perfect Fourth - 4:3

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The ancient Pythagoreans envisioned the heavens as celestial spheres rotating according to harmonious music. For Robert Fludd, the universe was a monochord, its physical structure unintelligible without an understanding of music. Galileo's father, Vincenzo Galilei, experimented with pitch and tuning.

Explore the relations between music and mathematics with a duochord. Make sure that the strings of the duochord are in tune with one another.

Mathematical Octave - 2:1

1. Locate the marker on the duochord that divides the string into *two equal halves*.

2. Place a moveable bridge under the halfway marker of one string and pluck half of the string. The resulting note will be one octave higher than the unaltered string.

Mathematical Perfect Fifth - 3:2

1. Locate the markers on the duochord that divide the string into *three equal segments*.

2. Place a moveable bridge over one marker dividing the string into segments of 1/3 and 2/3 of its entire length. Pluck the long side, or 2/3 of the divided string, to produce an interval of a perfect fifth higher than the unaltered string.

Mathematical Perfect Fourth - 4:3

1. Locate the markers on the duochord that divide the string into *four equal segments*.

2. Place a moveable bridge over one marker dividing the string into segments of 1/4 and 3/4 of its entire length. Pluck the long side, or 3/4 of the divided string, to produce an interval of a perfect fourth higher than the unaltered string.

Jonathan Annis