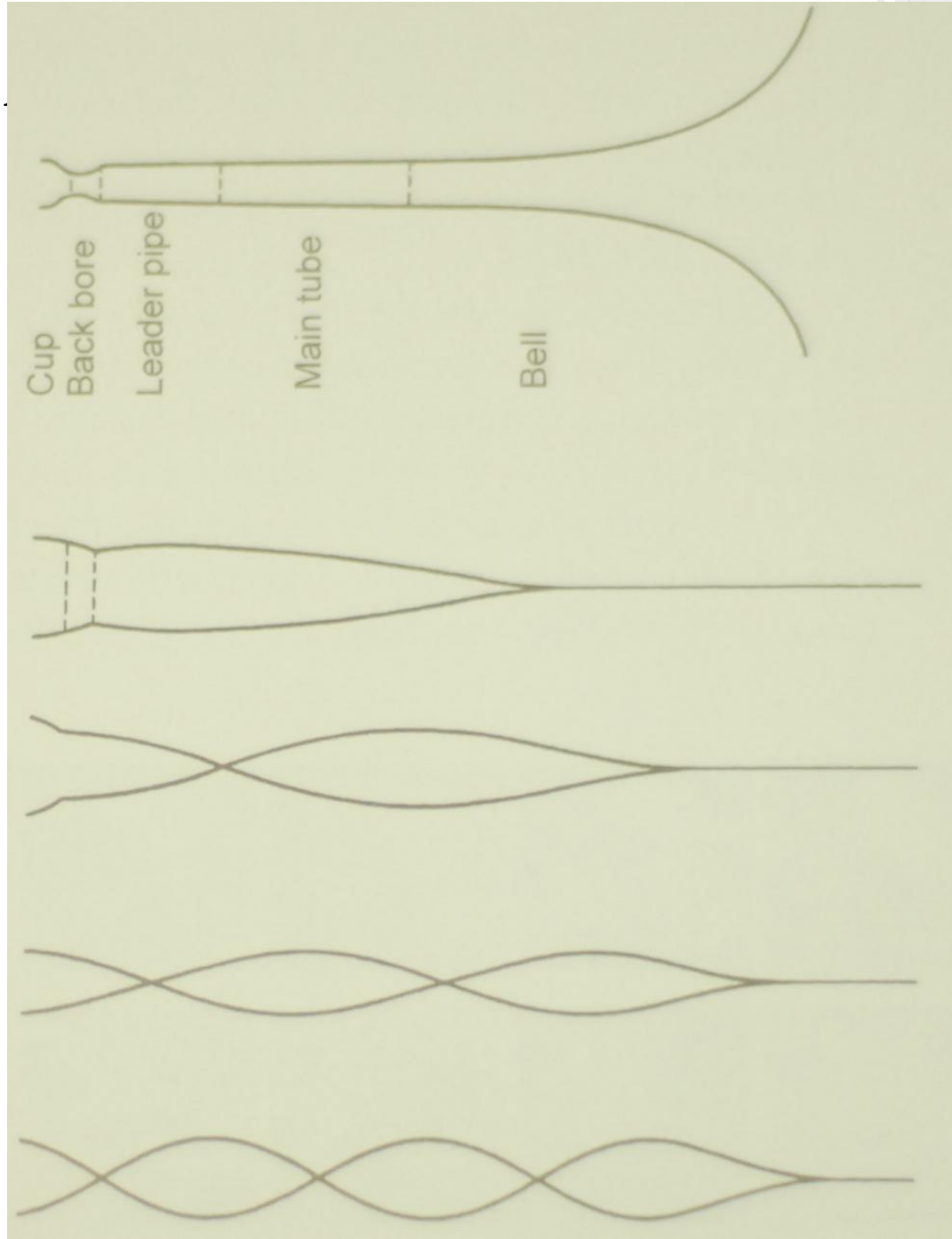
Brass Instruments & Vuvuzelas

Enrique Macias and Mark Omiliak

Why are Vuvuzelas annoying?

- Many are played together a drone is produced
  - Drone sounds are harder to ignore
- Became popular from the 2010 World Cup in Africa
- Produces about 116 decibels at 1 meter
  - Classical music at its finest

Pieces and modes of brass instruments



Sound Propagation and Mouth piece

- Sound of a brass instrument is made by the vibration of the lips creating a standing wave
- Player's embouchure may be seen as a flow control valve acting on the steady air flow
- Mouth Pieces - You buzz on them.

Lead Pipe and Tubing

- Length of tubing determines pitch/ frequency of the sound wave
- Valves redirect flow of air to changes length of tubing
- Different lengths of tubing allow the player to play chromatically on the fly

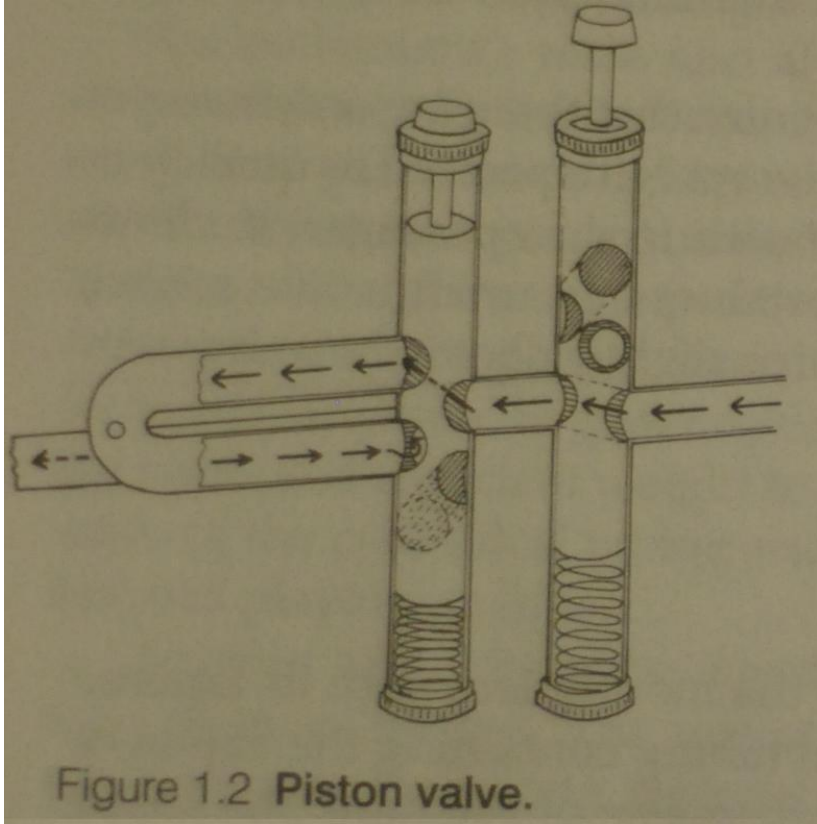


Figure 1.2 **Piston valve.**

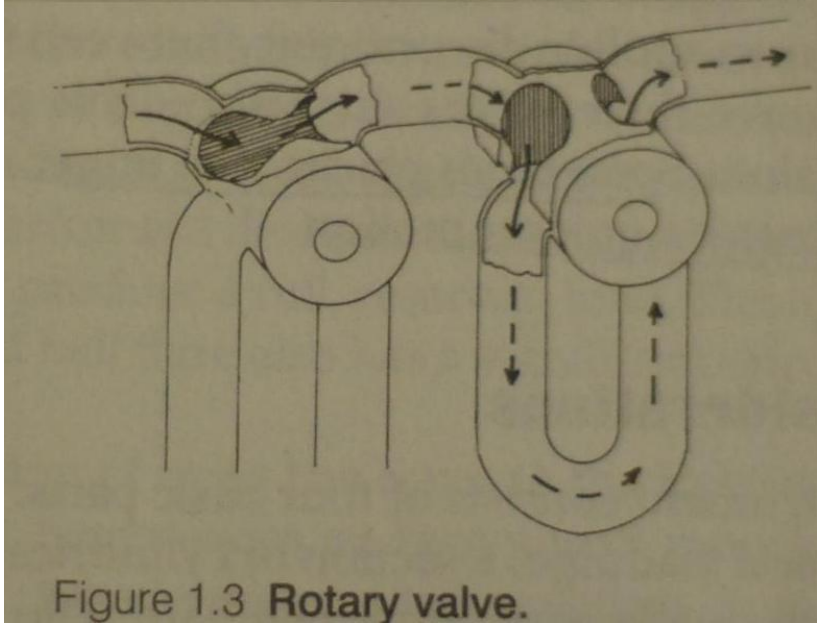
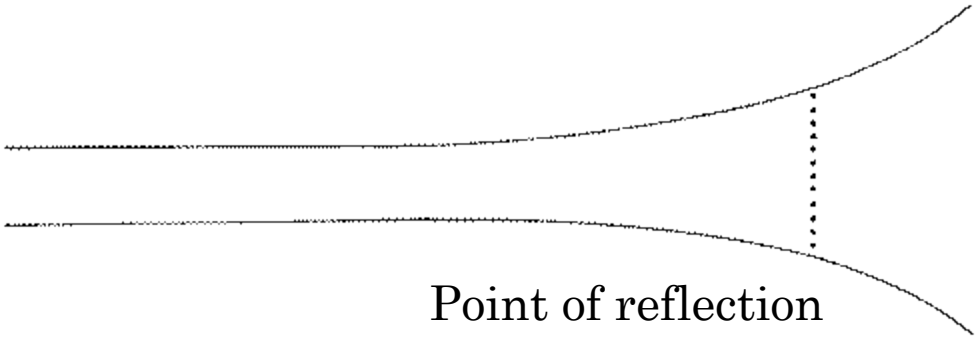


Figure 1.3 **Rotary valve.**

Bell Flare

- Redirects acoustical energy back into the instrument
  - Mostly middle and low frequencies are reflected back
- Projects the sound
- Different Metals affect the sound



Harmonic series of our Vuvuzela

Based on L=0.623m

Experimental		**Theoritical**	
108	~ A2	**107**	~ A2
212	~ Ab3	214	~ A3
420	~ Ab4	428	~ A4
633	~ Eb5	642	~ E5
835	~ Ab5	857	~ A5

Bibliography

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- Whitener, Scott. A Complete Guide to Brass: Instruments and Technique. New York: Schirmer, 1997. Print.