What is an instrument?

• Anything with which we can make music...
• Rhythm, melody, chords,
• Pitched or un-pitched sounds...

• Narrow definitions vs. Extremely broad definitions
Tone Colour or **Timbre**

(pronounced TAM-ber)

• Refers to the sound of a note or pitch
  – Not the highness or lowness of the pitch itself

• Different instruments have different timbres
  – We use words like smooth, rough, sweet, dark
  – Ineffable?
Range

- Instruments and voices have a **range** of notes they can play or sing
  - Demo guitar and voice

- Lowest to highest sounds
- Ways to push beyond the standard range
Five Categories of Musical Instruments

Classification system devised in India in the 3rd or 4th century B.C.

1. Aerophones
   • Wind instruments, anything using air

2. Chordophones
   • Stringed instruments

3. Membranophones
   • Drums with heads

4. Idiophones
   • Non-drum percussion

5. Electrophones
   • Electronic sounds
1. Aerophones

- Wind instruments, anything using air
- Aerophones are generally either:
  - **Woodwind** (Doesn’t have to be wood i.e. flute)
  - **Reed** (Small piece of wood i.e. saxophone)
  - **Brass** (Lip vibration i.e. trumpet)
Flute

- Woodwind family
- At least 30,000 years old (bone)

Ex: Claude Debussy – “Syrinx” (1913)
https://www.youtube.com/watch?v=C_yf7Flyu1Y

Ex: Jurassic 5 – “Flute Loop” (2000)

Ex: Anchorman “Jazz Flute” (0:55)
https://www.youtube.com/watch?v=Dh95taldCo0
Bass Flute

• One octave lower than a regular flute
  
  Ex: Overture from *The Jungle Book*
  https://www.youtube.com/watch?v=UUH42ciR5SA

• Other related instruments:
  • Piccolo (one octave higher than a flute)
  • Pan flutes
  • Bone or wooden flutes
Accordion

- Modern accordion: early 19th C. Germany
- Different types: keyboard, button (diatonic, chromatic)

Ex: Introduction to the Accordion
https://www.youtube.com/watch?v=9s-YJu86Vgo

Ex: Beau Jocque and the Zydeco Hi-Rollers
  – “Gonna Take You Downtown” (1996)

Melodica

• Related to harmonica
• 2 or 3 octave
• Optional air tube

Ex: Augustus Pablo – “Java” (1972)

Ex: “Java” live in Japan, 1986
https://www.youtube.com/watch?v=MiaekG1Q0UE
Didgeridoo

- Indigenous Australian drone instrument
- Termite-hollowed
- Wax seal for mouthpiece

Video Ex: Jeremy Donovan
https://www.youtube.com/watch?v=9g592I-p-d

Video Ex: Xavier Rudd – “Lioness Eye” (2012)
https://www.youtube.com/watch?time_continue=52&v=QRBCzUPDUVA
Clarinet

Video Ex: Instrument: Clarinet (Philharmonia Orchestra)

https://www.youtube.com/watch?v=nENXs6n_ITI

Ex: King Oliver’s Creole Jazz Band
   – “Dippermouth Blues” (1923)

Ex: Benny Goodman
   – “What Can I Say After I’m Sorry” (1955)

Ex: The Beatles – “When I’m Sixty-Four” (1967)
2. Chordophones

- All stringed instruments
- Chordophones are either: 
  bowed (violin),
  plucked (guitar), or 
  hammered (piano).
Banjo

- 4, 5, 6 string banjos
- Resonator

**Video Ex: Banjo Picking Styles (Bela Fleck)**
https://www.youtube.com/watch?v=a1ICccY-sfg

**Video Ex: “Dueling Banjos” from Deliverance (1972)**
https://www.youtube.com/watch?time_continue=2&v=myhnAZFR1po
Banjo (cont.)

Ex: The Statler Brothers – “Flowers On The Wall” (1966)

Ex: Neil Young – “Old Man” (1972) (1:10)

Ex: Coleman Hell – “2 Heads” (2015)
Mandolin

- Unison strings

Ex: Bill Monroe and His Bluegrass Boys – “Nobody Loves Me” (1945)


Stand Up Bass vs. Electric Bass

- Listening for the bass in general
- Frets, buzzing, muddy or clear sounds

Video Ex: Demonstration of Electric Bass, Upright Bass and Keyboard Bass

https://www.youtube.com/watch?v=v1iptQc9hTQ
(3:10 stand up, 10:10 keyboard bass)
Stand Up Bass
aka Upright Bass/Double Bass

• No frets, slides, buzz, “muddy”

Ex: Elvis Presley – “That’s All Right” (1954)
• Bass by Bill Black

Ex: Muddy Waters –
“I Just Want To Make Love To You” (1954)
• Bass by Willie Dixon
Electric Bass

• Frets (fretless also available)
• “Clean” sound


Ex: Bob Marley and the Wailers – “Exodus” (1977)
Synth/Keyboard Bass

- Range of possible tones
- Can mimic standup, electric or other sounds
- Electrophone family of instruments, not chordophone

Ex: Parliament – “Flash Light” (1977)
- Bernie Worrell


Ex: Stevie Wonder – “I Believe (When I Fall In Love It Will Be Forever)” (1972) (1:05)
Harpsichord

• Peak 15th to 18th C. in Europe
• Used today to play music of this time

Video Ex: Harpsichord Demonstration
https://www.youtube.com/watch?v=IzGdkh3Mpl0

• No dynamics
Harpsichord (Cont.)

• Pop music (Baroque Pop)
  Ex: The Beatles – “Fixing A Hole” (1967)
  Ex: The Rolling Stones – “Play With Fire” (1965)
  Ex: The Yardbirds – “For Your Love” (1965)

• Funk/Soul context
  Ex: Barry White – “Never Gonna Give Ya Up” (1975)

• Electronic keyboards
Oud

- Typically 11 strings (lowest is not doubled)
- Common in the Middle East and North Africa

Video Ex: Toti Pumpo Oud Solo
https://www.youtube.com/watch?v=aAXvavQkxFI

Video Ex: Smooth Criminal
Oud cover by Ahmed Alshaiba
https://www.youtube.com/watch?v=_FwJqYcCcMU
Shamisen

• Japan: “3 strings”
• 16th C. Japan, origins in China
• Resonator body, fretless
• Bachi: large plectrum

Video Ex: Traditional Shamisen
https://www.youtube.com/watch?v=BArSq0MnvMM

Video Ex: Wagakki Band
https://www.youtube.com/watch?v=NZ8adlsHGaE
Sitar

• Indian classical instrument

• In its current form, 18th c. or earlier

• 18-21 strings; 6-7 played, the rest are sympathetic (drone) strings
Sitar (cont.)

Video Ex: Ravi Shankar, Dick Cavett Show (1971)
https://www.youtube.com/watch?v=4gWCiLexiLY

- Popular music: Beatles, Stones, etc.

Ex: The Beatles – “Norwegian Wood (This Bird Has Flown)” (1965)
- Regarded as the first pop song to use a sitar

- Electric Sitar, 1967
https://www.youtube.com/watch?v=dPeFjnPlUjA
3. Membranophones

• All drums with heads
  (i.e. not percussion instruments like shakers)
Tabla

- South Asian classical music
- Wood, clay or brass
- Finger patterns
- Heel of the hand to change the pitch

Video Ex: Gurtek Singh
https://www.youtube.com/watch?v=XUgjZGjNh2Q

Ex: The Beatles – “Within You Without You” (1967)
Timpani
aka Kettledrums

• Orchestral instrument

Video Clip:
Instrument: Timpani (Philharmonia Orchestra)
https://www.youtube.com/watch?v=40k3AAbA7tM
(3:06)

Ex: Richard Strauss – “Thus Spoke Zarathustra” (1896)
The Drum Kit

- Origins in New Orleans

Ex: Parts of a Drum Set

https://www.youtube.com/watch?v=Wea_zXuLcP0
Common Drum Beats and Techniques

1. Backbeat

Video Ex: Drum Lesson, Backbeat (1:50)
https://www.youtube.com/watch?v=qbUoM9praog&t=115s

Ex: Etta James – “Something’s Got A Hold On Me” (1964)

2. Four-on-the-Floor

Video Ex: 7 Days of Basic Beats (:20 and later)
https://www.youtube.com/watch?v=G8KCb3NSGc

Ex: Rolling Stones – “Miss You” (1978)

3. Jungle Drumming

Ex: Benny Goodman – “Sing, Sing, Sing” (1937) Gene Krupa
Common Drum Beats and Techniques (cont.)

4. Ride Cymbal Patterns
Ex: Hank Mobley – “Soft Impressions” (1966)
Ex: Stan Getz & J.J. Johnson – “Crazy Rhythm” (1957)
Ex: The Doors – “L.A. Woman” (1971)

5. Rim Shots
Ex: Charlie Rouse – “Aconteceu” (1962)
Ex: Bob Marley & The Wailers – “So Much Things To Say” (1977)
6. Brush Patterns (See next slide for diagram)

- Brushes vs. Sticks

**Video Ex: Three Beginner Brush Patterns for Snare Drum**

[https://www.youtube.com/watch?v=1Sld2psjrA8](https://www.youtube.com/watch?v=1Sld2psjrA8)

**Ex: Miles Davis – “All Blues” (1959)**

**Video Ex: Gene Krupa & His Orchestra**

- “The Brush Drum Solo” (1939)

[https://www.youtube.com/watch?v=NYWTjO6t-vQ](https://www.youtube.com/watch?v=NYWTjO6t-vQ)
Brush Patterns

Fig. 1: SLOW
- Right hand: 2, 4
- Left hand: 1, 2, 3, 4

Fig. 2: Medium
- Right hand: 1, 3
- Left hand: 2, 4

Fig. 3: Fast
- Right hand: 3, 4
- Left hand: 1, 2
4. Idiophones

- Includes most percussion instruments that are not drums.
- Xylophones, maracas, etc.
Steel Pan/Steel Drums

- Trinidad and Tobago
- Oil and chemical drums

Video Ex: Steel Pan
https://www.youtube.com/watch?v=rVXAwHbaFB0

Video Ex: Robert Greenidge Steel Pan
https://www.youtube.com/watch?v=5EcuGvLn7zs

Handpan

- 21\textsuperscript{st} C instrument
- Steel pan connection
- Fewer notes
- Major or minor

Video Ex: Jesse Stewart

https://vimeo.com/220826370
Tuned Glasses

• Broad definition of “instrument”

Ex: “Hallelujah” on Crystal Glasses

https://www.youtube.com/watch?v=REyI4VIY2A
5. Electrophones

• This category is NOT from the 3-4th C. BC, but from the 20th century.

• Includes all instruments made with electronic sounds: synthesizers, theremin, etc.
Keytar

- 18th C. portable pianos
- 1980s origins
- Keyboard/Synthesizer

Ex: Herbie Hancock

– “Chameleon” (live, 2012)

https://www.youtube.com/watch?v=PK_Nz7e7ZVc
(:30, 6:00)
Electric Drum Kit

- Variety of sounds (samples)
- Volume control

Video Ex:
How Electronic Drums Sound Without Amplification
https://www.youtube.com/watch?v=IH5mSI1LLMA

Video Ex: How Electric Drums Work
https://www.youtube.com/watch?v=QoWbUZChfls

- Sample Pads
Ondes Martenot

• 1928
• similar to theremin (but more accurate)

Video Ex: *Ghostbusters* (1984) titles (1:00)
• Elmer Bernstein
  https://www.youtube.com/watch?v=TNuVcYz0WDQ

Video Ex: Cynthia Millar, Ondes Martenot (0:00 4:30)
https://www.youtube.com/watch?v=yidV0HeVyCg

• Johnny Greenwood (Radiohead)
The Human Voice

• A 6\textsuperscript{th} instrument category?
  – Voice as instrument
  – “I don’t play an instrument, but I sing”
• Different vocal timbres
• Male vs. female
• 4 Mysterious Audio Examples

Ex: Arch Enemy – “Stolen Life” (2014)
https://www.youtube.com/watch?v=gB4uhCqOH2k

• http://www.concerthotels.com/worlds-greatest-vocal-ranges
Beatboxing

• Drum or other instrumental sounds created vocally
• Pre-rap origins:

  • **Hambone**: body percussion

    **Video Clip: Hambone – Steve McCraven**
    • [https://www.youtube.com/watch?v=v8r5wxpa3hg](https://www.youtube.com/watch?v=v8r5wxpa3hg)

  • **Scat singing**

    **Video Clip: Ella Fitzgerald scats**
    • [https://www.youtube.com/watch?v=2xoSFyqW7Ji](https://www.youtube.com/watch?v=2xoSFyqW7Ji)
Beatboxing

• Fat Boys’ Darren “The Human Beat Box” Robinson
  Ex: Doug E. Fresh & Slick Rick – “La Di Da Di” (1985)

• Rahzel:
  Ex: Rahzel – “If Your Mother Only Knew” (1999)
Beatboxing and Flute

Video Ex: Beatboxing Flute Inspector Gadget

https://www.youtube.com/watch?v=59ZX5qdIEB0
Vocal through Paper-and-Comb

• Paper vibrates on comb, like a kazoo
  https://www.youtube.com/watch?v=5rgo_4F5dHg

Ex: The Mound City Blowers – “If I Could Be With You One Hour Tonight” (1929)

• Red McKenzie, vocal through paper-and-comb
Human Voices

Overtone Singing

• What are overtones?

https://www.youtube.com/watch?v=vC9Qh709gas
Human Voices

- Throat “singing”
- Game
- Tanya Tagaq


https://www.youtube.com/watch?v=KNb2ZDjeiU4