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 3\textsuperscript{rd} or 4\textsuperscript{th} 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](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-YJu86Vqo

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=9g592l-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)

Ex: The Soggy Bottom Boys

Ex: Led Zeppelin
   - “The Battle of Evermore” (1971)
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: Queen feat. David Bowie
- “Under Pressure” (1981)

Ex: Michael Jackson
- “Billie Jean” (1982)

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)
12 String Guitar

• Unison and octave strings

Ex: The Byrds
  – “Mr. Tambourine Man” (1965)

Ex: Tom Petty & The Heartbreakers

Video Ex: Jimi Hendrix
  – “Hear My Train A Comin’” (1967)

https://www.youtube.com/watch?v=G6IlVRMvZQo
12 String Guitar (cont.)

Ex: Leadbelly – “Easy Rider” (1949)
• King of the 12 string guitar

Ex: The Rolling Stones – “As Tears Go By” (1965)

Video Ex: Stevie Ray Vaughan – “Rude Mood” (1990)
https://www.youtube.com/watch?v=XuZJiiQESqo
Slide Guitar
aka Bottleneck Guitar

- A slide can be used on any type of guitar
- Demo

Ex: Muddy Waters – “I Can’t Be Satisfied” (1948)
Ex: The Allman Brothers Band
   – “Statesboro Blues (live)” (1971)
Harpsichord

- Peak 15\textsuperscript{th} to 18\textsuperscript{th} 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”
• 16\textsuperscript{th} 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=4gWCiLexiY](https://www.youtube.com/watch?v=4gWCiLexiY)

- 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=dPeFjnPjUjA](https://www.youtube.com/watch?v=dPeFjnPjUjA)
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=40k3AAAbA7tM

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](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=G8KCkb3NSGc](https://www.youtube.com/watch?v=G8KCkb3NSGc)
   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)
Common Drum Beats and Techniques (cont.)

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

Fig. 2: Medium

Fig. 3: Fast
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=rVXAwhHbaFB0](https://www.youtube.com/watch?v=rVXAwhHbaFB0)

**Video Ex: Robert Greenidge Steel Pan**
[https://www.youtube.com/watch?v=5EcugvLn7zs](https://www.youtube.com/watch?v=5EcugvLn7zs)

**Ex: 50 Cent – “P.I.M.P” (2003)***
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=IAEXH9DAH98
5. Electrophones

• This category is NOT from the 3-4\textsuperscript{th} C. BC, but from the 20\textsuperscript{th} 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)
Guitar Synthesizer

Video Ex: Casio
DG-10 Guitar Synth
• Plastic “strings;” purely electric
• Built-in synth and speaker

https://www.youtube.com/watch?v=p3DtB7WSMiY

Video Ex: Flight of the Conchords
– “She’s So Hot ... Boom (live)” (2005)

https://www.youtube.com/watch?v=a-sawvtJxDl
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](https://www.youtube.com/watch?v=TNuVcYz0WDQ)

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

- Johnny Greenwood (Radiohead)
The Human Voice

• A 6th 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=2xoSFyqW7Jl](https://www.youtube.com/watch?v=2xoSFyqW7Jl)
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=59ZX5qdlEB0
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

Ex: Tanya Tagaq –
“The Sound of Throat Singing” (2009)

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