Another ABC Presentation

American Band College of Central Washington University

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ABC's of the Overtone Series
Overtone Series
Building the Series

Partial
Overtone Series
Building the Series

Partial
Overtone Series
Building the Series

Partial

1 2

3 4
Overtone Series
Building the Series

1 2
Partial
Overtone Series
Building the Series

Partial
Overtone Series
Building the Series

1 2
Partial
Overtone Series
Building the Series

1 2
Partial
Overtone Series
Building the Series

1 2 Partial
Overtone Series
Building the Series

1 2
Partial

3 4 5 6 7 8 9 10
Overtone Series
Building the Series

3 4 5 6 7 8 9 10 11

Partial
Overtone Series
Building the Series

1 2
Partial

3 4 5 6 7 8 9 10 11 12
Overtone Series

Building the Series

\[ \text{\textbf{1 2}} \]

\[ \text{\textbf{3 4 5 6 7 8 9 10 11 12 13}} \]
Overtone Series
Building the Series

3 4 5 6 7 8 9 10 11 12 13 14
Overtone Series
Building the Series

3 4 5 6 7 8 9 10 11 12 13 14 15

1 2
Overtone Series

3, 6, 12 = Sharp
5, 10 = Flat
7, 14 = Very Flat

1, 2, 4, 8, 16 = OK
Overtone Series
Part 2
THE SEVEN SERIES
Overtone Series

C Series (open)
Overtone Series

B Series (2nd Valve)

\begin{music}
\begin{fretboard}
\drawString[2,2]{1}{4}\drawString[2,4]{6}{8}\drawString[2,6]{9}{12}
\end{fretboard}
\end{music}

OPEN  2
Overtone Series

Bb Series (1st valve)
Overtone Series

A Series (12 or 3)

OPEN 2 1 12 or 3
Overtone Series

Ab Series (23)

Open 2 1 12 23
or 3
Overtone Series

G Series (13)

OPEN  2  1  12  23  13
or 3
Overtone Series

Gb Series (123)

OPEN 2 1 12 or 3 23 13 123
Overtone Series
Pitch Tendencies (valves)

* Can vary depending on the manufacturer.
Overtone Series

ALL POSSIBLE FINGERINGS
Overtone Series
All possible fingerings

Trumpet

Given note E

Open 2 1 12 23 13 123

or 3
Overtone Series
All possible fingerings

Trumpet

- Check for given note

Given note E

None

OPEN

2 1 12 23 13 123

or 3
Overtone Series
All possible fingerings

Trumpet

- Check for given note
  - None

- Think down Major 3rd, check for series
  - Open

Given note E
Major 3rd

Open
2
1
12
or 3
23
13
123
Overtone Series
All possible fingerings

Trumpet

- Check for given note E
  None

- Think down Major 3rd, check for series
  Open

- Think down Perfect 5th, check for series
  12 or 3
Overtone Series
All possible fingerings

Trumpet

- Check for given note: None
- Think down Major 3rd, check for series: Open
- Think down Perfect 5th, check for series: 12 or 3
- Think down minor 7th, check for series: 123
Overtone Series
All possible fingerings

Trumpet

* There are 4 possible fingerings:

- **OPEN**
- **12 or 3**
- **123**

Given note E: 

\[
\begin{align*}
\text{OPEN} & & 12 \text{ or } 3 & & 123 \\
\end{align*}
\]
Overtone Series

CHOOSE PREFERRED FINGERING
Overtone Series
Choosing preferred fingering

- Least number of valves,
- Unless it involves 3rd valve,
- Or is the 7th partial
Overtone Series
Choosing preferred fingering

Trumpet

Given note E

- Least number of valves

OPEN

12 or 3

123

OPEN

2 1 12

or 3

23 13

123
Overtone Series
Choosing preferred fingering

Trumpet

- Least number of valves,
- Unless it involves 3rd valve

Given note E

OPEN

12 or 3

123

OPEN 2 1 12 or 3 23 13 123
Overtone Series
Choosing preferred fingering

Trumpet

- Least number of valves,
- Unless it involves 3rd valve,
- Or is the 7th partial

Given note E:

- OPEN
- 12 or 3

Fingering:
- OPEN
- 2
- 1
- 12 or 3
- 23
- 13
- #123
- OPEN
- 2
- 1
- 12
- 23
- 13
- #123
Overtone Series

ALL POSSIBLE FINGERINGS (High Ab)
Overtone Series
All possible fingerings

Trumpet

- Check for given note

Given note Ab

\[ \text{OPEN} \quad 2 \quad 1 \quad 12 \quad 23 \quad 13 \quad 123 \quad \text{or 3} \]
Overtone Series
All possible fingerings

Trumpet

- Check for given note
- Think down Major 3rd, check for series

Given note Ab

\[ \text{MAJOR 3RD} \]

\[ \text{OPEN} \quad 2 \quad 1 \quad 12 \quad 23 \quad 13 \quad 123 \]

or 3
Overtone Series
All possible fingerings

Trumpet

- Check for given note
- Think down Major 3rd, check for series
- Think down Perfect 5th, check for series

Given note Ab

Perfect 5th

OPEN 2 1 12 23 13 123
or 3
Overtone Series
All possible fingerings

Given note Ab

- Check for given note
- Think down Major 3rd, check for series
- Think down Perfect 5th, check for series
- Think down minor 7th, check for series

Minor 7th

None
None
1

Trumpet

Open 2 1 12 23 13 123

or 3
Overtone Series
All possible fingerings

Trumpet

Given note Ab

- Check for given note
- Think down Major 3rd, check for series
- Think down Perfect 5th, check for series
- Think down minor 7th, check for series
- Think down Major 9th, check for series

MAJOR 9TH

1

123

OPEN 2 1 12 23 13 123

or 3
Overtone Series

All possible fingerings

There are 3 possible fingerings:

- OPEN
- 1
- 2
- 3
- 12
- 13
- 23
- 3
- 123

Trumpet

Given note Ab
Overtone Series
Choosing preferred fingering

Trumpet

- Least number of valves

Given note Ab

```
OPEN 2 1 12 23 13 123
or 3
```
Overtone Series
Choosing preferred fingering

Trumpet

Given note Ab

- Least number of valves
- Unless it involves 3rd valve

<table>
<thead>
<tr>
<th>OPEN</th>
<th>2</th>
<th>1</th>
<th>12</th>
<th>23</th>
<th>13</th>
<th>123</th>
<th>23</th>
<th>123</th>
</tr>
</thead>
</table>
Overtone Series
Choosing preferred fingering

Trumpet

Given note Ab

- Least number of valves
- Unless it involves 3rd valve
- Or is the 7th partial

Open 2 1 12 23 13 123
or 3
Overtone Series
Choosing preferred fingering

Trumpet

Given note Ab

- Least number of valves
- Unless it involves 3rd valve
- Or is the 7th partial

```
\begin{array}{cccccc}
& \text{OPEN} & 2 & 1 & 12 & 23 & 13 & 123 \\
\end{array}
```
Overtone Series

PITCH TENDENCY (PARTIALS + VALVES)
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

1. Open
2. 2nd Partial
3. 3rd Partial
4. 4th Partial
5. 5th Partial

Or 3rd Partial:

123
Overtone Series
Pitch Tendencies (partial + valves)

Trumpet

$\text{5, 10 = Flat}$

$\text{OPEN}$

$\text{2}$

$\text{1}$

$\text{5th partials = flat}$

$\text{valves = ok}$

$\text{overall pitch = flat}$

$\text{OPEN}$

$\text{2}$

$\text{1}$

$\text{12 or 3}$

$\text{23}$

$\text{13}$

$\text{123}$
Brass Pitch Problems

Holst 2nd Suite • 2nd Mvt

2 Bb Cor.

Bb Tpts.
Brass Pitch Problems

Holst 2nd Suite • 2nd Mvt

5th partials = flat

2 Bb Cor.

Bb Tpts.
Brass Pitch Problems

Holst 2nd Suite • 2nd Mvt

2 Bb Cor.

Bb Tpts.
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

3rd partials = ♯
valves = ♯
overall pitch = ♯

3, 6, 12 = Sharp

OPEN 2 1 12 or 3 23 13 123
Brass Pitch Problems

Holst 2\textsuperscript{nd} Suite • 2\textsuperscript{nd} Mvt

\begin{align*}
&\text{2 Bb Cor.} \\
&\text{Bb Tpts.}
\end{align*}

\begin{align*}
\text{5th partials} & = \text{flat} \\
\text{3rd partials} & = \# \\
12 & \quad 12 \quad 13
\end{align*}
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

```
<table>
<thead>
<tr>
<th>OPEN</th>
<th>2</th>
<th>1</th>
<th>12</th>
<th>23</th>
<th>13</th>
<th>123</th>
</tr>
</thead>
</table>
```

\[ \text{or } 3 \]
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

5, 10 = Flat

5th partial = flat

12 valve combo = #

Overall pitch = ok

OPEN 2 1 12
or 3 23 13 123
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

7th Partial Usage

123

OPEN 2 1 12 23 13 #123
or 3
Overtone Series
Pitch Tendencies (partials + valves)

Trumpet

7th Partial Usage

7th partial = very flat
123 valve combo = v. sharp
Overall pitch = ok

7, 14 = Very Flat

OPEN 2 1 12 or 3 23 13 #125
Overtone Series

Relationship to Woodwinds
Woodwind Fingerings

Elsa’s Procession

B♭ Cls. I
Chalumeau Fingerings

1st Partial
Clarion Fingerings

+ Register Key

1st Partial

3rd Partial
Altissimo Fingerings

- 1st Finger

+ Register Key

3rd Partial

5th Partial

1st Partial
Woodwind Fingerings

Elsa’s Procession

B♭ Clarinet I
Overtone Series
Relationship to Woodwinds
(from clarinet)

\[ \text{Clarinet 3}\text{rd Partials relate to flute, oboe and sax fingerings} \]

\[ \text{Fundamentals (from clarinet)} \]

\[ \text{Clarinet fundamentals relate to bassoon fingerings} \]
Overtone Series

Trumpet Related to Other Brass
Overtone Series
B.C. Baritone to Trumpet

Go up Major 9th,
then think trumpet fingerings
Overtone Series
Tuba to Trumpet

Go up two Octaves + Major 2nd, then think trumpet fingerings
Overtone Series
Horn (F side) to Trumpet

Go up Octave,
then think trumpet fingerings
Overtone Series
Horn (Bb side) to Trumpet

Go up perfect 5th,
then think trumpet fingerings
Overtone Series
Trombone & Trumpet Relationship

**Trumpet**
- Open
- 3rd
- 1st
- 12 or 3rd
- 23rd
- 13th
- 123rd

**Trombone**
- 1st
- 2nd
- 3rd
- 4th
- 5th
- 6th
- 7th
Brass Pitch Problems

Air for Band - 2 measures before letter E

3rd partials = #

valves = #

Overall pitch = #
Brass Pitch Problems

Air for Band - 2 measures before letter E

Horn (F side) to Trumpet

Go up octave,
then think trumpet fingering

Horn 1 & 2
Brass Pitch Problems

Air for Band - 2 measures before letter E

Horn (F side) to Trumpet

Go up octave,
then think trumpet fingering

5th partials = \text{flat}
valves = \text{ok}
overall pitch = \text{flat}

Horn 1 & 2
Brass Pitch Problems

Air for Band - 2 measures before letter E

Overall pitch = #

Overall pitch = #

Overall pitch = flat
Brass Pitch Problems

Air for Band - 2 measures before letter E

B.C. Baritone to Trumpet

Go up M9th,
then think trumpet fingering

Euphonium
Brass Pitch Problems

Air for Band - 2 measures before letter E

B.C. Baritone to Trumpet
Go up M9th,
then think trumpet fingering

Trumpet

Euphonium

3rd partials = ♯
valves = ♯
overall pitch = ♯
Brass Pitch Problems

Air for Band - 2 measures before letter E

Trumpet 1 & 2
Overall pitch = ♯

Trumpet 3
Overall pitch = ♯

Horn 1 & 2
Overall pitch = ♭

Trombone 1 & 2

Trombone 3

Euphonium

Tuba
Brass Pitch Problems

Air for Band - 2 measures before letter E

Tuba to Trumpet
Go up two octaves + M2nd,
then think trumpet fingering
Brass Pitch Problems
Air for Band - 2 measures before letter E

Tuba to Trumpet
Go up two octaves + M2nd,
then think trumpet fingering
Brass Pitch Problems

Air for Band - 2 measures before letter E

Tuba to Trumpet
Go up two octaves + M2nd,
then think trumpet fingering

Trumpet

Tuba

3rd partials = \#
valves = \#
overall pitch = \#
Brass Pitch Problems

Air for Band - 2 measures before letter E

Trumpet 1 & 2

Trumpet 3

Horn 1 & 2

Trombone 1 & 2

Trombone 3

Euphonium

Tuba

Overall pitch = #

Overall pitch = #

Overall pitch = flat

Overall pitch = #

Overall pitch = #
Partial to the Winds

The Power of the Overtone Series

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Get more info at www.bandworld.org