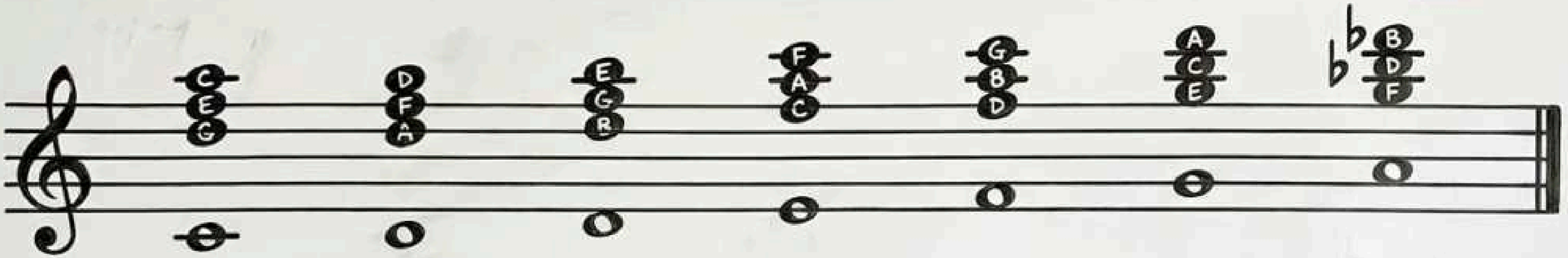
Lecture 5: Harmony in Keys & Diatonic Chords

¶ 5.1



C (C-E-G) = C major
D (D-F-A) = D minor
E (E-G-B) = E minor
F (F-A-C) = F major
G (G-B-D) = G major
A (A-C-E) = A minor
B (B-D-F) = B diminished

Rule: Build a triad on each note of a major scale, using only notes from that scale. The pattern of qualities is identical in every major key.

¶ 5.2

The Roman Numeral System: Role Over Name

The Legend

- Upper case (I, IV, V) = Major
- Lower case (ii, iii, vi) = Minor
- Degree symbol (vii°) = Diminished

The Translation in C Major

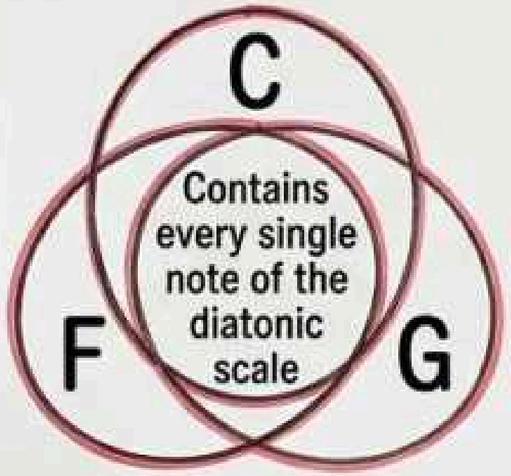
C → I
Dm → ii
Em → iii
F → IV
G → V
Am → vi
B° → vii°

Roman numerals describe a chord's role in the key, not its letter name. A progression written in numerals works in any key.

Chord Roles in Popular Music

The Backbone

Chords: I, IV, V
(C, F, G in C Major)



Can harmonize any melody note.

The Colour

Chords: ii, iii, vi
(Dm, Em, Am in C Major)

Adds emotional color and texture.

The Rarity

Chord: vii°
(B° in C Major)

~~B°~~ → V7

Rarely used alone in pop music; the dominant 7th (V7) takes its job.

¶ 5.4

The Five Ukulele-Friendly Keys

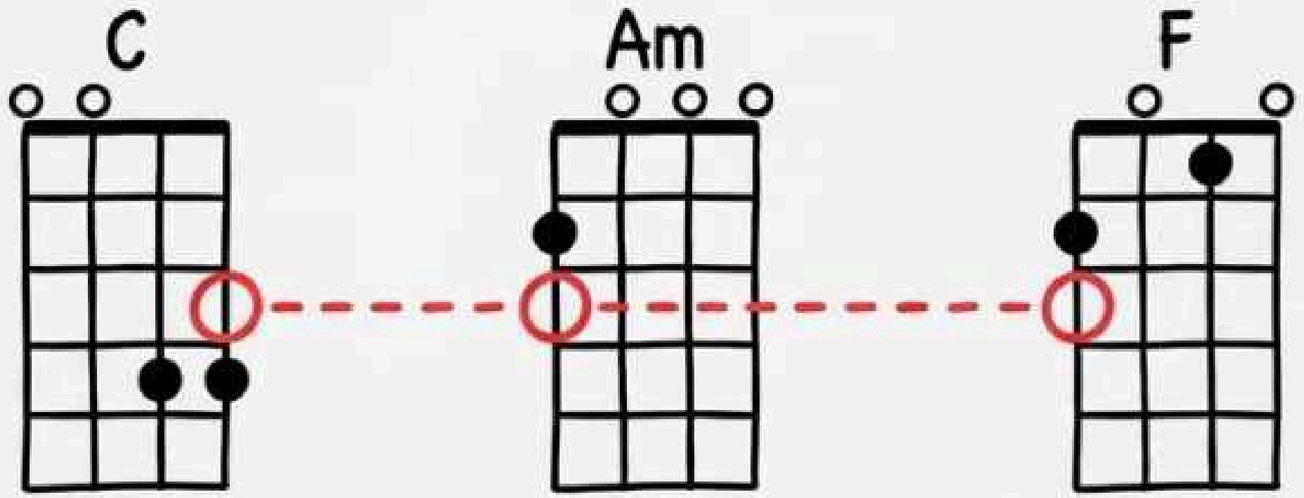
	I	ii	iii	IV	V	vi	vii°
G Major	G	Am	Bm	C	D	Em	F#°
F Major	F	Gm	Am	Bb	C	Dm	E°
D Major	D	Em	F#m	G	A	Bm	C#°
A Major	A	Bm	C#m	D	E	F#m	G#°

Learning the I, IV, V, and vi of these keys covers the vast majority of standard ukulele songbooks.

Common Progressions & Shared Notes

Formula A (Pop Standard): **I -> V -> vi -> IV** (In C: C -> G -> Am -> F)

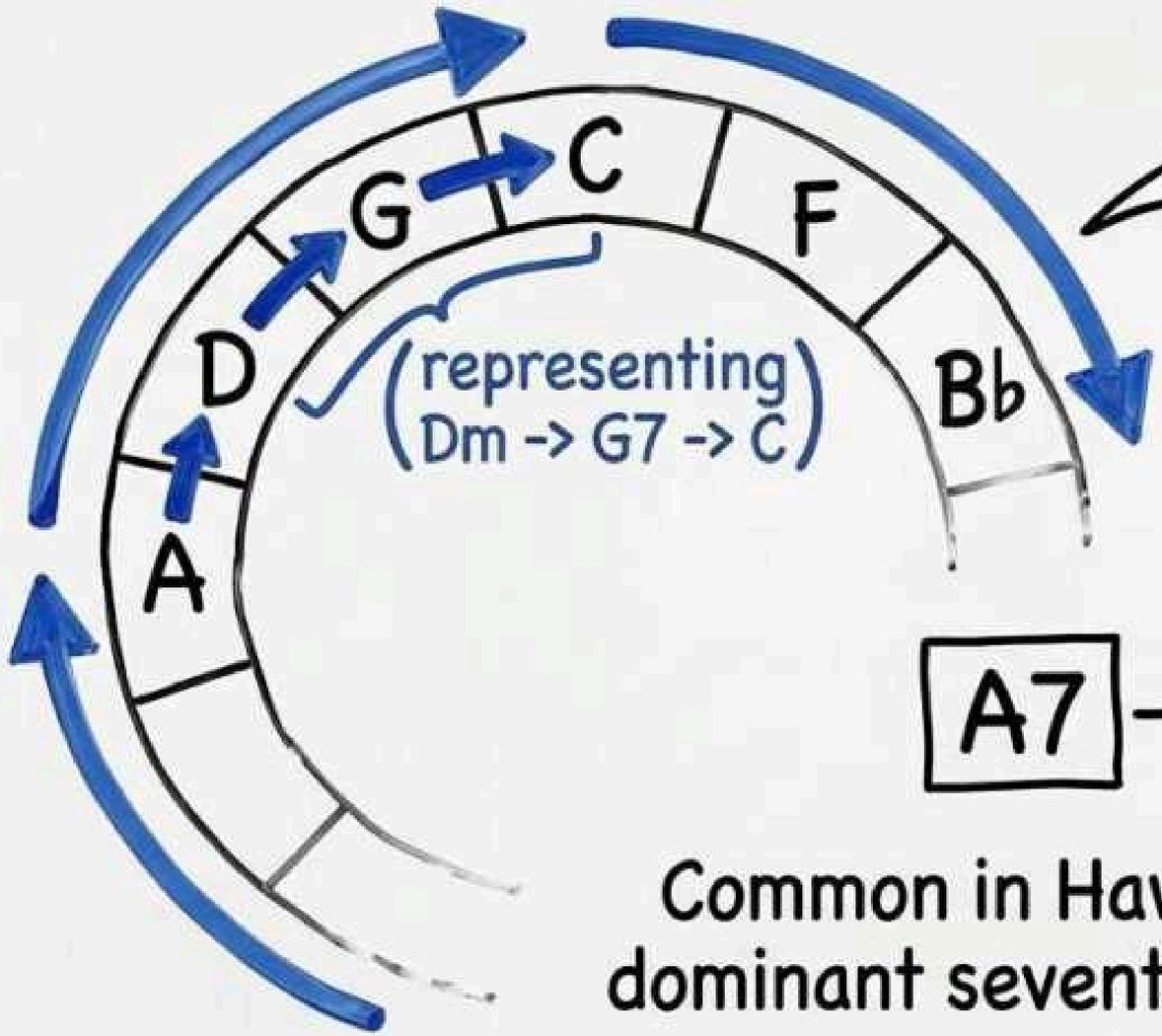
Formula B (1950s Doo-Wop): **I -> vi -> IV -> V** (In C: C -> Am -> F -> G)



Hundreds of songs use the same four chords. On the ukulele, C, Am, and F all contain the open C string, requiring only tiny finger movements.

¶ 5.6

Jazz, Swing, & The Falling Fifth



The root falls a fifth to the next chord. Creates a strong, purposeful motion.

Tin Pan Alley Chain

A7 → D7 → G7 → C

Common in Hawaiian and early pop standards: dominant sevenths cascading into one another.

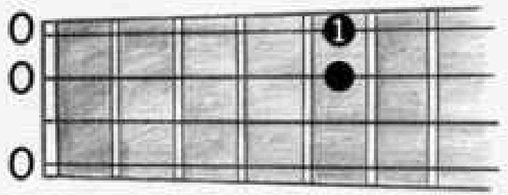
The Twelve-Bar Blues Architecture

¶ 5.7

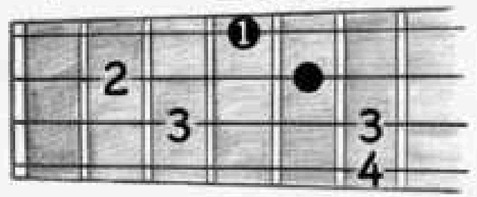
C7	C7	C7	C7
F7	F7	C7	C7
G7	F7	C7	G7

Turnaround

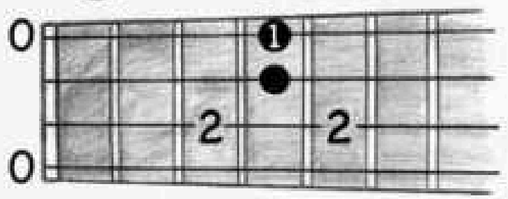
C7 = 0001



F7 = 2313



G7 = 0212



Built entirely on I, IV, and V, played as dominant sevenths.
The foundation of countless blues, rock, and early jazz tunes.

¶ 5.8

Cadences: The Punctuation of Music

[•]	Authentic Cadence ($V \rightarrow I$ or $V^7 \rightarrow I$) $G^7 \rightarrow C$	A complete, final resolution.
[~]	Plagal Cadence ($IV \rightarrow I$) $F \rightarrow C$	The softer "Amen" ending of hymns.
[, / ?]	Half Cadence (Ends on V)?	Leaves the phrase open and unresolved. ?
[!]	Deceptive Cadence ($V \rightarrow vi$)! $G \rightarrow Am$	A plot twist. Avoids the expected resolution. !

Venturing Outside the Key

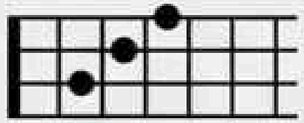
¶ 5.9

Non-Diatonic Chords

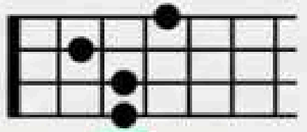
Secondary Dominants

(Borrowing to lead strongly into a non-tonic chord)

A7 (0100) is the V7 of D minor.



E7 (1202) is the V7 of A minor.



A7 (V7/Dm) → Dm (i)

C#

G#

Tension!

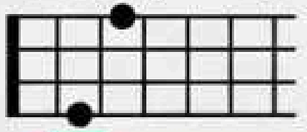
Am (V7/Am) (i)

Borrowed Chords

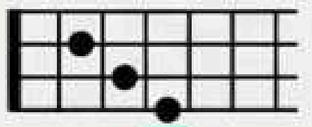
(Sourced from the parallel minor key)

F minor or Bb played in the key of C Major.

Fm (1013)



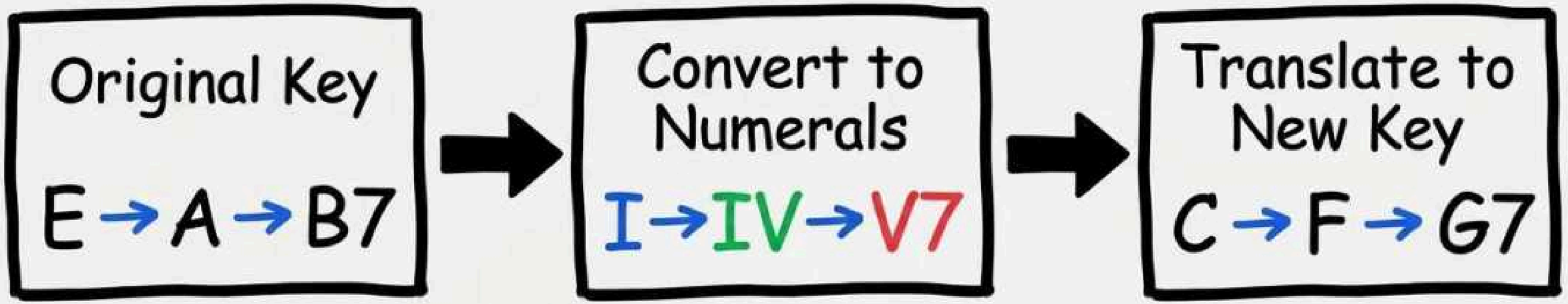
Bb (3211)



Adds a wistful, emotional color without changing the overall key.

Transposing via Roman Numerals

¶ 5.10

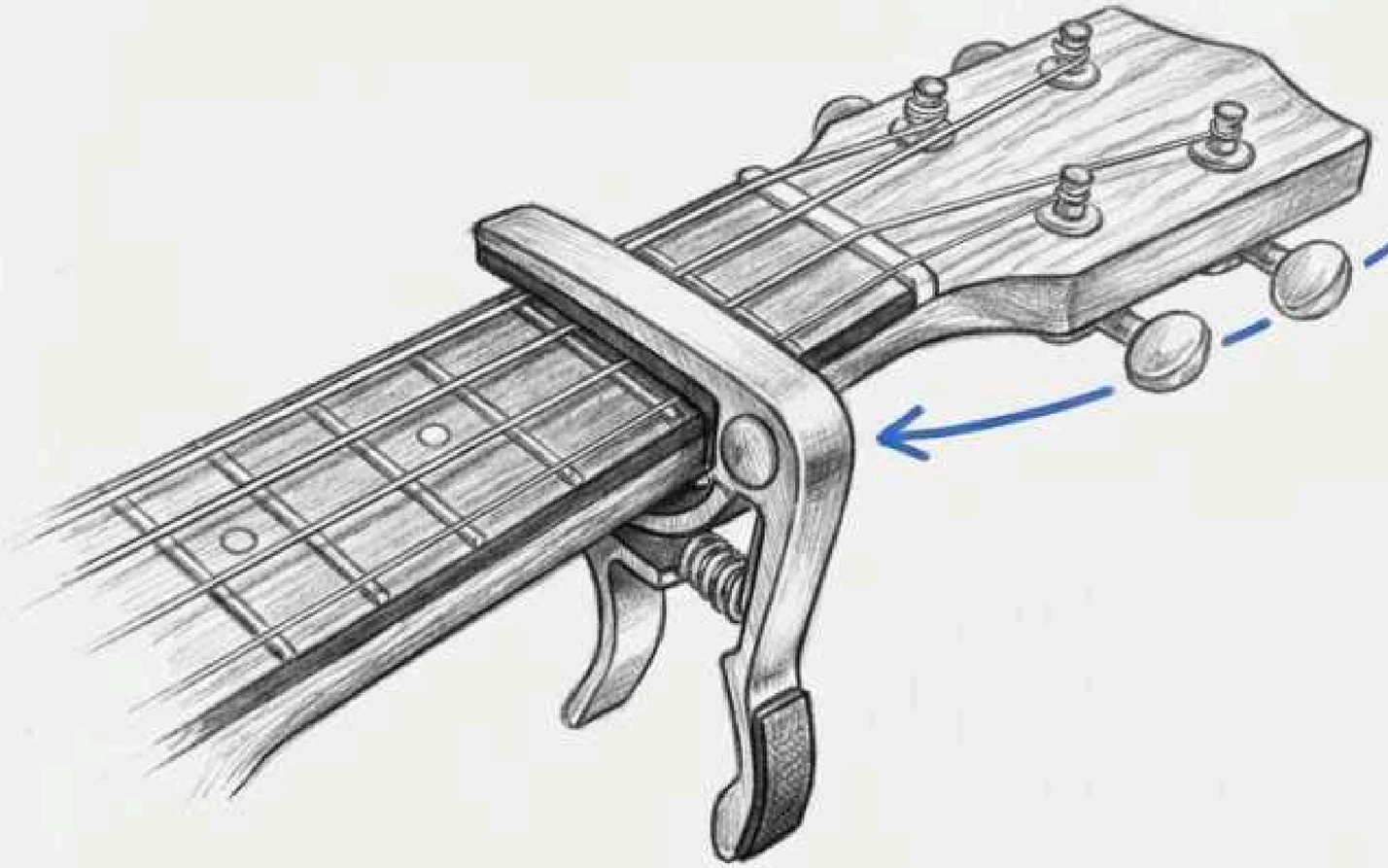


Why Transpose?

1. For singers to find a comfortable vocal range.
2. For ukulele players to find easier, more familiar chord shapes.

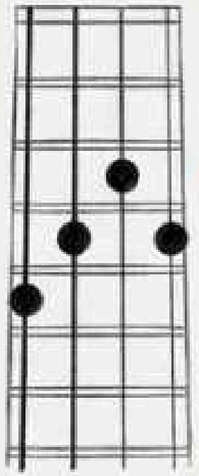
The Capo: A Movable Nut

¶ 5.11



With the capo at the 2nd fret, every shape sounds two half steps higher.

C



Sounds as a D Major Chord

A standard G shape now sounds as an A.

Because ukuleles have short necks, capos are practically limited to frets 1 through 5 to match singers or other instruments without learning new chords.

Capo Mathematics

¶ 5.12

Working Forward

Shape Key + Capo Fret (n) = Sounding Key

(measured in half-steps)

Working Backward

Goal: You want to play a song in E, but use easy C shapes.

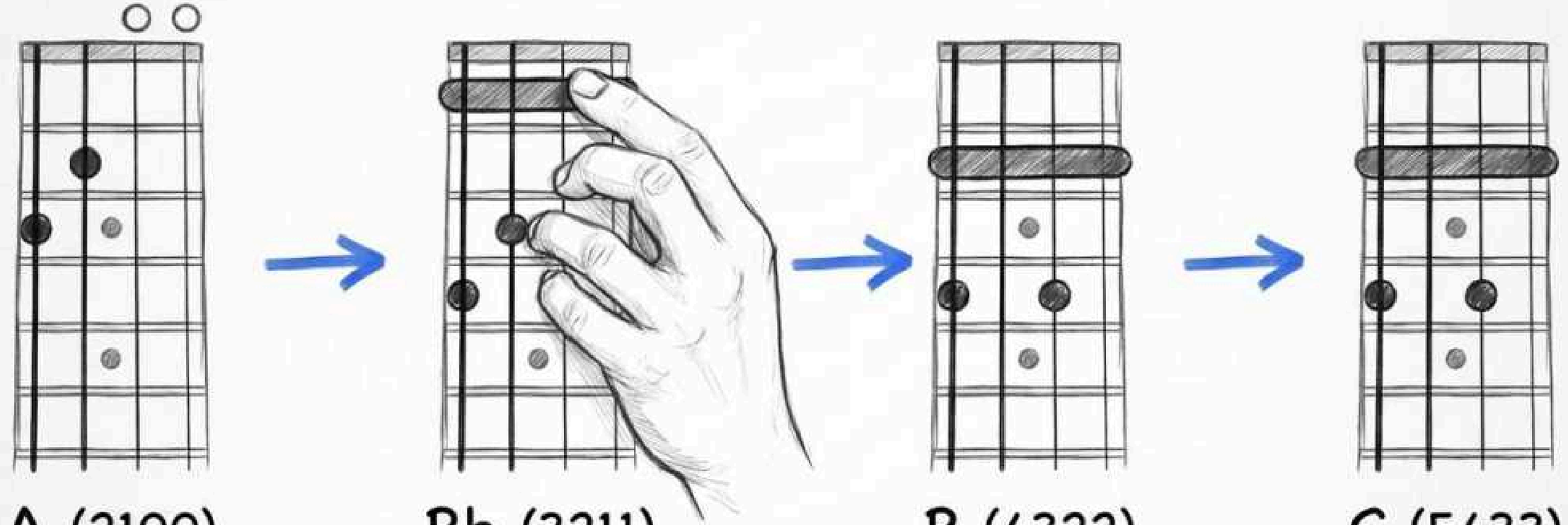
Desired Key (E) − Shape Key (C) = 3 half steps.

Result: → Clamp the capo on Fret 3.

The chords on the chart are what the audience hears; the shapes are what your fingers play.

¶ 5.13

Movable Shapes (No Open Strings)



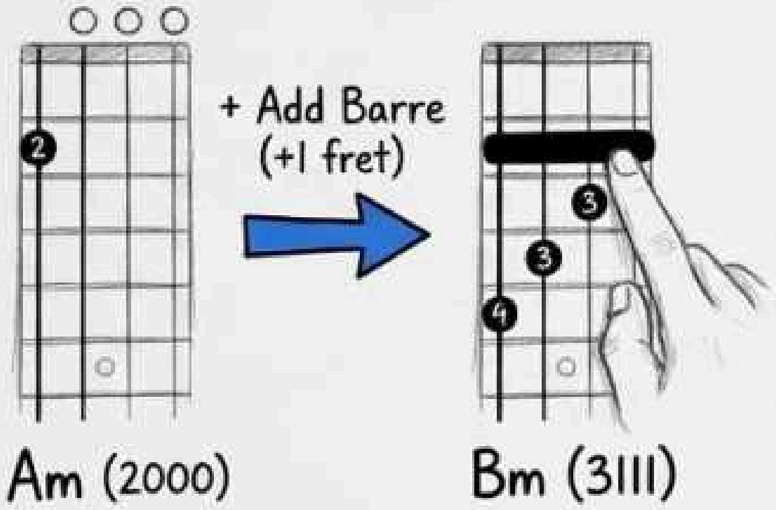
A (2100) Bb (3211) B (4322) C (5433)

By keeping the shape and changing the root, a single movable major shape yields all twelve major chords.

Creating Barre Chords

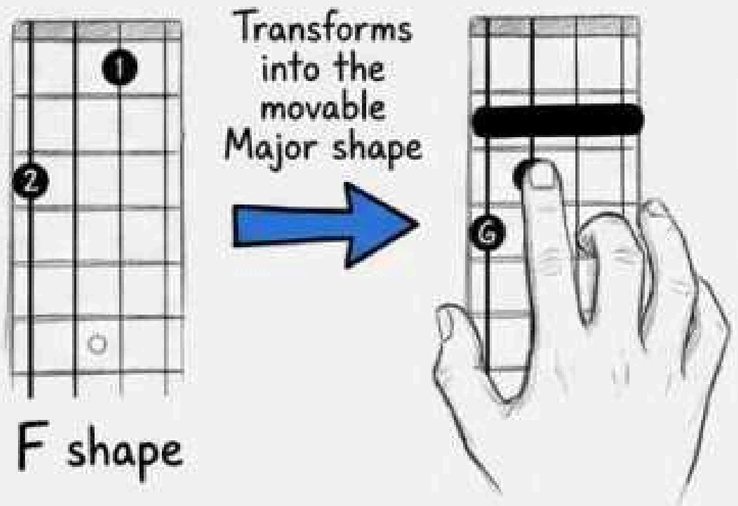
¶ 5.14

The Minor Family



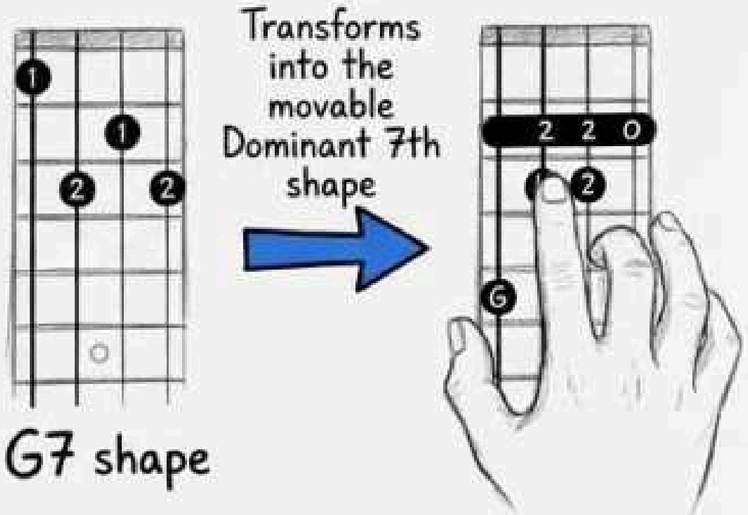
Am (2000) Bm (3111)

The Major Family



F shape

The Dominant 7th Family

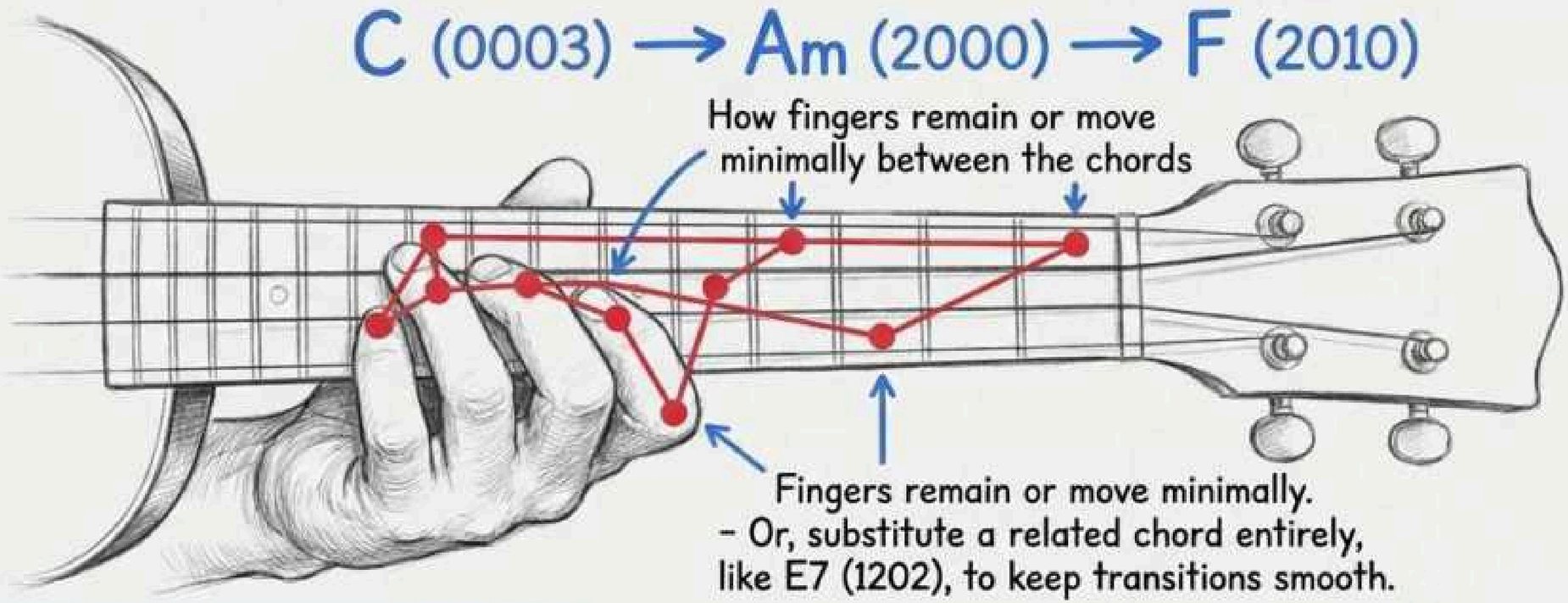


G7 shape

Combine 3 or 4 movable shapes with fretboard note knowledge (Lecture 2) to play any chord without a chart.

Finger Economy & Pivot Points

¶ 5.15



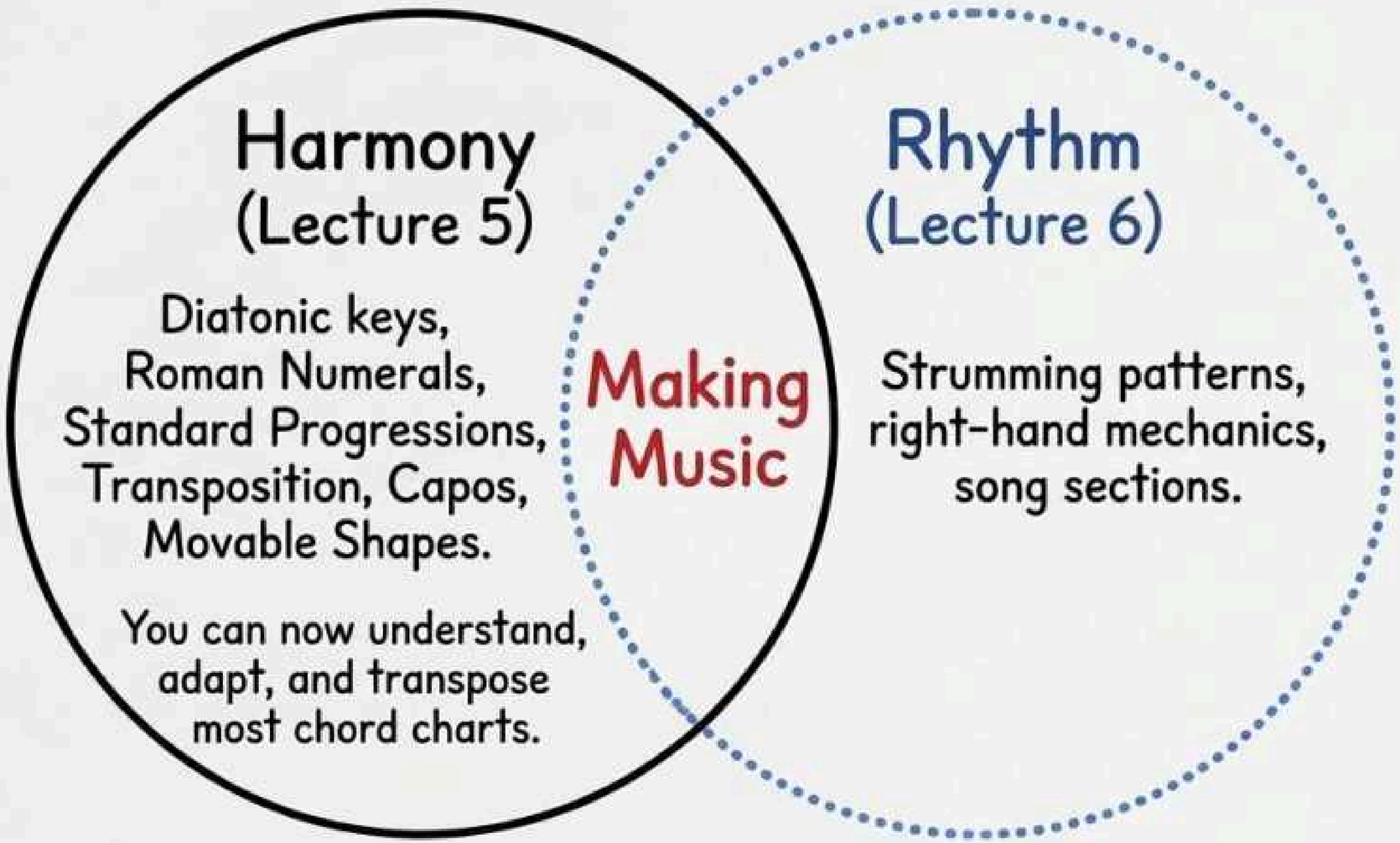
Substitution Strategy

Avoid physically punishing voicings.

- Instead of straining for E (4442), substitute the easier voicing (1402).
- Or, substitute a related chord entirely, like E7 (1202), to keep transitions smooth.

The Foundation of Harmony

¶ 5.16



Harmony gives you the map. The next lecture gives you the engine.