## a custom numerical chord notation, applied to songs tentative definition

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Clearly, when making music with chords, using notation such as "*Cmin7*" is arbitrary and absurd – just as arbitrary and absurd as using something like " $Q \checkmark x$ " would be.

Having to use such strange names is a real obstacle when trying to get a feel for how pitches combine into chords, and chords into sequences.

Not only the development of musical intuition and insight are hindered: there are also more immediate practical disadvantages.

For example, suppose we feel like singing a song, but our voice has a different range than fits well with the standard chord sequence. We would then like to use the same sequence, but play it somewhat higher, or lower.

But when we try to do this, suddenly the names change. This is confusing, and having to translate one set of arbitrary names into another places a burden between us and the experience of actually making music. In the end, we may even give up on our plan of singing the song.

That is unacceptable.

Clearly, not the specific pitches that are used, but the differences between them determine the melodies and chord sequences which we recognize in musical sound. Typically, this happens based on an overall set of absolute pitches which, when traversed sequentially from low to high, each perceptually represent a countable step of uniform distance. (A widely used set is the 12-tone Western chromatic scale.) So, rather than referring to pitches using absolute names, we should instead refer to them using relative numbers.

Concretely, we can:

- Denote the *tonic* or base pitch as "0".
- $\uparrow$  Now, "play in E", for example, becomes: "tonic 0: -5 steps from 440 Hz (12 steps: frequency × 2)".
- Also denote the other pitches used as numerical values, relative to the tonic.
- $\uparrow$  The "B" below "E", for example, becomes "-5".
- Denote chords by their relative base pitch, followed by a pitch set relative to that, deemed perceptually to adequately characterize the chord.
  - $\uparrow$  "*E minor*", for example, now becomes " $0 \{ +3 \}$ "; the "*B minor*" below "*E*" becomes "-5  $\{ +3 \}$ "; the "*B major* 7" becomes "-5  $\{ +4, +10 \}$ "; and so on.

Actual use of this simple notation demonstrates the advantages sought.

Execution may incorporate some additional assumptions:

- The melody of a song is usually easier to remember than its words. Reading the words can be expected to lead to adequate remembrance of the melody. Therefore, in a concise notation used to guide immediate playing, the melody can be left out.
- Using layout and whitespace, chords and words can be visually aligned with some precision, to indicate the temporal onset of chords relative to that of phonemes of the song text.
- Notation should allow a typical song of a few minutes' duration to be visible, as a whole, on an area the size of an A4 sheet.
- The current wide use of electronic screens enables the effective use of color: allowing fallback to black-and-white paper copies no longer has to be a practical restriction. We can use color to visually differentiate between chords and words; and also between different verses combining with the same chord sequence.

Four examples of using such a notation follow on the next pages.

# 1866 - Johnson & Butterfield - When you and I were young, Maggie (version Will Oakland 1908)

tempo: ±	72 BPM		tonic 0: -7 steps from 440 Hz for my voice: probably better to	<b>(12 steps: frequency × 2)</b> use -10 steps	
Ι	0 { +4 } wandered today to the		+5 { +4 } hill, Maggie,		
to	0 { +4 } watch the field be-		-5 { +4 } low,		
the	0 { +4 } creek and the creaking old		+5 { +4 } mill, Maggie,		
as	0 { +4 } we used to	-5 { +4 } long a-	0 { +4 } go.		
The And	+5 { +4 } green grove is gone from the now we are aged and		0 { +4 } hill, Maggie, grey, Maggie,		
where and the	-5 {+4 } -10 {+4 } first the daisies trials of life nearly		-5 { +4 } bloomed. done.		
The Let us	0 { +4 } creaking old mill is sing of the days that are		+5 { +4 } still, Maggie, gone, Maggie,		
since when	0 { +4 } you and you and	-5 { +4 } I were I were	0 { +4 } young. young.		

### 1903 - Cohan - Always leave them laughing when you say goodbye (version Billy Murray 1907)

# tempo: ± 135 BPM

tonic 0: -3 steps from 440 Hz (12 steps: frequency × 2) for my voice: probably better to use -9 steps

Му	0 { +4 } dad would never prea	ach to me, in	fact he'd	never		teach to me
the	different things that I	should do when	-5 { +4 } I'd be	here and		there.
In	-5 { +4, +10 } fact he said: "Go on a	alone.	You have	ideas		of your own
You'll	never lose if you will	use the	0 { +4 } others	fair and		square."
That's	just as far as he'd adv	vised,	'till one	day to		my surprise
Ι	-3 {+4 } went to say that I was	s going to	+2 { +3 } other	-3 { +4 } lands to		+2 { +3 } live.
And	+2 { +4 } as I went to say	-5 { +4 } goodbye he	+2 { +4 } saw a	teardrop		-5 { +4 } in my eye.
Said	-7 { +4 } he: "My lad oh	that's too bad, I've	+2 { +4 } some ad-	vice to		-5 { +4 } give:
	0 { +4 } Always leave them laughing when you Everyone was laughing when a Everyone was laughing as the Everyone was laughing as the		+2 { +4, +10 } say goodbye; band went by. jay went by. car flew by:			
The the	-5 { +4 } never linger long abo In the band I play the whiskers on his chin fat man he was trying	ut or e drum (of were brown I g to sit in-	0 { +4 } else you'll course I p think he c to a space	l wear your layed it, ame from he		-5 { +4 } welcome out. I'm the bum). Terrytown. wouldn't fit.
Не	0 { +4 } When you meet a fel Rockefeller heard the stopped to watch a ca Sitting right beside h	low with a band and ble car as im was a	+2 {+4,- tear-dimm said "By g it flew by real thin g	+10 } ned eye guy, ; guy;		
that's the with- the	-7 { +4 } you can leave him lat best I ever heard and out a horse it seemed fat man had his elbox	ughing if you that's no to puzzle v in his	-5 { +4 } try. lie." Sy. eye.			
He He The	0 { +4 } When he tells his troi said: "I'm going to fi walked out to the cra thin man looked and	ubles inter- Il your instru- nk to see just said "They ought to	+2 { +4, + rupt him v ments wit how the th short us b	-10 } with a joke. h money no ning would y our weigh	w." work; t."	
He his Said	-5 { +4 } Tell him one he's new filled the instruments eye down to the grou fatty: "Allright, when	er heard and like quilt with nd he got his n they do, they'll	-7 { +4 } he'll decla yellow fif whiskers i never stop	tre that ty in the at		-5 { +4 } it's a bird. dollar bills. cable slot. all for you!"
I The	-3 {+4 } When he's giggling g was allowed to rob th cable caught his whis Squeezed his way in	ood, you know, he band – I skers, see, and with a din,	+2 { +3 } that's the t held the d he went to squeezed	time to turn rumsticks in the battery the thin mat	and go. n my hand ;; n into him	
and and	0 { +4 } Always leave them la everyone was laughin everyone was laughin everyone was laughin	nughing when you ng when he ng when he ng when he	+2 {+4, - say said said said	+10 }	-5 { +4 } goodbye.' goodbye. goodbye	<b>0</b> { +4 }

#### 1905 - Robyn & Irwin - Wouldn't you like to have me for a sweetheart (version Ada Jones $\pm$ 1905)

tempo: ± 72 BPM tonic 0: -8 steps from 440 Hz (12 steps: frequency × 2) for my voice: probably better to use -9 steps -5 { +4 } spiteful, frightful;  $0 \{ +4 \}$ Other girls may treat you I don't care if he is tender, slender  $0 \{+4\}$ -5 { +4 } others may be cruel and cold. or if he is short or stout. I am neither hawky neither changeable or naughty; Any handsome fellow be his hair just black or yellow 0 { +4 } I've a heart as good as gold. I will suit his taste no doubt. -3 { +3 } +4 { +3 } Other girls have sweethearts, plenty, twenty! Silver bells will then be ringing, swinging  $+2 \{+4\}$  $-1 \{ +4, +10 \}$ I wonder what they do? never [ IRONY ] jangled out of tune.  $+4 \{+4\}$ -3 { +3 } had a proper chappie only had a chappie Wouldn't I be happy if I Oh I would be happy if I  $0 \{ +4 \}$  $+2 \{+4\}$ -5 { +4 } just to come and woo me woo me too and we'd go upon a honeymoon...  $0 \{ +4 \}$ Wouldn't you like to have me for a sweetheart? Wouldn't you like to have me for a sweetheart? -5 { +4, +10 } Wouldn't you like to have me for a ball? Wouldn't you like to have me for a ball? Wouldn't you like to whisper me your secrets Wouldn't you like to whisper me your secrets 0 { +4 } -5 { +4 } well as any girl you know? about as well as any girl you know? about as Wouldn't you like to meet me in the starlight? Wouldn't you like to meet me in the starlight? -3 { +4 } +2 { +3 } thy? Wouldn't you like to have my sympa-Wouldn't you like to have my sympathy? -7 { +4 }  $0 \{ +4 \}$  $-3 \{+4\}$ Wouldn't you like the conversation, wouldn't you like the consolation Wouldn't you like the conversation, wouldn't you like the consolation -7 { +4 } of a little -5 { +4 }  $0 \{ +4 \}$ me? girl like of a little girl like me?

### 1968 - Legrand, Bergman & Bergman - The windmills of your mind (version Noel Harrison 1968)

## tempo: ± 112 BPM

tonic 0: -5 steps from 440 Hz (12 steps: frequency × 2) for my voice: probably better to use -9 steps

0	{	+3	}
R	0	und	_

like a circle in a spiral Like a tunnel you can follow	,	like a wheel within a to a tunnel of its	-5 { +4. +10 } wheel; own,
never ending or beginning down a hollow to a cavern		on an ever-spinning where the sun has never	0 { +3 } reel; shone;
like a snowball down a like a door that keeps re-	0 { +4 } mountain, volving	or a carnival bal- in a half-forgotten	-7 { +3 } loon; dream,
like a carousel that's or the ripples from a	-2 { +4 } turning, pebble	running rings around the someone tosses in a	+3 { +4 } moon; stream;
like a clock whose hands are like a clock whose hands are	-4 { +4, +14 } sweeping sweeping	past the minutes of its past the minutes of its	-7 { +3 } face face
and the world is like an and the world is like an	-5 { +4, +10, +13 } apple apple	-5 { +4 } whirling silently in whirling silently in	-6 { +6, +9 } space; space;
like the circles that you like the circles that you	-5 { +4, +10 } find find	in the windmills of your in the windmills of your	0 { +3 } mind. mind.
Keys that jingle in your pocket,		words that jangle in your	<b>-7 { +3 }</b> head.
Why did summer go so	<b>-2 { +4 }</b> quickly?	Was it something that you	+3 { +4 } said?
Lovers walk along the shore	and	+3 {+4, +10 } leave their footprints in the	-4 { +4 } sand.
Was the sound of distant	+2 { +4 } drumming	just the fingers of your	-5 { +3 } hand?
Pictures hanging in a	<b>0 { +4 }</b> hallway –	or the fragment of a	+ <b>5</b> { + <b>3</b> } song?
Half-remembered names and	<b>-2</b> { <b>+4</b> } faces.	But to whom do they be-	+3 { +4 } long?
When you knew that it was	-4 { +4 } over	you were suddenly a-	-7 { +3 } ware
[ DRAMATIC PAUSE ]			
that the autumn leaves were	-5 { +4 } turning	to the color of her	<b>0</b> { + <b>3</b> } hair.
A circle in a spiral,		a wheel within a	-5 { +4 } wheel;
never ending or beginning		-5 { +4, +10 } on an ever-spinning	-6 { +6, +9 } reel;
as the images un-	0 { -5, +3 } wind	like the circles that you	-5 { +4 } find
in the windmills	<b>0</b> { + <b>3</b> } of your mind.		