

F#4	G3
D#4	D3
C4	D3
Ab3	G3

In this striking resolution the outer voices move by $1^\circ 17$, the next to lowest voice by $3^\circ 17$, and the next to highest voice by $2^\circ 17$.

Exploring progressions like these in 17-WT led me to an awareness that isoharmonic sonorities may occur in a variety of neo-medieval tuning systems. For example, 29-ET has a version of 11:13:15 ($\sim 0-289.21-536.95$ cents) in near-pure form ($\sim 0-289.66-537.93$ cents), with all intervals within one cent of just. In the following 29-ET progression, an asterisk (*) shows a note raised by an enharmonic diesis of $1^\circ 29$, about 41.38 cents:

D*5	D#5	E*5	F5
C5	B4	B*4	C5
A4	G#4	G4	F4

From the 11:13:15 sonority A4-C5-D*5 ($0^\circ 29-7^\circ 29-13^\circ 29$), the voices expand to a penultimate cadential sonority of G4-B*4-E*5 ($0^\circ 29-11^\circ 29-23^\circ 29$) with a large “major third” and “major sixth” at around 455.17 cents and 951.72 cents, very close to 13:10 (~ 454.21 cents) and 26:15 (~ 952.26 cents). In the final cadence, the upper voices ascend by $1^\circ 29$ dieses while the lowest voice descends by a $5^\circ 29$ whole-tone. Thus isoharmonic sonorities and associated enharmonic progressions can take many forms over a range of tuning systems.

8. Suspensions in 17-WT: Neo-medieval meets neo-Renaissance

WHEN GEORGE SECOR shared with me his excitement about suspensions in 17-WT (Letter, 12 October 2001), as related in his companion article, I found myself experimenting with progressions mixing medieval and Renaissance elements. In this kind of “fusion,” Renaissance suspensions like 7-6, 2-3, or 4-3 lead to neo-medieval cadences. Such a style provides an opportunity for coloristic textures of the variety discussed in Section 6.1, with leisurely motion encouraged as the music explores fine nuances of tension and resolution.

In his letter, he tells the story of his discovery:

I was having such a good time finding new progressions that, until now, I had neglected trying out something much more obvious to hear how well it worked. What a surprise I got! – It’s fantastic! What really got me excited was hearing a very ordinary suspension that I should have expected to be effective, but instead it caught me completely off guard:

C5-----
 B4 A4
 E4-----
 A3-----

I have been so focused on how melodically effective those 1°17 semitones are that I was absolutely astounded to hear how *harmonically* effective they are, as evidenced by the huge dissonance-consonance contrast between the suspension and its resolution.⁶⁵

Reading this, and trying his example, I wondered how I might use suspensions involving the extra vertical tension as well as melodic beauty of the compact 63.90-cent semitones in the nearer transpositions of 17-WT (very close 28:27, ~62.96 cents), and likewise the 1136.10-cent major sevenths.

While 14th-century composers such as Machaut use a variety of syncopated figures, some of which could be described as suspensions, it is in the Renaissance era of the 15th and 16th centuries that the suspension takes on a central role as other uses of seconds and sevenths become increasingly cautious. Happily, I quickly found that suspensions familiar to me in a Renaissance context could also mix nicely into a neo-medieval style, giving rise to new patterns.

8.1. Basic 2-3 and 7-6 suspensions

The 2-3 and 7-6 suspensions can combine in a neo-medieval idiom beginning with a tempered 14:18:21:24 sonority which might simply expand to a stable trine in usual fashion, for example G3-B3-D4-E4 to F3-C4-F4. Instead, this major sixth sonority leads to a passage combining medieval and Renaissance elements, notated like some earlier examples with a kind of metrical tablature to show the rhythm, here quite leisurely:

1	2	1	&	2	1
E4			D4 C4 D4		E4
D4	C4				B3
B3		A3			B3
G3		F3			E3

The resolution of the 2-3 suspension introduced by the next to highest voice at the second beat of the first measure, with its minor second B3-C4, results in a 7-6 suspension between the outer voices at the opening of the second measure,

⁶⁵Here, as explained at p. 72 n. 71 above, I have quoted Secor's example with his dashed lines to show sustained notes; in this article, however, I generally follow the convention that notes in a given line are assumed to be sustained until the next note in that part, the end of the example, or a rest indicated by the symbol "r."

with an ornamental resolution to the major sixth sonority F3-A3-C4-D4, cadencing in a usual remissive manner to E3-B3-E4.

A related idiom opens with a tempered 12:14:18:21 sonority which might simply contract to a stable fifth, for example E3-G3-B3-D4 to F3-C4:

1	2		1	2		1
D4			C4			B3
B3			A3			B3
G3			F3			E3
E3				D3		E3

This might be called a triple suspension, reminiscent of some Late Renaissance or Manneristic forms in the era of around 1600, with the telling 64-cent minor second E3-F3.

These examples illustrate some common patterns for neo-medieval suspensions. Typically a suspended sonority involving a more discordant interval such as a minor second or major seventh resolves to a relatively concordant major sixth sonority (~14:24:18:21) or minor seventh sonority (~12:14:18:21), which in turn resolves to a stable trine or fifth.⁶⁶

Another aspect of these passages is that the opening sonority often suggests an intensive resolution (G3-B3-D4-E4 to F3-C4-F4; E3-G3-B3-D4 to F3-C4), but the downward motion of suspension and resolution ultimately leads to a remissive cadence on the degree a step lower than this originally anticipated goal (here E3-B3-E4 or E3-B3). One might say, in this type of passage, that the descending gesture of the suspension leads to a cadence with descending rather than ascending semitones.

Textures like this invite a rather slow rhythm, so that one can dwell on the suspended sonorities and the “lush” major sixth or minor seventh sonorities to which they often resolve, harmonies relished in a neo-medieval setting for their purely coloristic as well as cadential aspects.

8.2. The 4-3 suspension

The 4-3 suspension lends itself to a neo-medieval treatment where it resolves to a *minor* third of 4°17, near 7:6 in the closer portion of the 17-WT circle, which then contracts to a unison. In the following example, this idiom is introduced by a standard cadence of G3-B3-E4 to F3-C4-F4, with the voices then crossing so that the highest voice becomes the middle voice holding the 4-3 suspension (as reflected in the octave numbers of the notation):

⁶⁶This procedure is somewhat analogous to the Renaissance pattern aptly summed up by John Howell as “dissonance-imperfect consonance-perfect consonance,” for example a 7-6 suspension followed by a 6-8 cadence, or a 2-3 suspension followed by a 3-1 cadence.

1	2		1	&	2		1
E4	F4		Eb4	D4	Eb4		Db4
B3	C4		G4				Ab4
G3	F3		C4				Db4

Like a typical Renaissance 4-3, the suspension is followed by a cadence with decisive semitonal motion, but here in a Gothic-like pattern with a three-voice progression from C4-Eb4-G4 to Db4-Ab4 (m3-1 + M3-5).⁶⁷ If we take F as a modal center or focus, then there is a striking diversion to Db a minor sixth higher or major third lower. In fact, progressions like this might be one interesting way of circumambulating the 17-tone circle.

Here the themes “4-3 suspension” and “ascending semitonal motion” are combined, but in a very different pattern from the familiar 15th–16th century ones where the suspension resolves to a *major* third above the lowest voice.

For a change of pace, the 4-3 suspension could lead to a remissive resolution from minor third to unison with descending semitonal motion, or an equable resolution with each voice moving by 2°17:

1	2		1	&	2		1
E4	F4		Eb4	D4	Eb4		D4
B3	C4		G4				A4
G3	F3		C4				D4

1	2		1	&	2		1
E4	F4		Eb4	D4	Eb4		C#4
B3	C4		G4				G#4
G3	F3		C4				C#4

In contexts where a 13th-14th century kind of octave-species or “modal” structure is the norm, the remissive resolution suggests a more medieval-like relationship between the centers of F and D, while the equable resolution could be considered a form of “chromaticism.” In scales where 2°17 steps are the norm, however, the equable resolution would be a routine choice, for example the Zalzal and symmetrical tetrachord scales of Section 4. Thus the suspension might lead to a cadence on Zalzal step 6 (Bb4 in a scale of D4-D5):

1	2		1	&	2		1
C5	D5		C5	Bb≠4	C5		Bb≠4
G4	A4		E5				F≠5
E4	D4		A4				Bb≠4

⁶⁷This progression also involves a 2-3 suspension F4-G4 between the upper pair voices, with the resolving *major* third Eb4-G4 (near 9:7 in this portion of the circle) then expanding intensively to the fifth Db4-Ab4 in the concluding cadence.

or similarly to a cadence on step 2 of the symmetrical tetrachord scale (here notated as Db≠4 in a scale of C4-C5, 2 2 3 3 2 2 3):

1	2		1	&	2		1
Eb4	F4		Eb4	Db≠4	Eb4		Db≠4
Bb3	C4		G4				Ab≠4
G3	F3		C4				Db≠4

These last examples use an ornamental resolution of the 4-3 suspension with a momentary vertical neutral second, more dissonant than the usual relatively blending 8:9:12 type of sonority produced by such an ornament in a mode with 3°17 and 1°17 steps, but a coloristic touch which I find congenial to these scales.

8.3. Combining 7-6 or 2-3 with 4-3

We can combine the 7-6 or 2-3 type of suspension with a 4-3 type in an idiom which leads to a cadence on the step invited by the opening sonority:

1	2		1	&	2		1	2		1
E4				D4	C4	D4		E4		F4
D4			C4					B3		C4
B3			A3						G3	F3
G3			F3					E3		F3

This is a variation on the first progression of Section 8.1, where the resolution of the 7-6 suspension to F3-A3-C4-D4 leads to a cadence on E3-B3-E4 — a step below the goal of F3-C4-F4 suggested by the opening G3-B3-D4-E4. Here, however, F3-A3-C4-D4 moves to another suspended sonority E3-A3-B3-E4, with a 4-3 resolution to E3-G3-B3-E4 (approximately 6:7:9:12), cadencing to the originally suggested center of F3-C4-F4. This cadence involves resolutions of minor third to unison and major third to fifth, plus major sixth to octave between two of the upper voices (G3-E4 to F3-F4).

In an adventurous neo-medieval style, E3-A3-B3-E4 (6:8:9:12) might also be treated as a stable concord rather than a relatively blending but unstable one, with 20th-century quartal/quintal harmony as a precedent. In such a treatment, this sonority might conclude the passage.

Here is a similar alternative version for the second passage of Section 8.1 with its “triple suspension,” with an eventual 4-3 suspension and arrival at the originally suggested goal of F. The symbol “r” shows a rest in the next to lowest voice for the last part of the passage with its three-voice texture:

1	2		1	2		1	&	2		1
D4			C4			B3				C4
B3			A3				G3	F#3	G3	F3
G3			F3			E3			r	
E3				D3		E3				F3

The contrast between the F#3 of the ornamental 4-3 resolution and the cadential goal of F is a touch in keeping with the fluid degree inflections of medieval and Renaissance styles.

8.4. Drifting idioms and piquant intervals

Other suspension idioms may have a drifting quality, sometimes punctuated by piquant intervals such as the augmented sixth, which as neutral seventh can be treated as a kind of 7-6 suspension (15°17-13°17):

1	2	1	2	1
G#4			G4	A4
F4	E4	D4		E4
D4	C4	Bb3		A3

This passage also includes a tritone D4-G#4 (9°17) and an augmented fifth C4-G#4 (12°17), and could be used in a version with an ornamental resolution:

1	2	1	&	2	1
C#4			C4 Bb4	C4	D4
Bb3	A3	G4			A3
G3	F3	Eb3			D3

These examples may recall late Renaissance or Manneristic styles with many alterations and chromatic steps, but here set in a 17-WT universe of compact diatonic semitones and regular thirds near 7:9 and 6:7 — along with a range of neutral or semi-neutral intervals. In the next progression, a 4-3 suspension launches a kindred style:

1	2	1	2	1	2	&	1
E4	F4		Eb4		D4		E4
B3	C4	G4		A4		G4	A4
G3	F3	C4			Bb3		A3

The augmented fourth sonority C4-Eb4-A4 might suggest a style of around 1600, as might also the following 7-6 suspension, while the 17-WT tuning of Bb3-D4-G4 near 7:9:12 brings out the neo-medieval side of this “fusion” style. From an organizational point of view, this passage could fit a common 14th-century scheme with F as the “final” or conclusive center affirmed through cadences with ascending semitones (as in the opening progression), and A as a goal of internal cadences with descending semitones. Playing this passage, I find that it invites a smooth return to F in a usual Gothic fashion.

8.5. Suspensions and scalar context

Exploring the symmetrical tetrachord or Ibn Sina/Secor scale (Section 4.2), I came upon a suspension which I promptly shared with George Secor (Letter, 9 January 2002), in a rhythm which might be expressed as a slow 3/2, or a 12/8:

1				2				3				1	
1	2	3	4	5	6	7	8	9	10	11	12	1	
Eb4								Dd4		C4	Dd4	Eb4	
Bb3				Ad3								Bb3	
G3				F3								Eb3	

Melodically, the equable division of the minor third C4-Eb4 in the figure Eb4-Dd4-C4-Dd4-Eb4 (almost identical in 17-WT to the complex isoharmonic division of 23:25:27) seemed to me pleasantly to resemble a medieval European figure such as D4-C4-B3-C4-D4, or here a transposition to Eb4-Db4-C4-Db4-Eb4 which could fit nicely in an alternative version of the above passage with Ab3 substituted for Ad3 in the middle voice. The equable version with its neutral second steps is at once similar and charmingly different.

Here all notes in the passage are taken from the regular steps of the scale, and the dimensions of melody and harmony alike reflect its structure: the 2°17 steps, and many neutral intervals. The suspended sonority F3-Ad3-Eb4 accordingly has a neutral third between the two lower voices, and leads to the neutral cadence of F3-Ad3-Dd4 to Eb3-Bb3-Eb4 (5°17-10°17, 12°17-17°17).

In playing the passage again to check the voice-leading and rhythm, I made a “slip of the keyboard” and arrived at this:

1				2				3				1	
1	2	3	4	5	6	7	8	9	10	11	12	1	
Eb4								Dd4		C4	Dd4	D4	
Bb3				A3								G3	
G3				F#3								G3	

The note F#3, which I originally played by mistake, led me to a cadence here spelled as F#3-A3-Dd4 to G3-D4. The effect might be called *ekmelic* both in involving notes “out of the scale” (F#3, A3, and D4), and in bringing about a kind of stylistic shift or musical time warp brought home to me by the 1°17 steps in the cadence. As I wrote to Secor:

Maybe the spelling reflects my state of mind or hearing: the upper voice still notated in the Tartini/Co[u]lper style for our symmetrical scale, but the F#3 in the lower voice coming from somewhere else, with a certain pop or “barbershop” feeling maybe, and then that cadence with an ascending 1°17, where “Dd4-D4” may capture that shift to a different world. Recalling that Thomas Morley (1597) talked in his *Plain & Easy Introduction to Practical Music* about tunes people sing at the barber’s, I wonder if history may have gone off on a tangent somewhere in the late medieval era, taking us to some other kind of barbershop intonation, and

then with that cadence, back to the 14th century.⁶⁸

Possibly my “barbershop” association, more 20th-century than Elizabethan in its concrete musical aspect, was connected to the suspended diminished seventh F#3-Eb4, a kind of floating feeling. The cadence of F#3-A3-Dd4 to G3-D4 abruptly transported me to a musical world I associated with 14th-century France; this resolution at once brought home to me a sudden “change of scene,” and brought me home to my familiar Gothic or neo-medieval style.

As if to confirm this homecoming, I added a coda here given in 3/4 repeating this usual intensive formula (m3-1 + M3-5), now spelled F#3-A3-C#4 to G3-D4:

12/8												3/4					
1				2					3			1	2	3			
1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5 6 1
Eb4								Dd4		C4	Dd4	D4		C#4			D4
Bb3				A3								G3		A3			G3
G3				F#3								G3		F#3			G3

The Greek term *ekmelic* can have the meaning of “dissonant” or “unmelodious,” but could also be used to describe the effect of a note or interval *transforming* the framework of melody or “in-tuneness” in what I have called a change of scene.

Not quite three months earlier, George Secor had excitedly shared with me his discovery of how effective the 64-cent diatonic semitones of 17-WT could be as vertical intervals in a suspension along Classic lines, for him a musical homecoming: “the familiar landscape has suddenly become more vivid than anything I had ever dreamed.” (Letter, 12 October 2001)

Inspired by that letter, I found that my own odyssey had taken a curious turn. Exploring suspensions based on a symmetrical scale almost identical to that described by Ibn Sina in the early 11th century, I had first come upon a passage having for me a certain quasi-13th-century European color — although suspensions had not yet been invented in that time and place — and then by a mistaken accidental at the keyboard had been transported into a kind of quasi-20th-century “barbershop” style.

⁶⁸See Thomas Morley, *A Plain & Easy Introduction to Practical Music*, Alec Harman, ed. (New York: W. W. Norton: 1973), pp. 214–215 and n. 2, where one character in Morley’s dialogue tells of how one exponent of the art of descant (improvised counterpoint) would ridicule another: “...you sing you know not what; it should seem that you came lately from a barber’s shop where you had Gregory Walker or a Curranta played to you in the new Proportions by them lately found out...” As Harman explains in his editorial note, a “Gregory” was a 16th-century wig “said to have been invented by a barber named Gregory,” and it was customary for a barber shop in the 16th and early 17th centuries to provide “a lute, viol, or fiddle” on which waiting customers might amuse themselves.

The logic of that same misplaced accidental then brought me to a musical homecoming of my own — through a 1°17 semitone, this time as a melodic interval defining a familiar 14th-century cadence.

Such is the copious nature of 17-WT.

8.6. A suspension-like “fusion” idiom

Another idiom, although not precisely a suspension, seems also to combine medieval and Renaissance elements:

1	2	1	2	&	1
D5	C#5	D5			
A4	G#4	Bb4	A4	G4	A4
F4	E4	D4			

The standard 14th-century progression of E4-G#4-C#5 to D4-A4-D5 is decorated with an ornament in the middle voice, which moves to the minor sixth in place of the expected fifth, and then gently settles into its anticipated goal (Bb4-A4-G4-A4). While the expressive resolution from minor sixth to fifth by oblique motion appears in 13th-century pieces, the figure Bb4-A4-G4-A4 evokes for me especially some cadences of around 1500, the era of Josquin des Prez.

From this perspective, the melodic diminished third G#4-Bb4 in the middle voice (2°17) seems a kind of bridge between medieval and Renaissance eras.

In 17-WT, the minor sixth (11°17) ranges from its smallest size near 9:14 (~764.92 cents) in the nearer portion of the circle, as here (D4-Bb4, ~771.78 cents), to a pure 7:11 (~782.49 cents) in the remote portion. A minor sixth around 9:14 or 7:11 has for me a pleasantly languid quality, here nicely contrasting with the outgoing and expansive qualities of the sonority with major third and sixth preceding it. Once again, 17-WT proves fertile ground for a cross-pollination of the centuries.