Lochac Autumn Crown 2022
A&S Competition Entry

Competition: Musical

Entrant: Master Crispin Sexi, OL.

Description of Item: A method and example for multiple settings of a canon - "Novello"

MP3 renderings are available at http://aelflaed.homemail.com.au/music/novello.html

Previous Experience: Crispin was laurelled for musical composition in 2004.

Effort: Estimated 80 hours of work in devising the method of composition and working on 19 different attempts in coming up with the final product.

Inspiration: Nicodemus Novello repaired my harp and when asked how I could pay, Nicodemus suggested a piece of music with no words. Nicodemus is a cunning fellow and *canon* is a cunning technique in musical composition, so I felt it was a good match.

In canon, the one line of composed melody is given to different voices, who start one after the other in order to build up a complete polyphonic piece of music. The *round* is a type of canon where every voice begins at the same pitch and repeats when they get to the end. The more general form of a canon is where each voice starts on a different note and all parts cease when the leader gets to the end of the music.

But how to make a suitably extra-complicated canon for Nicodemus?

Historical Evidence:
William Bathe's *A Brief Introduction To The Skill Of Song* (1587) gives a formula for composing two part canon above a bass line. He includes a table for how to find the usable next notes while avoiding tritones, discords, and parallel 5ths/8ves. He hints that the table could also be used for three-part canon.

Thomas Morley discusses the setting of inverted counterpoint (i.e. swapping the upper and lower parts but still staying in harmony) - with and without contrary motion (i.e. going down instead of up and vice-versa) - on p105 in his section on canons in *A Plaine and Easie Introduction to the Skill of Music* (1597).

Other interesting canon types are covered in detail in Elway Beven's 1631 book *A Briefe And Short Instruction Of The Art Of Musicke* (1631), wherein he includes doubling or halving the note lengths (augmentation and diminution), and retro (reversing the melody). And, just to be tricky, he includes a type where you swap the note lengths (minims become semibreves and vice-versa).

Just why all these theorists title their books to try to make music theory sound simple is a mystery to me.

Glareanus in his book innovatively called *Dodecachordon* (1547) has an example canon "Salve Mater" on p465 where the following voice moves "adverse" or contrary to the leading voice. And on p389 he has a canon that has the follower contrary ***and*** augmented at greater note lengths. This latter example starts out with upwards step then upwards leap, an awkward melodic shape normally avoided in Renaissance composition but caused here by the contrary setting.

In addition to these examples there is also *Bayerische Staatsbibliothek, Munich. 2 Mus.pr. 156* (1547), printed in Augsburg by Philip Ulhart. The page has a single line of music written by someone called Theodoricus. Around the four borders there are four different settings for the one canon. Three are for 3 voices and the other for four voices. Each setting of this canon starts on a different set of notes.

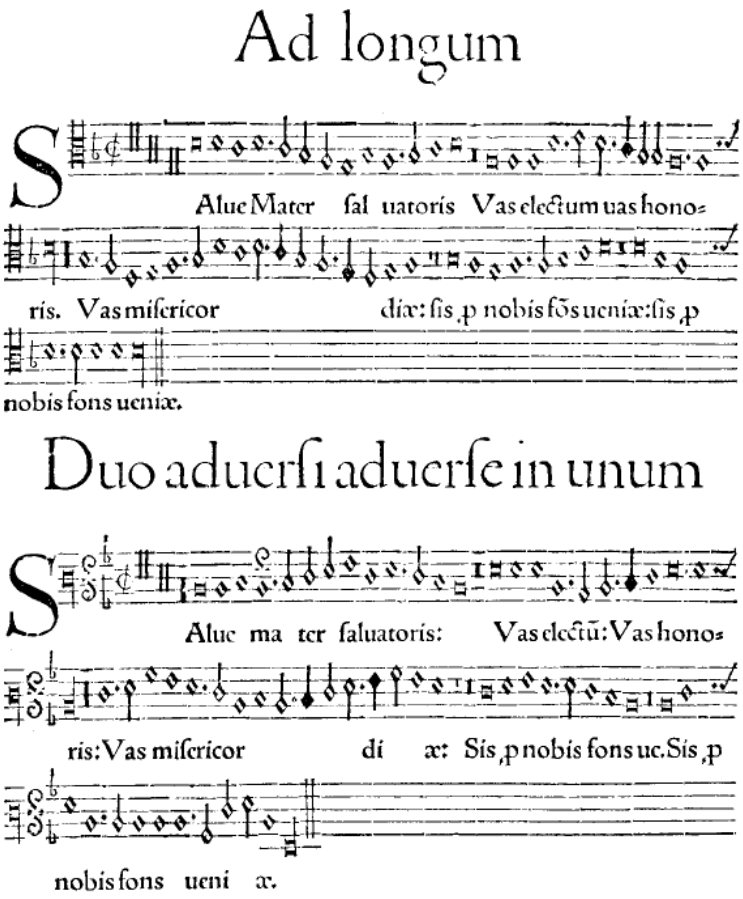

Fig 1: Adverse canon "Salve Mater" from Glareanus' Dodecachordon

"There is also a manner of composition vsed amongst the Italians, which they call Contrapunto doppio, or double descant, and though it be no Canon, yet is it verie neere the nature of a Canon: and therefore I thought it meetest to be handled in this place, and it is no other thing, but a certaine kind of composition, which beeing sung after diuers sortes, by changing the partes, maketh diuers manners of harmonie: and is founde to be of two sortes. The first is, when the principall (that is the thing as it is firste made) and the replie (that is it which the principall hauing the partes changed dooth make) are sung, changing the partes in such maner, as the highest part may be made the lowest, and the lowest parte the highest, without anie change of motion"

Fig 2: Thomas Morley discussing invertible/transposable counterpoint in A Plaine and Easie Introduction to the Skill of Music.

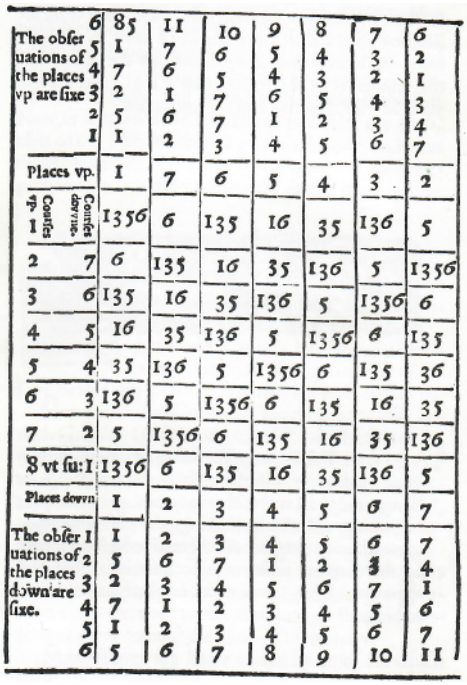

Fig 3: William Bathe's table for devising "two parts in one", a term commonly used for canon.

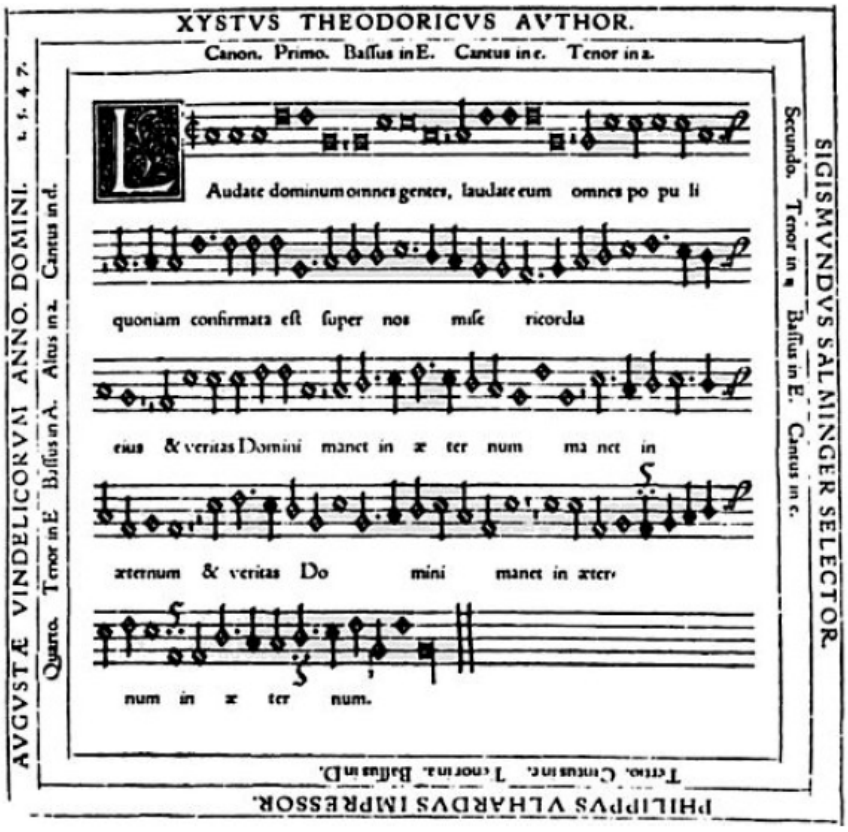

Fig 4: Theodoricus's canon for four settings - Bayerische Staatsbibliothek, Munich. 2 Mus.pr. 156.

My Attempt:

Writing canon that works in multiple settings turns out to be technically a lot harder than I thought it would be. Novello is my 19th attempt. Through those various iterations I settled on trying to emulate Theodoricus' impressive canon. To do so I had to work out two main things and combine them:

1) How to write canon where the parts are transposable relative to each other.

2) How to write four-part canon that does not tangle itself up in a dead end.

The answer to **point #1** is to write a canon where the leader is always the root note of every chord, for example C when the other voices are sounding C, E, or G. This means that you could then transpose all the other voices down by a 3rd and still make valid triad chords (e.g. A, C and E). Similarly you can also transpose all the other voices down by a 5th and they too will make valid chords (e.g. F, A and C). Though at this stage the leader must now be an upper voice due to Renaissance people not liking 2nd inversion chords.

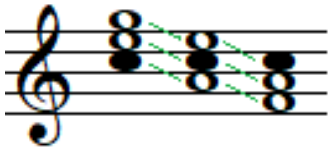

Fig 5: Leader stays on C, other voices transposed.

The type of "transposing" used in canons changes the mode of the melody - no sharps or flats are added. This potentially turns 4ths or 5ths into tritone leaps, which were frowned upon back then. So I made up a table to help with this. It turns out that the less leaps you use in composing the melody, the more options you have for transposing the following parts in the canon and still avoiding tritones. However this benefit is countered by having less options when moving from one note to the next in the melody as you are eventually reduced to only being able to move by 2nds and 3rds. See table 1 below.

For **point #2** I took a leaf out of William Bathe's book and put together another table of figures that showed, for any starting configuration of 3 voices, how to move from one note to the next in the canon without causing any issues. In Bathe's table he allowed for the upper voices to make 3rd, 5th, 6th or octaves, however to allow for transposition I had to leave out 6ths. The table I made was bigger than Bathe's one - see Table 2 below. It showed that some combinations of starting intervals between the parts are much better than others for allowing variety in movement from one note to the next. I contemplated expanding this table to work for 4 part canon, but that would have been huge so I held off on that.

Having worked the two tables out throughout my canon attempts 1 to 18, for my *19th* attempt I selected one of the more transposable options (I-V, V-II) from Table 1 and one of the better three part canon configurations (7, 4) from Table 2 and started to write out three bars of a canon. See the grey row in Table 1 and Table 2.

At bar 4 I recognised that the start of the fourth voice just needed to make a good triad chord with voices two and three. There's a little bit of adjustment at this point to make the melody fit such that the 4th part continues to stay in tune with the 2nd and 3rd parts. Once that's done, the next note for the leader just has to be the root of the chord for bar 4.

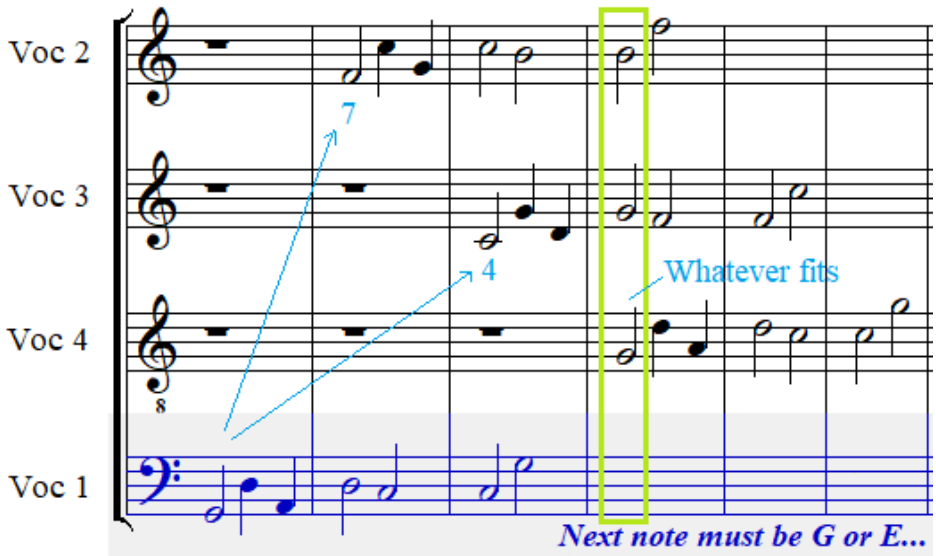

Fig 6: Starting the canon... 19th attempt!
Voice 2 is a 7th above the leader, Voice 3 a 4th.

From that point on the canon pretty much writes itself, as every bass note must be the root of the next chord. Sometimes you have a choice of note for the leader because the upper three voices might happen to outline only part of a chord, but that's about it. And so it turned out I didn't actually need to expand Table 2 to cater for four parts!

Finally, once the piece felt long enough, I aimed for a good ending on the same note the canon started. Then I went back to fill in passing notes, to prevent leaps that were banned by my selected row in Table 1 and generally make the melody more interesting.

Once the four part canon was written, I used Table 1 to work out seven variations where the parts were transposed but avoided tritones in the melodies:

Setting	**Parts**	**Transposition**	**Start Intervals**	**Start Note**	**Part Order**
1	Two	Down 3rd	1, -, 2	G, -, A	Sop, Alt
2	Two	Down 5th	1, 3	F, A	Sop, Alt
3	Two	Down 3rd, contrary	1, 4	D, G	Ten, Sop
4	Three	Down 3rd	1, 5, 2	C, G, D	Ten, Alt, Sop
5	Three	Down 5th	1, 3, 7	D, F, C	Sop, Alt, Ten
6	Three	Voice 2 down a 3rd	1, 5, 4	D, A, G	Alt, Ten, Sop
7	Four	Original setting	1, 7, 4, 1	G, F, C, G	Bas, Sop, Alt, Ten

Once you have a four-part canon, it's easy to make two- or three-part canons just by leaving out a following voice or two. On the contrary, it's not feasible to write a two-part canon and expect to be able to add voices - to attempt this would lead to a terrible mess of discordant music.

Conclusion:

Theodoricus' achievement of four different settings of the one canon melody is quite impressive. However, the method I have devised to replicate his achievement makes canon in multiple settings relatively easy. There are points about this method that I have not covered in my description above, for the sake of brevity. Also, this method stops short of helping compose other kinds of canon, such as augmented, diminished or retro canon. In future I shall work on adding those features to this method, because that would be way cool.

I emailed through the settings to Nicodemus, one at a time over a span of 5 weeks, starting with a two-parter in PDF and MP3 format (courtesy of SynthFont[tm]) and gradually working up to the four-parter. His response when I sent the ***first*** of the settings:

> I feel I have been well and truly over-paid, sir. Thank you very, very much.
>
> You'll be amused to know that I didn't announce this piece in any way - just turned off the radio and played it - and Rowan, after a few seconds, looked at me and asked 'Crispin?' You have a style, apparently.
>
> Deeply flattered and grateful,
> Nico"

By the time I had sent the fourth setting, Nicodemus had stopped replying. Possibly I had overdone it..?

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Table 1: Transposition Options for Canon Melody

Leaps used (4th / 5th)	Allowed Start	Down 3rd Transposition	Down 5th Transposition	Variety
I-V	A, C, D, E, F, G	A>F, G>E, F>D, E>C, C>A	A>D, G>C, E>A, D>G, C>F	Best: (D/F) A G E C
I-V, VI-III	A, C, E, F, G	A>F, G>E, E>C, C>A	G>C, E>A, C>F	Great: (A) C E G
I-V, III-VII	A, C, D, E, F	A>F, F>D, E>C, C>A	A>D, E>A, C>F	Great: (F) A C E
I-V, IV-I	A, C, D, E, G	G>E, E>C, C>A	A>D, G>C, E>A, D>G	Good: ? G E (A/C/D)
I-V, V-II	A, C, D, F, G	A>F, F>D, C>A	A>D, G>C, D>G, C>F	Good: ? A C (D/F/G)
I-V, II-VI	C, D, E, F, G	G>E, F>D, E>C	G>C, D>G, C>F	Okay: ? G (C/D/E/F)
I-V, VII-IV	A, D, E, F, G	A>F, G>E, F>D	A>D, E>A, D>G	Okay: ? A (D/E/F/G)
I-V, IV-I, VI-III	A, C, E, G	G>E, E>C, C>A	G>C, E>A	Good: [A] G E (C)
I-V, V-II, III-VII	A, C, D, F	A>F, F>D, C>A	A>D, C>F	Good: [D] A C (F)
I-V, VI-III, III-VII	A, C, E, F	A>F, E>C, C>A	E>A, C>F	Good: [F] C E (A)
I-V, IV-I, III-VII	A, C, D, E	E>C, C>A	A>D, E>A	Okay: [D] E (C/A)
I-V, IV-I, II-VI	C, D, E, G	G>E, E>C	G>C, D>G	Okay: [C] G (E/D)
I-V, V-II, VII-IV	A, D, F, G	A>F, F>D	A>D, D>G	Okay: [G] A (F/D)
I-V, V-II, VI-III	A, C, F, G	A>F, C>A	G>C, C>F	Okay: [F] C (A/G)
I-V, VI-III, II-VI	C, E, F, G	G>E, E>C	G>C, C>F	Okay: [F] G (E/C)
I-V, VI-III, VII-IV	A, E, F, G	A>F, G>E	G>C, E>A	Okay: [F] G (A/E)
I-V, III-VII, VII-IV	A, D, E, F	A>F, F>D	A>D, E>A	Okay: [D] A (F/E)
I-V, IV-I, VII-IV	A, D, E, G	G>E	A>D, E>A, D>G	Low
I-V, V-II, II-VI	C, D, F, G	F>D	G>C, D>G, C>F	Low
I-V, IV-I, V-II	A, C, D, G	C>A	A>D, G>C, D>G	Low
I-V, III-VII, II-VI	C, D, E, F	F>D, E>C	C>F	Low
I-V, VII-IV, II-VI	D, E, F, G	G>E, F>D	D>G	Low
I-V, IV-I, VI-III, II-VI	C, E, G	G>E, E>C	G>C	Okay: C G (E)
I-V, IV-I, VI-III, III-VII	A, C, E	E>C, C>A	E>A	Okay: A E (C)
I-V, V-II, VII-IV, III-VII	A, D, F	A>F, F>D	A>D	Okay: D A (F)
I-V, V-II, VI-III, III-VII	A, C, F	A>F, C>A	C>F	Okay: F C (A)
I-V, IV-I, III-VII, VII-IV	A, D, E		A>D, E>A	Low
I-V, IV-I, II-VI, V-II	C, D, G		G>C, D>G	Low
I-V, IV-I, VII-IV, V-II	A, D, G		A>D, D>G	Low
I-V, V-II, VI-III, II-VI	C, F, G		G>C, C>F	Low
I-V, IV-I, VI-III, VII-IV	A, E, G	G>E	E>A	Poor
I-V, IV-I, VI-III, V-II	A, C, G	C>A	G>C	Poor
I-V, IV-I, III-VII, II-VI	C, D, E	E>C		Poor
I-V, IV-I, III-VII, V-II	A, C, D	C>A	A>D	Poor
I-V, IV-I, II-VI, VII-IV	D, E, G	G>E	D>G	Poor
I-V, V-II, VII-IV, II-VI	D, F, G	F>D	D>G	Poor
I-V, V-II, VII-IV, VI-III	A, F, G	A>F		Poor
I-V, V-II, II-VI, III-VII	C, D, F	F>D	C>F	Poor
I-V, VI-III, II-VI, III-VII	C, E, F	E>C	C>F	Poor
I-V, VI-III, II-VI, VII-IV	E, F, G	G>E		Poor
I-V, VI-III, VII-IV, III-VII	A, E, F	A>F	E>A	Poor
I-V, III-VII, II-VI, VII-IV	D, E, F	F>D		Poor
I-V, IV-I, VI-III, VII-IV, II-VI	E, G	G>E		Poor
I-V, IV-I, VI-III, II-VI, III-VII	C, E	E>C		Poor
I-V, IV-I, VI-III, V-II, III-VII	A, C	C>A		Poor
I-V, V-II, VII-IV, II-VI, III-VII	D, F	F>D		Poor
I-V, V-II, VII-IV, VI-III, III-VII	A, F	A>F		Poor
I-V, IV-I, VI-III, II-VI, V-II	C, G		G>C	Poor
I-V, IV-I, VI-III, VII-IV, III-VII	A, E		E>A	Poor
I-V, IV-I, III-VII, VII-IV, V-II	A, D		A>D	Poor
I-V, IV-I, II-VI, VII-IV, V-II	D, G		D>G	Poor
I-V, V-II, VI-III, II-VI, III-VII	C, F		C>F	Poor
I-V, IV-I, III-VII, II-VI, V-II	C, D			None
I-V, IV-I, VI-III, VII-IV, V-II	A, G			None
I-V, IV-I, III-VII, VII-IV, II-VI	D, E			None
I-V, V-II, VII-IV, II-VI, VI-III	F, G			None
I-V, VI-III, II-VI, III-VII, VII-IV	E, F			None

This table shows the allowed starting notes for canon parts where the melody makes use of certain leaps of a 4th or 5th relative to the starting note. The more leaps you want in your canon melody, the less transposable it will be.

Table 2: Possible Movement for Canon Melody Based on Relative Starting Notes of Voices 2 and 3

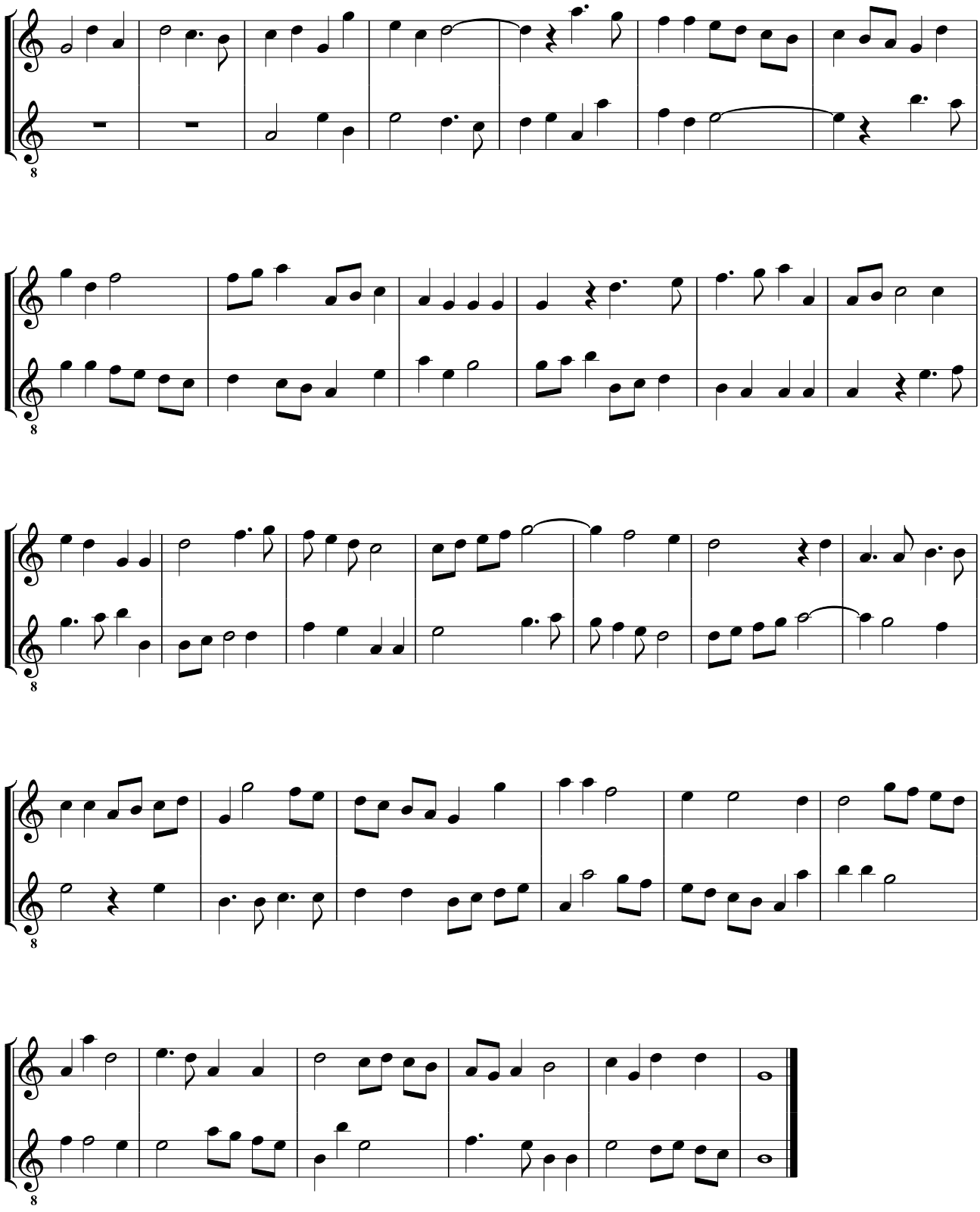
Place		Previous Course							Comments
Follower 1	Follower 2	1	2	3	4	5	6	7	
1	1	1 4 6			1		1 6		Good
	2				4 6		4		Poor
	3	1 6					1		Poor
	4	4			1 4 6		4 6		Good
	5	1							Unusable
	6	4 6			1 6		1 4 6		Best variety
	7				4				Unusable
2	1		5 7			2 7		2 5 7	Best variety
	2					5			Unusable
	3		2 5 7			2		2 7	Good
	4					5 7		5	Poor
	5		2 7					2	Poor
	6		5			2 5 7		5 7	Good
	7		2						Unusable
3	1	1 6		6			1 3 6		Good
	2			3					Unusable
	3	1 3 6		1 6			1 3		Best variety
	4						6		Unusable
	5	1 3		1 3 6			3		Good
	6	6					1 6		Poor
	7	3		1 3					Poor
4	1		7					2 7	Poor
	2		4		2 4				Poor
	3		2 7		7			2 4 7	Good
	4				4				Unusable
	5		2 4 7		2 7			2 4	Best variety
	6							7	Unusable
	7		2 4		2 4 7			4	Good
5	1	1							Unusable
	2	5		3 5		1 3 5			Good
	3	1 3		1					Poor
	4			5		3 5			Poor
	5		1 3 5	1 3		1			Good
	6					5			Unusable
	7	3 5		1 3 5		1 3			Best variety
6	1						6		Unusable
	2		4 6		2 4 6		2 4		Best variety
	3		2						Unusable
	4		6		4 6		2 4 6		Good
	5		2 4		2				Poor
	6				6		4 6		Poor
	7		2 4 6		2 4		2		Good
7	1					7		5 7	Poor
	2			3 5 7		3 5		3	Good
	3							7	Unusable
	4			5 7		3 5 7		3 5	Best variety
	5			3					Unusable
	6			7		5 7		3 5 7	Good
	7			3 5		3			Poor

Here "previous course" means how much the melody last moved, and gives the options for what the next movement might be. 1 = unison or 8ve, 2= upwards by a 2nd or down by a 7th, 3 = upwards by a 3rd or down by a 6th, and so on. The more numbers in a row, the easier it will be to write interesting music.

Novello - Setting 1

Canon: Soprano G, Alto A

Crispin Sexi



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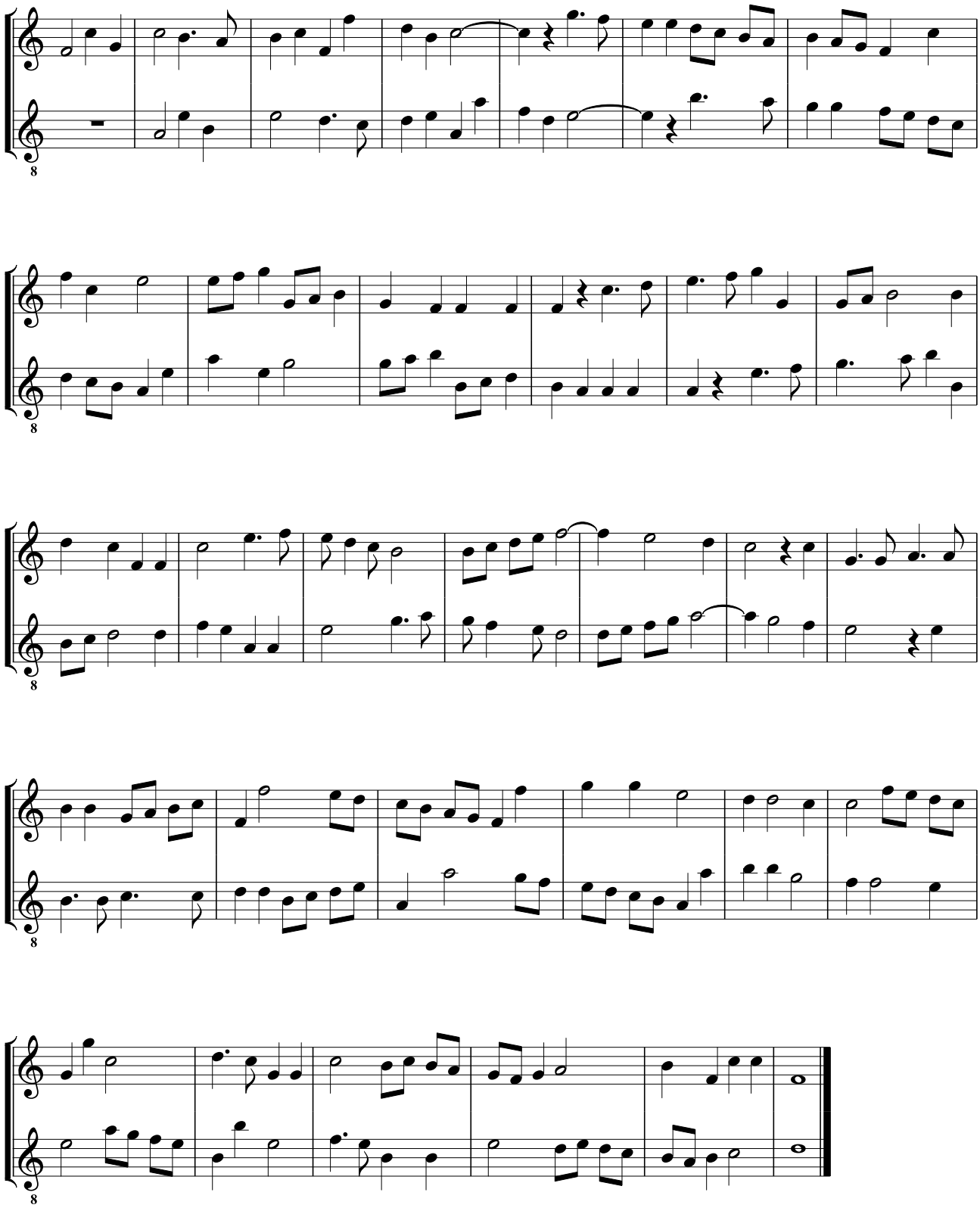
Novello - Setting 2

Canon: Soprano F, Alto A

Crispin Sexi



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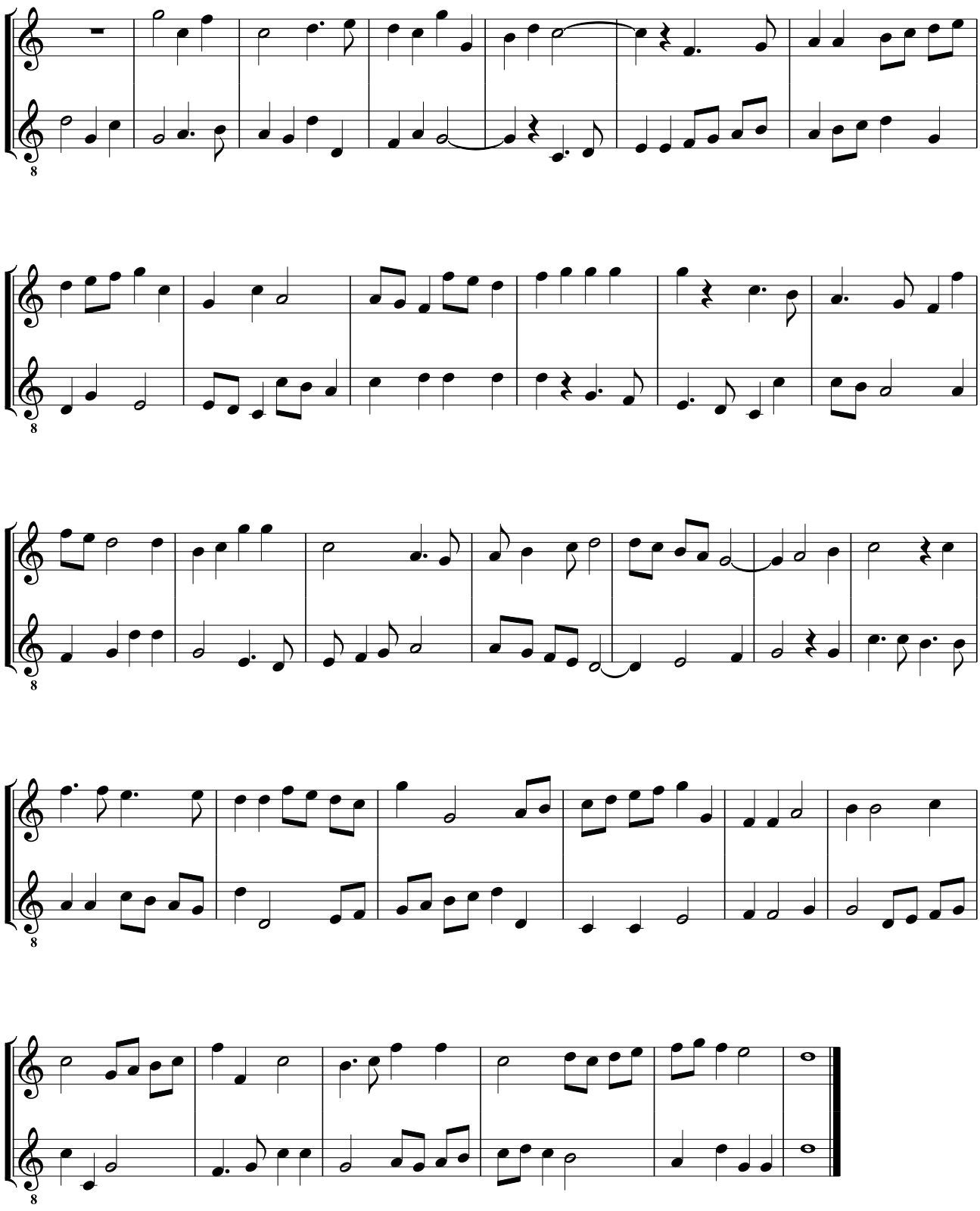
Novello - Setting 3

Canon: Tenor D, Soprano G, contrary motion

Crispin Sexi



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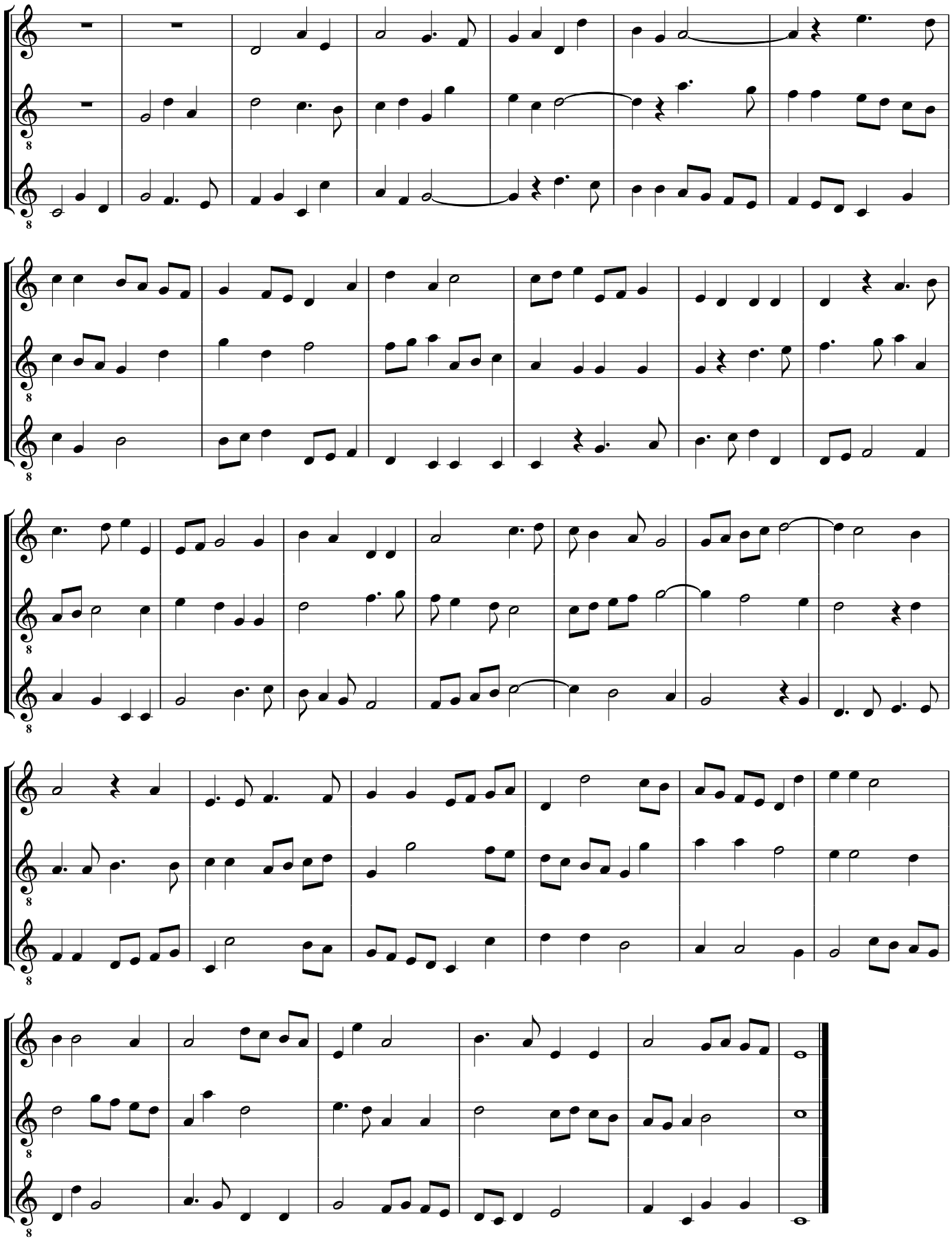
Novello - Setting 4

Canon: Tenor C, Alto G, Soprano D

Crispin Sexi



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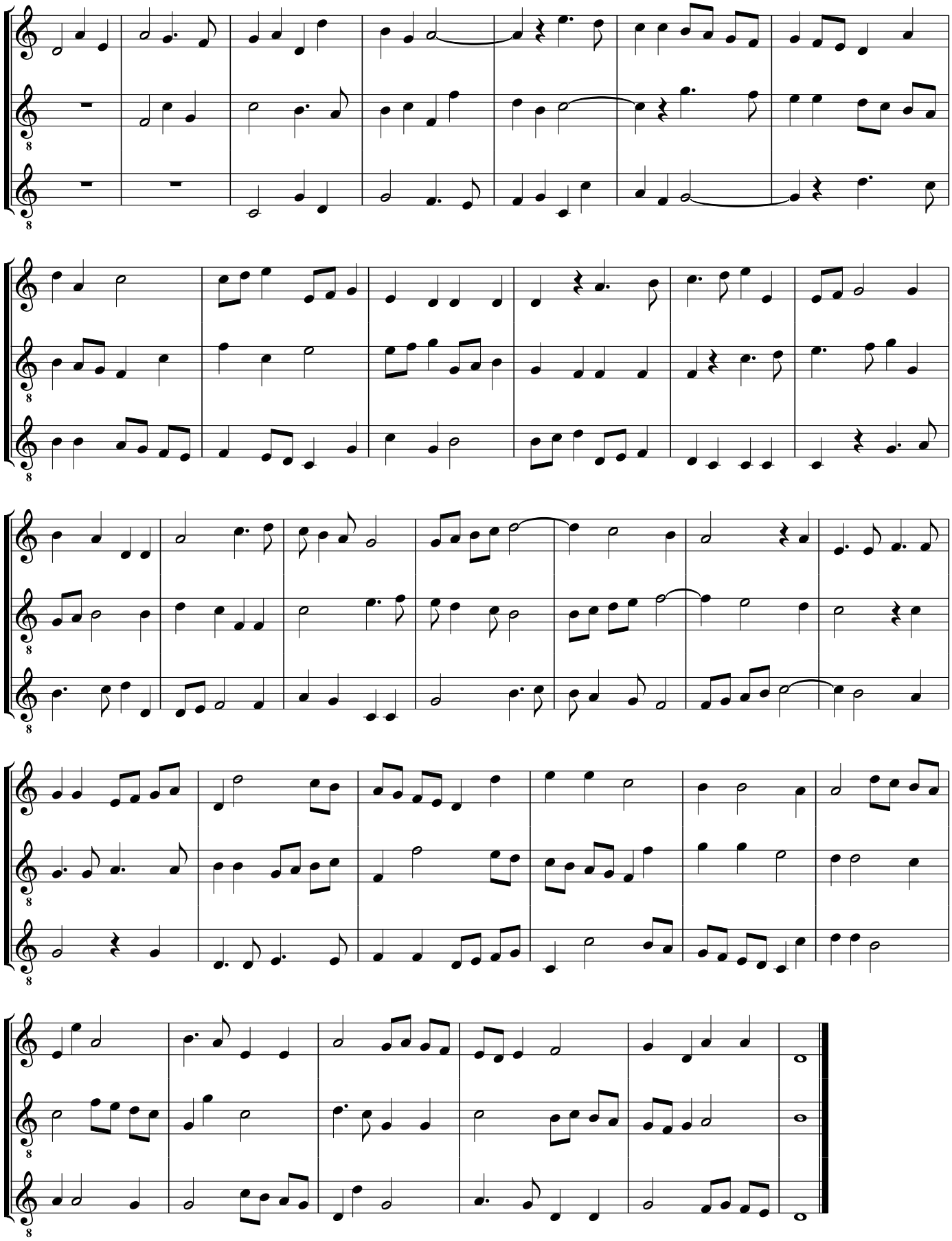
Novello - Setting 5

Canon: Soprano D, Alto F, Tenor C

Crispin Sexi



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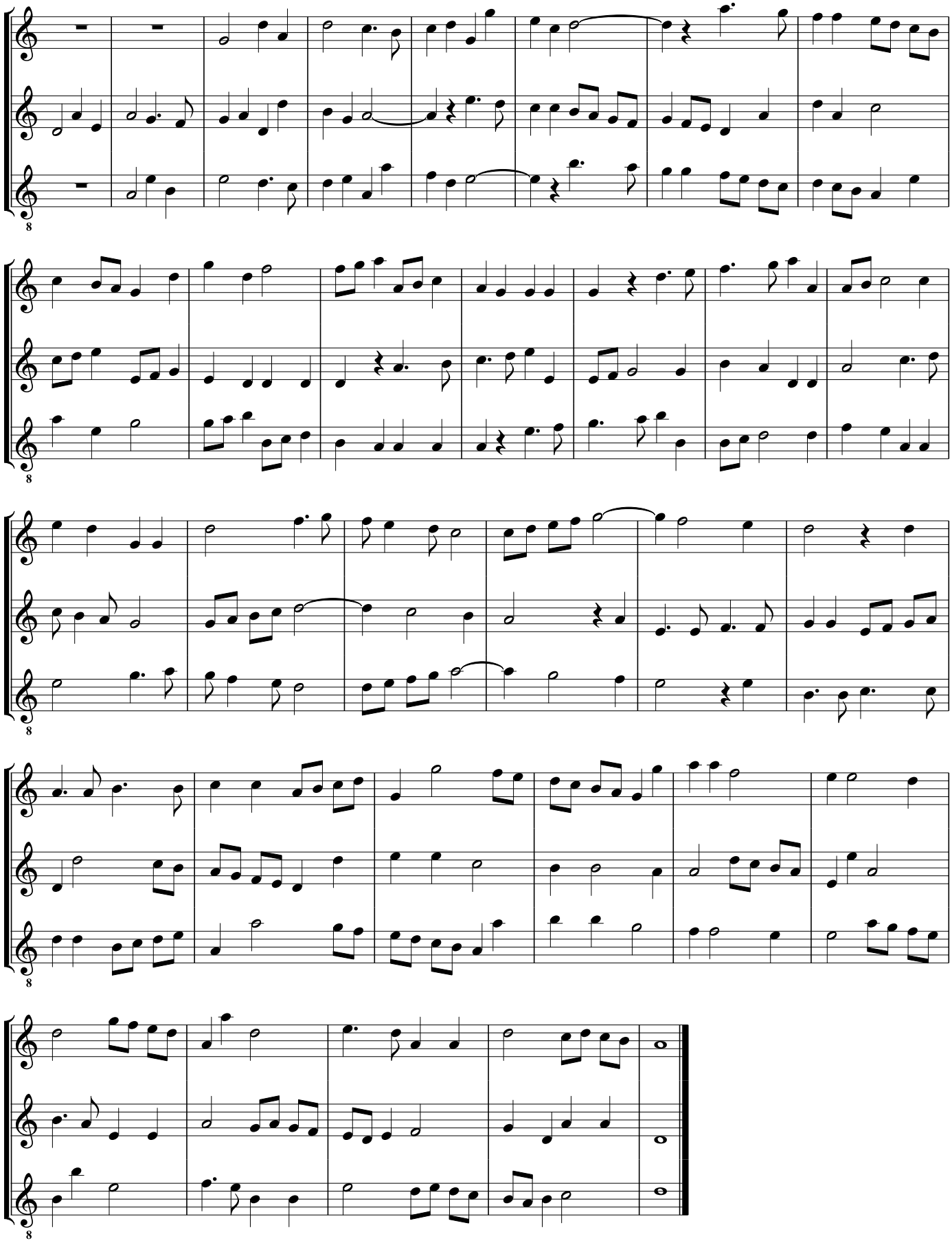
Novello - Setting 6

Canon: Alto D, Tenor A, Soprano G

Crispin Sexi



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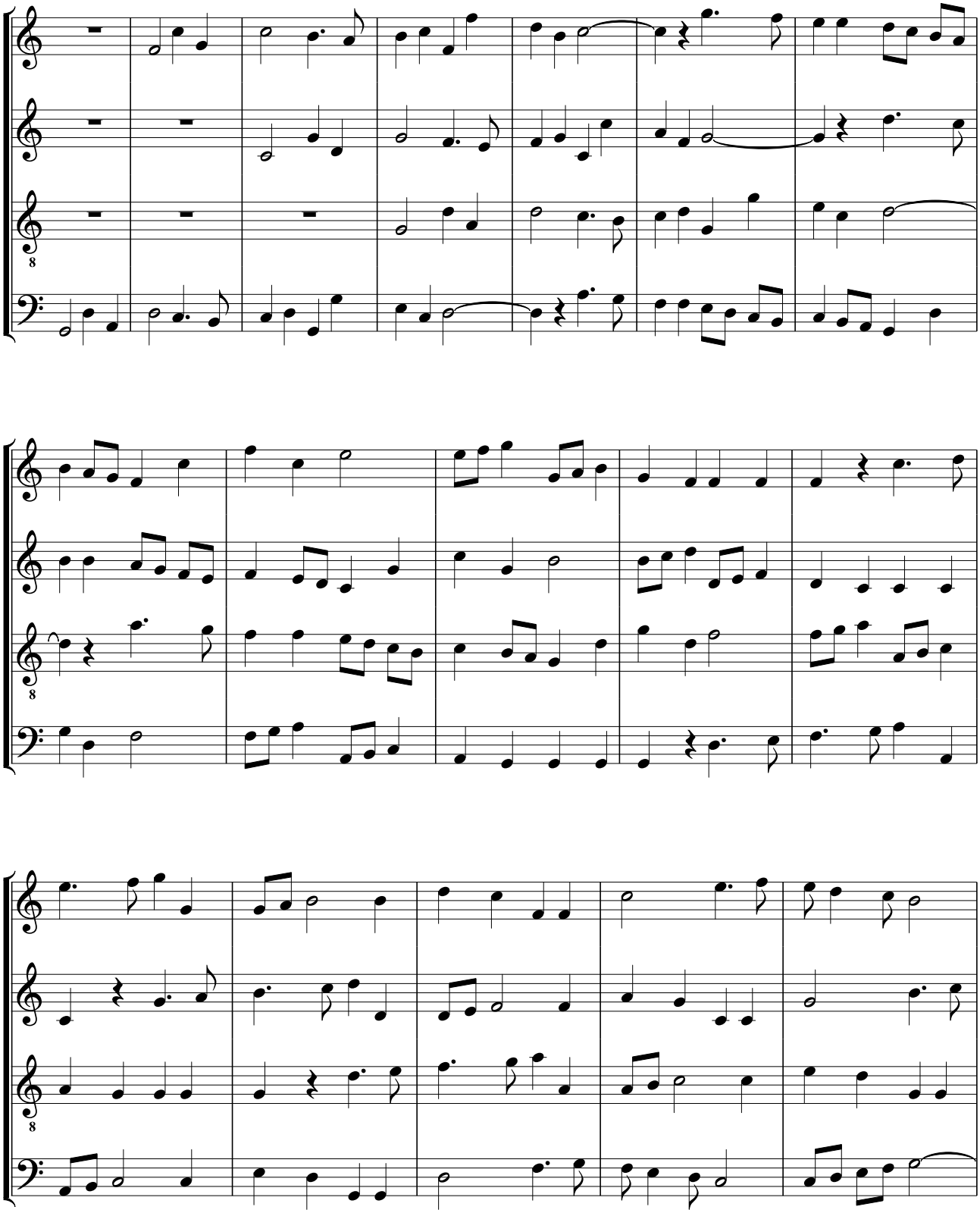
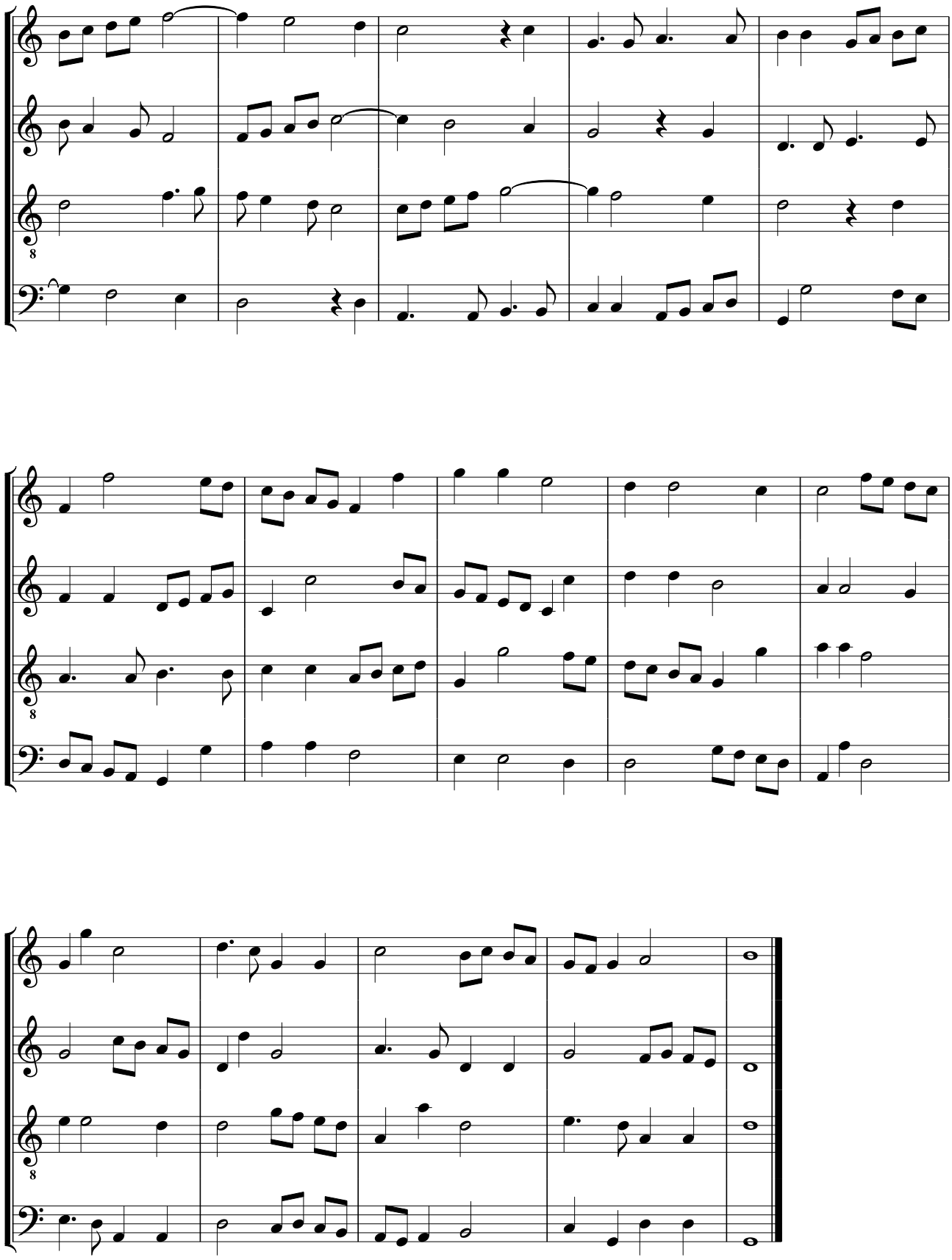
Novello - Setting 7

Canon: Bass G, Soprano F, Alto C, Tenor G

Crispin Sexi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