

# THE SOUND AND THE *FUSAE*: MUSIC NOTATION AS A MEANS OF TIME TRAVEL

Darlene Castro (Jane Hatter)  
Department of Music

The Renaissance composer Crispinus van Stappen was born during a time in which things such as cloud storage and back-up files had yet to be invented; if something went missing it stayed that way. Unfortunately, this happened with one of the voices to his choral piece *Exaudi nos filia* and it has yet to be found. Without this voice his composition is incomplete and unperformable. This project of recreating the missing voice first came about at the suggestion of my research mentor Dr. Jane Hatter. I received a grant from the Office of Undergraduate Research at the University of Utah to study the transcription and digital typesetting of early music notation. Dr. Hatter knew *Exaudi nos filia* from her own research and thought might be interesting for me as a composer to try and recreate the missing voice.

The more time I spent with the piece, the more I began to think about what would I have to take into consideration to get the most accurate result without creating a time machine, travelling back in time, and listening to the original. Performers of early music face a similar predicament when trying to play music from previous eras even when there is a complete score. They have historical treatises for reference, but they also rely on period instruments to get many of the nuances that would have been heard back then. For instance, consider this calligraphic text that dates from the 12th to 14th century. If we were to try and copy this, we can use a modern ballpoint pen to get the general shape and then painstakingly fill in the letters with ink. Or we can use a broad edge quill to almost effortlessly create a pretty close match.

Handwriting tools and alphabet styles, musical instruments, and systems of music notation have all evolved over time. Some elements have persisted through these changes and many of these changes have made the tools better, but important nuances have been lost as well. These losses create enough of a difference to warrant the need for replicas of these historical tools to get closer results to the original. Just as we use period instruments to produce a more authentic performance, can we also compose with period notation to create a more authentic soundspace for van Stappen's missing voice? If so, what does this tell us about the composition process and how tools such as notation can influence it and the composer? To tackle these questions and recreate the missing voice, we will need to focus on three things: the layout of renaissance choral music, the compromises made in the evolution of music notation in history, and the original system that the piece was written in—white mensural notation.

## **1. Layout**

One of the first things we have to understand is that music printing during the Renaissance looked a little different than music printed today. Choral music printing started in 1501 and by 1502 it was almost always printed in what is called partbook format. Unlike today's printing, which consists of all the voices lined up on the same page, partbooks presented each voice in a different book. While this saved space and consolidated everything

for performance, the lack of full score made it susceptible to the fate of van Stappen’s missing voice.

This next example can help us understand how partbooks sort of work and helps to highlight how we can go about recreating the missing voice. Say we have a line of text that we want separate people to take turns reading. In partbooks, instead of presenting the full text to everyone and marking each individual readers’ words with a distinguishing feature, we present them with only the words they read and some numbers to indicate how many words they should wait before they say their next word as shown below in Figure 1.

**The book is very heavy and bulky, and doesn’t fit on the shelf.**  
**Whenever the student looks for the book it’s easy to spot.**

Figure 1

In Figure 2 we have the separate parts and you can begin to see how this staggered reading would work.

**Soprano. The book [7]and doesn’t [14] looks for [19]easy**  
**Alto. [2]is very [9]fit on the [16]the [20]to spot.-**  
**Tenor. [4]heavy [10]shelf. [17]book**  
**Bass. [5]and bulky,[11]Whenever the student [18]it’s**

Figure 2

We start with the Soprano, reading their part. Then the alto waits two words before reading “is very”. The tenor waits four words before reading their text, then the bass and so forth and so on. But if one of the parts goes missing we no longer have the full text as we see in the missing tenor part of Figure 3.

**The book is very \_\_\_\_\_ and bulky, and doesn’t fit on the \_\_\_\_\_**  
**Whenever the student looks for the \_\_\_\_\_ it’s easy to spot.**

Figure 3

However, the grammar gives us some clues. We can guess that we need an adjective for the book, because of the paired adjective that follows. Likewise, we can infer we need “shelf” from the context and that “book” is missing because of the sentence structure. Similar clues can also be found in van Stappen’s piece by careful study of renaissance music theory and counterpoint. From studying the surviving parts and similar pieces by him and his contemporaries we can begin to reconstruct the missing voice, hypothetically completing the composition.

In tackling the problem of reconstructing this voice, I first transcribed and rearranged the piece into score format. No sketches of van Stappen’s exist, so it isn’t certain what his exact compositional process was in terms of composing the parts out separately or all together in some sort of score-like format. I don’t have the memory of van Stappen or direct knowledge of his compositional intent, so the best way for me to see the relationships between the voices that he might have intended is by having the

piece in score format. Now, this might be problematic because I can get stuck in a vertical frame of mind in a musical style that wasn't conceived of in this way, but research by Jessie Ann Owens shows that some sketches of van Stappen's contemporaries exist in what is called quasi-score format. In quasi-score format the parts appear on the same page like score format, but don't exactly line up with each other or have barlines running through all the voices. While the whole sketch of a piece may not always show up in quasi-score format, evidence shows that composers may have sketched at least sections of a piece in quasi score format and then pieced them together in the final product (Owens, 1997). This in turn suggests that it was an option that may have been available to van Stappen, and therefore serves as a plausible method in my reconstruction.

Based on this information, I then segmented the piece into homophonic and polyphonic sections. The homophonic sections are the easiest to guess and are good indications of arrival points. This then could allow me to work backwards from known points and guide where the polyphonic sections would end. I then studied the following four voice pieces by van Stappen: *Ave Maria*, *Beati Paci* (A setting of *Des tous biens plaine*), *Non lotis Manibus*, *Virtutum expulsus*, and *Gentil Galans*.

Though *Exaudi nos* is a five-voice work, the tenor line only comes in at certain points, rendering it effectively a four-voice piece for the majority of the time. By studying these scores, I can find cadential and textural tendencies. *Ave Maria*, the piece most similar to *Exaudi nos* in its alternation of homophonic and polyphonic sections, has a wealth of information about how van Stappen spaced four voices and the doublings he used in homophonic sections.

I color coded the triads van Stappen used in the homophonic opening to *Ave Maria*, with green being the lowest note of the triad, pink the middle second note, and yellow the highest third note. From this I discovered he most often doubles the lowest note of the triad, which appears the most in the bass voice. The next note most doubled is yellow, or the third highest note in the triad. From this information, the homophonic sections can become a bit of a crossword puzzle where you fill in the missing voice, as shown in Figure 4.

The image shows a musical score for five voices: Superius, Contra tenor primus, Contra tenor secundus\*, Tenor, and Bassus. The lyrics are 'Exaudi nos filia syon'. The score is divided into measures corresponding to the words. Triads are color-coded: green for the lowest note, pink for the middle note, and yellow for the highest note. The Superius and Bassus parts have some notes filled in, while the other parts have boxes indicating missing notes. The Tenor part is mostly empty, suggesting it is not present in this section. The Bassus part has a long green-shaded note under 'nos'.

Figure 4

We see that by studying his surviving scores and the music theory of the time, we have better chance of filling in the homophonic sections correctly. However, the contrapuntal sections prove more challenging. There are more rhythmic possibilities and motivic structures that appear. This begs the question does intent study of music theory provide enough information to recreate the voice in these more diverse polyphonic sections? As a composer, wouldn't I want to have all the options that were available to van Stappen when trying to recreate this voice? This is where notation could be used to expand our understanding of the piece.

## 2. Compromises in the Evolution of Notation

Notation as we know it today hasn't always been this way. Some of the earliest musical markings were added above written text as memory aides for melodies to be performed in liturgical

settings. They worked if you already knew how the melody went (Kelly, 2015). It didn't exactly tell you what pitch to sing, but rather the general shape of the line. This system, neumatic notation also gave some instructions or reminders about how to perform the music (Kelly, 2015). Certain symbols like the liquescent neumes, gave the performer instructions on "changing the sound at the end of a syllable" (Kelly, p. 55). The pressus and oriscus explain types of ornaments on notes and other symbols, like the apostrophic neumes, indicated rhythmic changes from note lengthening to syncopation-like events (Parrish, 1959).

Later on, these neumes sometimes appeared as heightened neumes, in which the symbols were placed at different levels to indicate a relative frame of reference for the pitch. Then came Guido of Arezzo and his revolutionary idea of different colored lines and spaces to form a concrete frame of reference for the pitches. This was monumental because now you didn't have to rely on the memory of the melody to sing it, you could effectively learn to sing anything now instantly (Kelly, 2015). And by extension, you could compose anything and have anyone sing it. By the 13<sup>th</sup> century, Guido's system had evolved into square notation.

In his book *Capturing Music*, musicologist Thomas Forrest Kelly mentions an interesting comment about the switch from neumatic notation in Gregorian chant.

As it happens, Guido's innovation, important as it is, will have the unintended consequence of attaching so much importance to this new aspect of music-the fact that you can sing it at sight-that the music itself will gradually lose many of the details of performance, ornamentation, and finesse that characterized the best of neumatic notation.

These details don't really fit on Guido's staff because they are not just a single specific note, but they were an important part of the singing style of earlier centuries. If those nuances disappear...does it mean the gestures they represent are no longer sung? We don't know for sure, but shortly after Guido's time Gregorian chant came to be called *cantus planus* ('flat song'), or plainsong: 'flat song' doesn't sound like a music with a lot of elegant performance nuance (Kelly p. 73).

This sort of emphasis that Guido's system places on precision makes a lot of the neumatic symbols obsolete. As Kelly mentions, if these symbols are no longer a part of your system (or no longer fit into your system) perhaps you are less likely to use them, thus they are no longer performed and their presence is lost. Just as Guido's system compromised nuance for precision, are we compromising something in trying to recreate van Stappen's missing voice in modern notation instead of the original white mensural notation?

### 3. Notation

White mensural notation is a close precursor to our modern system of notation. *Fusae* correspond with our equivalent of eighth notes, *semiminims* with quarter notes, *minims* with halves, *semibreves* with whole notes, and *breves* with double whole notes. The main difference between these two notational systems lies in how they encode information about note lengths. White mensural notation uses shape, color, and is context dependent to distinguish note length. For example, this is a song we all know, Pop Goes the Weasel shown in Figure 5.

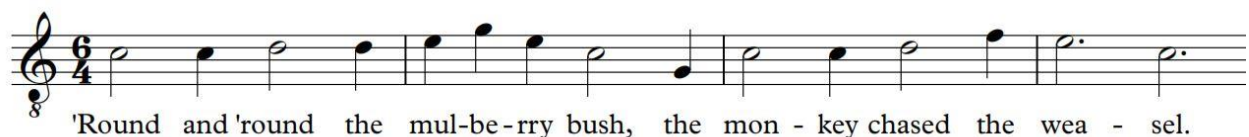


Figure 5

Each measure has six base units or quarter notes. If you think of a measure as a container of some sort, which can be filled with quarter notes, half notes, and dotted half notes. However, each of these are distinct looking and have separate symbols to communicate different values. Our symbol for

two (the half note) is different from the symbol for three (the dotted half note.) Now let's take a look at the same melody in White Mensural Notation as shown in Figure 6.

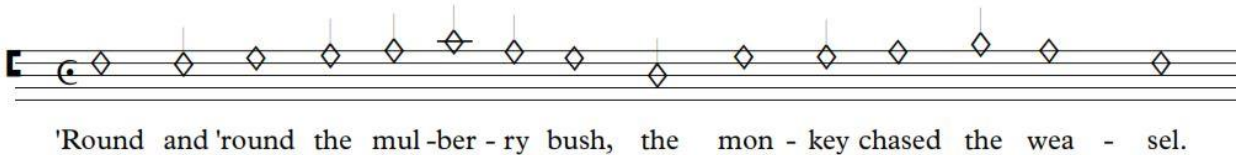


Figure 6

In this system, the shape for two (as it does for the first note on the word “round”) could also mean three (as it does for the word “weasel”), depending on the note that precedes or follows it. White mensural notation also doesn't have any bars separating measures, unlike modern notation. Therefore, you depend more on the text and the music itself to determine where to start and end a phrase, giving the music less rigidity.

There was a study done by Pam Mueller and Daniel Oppenheimer on laptop versus longhand note-taking that was published in 2014. They concluded that laptops made verbatim note taking easier than longhand and therefore the notes from laptop users tended to be verbatim. This worked great for factual recall and both groups of notetakers scored equally strong when tested (Mueller and Oppenheimer, 2014). However, when it came to conceptual retention, the laptop note takers scored significantly less than the longhand note takers (Mueller and Oppenheimer, 2014). Mueller and Oppenheimer's study attributed this to the tools they were using: since writing something out by hand forces you to interact with it more intimately and summarize long streams of information into your own words, the longhand notetakers were able to grasp concepts better than those that were able to write everything verbatim. This is an example of how the tools we use may influence how we accomplish a task. By merely having more propensity for a certain characteristic, the tool “suggests” a methodology to us that we can then take.

Notation is a tool in music and one that can likewise suggest methodologies to composers. It's a way of encoding information and similar to a language, if you aren't familiar with all the capabilities of your tool you are limited in what you can communicate. Van Stappen's piece was written in a highly imitative and pattern-based tradition that was common during the Renaissance. There are two components within white mensural notation that help to support this style.

- 1) The distinctive noteheads make pattern recognition easier to recognize and therefore easier to place into other voices.
- 2) Lack of barlines keeps patterns intact facilitating pattern repetition not only visually, but also spatially because you don't have barlines breaking your patterns (Schubert, 1999).

Therefore, working in this musical style with the original notation system is an advantage that presents all these compositional capabilities without having to pull or force them out of modern notation. Below are some examples taken from van Stappen's piece that show how white mensural notation facilitates pattern recognition which in turn informs and enriches the voice recreation process.

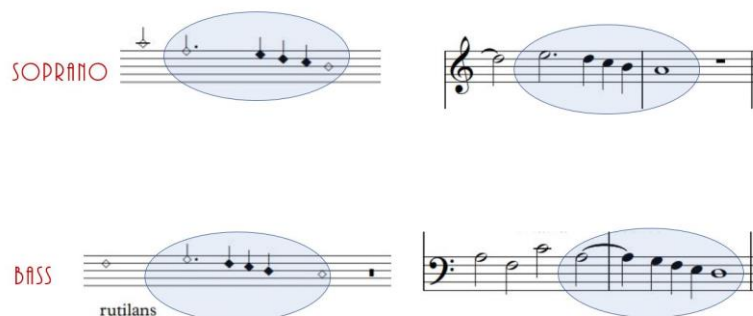


Figure 7



Figure 7 is a cadential gesture that happens first in the soprano and then later in the bass. We may have noticed it in modern notation, or by playing it on a piano, but with white mensural notation it stands out. Likewise, if I wanted to have the missing voice imitate this pattern, I could place it anywhere with ease, without having to break the pattern with barlines as we see in this next example.

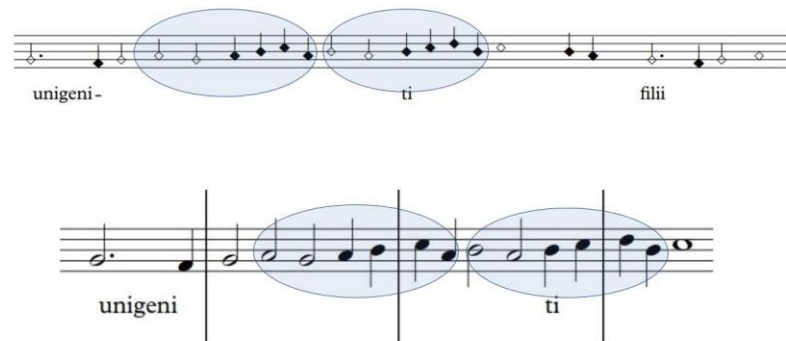


Figure 8

In Figure 8 the barline creates a break and division of this pattern. We may be tempted to overlook this specific example as it is not that disruptive, but as we saw in the previously, barlines can often transform note values into something visually different still breaking the pattern. While in this example this imitation occurs within the same voice, it is still an important element of van Stappen’s compositional process and can inform me as a composer. Working in white mensural notation, I can more readily recognize this as a clue that I can then apply when writing this missing voice. Thinking about composing in the original notation system is a powerful tool that can help me not only tell when I may be able to copy and paste a pattern, but also how van Stappen can deviate from patterns.

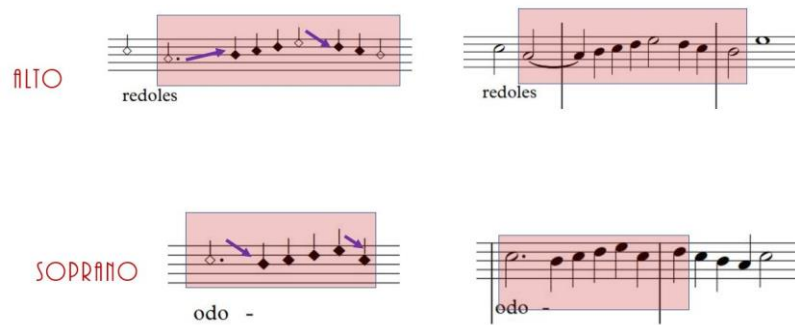


Figure 9

Figure 9 shows a line that appears first in the alto then the soprano. However, it isn’t completely identical. For instance, the starting note goes up in the alto, and down in the soprano. And as we reach the same peak (E), the next note (C) is delayed in the alto by passing tone but occurs instantly in the soprano by a skip.

This gives us a clear clue as to how van Stappen could have treated variety. Again, we may have seen this with modern notation if we were paying close enough attention, but because this notation system facilitates finding these patterns, and by extension variations, it’s a better choice for recognizing these features effortlessly and then applying this found information during the recreation process.

#### 4. Conclusion

While there are certainly ways to recreate these nuances with modern notation, just as there is a way to mimic longhand notes on a laptop, it’s still important not to overlook the effect notation can have on the composer and the composition process in any era. Music notation is the way that composers speak to performers and communicate their ideas. If we would like to communicate as they did in order to recreate a missing voice, we should learn their method of communication. Just as musicians who

perform music from the Renaissance play on period instruments or read from the original notation for “authenticity”, so too can we try to “period compose”. While period instruments suggest physical playing methods that better express the playing style of its respective era, period composing can allow us to capture the compositional possibilities suggested by period music notation. This in turns simulates a similar state that van Stappen would have found himself in, effectively sending us back in time, if only figuratively.

### Sources Cited

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