E: Article on Harmonic Tendencies
in the Missa Pape Marcelfi

## Harmonic Tendencies in the Missa Papae Marcelli

BY

## RICHARD BOBBITT

## Introduction and Explanation of Terms

The Missa Papae Marcelli (ca. 1555) of Palestrina is reputed ${ }^{1}$ to be one of the jixteenth-century master's most excellent compositions. It has been chosen, for this reason, as a subject for analysis. The purpose of this study is to examine the harmonic tendmcies of the Marcellus Mass in the light of modern theory-i.e to expose, if possible, the composer's concept of "tonality" in terms of to-day's musical thought.

All analysis is confined to the Gloria In Excelsis Deo and the Credo In Unum Deum, since these two portions form the bulk of the work and yield more than adequate examples of the harmonic style which is typical of the whole composition. The entire Mass occupies 566 measures, of which the Gloria and Credo account for 115 and 175 bars respectively, and together total 290 measures. Detailed examination shows that examples of all the harmonic devices to be discussed may be found in these two sections of the composition.

For clarity of presentation, it is necessary that we examine rather closely the technical terms which will be used in subsequent analysis.

The expression "tonality" will at all times be indicative of the following concept.
(a) Assume a scale of seven tones

(b) Derive all possible chordal structures which may be expressed in intervals of 3 rds


3 part structures derived from open form

(c) Assume the structure which was erected upon the first scale degree to be the tonal centre (tonic) and that all other structures will be subsidiary to this centre.

[^0](d) Assume that the most important subsidiary chords are those mos nearly identical in structure to the tonic and which, at the same time include a maximum number of scale tones.


Other chords with structure identical to tonic


Together with the tonic, these chords yield every note in the scale


This technique gives primary subsidiary chords for cadential activity in the following modes (Lydian and Locrian are not used in the Marcellus Mass)

(e) Assume that "substitute" chords may be obtained from primary structures by inversion of intervallic relationships.


Of course, these inversions may be related to any tone in the primary chord, but those positions yielding tones not in the scale of the parent chord are eliminated.


Tonality, in the traditional sense, ${ }^{2}$ may now be defined as that type of har monic motion which best outlines and accentuates the function of the tonic chord. Such motion is primarily expressed through subsidiary tonal levels of closely related structures and their substitutes, as shown above.

Harmonic movement which confines itself entirely to the stated diatonic scale, both in root motion and in the structure of chords built upon these roots, will be colled Type I harmony.

If chord roots come from the diatonic scale, but with upper structures altered through use of non-scale tones, this will be termed Type II harmony. ${ }^{3}$

Type I (C Ionian)


Type II (upper structures not limited to the mode from which the bass is derived


Movement-i.e. activity-within a stated tonality will be classified by means of "cycles". The common term "cycle of the 5 th" will be known as $\mathrm{C}_{5}$ (cycle 5). This refers to the downward motion of a fifth, perfect or diminished, between two chord roots:

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$$

Since motion between chord roots is by no means limited to the interval of a fifth, a general classification of all cycle movement may be summarized as follows: ${ }^{4}$


${ }^{2}$ The term "traditional", as applied to tonality, refers to the type of harmonic thought ${ }^{2}$ The term "traditional", as applied to tonality, refers to the type of harmonic thought
, Werge expressed by textbooks in general use to-day-i.e. such
${ }^{3}$ Schillinger System of Musical Composition (N.Y., 1045), Vol. I, P. 393

- Schillinger System of Mus. Comp. (N.Y., 1945), Vol. 1, p. 361-387.

An illustration of each type of cycle movement is as follows:


Note that octave adjustment of the roots does not affect the basic cycle motion-i.e. C7 may also be regarded as moving up one degree, since the same tone results as moving down a seventh.

Cycles 3,5 and 7 will be regarded as positive, since these cycles predominate in strongly "tonal" progressions of triads.


Cycles $-3,-5$ and -7 will be regarded as negative, since these cycles predominate in triad progressions of "indefinite tonality"-i.e. not necessarily gravitating to important subsidiary structures of the tonic, such as dominant or sub-dominant of a major scale.


Triad progressions which fluctuate between positive and negative cycles in such a manner as to obscure definitive harmonic motion will be known as oblique progressions-i.e. tonally indirect or evasive. Negative cycles usually predominate in this type of movement.

Key modulation will refer to the hamonic establishment of the same mode on a different pitch level. For exambls, the C major scale and its primary chords might be transferred to the nu- pitch level of D :


Modal modulation will refer to the harmonic establishment of a new scale on the same or different pitch level. This is unliku key modulation in that the scale (mode) is changed and the primary subsidiary chords of the new mode may be of different intervallic structure.

Here is an example of modal modulation to a different pitch level:


Although the term "mode" for all practical purposes simply means "scale", we will only apply the expression to those ecclesiastical modes which were used by Palestrina in the Missa Papae Marcelli-the Ionian, Dorian, Phrygian, Mixolydian, and Aeolian modes.


Thus, here is a categorical listing of the terms necessary to this analysis: Tonality.-Harmonic motion which gravitates toward the tonic chord and its primary subsidiaries.

Type I Harmony.-Chord roots and upper structures from the same scale. Type II Harmony.-Chord roots from a scale, upper structures not restricted to this same scale.

Cycle.-The intervallic relationship between chord roots.
Positive Motion.-Motion consisting primarily of positive cycles.
Negative Motion.-Motion consisting primarily of negative cycles.
Oblique Motion.-Motion of "indirect" character which fluctuates between positive and negative cycles so as to obscure primary tonal centres.

Key Modulation.-The complete harmonic establishment of the same scale on different pitch level.

Mode.-Any scale, but specifically one of the ecclesiastical modes (scales) used by Palestrina.

Modal Modulation.-The complete harmonic establishment of a new scale on same or different pitch level. Modal modulation may take place, of course, without harmony being present, but no such situation occurs in this composition.
Analysis of the Missa Papae Marcelli

Like any composer, Palestrina was obliged to draw heavily upon the compositional materials which were available during his lifetime. The tuning system of "equal-temperament" which permits free modulation to any key level was unknown to him, and although chromatic tones were employed as early as the fourteenth and fifteenth century, ${ }^{5}$ Palestrina made sparing use of them.

He seemed to prefer the major triad to the minor-this is evidenced by his preference for the Ionian (major) mode, and by structural alterations of dominant (and secondary dominant) chords at the cadence. For example, the Ionian mode occupies about 200 bars of the 290 bars in the Gloria and Credo -well over half the entire length of these two sections combined-and when cadencing in the Dorian, Mixolydian, or Acolian modes, the dominant is often changed from minor to major. It was in these cadential alterations that Palestrina made use of chromatics:


Ex. 2 Another altered Dominant - Gloria [Aeolian Mode]


[^1]In one instance, the tonic chord itself (in Dorian) is changed from minor to major to produce a strong secondary dominant effect in returning to C major.


Occasional use was made of the lowered sixth degree in the Dorian mode ut this seems to be the only instance where chromatic alteration was used to change a major triad to minor.


These, then, were the essential materials available to Palestrina:
(a) The ecclesiastical modes;
(b) Knowledge of the four triads-major, minor, diminished and augmented.
As if these sources of tonal art were not little enough, the composer limited himself even further. Not all of the melodic interval found in the modes were used, nor were all of the triads. Palestrina restricts his melodic writing to the use of major and minor seconds, major and minor thirds, perfect fourths and fifths, minor sixths and the perfect octave. Only major and minor triads are used extensively; the diminished triad occuring solely at the cadence, and the augmented triad not being used at all.
agmented triad not being used at conservative beginning could hardly be imagined, yet the composer
A more conservative beginning could hardly be imagined, he these simple materials into a highly developed, artistic product.

## Cycle Tendencies

To Palestrina the line was the thing-i.e. he seemed primarily concerned with the "singability" of each melodic part; yet, it could not be said that he was unaware of the vertical responsibilities of polyphony, since the harmonic motion resulting from melodic combinations formed patterns of movement motion resulting from melodic combinations form of the entire composition.

Analysis shows that $\mathrm{C}_{5}$ is the predominating harmonic feature of the Marcellus Mass. This hypothesis may be verified by close examination of cycle movement in the Credo, where it will be found that $\mathrm{C}_{5}$ occurs more than any other cycle. A comparative chart will serve as illustration:

$$
\begin{aligned}
& \text { Cycle Ratios of the Credo (I75 bars) } \\
& \left\{\begin{array}{llll}
\mathrm{C}_{5} \text { occurs } \\
\mathrm{C}-5 & \text { at least } & 93 & \text { times }
\end{array}\right. \\
& \left\{\begin{array}{llll}
\mathrm{C}_{7} & " & " & 77 \\
\mathrm{C}-7 & " & " & 66 \\
\hline
\end{array}\right. \\
& \left\{\begin{array}{llll}
\mathrm{C}_{3} & " & " & 56 \\
\mathrm{C}-3 & " & ", & 46
\end{array}\right. \\
& \hline
\end{aligned}
$$

The Credo section is considered to be representative in that it is the longest portion of the composition, and analysis of the other sections yields the same approximate cycle ratios. Here are three typical examples of $\mathrm{C}_{5}$ from the Credo.


Note that Palestrina prefers the altered V chord (in Ex. 6) to the diatonic VII chord which might be expected in pure Mixolydian mode.

Many instances occur where a diminished triad is used to replace the expected $\mathrm{C}_{5}$ at the cadence. But, even though the actual cadence is $\mathrm{C}_{7}$, the ear accepts the movement as substituting for the dominant and thus produces the effect of $\mathrm{C}_{5}$.


Were all such cases considered to be ( 8 (which is their aural effect), the total number of these cycles would be almost doubled.

The plagal cadence is also much in evidence:


Two other cadences worthy of mention are those formed by C-7 and $\mathrm{C}_{3}$. The latter occurs only once ${ }^{6}$ (as far as this analysis could determine) in the entire Mass and is so unusual as to be questionable. Its effect is that of a deceptive $\frac{1}{2}$ cadence into the "relative major" (to use a modern term) and sets up a crossrelation between C sharp and C natural, a rare thing in this composition. The C-7 cadence occurs as a result of embellishing the IV chord.


These cadences should not be considered important to the over-all harmonic style of the Marcellus Mass since they probably result from special melodic treatment of the text (a separate study beyond the scope of this paper). Only one other example of cross-relation was found: ${ }^{7}$


The G natural occur in a different voice from the G sharp.

Palestrina's affinity for $\mathrm{C}_{5}$ is further seen in his use of secondary dominants (what to-day would be termed "V of $V$ "). Chromatic alteration of the third emphasizes the dominant role of the chord:


[^2]Next to cycle 5 , cycle 7 is the most important harmonic factor in this composition. Its affinity to $\mathrm{C}_{5}$ at the cadence has already been discussed and its frequent use may be noted by referring to the chart of cycle ratios. Cycle 7 demonstrates its greatest usefulness, lowever, in the way it contributes to oblique harmonic motion. This phenomenon seems to be peculiar to sixteenthcentury counterpoint and is much in evidence in the Marcellus Mass. For example, $\mathrm{C}_{7}$ combined with its negative form ( $\mathrm{C}-7$ ) gives a combination of upward and downward motion:


This type of movement is especially valuable when an evasive, indirect style is desired, and the effect of wavering between positive and negative is useful in prolonging the sensation of continuous motion. Oblique movement is particularly necessary in the vocal, contrapuntal style, since the unchanging colour of human voices (even skillfully spaced) might tend to monotony without a reservoir of flowing, undulative rhythm suggested by shifting harmonic levels.

Palestrina usually uses "fauxbourdon" (scalewise movement of triads in Ist inversion) to achieve oblique motion.


This device also serves to illustrate that Palestrina was by no means indifferent to the older techniques, since "fauxbourdon" was primarily a phenomenon of the Late Middle Age period (ca. I300-I450). ${ }^{8}$ These oblique, "false bass" passages often ended with an open fifth at the cadence, reminiscent of the old ninth century organum. The following example from the Gloria is in the Phrygian mode:


The major seventh chord formed by suspension at the $C_{7}$ cadence is particularly effective.

Many similar examples of oblique, undulative motion may be found throughut the Mass, and it cannot be emphasized too strongly that this technique is one of the principal factors which contribute to the flowing Palestrinian style.
Another important feature is the lack of strict metre. It is possible that thythmic errors occurred when transferring the old music without bar lines into modern notation, but probably the modern scores (if not over-edited) are reasonably accurate. The Eulenburg edition, upon which this analysis is based, indicates certain sections to be a combination of metres, alternating between $\frac{3}{3}$ and $\frac{2}{2}$ time. This, of course, helps free the music from any monotonous metrical pulsation which might otherwise occur.
In addition, the tonic chord in harmonic cadences does not always coincide ith the strongest pulsation of the measure. This, too, contributes to the effect of indirect, wave-like motion.


Although triads are the principal structures throughout this work, seventh chords are occasionally formed by suspension between cycles.


Modal Relationships
The interval of a perfect fifth was evidently highly significant to Palestrina a symbel harmonic motion between chord roots; it also seems to play an important role
in the selection of modal centres. For example, if we outline the first fou tones which fall a perfect fifth above $C$, the following order occurs:


It is interesting to note that Palestrina may have considered the fifth nearest to C as the most closely related, and the one furthest from C as the least likely target for modal modulation. His choice of modes for the Gloria and Credo seems to bear out this hypothesis, since the Mixolydian mode occurs most frequently and the Phrygian mode only once. Modulations into the Mixolydian mode were not always "direct", in that the mode might not be fully established before returning to Ionian. Nevertheless, these oblique, indirect gravitations occurred so frequently that more total time was spent in Mixolydian than in any other mode besides Ionian, which predominated. A comparative chart illustrates the point:

> Modal Ratios of the Gloria and Credo (290 bars)
$C$ Ionian = approximately 200 bars-predominating
$G$ Mixolydian = approximately 26 birs where mod
plus approximately 24 bars of " D Dorian = approximately 38 bars where mode
Dorian =approximately 38 bars where mode is definitely established plus
approximately 4 bars of "gravitation" Approximately 4 bars of "gravitation".
A Aeolian = approximately i6 bars.
E Phrygian = approximately 5 bars.
Note that the above proportions correspond with the order of fifths previously outlined-i.e. the fifth closest to C received the most emphasis. Examination of the other sections of the Mass showed nothing to contradict this hypothesis. Lydian and Locrian moles were not used-probably due to the augmented fourth and diminished fifth so easily exposed in those scales.
Here is an example of "gravitation" toward the Mixolydian mode. Note that the modality, when heard in full context, never completely withdraws from C Ionian, but seems to venture tentatively into G Mixolydian.


Contrast the above example with the following one. Observe the full establishment of the Mixolydian mode without return to a chord on C , and the use of the natural seventh degree in descending passages:


Similar examples of modal modulation occur in Dorian, Aeolian and Phrygian. The following example is in the Dorian mode:


A more obvious use of the "fifth" relationship between modal centres is found in the second portion of the Credo (Quatuor Vocibus). Here we see extended gravitational motion with $C$ Ionian as the final target. It is interesting to note that the order of modal centres passed through corresponds exactly to the previously discussed cycle of fifths. Palestrina lends impetus to the beginning by means of a typical "fauxbourdon" passage:


The circling rhythm which results from this broad modal flow is not unlike the gliding of a bird-first hanging suspended, and then dropping by gentle degrees to a final point of rest.


The type of modal modulation just illustrated is termed "extended gravitation" because-although each mode is established by full cadence-the amount of time spent on each successive resting point is quite short, the first gravitational movement into E Phrygian being shortest of all. Thus the over-all picture is gravitational movement towards the final point of rest-i.e. Ionian C Also, note the open fifth at the Dorian and Mixolydian cadence.

Palestrina's preference for the "dominant" relationship is again indicated here by his modal cadences. With the exception of Phrygian (see Ex. 16) h seldom uses the identical structures of the pure mode (discussed in the introduction under the subject of "tonality"), evidently preferring the altered dominant effect. It would thus appear that he did not feel bound by any strict modal "system" as far as primary and substitute structures were concerned.

The modal changes in this composition are by no means radical to modern ears. No more than one accidental (except for the occasional Bb and F\# in Dorian) ever separates the various modal levels from C Ionian. The chosen modes are simply displacements of the C scale with accidentals at the cadence.


Never does the composer go as far afield as, say, from C Ionian to E Mixolydian. Most of the harmony is Type I (diatonic), except at the cadence where Type II is frequently used to emphasis; the dominant effect.

The fact that no other mode than C Tonian ever occupies more than twelve consecutive measures of this Mass indicates the essentially Ionian character of the entire work. There are no "key" modulations in the sense of our original definition of the term

## Summary

The harmonic tendencies of the Marcellus Mass would seem to be governed predominantly by the following factors:
(a) The melodic line;
(b) The interval of a fifth, as it shapes harmenic motion ( $\mathrm{C}_{5}$ ) and modal relationships.
(c) Oblique cycle motion, contributing to a "wave-like" harmonic style.

With Palestrina, the individual line had to have balanced melodic content. At the same time, it was necessary that the over-all effect of coinciding melodic parts be governed by unity of principle. This unity was provided through the ever-present interval of a fifth, which seemed to underlie almost every phase of the composer's thought. $\mathrm{C}_{5}$ predominated in harmonic motion between roots, and the fifth outlined the structure of his chords:


The same interval appears to have governed Palestrina's choice of modes, and it was often used in its original (harmonic series), open form at the cadence.

Free rhythmic treatment of individual melodic lines and oblique cycle movement combined with unrestricted metrical outline to produce an effect of flowing, undulative motion. The oblique alternation between positive and negative cycles gives the impression of harmonic freedom to to-day's ears, so accustomed to strict, definitive tonal progression.

Graphic representation of such harmonic fluctuations might appear as:


In other words, a constant expanding-contracting, rising-falling effect proceeding in smooth, undulatory motion to points of relaxation or rest.

The essential features of the Palestrinian style may now be categorized as follows (all subdivisions of each subject heading are listed in order of importance):
(I) Harmonic Structures
(a) Major triad
(b) Minor triad
(c) Diminished triad
(d) Seventh chords by suspension.
(2) Harmonic Motion
(a) $\mathrm{C}_{5}$ (with $\mathrm{C}_{7}$ as substitute at cadence) giving positive (strongly tonal) movement;
(b) $\mathrm{C}_{7}$ and $\mathrm{C}_{-7}$ (fauxbourdon) giving oblique movement;
(c) $\mathrm{C}-5$ at cadence points, or with $\mathrm{C}_{6}$ in oblique motion;
(d) $\mathrm{C}_{3}$ and $\mathrm{C}-3$ less than any other cycles.
(3) Modal Activity
(a) Essentially C Ionian;
(b) Frequent modal gravitation to closely alated Mixolydian, Dorian, Aeolian and Phrygian modes (none of these modes are restricted to "pure" form except Phrygian);
(c) Altered dominants by use of the chromatics $\mathrm{C} \#, \mathrm{~F} \#, \mathrm{G} \#$ at the cadence.
(d) No key modulations in the sense of previous definition.

Thus, modern techniques enable us to see more clearly many of the underlying factors which contribute to the individuality of this compositional style. The knowledge of cycle relationships explains much about the wave-like character of the music, and gives a clearer concept of chord function at the cadence. Pure modal cadences are easily found through the study of primary subsidiary chords, and the meaning of "mode" is broadened by the idea of "gravitation". Further enlightenment should result from the theory of "positive and negative" motion, and "modal" modulation as opposed to "key" modulation.

A knowledge of these factors will probably speed the analysis of any work by Palestrina, and certainly of the Missa Papae Marcelli. Harmonic tendencies of this composition could not be thoroughly examined without including the other ingredients which support and activate all the "vertical" combinations.

It would surely seem that the Marcellus Mass is an excellent example of that hard-to-attain compositional ideal, "just adaptation of individual parts to form a complete whole".

## Additional Bibliography

Sixteenth Century Polyphony, Merritt, Cambridge, Mass., 1940.

AN aspect of contra nature of progress method of analysis to what is common

First of all, let movement in eithe contrapuntal progr from one note to t

Four kinds of parallel motion whe the same interval in strict counterpo or sixths. Similar

but progress in di oblique motion whe remains on the sa fourth type of pro simultaneously in

It is apparent independence. N greatest melodic proviues more in more independenc feasible to assign melodic independ


[^0]:    ${ }^{1}$ Style of Polestrina and the Dissonance (London, 1946) p. 40 .

[^1]:    5 Style of Palcstrina and the Dissonance (London, mum p. 27.

[^2]:    ${ }^{6}$ This does not mean that $\mathrm{C}_{3}$, as such, occurs only once in the composition; the statement refer to its cadential use. Although the Eulenberg edition shows both

