TRANSPOSITION AND THE TRANSPosed MODES
IN LATE-BAROQUE FRANCE

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Mark M. Parker, B.A., M.A.
Denton, Texas
December, 1988
Parker, Mark M., *Transposition and the Transposed Modes in Late-Baroque France*. Doctor of Philosophy (Music Theory), December, 1988, 625 pp., 12 figures, 114 musical examples, 21 tables, bibliography, 176 titles.

The purpose of the study is the investigation of the topics of transposition and the transposed major and minor modes as discussed principally by selected French authors of the final twenty years of the seventeenth century and the first three decades of the eighteenth. The sources are relatively varied and include manuals for singers and instrumentalists, dictionaries, independent essays, and tracts which were published in scholarly journals; special emphasis is placed on the observation and attempted explanation of both irregular signatures and the signatures of the minor modes.

The paper concerns the following areas: definitions and related concepts, methods for singers and instrumentalists, and signatures for the tones which were identified by the authors. The topics are interdependent, for the signatures both effected transposition and indicated written-out transpositions.

The late Baroque was characterized by much diversity with regard to definitions of the natural and transposed modes. At the close of the seventeenth century, two
concurrent and yet diverse notions were in evidence: the most widespread associated "natural" with inclusion within the gamme; that is, the criterion for naturalness was total diatonic pitch content, as specified by the signature. When the scale was reduced from two columns to a single one, its total pitch content was diminished, and consequently the number of the natural modes found within the gamme was reduced. An apparently less popular view narrowed the focus of "natural tone" to a single diatonic pitch, the final of the tone or mode.

A number of factors contributed to the disappearance of the long-held distinction between natural and transposed tones: the linking of the notion of "transposed" with the temperament, the establishment of two types of signatures for the minor tones (for tones with sharps and flats, respectively), the transition from a two-column scale to a single-column one, and the recognition of a unified system of major and minor keys.
ACKNOWLEDGEMENTS

There are numerous institutions and people to whom I am greatly indebted. Libraries across the United States and elsewhere have willingly provided loans of materials, have permitted the purchase of films and photocopies, or have allowed the perusal of their holdings. These include, in part: the Bibliothèque Royale Albert of Brussels, the Bibliothèque nationale of Paris, the Newberry Library, the Library of Congress, the New York Public Library, the libraries of the University of Southern California, Columbia University Teachers College, Vanderbilt University, Stanford University, Southern Illinois University, the University of Iowa, and Bob Jones University.

I owe a great debt to Minkoff Reprint for their permission to include photocopies of musical examples from reprints of French treatises published by them. Mrs. Edith Boyd of the French department of Bob Jones University has carefully examined a number of the more difficult passages that were translated from the French and has made many helpful corrections. I am especially indebted to Bob Jones University for their generous financial assistance and for making it possible for me to devote my full energies to the dissertation during the summers of 1986 through 1988.
PREFACE

The purpose of the study is the investigation of the topics of transposition and the transposed modes as they were discussed principally by selected French authors of the final twenty years of the seventeenth century and the first three decades of the eighteenth. A large part of the paper is devoted to the examination of notions and methods through a chronological study of the sources; attention also will be drawn to relationships between transpositional theories or methods and the signatures that were in use for the transpositions. Special emphasis will be placed on the observation and attempted explanation of irregular signatures.

One will observe that while the signatures for the major modes were uniform throughout the period in France, those for the minor modes were not; indeed, the general acceptance and adoption in France of the modern minor key signatures postdated the sources examined in the present study. Therefore, the signatures of the minor modes are afforded special scrutiny. It is hoped that the study ultimately will shed some light on the phenomenon of the establishment of the major and minor key signatures in eighteenth-century France.
The project has been organized in three parts: the first (chapter 2) deals with concepts of transposition; the second (chapter 3) treats methods for singers and instrumentalists; the third (chapter 4) concerns the signatures for the natural and transposed tones which were observed or recommended by the authors. Tentative conclusions are drawn from the accumulated data. The second topic is to some degree dependent upon the first, and the common denominator of both is the subject of the third part, for the signatures both indicated the transpositions and accomplished the transposition. The three divisions thus are interdependent and form an inseparable unit; together they yield a complete picture. Because the different notions often are inextricably intertwined, the chapter divisions are somewhat artificial and some overlap of concept and discussion among the chapters is unavoidable. Nevertheless, this author has found it convenient to discuss transpositions (transposed tones) principally in chapter 2 and transposition (that is, the process of placing music on a different tone) in chapter 3.

An attempt has been made to group related concepts under the appropriate subheading in the relevant chapter. As the topics are interrelated, they cannot always be separated easily, nor should they be in every case. The chapter headings and subtitles serve merely to facilitate
the grouping of related topics into complexes and not to identify mutually exclusive categories.

The study will focus on transposition and the transpositions in France from the time of the publication of Jean Rousseau's *Méthode* (c. 1678)\(^1\) to c. 1730. The initiation of the study with the *Méthode* is logical in that that work evidently was the earliest in France in which the transposed modes were reduced to major and minor. The terminus of 1730 represents an arbitrarily chosen stopping point, yet it was considered suitable in that it postdates many of the important statements relative to the natural and transposed tones in their day. The history of the transposed modes prior to Rousseau will be neither traced nor summarized, for a number of excellent studies already have been made of the modes in the seventeenth century.\(^2\) Moreover, while an investigation of the transposed modes beyond 1730 might be both interesting and productive, such a task unfortunately is beyond the scope of this paper. For the sake of brevity, the study has been limited primarily to ideas expressed by French authors.

---


2. See, for example, the works cited in notes 3 and 4.
The investigation, while not exhaustive, nonetheless is detailed. A study of this kind would seem to benefit from the guidelines suggested by Joel Lester in his article "Major-Minor Concepts and Modal Theory in Germany, 1592-1680." Accordingly, this author has attempted to adhere to the following practices. To begin, he has sought to avoid an evolutionary view which, through quotes from alleged representative authors, merely highlights the main stages of thought and activity relative to transposition while overlooking the conflicts and contradictions that often occurred. Secondly, he has endeavored to examine notions in the context of the theorists' intellectual framework rather than in terms of a twentieth-century frame of reference. Finally, he has endeavored to avoid establishing the acceptance of a notion on the basis of the work which was the most progressive in any given time interval. Rather, he has attempted to balance the views of contemporaneous theorists against one another. One expects that statements which were repeatedly made represented commonly held notions.

Additionally, this author has adopted an approach which is basically chronological. This has been done in part to

expedite the study of changing concepts of transposition in the light of the transition that took place with regard to the gamme. Hence, the first theorists to be discussed are Rousseau (c. 1678), Delair (1690) and Ozanam (1691) and the last, François Campion (1716, 1730).

A number of questions will be addressed, whose answers often were different with individual writers. These include the following: Which modes were regarded to be natural? Which were transposed? What were the factors that limited the domain of the transposed modes? What was meant by the term "to transpose" (transposer)? Which finals and/or signatures were included and excluded by individual authors? What kinds of signatures were used for the minor modes? By what means were the transposed modes made easier to sing? How did procedures of transposition for singers differ from those for instrumentalists? What were the reasons for which instrumentalists and singers transposed? Why were the modes transposed? I.e., why were the transposed modes used instead of the natural ones? What differences existed among the various transposed modes? How might those differences account for a composer's choice of one mode over another?

Justification for the present investigation rests upon three facts: first, a relatively large number of the authors of the period discussed concepts and/or methods of transposition and, in many cases, those notions have not been studied in depth by modern authors writing in English.
Secondly, to this author's knowledge, no studies of the era exist which deal comprehensively with the subject of transposition. Thirdly, it appears that, in spite of excellent studies in recent years by Gruber (1969), Atcherson (1973), Lester (1978) and Green (1979), Lester's observation cited below yet has validity after more than a decade. He declared:

A thorough investigation into the development of the theory of major and minor keys alongside of and eventually replacing modal theory as the basis of contemporary music remains, despite a number of recent studies, one of the major lacunae in the history of music theory.5

For the causes set forth above, it appears that a detailed investigation into the concepts and methods of transposition and "transpositions" according to French sources merits further study.

In a few instances, I have quoted (sometimes extensively) from published translations or otherwise have restated the notions of authors which have appeared in


English translation and which sometimes have been discussed at length by other writers. When I have done so, it has been solely for the purpose of comparing the theories and practices of those authors with the concepts and methods of others whose works generally are less well known, in order to obtain a broader historical perspective. In this respect, I am particularly indebted to the scholarship of James Burchill, Albert Cohen, Philip Gossett, Robert Green, Albion Gruber, Rebecca Harris-Warrick, Mark Lindley and Richard Semmens.  

6 Green's accurate and enlightening, though brief, study of the notions of Rousseau and his predecessors and followers on transposition has to some degree served as a springboard for the present investigation.

Since the subject of transposition comprises a complex of concepts, many of which merit investigation in their own

right, it is essential in a study of the present scope to
limit the degree of elaboration and also to exclude certain
notions which, while relevant to the subject, could lead the
author through long and circuitous paths. The following
topics will be pursued only superficially: the mean-tone
and irregular temperaments of the period and instruments
which accomplished transposition automatically via
mechanical means, namely, the transposing double harpsichord
and the harpsichord whose manual could be shifted either to
the right or left. Additionally, this author begs to be
excused from the controversy over the relationship between
the decline of the modes and the appearance of the keys. It
appears to him that, while the question of the point at
which the keys superceded the modes—and at which it becomes
meaningful to refer to the tones as keys—invites debate,
such debate is unnecessary. As some authors regarded tone
and mode to be synonymous, and the term "transposed tone"
was used long after the major and minor modes or "keys" were
in common use, the terminology of the authors cannot
necessarily be taken as an index to the dominance of modal
theory over key theory, and vice versa. Perhaps the "tones"
of the transposed modes should be identified as keys from
the point at which the major and minor patterns became
dominant in the practice. The associated signatures, which
correspondingly displayed a measure of uniformity (except of
course in regard to the sixth degree of the minor mode) could then be termed "key signatures."

Should the reader wish to pursue further any topic which is not dealt with comprehensively in this paper, he will find adequate source material. For the subject of temperament, he may wish to consult the following: James Murray Barbour's *Tuning and Temperament,* relevant articles in the *New Grove Dictionary of Music and Musicians* and *The New Harvard Dictionary of Music,* and other pertinent sources. For information on transposing keyboard instruments, he is referred particularly to Frank Hubbard's *Three Centuries of Harpsichord Making.* For the relationship between modal and key theories, one especially should see Atcherson's and Lester's articles cited above.

---


10. See notes 3 and 4.
In order to get a grasp of the notions expressed by the authors, I rely heavily on citations of the original sources. For the benefit of the serious student, and because of the possibility of alternative renderings of certain passages, I have included in an appendix entitled "Appendix: Foreign Language Sources" (hereafter abbreviated to "Appendix") the original text of passages cited in translation. The selection of texts generally has followed certain guidelines: First, in a majority of cases, source texts are provided for direct quotes only. This was thought to be expedient in order to limit the size of the Appendix. Where the material appears to be particularly interesting or significant, such texts occasionally have been provided for paraphrased statements. Secondly, the scope of the text sometimes exceeds that of the translated passage. It was felt that by providing a more inclusive source text whereby the statement could be interpreted within a larger context, the integrity of the translated passage could be judged more successfully. Of course, whenever accepted published translations have been used—namely, those of Cohen, Gossett, Harris-Warrick and Lindley—, the source texts have not been included. This practice has been considered acceptable because of the ready availability of the original texts through facsimile reprints.11 Concerning the source

11. See, for example, the following: Étienne Loulié, xiv
texts themselves, I have made no attempt to "correct" instances of obsolete spelling (in original titles and elsewhere) or punctuation, and the diacritical markings generally have been reproduced exactly as they are found in the source. With a literal rendition of the source texts, the reader is on equal ground with this author. Such an approach appears to have two benefits: 1) it provides for the possibility of alternate interpretations in doubtful passages where differences of punctuation can change the meaning significantly; 2) it retains the particular flavor of the source.

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II. TRANSPOSITION, TRANSPOSED MODES AND RELATED CONCEPTS</td>
<td>20</td>
</tr>
</tbody>
</table>

Foundational Notions: Natural and Transposed Notes, Mode and Gamme

<table>
<thead>
<tr>
<th>Natural and Transposed Notes</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rousseau (22)</td>
<td></td>
</tr>
<tr>
<td>Delair (22)</td>
<td></td>
</tr>
<tr>
<td>Ozanam (28)</td>
<td></td>
</tr>
<tr>
<td>L’Affilllard (31)</td>
<td></td>
</tr>
<tr>
<td>Loulié (32)</td>
<td></td>
</tr>
<tr>
<td>Freillon-Poncein (34)</td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>35</td>
</tr>
<tr>
<td>Rousseau (35)</td>
<td></td>
</tr>
<tr>
<td>Delair (36)</td>
<td></td>
</tr>
<tr>
<td>Ozanam (38)</td>
<td></td>
</tr>
<tr>
<td>Pairing of the third and sixth (40)</td>
<td></td>
</tr>
<tr>
<td>Charpentier (44)</td>
<td></td>
</tr>
<tr>
<td>Relationship of the modes to Ut or Re (45)</td>
<td></td>
</tr>
<tr>
<td>Masson (48)</td>
<td></td>
</tr>
<tr>
<td>L’Affilllard (48)</td>
<td></td>
</tr>
<tr>
<td>Freillon-Poncein (51)</td>
<td></td>
</tr>
<tr>
<td>Brossard (52)</td>
<td></td>
</tr>
<tr>
<td>Saint-Lambert (54)</td>
<td></td>
</tr>
<tr>
<td>Montéclair (58)</td>
<td></td>
</tr>
<tr>
<td>Rameau (58)</td>
<td></td>
</tr>
<tr>
<td>Borin (63)</td>
<td></td>
</tr>
<tr>
<td>Campion (66)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gamme</th>
<th>67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rousseau (68)</td>
<td></td>
</tr>
<tr>
<td>L’Affilllard (71)</td>
<td></td>
</tr>
</tbody>
</table>

v  xx  xxi  xxix
Brossard (249)
Frère (251)
Montéclair (261)
Dupont (277)
Mattheson (279)
Rameau (283)
Borin (284)
Campion (286)

Methods for Dealing with Irregularly
Written Signatures ....... 294
Rousseau (294)
Loulie (302)

Differences in the methods of
Rousseau and Loulie (310)
Frère (313)

Comparison of the methods of
Rousseau, Loulie and Frère (336)

Transposition by Instrumentalists .... 340

Brief References to Transposition
by Instrumentalists ......... 343
Ozanam (343)
L’Affillard (343)
Brossard (344)
Frère (345)

Methods of Transposition for
Instrumentalists ............ 345
Rousseau (345)
Loulie (356)
Freilllon-Poncet (358)
Saint-Lambert (362)
Gasparini (364)
Montéclair (367)
L’art de transposer (369)
Hotteterre (396)
Borin (406)
Fischer (410)
Campion (422)

IV. OBSERVATIONS ON THE FINALS AND SIGNATURES OF
THE NATURAL AND TRANPOSED MODES ... 431

Signatures Recommended or Presented as
Regular by the Authors and Finals
Accepted by Them .............. 435
Rousseau (435)
Delaire (441)
L’Affillard (448)
Loulie (455)
Freilllon-Poncet (456)
Brossard (459)
Saint-Lambert (Les principes) (461)
Growth in the Acceptance of Finals and Signatures (462)
Frère (466)
Saint-Lambert (Nouveau traité) (468)
Montéclair (472)
Borin (475)
Rameau (475)
Campion (480)

Signatures Regarded by the Authors to be Irregular .......... 483
Rousseau (488)
Delaire (495)
Gasparini (497)
L’Affillard (502)
Frère (505)
Hotteterre (512)
Rameau (514)
Campion (518)

Signatures Observed in the Treatises and in the Practice: Resume of the Transition from a Single Signature Type to Two for the Minor Modes .............. 521

V. CONCLUSIONS ................. 530

Natural and Transposed Tones and Related Concepts .......... 530

The Demise of the Transposed Tones ............. 534

Transposition by Singers ............. 538

Transposition by Instrumentalists ........... 542

Observations on the Finals and Signatures .. 545

APPENDIX: FOREIGN LANGUAGE SOURCES ........... 550

BIBLIOGRAPHY ................. 609

Primary Sources ................. 609

Secondary Sources ................. 615
   A. Contemporaneous Dictionaries, Encyclopedias and Journals (615)
   B. Books, Dissertations, Theses, etc. (616)
   C. Catalogs, Dictionaries, Encyclopedias and General References (619)
   D. Articles and Essays (621)
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Delair’s circle of natural and transposed notes (Delair, 11)</td>
<td>23</td>
</tr>
<tr>
<td>2.</td>
<td>Ozanam’s illustration of the organ keyboard (Ozanam, 651)</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>Ozanam’s illustration of a hypothetical keyboard containing “enharmonic” notes (Ozanam, 651)</td>
<td>29</td>
</tr>
<tr>
<td>4.</td>
<td>Solmization within the system of the hexachords</td>
<td>43</td>
</tr>
<tr>
<td>5.</td>
<td>The <strong>gamme</strong>, according to Jean Rousseau (Méthode, 9)</td>
<td>69</td>
</tr>
<tr>
<td>6.</td>
<td>The <strong>gamme double</strong> (L’Affillard (1694), 2)</td>
<td>72</td>
</tr>
<tr>
<td>7.</td>
<td>Louillé’s <strong>gamme simple</strong> (Éléments ou principes, 21)</td>
<td>74</td>
</tr>
<tr>
<td>8.</td>
<td>Saint-Lambert’s illustration of the keyboard (Les principes, 6)</td>
<td>129</td>
</tr>
<tr>
<td>9.</td>
<td>Relative degree of tempering of the thirds above the finals in typical keyboard tunings of the eighteenth century (based in part on Lindley’s figure 2)</td>
<td>167</td>
</tr>
<tr>
<td>10.</td>
<td>Frère’s Italian Air</td>
<td>334</td>
</tr>
<tr>
<td>11.</td>
<td>Fischer’s &quot;transporter&quot;</td>
<td>420</td>
</tr>
<tr>
<td>12.</td>
<td>Concentration of common signature types in two pitch-class regions in Freillon-Poncein’s examples of the finals</td>
<td>458</td>
</tr>
</tbody>
</table>
# LIST OF MUSICAL EXAMPLES

<table>
<thead>
<tr>
<th>Example</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Freillio-Poncein's illustration of the</td>
<td></td>
</tr>
<tr>
<td>&quot;natural, sharped and flatted sounds&quot;</td>
<td>15</td>
</tr>
<tr>
<td>(La veritable maniere, 15)</td>
<td></td>
</tr>
<tr>
<td>2. The major and minor tones (L'Affillard</td>
<td>49</td>
</tr>
<tr>
<td>(1694), 7)</td>
<td></td>
</tr>
<tr>
<td>3. Intonation in the unnaturalized, transposed</td>
<td>80</td>
</tr>
<tr>
<td>tone</td>
<td></td>
</tr>
<tr>
<td>4. Rousseau's Tons naturels</td>
<td>83</td>
</tr>
<tr>
<td>5. Selections from Rousseau's &quot;Demonstrations of the Tons transposez</td>
<td>85</td>
</tr>
<tr>
<td>par b queere and par b moli&quot; (Methode, 33, 24)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>87</td>
</tr>
<tr>
<td>7. Solmization of the octave above Ut in the system of the hexachords</td>
<td>108</td>
</tr>
<tr>
<td>8. Solmization of the octave of Re</td>
<td>108</td>
</tr>
<tr>
<td>9. Transposition of a mode containing flats par b moli (&quot;by the flat&quot;)</td>
<td>113</td>
</tr>
<tr>
<td>10.</td>
<td>118</td>
</tr>
<tr>
<td>11.</td>
<td>119</td>
</tr>
<tr>
<td>12.</td>
<td>119</td>
</tr>
<tr>
<td>13.</td>
<td>120</td>
</tr>
<tr>
<td>14. Saint-Lambert's &quot;Example of the Transpositions&quot; (Les principes, 38)</td>
<td>126</td>
</tr>
<tr>
<td>15. Montéclair (1709), 20</td>
<td>137</td>
</tr>
<tr>
<td>16. The different positions of the clefs</td>
<td>193</td>
</tr>
</tbody>
</table>
17. Equivalence of the bass clef and the French violin clef with respect to pitch class .......................... 193

18. Selections from the transposed tones with flats that Rousseau naturalized (Méthode, 23) .......................... 201

19. Selections from the transposed tones with sharps that Rousseau naturalized (Méthode, 23) .......................... 201

20. Demonstration of the transposed tone with flats in F minor (Méthode, 26-8) .................. 205

21. Illustration of the potential possessed by the different clef positions for renaming the individual staff degree (adapted from Loullé, Éléments ou principes, 25) .................. 207

22. Loullé's examples of transposed clefs with sharps reduced to natural clefs (Éléments ou principes, 28) ................ 209

23. Loullé's examples of transposed clefs with flats reduced to natural clefs (Éléments ou principes, 29) ................ 211

24. "Positions of Ut on all the degrees, with the relationship of the transposed clefs to one of the natural clefs" ("Positions de l'Ut sur tous les Degrez, avec le rapport des Clefs Transposées à une des Clefs Naturelles"; Loullé, Abrégé des principes, 38-9) .................. 212

25. .......................................................................................... 214

26. .......................................................................................... 215

27. .......................................................................................... 217

28. .......................................................................................... 218

29. .......................................................................................... 218

30. "Scheme of all the clefs, parts and natural sounds of music sung with B-flat" (L'Affilllard (1694), 80) .................. 227
31. "Second scheme of all the parts of music,
in which the relationship between the
different parts is demonstrated"
(L’Affilllard (1705), 158) . . . . . . . . . . . 227

32. "Examples for the transpositions on [or like]
Ut" (L’Affilllard (1694), 86) . . . . . . . . . 230

33. "Examples for the transpositions on [or like]
Re" (L’Affilllard (1694), 87) . . . . . . . . . 230

34. Transposed Air (L’Affilllard (1694), 88) . . . 232
35. Transposed Air (L’Affilllard (1694), 91) . . . 232
36. L’Affilllard (1697), 122 . . . . . . . . . . . . 234

37. "OTHER EXAMPLES for the Transpositions
which are formed with sharps"
(L’Affilllard (1697), 123) . . . . . . . . . . . . 235
38. L’Affilllard (1697), 124 . . . . . . . . . . . . 238

39. "OTHER EXAMPLES as regards the Transpositions
which are formed with flats"
(L’Affilllard (1697), 125) . . . . . . . . . . . . 239

40. "Progress of the seven octaves of music"
(L’Affilllard (1705), 16-7) . . . . . . . . . . 240

41. Freillon-Poncein, 6 . . . . . . . . . . . . . . . 246

42. Freillon-Poncein’s second listing of the
natural, sharped and flatted finals
(La veritable maniere, 51) . . . . . . . . . . . . 247

43. Transposed thirds (Frère, 17-18) . . . . . . 253
44. Transposed and natural thirds (Frère, 14) . . . 254
45. Two examples to illustrate "reducing to
the natural" (Frère, 15-16) . . . . . . . . . . . 256
46. Another example to illustrate "reducing
to the natural" (Frère, 20) . . . . . . . . . . . 257
47. Placement of Ut on consecutive degrees of
the staff by the seven clef positions
(Frère, 24) . . . . . . . . . . . . . . . . . . . . 259

xxiii
48.

Two more examples Illustrating "reducing
to the natural * (Frere, 2 8 - 9 )

49.

Lesson

50.

"Lesson on the accidental flats and sharps"
(Monteclalr, 2 1 )
Example in A major, with the notes sung under
their given names (Monteclair, 2 1 )
. . . .

265

Example in F minor, with the notes sung under
their given names (Monteclair, 2 1 )
. . . .

265

Essential notes of the major mode on all the
finals, with the note names transposed . .

266

Essential notes of the minor mode on the
natural finals, with the note names
transposed

266

51.

52.

53.

54.

55.

56.

57.

58.

59.

60.

61.

62.

in G major (Monteclair (1709), 5 )

260
. . .

Examples illustrating the transposition of
the names of the notes

261

264

266-7

"Manner of transposing the namets] of the
n o t e s / a n d of supposing a natural clef"
(Monteclair, 2 8 )

270

Excerpts from Monteclair's examples of
m e l o d i e s with flats (Nouvfti1P
methode. 28)

271

"Manner of transposing the namets] of the
n o t e s a n d of supposing a natural clef"
(Monteclair, 2 9 )

272

Excerpts from Monteclair's examples of
m e l o d i e s with sharps (Nouvel1e
methode. 29)

272

"Table of the clefs followed by flats and
the natural clefs that one must suppose"
(Monteclair, 3 2 )

274

"Table of the clefs followed by sharps and
the natural clefs that one must suppose"
(Monteclair, 3 3 )

275

"Example in order to understand those notes
or degrees by the G clef with five flats"
(Dupont, 6 )

278

xxiv


63. "Concerning the tones and their reduction to the natural" ([Borin], La musique théorique et pratique, 90) . . . . . . 285

64. "Continuation of the tones and their reduction to the natural" ([Borin], 91) . . . . . . 285

65. Campion's "series of octaves" representing the minor tone (Traité, Insert following p. 9) . . . . . . . 287

66. Reciprocal relationship exhibited by the transposed and naturalized tones . . . . . . 301

67. . . . . . . . . . . . . . . . . . . . . . . . . . . . . 303

68. Frère's twelve major and twelve minor transpositions (Transpositions de musique, 36-44) . . . . . . . . . . . . 315-6

69. Solmization of the minor mode from A La . . . . . . 319

70. Solmization of the minor mode from D Re . . . . . . 319

71. Air written irregularly in A minor (Frère, 54) . . . . . . . . 322

72. Air (corrected) in A minor (Frère, 55) . . . . . . . . 323

73. Air in B-flat major (Frère, 76) . . . . . . . . . . . . . . . . . 326

74. . . . . . . . . . . . . . . . . . . . . . . . . . . . . 327

75. Air in F minor (Frère, 77) . . . . . . . . . . . . . . . . . . . . 328

76. Italian Air in A-sharp minor (Frère, 95-7) . . 330

77. Selections from Rousseau's "Models for transposition" (Rousseau, Traité, 120, 123, 131) . . . . . . . . . . . . . . 349

78. Selections from Rousseau's "Models for transposition a degree higher and lower" (Traité, 121, 124-5) . . . . . . . . . . . . . . 353

79. Selections from Rousseau's "Models for transposition a fourth higher and lower" (Traité, 145) . . . . . . . . . . . . . . 354-5

xxv
80. Selections from Rousseau's "Models for transposition a fourth higher" (Traité, 146) .......................... 355-6
81. Montéclair's first lesson in two parts (Montéclair, 48) .......................... 368
82. .................................................. 381
83. Cancellation of twelve sharps or flats through the movement of the clef one degree lower or higher. .......................... 391
84. Relationship between staves governed by the French violin and treble clefs (Hotteterre, 52) .......................... 398
85. Relationship of the alto and tenor clefs to the grand staff .......................... 399
86. Relationship between staves governed by the French violin and soprano clefs (Hotteterre, 52) .......................... 399
87. Transposition a fifth higher (Hotteterre, 52) .......................... 400
88. Relationship between staves governed by the alto and French violin clefs (Hotteterre, 53) .......................... 401
89. Transposition a second higher (Hotteterre, 53) .......................... 402
90. Hotteterre's "former Brunette" followed by three of the written-out transpositions "into the seven degrees" (Hotteterre, 56) .......................... 404
91. "Concerning the transpositions of tones onto other transposed tones" ([Borin], 92) .......................... 406
92. Fischer's examples, in part ([Kort en grondig onderwys, 31-2) .......................... 416
93. .................................................. 424-5
94. .................................................. 425-6
95. .................................................. 426-7

xxvi
96. Natural sixths in the Revenne and Lavenne octaves 428

97. Customary alterations in the minor modes with sharps and flats 444

98. Examples accompanying Delair's "Rules for knowing the notes which must be sharped or flatted in each natural or transposed tone in particular" 444-5

99. Essential notes of the major and minor modes on C Ut and A La, respectively (Montéclair, 19) 472

100. "All the transposed major keys" (adapted from Rameau, Treatise, 263) 477

101. "All the transposed minor keys" (adapted from Rameau, Treatise, 265) 477

102. "The order of the sharps and flats which should be placed after the clef to indicate the transposition of the modes" (adapted from Rameau, Treatise, 173) 479

103. Mixolydian instances among examples of irregular signatures for the major tones cited by Rousseau (Méthode, 81-2) 490

104. Mixolydian instances among examples of irregular signatures for the minor tones cited by Rousseau (Méthode, 80-1) 492

105. Gasparini's examples which illustrated the technique of modulating through all the tones (Gasparini, 73-5) 498

106. Examples of signatures containing the minimum number of components to produce the third Ut Re Mi 500

107. Examples of signatures containing the minimum number of components to produce the third Re Mi Fa 501

108. 503

109. 504

xxvii
110. Air in A minor with the Dorian signature of one sharp (manuscript collection of Airs appended to a copy of Berthet’s treatise, pp. 24) ........................................ 525

111. Air in A minor with the natural, Aeolian signature (manuscript collection of Airs appended to Berthet’s treatise, pp. 37-9) ........................................ 526

112. Air in D minor with the Aeolian signature of one flat (manuscript collection of Airs, pp. 125-6) ........................................ 527

113. Air in D minor with the natural, Dorian signature (manuscript collection of Airs, pp. 127-9) ........................................ 528

114. Natural sixths above the finals of the minor tones with sharps and flats, given the customary signatures ........................................ 529
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of the terms &quot;natural&quot; and &quot;transposed&quot; by selected authors</td>
<td>78</td>
</tr>
<tr>
<td>2. Effects of transposition from D major to B-flat major on the order or degree of intonation of individual notes</td>
<td>89</td>
</tr>
<tr>
<td>3. Designations of tones employing the term naturel (Delair, 55-7)</td>
<td>92</td>
</tr>
<tr>
<td>4. Index to tracts from MS. fonds français, n.a. 6355 which contain definitions or discuss practices of transposition</td>
<td>101</td>
</tr>
<tr>
<td>5. Summary of Rousseau’s inventory of the passions and the appropriate modes for expressing them</td>
<td>148</td>
</tr>
<tr>
<td>6. Sauveur, Principes, 60</td>
<td>161</td>
</tr>
<tr>
<td>7. Properties of the modes and keys, according to Rameau</td>
<td>188</td>
</tr>
<tr>
<td>8. Montéclair, 20</td>
<td>262</td>
</tr>
<tr>
<td>9. Montéclair, 20</td>
<td>263</td>
</tr>
<tr>
<td>10. Table &quot;for finding every transposition of music easily&quot;</td>
<td>386</td>
</tr>
<tr>
<td>11. Table based on the anonymous author’s table</td>
<td>389</td>
</tr>
<tr>
<td>12. Frequencies, in Rousseau’s &quot;Models,&quot; of altered finals which occurred as the result of transposition</td>
<td>439</td>
</tr>
<tr>
<td>13. Tones and signatures in three of L’Affilllard’s editions</td>
<td>452</td>
</tr>
<tr>
<td>14. Selections of finals of the modes cited or employed by various authors</td>
<td>463</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>15.</td>
<td>Comparison of signatures discussed or illustrated by various authors</td>
</tr>
<tr>
<td>16.</td>
<td>Irregularly written signatures discussed by Rousseau (Méthode, 79-83)</td>
</tr>
<tr>
<td>17.</td>
<td>Signatures employed in Frère's examples of irregularly written Airs</td>
</tr>
<tr>
<td>18.</td>
<td>Frequencies of instances lacking different numbers of sharps or flats in Frère's examples of irregularly written signatures</td>
</tr>
<tr>
<td>19.</td>
<td>Modes both included and excluded in Frère's examples of irregularly written transpositions</td>
</tr>
<tr>
<td>20.</td>
<td>Selections of modes given natural signatures by representative authors</td>
</tr>
<tr>
<td>21.</td>
<td>Kinds of signatures for the minor modes cited by selected authors</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

French musical theory of the later years of the seventeenth century contrasted markedly with that of the earlier years. According to Cohen, the first six decades produced a theory founded largely upon Renaissance teachings, principally those of Zarlino and Glareanus; their ideas were transmitted by Maillart (1610), de Caus (1615), and especially Mersenne (1627, 1636). Throughout the period, little was written by French theorists that was devoted to the practicing musician. However, before c. 1670 it appears that the emphasis had begun to change. Cohen has observed of the final three decades that the treatises no longer were written primarily by academicians, but rather, "leading practitioners" contributed works dealing with practical matters. Indeed, one could say that much of French musical theory of the late seventeenth century was intensely practical and served a pedagogical purpose. Cohen

provides an explanation for the new emphasis:

A theory based on practice, wherein aural proof becomes a dominant factor, is essentially a product of the latter part of the century in France. Fanned by an increasingly growing body of musical amateurs, practical musicians began to dominate the production of theory.2

Among the topics dealt with were the transposed tones and practices of transposition by singers and instrumentalists.

Although the contributions of late seventeenth-century and early eighteenth-century authors for the most part may be described as practical rather than as speculative, one in certain instances may observe a rational underpinning which appears to vindicate their practices. An example is Rousseau's discussion of the correspondence of the names of the first three flats in the transposed modes and the first three sharps in the naturalized modes, and vice versa, which is described in detail in chapter 3 (see example 66).

The period embraced by the present investigation, c. 1680-c. 1730, while perhaps not comprising exactly the age of the "transposed tones," nonetheless was conversant with the expressions, according to the testimony of numerous sources. In view of this circumstance, Palisca's statement that Masson "discarded the natural and transposed categories" of keys perhaps should be understood to mean that the French author merely neglected to use the terms of

"natural" and "transposed" in his writings. However, Masson was not alone in his non-usage of the terms; a number of other authors used alternative terminology. For example, L'Affilllard and Frère spoke of "transpositions," though the former also made reference to "transposed airs," and Campion merely referred to the major and minor tones (cf. Masson). Perhaps the usage or lack of usage of the terms "natural tone" and "transposed tone" by authors of the period in certain cases reflects the individual's concept of, or his attitude toward, the "transpositions." This author for the most part has refrained from speculating on the matter.

One factor which can be observed throughout the era is that of change with regard to popular notions of natural and transposed. Those concepts, especially at first, often had the scale as their frame of reference, and in such cases their definition derived from its constitution. As the scale underwent transformation from a two-column entity to a single-column one, the dependent notions of natural and transposed likewise underwent revision. The linking of the notion of transposed with the temperament in the early eighteenth century (Saint-Lambert, 1702) perhaps represents an attempt to place the distinction between natural and

transposed on a firm, scientific basis. It was at that time that Sauveur performed his experiments in the field of acoustics, and Rameau (1737), looking back to the work of that scientist, adopted acoustical proofs for his theories.  

Perhaps every age has witnessed two distinct attitudes, acceptance and rejection, toward certain aspects of its art forms. In the period under investigation, such contrasting attitudes were demonstrated relative to the customary signatures for the minor tones. While some authors employed or recommended the two types of signatures in their usual distribution in the musical practice, others sought to adopt a single signature type. In some cases, the impetus for the standardization of the signatures was the need for uniformity among the octave species in order to achieve a common solmization from a single final (Loulié, Frère).

This author's identification of primary sources has been facilitated through the examination of RISM\(^5\) and other comprehensive catalogs as well as bibliographies of modern scholars such as Robert Green (1979). Sources of less

---


recent origin also have proved useful, particularly Johann Forkel's annotated bibliography entitled *Allgemeine Litteratur der Music* (1792). In chapter 4 of his "Literature on the theory and practice of modern music," Forkel included a section termed "Concerning transposition," in which he cited pertinent sources and interspersed his own annotations. The sources, all but one of which were published within the period encompassed by the present study, include two anonymous tracts and also works by Alexandre Frère (1706), François Campion (1716), Johann Mattheson (1720), J.P.A. Fischer (1728) and Johann Haltmeier (1737). Except for the last cited, these sources will be

6. See the facsimile reprint of the Leipzig edition of 1792 (Hildesheim: Georg Olm, 1962), 360-61. The original texts of all quotations which represent translations of foreign language sources are cited in the Appendix. Source texts appear in numerical order, with the chapter number followed by the number of the footnote. For example, 1-6 refers to chapter one, note six.

7. See the following: the anonymous *L'art de transposer toute sorte de musique sans être obligé de connaître le ton ni le mode: avec des réflexions sur la nécessité de cet ouvrage* (Paris, 1711; the essay first appeared without the "reflections" in the *Mémoires [Journal]* de Trevoux IX (October, 1709), 1852-62); Alexandre Frère, *Transpositions de musique, réduites au naturel, par le secours de la modulation* (Paris, 1706); François Campion, *Traité d'accompagnement et de composition, selon la règle des octaves de musique*; facsimile reprint of the Paris edition of 1716 (Geneva: Minkoff Reprint, 1976); the anonymous "Éclaircissement d'un problème de musique pratique, pourquoi l'on employe quelquefois dans la composition, les tons ou modes transposez préférablement aux tons ou modes naturels?" (*Mémoires de Trevoux* XVIII (August, 1718), 310-19);
examined at length by the present author in the course of this paper.

The primary sources which have been consulted for the study are relatively varied in nature and include manuals for singers and instrumentalists, dictionaries, independent essays, and tracts which were published in scholarly journals. Most of the works appeared in printed editions, but a few existed only in manuscript. A number of the sources will be introduced below.

Jean Rousseau (1644-c. 1700), distinguished music teacher and performer on the viol, contributed two important musical treatises. The first was a singing tutor entitled *Méthode claire, certaine et facile pour apprendre à chanter la musique* (Paris, 1678? 1683f.); the second was a manual for viol players, the *Traité de la viole* (Paris, 1687). Both sources dealt with practices of transposition, the former with regard to singers and the latter, instrumentalists. Rousseau's concepts and methods are discussed at length in chapters 2-4.

---

8. The existence of a 1678 edition of the *Méthode* appears to have been documented only by Fétis, and no copies are extant. See Green's discussion of the editions of the *Méthode* in his dissertation, 22f.
Denis Delair (?-after 1727) addressed his *Traité d'Accompagnement pour le Théorbe, et le Clavessin* (Paris, 1690) to accompanists on the theorbo (one of the bass lutes) and the clavecin (the French harpsichord). He discussed a number of concepts relative to transposition. For example, he defined the natural and transposed notes, and he spoke of the results of transposition on the pitch of the music, the intonation of individual notes and the arrangement of the tones and semitones. He also cited a reason for each of the sharps and flats of the signatures of the major and minor modes from the point of view of the accompanist: that is, he rationalized every sharp and flat. His discussion is summarized in chapters 2 and 4.

Jacques Ozanam (1640-1717) concluded his *Dictionnaire mathématique* (Paris, 1691) with a section entitled "Musique," a thirty-three page catalog of musical terms with their definitions. In his compendium, which Albert Cohen suggests may be the first important dictionary of musical terms in France before Brossard's *Dictionnaire de musique* of 1701, the author included a discussion of the natural and transposed modes.

10. See the *Dictionnaire*, 640-72.
Contemporary with the musicians cited above was the singing instructor Monsieur L'Affilliard (c. 1656-1708). His treatise *Principes très-faciles pour bien apprendre la musique* (Paris, 1694) went through numerous editions until the mid-eighteenth century. In his book, the author discussed, among other things, the practice of making the "transpositions" easy to sing via the gamme. His objective is expressed in the complete title of his work, which may be translated: "Very easy principles for learning music well, which quickly will lead those who have some aptitude for vocal music to the point of singing any kind of Airs correctly and at sight."

After L'Affilliard's treatise of 1694, perhaps the next important French publication to discuss transposition for singers was Étienne Loulié's *Éléments ou principes de musique* (Paris, 1696). Loulié (c. 1655-c. 1707), a maître de musique, pedagogue and theorist, apparently was

---

12. Erich Schwandt, "L'Affilliard's Published 'Sketchbooks,'" *The Musical Quarterly* LXIII (1977), 99-113. This author will deal exclusively with the editions of 1694, 1697 and 1705, the last of which has been reprinted in a facsimile edition (Geneva: Minkoff Reprint, 1971).

13. See the Appendix, I-13.

principally active in Paris. His *Éléments* occupies an important place in French musical instruction of the late seventeenth and early eighteenth centuries.\(^{16}\)

Loulié's intent and organization are expressed by the title of his treatise, which in translation reads as follows: "Elements or principles of music, set in a new order [which is] very clear, very easy and very concise and divided into three parts: The first for children. The second for persons more advanced in age. The third for those who are capable of reasoning on the principles of music."\(^{16}\) As one would expect, the three parts are graded in difficulty. Topics of relatively greater complexity are deferred until sections two or three. Some topics are presented in one part and then are reinforced or are discussed in greater detail in a subsequent part or parts. One such notion is transposition.

Loulié did not broach the subject of transposition in the first part of his book, the part for children. He recognized that the usual custom was to introduce "all the clefs, the different time signatures, and even transpositions," at the beginning. He believed, however, that the knowledge of those subjects was both useless and confusing for beginners,\(^{17}\) and he therefore deferred any

\(^{15}\) Loulié, *Elements or Principles*, ix.

\(^{16}\) Ibid., xi.

\(^{17}\) Ibid., xvi.
discussion of them until parts two and three. In part two, he defined what transposition was and also discussed the differences between transposed music and natural music; he then presented a method for reducing transposed music to a natural clef. In part three, he provided examples of transpositions in the major mode having from one to six sharps and flats after the clef. He illustrated the possibility of rewriting a composition in another key in order for an instrumentalist to be able to play the accompaniment in a range suitable to the singer; he then illustrated how the singer could reduce his part to a natural clef.

Loulié expanded upon the material found in the Éléments at a later time. His additions, which represented proposed revisions of the treatise, were entitled "Supplément des Principes ou Éléments de Musique" and appeared in the manuscript fonds français n. a. 6355, gathering number XVII, folios 130-141 of the Bibliothèque nationale. The Supplement, which was never published and whose date of authorship has not been precisely established, contains important additions to Loulié's discussion of transposition, including another definition of transposer ("to transpose") in the material pertaining to the second part of the Éléments. His most extensive additions, however, related

18. Ibid., vi.
to the third part of the treatise and detailed a method for reducing music to a natural clef when the transpositions had not been "marked exactly after the clef" (i.e., when the signatures had been written irregularly). 19

Loulie's discussion of transposition, according to Cohen, ranks "among the most complete, systematic, and current of the period." 20 Loulie both simplified and expanded on methods employed by his predecessor Rousseau with regard to naturalizing transposed music. Certain of his notions were passed on by other French musicians, notably L'Affillard, Brossard, Montéclair and Campion, and were influential well into the eighteenth century.

Another treatise which contains statements that relate to transposition is Jean-Pierre Freillon-Poncelin's La véritable manièrè d'apprendre à jouer en perfection du haut-bois, de la flûte et du flageolet, avec les principes de la musique pour la voix et pour toutes sortes d'instruments (Paris, 1700). 21 The title translates: "The true [or thorough] manner of learning to play the oboe, recorder and flageolet perfectly, with musical principles for the voice and all kinds of instruments." Although

19. Ibid., 55.
20. Ibid., 9.
21. See the facsimile reprint (Geneva: Minkoff Reprint, 1974).
addressed principally to instrumental performers, the
treatise also contained a brief chapter for singers. The
author expressed the purpose and aim of his treatise in the
opening paragraph of the preface:

I have included in this little treatise everything
that has seemed useful to me for the instruction
of those who either are not in a position or [are
not] in a state of having the most expert
teachers. I can assure them that they will find
everything arranged in an order that will lead
them easily to a perfect performance of all kinds
of pieces in any transposition, if he [sic] has
ever so little talent and inclination to learn
it. 22

Monsieur de Saint-Lambert was the author of two
treatises, Les principes du clavecin contenant une
explication exacte de tout ce qui concerne la Tablature & le
clavier ("Principles of the clavecin, containing an exact
explanation of all that concerns tablature and the
keyboard"; Paris, 1702) and the Nouveau traité de
l'accompagnement du clavecin, de l'orgue, et des autres
instruments ("New treatise of accompaniment on the clavecin,
organ and other instruments"; Paris, 1707). 23 That both
books were widely disseminated in the early eighteenth
century is evident, for they were reprinted by Roger in

22. Freillon-Poncein, Preface, i.

23. Both treatises have been reprinted in facsimile
(Geneva: Minkoff Reprint, 1974). See also the excel-
 lent Principles of the Harpsichord, translated by
Harris-Warrick.
Amsterdam, translated into Italian in manuscript copies, and cited by numerous French and German authors including Rameau, Borin, Heinichen and Mattheson. Both treatises are of interest for their statements concerning transposition.

Sebastien de Brossard (1660-1730), compiler of the famous *Dictionnaire de musique*, was perhaps the most important musical lexicographer in France prior to the encyclopedists Jean-Jacques Rousseau and d'Alembert. Also a composer, he was according to Cohen "a traditionalist with an interest in cataloguing musical thought and practice rather than in seeking to form them." Brossard's work, which first appeared in 1701 with later editions in 1703, etc., appears to have been important for its influence on early eighteenth-century French theorists such as Rameau. The author was a close acquaintance of Loulié and it seems that an active exchange of ideas took place between the two.

26. According to Cohen, Brossard's dictionary of 1701 was entitled *Dictionnaire des termes grecs, latins et italiens, dont on se sert fréquemment dans toutes sortes de musique*. It then was reissued in 1703 as *Dictionnaire de musique, contenant une explication des termes grecs, latins, italiens, & français les plus usités dans la musique*, with a second edition in 1705 (Cohen, "Symposium," 27). All citations by this author of the *Dictionnaire* have reference to the facsimile reprint of the Paris edition of 1703 (Amsterdam: Antiqua, 1964).
Indeed, some of the notions expressed by Brossard probably were Loulié's. Of course, many other writers also must have influenced Brossard's thinking.

Alexandre Frère, one-time member of the Opéra (l'Académie Royale de Musique) and an instructor of singers, presented a method for reducing transposed music to the natural. His method was entitled Transpositions de musique, réduites au naturel, par le secours de la Modulation. Avec une Pratique des Transpositions irrégulièremment écrites: Et la manière d'en surmonter les difficultez (Paris, 1706; Amsterdam [c.1708]). In modern English the title reads: "Transpositions of music reduced to the natural through the assistance of the modulation (i.e., the modality), with an observance of transpositions written irregularly, and the way of overcoming their difficulties." According to François Fétis, Frère's treatise was reprinted by Ballard in 1715 "with a few changes" under the title Transpositions de musique de toutes les manières, pour servir de supplément à toutes les autres méthodes. The cited title appeared in


28. The Amsterdam edition is undated; the date of c.1708 is from RISM (Écrits imprimés, vol. 1, p. 329). Unless otherwise noted, all references to Frère's treatise relate to this edition.
Ballard's catalog which was appended to the "Supplément" of Rameau's *Traité de l'harmonie* (Paris, 1722). 30

Unfortunately, not a single copy of the alleged second edition of Frère's work has surfaced in this author's search.

Frère's treatise appears to represent an important contribution to the body of works dealing with the instruction of singers in the practice of changing or transposing the names of the notes in order to facilitate the intonation of their music. As it was devoted entirely to a method for reducing vocal music to the natural, it ranks among a small number of writings which comprehensively and exclusively dealt with transposition. However, many of the ideas Frère discussed were not new; indeed, he may be viewed as reactionary in his insistence upon Dorian signatures for all the transpositions of the minor mode. 31

The scope and aim of Frère's treatise are evident from its title. It was the author's express purpose to simplify the singing of Airs for students, and to achieve that end he presented a method which he illustrated with many examples


30. Rameau, *Traité de l'harmonie*, 480. The title was listed again in the publisher's catalog at the end of the *Nouveau système* (1726).

31. Frère, 63.
and clarified through much repetition. He declared that he had employed "some repetition that cannot be avoided when one wants to make things perceptible."32

Frère divided his treatise into two parts. The first presented his method for "reducing every kind of transposed music to the natural by the assistance of the modulation."33 He discussed the gamme, the identification of the final of a piece, modulation and the manner of choosing one's tone so that the piece would suit the range of one's voice, the two different kinds of thirds and "modulations," the "most natural modulations" and the "transpositions," the method of reducing a transposed piece to the natural, and the natural and transposed thirds. He then applied his method to several examples of transpositions.34 As he explained in his preface, the second part demonstrated his method for "overcoming the difficulties of the irregularly written transposition, that is, that whose necessary sharps or flats are not put regularly after the clef."35

In the preface, Frère set out to justify the presentation of his method to the public. He expressed his dissatisfaction with attempts that had been made in methods up to that time to explain transpositions to singers, and he

32. Ibid., Preface. 33. Ibid., 1.
34. Ibid., 1f. 35. Ibid., preface.
cited several reasons why his method was better than the others: first, it provided reasons for the assumptions that students had to make; secondly, it taught the singer how to adapt a melody to his own vocal range; third, it taught the correct signatures for the major and minor modulations and also explained how to correct incomplete signatures; fourth, it provided a method of overcoming irregularly written transpositions; finally, it even explained the most troublesome musical terms.\textsuperscript{36} Frère later cited additional advantages of his method: it accustomed the student to the differences between whole tones and semitones, to major and minor thirds, to the term \textit{modulation}, and to the tones and semitones on which one could compose.\textsuperscript{37} Frère regarded those things to be integral to the theory and practice of transpositions. He affirmed that the one who used his method would know what he was doing.\textsuperscript{38}

Frère's method evoked the criticism of certain of his contemporaries, including Johann Mattheson (Hamburg, 1720), Rameau (1722), J.P.A. Fischer (Utrecht, 1728), and François Campion (1730). The first three attacked him by name. The fact that Mattheson and Fischer were acquainted with Frère's work testifies to the breadth of its circulation.

\textsuperscript{36} Ibid. \hspace{1cm} \textsuperscript{37} Ibid., 27.

\textsuperscript{38} Ibid., Preface.
Michel Pignolet de Montéclair (c. 1667-1737) authored numerous treatises and musical works which appeared in print over a period of several years. One of his earlier tracts was entitled *Nouvelle méthode pour apprendre la musique par des démonstrations faciles, suivies d'un grand nombre de leçons à une et à deux Voix, avec des Tables qui facilitent l'habitude des transpositions et la connaissance des différentes mesures* ("New method for learning music by easy demonstrations, followed by a great number of lessons in one and two voices, with tables which facilitate the practice of the transpositions and the understanding of the different meters"). Published in Paris in 1709, the work perhaps is the earliest French source in which the natural modes on D and A were explicitly adopted as models for the solmization of the minor tones from finals of Re and La.

The anonymous author (evidently Monsieur Borin) of *La musique théorique et pratique, dans son ordre naturel; nouveaux principes par Mr. ****** ("Theoretical and practical instruction in music in its natural division: new principles by Mr. *****"; Paris, 1722) purposed to include in his treatise "all the principles of theory and examples of practice that must precede composition." His work,

39. For a discussion of attributions of authorship of this work, see Jacobi's remarks in the Introduction to Rameau's *Traité de l'harmonie*, xxiv-xxv and notes 15 and 16.
appearing close on the heels of Rameau's *Traité de l'harmonie*, evidently was intended to serve as a primer for the *Traité*. The author divided his presentation into two parts: the first, "Concerning theory," and the second, "Concerning practice." He discussed the transposed tones in the former part and provided examples of clef substitutions relating to the vocal and instrumental practices of transposition in the latter.

François Campion (c. 1686-1748) wrote two treatises, the *Traité d'accompagnement et de composition, selon la règle des octaves de musique* ("Treatise on accompaniment and composition according to the rule of the octaves of music"; Paris, 1716) and the *Addition au traité d'accompagnement et de composition par la règle de l'octave* (Paris, 1730). In both, the author discussed the practice of transposition. The former work contained references to the traditional method for singers whereby the note names of the finals were changed to Ut or Re. The latter presented a method of transposition for instrumentalists as well as a method for singers which utilized the two models for the minor modes.

40. Borin, v. 41. Ibid., viii.

42. See the Appendix, note 1-42.

43. The *Traité* and the *Addition* have been reprinted in a single-volume facsimile edition (Geneva: Minkoff Reprint, 1976).
CHAPTER II

TRANSPOSITION, TRANSPOSED MODES AND RELATED CONCEPTS

Transposition and the transposed modes in late-Baroque France were multifaceted notions. Foundational to their comprehension were the ideas of mode, tone, modulation, gamme (i.e., the scale), natural and transposed notes, and the temperaments. The authors generally agreed that there were two modes—or two types of modes—major and minor, though their usage of the terms mode and ton, and their definitions of modulation, were somewhat diverse. They were sharply divided on the particular gamme that they regarded to be the basis for singing music, and their nonuniformity produced differences in their lines of demarcation between the natural and transposed tones.

While French singing instructors differed in their understanding (or at least in their explanations) of what took place when they transposed, they generally seemed to agree concerning the objective of such transposition, which was singing music naturally, or reducing to the natural. Their notions of natural and transposed modes had parallels
in the twelve-mode theory of conservative German musicians. Likewise, their teachings regarding the different properties of the modes and their conviction that the modes were capable of expressing the passions found parallels in the Affektenlehre of the Germans.

In short, the authors founded their teachings on those of their predecessors, but at the same time they expressed viewpoints which differed so radically as to preclude any other than a chronological and documentary approach to the subject at hand. As the study of their notions and methods is quite detailed, those readers interested primarily in an overview may wish first to read chapter five (the conclusions), returning thereafter to peruse chapters two through four, in order to expand on notions that will have aroused their curiosity. Finally, for any who are interested solely in the theoretical-speculative part of this paper, viz., in the hypothesis that the minor "key" signatures of late-Baroque France, like the major ones of Italy, represented an economy of means on the part of practitioners, will perhaps prefer a reverse order of approach, beginning with chapter four and continuing with chapters three and two (in that order).
Foundational Notions: Natural and Transposed Notes, Mode and Gamme

Natural and Transposed Notes

Rousseau.—Rousseau did not specifically refer to natural and transposed notes either in his Méthode (c. 1678) or in his Traité de la viole (1687), but it appears that he recognized that the transposition of the mode or the tone resulted in the change of the condition of individual pitches. He observed that through transposition, the degree of intonation assigned to each note's name often was changed around (renversé), that is, transposed.¹

Delair.—Delair discussed the "natural notes" and the "transposed notes" in his Traité d'accompagnement (1690). He presented a figure consisting of two concentric circles (figure 1); each circle contained a series of pitch letters, some of which were accompanied by accidentals, which constituted the twelve pitches of the octave. The inner circle was labeled "circle of natural notes" and the outer circle, "circle of transposed notes." The author related the natural and transposed notes to the keyboard of the clavecin (i.e., harpsichord):

One will observe with the circle above that all the keys of the clavecin have two different names each, one of which is natural to them, and the other is by transposition. The natural names are

---

¹ Méthode, 78; Traité, 116.
In the first circle and the transposed names are
in the second.  

The "circle of the natural notes," which he said
"contains the keyboard of the clavecin," included the seven
natural notes C, D, E, F, G, A, and B, along with the five
chromatic pitches (feintes): B-flat, E-flat, C-sharp,
F-sharp and G-sharp. Those were the sharps and flats which
characteristically were found in tune on the clavecin (see
figure 8). The others were lacking, because in the
temperaments that were employed in late seventeenth-century
France, the sharp and its corresponding flat (e.g., C-sharp

2. Delair, 12.  3. Ibid., 11.
and D-flat) were not quite in tune and a choice had to be made between them on keyboard and woodwind instruments.\(^4\)

The customary seventeenth-century disposition of the notes encompassed the range of E-flat to G-sharp, if one were to proceed by ascending fifths.\(^5\)

The circle of the transposed notes contained the "transposed names," or the names "by transposition," of the twelve keys whose natural names were found in the inner circle. Those notes apparently were not exact enharmonic equivalents of the natural notes in the mean-tone and irregular temperaments of the period. For example, D-sharp was slightly lower in pitch than E-flat, and so forth.

Therefore, the diatonic semitones (e.g., F-sharp - G) were larger than the chromatic ones (e.g., E-flat - E),\(^6\) and those tones which had a chromatic semitone below the final necessarily had sharper leading tones than those that had a diatonic semitone there.

Delair spoke of the practical use of the transposed notes. He stated that they "serve to transpose, and to make up, the possible accords." He made a similar statement with regard to the doubly sharped notes, which were a subset of the transposed notes. The double sharps, he said, were

---


5. Lindley, 667.

6. Ibid., 661.
useful in "the distinction of the accords." 7

He recognized the use of the transposed notes on clavecins with split keys:

There are clavecins in which the keys are divided [so that] every note, whether natural or transposed, has its own key. Those clavecins are scarcely in use, because of the difficulty which is encountered in making use of them. 8

Instruments with keyboards having divided keys were made throughout the seventeenth century by a number of Italian harpsichord makers, but they evidently did not ever become very popular in France. 9 The clavecins typically had certain of the sharp keys divided, which permitted the execution of both the sharp and its nonenharmonic flat (for example, G-sharp and A-flat), or vice versa. 10 Michael Praetorius (1619) insisted that it was very good and highly necessary that the D-sharp (i.e., the E-flat) and, where possible, the G-sharp, be divided on organs—and on

7. Delair, 12. See II-192 and pp. 132-3 below. 8. Ibid.


10. Ibid. The term "nonenharmonic pitch" is defined by this author to be a pitch not actually found on the instruments of the period but which corresponds to one of those pitches; it is nearly, but not exactly, enharmonically equivalent to its correspondent, and it is spelled differently. The term "nonenharmonic" also is used to refer to a pair of pitches that exhibits the relationship just described. An example of a nonenharmonic pitch is A-flat; G-sharp and A-flat constitute a nonenharmonic pair.
harpsichords, when the latter were tempered in the customary way—, if such were used in concerti (i.e., ensemble music). (He then referred the reader to his discussion of the Universal Clavicymbel in volume two, part two of his treatise.) He observed that there were new organs which had the G-sharp keys divided, and that that division was necessary if one wanted to use the minor third above F. The split keys (Italian: tasti spezzati) allowed an extension of the mean-tone "spiral of fifths," where the flat and sharp sides never arrived at enharmonically equivalent pitches. The cost of making instruments with divided keys and difficulties of performance on such instruments hindered their acceptance. The "transposed" notes were played on conventional keyboards by substituting their closest approximates, which inevitably were somewhat out of tune.


13. Because the pitches were not found on conventional keyboard instruments, whenever one played on the keyboard an accord which required such a note, one had
Delair explained how the double sharps of C, F and G occurred in the music:

I know that those doubly sharped notes will look like a new invention to those who do not fully possess the rules of the transpositions. Yet I will say to them that one must be no more surprised to see the same notes doubly sharped than to encounter sharps on Mi [E], Si [B] and La [A]. Those being naturally sharped, nevertheless are encountered further sharped. Now Ut [C], Fa [F], and Sol [G], [if] sharped at the beginning by the clef in the transposed tones in b. quarre [i.e., in the major modes], hold instead of Mi, Si and La. Thus, in the course of pieces, the same notes can be sharped once again as well as Mi, Si and La. I confess that that is rare, but it sometimes is encountered. I have a printed Italian piece in which there is D-sharp with the major third marked above, which third must be F doubly sharped.14

It appears from the statements above that Delair was attempting to justify the use of double sharps in the transposed modes by analogy, i.e., by invoking permissable practice in the natural modes. He seems to have reasoned as follows: Sharps already are allowed on the "naturally sharped" notes of Mi, Si and La (E, B and A). Now C-sharp, to substitute the note's counterpart. For instance, the A-flat major chord required the nonenharmonic note of A-flat. In order to perform this chord on the keyboard, one had to substitute G-sharp for A-flat. The resulting chord, played G-sharp - C - E-flat, differed slightly in its intonation from that which one would have obtained if A-flat had been available, because G-sharp was lower than A-flat. (See Harris-Warrick's remarks in Saint-Lambert, Principles, 67.) The differences of intonation existed in spite of compromises made in regard to the tuning with irregular temperaments.

F-sharp and G-sharp, if found in the signatures of the major tones, are in force instead of those note names. For example, in A major, the major mode with three sharps, C-sharp holds for the third degree instead of Mi, G-sharp instead of Si and F-sharp instead of La. Since Mi, Si and La may themselves be sharped, Delair reasoned, one therefore may sharp the degrees which correspond to those names. In such a manner, one may obtain C, G and F doubly sharped.

Ozanam.---Ozanam defined three kinds of notes—diatonic, chromatic and enharmonic—in his *Dictionnaire mathématique* of 1691.15 His threefold classification of the notes demonstrates a finer degree of distinction than was made by Delair, for his collective diatonic and chromatic notes (figure 2) included Delair's circle of natural notes,

![Figure 2. Ozanam's illustration of the organ keyboard (Ozanam, 651).](image)

15. Ozanam, 650-651. Either Ozanam or his printer omitted B-sharp from the list of the "enharmonic" notes. The omission appears to have been accidental.
and his enharmonic notes (see figure 3) consisted of Delair's transposed ones, except that he omitted the three double sharps of C, F and G.

The "enharmonic" notes comprised those outside of the usual chromatic ones which formed a minor or chromatic semitone with one of the diatonic or natural notes. They actually were nonenharmonic. Their inclusion provided both a sharp and a flat for every pitch letter, so that there were a total of twenty-one different notes within the octave. Ozanam's consideration of the sharped and flatted instances of the seven natural notes anticipated Freillon-Poncein's and Saint-Lambert's later presentations of the twenty-one finals.16

16. See Freillon-Poncein, 6, 51-53 and examples 41 and 42 of this paper. See also Saint-Lambert, Nouveau traité, 28-30.
It should be observed that the use of the term "diatonic" by Ozanam and his contemporaries differs from the customary usage of the term by musicians today. Ozanam and others of his generation equated diatonique with the state of inclusion within the scale. That is, the notes that were regarded as diatonic were the components of the gamme double or the gamme simple (see figures 6 and 7). Ozanam's citation of G minor among the modes that had diatonic mediants and B-flat major and B-flat minor among those with diatonic finals is a consequence of his acceptance of the two-column scale (figure 6).

Ozanam stated: the "smallest intervals of this system are the enharmonic sharps." It appears that he may have been referring to the intervals C-sharp to D-flat, D-sharp to E-flat, and so forth, which of course were not found on the conventional keyboard. As has been observed, the notes of each hypothetical "enharmonic" pair would not have been exactly identical in pitch in the mean-tone and irregular temperaments of the time. Ozanam observed that since keyboards which contained the "enharmonic notes" would be too difficult to play, and since means had been found to dispense with the "enharmonic" notes "by lessening the


harmony of the others," the notes had been rejected on French instruments. Evidently, the chromatic pitches sometimes were slightly mistuned in order to improve the intonation of the "enharmonic" pitches. Arnolt Schlick (1511) had advised a tempering of the fifth from A-flat to E-flat which would render both G-sharp and A-flat serviceable. Praetorius (1619) admitted that divided keys were not as necessary on harpsichords as on organs, because the E-flat string could be tuned a little low in order to produce an exact major third between B and F-sharp. Chaumont (1695) referred to a practice among tuners, which evidently came about through a misreading of Mersenne's tuning instructions of 1635-6, whereby E-flat and B-flat were treated variously as deficient or large. Irregular temperaments became customary on keyboard instruments of the late seventeenth and eighteenth centuries.

L'Affilard.--In his Principes très faciles (1694), L'Affilard reiterated the distinction between the sharps or flats commonly found on the musical instruments of his day and those which were out of tune on the same. He affirmed: "In the natural modulation, there are only two notes on

19. Ibid., 651-2.
20. Praetorius, 81; see also Lampl, 139.
which flats and natural signs are put: namely, on B and E, and three on which sharps are put: namely, [on] F, G and C." His statements recall Delair's distinction between the natural and the transposed notes, which likewise was based on customary practices of tempering the pitches on instruments.

Louilé.—Louilé classified the notes as transposed and non-transposed in two different treatises preserved in the manuscript *fonds français, n.a. 6355*. The first instance is found in his partial revisions of the *Éléments*. Like Delair before him, Louilé distinguished the customary names of the keys of the keyboard and their alternative names "of transposition." He declared the usual names of the notes to be the domain of both natural music and transposed music, but he indicated that the names of transposition were exclusively the province of transposed music. 23

In his unpublished recorder treatise, which appears in the same manuscript, Louilé observed that the "most obscure" flats and sharps of transposition, the double flats and double sharps, were hardly ever used. He declared that he was including them for the profit of those who might wish to transpose to all kinds of tones but who were not accustomed

---

22. L'Affilllard (1694), 12.
to the practice. His seven sharps of transposition comprised both the sharps of the natural notes D, E, A and B and the sharps of the customary sharps of C, F and G (and thus included the latter doubly sharped). Analogously, his flats of transposition included the flats of the natural notes C, D, F, G and A and the flats of the usual flats (thus including B and E doubly flatted).

He affirmed that the sharps of transposition were the same thing and were performed on the flute in the same way as those notes that were one degree higher, whether the latter were ordinary flats or natural pitches. Citing examples, he declared that D-sharp was the same thing as E-flat, E-sharp as F, and C-double sharp as D. He then made an analogous statement concerning the flats of transposition.²⁴

In his statement that the sharps of transposition were the same thing and were produced in the same way as the flats or the natural notes a degree higher, Loulié evidently was not implying that the transposed notes were the exact enharmonic equivalents of the customary notes from the standpoint of the temperament. Equal temperament had not yet become generally accepted in France. A number of different mean-tone temperaments and certain irregular ones, in the case of keyboard performers, were in use by

²⁴. Semmens, 147-8, 211-12. See also table 4 below.
Instrumentalists. Louillé stated in 1698 that 1/5 comma mean-tone temperament was "better and more in use" than any of the others. Evidently not references to equal temperament, Louillé's statements make sense in reference to the customary temperaments of his day. He seems to have been saying that the written sharps and flats of transposition were represented by, and corresponded to, pitches on the recorder which were found on the degrees immediately above or below those transposed notes.

Freillon-Poncein.---In the preface of his treatise, Freillon-Poncein referred to the "natural, sharped and flatted sounds," which he later illustrated (example 1).

Example 1. Freillon-Poncein's illustration of the "natural, sharped and flatted sounds" (La véritable maniÈre, 15).

Copyright 1974 by Minkoff Reprint. Used by permission.

His definitions parallel Louillé's definitions of Natural and Altered Sounds from the Éléments. 26

25. Lindley, 666.

26. Louillé, Elements or Principles, 50.
Mode

A number of late seventeenth-century and early eighteenth-century French authors delineated the characteristics or discussed various aspects of the modes and/or tones. Among those are Rousseau, Delair, Ozanam, Charpentier, Masson, L’Affilliard, Freillon-Poncels, Brossard, Saint-Lambert, Montéclair, Borin, Rameau and François Campion. Their notions will be examined in turn.

Rousseau.--Rousseau employed the expressions "transposed" and "natural" tons rather than modes in the Méthode. However, it is clear that the terms can be taken as synonymous in reference to those entities, in his opinion. In his response to the twelfth question, he declared that ton and mode were the same thing in composition.27

He declared that a piece could be recognized as being in major (en Tierce majeure: "by major third") or in minor (en Tierce mineure: "by minor third") when the interval from the final to the third degree was two whole tones or a tone and a semitone, respectively.28 His distinguishing of the modes according to whether they rose a major third or a minor third above the final was by no means a new practice. Zarlino had made the distinction more than one hundred

27. Rousseau, Méthode, 84. 28. Ibid., 23.
years earlier, and theorists had been carrying it on ever since his time. However, with Rousseau it took on a new significance: it represented the whole basis for the identification of the modes reduced to two octave species.

**Delair**—Delair stated a "Rule for knowing what a piece is in," in which he explained how one could identify the mode or tone. There were two steps to the procedure. First, one had to observe the final pitch of the bass part. If the bass ended on Ut (C), the piece was "in C Sol Ut," and so forth. The second step was to observe the third above the final note in order to determine whether the piece was en bémosi or en b square, i.e., "in minor" or "in major" (cf. Rousseau). He stated:

In order to know whether the piece is in minor or in major, one will observe the third of the last note. When it is minor during the course of the piece, either naturally or artificially, the piece is in minor. When the third above the final is naturally or artificially major during the course of the piece, the piece is in major.

This author's rendering of the expressions en bémosi and en b square demands explanation. The literal meaning of bémosi is the flat sign (♭); the term derives from the soft (mollis) form of the B. The b square is the natural sign


30. Delair, 52. 31. Ibid.
and derives from the hard (durus) form. Marin Mersenne (1636) associated bemol (sic) with the minor third above the final and quarre (sic) with the major third. Those correspondences evidently derived from the existence of two diatonic thirds above G, the major and the minor, which resulted from the use of B-natural or B-flat, respectively. With a final of G, it was necessary to specify the form of the B, because without such specification, the expression of the modality would have been ambiguous.

Delair's use of the terms bémol and quarre to designate the modalities of tones other than G was not unique among musicians of his day. Ozanam similarly used the terms, and Brossard associated bécarre and bémol (sic) with "major" and "minor." Saint-Lambert reflected:

Some musicians, instead of using the terms major and minor in order to express the mode of an Air, make use of the former terms bécarre and bémol. For example, in order to indicate that an Air is in C minor, they say that it is in C bémol. In order to indicate that another is in D major, they say that it is in D bécarre, and so with the others. Yet those expressions, which perhaps are the most common, nevertheless are not as suitable as the others.

32. See II-53. The terms also related to the diatonic systems with B-flat and B-natural, which both derived from the mollis and durus hexachords on F and G and later were succeeded by the two columns of the gamme. Cf. Green, 65f. and also p. 67f. of this paper.

33. Ozanam, 659-60; Brossard, "MODO." The latter's use of bécarre (cf. Millet's usage cited in II-54) suggests a derivation from the square or hard (durus) form of b.

34. Saint-Lambert, Nouveau traité, 27.
German authors regularly employed the expressions of **dur** and **moll** (which derived analogously from the two forms of the letter B) to designate major and minor. It thus appears that Delair’s usage of the terms was consistent with both French and German practices.  

**Ozanam.**—Ozanam defined Mode as follows:

> The mode is a certain order in the invention of a melody, which obliges us to employ certain notes more often than others, because they are natural or essential to the mode, and to avoid certain other notes which are not [so], and finally to finish with a certain note, which is that which gives the name to the mode.

> For example, when we finish with F, we say that the piece is in F—, that is, in the mode or tone of F, for the term **tone** often is employed in the same sense as mode.

> That note is called the final or the note of the mode. The fifth above is named the dominant and the third the mediant. Now as the third can be major or minor, that gives rise to two species of modes, the former of which are called major [literally, de b guarre (sic)] and the latter, minor [de b moll]. . . .

> All the modes have besides that a natural [whole] tone above the final and below the dominant and an essential semitone below the final.

> The minor modes further have an essential semitone above their dominant and the major modes [have] a natural [whole] tone [there].  

Ozanam thus both defined the three essential notes (the final, mediant and dominant) and also specified the relationships of the remaining notes either to the final or

---

35. On the other hand, Rousseau and Sauveur employed the expressions **en Tierce maleure** and **en Tierce mineure** (cf. Masson’s similar usage).

36. Ozanam, 659.
to the dominant pitch, thus establishing the relative positions of each of the individual notes. His statements provided an impetus for the eventual normalization of the octave species and signatures of the major and minor modes.

According to Ozanam, the number of the modes in existence derived from the number of notes that were found within the compass of the octave. He stated:

There are two times as many modes as notes in the compass of an octave. Each of those notes gives its name to two modes, one of which proceeds by the major third and the other by the minor third. Thus, as the octave contains twelve notes, there are twenty-four modes.37

Ozanam's list of the modes may be the first presentation in France of twenty-four major and minor modes with the twelve pitches of the octave serving as the finals for each species of mode. The notion of twenty-four modes probably had a sympathetic audience in late seventeenth-century France because of the potential availability of the twelve authentic and plagal modes in each of two scales, cantus durus with B natural and cantus mollis with B-flat.38

At any rate, Ozanam's statement of twenty-four modes, which was echoed by Brossard and Campion, preceded Mattheson's statement of 1713 by twenty-two years.39

37. Ibid. See also II-149.

Ozanam contrasted the modal theory of his predecessors and that of his day. He declared that his generation had a clearer notion of the modes than his forerunners had had in part because the use of the chromatic notes gave more freedom of choice. His generation could easily see the indispensability of those notes, since without them all of the twelve (major) modes except C major lacked one or more of the notes which were essential or natural to them, and several modes (that is, modal finals) would be lacking which composers of his generation used every day.  

Pairing of the third and the sixth.—Ozanam's contemporaries (e.g., Charpentier) often referred, as he had done, to the semitone above the dominant in the minor mode. The association by Ozanam of the semitone above the dominant with the minor mode and the whole tone with the major mode parallels statements which associated the minor sixth above the final with the minor third and the major sixth with the major third. The parallelism is evident


40. Ozanam, 662.

because of the equivalence of the expressions "semitone above the dominant" and "minor sixth above the final," on the one hand, and "whole tone above the dominant" and "major sixth," on the other.

The correspondence in the relative positions of the third and sixth degrees of the major and minor modes had been declared by as early an author as Johannes Kepler (1571-1630). Kepler had observed that in cantus durus the third and the sixth tone above the final were found "about a Diesis higher" than they were in cantus mollis. Susi Jeans cautions, however: "His cantus durus and cantus mollis are not the beginnings of modern major and minor as has often been asserted but are used for classifying the traditional modes."  

The pairing of the third and the corresponding sixth was stated by a number of French authors of the late seventeenth and the early eighteenth centuries. For example, Nicolas Bernier stated in his manuscript treatise:

All the major modes must have the sixth as a major interval, and in the same way all the minor modes


must have the sixth as minor, especially in descending. Otherwise, the bass will proceed in another mode. 44

The cited view became a point of contention in the debate over the correct solmization of the minor modes. 45 The correlation of the qualities was extended by Saint-Lambert (1707) to the sevenths; 46 the establishment of the minor seventh alongside the minor third and the minor sixth in the minor mode ran counter to Ozanam's requirement of the "essential semitone" below the final but permitted the specification of all the degrees of the minor mode by the signature.

The cause of the pairing of the third and sixth perhaps can be found in part in the circumstance that in the practice of solmization via the hexachords, mutation often was a necessity, and Fa (B-flat) frequently was employed above La (A) in the Dorian mode on D in order to avoid the tritone Fa-Mi (F-B). Additionally, Fa (F) regularly was


45. See, for example, Frère, 49-50.

employed above La (E) in the Aeolian mode on A, which likewise was solmizated from a final of Re (see figure 4 below).

Figure 4. Solmizatlon within the system of the hexachords.

The requirement of the minor sixth above the final, or the semitone above the dominant, for all of the minor modes is of interest both because it anticipated the eventual acceptance of the Aeolian octave and signature for the minor modes generally and because it evidently was in conflict with contemporaneous musical practice. In Ozanam’s day, the minor modes with flats regularly were written with Dorian signatures, and those with sharps sometimes also had such signatures (see example 110). The Dorian signatures indicated a whole tone, rather than a semitone, above the dominant (i.e., a major sixth above the final; see examples
It appears that the minor modes with sharps increasingly came to be written with Aeolian signatures, which indicated the natural semitone above the dominant (that is, the minor sixth above the final). However, it was a long while before the modes with flats regularly came to be written with such signatures in the French practice.

**Charpentier.**—In a section of his manuscript treatise entitled "Concerning mode," Charpentier stated:

> There are as many modes as notes . . . All the modes can be related to the mode of Ut or the mode of Re. The mode of Ut has the major third. The mode of Re has the minor third. All the modes which have the major third resemble the mode of Ut. All the modes which have the minor third resemble the mode of Re.47

The cited passage is interesting. Charpentier presented two prototype modes, Ut and Re (or C major and D minor), which respectively had the major third and the minor third: all the other modes were like one of those. He thus expressed the relationship which existed between the transposed and the natural modes, though he did not use the terms, and he anticipated Frère's statements that the thirds of Ut and Re were natural and were those to which all the other, transposed thirds had to be related.48

---

47. Charpentier, "Règles de Composition," fol. 12r.; facsimile of the manuscript in "M.-A. Charpentier's 'Règles,'" 256-69 (see p. 266).

anticipated L'Affilliard's statement that all the modes of music could be reduced to two: the major and the minor (see example 2). In stating that the modes resembled those of Ut and Re, Charpentier perhaps was suggesting that the correspondences among the intervals extended beyond the thirds to the remainder of the octaves.

Relationship of the modes to Ut or Re.--

Charpentier's statements concerning the relationship of all the modes to Ut or Re recall statements of Delair and evidently represented commonly held notions in his day. As one would expect, the notions were derived from earlier authors. The Swiss theorist Glareanus (1488-1563) had stated: "Every song ends either on re or on mi or on ut . . ." The French scientist Mersenne (1588-1648) went even further. He stated:

Certain modes have more resemblance with some than with others. It suffices to interchange the seven species of octave for the seven tones or seven principal modes whose four cadences or modal tones reduce to Ut, Mi, Sol, Fa . . . and to Re, Fa, Re, Sol, . . . For, although one forms cadences on Mi, Sol, Mi, La in the third species of octave, these have no other force [energie] nor intervals than the Re, Fa, Re, Sol of the second [octave species] or the Re, Fa, Mi, La of the sixth species--just as the Fa, Re, Fa, Fa of the fourth

49. L'Affilliard (1694), 7.  50. Delair, 53.
is nothing other than the Ut, Mi, Sol, Fa of the first species.52

He continued:

One may conclude from that [1] that there are only two modes which are different in their cadences or principal notes, and [2] that those who reduce all the tones and modes to two kinds of modulations or deductions, namely to b quarre and b mol [i.e., to the major third or the minor third above the final], do not speak groundlessly. For the greatest difference among the modes arises from [the fact] that some have the minor third while others have the major [third], which happens by means of the b and the b7 . . . 53

Although he obtained common solmization patterns for the essential notes of all of the major and minor modes, Mersenne did not reduce the number of available octave species to two (see below). This is evident from the fact, which he admitted, that the cadence tones in the third species of octave were called Mi, Sol, Mi, La. His syllable patterns were obtained as a result of solmization via the hexachordal system (see figure 4). Similarity among those patterns reflected the similarity of the modes in terms of the intervals between their essential notes and did not imply identity among their octave species.

Jean Millet (1666) recognized the existence of only two


different kinds of cadences "in all vocal music"—, that of
the major third or $\frac{4}{3}$ (sic) and that of the minor
third or $\frac{5}{4}$ (sic). He declared that the cadence of the
minor third was formed on all the degrees of the Gamme
(i.e., gamut) on which one said Re, and that that of the
major third arose on all the degrees on which one said Ut.54
He thus related the cadence types to the vocables Ut and Re.
While neither Mersenne nor Millet reduced all of the
different octave species to two distinct types, their
reduction of the cadence tones and finals reemphasized the
similarities among the modes which rose a major third and
among those which rose a minor third.

It should be observed that Millet's examples
illustrated cadences on merely five of the seven natural
notes. He demonstrated cadences of $\frac{5}{4}$ on A and D and
cadences of $\frac{4}{3}$ on F, G and C; examples on finals of
E and B were conspicuously absent. This in part may reflect
the fact that signatures with sharps evidently were only
beginning to be accepted generally in the practice; such
signatures probably were less usual than their counterparts
with flats.55 Further, it apparently was not until later

54. Jean Millet, La belle méthode, ou l'art de bien
chanter, facsimile reprint of Lyon ed. of 1666 (New
York: Da Capo Press, 1973), 38. His cadence tones were
precisely those pitches called Ut and Re in the system
of the hexachords (see figure 4).

that the modal finals were absolutely reduced to two representatives, Ut and Re, in the practice; the use of Ut and Re finals by singers, in conjunction with the adoption of the two-column scale (see figure 5 or 6), evidently contributed to the reduction of the twelve modes to two, as efforts were made to achieve harmony between solmization patterns and signatures.

**Masson.**—Masson (fl. 1680-1700) defined mode as follows: "By the term Mode or Ton is understood the manner of beginning, guiding and concluding an Air on certain degrees or notes proper to each mode or tone." He thus defined mode in a manner similar to the way in which a number of his contemporaries defined mode (e.g., Ozanam) or modulation (cf. Brossard). He equated mode and ton (cf. Rousseau) but emphasized that most modern musicians used Ton rather than Mode because the different kinds of ecclesiastical chants were called Tons.57

**L’Affillard.**—In 1694, the year of the publication of the first edition of Masson’s treatise, L’Affillard stated:

All the tones or modes of music can be reduced to two: namely, to the major tone and to the minor


57. Masson, 9.
tone. The major tone proceeds with a major third. The minor tone proceeds by a minor third [example 2].

Example 2. The major and minor tones (L'Affillard (1694), 7).

![Diagram of essential notes for major and minor tones]

The reduction of the modes to two in the practice (cf. Rousseau, Méthode, c. 1678) evidently preceded the first explicit statements of the phenomenon. L'Affillard's

58. L'Affillard (1694), 7.

59. Rousseau, Méthode, 22f. While Rousseau's major and minor tones had had uniform signature types and octave species, the author did not declare that there were only two tones (i.e., modes).
affirmation of two modes—and evidently also Masson's, although his edition of 1694 no longer is extant—ranks among the earliest unequivocal declarations of the two-mode concept in print. The notion of reducing the modes to two kinds of modulations had been documented by Mersenne and evidently had become a matter of common parlance. That it was commonly accepted at the end of the century is apparent from the contents of the approbation found at the beginning of the 1694 edition of L'Affillard's treatise. Written by "Monsieur de la Lande, superintendent of music of the court of the king" (probably Michel-Richard Delalande (1657-1726)), the statement begins: "I have perused this book entitled Principes très-faciles pour bien apprendre la Musique. All that is discussed therein is according to the rules of singing and music. . . ." 

In the first edition of his treatise, L'Affillard provided examples of the essential notes of the major and

60. Masson usually is considered to have been the first to state clearly that there were only two modes. The basis for the attribution is the remark, from the second edition of 1699, that the author would demonstrate only two of them. As the first edition of 1694 no longer is extant, it is not certain that the statement ever appeared in that edition. L'Affillard's affirmation that all the modes could be reduced to two, the major one and the minor one, was more forceful, and it appears that the credit for the articulation of two modes should be shared with him.

61. See II-61.
minor modes on finals of F and G, respectively, with
signatures of one flat (see example 2). In the second
edition of 1697, he supplied additional examples on finals
of G and A. His examples demonstrate a pairing of the major
mode with the minor mode whose final was a degree higher.
Such a pairing is consistent with the assignment of the
finals of Ut and Re to the major and minor modes,
respectively, in late seventeenth-century France.

Freillon-Poncein.—Freillon-Poncein first mentioned
the modes in his preface, where he referred to "the seven
major modes and . . . the seven minor [modes] on the natural
finals."62 He later discussed the topic in detail:

There are two principal modes on which all
the others depend, which are the mode of C Sol Ut
with neither flats nor sharps and that of D La Re
likewise. That of C Sol Ut is called major
because from the final, which is Ut up to Mi,
which is the mediant there are two [whole] tones,
and from the mediant up to Sol, which is the
dominant, [there is] a tone and a half. The mode
of D La Re is minor because from Re, which is the
final, up to Fa, which is the mediant, there is
only a tone and a half, and from Fa to La, which
is the dominant, there are two [whole] tones.63

His two principal modes were precisely those which had been
illustrated in Masson's initial examples of the essential
notes and also in Louillé's examples of the same.64

64. Masson, 10: Louillé, Elements or Principles, 70.
Freillon-Poncein demonstrated both the major and the minor modes on the seven natural, flatted and sharped finals and thereby obtained forty-two different representatives.\textsuperscript{65}

\textbf{Brossard}---Brossard's notions concerning mode are expressed in detail in his article "MODO."\textsuperscript{66} His statements reveal his acquaintance both with earlier theory and practice and with that of his contemporaries.\textsuperscript{67} He divided his article into twelve parts plus an introduction. Of primary interest to the present study are the sixth through the tenth parts, which dealt with contemporaneous modal theory and culminated in the definition of the natural and transposed modes.

After he had first discussed the three essential notes, Brossard then considered the natural and the necessary notes. The former were so named because "one cannot make a beautiful melody nor even a graceful harmony without their assistance."\textsuperscript{68} The natural notes were, "first . . . a major semitone, either natural or accidental, below the final:

\begin{quote}
\end{quote}

\textsuperscript{65.} Freillon-Poncein, 6, 51-53.

\textsuperscript{66.} Also see his definition of "MODULATIONE."

\textsuperscript{67.} Walter Atcherson states that Brossard's principal source for his discussion of modal theory was Pierre-Benoît de Jumièges's \textit{La science et pratique du plain-chant} (Paris, 1673). See Atcherson, "Key and Mode," 214.

secondly, for the minor modes, a major semitone above their dominant; third, for the major modes, a whole tone above their dominant." In the minor modes, neither the semitone below the final nor the one above the dominant had to be put into the signature. This is evident from the author's examples of Re naturel (i.e., D minor) and "Re by transposition a whole tone lower" (i.e., C minor): in both instances, he supplied Dorian signatures, which designated whole tones below the final and above the dominant (see examples 13a and 13c). The necessary notes, he stated, were two in number, namely, the whole tone above the final and the whole tone below the dominant. Those were not essential like the essential notes, nor were they so natural as the natural notes. (However, they uniformly were specified by the regular signatures.)

Brossard's notions expressed in "MODO" appear in certain instances to derive from Ozanam. Like his predecessor, he admitted both a major and a minor mode on each of the twelve pitches of the octave. His identification of the position of each of the degrees of the modes relative to the final or the dominant also echoes the instruction of Ozanam. The renewed expression of such

69. See II-69.

70. Ozanam, 659. Brossard's usage of the terms "natural" and "essential" may derive from Ozanam.
notions suggests an ongoing preoccupation with the identity of the individual scale degrees and likely contributed further to the crystallization of the major and minor octave species and subsequently of their signatures.

Saint-Lambert.--In chapter 4 of his *Nouveau traité* (1707), Saint-Lambert discussed the concepts of mode and tone and defined the major and minor modes. He began: "Every Air or piece of music is composed on a certain tone [i.e., final pitch] and in a certain mode." He defined mode as follows:

The mode is the determination of the course which the melody of an Air must follow and [also] that of its parts (when it has any), the whole in relation to the final note. It is that which establishes the species of each interval; it is the particular system on which a piece of music is built.

There are only two modes in music: the major mode and the minor mode.

The mode of an Air is major when the third, the sixth and the seventh (above) the final or tonic note are major.

The mode is minor when the third, the sixth and the seventh (above) the final are minor.

He observed that in the major and the minor modes, the second, fourth, fifth and octave were of the same species:

71. Saint-Lambert, *Nouveau traité*, 26. He reaffirmed the independence of ton and mode in his discussion of transposition, for he declared that to transpose an Air was "to take it out of its tone in order to put it on another [tone], without however changing anything in its mode" (p. 32).

consequently, the entire difference between the one mode and the other consisted solely in the differences of the third, sixth and seventh.\textsuperscript{73}

The establishment of two classes of modes, one of which was characterized by the major third, sixth and seventh and the other with those intervals minor, had been made previously by Thomas Salmon. In \textit{A Proposal to Perform Musick}, the British author had stated: "I shall in this Catalogue of Keys offer you the variety of fourteen: seven with a Greater Third, Sixth and Seventh, the other Seven with all these Intervals Lesser."\textsuperscript{74} Whether Saint-Lambert (whose definitions can be regarded as an extension of the doctrine of parallel qualities of the third and the sixth) was consciously reaffirming Salmon's statements is not known. At any rate, numerous authors after Saint-Lambert repeated the distinction; these included Montéclair (1709) and Alexander Malcolm (1721).\textsuperscript{75}

Saint-Lambert observed the relationship between the

\textsuperscript{73.} \textit{Ibid}.

\textsuperscript{74.} Thomas Salmon, \textit{A Proposal to Perform Musick, in Perfect and Mathematical Proportions} (London, 1688), 19.

\textsuperscript{75.} See Montéclair, \textit{Nouvelle méthode}, preface. The author evidently held to the distinction in theory only, for in the course of the treatise, he adapted himself to the musical practice. See also Alexander Malcolm, \textit{A Treatise of Musick: Speculative, Practical, and Historical}, facsimile reprint of the Edinburgh edition of 1721 (New York: Da Capo, 1970), 273.
tone and the mode, stating: "The tone and the mode of an Air are two absolutely inseparable things; one likewise can never speak of the first without at the same time expressing or at least implying the second." He further confessed that there were modulations that ordinarily were implied without being expressed, "because one considers them [to be] natural to certain tones." He supplied examples of such modulations or modalities. If an Air was said merely to be "in [or on] C," its modality was implied to be major. Likewise, if an Air was said to be "in D," its modality was implied to be minor, and so on. In each case he cited, the modality that was implied proved to be that with the diatonic third above the final according to the two-column scale. Thus, E minor, F major, and A minor were said to be implied by the expressions "in E," "in F," and "in A," respectively.
The author affirmed that G had no modulation at all that was more natural to it than the other; thus, one always was obliged to express the mode whenever one spoke of an Air in G. Further, whenever

76. Saint-Lambert, *Nouveau traité*, 26. The author was not implying that ton and mode were synonymous. See footnote 71.


79. *Ibid.*, 26. As has been observed, the necessity of identifying the modality with a final of G resulted from the fact that in the two-column scale, both B-natural and B-flat were diatonic, and one had to specify the form of the B found above the final. The existence of
any Air was not in the mode customarily implied by its tone (if one indeed was implied), the mode had to be expressed. Thus, for example, one had to say C minor, D major, and so forth. Saint-Lambert's designations of the modalities of the tones appear to derive from Ozanam's division of the natural modes into two categories: the au naturel, and the natural modes "with chromatics." In the former category, the modality was understood to be that indicated by the diatonic third.

Saint-Lambert discussed the number of the modes:

The division of the octave into twelve parts as we do it, giving us twelve different pitches, each [of] which can be taken as the tonic note of an Air, permits it to be said that we have twelve tones [i.e., finals] in our music. . . . However, because of the twelve pitches which arise from this division of the octave there are nine which can be considered under two different conceptions each, that increases the number of the tones to twenty-one. But they are twenty-one tones in name only, because in reality there are only twelve.

His recognition of nine tones which could have two different names recalls both Ozanam's declaration of the possibility of supposing the nine enharmonic notes and two diatonic forms of B also affected the designation of the modes whose finals were B or B-flat. The author stated that B natural had no modulation at all that was particularly attributed to it but that if it had one, it would be the minor modality. He recognized that customarily, when it was said that an Air was on B, it was understood to be in B-flat major.

80. Ibid., 27. 81. Ibid.
Freillon-Poncein's inclusion of the natural, sharped and flatted representatives of every pitch letter in his examples of the finals.

Montéclair.--In his Nouvelle méthode (1709), Montéclair at the outset reaffirmed Saint-Lambert's distinction between the major and minor modalities but confessed that he had accommodated himself to ordinary usage in the remainder of his treatise. It appears that he accepted in concept the reformatory notions of his predecessor but yet adhered to conservative musical practice, wherein D minor and the modes with flats had the major sixth above the final.

Rameau.--In books 2 through 4 of his Traité de l'harmonie (1722), Rameau (1683-1764) discussed in detail the concepts of mode, tone and modulation. His definition of mode emphasized the preeminence of the harmony, contrary to the opinions of his predecessors:

It is well known that what we call a mode consists of the octave of a single sound within which all the sounds that can be used for melodies and chords are to be found. The Ancients considered only the melody, which was an error, for the melody completely depends on the chords fixed by the mode.

He declared the source of the major mode to be the

82. Montéclair, Nouvelle méthode, preface.
octave of Ut and stressed the necessity of retaining the intervals of the notes above Ut (that is, the octave species) for the sake of the mode's identity. He continued: "The principal notes of this mode were first derived from the perfect chord built on the note Do [sic: Ut]: the third was called the mediant and the fifth the dominant."\textsuperscript{84} This statement appears to demonstrate a lack of historical perspective, for the principal notes of the mode had been discussed long before their combination had come to be viewed as a fundamental entity.

He then compared the minor mode to the major, stating that the former differed from the latter "only in that its third and its sixth should be minor, although there are several problems with regard to the sixth which we shall explain in the following book" (i.e., book 3).\textsuperscript{85} The notion of the correspondence of the third and the sixth, though challenged by Frère, had been affirmed by numerous others and evidently was relatively commonly held.

Rameau affirmed that the modes had certain common properties which derived from the necessity of forming a perfect cadence at the conclusion of pieces:

Now, since all perfect conclusions can occur only on a tonic note preceded by its fifth, i.e., its dominant, and since the perfect chord of this dominant can consist only of its fifth and its

\textsuperscript{84} Ibid. Gossett regularly has translated Ut as Do.

\textsuperscript{85} Ibid., 158.
major third, we see that there is always a tone between this fifth and the tonic note and a semitone between this major third and the tonic note. Thus no mode can exist in which these properties are not found, for if the natural progression of the bass in a perfect cadence is to descend a fifth, this cadence cannot be heard in other parts without one of these parts ascending a semitone and another of them descending a tone. We may only conclude a piece of music by a perfect cadence on the principal note of a mode; otherwise the spirit will not be satisfied.86

In other words, the modes required the whole tone above, and the semitone below, the final as well as the perfect fifth above it (cf. Ozanam’s and Brossard’s specifications).

The author affirmed that each of the modes could be taken "on any of the twenty-four different notes of the chromatic system."87 Perhaps this paradoxical statement is clarified by his declaration in book 4 of the possibility of writing the tones under two different (and nonenharmonic) names:

All keys may similarly be notated with two different names. The note Do may be notated with the name Si♯, while the note Do♯ may be notated with the name Re ♭; all the notes of the octave will thus change their names simultaneously. This relationship is invoked so seldom, however, that we have considered it sufficient to give merely an idea of it, leaving each one individually to obtain this double knowledge of the keyboard, knowledge which is very necessary for those who wish to be able to conquer the greatest difficulties.88

86. Ibid., 160. 87. Ibid., 163.
88. Ibid., 398-9. Gossett evidently believes that Rameau’s citation of the "twenty-four different notes" probably was a reference not to the enharmonic
According to this "double knowledge," forty-eight different modes were available in name.

Rameau's teaching of modulation embraced a number of concepts articulated by earlier theorists and encompassed two distinct views. The first view, which derived from Renaissance theory, concerned the expression of a single modality. Rameau's occasional references to modulating on various tones testify to his acceptance of this view. However, he differed from his predecessors in a number of respects. To begin, while the "ancients" had associated the manner of proceeding with the division of the octaves into their component fifth and fourth and had emphasized the importance of the essential notes through their use as beginning notes and cadences, Rameau related the notion (which he termed "modulation") strictly to the octave species. He wrote:

[The tonic note] has the privilege of determining the order of the diatonic intervals, i.e., of the tones and semitones, which should be found between

spelling of the pitches, but rather to the major and minor keys on the twelve pitches of the octave (Rameau, 163, note 81).

89. See, for example, Gioseffo Zarlino, On the Modes: Part Four of Le istitutioni harmoniche, 1558, translated by Vered Cohen (New Haven: Yale University Press, 1983), 89-91. Pailisca comments that Cohen has translated Zarlino's Modulazione as "melody" or "melodic line" (xxi; cf. p. 53). Zarilino identified a composition's manner of proceeding as its "form" (p. 90), while later French authors often employed the term modulation (see 11-221 – II-223).
consecutive notes from this tonic note to its octave. This is known as the modulation.  

Further, Rameau believed that the source of all modulation was harmony. He therefore defined modulation in harmonic terms:

Only from the perfect chord of the tonic note, the perfect chord of its dominant to which a seventh is added whenever appropriate, and the seventh chord of its second note is true modulation, and consequently all the sequence of good harmony and beautiful melody[.] derived.  

While Brossard and Saint-Lambert had included the harmonic aspect in their definitions of modulation and mode, respectively, they simply had discussed it alongside the melodic aspect and had not stated that it was the ultimate source of the modulation. Thus it appears that Rameau modified the notions of his predecessors to reflect his view that melody arose from harmony.

Rameau’s establishment of a harmonic basis for the modulation (from the tonic, dominant or dominant seventh, and supertonic seventh chords) may have provided a rationale for his inclusion of the minor sixth in the signatures of all the minor modes in the "Supplément." The supertonic seventh chord of the minor mode customarily was found

90. Rameau, 219.  
91. Ibid., 162.  
92. Ozanam’s and Brossard’s specifications for the minor mode, which yielded the "harmonic form," perhaps suggest a harmonic origin, however, at least as far as the raised seventh is concerned.
half-diminished (e.g., in C minor, spelled D-F--A-flat--C), and therefore obtained the minor sixth (viz., C--A-flat) above the final.93

The second view of modulation espoused by Rameau derived from Ozanam’s and Brossard’s definitions and identified it with a change of the tone. This view, which contrasted with Frère’s more restricted (i.e., conservative) use of the term as the melodic procedure within a single mode,94 has survived until the present day. Rameau discussed the notion in the third book, chapter 23, "On how to pass from one key to another, i.e., on how to Modulate."95

Borin.--The anonymous author (probably Borin) of La musique theorique et pratique, dans son ordre naturel (Paris, 1722) observed that “the diversity of the progress”

93. In his harmonizations of the octaves of the minor tones in book four of the Traité, pp. 383-7, Rameau designated, by figures, the supertonic half-diminished seventh chord on the fourth degrees ascending and also in the concluding cadence formulae. His acceptance of the minor sixth in the minor mode thus appears to have been corroborated by his practice. N.B. His minor octaves had their sixths and sevenths major while ascending and minor while descending; that is, both the major and the minor sixth were found in his examples.

94. Frère, 4f.

of the seven notes of the (modal) octave produced the
difference between the major and the minor modes (cf.
Saint-Lambert). He assimilated Brossard’s doctrine (and
Ozanam’s) concerning the relative positions of the notes of
the major and minor modes and reorganized and modified the
data. He subsequently described the progress of the major
and minor modes in terms of series of thirds: he
constructed thirds on the final, mediant and dominant
pitches (the essential notes) and concluded with the whole
tone or semitone leading up to the final.

He illustrated the progress of the major mode by the
natural mode on C (Ut) and that of the minor mode by the
natural mode on A (La). He elsewhere declared: “The model
of the major mode is the tone of Ut [i.e., C major], which
consequently requires neither sharps nor flats at the
beginning by its clef.” He later added: “The model of
the minor mode is La [i.e., A minor]. Therefore, it
requires neither sharp nor flat. Some persons consider the
tone of D [minor] also as [a] model.” In declaring the
model of the minor mode to be A minor, he echoed Rameau’s
affirmation from the "Supplément" of the Traité.

96. Borin, 4.
97. Ibid., 4-5. His concepts and practice are further
discussed in chapter 3.
98. Ibid., 10. 99. Ibid., 11.
Borin’s recognition that some people also accepted D minor as a model testifies both to his awareness of the customary practice, where the modes with flats followed D minor with its natural, Dorian signature, and to the survival of a pedagogy oriented to that practice, wherein the minor modes uniformly were solmizated from finals of Re.

Borin observed, like Saint-Lambert and Montéclair, that the third, sixth and seventh degrees of the minor mode were minor. He recognized, however, that ordinarily the sixth and seventh degrees were made major in the ascent from the dominant to the final, and that "the modulation" more often required the minor sixth and the major seventh than their alternatives.  

Thus, while his designated order or progress of the minor mode conformed to Saint-Lambert’s prescriptions and to the modern "natural" form of the scale, the sixth and seventh degrees that he regarded to be more frequently needed, which corresponded to the required positions of those notes according to Ozanam and Brossard, yielded a different pattern, namely, the "harmonic" form.

Borin’s discussion of the progress of the major and minor modes recalls L’Affillard’s examples (1705) illustrating the "Progress of the seven octaves of music," in which the author presented either the major or the minor

---

mode on each of the natural finals with the natural third (example 40). L’Affillard’s “progress” of the minor mode was noticeably different from Borin’s, however, since the former author illustrated the ascending “melodic” form of the scale.

Campion. — In the Addition au traité d’accompagnement et de composition (1730), Campion eradicated the distinction between tone and mode which had been carefully made by Saint-Lambert and others, declaring: “Tone, mode, modulation, octave or tonic note are synonymous and signify the same thing.” Campion’s statement, which represents the reaffirmation of a viewpoint previously expressed or implied by such authors as L’Affillard, may have come about through a need to make his terminology inclusive: to admit that tone and mode were the same thing would permit one to employ one term for both concepts simultaneously. Perhaps the author reasoned that since ton and mode were inseparable in the designations of the “keys” (e.g., Ut major or C Sol Ut major, etc.), as Saint-Lambert had observed, the terms therefore could be employed interchangeably in reference to those designations.

102. L’Affillard (1705), 16-17.
103. Campion, Addition, 54.
104. L’Affillard evidently regarded ton and mode to be synonymous. See example 2.
The scale, or gamme, as it was called, was in late-Baroque France the vehicle by which singers solmizated their music, even as the system of the hexachords had been previously. Those entities differed in at least two ways: first, the hexachords placed Ut on C, F and G (and later on B-flat, D, etc.), while the gamme limited the occurrence of Ut to C and F (later, to C alone). Secondly, the gamme added the seventh syllable Si to the six vocables (see below).

A discussion of the gamme is integral to a comprehensive study of the natural and transposed modes or tones because it was regarded by some to be the repository of the natural ones. If the scale circumscribed the natural modes, it necessarily determined the limits of the transposed ones. Now, insofar as the definition of the natural and transposed modes was dependent upon the scale, any change in the composition of the scale would require a revision of the definitions. With the change from the two-column scale to the single-column one in the late seventeenth and early eighteenth centuries, popular notions of what was natural and what was transposed accordingly underwent revision.

The two-column "Scale of Si" or gamme double ("double" or "two-fold scale") evidently appeared around the middle of the seventeenth century and survived into the first part of
the eighteenth. It eventually was supplanted by the single-column gamme simple ("single" or "simple scale"), which first came into use toward the end of the seventeenth century. While it might be interesting to observe the transition from the two-column scale to the single-column one, extensive documentation of that phenomenon is beyond the scope of this paper. A few relevant statements will be cited, however, in an attempt to clarify the conflict which took place. In Chapter 4, I have discussed certain changes in two editions of L’Affallard’s treatise (1697, 1705) which illustrate a changing attitude toward the scale during the time that musicians were beginning to abandon the older scale and to adopt the newer one.

Rousseau—In the Méthode, Rousseau presented a system of tones which he related to the two-column scale. The scale actually consisted of two scales in one: it comprised two columns, each containing a diatonic progression of seven notes. To the six notes of the hexachord was added a seventh, Si. The first column placed

105. An enlightening discussion of the scale or method of Si and its historical antecedents is found in Green’s dissertation (see in particular pp. 57-64 and 91-94). Cf. Loulié, Elements or Principles, 43.

106. See Loulié, Elements or Principles, 17-18, 43-44 and Cohen’s tenth footnote.

107. Rousseau, Méthode, 8-34.
Ut on F and contained B-flat; the second placed Ut on C and contained neither flat nor sharp (see figure 5). Rousseau observed that the seven notes of the first column were sung

<table>
<thead>
<tr>
<th>E</th>
<th>Si</th>
<th>Mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>La</td>
<td>Re</td>
</tr>
<tr>
<td>C</td>
<td>Sol</td>
<td>Ut</td>
</tr>
<tr>
<td>B</td>
<td>Fa</td>
<td>Si</td>
</tr>
<tr>
<td>A</td>
<td>Mi</td>
<td>La</td>
</tr>
<tr>
<td>G</td>
<td>Re</td>
<td>Sol</td>
</tr>
<tr>
<td>F</td>
<td>Ut</td>
<td>Fa</td>
</tr>
</tbody>
</table>

letters B-flat B-natural
[b mol] [b quarre]

Figure 5. The *gamme*, according to Jean Rousseau (*Méthode*, 9).

with B-flat and those of the second with B-natural. The first and second columns accordingly were termed *b mol* (B-flat) and *b quarre* (B-natural).

The presence of B-flat alone after the clef indicated that one was to sing the notes via the first column. One simply called B-flat Fa and proceeded from there to name the

other notes. When there was no flat or sharp after the clef, one sang via the second column with B-natural, deriving the names of the notes or syllables from the given clef. Thus, a single B-flat in the signature served to indicate the position of Fa in the same way as the G-clef. The C-clef or the F-clef respectively served to show the location of Sol, Ut or Fa when the clef was without any sharps or flats (i.e., with B-natural). The B-flat thus had a function which was analogous to that of a clef. At least one writer (Loulie) referred to the flat as a "clef of Fa." 109

In other words, Rousseau embraced a method of solmization in which the note names of Ut, Re, Mi, and so forth had fixed correspondences to single letter names within each column of the scale. For example, if one adopted the first column by means of a signature of one flat, Ut always was sung on F, Re on G, and so on. If one adopted the second column through the use of a completely natural signature (or if one merely followed the given clef), one sang Ut on C, Re on D, and so forth: this was

109. Ibid., 8-11.

110. Loulié, Elements or Principles, 23. The identification of the flat with Fa, which derived from earlier hexachordal solmization, was recalled as a primary element in Loulié's method of "reducing to a natural clef."
the case regardless of the actual tone at which the music was sung.

As the pitches of the gamme had reference to two different columns of notes, they thus obtained double-syllable designations (e.g., C Sol Ut, D La Re; cf. the two- and three-syllable names of pitches in the system of the hexachords, from which the gamme derived). These hypothetically permitted the practice of mutation from one column to the other. However, with the use of seven note names (i.e., a different one for each degree of the scale), one could (and did) proceed without mutation through an entire octave of notes. Such mutationless solmization, evidently the rule with the two-column scale, would have been impossible with the system of the hexachords, which had employed as vocables only the six notes Ut, Re, Mi, Fa, Sol and La (see figure 4).

While a scale with two columns might seem to represent an unnecessary complexity to today's musicians, it was widely used by students of the late seventeenth century and beyond as a path for learning to solmize music. Rousseau observed: “There are two voices [or sounds: literally, voix], namely, B-flat and B-natural. Everything that is sung is by either of the two.”

L’Affilllard.—Like Rousseau, L’Affilllard adopted the two-column scale, which he called the **gamme double** (see figure 6). However, unlike his predecessor, he may have revised his concept of the scale. He appears to have become

**GAMME DOUBLE**

*FAIT AINSI TOUT EXPRES*

Pour y poser chacune des trois Clés dans sa place véritable.

<table>
<thead>
<tr>
<th>E</th>
<th>mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>la</td>
</tr>
<tr>
<td>C</td>
<td>sol</td>
</tr>
<tr>
<td>B</td>
<td>fa</td>
</tr>
<tr>
<td>A</td>
<td>mi</td>
</tr>
<tr>
<td>G</td>
<td>ré</td>
</tr>
<tr>
<td>F</td>
<td>ut</td>
</tr>
<tr>
<td>E</td>
<td>mi</td>
</tr>
<tr>
<td>D</td>
<td>la</td>
</tr>
<tr>
<td>C</td>
<td>sol</td>
</tr>
<tr>
<td>B</td>
<td>fa</td>
</tr>
<tr>
<td>A</td>
<td>mi</td>
</tr>
<tr>
<td>G</td>
<td>ré</td>
</tr>
<tr>
<td>F</td>
<td>ut</td>
</tr>
</tbody>
</table>

**Figure 6. The *gamme double* (L’Affilllard (1694), 2).**
Influenced by those who regarded the column of B-flat to be transposed, for in the second edition (1697), he began to include the signature of one flat among his examples of the "transpositions." His practice with regard to that signature is discussed in depth in Chapter 4.

Loüié.—Loüié's notions relative to transposition cannot properly be understood without a prior understanding of his scale. He himself evidently became convinced of this circumstance, for he placed the scale at the beginning of the section on transposition in his manuscript revisions of part 2 of the Œléments.113 His gamme simple (figure 7) was "single" in that it contained only one column with B-natural, rather than the two columns of the gamme par Si (i.e., the gamme double).114 The scale consequently had single-syllable designations for the notes: C Ut, D Re, E Mi, F Fa, G Sol, A La, and B Si.

His presentation of the single scale in the Œléments evidently was the first exposition of the scale in print. However, that scale had been known for some time prior to

112. L'Affillard (1697), 125-33.
113. Loüié, Elements or Principles, 17, Cohen's first footnote.
114. Loüié employed the expression gamme par Si in the Œléments ou principes, 49.
Loulé's demonstration of it. His one-time teacher René Ouvrard (1624 - 1694) had previously illustrated, in a manuscript treatise, a version that began on F.115

\[ \begin{array}{c|c}
A & \text{La} \\
G & \text{Sol} \\
F & \text{Fa} \\
E & \text{Mi} \\
D & \text{Re} \\
C & \text{Ut} \\
B & \text{Si} \\
A & \text{La} \\
\end{array} \]

Copyright 1971 by Minkoff Reprint. Used by permission.

Figure 7. Loulié's gamme simple (Éléments ou principes, 21).

In 1691, Rousseau had strongly objected to the use of the single-column scale. His remarks indicate that the scale was highly controversial during its infancy. He stated:

I do not believe that it is irrelevant to say here that it is without [any] basis that some persons want to reduce those two routes [i.e., the columns of the scale] to only one. I confess that the

115. See Loulié, Elements or Principles, 18, Cohen's sixth footnote.
single route is shorter for the naming of the notes, but it is certain that the intonation, which is more important than the naming, is so confused and so difficult to practice in it that the time one claims to cut down in the naming is prolonged four times more in the intonation of the notes, particularly in the transposed tones. It is impossible for a person to learn to sing perfectly by that method. One must leave it to those who play instruments only, because they are not occupied with the intonation, which always is exact on the instrument when one plays accurately. Now in order to play accurately, it suffices to know the names of the notes.116

Rousseau's objection to the single-column scale was a practical one. Singers had much difficulty with the intonation of the notes in the transposed modes. It appears that he was not cognizant of a method for naturalizing the transposed modes which was compatible with the single-column scale.117

Loulié evidently recognized the novelty of his public endorsement of the single scale and anticipated the opposition which that endorsement would generate among conservative musicians. Consequently, he did not eliminate the column of B-flat from the scale without defending his actions. He wrote:

I have omitted from this scale, commonly called Scale of Si, the first column of tones using B-flat, because there is no longer reason to

116. Rousseau, Méthode, 75.

117. For a discussion of a possible explanation for Rousseau's rejection of the single-column scale, see pp. 83-4 of this paper.
indicate therein the tones of either B-flat or sharp or natural, the first of these not being more natural than the last. Moreover, they are useless and confusing; and besides, the explanation of these columns is the stumbling block of the best methods. 118

He believed the single scale to be easier, shorter and less cumbersome than the scale of Si, and he therefore was confident that it eventually would be preferred to the other scales. 119 While Loulié's prediction ultimately proved true, the two-column scale continued to be found in the practice in the early eighteenth century (cf. Freillon-Poncein, Dupont). 120

Frère.--At the beginning of his treatise, Frère demonstrated the two columns of the scale and employed the two-syllable designations of the pitches which derived from them (C Sol Ut, D La Re, etc.). 121 However, for all practical purposes, he soon eliminated the first column of the scale, referring to pitches simply by their associated

118. Loulié, Elements or Principles, 18.
119. Ibid., 44; see also Éléments ou principes, 48.
120. Freillon-Poncein, 48; Henri-Bonaventure Dupont, Principes de musique par demande et par reponce, 2d ed. (Paris, 1718), 25. Dupont's presentation of the scale twenty-two years after Loulié's exposition of the gamme simple illustrates the persistence of conservative thought and pedagogy. Cohen also testifies to the longevity of the scale of Si in Loulié's Elements or Principles, 43, footnote 10.
121. Frère, 1-2.
vocabulary from the column with B-natural (i.e., saying Ut for C, Re for D, etc.; cf. Montéclair).\textsuperscript{122} He continued to employ the dual-syllable names in his references to the clefs and he also cited them as alternative designations for final pitches, probably because of their familiarity in the practice.\textsuperscript{123} Although he did not employ the term \textit{gamme simple}, he declared that the notes of the last column were those which concluded musical works.\textsuperscript{124} His two "most natural" modulations, Ut (C major) and Re (D minor), suggest the preeminence of the column with B-natural.\textsuperscript{125}

The Natural and Transposed Tones or Modes and Transposition

\textbf{Concepts, Definitions, and Examples}

Individual writers often cited distinctive notions relative to the identity or definition of the natural and transposed tones and the meaning of \textit{transposer}. Indeed, the degree of nonuniformity is intriguing. The application of the terms "natural" and "transposed" by selected authors of the period is summarized in table 1 below.

\begin{itemize}
\item \textsuperscript{122} \textit{Ibid.}, 15f. See also Montéclair, 2f.
\item \textsuperscript{123} See, for example, Frère, 19, 41-44.
\item \textsuperscript{124} \textit{Ibid.}, 4.
\item \textsuperscript{125} \textit{Ibid.}, 12-13.
\end{itemize}
Table 1. Use of the terms "natural" and "transposed" by selected authors.

<table>
<thead>
<tr>
<th>Author</th>
<th>Natural modes</th>
<th>Transposed modes</th>
<th>Other distinctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rousseau (Méthode)</td>
<td>C, d, F, g, a</td>
<td>Bb, c, f; G, D, e, A, b (no minor ton with one sharp)</td>
<td></td>
</tr>
<tr>
<td>Ozanam</td>
<td>major and minor modes</td>
<td>all modes on the non-diatonic, &quot;chromatic&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>on diatonic finals (C#, E♭, F♯, G#), as well as on the natural pitches and B♭</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delair</td>
<td>natural thirds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L'Affiliard</td>
<td>see table 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loulié</td>
<td>natural music has no sharps or flats in the signature (C, d)</td>
<td>transposed music has one or more sharps in the signature</td>
<td></td>
</tr>
<tr>
<td>Freillon-Poncein</td>
<td></td>
<td></td>
<td>7 natural finals; 14 sharped and flatted ones</td>
</tr>
<tr>
<td>Brossard</td>
<td>C, (d)</td>
<td>in narrowest sense, all modes other than C major</td>
<td></td>
</tr>
<tr>
<td>Saint-Lambert (1702)</td>
<td>D, A, B♭, etc.</td>
<td>&quot;those whose accords do not have the usual intonation&quot;</td>
<td></td>
</tr>
<tr>
<td>Frère</td>
<td>C, d</td>
<td>all others</td>
<td>natural and accidental 3rds</td>
</tr>
<tr>
<td>Gasparini</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.B. Large case letters designate major modes or tones; small case letters indicate minor ones.
Rousseau—Rousseau addressed the topics of the
natural and transposed tones both in the Méthode proper and
in his responses to a series of questions which first
appeared at the end of the Paris edition of 1691 and which
were entitled "Clarification of some difficulties."  
He initially approached the topic by observing the effects of
transposition on the intonation of individual pitches. In
his preface, he referred to the "different transpositions
which, changing [around] the degree of intonation assigned
to the name of each note, cause difficulty to some people
. . . ."  At the beginning of his discussion of his "Rules
for naturalizing the transposed tones," he also observed
the changes in the positions of the whole tones and
semitones as a result of transposition. He stated:

There often are encountered tones transposed by
[the] flat and [the] sharp [literally, par b
ouvrée], which cause some change in the degree of
the intonation. This causes difficulty for some
people because whole tones are encountered where
there used to be semitones and semitones where
there used to be whole tones.  

In short, individual pitches were altered by means of
accidentals from their natural state or degree of
intonation, and consequently the half steps and whole steps
exchanged places: that is, they occupied different

126. See Rousseau, Méthode, 66-86.
127. Ibid., preface, i, ii.
128. Ibid., 22. 129. Ibid., 22-23.
positions from those they had had in the natural tones (half steps from Mi to Fa and Si to Ut; see example 4). These circumstances were a potential source of difficulty for the singer who solmizated with Ut attached to C.

The effect of transposition on the order of the intonation of pitches will be illustrated by means of the following example. Suppose that one is given the pitch of C Sol Ut. The natural name of the note, according to the column of B-natural, is Ut and its order or degree of intonation is C. If one were to employ the transposed mode of D major, the order of intonation of Ut would be changed to C-sharp. Additionally, the interval from Si to Ut, naturally found as the semitone B - C, would become the whole tone B - C-sharp, and the interval from Ut to Re, naturally the whole tone C - D, would become the semitone C-sharp - D (example 3).

Example 3. Intonation in the unnaturalized, transposed tone.

Rousseau delineated the transposed tones, stating at the outset: "In the first place, one must understand that there are some tones transposed by [the] flat and others by [the] sharp [lit., natural]." He listed the ones with
flats (C minor, B-flat major and F minor) and those with sharps (G major, D major, A major, E minor and B minor). He testified that the cited modes were the ones which were in use in France.131

This author's rendering of Rousseau's expressions *Tons transposez par b mol* and *par b guerre* requires explanation. *B mol* literally is the flat sign: the term is used generally to refer to any flat. *B guerre* similarly translates literally as the natural sign (♮). Further, the natural sign was used interchangeably with the sharp sign in late seventeenth-century France (cf. Rousseau, Freillon-Poncein).132 Accordingly, this author has chosen to translate the term *b guerre* somewhat imprecisely as sharp in this instance. Since the functions of the two were nearly identical during this time, it appears that the rendering at least is not inadmissible.

The argument for this author's renderings of the given expressions ultimately rests upon history. Zarlino observed that there were transpositions that were done "with the help of notes marked by a flat" and "by a sharp." He continued: "The moderns . . . call these transpositions 'modes transposed by false music' . . ."133 Rousseau's own

expressions appear to be descendents of those cited by the Italian.

The chosen renderings seem logical and perhaps even necessary in view of the function of the sharp and the flat as the agents of transposition. However, one might argue for an additional meaning of *Tons transposez par b mol* and *par b guerre*: the constituents are transposed tones with flats and sharps, respectively (see below), and one could understand the expressions to identify those categories.

Rousseau defined the natural and the transposed tones in his response to the tenth question. He wrote:

> The natural tones with B-flat are those in which a flat is marked after the clef on the degree on which Si would be said with [the column of] B-natural and on which Fa is said because of the flat. The natural tones with B-natural are those in which neither flat nor sharp is marked after the clef. All the other tones which have more than one different flat after the clef, that is, [flats] which are not at the octave, are tones transposed by [the] flat and those which have one or more sharps after the clef are tones transposed by [the] sharp [literally, "by B-natural"].

That is, for Rousseau, the natural tones were the major and minor ones with one flat or with no sharps or flats in their signatures—, i.e., those occurring in the columns of B-flat.

---

or B-natural of the two-column scale (see examples 4a-d).

Example 4. Rousseau’s *tons naturels*.

Natural tones with B-flat

\[
\begin{align*}
\text{ut re mi fa sol la si ut} & \quad \text{re mi fa sol la si ut re} \\
\text{semitone} & \quad \text{semitone} & \quad \text{semitone} & \quad \text{semitone}
\end{align*}
\]

Natural tones with B-natural

\[
\begin{align*}
\text{ut re mi fa sol la si ut} & \quad \text{re mi fa sol la si ut re} \\
\text{semitone} & \quad \text{semitone} & \quad \text{semitone} & \quad \text{semitone}
\end{align*}
\]

The natural tones therefore were F major and G minor from the first column with B-flat and C major and D minor from the second with B-natural. The transposed tones with flats and sharps appear to derive logically from the columns of B-flat and B-natural, respectively.\(^{135}\)

The supposed indispensability of the two columns of the scale to Rousseau’s system of natural and transposed tones may explain the author’s rejection of the *game simple*. If the transposed tones with flats were derived from the

\[135\] It should be observed that Rousseau’s definition of the natural tones differed from that of his predecessors Guillet and La Voye Mignot who, according to Herbert Schneider, reduced the twelve modes to six “Modes naturels” independently of one another (Schneider, 263). See notes 208-11 of this chapter.
natural tones of the column of B-flat by transposition and
the transposed tones with sharps from the column of
B-natural by the same means, then the elimination of either
column would both upset the symmetry of the system and more
importantly would remove the source either of the transposed
tones with flats or of those with sharps. That is, if the
natural tones of one column were deleted, then the
transposed tones derived from them no longer presumably
could be rationalized: Rousseau further may have believed
that those transposed tones therefore could not have been
naturalized. If such indeed were the case, then one would
be constrained to sing those transposed tones under the
natural names of the notes, even though the degree of the
intonation of the notes had been changed through
transposition. That is, one would be obliged to employ a
fixed Ut. For example, if the column of B-flat were
eliminated, in the transposed tone of E-flat major, the
interval E-flat - F might yet have to be sung as Mi-Fa, even
though the interval had been augmented to a whole tone by
means of the E-flat.

Rousseau's system of natural and transposed tones was
not completely consistent. While the tones with flats
indeed may be said to have originated from the column of
B-flat and those with sharps from that of B-natural, the
transposed tones did not have to reduce to their
hypothetical sources when they were naturalized; transposed
tones with sharps and flats both could be naturalized to tones with B-flat or B-natural. In his examples ("demonstrations"), Rousseau included both options for every tone (see examples 5a and 5b). It appears that the primary

Example 5. Selections from Rousseau's "Demonstrations of the Tons transposez par b quarre and par b mol" (Méthode, 33, 24).

a) in A major ("en A mi la Tierce majeure")

```
fa
mi b
trans-natural Ut Mi Ut Sol Mi Fa Re Mi Ut La Re Si Mi Re Ut
posed tones
```

b) in C minor ("en C sol ut Tierce mineure")

```
fa
b
trans-natural Re Fa Re La Sol Fa Ut Si La Re Ut Si Ut Re Mi La Re Ut# Re
posed tones
```

advantage of the option of reducing to natural tones either with B-flat or with a natural signature was that the number of possible clef substitutions was increased in comparison to the number that would have been available if one were allowed to naturalize to only one kind of natural tone.136

In the Méthode, Rousseau discussed concepts relating to a method of transposition whereby singers transposed pieces

136. Green has pointed out this advantage (p. 77). N.B.
The singer essentially was employing a fixed Ut; the substituted clefs were appropriated in order to sing more easily via the gamme (see chapter 3).
back into a natural tone. However, his understanding of transposition encompassed additional notions: in the chapter entitled "Concerning transposition" from the *Traité de la Viole* (1687), he defined transposition as follows:

The term *transposition* is an equivocal term which is proper to the composition of pieces of music and also to their performance, but the application of the term is different in each case. To transpose in composition is to change the degree of the intonation assigned to the natural name of each note, and to make major what naturally is minor, and also to make minor what naturally is major. To transpose in performance is to play a [whole] tone, a third, a fourth, or a fifth higher or lower than what is indicated on paper through the substitution of clefs, while causing the correct degree of intonation to be encountered in relation to that which one would observe if one was not transposing, so that often the degree of intonation assigned to the name of each note is changed around, and also sometimes it is restored to its natural [degree]. When one transposes a natural tone, it often passes into the transposed tones of composition, and when one transposes a transposed tone of composition, it often returns to the natural degree of intonation and sometimes to its natural tone.\(^{137}\)

Rousseau thus applied the term *transposition* to the practices of both composers and performers. Each of those circumstances will be considered in the discussion which follows.

In his definition of transposition in composition, Rousseau recalled statements he previously had made in his *Méthode* concerning the change in the degree of intonation of pitches. He again seemed to be describing the composer's

practice of chromatically altering natural notes. He also recognized that transposition involved the making of intervals which naturally were major into minor ones, and vice versa. His statement to that effect may have had reference to the alteration of natural minor thirds into major ones, and vice versa, through the use of the sharp or the flat. For example, with the use of F-sharp, the minor third D-F, which occurred as the interval Re-Fa in the column of B-natural, was made into the major third D-F-sharp. Likewise, with the use of E-flat, the major third C-E, which was found as the interval Ut-Mi in the gamme, was made into the minor third C-E-flat (example 6).

Example 6.

Rousseau remarked that when transposing in performance, one caused the exact or proper (lit., juste) degree of the intonation to be encountered in conformity to that which
would be observed in the non-transposed piece. This evidently meant that the semitones would be found in the same relative positions in the octaves of both tones (see examples 3, 4a and 4c).

In the ensuing remarks, Rousseau again described the effects of transposition on the order or degree of the intonation of pitches. He stated that the degree of intonation assigned to the name of each note often was changed around (renversé: i.e., the note was altered), and sometimes it was restored to its natural order or degree. Perhaps the meaning of his statement can be illustrated by the following example. If one transposes a piece from D major to B-flat major, the degrees of intonation of the pitches E and B will be "changed around" or transposed from their natural states to chromatic states. On the other hand, F-sharp and C-sharp will be restored to the natural degrees. The order of intonation of the remaining pitches will be unchanged (see table 2 below).

The last of Rousseau's statements cited above seems puzzling. The difficulty lies in understanding what is meant by the notion that a transposed tone often returned to the natural order of intonation. Perhaps the difficulty can be removed through the following explanation. The term ton, according to Rousseau, could be understood to extend to the octave of notes above the final of the mode. In the context under consideration, however, it appears that the
Table 2. Effects of transposition from D major to B-flat major on the order or degree of intonation of the individual notes.

<table>
<thead>
<tr>
<th>Individual notes of the original mode</th>
<th>Effect of transposition on individual notes</th>
<th>Individual notes of the mode to which one has transposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-sharp</td>
<td>restored to natural degree</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>changed around (<em>renversé</em>)</td>
<td>G</td>
</tr>
<tr>
<td>A</td>
<td>no change (natural degree)</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>no change (natural degree)</td>
<td>E-flat</td>
</tr>
<tr>
<td>F-sharp</td>
<td>restored to natural order</td>
<td>D</td>
</tr>
<tr>
<td>E</td>
<td>changed around (<em>renversé</em>)</td>
<td>C</td>
</tr>
<tr>
<td>D (final)</td>
<td>no change (natural degree)</td>
<td></td>
</tr>
</tbody>
</table>

more limited meaning of ton as final pitch is implied.

Thus, Rousseau’s statement may be paraphrased as follows:

> When a transposed tone of composition is [itself] transposed, the tone [or final pitch] often returns to the natural degree of intonation [i.e., to a natural pitch, with neither sharp nor flat], and it sometimes returns to its natural tone [or mode].

In order for a tone to return to the natural order or degree of intonation, it first of all must have been sharped or flatted.

The following hypothetical example will illustrate this interpretation of Rousseau’s statement: Suppose one is given a piece in the tone or mode of E-flat major; if one

transposes it to E major, the final pitch thereby will return to the natural degree of intonation (i.e., to the natural state). If the piece is transposed instead from E-flat major to C major or F major, it also will return to the natural mode.

De lair.--Delair initially defined the term transposed as follows:

Those pieces are called transposed, in general musical terminology, which by means of sharps or flats are higher or lower than they naturally are obliged to be, and therefore the natural order of the notes with regard to the whole tones and semitones is transposed.\textsuperscript{139}

The statement above expresses a number of ideas. Delair recognized that transposition, as a concept pertaining to musical composition, was accomplished "by means of sharps or flats." That is, sharps and flats were the agents of transposition. Secondly, transposed pieces were either higher or lower than they naturally were obliged to be. His statement appears to refer to the differences in final pitch and ambitus of transposed pieces and natural ones. (Rousseau seems to have made a similar observation in his response to the ninth question.)\textsuperscript{140}

Delair observed that in transposed music, the natural order of the notes in relation to the whole tones and

\textsuperscript{139} Delair, 10. \textsuperscript{140} See the \textit{Méthode}, 78.
semitones was changed (renverse). It is interesting that both Rousseau and Delair used the term renverse in order to describe the effects of transposition on pitches. Delair on another occasion discussed the way in which the natural order or degree of the notes was changed and the effects of that change on the disposition of the tones and semitones. His comments both recall and amplify Rousseau's statements.  

In the section entitled "Concerning transpositions," Delair advanced a second definition of a transposed piece. He wrote:

That piece is called transposed, in terms of composition and accompaniment, whose final does not have the third which naturally is proper to it during the course of the piece. [Rather], its third is without its naturalness by some sharp or flat that augments or diminishes it by a semitone more or less than it has naturally. Thus, there is not any transposed piece without some sharp or flat, although there may be some flat or sharp at the beginning by the clef in the natural tones, as we eventually shall see.

The passage above will be summarized briefly. Delair identified a transposed piece as one whose third was either sharped or flatted. Transposed pieces therefore necessarily had some sharp or flat in their signatures. However, in certain cases, natural modes also might have a sharp or flat after the clef. This last comment may have been intended to

141. Delair, 3. 142. Ibid., 52f.
143. Ibid., 52-53.
caution students to avoid identifying a piece as transposed simply because it had sharps or flats in the signature. At any rate, Delair differed from those for whom transposition was indicated by the presence of one or more sharps after the clef (cf. Rousseau): for him, the signature with sharps or flats was not in itself sufficient cause to identify a piece as transposed. His position anticipated views demonstrated by Ozanam and expressed by Saint-Lambert (1702).

While Delair defined the term "transposed piece" in detail, he did not precisely define "natural tone" or mode. He associated the term "natural" with those tones whose thirds were natural (i.e., neither sharped nor flatted; see table 3 and example 98). In short, the term had reference

Table 3. Designations of tones employing the term *naturel* (Delair, 55-7).

<table>
<thead>
<tr>
<th>Name assigned by Delair</th>
<th>Modern designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Sol Ut naturel ou bquare</td>
<td>C major</td>
</tr>
<tr>
<td>D La Re naturel ou bemol</td>
<td>D minor</td>
</tr>
<tr>
<td>E Si Mi naturel, ou bemol</td>
<td>E minor</td>
</tr>
<tr>
<td>F Ut Fa naturel ou bquare</td>
<td>F major</td>
</tr>
<tr>
<td>G Re Sol naturel ou bsquare</td>
<td>G major</td>
</tr>
<tr>
<td>A Mi La naturel ou bemol</td>
<td>A minor</td>
</tr>
<tr>
<td>B Fa Si bemol naturel</td>
<td>B-flat major</td>
</tr>
<tr>
<td>B Fa Si bquare naturel</td>
<td>B minor</td>
</tr>
</tbody>
</table>
strictly to the third above the final. His meaning thus was
more particular than that of Rousseau, with whom natural
indicated the condition of the entire modal octave.

Delair described the relationship of the transposed
tones to the natural prototypes: he observed that sharps or
flats encountered in the signatures often served "to
reestablish the natural order of the notes in relation to Ut
in the transposed pieces in major [lit., en b, quarre] and in
relation to Re in transposed pieces in minor [en bemol].
All the transposed modes are related to those two."144

According to Delair, the sharps and flats evidently
could serve to bring the octave species of the transposed
tone into conformity with that of C major or D minor. He
appears to have been among the earliest French authors to
relate explicitly all of the transposed modes to the octaves
of Ut and Re within the seven-note system of mutationless
solmization. He may have been a primary source for
statements of Charpentier (c. 1692), L'Affillard (1694) and
Loulié (1696).

Delair's observation regarding the relationship of the
transposed modes to Ut or Re likely derives in part from
statements of earlier theorists (cf. those of Mersenne and
Millet cited above). It also appears that the musical
practice was ripe for such expressions, for Rousseau

144. Ibid., 53.
employed only two octave species for all of the transposed major and minor tones in his "Demonstrations" of the Méthode: the two patterns corresponded to 1) the major tones of F and C (whose finals were sung as Ut) and 2) the minor tones of G and D (whose finals were Re), of the columns of B-flat and B-natural. The correspondence of the octave species was necessary in order for Rousseau to be able to naturalize the transposed tones. He did not identify directly the finals of the naturalized tones as Ut or Re.

Ozanam.—Ozanam divided the twenty-four modes into categories of natural and transposed according to the condition of their finals. Those with diatonic finals according to the two-column scale were termed natural, while those with chromatic finals were declared to be transposed. The natural modes with diatonic mediants were called au naturel and generally were expressed by the name of the final pitch alone. The natural modes with chromatic mediants had the expression par b quarte or par b mol appended to the name of the final in order to indicate that the mode was "by major third" or "by minor third." Ozanam's statements provided a source for Saint-Lambert's notions concerning implied and expressed modalities.

Ozanam listed all the modes, which he distributed in

145. Ozanam, 659.
three classes:

The natural modes in nature
C [major]
D [minor]
E [minor]
F [major]
G with B-flat [i.e., G minor]
G with B-natural [G major]
A [minor]
B-flat [major]
B [minor]
Because the two notes B-flat and B-natural both are considered diatonic, one must express which of the two it is.

The natural modes with chromatics
[i.e., with sharped or flatted thirds]
C minor [literally, C sol, ut, par b mol]
D major [lit., D la, [re] par b quarre]
E major
F minor
A major
B-flat minor
B major

The transposed modes
C-sharp major
C-sharp minor
E-flat major
E-flat minor
F-sharp major
F-sharp minor
G-sharp major
G-sharp minor

A few comments will be made relative to Ozanam's division and designation of the modes. While he accepted the two-column scale, which he called "the new scale," he did not limit the natural modes to those whose constituent

146. Ibid., 660. His presentation of G-sharp rather than A-flat major resulted from the fact that he limited his selection of finals to those found on the conventional keyboard. See table 14 and figures 2 and 8.

147. Ibid., 647.
pitches were contained within that scale, as Rousseau had
done. He regarded as natural not only those modes with
signatures of B-flat and the natural signature but also some
with more complex signatures (cf. Delair and Saint-Lambert).
By taking both the major third and the minor third above
each diatonic final, he obtained sixteen natural modes, or
twice as many as Delair had presented (see table 3).

Ozanam's terminology for the natural modes represented
a simplification of Delair's. While Delair regularly had
used the term bémal whenever the mode had the minor third
and square whenever it had the major third (with the
exception of the modes of B-flat major and B minor, whose
thirds he had identified simply as naturel), Ozanam employed
the terms par bémal and par square (sic) merely in
reference to the thirds of the natural modes with altered
mediants and the transposed modes.

Ozanam explained why the modes were called transposed
and described their use.

The transposed modes are so-called because they
are hardly ever used, except by necessity when one
is obliged to transpose a piece to them which will
have been composed in a natural mode, in order to
be adapted to a voice or to some other instrument.
For example, when one instrument is [tuned] lower
than another by a semitone, if the one will play
in C [major], the other will be able to perform it
[sic] at the same time in C-sharp major.148

148. Ibid., 660. Ozanam's example perhaps depicts a
practice observed among eighteenth-century musicians,
viz., the combination of low-pitched woodwinds with
high-pitched church organs.
The statements above anticipate Freillon-Poncein's concepts and method. Ozanam's remark concerning the infrequency of use of the transposed modes perhaps can be understood in light of the fact that he defined them to be modes with chromatic finals (cf. figure 2); their scarcity of usage then may reflect the preference by musicians of his day for diatonic finals and their frequently simpler signatures.

He observed that the number of the transposed modes would be augmented if one included the "enharmonic" notes (cf. figure 3) as finals:

If we wish to suppose the nine enharmonic notes, we will have eighteen transposed modes besides. But although we do not put those notes into use, that does not prevent their names from being able to be given to the modes which correspond to them, and [that does not prevent] us, for example, from calling "D-sharp major" the one that we have just indicated by the name of "E-flat major," and so for the others according to what we have said above in speaking of the enharmonic notes.149

If one were to include both the major and the minor modes on each of the nine enharmonic notes, one would obtain a total of twelve times two plus nine times two—i.e., forty-two—modes. Ozanam's statement of their hypothetical possibility anticipated their later inclusion by Freillon-Poncein and Saint-Lambert.

Ozanam's admission that the names of the "enharmonic" notes could be given to the corresponding modes in no way

149. Ibid., 660-1.
implies an acceptance of equal temperament. As a mathematician, he undoubtedly was familiar with the different temperaments customarily employed in his day. Rather, his statements probably represent a desire to overlook minor differences of intonation between the "enharmonic" notes and their correspondents in order to provide musicians with greater freedom both with respect to their terminology and in their notational practices.150

L'Affillard.--In his Principes très facile (1694f.), L'Affillard referred to transpositions and Airs transposez. Though he did not outline a system of natural and transposed tones, he instructed singers in his "general rule for all transpositions" (1694) to solmizate their music from finals of Ut and Re.151 He thereby affirmed the relationship of the transpositions to the octaves of F major and C major, on the one hand, and G minor and D minor, on the other. His non-usage of the terms "natural tone" and "transposed tone" perhaps reflects the fact that he explicitly reduced the tones to the major tone and the minor

150. Cf. II-15. Ozanam's acceptance of the "enharmonic" names of the customary tones recalls notational practices of the German composers. Among the tones identified by Johann Mattheson in Das neu-eröffnete Orchester (Hamburg, 1713) were D-sharp and G-sharp major and minor (p. 62). Mattheson's use of enharmonic spellings for both finals and the other essential notes evidently derived from the use of one symbol for each pitch in the German tablature.

151. L'Affillard (1694), 85. See III-36.
tone rather than to specific representatives that he described as natural (see example 2).\footnote{152}

Loulié.—Loulié's discussion of transposition in part 2 of the Éléments included a number of definitions. In the first of them he affirmed: "To transpose is to detach or to displace the name of Ut from the letter C, to which it is naturally attached in the scale, and to transpose it to, or combine it with, another letter."\footnote{153} He continued:

Transposed Music is that which has one or more sharps or flats immediately following the clef. Natural Music is that which has neither sharps nor flats immediately after the clef. Transposed Clef is that immediately after which there is found one or several \[sic: \text{more}\] sharps or flats. Natural Clef is that immediately after which there are found neither sharps nor flats, such as those given above in the different positions.\footnote{154}

Loulié's definitions articulate a number of concepts. First of all, the essence of transposition was the placement of Ut with another letter. That is, in Transposed Music, Ut could be combined with D, E-flat, or any other pitch; thus, C no longer would be Ut. In other words, the note names or syllables were transposed. This definition of transposition in terms of the solmization applied to vocal music only, since Ut and C were inseparable from the standpoint of the

\footnote{152. In the 1705 edition, however, he indicated that C major and D minor possessed the quality of naturalness (p. 18).}

\footnote{153. Loulié, \textit{Elements or Principles}, 22. \ 154. \textit{Ibid.}}
instrumentalist. Loulié stated: "C on instruments should always be called Ut, in whatever transposition it be."\textsuperscript{155}

Loulie employed the terms "Transposed Clef" and "Natural Clef" to refer respectively to a clef accompanied by one or more sharps or flats and to a clef after which there was found none of them. Thus, a natural signature (i.e., a Natural Clef) indicated Natural Music, and sharps or flats in the signature (i.e., a Transposed Clef) indicated Transposed Music (cf. Saint-Lambert). It appears that the Transposed Clef was so named because the names of the notes indicated by the clef were transposed; that is, the note names were applied to different pitch letters, and the degrees therefore no longer had the same names as they had had with the Natural Clefs.

The cited definitions appear to be Loulié's basic statements concerning transposition in composition.\textsuperscript{156} In his proposed revisions of the Éléments found in ms. 6355, Loulié expanded on those statements, adding the following:

To transpose means [likewise] to move the semitones between notes from where they are found in the natural scale to [notes designated by] other letters, and to indicate this immediately after the clef by one or more sharps or flats.\textsuperscript{157}

\textsuperscript{155} Ibid., 54.

\textsuperscript{156} Loulié further discussed concepts relative to the definition and practice of transposition in a number of items of manuscript 6355. Table 4 contains an inventory of the sources with a brief summary of the notions discussed. Also see Cohen, "Étienne Loulié," 70-2.
Table 4. Index to tracts from MS. fonds français, n.a. 6355 which contain definitions or discuss practices of transposition.

1) Item XVII/1, f. 127r. Loulié, "Règles ou Méthode pour trouver quelle clef il faut concevoir lorsqu'on veut exécuter une pièce à un autre ton . . . ce qu'on appelle transposer." The essay described a method whereby instrumentalists could obtain the signature of the tone onto which they were transposing. See pp. 356-8 of this paper.

2) Item XVII/3, ff. 130-41'. Loulié, "Supplément des Principes ou Éléments de Musique." Loulié defined transposer and presented a method for reducing Transposed Music to a Natural Clef when the transpositions were not marked exactly after the clef. See p. 302f. of this paper. Also see Loulié, Elements or Principles, vif.

3) Items XIX and XX, ff. 170r. and 193r. [Loulie], "Méthode pour apprendre à jouer de la flûte douce" (two versions). He discussed the sharps and flats of transposition (ff. 183v., 203v.). See pp. 32-4 of this paper.

4) Item XXIV, f. 233r. [Loulie], "Musique Pratique des Anciens ou Progrès de la Musique Pratique des Anciens jusqu'à la Nôtre." The author defined Gamme Naturelle and Gammes de Transposition (ff. 243v.-4r.): "The scale in which none of the seven sounds are altered either by sharp or by flat is called 'natural scale.' The other scales, in which the pitches are altered either by sharps or by flats are called 'scales of transposition.'" There followed examples of "scales of transposition by sharps" and "by flats" having from one through six components. See II-156.

5) Item XXVII, f. 261r. [Loulie], "5e. Question" of "Questions et Propositions." Question: "Whether it is easier to intone transposed music without reducing it to the natural than to reduce it pure." Answer: "It is easier to intone transposed music by reducing it to the natural than by not reducing it, because when one intones without reducing to the natural, one is obliged to name [the] same interval in seven different ways. For example, one is obliged, according to the different transpositions, to call the first semitone mi-fa, fa-sol, sol-la, la-si, si-ut, ut-re, [or] re-mi. But when one intones transposed music by reducing it to the natural, one always names each interval by the same name. For example, the first semitone always is called Mi-Fa. [Examples]. . . ." See II-156.
In its emphasis on the dislocation of the semitones, this statement recalls Rousseau's discussion of the results of transposition.

Loulé again addressed the topic of transposition in the third part of the Éléments. He began:

In order to understand well the meaning of transpositions [sic: transposition] in music, it is necessary to know that C Ut was determined from the very beginning of music at a fixed pitch, called by musicians C Ut, or C Sol Ut.

All instruments, particularly organs and harpsichords [lit., clavecins], are constructed according to this primary determination, so that C Ut of all these instruments is ordinarily [fixed] at this determined pitch. 158

In his statements above, Loulë identified a basis for the theory and practice of transposition: the establishment of a definite pitch for C on musical instruments. It appears that his observations may reflect an ideal rather than a uniform practice, however, since absolute standards for pitch evidently were not yet widely established at that time. 159

Differences in the notions of Rousseau and Loulë. In his collective statements on transposition, Loulë advanced a number of ideas which reveal a concept that is different in certain respects from that of Rousseau. Rousseau had defined transposition in terms of the "change

157. Loulë, Éléments or Principles, 22. 158. Ibid., 53. 159. Ibid., Cohen's thirty-second footnote.
[In] the degree of the intonation assigned to the natural name of each note . . .” 160 This change in itself did not produce a corresponding change in the syllabic names (vocables) of the pitches. Loulié, on the other hand, held that the introduction of sharps or flats into the signatures changed the note names associated with the particular pitches. Thus, the vocables were independent of pitch (cf. Brossard’s second definition of "TRANSPOSITIO").

Another difference between Loulié’s and Rousseau’s concepts of transposition concerns the notions of natural and transposed music. In the Méthode, Rousseau had presented a system of natural and transposed tones based on the two-column scale. There were two different kinds of tones, major and minor (which had the major third or the minor third, respectively). Each kind could occur naturally in two places: the column of B-flat and the column of B-natural. Consequently, there were two pairs of natural major and minor tones, one with signatures of B-flat and another with natural signatures. All the other tones, which had signatures of one or more sharps or of two or more flats, were called transposed. Loulié, on the other hand, made no mention of "natural" and "transposed" tones. He instead defined natural and transposed music and clefs.

160. See II-137.
Since his scale was the single-column one with B-natural, his natural music was limited to that which had neither sharps nor flats in the signature.

Rousseau and Loulié differed with regard to the relationships of their statements on transposition to modal theory. Rousseau's affiliation of mode and transposition was explicit. Loulié, however, at first seemed to take the relationship for granted: he presented his initial statements on transposition in parts 2 and 3 of the *Eléments* without a single direct reference to the modes. (He addressed the topic of mode only after he had concluded his discussion of transposition in part 3 of his treatise.) In part 2, when he first defined *transposer* and "Transposed Music," he had done so in terms of the following elements: the solmization (the change in the placement of Ut) and the signature (the presence of sharps or flats after the clef).

While Loulié at first separated the notions of transposition and mode—perhaps for pedagogical purposes—, he nevertheless was keenly aware that a relationship did exist between them. In his chapter entitled "Explanation of what is called mode or tone," he stated:

All musical works end on Ut or Re, assuming that the transpositions, if there be any, are indicated exactly immediately after the clef.

The note on which each piece of music ends, together with the Principal and Dependent Tones included between this note and its octave, is called Mode or Tone.
Loulie's statements above provide additional insights into his concept of transposition. He assumed that the signatures of transposed music would be written accurately. His statements suggest that if the transpositions were not precisely indicated by the signature, the final would be some note other than Ut or Re. This apparently would be the case because the sharps or flats in the signature determined the placement of the half steps Mi-Fa and Si-Ut.162 Whenever their number was changed, the locations of the half steps also were changed and thus the positions of Mi, Fa and the other notes were different. In short, Loulie affirmed the dependence of the finals on the signatures. He thereby seems to have recognized the relationship between transposition and octave species, the latter of which he elsewhere identified as a modal characteristic.163

Loulie related the notions of transposition and mode most strongly through the element of the note names (i.e., the solmization). According to him, all musical works, whether natural or transposed, properly ended on Ut or Re. The final, in such circumstances, identified the mode of the piece. Loulie provided examples of the principal tones or essential notes of the "major mode, or tone Ut," with final of C, and the "minor mode, or tone Re," with final D.164

161. Loulie, Elements or Principles, 69.
162. Ibid., 54. 163. Ibid., 51. 164. Ibid., 70.
Effect of the choice of Ut and Re finals on the available octave species in the system of the hexachords and with the gamme.--As has been observed, the appropriation of Ut and Re as finals did not originate with Loulié. Mersenne and Millet respectively had limited the patterns of essential notes (final, mediant, dominant, final) and the choice of notes on which cadences could occur to two. However, while the names of the preeminent cadence tones--and therefore the finals--were reduced to Ut and Re for the practical purpose of solmization long before Loulié's statements, the use of those notes as finals had a significance with Loulié and his contemporaries which had not been found with his predecessors. Mersenne (and evidently Millet) accepted both the twelve-mode system of Glareanus, which had been recodified by Zarlino, and the eight psalm tones. (The two systems of eight tones and twelve modes were generally discussed by French authors during the first half of the seventeenth century.)

Both Mersenne and Millet undoubtedly recommended the solmization of the modes according to the currently-practiced system of the hexachords, although Mersenne also proposed seven-syllable alternatives. As has been seen, the hexachordal system comprised three interlocking six-note

165. Powers, 411; Schneider, 37-9, 71f., 178, 261-2.
scales (hexachords), each of which, containing the same sequence of intervals, was solmizated Ut, Re, Mi, Fa, Sol, La (see figure 4). The hexachords were constructed on C, F (with B-flat) and G. In order to exceed the limits of a single hexachord, the singer had to make a transition to another through a change of the note names on a pitch common to both. Such mutation often was a practical necessity.

With that system, there were three different places where one could say Ut (C, F or G) and likewise three places where one could say Re (D, G or A). An examination of the octaves of each Ut and each Re reveals that there were a plurality of different solmization patterns and octave species which began with Ut and with Re (see figure 4 and examples 7-8). Therefore, finals of Ut and Re did not designate unique octave species and modes within the hexachordal system. For example, if the Ut of the F hexachord was the final, the designated octave species would be Ionian or, if one immediately mutated to the G hexachord, Lydian. If the Ut of the G hexachord was taken as the final, the octave would be Mixolydian. An Ut from the C hexachord could have either a Mixolydian or an Ionian octave species, according to whether one mutated to the F hexachord with B-flat or to the one on G with B-natural (see examples 7a-7e). Likewise, if the D Re of the C hexachord was taken as the final, the octave species could be either Aeolian or
Example 7. Solmization of the octave above Ut in the system of the hexachords.

Ionian octave species

Lydian octave species

Mixolydian octave species

Example 8. Solmization of the octave of Re.

Aeolian octave species

Dorian octave species

Mixolydian octave species

N.B. Degrees of the octave on which the semitones (mi-fa; indicated by arcs) occur have been identified numerically.

N.B. The notes on which the mutation has been effected in the examples do not represent the only places at which mutation could occur. According to Engelbert (c.1250-1331), the preferable notes for mutation were a and a. See "Hexachord. IV," in the Harvard Dictionary of Music, 382.
Dorian, according to whether one mutated to the hexachord on F or to the one on G. If the G Re of the F hexachord was the final, the octave would be Dorian. Finally, if the A Re of the G hexachord was the final, the octave would be Aeolian (see examples 8a-8d).

The lack of uniqueness among octave species with Ut and Re finals is exemplified by the practice of the Italian Francesco Gasparini (1668-1727). As an Italian, he did not employ the two-column scale (the French gamme double) but rather practiced solmization according to the hexachords. This circumstance is demonstrated by his usage of three-syllable names for pitches (e.g., G sol re ut) and by his statement that in a key (i.e., tone) with the minor third Re Mi Fa, the fourth note above the final again required the minor third, at which point the same pattern, Re Mi Fa, occurred. According to Cohen, Jean-Jacques Rousseau included in his Dictionnaire an illustration of the hexachordal system, which he labeled "Gamme Italien." Gasparini declared that all compositions were formed either with the major third, which was read "Ut, Re, Mi," or with the minor third, read "Re, Mi, Fa." That he was


168. Loulié, Elements or Principles, 44, Cohen's twelfth footnote.
concerned only with the third above the final and not with the entire octave species is apparent both from his statements and accompanying examples and from an examination of the numerous irregular signatures that he later provided in his examples of the major and minor tones (example 105). 170

With Rousseau and Loulié, the multiplicity of possibilities of octave species for the Ut and Re finals no longer existed. Both authors employed seven-note scalar systems which provided within a single column a unique octave species for every note name. For Rousseau, a final of Re (which was obtained indirectly) could be found either on G in the column of B-flat or on D in the column of B-natural; in both instances the final designated the Dorian octave species, assuming that there was no mutation to the alternative column. Loulié went a step further than Rousseau, eliminating the column of B-flat and thereby reducing the number of potential locations of each note name within the gamme to one. Accordingly, a given note came to be affiliated with both a unique octave species and a unique pitch in the scalar system. Consequently, it was impossible for Loulié to name the final Ut or Re unless the octave

169. Gasparini, 66.

170. Ibid., 66, 73-75. This circumstance is discussed in greater detail in chapter 4.
species above the final was identical to that which was found above the C Ut or D Re of the scale, where half steps occurred from Mi to Fa and from Si to Ut. By reducing the available octave species for the modes to two representatives Loulié, like Rousseau before him, fulfilled the conditions that were necessary in order to establish uniform signatures for the major and the minor modes.

Differences in the notions of Rousseau and Loulié, continued.—The authors' differences concerning the modes contributed to the following difference of perspective on natural and transposed music. Rousseau had affirmed the individuality of the tones by citing the different passions that individual ones were capable of expressing (see table 5 below). Further, though he related all of the transposed tones to natural ones of only two different octave species, he did not explicitly say either that there were only two modes, major and minor, or that there were only two finals. For Rousseau to have identified all of the finals as Ut or Re evidently would have been impossible, since the finals of the unnaturalized, transposed tones retained the names assigned them by the clef, which derived from the column of B-natural. Accordingly, the final of a tone which concluded on E would have been identified as Mi, etc. Loulié, on the other hand, instead of stressing the individuality of all the modes, emphasized their similarity (after Charpentier,
Masson and L’Affillard). By affirming that all correctly written musical works ended either on Ut or on Re, he baptized vocal music into a two-octave system of solmization. (Rousseau also had done as much, even though he had not explicitly reduced the finals to two.)

Freillon-Poncein.—The author declared in the preface of his treatise that he would teach “the transposition of the seven major modes and the seven minor modes from the natural [finals] to the flat or sharp [literally, to the flat or natural sign or sharp]” (i.e., to the flatted or sharped finals). He stated further: “I understand by the term transposed that it is by [or with] flat [par b. mol] or by [or with] sharp [literally, par b. carre].” In other words, he employed the expressions par b. mol and par b. carre or par dièze to indicate the transposition of the final by the flat or the sharp, respectively. He explained: “One calls a piece ‘with flat’ when there are flats on the final degree and ‘with sharp’ [literally, par b. carre] when there are sharps.” As a result of the transposition of the seven natural finals by the sharp and the flat, he

171. Freillon-Poncein, preface, ii.

172. Ibid., 48. Saint-Lambert used par Dièze in a similar context (see example 14).

173. Ibid., 8. His usage of par b. mol and par b. carre differs from Ozanam’s use of those expressions.
obtained twenty-one finals, each of which could bear both the major mode and the minor mode. His appropriation of the sharp and flat of every natural note was anticipated by Ozanam's earlier discussion of twenty-one notes.

If it was to be exact, the transposition of the seven major and minor modes necessitated the placing of a flat or a sharp not only on the natural final, but also on the remaining degrees of the mode, whether those pitches previously had been natural or altered. For example, if the major mode on D, spelled D, E, F-sharp, G, A, B, C-sharp, D, was transposed "by [or with] sharp" one would require the following series of pitches: D-sharp, E-sharp, F-double sharp, G-sharp, A-sharp, B-sharp, C-double sharp, D-sharp (see example 92, C and I). An analogous result would be forthcoming if one transposed a mode containing flats "by [or with] flat." As the former instance of transposition resulted in the introduction of double sharps, the latter resulted in the use of double flats (see example 9 and example 92, E and N). (Of course, whenever a mode with sharps was transposed "by flat" or a mode with flats was transposed "by sharp," double sharps and double flats would

Example 9. Transposition of a mode containing flats par b.mol ("by [the] flat").

\[\text{C minor transposed to C-flat}\]
not have been introduced.) In short, transposition involved the use of sharps or flats in order to obtain a scale a semitone higher or lower than the one on the natural final. The author observed that with such transposition, one did not depart from the mode of the natural final.\footnote{174} The seven major and minor modes on the natural finals thus retained their identities when they were transposed by a semitone. As a result, there in reality were only seven major modes and seven minor modes, or a total of fourteen different modes, although there were forty-two instances of signatures.

Freillon-Poncein's notion of the natural modes is not explicitly stated. One is not entirely certain which modes he was referring to when he used the term "natural modes" on page 48 of his treatise, for he commonly applied the term naturel to finals.\footnote{175} For instance, in his initial examples of the essential notes with accompanying signatures (example 41), he was careful to refer to the first representatives cited as "on their natural finals." One might infer from his statements that the transposed modes were those whose finals were transposed. By analogy, the term "natural modes" would seem to indicate those whose finals were

\footnote{174. See III-177.}

\footnote{175. See examples 41 and 42.}
natural. Such a distinction among the modes on the basis of the state of their finals previously had been made by Ozanam.

Freillon-Poncein employed the term naturel in one instance to describe an individual mode. He stated: "The flageolet is very suitable for playing lively Airs, like those of the mode of C Sol Ut [major], as being the brightest and the most natural." This statement suggests first that naturalness was an attribute which was variable in degree, that is, that one mode reasonably could be more natural than another. It also seems to suggest the plurality of the natural modes.

Brossard.--In part 10 of his article "MODO," Brossard defined the natural and transposed modes in terms of the placement of the essential, natural and necessary notes. He stated:

10 If all of those notes are placed naturally in the manner that we have just said, then the mode is natural. On the other hand, if one is obliged to avail oneself of the assistance of the sharps or flats either immediately after the clef or in the course of the music in order to introduce that [prescribed] order among the notes, then it is a transposed mode. On this principle, only the mode of C Sol Ut [i.e., C major] truly is diatonic or natural. All the others have need of some sharps or flats, either to put their final on the degree that one wishes (and then they are transposed chromatically), or to make their fifth just [i.e., perfect], or to make their third

176. Freillon-Poncein, 15.
major or minor, or to cause there to be only a semitone above the dominant or below the final, or finally to cause there to be a whole tone below the dominant and above the final. \[177\]

A number of comments will be made regarding the statements above. First of all, in order for the mode to be considered natural, all of the notes of the mode had to be in their designated locations without the use either of sharps or flats in the signature or of accidentals in the course of the music. Brossard concluded that only C major, therefore, truly was diatonic or natural, while all the other modes were transposed. Even D minor could not be called natural by his extremely narrow definition, since it required the B-flat in order to obtain the "natural note" a semitone above the dominant. It appears also that A minor and D minor could not be identified as truly natural because they, along with numerous other minor modes, did not possess naturally the required semitone below the final pitch. Brossard's view concerning what was natural may have derived in part from a statement made by Ozanam (whose definition of the natural modes, however, was much broader than Brossard's): the former theorist had indicated that without the chromatic notes, all the modes except C major lacked at

least one note that was essential or natural to them.

Brossard's statement that a transposed mode was indicated whenever sharps or flats were necessary either in the signature or in the course of the music suggests that the signature could not specify the correct position for every note in all cases. That is, the signature sometimes was insufficient for the complete specification of the modal octave, and accidentals had to be employed in order to obtain the correct arrangement of the notes. Such was particularly the case with the minor modes, where accidentals regularly were required in order to introduce the semitone below the final (i.e., the leading tone). Also, the minor modes with flats as well as D minor needed an accidental flat in order to produce the semitone above the dominant, if the Dorian signature was used.

Brossard's notions regarding the natural and transposed modes may be summarized briefly. His requirement that the essential, natural and necessary notes be natural in the natural modes eliminated all candidates except C major. However, in his musical examples accompanying the article "TRANSPOSITIO," he provided transpositions of the octave of Re naturel, thereby suggesting his recognition of D minor as a "natural" mode, in spite of the fact that the octave above D did not naturally fulfill the required conditions. According to the strictest interpretation, his definition of
transposed mode seems to have depended upon the notions of natural notes and altered or transposed notes, for if a single note of the modal octave had to be either sharpened or flattened, the mode was considered to be transposed.

Brossard discussed the term "TRANSPOSITIO" in depth. He cited four different definitions and included a number of examples to illustrate his statements. His discussion will be cited in full below.

TRANSPOSITIO. Latin word from which the Italians have made Trasportazione, or Transpositione, and the French TRANSPOSITION. To transpose in the matter of music is 1. to remove or to transfer a melody from its natural position, or at least from that in which it is written, in order to put it higher or lower according to the need that one has. [That is done] in order to be accommodated to the range, staff or strength of voices or instruments, etc. Example [10.]

[Example 10.]

\[
\begin{array}{c}
\text{\textit{Au naturel} or diatonic} \\
\begin{align*}
\text{Melody transposed a fourth higher}
\end{align*}
\end{array}
\]

2. Alternatively, to transpose indeed is to put a melody into another species of octave than the one in which it perhaps at first has been composed, or at least currently is written. [This is done] in such a way, however, that the semitones of the two tetrachords or fourths which make up each of those octaves—that is, Mi-Fa and Si-Ut—, are found by means of the flats and sharps precisely in the same order or in the same degrees in both of those octaves. Example [11]

3. Alternatively, to transpose is to use one or more chromatic notes instead of natural or diatonic notes in order to establish a mode—, that is, in order to put the final at the desired
pitch or to make the fifth above the final just [i.e., perfect] in order to form the dominant.

[Example 11.]

\[\begin{align*}
\text{a.} & \quad \begin{array}{c}
\text{Diatonic or natural} \\
\text{octave.}
\end{array} \\
\text{b.} & \quad \begin{array}{c}
\text{Octave transposed a whole} \\
\text{tone higher, where by means} \\
\text{of the sharps, the two} \\
\text{fourths are each terminated} \\
\text{at the top by a semitone,} \\
\text{as in the natural octave.}
\end{array}
\end{align*}\]

or in order to make the third major or minor, etc. (See MODO, number 10). For one indeed first must observe that it is not possible to transport a purely diatonic melody higher or lower without using at least one of the chromatic signs—that is, a flat or a sharp—and very often several. Therefore, when one finds one or more flats or one or more sharps, either immediately after the clef or in the course of a melody on the degrees of the essential or natural notes of the mode, one must boldly conclude that the melody is in a transposed mode or tone, which consequently can be reduced to a natural mode or tone. The examples above or hereafter suffice for this point.

4. Finally, to transpose is to see to it, by means of the chromatic signs♭ or ♯, that the notes of two octaves are able to form precisely the same intervals, although they begin and continue on different letters or degrees of the scale. Consequently, [the notes of those octaves] are able to bear the same names and to allow the same intonations. Examples 12 and 13.

[Example 12.]

\[\begin{align*}
\text{a.} & \quad \begin{array}{c}
\text{Ut natural [i.e., C major]} \\
\text{Ut by transposition a} \\
\text{whole tone lower}
\end{array} \\
\text{b.} & \quad \begin{array}{c}
\text{Ut by transposition a} \\
\text{third lower}
\end{array}
\end{align*}\]
[Example 13.]

a. Re naturel i.e., D minor

b. Re by transposition a whole tone higher
c. Re by transposition a whole tone lower

[N.B. Semitones in examples 10-13 are indicated by blackened noteheads.]

Observe that I have put in examples only for Ut and Re, because all the finals of the transposed modes are necessarily of Ut or Re. They are of Ut if the third which is formed above that final is major. They are of Re if the third is minor. I think that that will suffice at present to demonstrate what Transposition and transposed mode are. Nevertheless, many things yet could be said concerning the causes, the necessity, the nature, the effects, the use, (and) the number, etc. of the transposed modes. I find myself obliged to postpone [those things] to another time in order to avoid prolixity. 178

Brossard's first definition of "TRANSPOSITIO" recalls statements made by Rousseau and Delair. 179 To transpose according to his second definition was to place the melody into another octave species in such a way that by means of sharps or flats, the semitones of corresponding tetrachords were in the same relative positions. As the semitones had the same names (Mi-Fa and Si-Ut) in both cases, the sequence

178. See II-178. See also Brossard, Dictionary, 166-9.
179. Rousseau, Méthode, 78; Delair, 10.
of the vocables necessarily would have been the same in both octaves (cf. Louillé). Brossard’s definition brings to mind the method of transposition described by J.P.A. Fischer (1728), where the performer first observed the positions of the semitones in the original octave and then proceeded to mark those positions in another octave and to make semitones there.180

**Importance** of the octave species in the transposition of the mode.—Brossard’s emphasis on the octave species harks back to teachings of the sixteenth-century theorists Glareanus and Zarlino. Glareanus made the first presentation of the twelve modes in print in his *Dodecachordon* (1547). According to him, the identity of the individual mode was dependent upon its particular octave species, which was determined by the positions of the semitones within its octave. He stated in Chapter 5: "There may be a change from one [mode] into another, and frequently their nature is completely altered by the change of only a single semitone."181

The Italian theorist Zarlino, who a few years later in *L’istituzione harmoniche* (1558) presented again Glareanus’

180. J.P.A. Fischer, *Kort en grondig onderwijv, van de transpositie* (Utrecht, 1728), 6f. See the discussion of Fischer’s method in chapter three of this paper.

system of the twelve modes—and whose ideas were extremely influential on seventeenth-century French theorists—affirmed in Chapter 17 of part 4:

There is no doubt that any mode, be it the first, second, third, fourth, or any of the others, can be transposed up or down, as pleases us, with the help of any note that changes one [species of] diapason [i.e., octave] into another. 182

That is, the transposition of the mode occurred through the transformation of another octave species so that it conformed to a given one in terms of its arrangement of whole tones and semitones. Zarlino stated further:

When out of necessity or under other circumstances the mode of a composition is transposed, musicians should be warned above all to arrange it in such a manner and place that, in both ascent and descent, all notes are present which are necessary for the constitution of the mode, that is, which yield the whole tones and semitones necessary for the mode's essential character. 183

Brossard, continued.—It is interesting that in each of the examples pertaining to his second through fourth definitions of "TRANSPOSITION," Brossard divided the modal octave into two disjunct tetrachords (examples 11-13). It appears that he wished for his readers to be aware of the tetrachordal components. He evidently believed that an understanding of them was beneficial both in the practice of

182. Zarlino, On the modes, 52.
183. Ibid.
transposition and in the writing of transpositions. One may observe that in each of the transpositions of the major mode on Ut, and in those of the (natural) minor mode on Re, the two tetrachords of the octave were structurally identical; that is, the semitone occurred in the same relative position in both tetrachords. The author drew particular attention to this circumstance in one instance (see example 11).

Brossard's illustration of the similarity of component tetrachords within the octaves perhaps had a two-fold benefit: first of all, it demonstrated the simplicity of the process of transposing the major and minor modes. Secondly, it may have lent credibility to the choice of the natural octaves of Ut and Re as prototypes for the major and minor modes. If such were the case, it would be interesting because his example of Re naturel did not completely fulfill his stated criteria of the natural minor mode.

It should be observed that the natural octave on E also exhibited the relationship of identical tetrachords: S T T S T T (where S denotes a semitone and T indicates a whole tone). However, its particular structure did not satisfy the requirement of the whole tone above the final of the minor mode, as Brossard outlined in "MODO." Accordingly, the octave of E necessarily was excluded as a potential prototype of the minor mode.

In his third definition of "TRANSPOSITIO," Brossard stated that to transpose was to use one or more sharps or
flats in order to establish a mode. He cited several particular uses of them in that respect, and he referred his readers to "MODO," part 10. His remarks may be summarized simply: transposition required sharps or flats; therefore, sharps or flats either in the signature or in the course of the music on the essential or the natural notes indicated transposition.

In Brossard's fourth and final definition of "TRANSPOSITIO," he stated that to transpose was to cause the notes of two octaves which began on different pitch letters to form exactly the same intervals by means of flats or sharps (cf. Rousseau). Since the two different octaves would have identical arrangements of whole tones and semitones, they both necessarily would represent the same octave species and mode, and the notes would be sung to the same vocables and with the same relative intonation. This is approximately what the author had expressed in his second definition of "TRANSPOSITIO," though there is a difference of emphasis in the two definitions.

In his four definitions of "TRANSPOSITIO," Brossard presented four different aspects of the process and practice of transposition. Those different facets complemented one

184. In "MODO," parts 7 and 9, he cited the required positions of the essential, natural and necessary notes, the establishment of which constituted the uses of the sharps and the flats.
another and produced a comprehensive view of transposition which encompassed both the performance of a piece at another pitch and the writing out of a major or minor mode on another degree.

Brossard's concepts of natural and transposed appear to have greater kinship to notions expressed by Loulié than to those of Rousseau. (As Loulié and Brossard were associates, this circumstance might be expected.) Similar to Loulié, Brossard would have viewed a signature of one flat as evidence of transposition.

Saint-Lambert.--The author discussed transposition in chapter 18 of *Les principes*. "Concerning transposed pieces," and in selected "Remarks on some places in this work," which provided commentary on the text. The author first defined transposed pieces à la Loulié and illustrated his definition by an example in which signatures of even one sharp or one flat indicated transpositions (example 14). Clearly, the column of B-flat was transposed, and the one of B-natural--i.e., the single-column scale--was the sole source of the natural modes. This notion of transposed apparently was commonly held at the time.


He discussed "transposition by (or with) sharp" (par Dieze; see example 14), declaring that there were seven degrees of transposition. He apparently regarded the transpositions to form a graded series whose members


Example des Transpositions.

Transposition par Dieze.

1. Dieze. 2. Diezes. 3. Diezes.

Transposition par Bémol.


Copyright 1974 by Minkoff Reprint. Used by permission.

progressively increased the number of sharps in their signatures from one to seven. Thus, transposition was viewed as a quantitative element. The sharp was the means by which the transposition was accomplished, or the agent of the transposition (cf. Freillon-Poncein).

Saint-Lambert observed that the presence of one or more sharps next to the clef might not always be sufficient cause for the positive identification of the mode as transposed. He cautioned:

In a non-transposed piece, it may happen by chance that one or several [sic: more] notes marked by sharps are found right next to the clef, and in the absence of any warning one could take the piece to be transposed. However, one must realize that a piece is only transposed when all the clefs are accompanied by sharps and when these sharps are always on the same degrees. 188

Thus, before a piece could be regarded as truly transposed, all the parts had to have sharps in their signatures and the signatures had to be uniform. Perhaps these statements reflect a certain carelessness in the preparation of printed editions. Alternatively, the author may have recognized the potential occurrence of a combination of a transposing instrument with a non-transposing one. In such a case, one indeed might have found one part written in a natural mode and another in a transposed mode.

Following his discussion of "transposition by sharp."

188. Ibid., 69; see also Les principes, 39.
Saint-Lambert took up "transposition by [or with] flat" (par Bémol) and proceeded analogously (see example 14); the latter had seven different degrees, just as the former had. He warned the performer, as before, to avoid the assumption that the piece was transposed "if chance has placed a few notes marked by a flat next to one of the two clefs"; there was no transposition, he affirmed, unless every clef had flats on the same degrees.¹⁸⁹

In one of his "Remarks," Saint-Lambert took issue with his initial definition of transposed, stating:

One usually calls pieces transposed whose clefs are accompanied by sharps or flats, but it is incorrect to call them thus without any other distinction, for there are several which, despite having many flats or sharps, are not transposed at all and are, on the contrary, in very natural modes. Such are pieces in D, A, and B♭ major, and several others. The only truly transposed modes are those whose chords [accords] do not have the usual intonation, as in several [sic: some] where the major thirds are more than major and others where the minor thirds are less than minor--; in a word those modes where the intervals are either too large or too small. If I have called them all transposed, it is only to conform to common usage, plus the fact that the truth or falsity of the transposition of this kind of piece makes no difference to the rule in question in Chapter XVIII.¹⁹⁰

Saint-Lambert's statements provide insight into his concepts of the natural and transposed modes. He had a wider range of natural modes than some of his predecessors and contemporaries had (see table 1 above). His concept

¹⁸⁹. Ibid.  ¹⁹⁰. Ibid., 67.
concerning what was natural recalls Ozanam’s and Delair’s views, which were similarly broad but were founded upon different premises.

It appears that pieces whose accords (see below) used only the sharps or flats of the keyboard (figure 8),

\[ \text{DEMONSTRATION DU CLAVIER.} \]

\[ \text{Copyright 1974 by Minkoff Reprint. Used by permission.} \]

Figure 8. Saint-Lambert’s illustration of the keyboard (Les principes, 6).

I.e., whose accords had the customary intonation, were those that Saint-Lambert regarded to be "in very natural modes." If this indeed was the case, then one could have identified at least the following as natural modes: C major (no sharps), G major (F-sharp), D major (F-sharp, C-sharp), A major (F-sharp, C-sharp, G-sharp), F major (B-flat), and B-flat major (B-flat, E-flat). Also one might have included the following minor modes: A minor (no sharps), E minor (F-sharp), B minor (F-sharp, C-sharp), F-sharp minor.
(F-sharp, C-sharp, G-sharp), D minor (no flats), G minor (B-flat), and C minor (B-flat, E-flat). Of course, if one excluded the minor modes whose altered sixths or leading tones were nonenharmonic (and consequently were out of tune), the list of the "very natural" modes would have been shorter. The following would have had to be eliminated: E minor, with leading tone D-sharp; B minor, with leading tone A-sharp; F-sharp minor, with leading tone E-sharp; and C minor, with lowered sixth A-flat.

The author's relatively large domain of the natural modes resulted from the fact that he limited the range of the transposed ones. By redefining the latter as modes whose accords employed unusually tuned notes (i.e., nonenharmonic ones), he brought the concept of "transposed" into a position of vital dependence upon the temperament; to him, "transposed" clearly meant "out of tune." It appears that the number of the transposed modes would have differed with different tuning systems.

Saint-Lambert's association of transposed with those modes whose major thirds were too large (literally, greater than major) or whose minor thirds were too small (less than minor) is of interest. A primary factor in the differences of the temperament of the thirds was the need for the substitution of chromatic pitches found on keyboard and wind instruments for the nonenharmonic notes required by certain thirds. The substitutions were necessary in order for some
chords to be playable on the instruments. For example, in the mode of B major, the principal or "tonic" chord had to be played B, E-flat, F-sharp, since the E-flat on the keyboard had to be substituted for the D-sharp; the "major third" B – E-flat would have been "more than major" or too large, since E-flat was higher than D-sharp. In B-flat minor, the principal triad had to be played B-flat, C-sharp, F, because the C-sharp on the keyboard was substituted for the D-flat: the "minor third" B-flat – C-sharp would have been "less than minor" or too small, since C-sharp was lower than D-flat. Other examples of chords which would have been out of tune include the F minor (F, G-sharp, C), E-flat minor (E-flat, F-sharp, B-flat), A-flat major (G-sharp, C, E-flat) and D-flat major (C-sharp, F, G-sharp) triads. In those instances, the thirds would have been "more than major" or "less than minor."

Jean Denis' (1650) definitions of good and bad thirds on keyboards tuned approximately in 1/4 comma mean-tone temperament illustrate how the major and minor thirds could prove to be too large and too small, respectively. Denis wrote:

The [whole] tone is composed of two semitones, namely, a minor [one] and a major. The minor third, in order to be good, is composed of three semitones, namely, two major semitones and a minor [one]. The bad minor third is composed of two minor semitones and a major. [I.e., it is smaller than minor.] The major third, in order to be good, is composed of four semitones: two major and two minor. The bad major third is composed of
four semitones, namely, three major and one minor. [I.e., it is larger than major.]

The statements above may be illustrated as follows.

The minor third from C to E-flat is composed of two major or diatonic semitones (C-sharp - D and D - E-flat) and one minor or chromatic semitone (C - C-sharp); that minor third therefore is "good." On the other hand, the "minor third" from B-flat to C-sharp is composed of two minor semitones (B-flat - B and C - C-sharp) and one major semitone (B-C); it therefore is "bad" or too small. Analogous examples could be constructed to illustrate good and bad major thirds.

One is not entirely certain what Saint-Lambert meant when he used the term accord in the statements cited above. He evidently was not referring merely to the entity composed of the three essential notes, the simultaneity known today as the tonic triad. If such had been the case, then it evidently would have been possible for a mode to contain within its octave out-of-tune (i.e., nonenharmonic) notes that would not have rendered the mode transposed because they were not among the essential ones. He further did not limit his reference to "chords" in general. In his remark immediately following his redefinition of transposed pieces (see above), he stated:

191. Denis, Traité, insert prior to p. 7.
An **accord** is a production of some sounds all at once, which through their combination form a pleasing consonance. Now when it is said "a production of some sounds," let it be understood of two as well as of four or six [sounds].

In summary, Saint-Lambert redefined the natural and transposed modes, but he did not do so in terms of either their signatures or their finals. It would be interesting to know exactly which signatures and finals he would have regarded each of those categories to have included. The modes that he indicated were very natural—D major, A major and B-flat major—actually contained no more than three sharps or two flats, the very sharps and flats found on the keyboard and wind instruments of his day and consequently the ones which were in tune on those instruments. Whatever the limits of the signatures of the truly natural modes, it

192. Saint-Lambert, *Les principes*, 64. It appears that later on, **accord** was used particularly in reference to simultaneities having at least three different pitches. Rameau stated: "The union of three or four different sounds is called accord." See Jean-Philippe Rameau, *Nouveau système de musique théorique* (1726), vol. II of the *Complete Theoretical Writings*, ed. Erwin Jacobi (American Institute of Musicology, 1967), 4 (14). When Rameau and certain others referred to the entity comprising the essential notes, they used the specific expression "perfect chord" (**accord parfait**). See *Treatise*, 40f. See also Jacques Hotteterre, *L'art de préluder sur la flûte traversière sur la flûte-à-bec, sur le hautbois, et autres instrumens de dessus . . . ensemble des principes de modulation et de transposition . . .*, facsimile reprint of the Paris edition of 1719 (Geneva: Minkoff Reprint, 1978), 3.
is certain that the temperament was a factor. In addition, the modes he cited as "very natural" were among those he indicated were in common use. Thus he associated the concept of natural with ordinary usage. This circumstance recalls Ozanam's observation that the transposed modes were "hardly ever used, except by necessity."

Frère.--In his treatise, Frère primarily was occupied with his method of reducing transpositions to the natural. Since his notions of natural and transposed perhaps can best be understood in that context, detailed discussion of them has been postponed until chapter 3. However, some of the author's basic concepts will be summarized presently. He stated that there were only two different thirds, major ones and minor ones; all thirds were either like the major third above Ut or like the minor one above Re.\footnote{Frère, 11-12.} The major modulation from Ut and the minor one from Re were the most natural of the modulations (or modes). All the other modulations were transposed and were related to those two.\footnote{Frère's statements recall earlier ones of Delair (p. 53) and Charpentier (p. 249). Further, it appears that for Frère, naturalness was a relative factor (cf. Freillon-Poncein, 15 or II-176).}
and therefore chose them as his models for all the others. Ut and Re evidently were considered the most natural principally because they required neither sharp nor flat. Because of their natural condition, they were the easiest of all the major and minor modulations to sing. He accordingly referred to the thirds of Ut and Re as the "most natural" and the "easiest to intone," in contradistinction to the other, "transposed" thirds, which he said were "difficult to intone." A number of additional factors contributed to the view that the modulations of Ut and Re were the most natural. Zarlino had renumbered the twelve modes so that the first authentic was the Ionian with its final of C, the second authentic was the Dorian with final of D, and so forth. Zarlino's writings were extremely influential on French theorists of the first half of the seventeenth century, who adopted the Italian's renumbering of the modes. Other

196. Ibid., 17-19.
197. Zarlino renumbered the modes and reordered their names in his Dimostrazioni harmoniche (1571); in the 1573 edition of the Istituzioni harmoniche, he retained the new numbers but dropped the names (Powers, 408, 411). See also Robert Wienpahl, "Zarlino, the Senario and Tonality," Journal of the American Musicological Society XII/1 (1959), 29.
Factors in support of the identification of Re as one of the most natural modulations include its position as mode 1 of the eight ecclesiastical modes and the widespread use of D minor with a natural signature in the musical practice. 199

Like a number of his countrymen (Delair, Charpentier, Loulié, etc.), Frère emphasized the similarity exhibited by the representatives of each kind of mode. He did not discuss the differing qualities (énergie or passion) of the various tones as some of his predecessors and contemporaries did (Rousseau, Charpentier, etc.). 200 He was primarily concerned with baptizing all of the modes into a two-fold system of solmization.

Montéclair.—The author declared that the sharps and flats of the signatures "put the semitones out of their natural place[s] by transposing them either higher or lower"; 201 he illustrated that via an example (example 15). His statement recalls the words of Zarlino, who had observed that musicians sometimes transposed the modes by unusual intervals, using both chromatic and "enharmonic" notes in order to transpose the whole tones and semitones "to the


200. Rousseau, Méthode, 79 and Charpentier, 267; see also the concluding section of this chapter.

places indicated by the proper form of the mode."  

Example 15. Montéclair (1709), 20.

\[\text{major third}\]
\[\text{whole tone whole tone}\]

Borin.--The anonymous author of *La musique théorique et pratique* (1722) discussed the notions of "natural tone" and "transposed tone." His definition of the former derived in part from that of Brossard. He stated:

One considers as natural that tone which employs neither sharp nor flat in order to express the progress of the mode in which an Air is composed. That is what causes the tone of C [major] to be observed as the model [i.e., the pattern] of the major mode, to which all the transposed tones in [the] major mode must be related. And there properly is only the tone of C [major] which is pure and natural. For the tone of A [minor] (which is regarded as the natural pattern of the minor mode), to which the transposed tones in [the] minor mode are related, very often is altered by some sharp. The transposed tones in [the] minor mode can also be related to the tone of D [minor], although this relationship is less perfect. Thus, one must consider as [a] transposed tone any Air at all which does not end on Ut in [the] major mode and on Re or on La in [the] minor mode, which consequently will have at the beginning by its clef one or more sharps [or] flats according to the need of the tone of the transposed Air.  

Borin's criteria for the models of the major and minor modes were synonymous with the requirements for the natural tones: the needlessness of any sharp or flat in order to express the progress of the modes. A minor did not fulfill the requirements perfectly, since it often was altered in the practice through the introduction of the raised sixth and the leading tone. The relationship of the transposed modes to D minor was even "less perfect"; the latter was assigned a subsidiary position because it did not express the progress of the minor mode perfectly in its natural state (cf. Brossard).

It is evident that the preeminence of A minor was in concept only: Borin actually gave D minor equal status alongside A in his practice of reducing transposed Airs to a natural nomination; he declared that the minor modes with flats were to be solmized from finals of Re and those with sharps from finals of La. He neither required the unanimous agreement of the signatures of the minor tones with that of the accepted model on A nor obligated singers to solmize all the minor modes from the model's final.204

Borin's statements reflect the notions of his predecessors. His restatement of Brossard's extremely narrow definition of "natural tone" has already been observed. His opinion that any Air which had sharps or

204. See the discussion in chapter 3 of this paper.
flats in the signature was transposed echoes Loulié's teaching. Unlike Loulié—but like Rousseau—, however, he seemed to believe that Ut remained attached to C in the unnaturalized, transposed modes. Like Saint-Lambert, he distinguished ton (i.e., final pitch) from mode (i.e., modal octave). Additionally, his expressions Airs transposez par des Diezes and par des Bemols recall Rousseau's Tons transposez par b mol and par b quarre (cf. Freillon-Poncein's and Saint-Lambert's expressions). Like their antecedents, Borin's phrases appear to be capable of two renderings: "transposed Airs with sharps" and "with flats" or "Airs transposed by sharps" and "by flats."

Finally, like certain of his predecessors, Borin spoke of transposed tones; like others, he referred to transposed Airs. It appears that to him there was no contradiction in the application of the term "transposed" to both elements. He thus differed from Mattheson.205

Rameau.—Rameau's statements concerning the transposed tones and their conformity to the models of Ut and Re will be discussed in detail in chapter 4. The present study will focus on an investigation of his definition of transposed and its relationship to the notions of his contemporaries. Rameau initially declared all major tones other than C major

205. See II-259.
and all minor tones other than D minor to be transposed. Even A minor, with its customary natural signature, was listed beneath the heading "All the transposed minor tones." 206

Rameau's inclusion of A minor within his system of transposed tones was incompatible with customary definitions of transposed entities. According to commonly accepted notions, music was transposed by sharps or flats; transposed music, therefore, was accompanied by sharps or flats. The tone of A minor did not have any sharp or flat in its signature and presumably did not fulfill the accepted criterion of a transposed entity; it therefore appeared as an anomaly in his system of tones.

His paradoxical practice resulted from the fact that he defined "transposed" not according to the content of the signatures, but rather according to the alleged conformity to a model. It is evident that it would be impossible to achieve an exact transposition of a natural tone to another pitch without the use of one or more sharps or flats (cf. Brossard). Thus, the natural octave of A could not represent an exact transposition of that of D. Rameau nonetheless declared that the modulation of A minor conformed to the octave of D.

His practice may be explained as follows. He evidently

206. Rameau, Treatise, 263, 265.
was relying on the conformity that was observable among representatives of the minor mode, both in their ascent and in their descent, as a result of conventional chromatic alterations. It was his broad interpretation of conformity to a model which allowed him to relate A minor, a tone with a natural signature, to D minor, the natural model.

When Rameau adopted Aeolian signatures for all of the minor tones in the "Supplément" of the *Traité*, he eliminated the second natural signature. All of the transposed minor tones then had one or more sharps or flats, and all conformed exactly to their model of A minor, in terms of their progress or modulation. Therefore, the former discrepancy was removed.

**Collateral Notions in Contemporaneous German Theory**

The notion of natural and transposed tones, which was held by French authors with reference to the major and minor patterns, also was a doctrine of conservative, twelve-mode theory. Some German musicians clung to the modes and rationalized the *fictus* tones as transpositions of natural prototypes. Johann Buttstett (1716) cited eight of Mattheson's "new" tones and declared certain of them to be "as much as d-f-a and a-c-e: re fa la"; the remainder he affirmed to be "as much as c-e-g [and] g-b-d: ut mi sol."

He described the eight tones as "nothing other than [the] transposition [of] *toni naturalis* to [a] *tonum fictum*."\(^{208}\)

In a letter dated December 4, 1717, Johann Joseph Fux stated:

Two tones, authentic and plagal, are generated from each octave; the six octaves must therefore grow to twelve; the remainder are all transpositions and must be reduced to one of these twelve. . . . A transposed tone is in respect to neither genus nor species different from that from which it is transposed.\(^{209}\)

In another dated January 12, 1718, Fux affirmed further:

The semitone can be made in two ways: essentially and accidentally. Essentially, when the sharps or flats are placed at the beginning of the staff and coincide with one of the six natural diatonic modes, in which case they are transposed modes and are not capable of making a new mode.\(^{210}\)

Lester states that Fux regarded the twenty-four major and minor modes merely to be transpositions of the Ionian on C and the Aeolian on A.\(^{211}\)

---


210. Ibid., 52.

211. Lester, "The Recognition of Major and Minor Keys in German Theory: 1680-1730," 92.
Differences of Temperament and Affective Quality or Passion Among the Natural and Transposed Modes or Tones

The recognition of qualitative differences among the modes by a number of seventeenth-century and early eighteenth-century French authors appears to derive ultimately from ancient traditions which assigned a differing ethos to each of the Greek scales (harmoniae) and proximately from the practices of Renaissance authors of attributing affective qualities to each of the twelve modes. Glareanus and Zarlino had recognized the capability of the modes to produce particular effects on hearers. The former listed the distinctive properties of several of the modes, sometimes citing the opinions of the ancients (e.g., Plato) and at other times stating his own opinions, which in certain cases differed from those of his forerunners. The latter likewise cited the particular qualities or effects that his forerunners or contemporaries, or that he himself, ascribed to the individual modes.


French authors of the early seventeenth century continued to associate specific affects with the individual modes: De Caus passed along characteristics that Zarlino had attributed to the modes. Mersenne presented a number of lists of the twelve modes and their associated passions. Parran listed the modes and their customary affects.\textsuperscript{214} The differences in the particular affective qualities or passions of the twelve modes evidently were thought to be based largely on differences of modal ambiti and octave species, though the temperament also must have contributed to the perceived individuality of effect.

In the later transposed major and minor modes, differences of octave species no longer were significant except between the major mode and the minor mode. The available octaves had been reduced to two or three varieties, through the normalization of the intervallic successions of the modes after the natural prototypes. While differences of ambitus (i.e., the height of pitch) remained in force and, according to certain authors, continued to exert an effect on hearers, some evidently felt that the particular qualitative distinctions that formerly had characterized the modes no longer were valid because the

\textsuperscript{214} Schneider, 44, 72-3, 76-7, 80-2, 131; cf. 165 (La Voye Mignot), 178-9 (Gassendi), 264-5. (For a discussion of the affects of the individual modes or species of tones in a contemporaneous treatise from Germany, see Kepler's \textit{Weltharmonik}, 163-9.)
octave species had lost their uniqueness. Moreover, certain musicians questioned the purpose of the transposed modes.

There evidently were perceptible differences among the various modes in spite of their reduction to two types, for certain late seventeenth-century and early eighteenth-century authors professed as much. Some, such as Saint-Lambert (1702), merely observed general differences of temperament. Others, such as Rousseau, Charpentier and Rameau, attached particular qualities to individual modes. Still others, such as Ozanam and Sauveur, recognized that differences in the temperament contributed to differences in the affective qualities of the modes. Some of those who so linked the temperament with the expression of the Affekts or passiones indicated that the former differences were perceptible to the ear. The recognition of qualitative differences among the modes provided a large part of the rationale for the use of the transposed modes.

The question of the usefulness of the transposed modes was cited by Rousseau in 1691 and was expressed again a number of times during the next several years. The controversy surrounding that question was not limited to French musicians or to French territory, for Johann Mattheson (1720) reprinted—with his added commentary—an anonymous article on the subject which previously had appeared in two French journals. While a complete documentation of the arguments pro and con the usefulness of
the transposed modes according to the sources is beyond the scope of this paper, a few authors will be cited to illustrate the breadth of the controversy. The discussion will focus on qualitative differences among the modes, according to selected authors writing in French. An attempt will be made to understand notions expressed by the authors regarding the means by which the various modes were able to express the different passions.

Rousseau.—The author may have been the first to address in writing the question of the practical purpose of the transposed tones and to endeavor to justify their usefulness. In the ninth question of the Méthode, one asked: "Why are the transposed tones used, since they relate to the natural tones, and why are they called transposed?" Rousseau answered the first of the component questions in depth. He affirmed that the use of the transposed tones was very necessary in music but admitted meanwhile that their use had not always been as frequent as it was at present, particularly in France. There were two reasons, he stated, which could oblige one to make use of the transposed tones.

The first reason, Rousseau declared, was in order to

215. Rousseau, Méthode, 78. 216. Ibid.
diversify a piece, mainly when it was considerably long, because the variety would grant greater pleasure in the music. He observed that in extended works such as were composed for public entertainment, all kinds of transposed tones were practiced, which ordinarily were made to follow after the natural ones.  

It is not entirely clear what Rousseau meant by this last statement. It may be that the transposed tones followed the natural ones temporally during the course of the music: that is, the natural modes would have appeared at the beginning, and the transposed modes would have succeeded them as the result of modulation in the modern sense of the term. Additionally, it may be that the extended works to which he was referring exhibited great variety not only in terms of the number of the transposed tones that they employed but also in the breadth of the selection of those tones, which could have included the less frequently used ones, such as those on the chromatic finals. Perhaps such variety contributed to the increased use and acceptance of extraordinary modes in the practice generally.

Rousseau then cited another reason for the use of the transposed tones:

The second reason is in order to find tones appropriate to express the different passions that can be encountered according to the different

217. Ibid.
subjects which are used, for although the way of intoning in the transposed tones is the same as in the natural tones, the modulation nevertheless is entirely different.218

He listed the modes appropriate for the expression of particular passions and identified each as natural or transposed (table 5).

**Table 5. Summary of Rousseau's inventory of the passions and the appropriate modes for expressing them.**

<table>
<thead>
<tr>
<th>Passion</th>
<th>Examples of appropriate modes</th>
<th>Type of mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) seriousness</td>
<td>D minor</td>
<td>natural</td>
</tr>
<tr>
<td></td>
<td>A minor</td>
<td>natural</td>
</tr>
<tr>
<td>2) cheerfulness, grandeur</td>
<td>C major</td>
<td>natural</td>
</tr>
<tr>
<td></td>
<td>D major</td>
<td>transposed</td>
</tr>
<tr>
<td>3) sorrowfulness</td>
<td>G minor</td>
<td>natural</td>
</tr>
<tr>
<td>4) tenderness</td>
<td>E minor</td>
<td>transposed</td>
</tr>
<tr>
<td></td>
<td>G major</td>
<td>transposed</td>
</tr>
<tr>
<td>5) lament, mournfulness</td>
<td>C minor</td>
<td>transposed</td>
</tr>
<tr>
<td></td>
<td>F minor</td>
<td>transposed</td>
</tr>
<tr>
<td>6) devoutness (music of the church)</td>
<td>F major</td>
<td>natural</td>
</tr>
<tr>
<td></td>
<td>A major</td>
<td>transp.219</td>
</tr>
</tbody>
</table>

In his explanation of the second reason for the use of the transposed modes, Rousseau immediately referred to their modulation. He seemed to be saying that the transposed modes were rendered capable of expressing the different passions by virtue of the difference of their modulation with that of the natural modes. One supposes also that the

---

218. Ibid., 79. 219. Ibid.
transposed modes differed among themselves with regard to their modulation. Rousseau suggested as much in his statements following the eleventh question: he said that in singing the transposed modes naturally, one changed the names of the notes,

but this changing of the names of the notes, which provides facility in the intonation, changes nothing in the modulation, which is always that of the transposed tone, and this modulation does not depend at all on the names of the notes.220

If the modulation of each transposed mode and each natural mode was somehow distinctive, then the theory that different modes could express different passions could have a rational basis. In an attempt to understand in part how the expression of the passions might have occurred, this author first will briefly review the notion of modulation as discussed by Rousseau’s contemporaries. Ozanam (1691) stated:

Modulation is the manner of causing a piece to move within its Mode, to go out of it opportunely in order to enter another, from there to return similarly without thereby offending [or shocking] the ear, and finally to finish on the Tone or note of the mode.221

Brossard defined "MODULATIONE" in part as follows:

220. Ibid., 84. In his response to the twelfth question (p. 84), he discussed the uniqueness of the individual tones or modes in terms of their particular cadence tones and their ambiti (see II-27).

221. Ozanam, 659.
To modulate according to present-day [musicians] is not only to cause a melody to pass through the essential and natural notes of a mode more often than through the others, but also to use the same notes more often and preferably to others in the parts which form the harmony. One must avoid other notes, not because they are not good, but because they often would cause one to proceed badly with respect to the mode. To modulate also is sometimes to depart from the mode in order to return to it opportunely and naturally. . . . 222

In Frère's treatise, modulation seems to refer to the progress of the melody, with an emphasis on the essential notes of the mode: the final, mediant and dominant. 223 It thus appears that the modulation was dependent, at least in part, upon the essential notes. Those of one mode differed from those of the other modes in two respects: first, they differed in pitch—, i.e., their registral positions were different in the various modes; secondly, they differed in their intonation on keyboard and wind instruments, particularly when one or more of the essential notes was nonenharmonic and therefore was not found on the instruments.

In late seventeenth-century France, various mean-tone temperaments were in use on "orchestral" instruments, and

222. Brossard, "MODULATIONE" (cf. his Dictionary, 50). See also the discussion above of Rameau's concept of modulation in the section Mode of this chapter.

223. Frère, 4-11. The notion appears to have been commonly held. See, for example, Hotteterre, 3. Cf. Rousseau's response to the twelfth question of the Méthode cited in II-27 and Borin's article VI, "Concerning modulation" ("De la Modulation"), 12.
irregular temperaments commonly were employed on keyboard instruments. With the use of mean-tone and irregular temperaments on woodwind and keyboard instruments respectively, intervals in corresponding positions of different modes often were tempered differently. The performance of diverse sizes of intervals evidently was due largely, in the case of the mean-tone temperaments, and partially, in the case of the irregular temperaments, to the necessity of substituting available notes on the instruments for those required by the given mode. This circumstance, already discussed above, again will be considered briefly.

The modes which employed only the natural and chromatic notes found on the instruments--i.e., those which contained no more than three sharps and two flats--generally were quite satisfactory (though not uniform) in their intonation. They derived their pitches from the disposition of perfect fifths from E-flat through G-sharp. With the continuation of the projection of fifths through the nonenharmonic pitches (i.e., upward through D-sharp, A-sharp, etc. on the one hand; downward via A-flat, D-flat, etc. on the other), there was found "a very noticeable discrepancy between sharp and flat tones": the sharps were slightly lower in pitch than their corresponding flats (e.g., G-sharp was lower than

A-flat, and so forth). The substitution of available notes for required nonenharmonic ones inevitably caused some variation in the proportions of the intervals. For example, there were two sizes of semitones on the instruments, the major and the minor. These contributed to good and bad thirds (cf. Denis). Additional irregularities resulted from the unequal tuning of the fifths and thirds in irregular temperaments.

If the notion of modulation can be extended beyond the essential notes to include the entire octave species (see Ozanam's discussion of the earlier modes below), then one might conclude that differences in the intonation of any of the intervals could have an effect on the modulation. Such an assumption seems reasonable: Ozanam related modulation in a general way to the movement of a piece within its mode, Brossard extended the domain of the influential pitches to include the "natural notes," and Rameau equated the modulation with the order of the diatonic whole tones and semitones within the octave. With the hypothesis supposed, the substitution of the minor semitone for the major one, or vice versa, due to the unavailability of the required note on the instruments, would produce some change in the modulation. Such a substitution would be required in E major, for example. Since D-sharp was not available on the keyboard, E-flat would have to be substituted and the modal octave would be played: E, F-sharp, G-sharp, A, B, C-sharp,
E-flat, E. Because of the difference in pitch between the sharp and the flat, the minor or chromatic semitone (E-flat - E) was smaller than the major or diatonic one (D-sharp - E); consequently, the leading tone of E major would have been more acutely inflected than those leading tones would have been which formed diatonic semitones with their finals.

The employment of different sizes of intervals in the practice evidently yielded quantitative differences that were detectible. Rousseau observed in the Traité de la violé (1687) that the disparity between the minor semitone and the major one was "appreciably perceptible" on the monochord.226 He cited the existence of Italian harpsichords with split keys as proof of the necessity of performing the two kinds of semitones. He then contrasted those instruments with the French clavecins in particular, where the absence of the nonenharmonic keys often resulted in out-of-tune cadences and consequently "bad effects in the transposed tones."227

Lindley has observed the use of differently-tempered fifths and thirds on keyboard instruments:

Certain irregular keyboard temperaments, in which different 5ths are tuned differently but none rendered unserviceable, were favoured during the late 17th and 18th centuries because they enabled the more frequently used 3rds to be tempered less than those used infrequently, and because the various keys thereby gained a

diversity of intonational shading that was highly valued by connoisseurs and formed a prominent aspect of 18th-century musical thought.\textsuperscript{228}

From the preceding discussion, it appears that the differences among the modes in terms of both the register and the temperament of their essential notes—and by extension the height and temperament of their entire octaves—were factors which contributed to differences in their modulation. It further appears that those differences were perceptible and consequently provided the capability for the modes to express the different passions. In other words, the affective quality of each mode evidently resulted at least in part from its pitch and the temperament of its intervals.

Rousseau commented on the issue of the suitability of certain modes to express particular passions in the closing statements of his response to the ninth question. He declared:

\begin{quote}
I do not mean, however, that one cannot express on other tones the different passions of which I have just spoken (table 5), but it is certain that those I have cited are more suitable to them than any other(s). Therefore, one can know that if there were only this reason, it is forcible enough to prove the usefulness of the transposed tones.\textsuperscript{229}
\end{quote}

One will observe that for five of the six different

\textsuperscript{228} Lindley, "Temperaments," 661.

\textsuperscript{229} Rousseau, \textit{Méthode}, 79.
passions Rousseau discussed, he cited two different modes as appropriate. In one instance, both of the modes were natural. In two other instances, both modes were transposed. In two additional instances, he cited both a natural mode and a transposed mode as suitable. One question suggests itself: How could two different modes be capable of expressing a single passion? More particularly, how was it possible that both a natural and a transposed mode could express the same passion? These questions are difficult ones, and no easy answers may be forthcoming. It has been suggested that the differences in the modulation of the various modes rendered them capable of expressing the different passions. It further has been proposed that the variable elements of the modulations, the pitch and the temperament, provided the modes with those capabilities. Perhaps it was the interaction of those variable elements which could render two different modes capable of expressing the same, or a similar, passion.

Ozanam.--Ozanam discussed the differences that were found among the earlier modes and contrasted them with the differences that were observable among the modern modes of his day. He remarked that there was a "very essential difference" among the former ones, which consisted of the different positions of the semitone Mi-Fa. He attested that the different placement of that semitone in the various
modes (i.e., in their octave species) changed the order and the manner of the modulation. He then described the differences that were found among the modern modes:

Instead of this [essential difference in the position of the semitone], there is in our modes [an] essential difference only between the modes of the major third and those of the minor third. But among the different modes of the major third, as well as among those of the minor third, there is only an accidental difference, which results from voices and instruments being limited in their ambitus toward the low register and the high, which causes a difference of situation of the principal notes of each mode.

For example, if one supposes that a soprano voice has for [its] entire ambitus only eight notes from G below up to G above, it is evident that the mode of G will have the final in the two extremities of the voice, that the modes of C [major] or D [minor] will have the final nearly in the middle [of the voice's range], and that the other [modes] will have it nearer to the low or the high [end of the range]. Consequently, the positions of the mediant and the dominant will change in proportion, which does not fail to cause a remarkable diversity in the modulation of each mode.

If we tune our instruments in the exactness that the just division of the monochord requires, there would be yet another difference among our modes. This would consist in [the fact] that like intervals of like modes would hardly ever be found exactly equal, and one mode would be more or less harmonious and melodious than another such [mode].

Whatever [care] we may take in tuning our instruments in order to make all their Accords equal, there does not fail to be found always some inequality in them. That is what causes us to observe an "indefinable something" sad or cheerful, tuneful or harsh, which causes us to distinguish one mode from another by the assistance of the ear. 230

In his statements above, Ozanam cited three differences
among the modes of his day. He observed, first of all, that
an inherent or material difference was found only between
the modes that had the major third above their finals ("les
Modes de b quarre") and those that had the minor third
("ceux de b mol"). He also observed, however, that within
each of those classes there was an accidental difference
among the modes, which resulted from the circumstance that
the final and the other essential notes of different modes
were situated differently within the ambitus of the
individual instrument. He then declared that in like
modes—that is, in modes which were both major or both
minor—, corresponding intervals hardly ever would be
exactly equal, and those modes therefore would differ in
their degree of sweetness and tunefulness.

The fact of inequalities among like intervals, in
Ozanam's view, was not unique to the temperaments of his
day. He affirmed:

It is the same [circumstance of] inequality
between like intervals which caused one of the
greatest differences among the modes of the
"ancients," for they abided exactly by the
harmonic division of the monochord, and they also
had several different divisions of the monochord
which differed even more from ours . . . 231

He thus recognized that in the modes of the ancients, the
intervals differed in their proportions from mode to mode.

231. Ibid., 662-3.
Evidently, the inequalities among corresponding intervals—and therefore the perceived qualities of the modes—also differed somewhat from those of the transposed modes of his day.

It would be interesting to know what circumstances produced inequalities among the ancient modes. Throughout the sixteenth and the early seventeenth centuries, a number of varieties of regular mean-tone temperament were in use on keyboard instruments,\textsuperscript{232} and such temperaments evidently were widely in use on French wind instruments throughout the seventeenth century and later. Irregular temperaments for keyboard instruments were cited by Schlick and Praetorius—and inadvertently by Mersenne (see above)—, but they apparently became commonly used on French instruments only later in the seventeenth century.\textsuperscript{233}

It seems possible that inequalities of temperament may lie at the basis of Ozanam's classification of the natural and transposed modes. Lindley has observed:

Ozanam's distinction between "natural" and "transposed" modes confirms that the inequalities

\textsuperscript{232} Alan Curtis observes that Jean Denis (2d. ed., 1650) was an "avid partisan" of the simplest (i.e., 1/4 comma) mean-tone temperament (Denis, introduction, X). Denis' laudatory references to the temperament he dealt with as the "musical" and the "harmonic" (see, for example, pp. 9, 11-13) perhaps suggest its acceptance in the practice of his day.

\textsuperscript{233} See Lindley, "Temperaments," 661-7 (especially 665).
in question were distributed not at random but in a pattern consistent enough to allow the keys to be identified by ear according to their intonational inflections.234

Saint-Lambert (1702) later based his distinction between the natural and transposed modes on the temperament.

While Ozanam attributed the observable differences in the qualities of the modes to inequalities in the tuning of the Accords (i.e., the intervals of the modal octave), he confessed that other circumstances also contributed to the capability of distinguishing the modes by ear. Those factors included the characteristics of the particular instruments, the practice performers had of playing one note differently from another, the practice of the ear of judging in such cases, and "several other circumstances," which unfortunately he refrained from discussing.235

Charpentier.—The author addressed the question "Why the transpositions of the modes [?]," stating:

The first and less important reason is to make the same piece of music singable by every kind of voice. The second and principal reason is for the expression of the different passions, to which the different power [literally, énergie] of the modes is very suitable.236

The author then listed the modes and their associated passions. His list has been reprinted in part below.

234. Ibid., 668. 235. Ozanam, 662.
236. Charpentier, f. 13r. (p. 267).
Power of the modes

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C major third</td>
<td>Cheerful and martial</td>
</tr>
<tr>
<td>C minor</td>
<td>Sombre and sad</td>
</tr>
<tr>
<td>D minor</td>
<td>Solemn and devout</td>
</tr>
<tr>
<td>D major</td>
<td>Joyful and very martial</td>
</tr>
<tr>
<td>E minor</td>
<td>Effeminate, amorous and plaintive</td>
</tr>
<tr>
<td>E major</td>
<td>Quarrelsome and clamorous</td>
</tr>
</tbody>
</table>

Charpentier's two reasons for the transposition of the modes are of interest. His first reason pertained to performance (see chapter 3); his second one related to composition, since the expression of the passions depended on the deliberate choice of the composer. The greater importance of the latter reason in the opinion of Charpentier is not surprising, as his treatise is primarily concerned with the rules of composition.

Sauveur.--In *Principes d'acoustique et de musique ou système général des intervalles des sons* (Paris, 1701), Joseph Sauveur recognized that differences in the temperament of the intervals of the modes were a cause of the expression of the different passions. In his discussion of a particular temperament, he referred to a table (table 6) in which he had expressed mathematically the intervals above the finals for each of the twelve fundamental pitches. He wrote:

One observes with this table first that if one takes Ra [D] and even Lo [A] for [the] fundamental pitch or for the final of a song or Air, all the tempered diatonic intervals are just, but if one takes another sound for [the] final, there will be more or fewer intervals altered. Secondly, by this table, one sees what sound of the clavecin may be the most advantageous to serve as [the] final in a piece that would be in major or minor, whose just or altered intervals are able to indicate more pathetically the passion that one desires to express.238

Table 6. Sauveur, Principles, 60.

<table>
<thead>
<tr>
<th>Intervals Diatoniques.</th>
<th>I.</th>
<th>II.</th>
<th>III.</th>
<th>IV.</th>
<th>V.</th>
<th>VI.</th>
<th>VII.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT PA. d pl. RE RA. b go. MI GA. FA SO. d i. SOL BO. d b. LA LO. b dc. Si DO.</td>
<td>o (3) 7 11 14 18 21 25 (18) 31 36 39</td>
<td>o 4 (8) 11 (13) 18 (11) 25 19 (33) 36 (40)</td>
<td>o 4 7 11 14 18 21 25 29 31 36 39</td>
<td>o (1) 7 (10) 14 (17) 21 25 (18) 31 (33) 39</td>
<td>o 4 7 11 14 18 (11) 25 29 31 36 39</td>
<td>o (1) 7 (10) 14 13 21 25 (18) 31 36 39</td>
<td>o 4 7 11 13 (15) 18 21 25 19 (33) 36 (40)</td>
</tr>
</tbody>
</table>

Copyright 1973 by Minkoff Reprint. Used by permission.

"Éclaircissement."—The question of the usefulness of the transposed modes surfaced again in an anonymous essay published in 1718 in the Journal de Trevoux and reprinted a few months later in the Journal des Scavans.239 The essay

238. Sauveur, 61.

239. See Mémoires pour l'histoire des Sciences et des
was entitled "Éclaircissement d’un Problème de Musique pratique, pourquoi l’on employe quelquefois dans la composition, les tons ou modes transposez préférablement aux tons ou modes naturels?" ("Clarification of a problem of practical music: Why are the transposed tones or modes sometimes employed in composition preferably to the natural ones?")

The author recognized that there were only two kinds of tones, major and minor ones. Because of this, he believed, the transposed Airs for singing could be written instead in a natural tone such as C major or D minor, regardless of the number of sharps or flats found in their signatures. He thus recognized the equivalence of the transposed and natural tones. He declared that the singer who was given an Air to sing either in C major or in D major, if he were capable, would find with both kinds of notes "precisely the same melody [chant] and the same Air," and that as much could be said in regard to any particular transposed tone. In other words, an Air written either in a natural

beaux Arts (Journal de Trevoux), facsimile ed. (Geneva: Slatkine Reprints, 1968), XVIII (August, 1718), 310-19; Journal des scavans LXV (January, 1719), 69-76. All citations of this work have reference to the latter source.

240. Future references regularly will employ the abbreviated title of "Éclaircissement."

mode or in a transposed mode would be the same Air for the skillful singer. Having supposed this, he questioned the necessity for the use of the transposed tones in vocal Airs, since those tones were more difficult to perform (i.e., to read and sing with precise intonation) than the natural ones. 243

While he affirmed that it would be unnecessary to write vocal music in anything but a natural mode, the author recognized that instrumental performance was different, because in it one was required to play the transpositions on different keys and pitches. 244 He asked if the difference in the pitch of the transpositions was the sole basis for the proof of the charm (or gracefulness) that allegedly was experienced from them. He confessed that one expert thought as much, who reasoned that there was no particular rule for the transposed tones in composition and held that the sole reason for their use was that a piece performed a tone higher would have more brilliance and luster. 245

The author set out to refute the expert’s notion. He demonstrated through an example of a composer’s choice of the transposed tone of B major instead of the natural one of C that the reason for which a composer chose a transposed tone was not necessarily the desire to place an Air higher

243. Ibid. 244. Ibid., 70-71.
245. Ibid., 71-72.
in order to obtain more brilliance. On behalf of his opinion, he invoked the experience of musicians, citing their recognition of differing qualities among the tones:

If there were not any other difference at all between the transposed tones and the natural ones than to be performed either higher or lower, that would be to accuse musicians of prejudice in their notions when they say that one tone is either more beautiful, piquant or tender than another. It [i.e., the tone] will not differ then from that other [one] solely because it is performed a degree higher or lower. If that were [the case], [one] would only have to play an Air on an instrument [pitched] either higher or lower in order to produce the entire effect of the transposition, and that, however, does not happen at all.  

The author then related an experiment he had done, in which he had had a piece performed first in C major and then in C-sharp major on the same clavecin. His audience recognized a "very great and very perceptible difference," which they evidently did not experience when he supposedly had the same piece performed on two different clavecins, one of which was tuned a semitone higher than the other. In the latter instance, the piece apparently was played on the same keys of both instruments, with the C of one of them tuned to C-sharp and with the same proportions among the intervals of both octaves.

Having illustrated the existence of perceptible differences between a transposed tone and a natural one, the

246. Ibid., 72.  247. Ibid.  248. Ibid., 73.
author set out to explain the nature of those differences and to describe their effects on the listener. He argued that it was impossible to divide the octave into semitones in such a way that they would all be equal; that is, he denied the possibility of a practical equal temperament. His proof was the fact that tuners of instruments had to make certain intervals less just in their tuning of the octave. He affirmed that if one attempted to obtain just fifths when tuning the clavecin, the instrument would be "badly tuned" through its entire ambitus. He concluded that the differences between the intervals of a transposed tone and those of a natural one were the cause of the different effects produced by those tones:

One can say as much in regard to other musical instruments, that if one once understands this [i.e., the impracticality of tuning all the fifths justly on instruments], it is easy to understand why a piece performed on a transposed tone produces in the ear an effect different from [that produced on] a natural tone; it is that it then no longer is played with intervals on the musical instrument which are precisely of the same compass as the intervals of the natural tone.  

His statements recall the words of Ozanam.

While the author applied his remarks to other (i.e., non-keyboard) instruments, which evidently were tempered according to some variety of mean-tone temperament, his statements appear to have particular reference to the

249. Ibid., 73-74.  250. Ibid., 74.
Irregular temperaments that were in use on keyboard instruments in eighteenth-century France, Lindley observes:

The most characteristic type of 18th-century keyboard tuning was an irregular temperament with no wolf 5th but with the 3rds in the C major scale tempered lightly as in some form of mean-tone temperament; most of the 3rds in "modern" keys (such as B major, Ab major or F minor) were thereby rendered distinctly more impure than in equal temperament. As a modulation of triadic harmonies moved about the circle of 5ths the amount of tempering in the 3rds would thus change, in a more or less unabrupt fashion, according to whether one was closer to the front or back of the circle as shown in fig. 2 (i.e., fig. 9),... Concomitant to variously tempered 3rds were diverse sizes of semitone, the largest being E-F and B-C and the smallest C-Db and perhaps F-Gb (or E#-F#). Hence the major keys with few sharps or flats had the most resonant and limpid triads but the least keenly inflected leading notes. In minor keys the effects were more intricate, E minor for instance having a sharper leading note but a less harsh tonic triad than F minor, a key often remarked on (e.g., by M.A. Charpentier, c1695; Mattheson, 1713; Rousseau, 1768; Gervasoni, 1800) for its dark qualities,... Qualities of nuance in various keys created by this kind of tuning contributed much to the beauty of the Baroque French harpsichord and its music by such masters as D'Anglebert and Francois Couperin,...

French tuning instructions characteristically required two or three 5ths at the back of the circle of 5ths to be tempered slightly larger than pure (most probably Ab - Eb - Bb - F,...), thus producing a more pronounced difference in size and quality between the 3rds Db - F - Ab - C and the 3rds among the seven diatonic notes. This kind of tuning was often referred to by 18th-century French musicians as the "ordinary" or "common" temperament, though some occasionally confused it with regular mean-tone,... or with some tuning similar to the irregular temperament described above,... 251

least tempering of thirds

![Figure 9. Relative degree of tempering of the thirds above the finals in typical keyboard tunings of the eighteenth century (based in part on Lindley's figure 2).]

N.B. Major tones lie outside the circle, minor ones within.

The author of the essay elaborated on the manner in which the listener identified differences between the natural and the transposed tones. He indicated that if an Air were performed on two different tones, the initial interval of the Air would have a slightly different intonation in each of the tones and one would perceive some difference when performing those initial intervals. He recognized, however, that either a highly refined sense of
hearing or extensive experience was necessary in order for one to identify exactly the small differences among the intervals of different tones.252

The author's final remarks will be reprinted in full.

Connoisseurs distinguish [the effect of a piece played on a transposed tone or on a natural one] very well, and it is this difference for which I say that it is impossible to find the basis except in the unequal division of the [whole] tones or intervals on the instruments. Thence [it follows] also that those who have a great experience with instruments claim that certain tones are more graceful or sweet, [or] more sprightly or audacious than others. There indeed could be a little arbitrariness in that diversity of claimed qualities of the tones, but it is certain that some [diversity of quality] is encountered there.

Thus in general the natural tones produce a plainer and simpler music, because their division is the most exact which could have been made in the practice. On the other hand, the transposed tones are more peculiar and more extraordinary, since the division of their intervals is a little less just [i.e., exact], but it is that very absence of exact justness which produces their charm. That slight singularity, [by] drawing the soul thusly from a too-ordinary and too-uniform sentiment, arouses [the soul's] attention and grants it a moment of pleasure. That is approximately what happens in stews [ragouts], [whenever] more vinegar, pepper and other spices are added than would be needed in an ordinary seasoning, the kind best suited to health. That slight irregularity gives to the soul a feeling of excellent taste which is pleasing, if only because of its novelty. It offers enough variety for enjoyment and too little for a misjudging of the impressions it is supposed to make the most naturally and which basically are the most perfect. That is to say that in life, perfection itself, being too uniform, is not what gives the most satisfaction, and it is necessary at times to

depart from it a little in order to appreciate it better.253

The statements above will be summarized briefly. The author observed in the irregularity of the temperament of intervals the source of the musicians' claims of differing qualities among the tones. He ignored the issue of the difference of the pitch of the tones; his earlier statements seem to suggest that he did regard it to be a factor, though of far less consequence than that of the intervals. His failure to observe the factor of pitch in his final statements may indicate that he considered it to be so insignificant as to be unworthy of mention; alternatively, he may have regarded it to be so obvious as not to require restatement.

While admitting that the assignment of particular qualities could be somewhat arbitrary, he nonetheless recognized that a diversity of qualities did exist. He described differences between the natural and transposed tones in general terms, linking those differences to the temperament: he indicated that the natural tones were the most in tune (cf. Saint-Lambert).

The author concluded his remarks by describing how the irregularities in the temperament of the intervals affected the hearer. His reference to the modification of the state

253. Ibid., 75-6.
of the soul by an external influence recalls notions of Aristotle which were restated by Vincenzo Galilei\(^\text{254}\) and René Descartes (whose doctrine was vital to the Affektenlehre of the Germans).\(^\text{255}\) The author endeavored to illustrate the influence of the transposed tones on the soul through a comparison of their effect to that of the characteristically stronger-than-ordinary flavoring of stews (ragouts).

Mattheson.—The article of the anonymous author was reprinted by Johann ("Jean") Mattheson with an extended commentary under the title Réflexions sur l'éclaircissement d'un problème de musique pratique ("Reflections on the Clarification of a problem of practical music"); Hamburg, 1720). Mattheson's "reflections" were a series of remarks on successive portions of the essay. The remarks were polemical in character: Mattheson took issue with many of the anonymous author's statements, which he refuted point by point with brilliant logic and an occasional note of

\(^{254}\) See Galilei, 127-9.

\(^{255}\) Hans Lenneberg has noted that in De passionibus animae (1649), Descartes explained the soul's reception of feelings through the essprits animaux (Lenneberg, "Johann Mattheson on Affect and Rhetoric in Music," Journal of Music Theory II (1958), 47). See the following general sources: "Affections (affects), doctrine of," *The New Harvard Dictionary of Music*, 16; "Rhetoric," op. cit., 698-700. See also note 293 below.
condescension. He perhaps gave away his distance from the French tradition and way of thinking in his "Avertissement" or foreward, where he confessed: "I have never set foot on French soil." 256 One must not on that account dismiss his views as provincial, however, for he was widely read, as his frequent quotations of Latin, Italian, German and French sources testify. 257 His familiarity with the writings of his contemporaries in France is particularly noteworthy. 258

Mattheson approached the question "Why are the transposed modes or tones sometimes employed in composition preferably to the natural ones?" by first attacking the notion that lay at the basis of that question, the doctrine of the natural and transposed tones. He then proceeded to answer the question rather summarily, following which he went to great lengths to demonstrate the causes of the different effects that the various tones had upon hearers.

Mattheson at once repudiated the notion that some tones were natural and others were transposed, declaring all of them to be equally natural. He affirmed:

256. See note II-256.

257. Mattheson, Réflexions, 6, 9, 23-4, 27, 30 (see his footnotes).

258. He referred, for example, to a number of different volumes of the Journal de Trevoux, to the dictionary of Brossard and to the treatise of Frère, upon the last of which he bestowed harsh criticism (Réflexions, 1, 8, 10, 24).
In short, there are not any transposed tones at all in the world, because each of the twelve sounds which are used is a true original and very natural, having its own properties and attributes which distinguish it from every other sound or tone. One has transposed Airs but one does not have any tones or modes at all which are transposed. To speak of transposed tones is precisely to overthrow the order of nature, to establish false principles and to present ideas which absolutely throw one into error, since they are all equally natural.259

This thesis he had stated previously in a letter to Fux.260

It became the basic tenet of the Réflexions.

259. Ibid., 5. According to Lester (1978, pp. 88-9), Mattheson also regarded all the semitones to be natural. Lester refers the reader to the author's Das beschützte Orchester (Hamburg, 1717), 73.

While certain of the Germans, conservative in dogma (Buttstett, Fux), held views analogous to those of the French, others (e.g., Mattheson; Spless, 1745) rejected the notion of natural and transposed tones altogether (see Lester (1978), 92, 95). The issue saw much controversy, with Mattheson the perennial partisan --but often not the initiator of the dispute—and evidently the perennial victor. Numerous exchanges took place between him and the conservatives: there were disputes with Buttstett, Fux and finally the anonymous author. Mattheson defended his notions against attacks of the first in Das beschützte Orchester; he answered the second personally in two letters, and he published his reply to the third in his Réflexions. See notes 208-11.

260. In a letter to Fux dated December 18, 1717, Mattheson had affirmed:

"I will have nothing to do with transposed tones, and would not even recognize the term in this case at all [i.e., in relation to the twenty-four keys]; rather my thoughts go toward independent, essential, and authentique tones, of which each has its own figure, number, effect, properties, and powers separately, so differentiated from all others in kind that even a child can see it" (Lester, "The Fux-Mattheson Correspondence," 48-9).
Mattheson’s recognition that the individual pitches were "equally natural" necessarily contradicted the notion of natural and transposed notes. His repudiation of the concept also is evident in the following statement: "The sounds [of the chromatic scale] have been constituted by the Creator, having need neither of our art [or skill] nor of our transposition."261 Thus he rejected the French notion of the transposition of the tone in its entirety.

It appears that for Mattheson the concept of "transposed tone" implied the transposition of a tone to another pitch. He evidently could not accept the notion in part because the "transposition" could not possibly be exact. He believed that the sizes of the intervals differed in the different tones:

One must not ask if such an Air remains the same Air when transposed, for noone will deny it. The question is whether the tone or mode remains the same tone or mode in its proportions and intervals when an Air is performed on twelve different pitches. It seems to me that when one removes a melody so very far from its natural sphere and presents it under so different disguises, that must cause not only some accidental changes but indeed some essential [ones] in regard to the disposition of the material, I mean in the size and measurement of its proportions and intervals.262

Mattheson’s notion eventually became commonly accepted. In recent times, Atcherson has reaffirmed the impossibility of transposing the keys ((1973), 208).

261. Mattheson, Réflexions, 7.
He suggested that since the tones differed in the proportions of their intervals, they did not possess the identity necessary to be regarded as transposed. He later observed that the differences of the measurement (i.e., the sizes) of the intervals, in conjunction with the differences in the pitch of the tones, would produce different effects (see below). It seems that for him the differences of effect of the tones demonstrated their uniqueness and contradicted the notion of "transposed tone."

Mattheson denied the validity of a distinction between natural and transposed tones which derived from differences in their temperament. He observed:

> All [pitches] have the same original simplicity, if one understands how to temper them well. Consequently, music can be as simple and natural in the less-used tones which by abuse are called "transposed" as in those that are called "natural." 263

He also rejected the commonly held view which limited the notion of the "natural" tones to natural signatures. He first attacked the idea that sharps and flats were indicators of transposition—, that is, that the transposed modes could be recognized by the presence of sharps or flats

262. Ibid., 3. Lester ((1978), 90) observes that Mattheson held that each major tone and each minor tone was unique as a result of differences of temperament (Das geschützte Orchestre, 382). See also Lester (1978), 89 and 102, note 78.

263. Mattheson, Réflexions, 30.
in their signatures:

Besides, the sharps and flats are not in the least signs of transposition, because they frequently are used in the tones or modes which are anything but transposed. Those figures only serve to mark the sounds, [which are] all equally natural, as human voices sufficiently prove. 264

He professed further:

People speak as if those notes, sharps and lines rendered one tone less natural than another. They speak of thirds, fourths, etc. as if all the thirds and fourths were of the same proportion, which however is not the case.

The tones would be the same tones, incapable of transpositions, all equally natural, were there neither notes, lines, nor sharps in the world. Those things result from the tones, but the tones are not regulated by them. They are marks and not masters. . . . [Since] the Gamme, scale or diatonic succession of the pitches in the octave is easy and common to everybody, they have thought to confer upon those pitches the name of natural tones in a century in which the world was so natural or simple that those who showed the slightest skill passed for supernatural men and even for magicians. 265

Mattheson referred to the notion of the transposed tones as the error of his predecessors, and he questioned the necessity of following their "defective doctrines and expressions." 266 He went so far as to affirm: "It is merely ignorance alone that has invented the precious terms

264. Ibid., 2-3.

265. Ibid., 5-6. Mattheson was elaborating on certain notions he previously had expressed in Das beschützte Orchestre. See Lester (1978), 89.

266. Mattheson, Réflexions, 30.
of 'natural' and 'transposed tones,' whose distinction is only a mere creation of the imagination [chimera]."\textsuperscript{267} He felt that the concept of natural and transposed tones was based on first impressions without either the thorough examination of the nature of things or the knowledge of "the true form of the intervals."\textsuperscript{268}

While Mattheson rejected the notion of "transposed tone," he admitted that Airs could be transposed: "It is the Airs which are transposed into the tones; [the latter are] different, yet entirely original, particular, diverse and natural."\textsuperscript{269} He thus accepted the notion of transposition in relation to performance. However, he opposed all transpositions that were not done "by necessity."\textsuperscript{270}

Although he rejected the French notions of transposition in composition, he described a kind of transposition which had its origin in composition:

But there are transpositions, or transposed Airs and pieces of Airs, for which composition has great rules (with due deference to the skillful teacher) [i.e., the author]. "Where are they?" one may ask me. I reply that they are found principally in all the canons and double counterpoints, which basically are nothing other

\textsuperscript{267. Ibid., 8.}
\textsuperscript{268. Ibid., 5.}
\textsuperscript{269. Ibid., 6.}
\textsuperscript{270. Ibid., 15.}
than transpositions of the same subject into other tones, which is the sole kind of legitimate and acceptable transposition; all the other [kinds of transposition] are only corruptions and mutilations, which a composer who understands precisely the doctrine of harmonic proportions never allows except by necessity.\textsuperscript{271}

Once Mattheson had repudiated the doctrine of the natural and transposed tones, he addressed the question which the author had stated as follows:

Musicians are asked, "Since the melody [chant] is always the same in [both] the transposed tones and the natural tones, why do you employ the transposed tones, which are much more difficult to perform, instead of the natural tones, whose performance is easier?"\textsuperscript{272}

Mattheson replied:

Since the assumption is not true [that the singer would find "precisely the same melody and Air," whether that Air were written in one tone or in another], and as the melody of a transposed Air is not precisely the same in all of its parts or proportions, one can reply to the preceding question that it is even for the sake of the great variety which is found among the tones that one sometimes employs one [and] sometimes another, in order to make the Airs more pleasing and in order to move the soul and the ear better, which are pleased by the diversity.\textsuperscript{273}

Mattheson was uncomfortable with the author's limitation of the scope of his remarks concerning the differences among the intervals and the differences of the effects of the different tones to performance on musical

\textsuperscript{271} Ibid., 17.

\textsuperscript{272} "Éclaircissement," 70; Mattheson, Réflexions, 7.

\textsuperscript{273} Mattheson, Réflexions, 7-8.
instruments. He must have regarded the author's declaration of the sameness of the Air on different tones in vocal performance to be contrary to his notion of the individuality of the tones. He perhaps also saw it as a potential argument for the notion of "transposed tone" with regard to vocal music and therefore as contributory to the case for reducing to the natural, which notions were contrary to his principles. At any rate, Mattheson placed great emphasis on the adaptation of voices to accompanying instruments and stressed their consequent adoption of the same intervals and their production of the same effects. For instance, he declared:

That unequal division of the tones or intervals, which only in part is the basis of the difference in question [of the effect of one tone as opposed to another], is as much followed and imitated by the voices as it is inevitable on instruments, at least if they must be tuned together.\(^{274}\)

Additionally, to the author's statement that a piece performed instrumentally on a transposed tone was played with intervals of a different compass than those of the natural tone, Mattheson replied:

All that is true not only with regard to instruments but yet principally in regard to the voice. And what surprises me a lot is to observe that one speaks here of the intervals of instruments in a way so particular, as if the human voice did not have the same intervals in its entire range and consequently the same ability that the clavecins and other instruments have to

\(^{274}\) Ibid., 28.
produce a different effect with each change of the tone. . . . When those who tune instruments are obliged to make certain intervals less just, those who sing are indispensably reduced to the same necessity, and their ears incline them to it without their being aware of it.275

His affirmative answer to the question "Is not a tone the same tone whether one plays or sings?" summarizes his position.276

While the anonymous author and Mattheson both discussed the causes and the nature of the effects of the different tones, they differed in their opinions on both subjects. The author recognized the factor of pitch difference to be a secondary one, while Mattheson regarded it to be the principal cause for the perceived differences of effect among the different tones. He stated, "The difference between a lower or higher tone is very large in [its] extent on account of the frequent or less frequent vibrations."277

He later declared:

I affirm that if the tones that are thoughtlessly taken to be "transposed" had no other prerogative than that of high and low, that would suffice for some very perceptible differences because of what we have touched on above. It therefore is not solely but principally from that cause that the reason is drawn not for the charms [agrémens] but for the variations [changemens] that are experienced with the tones in question.278

275. Ibid., 25-6.
277. Ibid., 13.
Mattheson referred to the author's experiment involving successive performances of a piece on the same harpsichord in the tones of C major and C-sharp major and then the alleged performances of the piece on two different clavecins, one of which had been pitched a semitone higher than the other. He disagreed with the author's conclusion that a very great and perceptible difference would not be found in the latter instance, expressing doubts that the author had actually performed the experiment. He believed that if the author indeed had had the piece performed on the two clavecins, he would have spoken differently.\textsuperscript{279}

Mattheson continued:

It indeed is true that in the last case the difference is not quite as great as it is in the first [case], because the intervals, for example, of the mode or tone of C major are everywhere the same with regard to their proportion, whether one raises or lowers them. However, it frankly is to give the lie to the senses to assert that that difference is not found at all in the last case, because one only has to put the two clavecins . . . into the same room and to play the same piece successively on both on the same keys, etc. One will notice without hesitating a moment the great difference produced by the height and depth, which is precisely what is more perceptible.

\textsuperscript{278} Ibid., 15-16.
\textsuperscript{279} Ibid., 21.
\textsuperscript{280} Ibid., 21-22.
The German later described an experiment which demonstrated that differences of pitch among the tones were perceptible even to the unlearned:

Tune, for example, the octave of D major on one of your clavecins precisely in imitation of the intervals which are found in the octave of C major (called natural), which moreover are very diverse, but do not lower the tone. You will find that in playing your Air first in D major on one clavecin and immediately afterward in C major on the other, [that] although their intervals have for once the same proportion, everyone present—even the children—will be aware of the difference.281

The author and Mattheson held that differences in the disposition of the intervals contributed to the different effects produced by the tones, but they disagreed on the relative importance of that factor. While the author had affirmed that the unequal division of the intervals was "the basis" for the effects, Mattheson clearly assigned that factor a subordinate role. According to him, the proportions of the intervals always were less perceptible than the "great difference" in pitch, especially to unskilled listeners.282

Mattheson proposed an experiment to prove his statements. Two clavecins were required: the one would have the octave of C minor tuned according to the proportions of C-sharp minor; the other would be tuned normally. He directed for the Air to be played successively

281. Ibid., 22. 282. Ibid. See note II-280.
on the same keys of the two clavecins. He affirmed that a
"refined and learned ear" would be required in order to
observe the precise nature of the differences in the
intervals of the two tones. He confessed, however, that
that would be easily recognized when the clavecins were
played simultaneously.283

He declared that the height of the pitch constituted
the "grossest" (i.e., most unrefined or coarsest) part of
the difference among the tones and that "the diverse
proportions of the intervals" comprised "the most refined
and delicate part."284 He further discussed the relative
magnitude of each of the composite differences:

If therefore the particular difference, which
results from the diverse proportions in the tones
or modes, is so small (as I already have
acknowledged above in the remark on paragraph 8)
that in order to perceive it, one must have a very
great experience with the pitches, and if on the
other hand the general difference in the
transposed Airs is very great and very
perceptible, as our author very well has
experienced, is it not reasonable to attribute, as
I do, the greatest part of that difference to the
greater or lesser elevation of the pitch, either
on instruments or in voices? For that which is of
that part of the difference that we are calling
small is difficult to perceive only with regard to
the precise measurement or size of the intervals.
For one is readily aware that [the measurement of
the intervals] differs, but only the learned
detect how and how much that [measurement]
differs.285

He believed that if the fifths were tempered more

equally than was customary, approaching the rules advanced by Neidhardt, the temperament would become approximately the same for all the tones and would be sufficient "without depriving us of the pleasure [or charm; lit., accord] of the difference." In other words, the differences of effect would still be perceived even without the former magnitude of difference in the disposition of the intervals. It appears that this was the case because the difference of the pitch of the tones—which was the principal cause of the differences of effect—remained.

Lindley has observed that the unequal temperaments of the French keyboards generally seem to have been "less subtle than their German counterparts." Mattheson may have been aware of this circumstance. At any rate, he suggested that differences among the tones would be able to be perceived not only on the French and German clavecins and claviers in their customary temperaments, but also on those instruments that were tempered less, after the practice of Neidhardt. According to Lindley, Neidhardt—along with Werckmeister, Meckenneuser, Sinn, Goldbach and Mattheson—took an interest in equal temperament. Cecil Adkins refers to Neidhardt's "more than two dozen" temperaments, observing that Neidhardt was an exponent of irregular,

286. Ibid., 30.
"circulating" temperaments, where the most widely used keys were designed to be the most consonant, and the less commonly used (i.e., the more remote) keys were progressively less consonant.289

Mattheson confessed his high regard for particular qualities in the tones:

Let me be permitted that brilliance and luster (to say nothing of the other qualities) in certain tones, whatever they may be, preferably to the other [tones]. Those differences suffice me, since it is very certain that brilliance and luster are as estimable in music as in jewels.290

He thus differed from the anonymous author concerning the degree of specificity that legitimately could be employed in describing the effects produced by the different tones. The French author's observation of "arbitrariness" in customary descriptions of the effects of the tones evidently made him hesitant to assign particular passions to them, for he described their effects generally (cf. Ozanam). Mattheson rejected the notion that the Affekts were arbitrarily assigned to the tones, but he observed that musicians sometimes changed their mind about the qualities they ascribed to the tones as they gained experience.291

He summarized his remarks as follows, first restating the author's question to accommodate his own notions.

290. Mattheson, Réflexions, 18. 291. Ibid., 29.
In conclusion, if one asked me then in general, "Why is one tone (whatever it may be) sometimes employed in composition preferably to another?" I would reply that in speaking only of transposition, in which the thirds do not change at all from major into minor [thirds]: 1) the greater or lesser elevation of the pitches, [and] 2) the inevitable diversity of the proportions and intervals, whether on instruments or in accompanied voices, produce very perceptible differences, which operate physically in twelve distinct ways on our sensibilities. In speaking of composition, as the "Problem" [i.e., the author's essay] does, the quality [i.e., qualities] of the major and minor thirds, combined with the two aforesaid articles [i.e., factors], gives rise to twenty-four actual variations, which in the hands of a skillful man tend infinitely to stir up every kind of passion in listeners.

Therein no doubt lies the true answer!\textsuperscript{292}

The doctrines Mattheson laid down in his essay provided a logical basis or rationale for his previous remarks on the affections in \textit{Das neu-eröffnete Orchestre} (1713) and for his later, detailed exposition of them in \textit{Der vollkommene Kapellmeister} (1739).\textsuperscript{293}

\textsuperscript{292} Ibid., 33.

Mattheson's refutation of the anonymous author's notions was relentless, and his tone at times was somewhat harsh. However, he professed that his intention was "not to refute the author of the 'Clarification,' nor to cause offense to whomever that may be"; he claimed that his sole purpose was the pursuit of the truth. In his concluding remarks, he expressed his gratitude to the author for his "fine piece," which he recognized to be among those he held to be "more estimable in that genre," and he expressed the hope that the author would not be offended by his "innocent reflections."  

Whether Mattheson's views had much of an impact generally on French musicians is not known to this author. It appears at least that certain of them were not entirely persuaded of the German's notions, for they continued to refer to the transposed tones. Rameau did so in the Traité de l'harmonie (1722) and the Génération harmonique (1737), as did Antoine Dumas in L'art de la musique (1753). Rameau's notions regarding the differences among the modes will be summarized presently.

294. Mattheson, Réflexions, Avertissement.

295. Ibid., 33. He evidently esteemed the "Éclaircissement" more highly than he did the treatise of Buttstett or the letters of Fux, which had addressed the same topic. See notes 208-11.

296. Rameau, Treatise on Harmony, 173, 263, 265, etc. (Gossett, like many other modern scholars, has
Rameau.—In book 2 of the Traité, he discussed the properties of the modes. He stated that the ancients were in error in their teachings with regard to the effects of the modes since they attributed those effects solely to the melody. Rameau’s difference with the ancients resulted from the fact that he assigned to the harmony much of the ability of the modes to produce effects on the listener.

In chapter 23, "On the properties of Modes and Keys," Rameau attributed differences in the modulation of the octaves of the final pitches to the differences in the arrangement of the (diatonic and chromatic) semitones in those octaves. He suggested that the differences in their modulation were the cause of the differences in their properties, and he listed the modes and cited the particular properties they possessed. The modes have been tabulated with their alleged qualities in table 7. Of the remaining tones (i.e., those not listed below), Rameau stated that they were "not in general use" and that experience was the most certain way to learn their qualities.

translated ton as "key.") Antoine Dumas, L’art de la musique enseigné et pratiqué par la nouvelle méthode du bureau typographique établie sur une seule clé, sur un seul ton, et sur un seul signe de mesure (Paris, 1753), 197. See also Lindley, "Temperaments," 669.

299. Ibid., 164.
Table 7. Properties of the modes and keys, according to Rameau.

<table>
<thead>
<tr>
<th>tones</th>
<th>qualities</th>
</tr>
</thead>
<tbody>
<tr>
<td>C, D and A major</td>
<td>&quot;suitable for songs of mirth and rejoicing&quot;</td>
</tr>
<tr>
<td>F and B-flat major</td>
<td>&quot;suitable for tempests, furies, and other similar subjects&quot;</td>
</tr>
<tr>
<td>G and E major</td>
<td>&quot;suitable for both tender and gay songs&quot;</td>
</tr>
<tr>
<td>D, A and E major</td>
<td>&quot;grandeur and magnificence&quot;</td>
</tr>
<tr>
<td>D, G, B or E minor</td>
<td>&quot;suitable for sweetness and tenderness&quot;</td>
</tr>
<tr>
<td>C or F minor</td>
<td>&quot;suitable for tenderness and plaints&quot;</td>
</tr>
<tr>
<td>F or B-flat minor</td>
<td>&quot;suitable for mournful songs&quot;</td>
</tr>
</tbody>
</table>

It is interesting that Rameau often related several different modes to a single quality (cf. Rousseau) and also assigned certain modes to more than one complex of qualities. It appears from his statements that he regarded the attribution of qualities to be both flexible and at least to some degree a matter of personal choice. It is evident also that those differences of qualities resulted from differences in the temperament of the individual tones on instruments.

In his *Nouveau système de musique théorique* (1726), Rameau spoke of the different effects on listeners of similar intervals which were tempered differently.

300. Ibid.
We receive different impressions from intervals in keeping with their different [degree of] alteration. For example the major 3rd, which [in its] natural [state] excites us to joy, as we know from experience, impresses upon us ideas even of fury when it is too large; and the minor 3rd, which [in its] natural [state] transports us to sweetness and tenderness, saddens us when it is too small. Knowledgeable musicians know how to exploit these different effects of the intervals, and give value, by the expression they draw therefrom, to the alteration which one might [otherwise] condemn.301

He later stated, in the Génération harmonique (1737), that anyone who thought that the different impressions he received from differences caused by the temperament of each transposed mode "heighten its character and draw greater variety from it" was mistaken. He affirmed that the variety resulted from the interweaving of the modes "and not at all from the alteration of the intervals, which can only displease the ear and consequently distract it from its functions." Those statements constituted an argument in favor of equal temperament and represented a turning away from former ideas.302 He at once contradicted statements he had made in the Nouveau système and put himself in opposition to notions expressed by Mattheson and the anonymous author concerning the effects of the temperament of the intervals on the hearer.

301. Rameau's remarks are cited in translation by Lindley in "Temperaments," 668.

302. Ibid., 669. The cited remarks are from Lindley's translation.
It appears that diversity of opinion with regard to the effects of the different tones or modes was rather wide-ranging. Mattheson’s views evidently did not represent a characteristically "German" viewpoint in contradistinction to a "French" one. On the contrary, Mattheson differed with notable authors among his own countrymen. Werckmeister (1697), for example, had said that "the reordering of the tones and semitones" along with the different "beating of the concords" were responsible to a greater degree than "the change in pitch level" for the perceived effects of the transpositions.  Heinichen (1728) had ridiculed Mattheson’s propensity to assign specific affections to particular tones but yet had admitted: "In general, one can say that one key is more suitable than another for expressing [certain] affects." It is interesting that while Mattheson expressed notions which were contrary to those of certain of his countrymen, the anonymous author of France found some points of agreement with them.

303. Ibid., 668. Lindley again is the source of the English translation.

The notions of transpositions, transposed clefs and transposed tones are closely identified with the practice of transposition—indeed, the former in a sense are obtained as a product of the latter. To transpose in late seventeenth-century and early eighteenth-century France actually encompassed two distinct practices, one of which was employed by singers and the other by instrumentalists. The vocal method had as its objective the simplification of the singing of Airs written in the transposed modes. It accomplished this objective by transposing the Airs back into the natural modes (i.e., those found within the gamme). The practice was variously termed "naturalizing," "reducing to a natural clef," "reducing to the natural," or even "making the transpositions easy." It was facilitated through the substitution or "supposition" of the appropriate clef (an optional element for some authors) which would retain the positions of the whole steps and half steps on the staff and at the same time would permit the music to be sung via the scale, without chromatic pitches. For those

1. The reader is referred to Green's enlightening discussion of transposition, 75-85.
who endorsed the two-column scale, the natural modes could have both a completely natural signature and one with B-flat. For those who accepted the "single" (-column) scale, the natural modes could have only the completely natural signature of no sharps or flats.

The instrumental method had a number of purposes, including the following: 1) to transpose an accompaniment performed on the clavecin, viole, etc., to another tone or pitch in order to adapt it to the range of a singer; 2) to accommodate one instrument to another which was tuned to a different pitch; 3) to adapt a part written for an instrument with a different range to the range of one's own instrument; 4) to enable one to perform with an ensemble in which one of the performers had to transpose a part in order to adapt it to his own instrument.

Transposition for the instrumentalist thus was a practical necessity both in the accompaniment of solo Airs and in ensemble music. The instrumentalist transposed by adopting an appropriate clef and signature which would permit him to read the notes as they were written on the staff, yet the pitches associated with those notes were changed (transposed) so that he actually read his part in another mode or tone.

Common to both the vocal and the instrumental methods was the use of the seven or eight positions of the clefs (example 16). Singers often were taught, and also
instrumentalists who transposed (e.g., accompanists) evidently were required to learn, the four positions of the

Example 16. The different positions of the clefs.

\[ \text{Example 16. The different positions of the clefs.} \]

C-clef on the first, second, third and fourth lines, the two positions of the F-clef on the third and fourth lines, and the two positions of the G-clef on the first and second lines. Because the F-clef on the fourth line (the bass clef) and the G-clef on the first line (the "French violin clef") put the pitch letters on the same lines and spaces (i.e., they designated the same pitches two octaves apart; see example 17), there actually were only seven non-duplicative clef positions.

Example 17. Equivalence of the bass clef and the French violin clef with respect to pitch class.

\[ \text{Example 17. Equivalence of the bass clef and the French violin clef with respect to pitch class.} \]

Through the use of the seven different clefs, singers were able to correlate each note name and its associated pitch letter from the scale with every degree of the staff and thus were able to reduce any transposed Air to a natural
tone, regardless of the position of the final pitch on the staff. Likewise, instrumentalists were able to change the pitch of any staff degree to any other pitch and consequently were able to transpose their music by any interval.

The singer employed the supposed clef solely to guide him in his solmization of the transposed modes reduced to the natural, i.e., to change the names of the notes or pitches on the staff in order to sing via a natural mode. He did not use that clef in order to determine the pitch of his performance: the actual pitch at which he performed his music was entirely independent of the clef, at least for solo Airs. The instrumentalist, on the other hand, used the substituted clef with its accompanying signature in order to change the pitch or tone of his music to another: the pitch at which he performed his part was entirely dependent upon the substituted clef. Thus, for the singer, the assumed clef did not reflect the pitch of performance, while for the instrumentalist, the substituted clef determined the pitch.

The usefulness to singers and instrumentalists of the different positions of the clefs may be summarized as follows. Each of the seven voice parts evidently employed its own unique clef position in its music. In their actual performance, however, all of them (regardless of their ranges) could employ any of the seven positions in order to reduce transposed Airs to the natural. Instrumentalists
often could find the seven clef positions useful to them in their practice of transposition, since they were obliged to play the actual pitches that were written and thus had to adopt the particular clef that would place the written final on the desired tone.

Transposition as practiced by singers and instrumentalists differed with respect to the quantity and complexity of the signatures that performers employed when they transposed their music. Singers always transposed to natural modes, and consequently their assumed signatures were limited to one flat or to no sharps or flats at all. Instrumentalists, on the other hand, transposed either to natural or to transposed modes, and their assumed signatures could contain more or fewer sharps or flats than were found in the given signature. Campion declared: "In this [i.e., the instrumental] practice, one does not have the advantage of vocal transposition, which is to suppress the sharps and flats. On the contrary, one must recollect all of them if need be."2 The number of signatures the instrumentalists could employ was limited only by the selection of finals and the quantity of sharps and flats in use in the musical practice.

Finally, vocal and instrumental transposition differed

---

2. Campion, *Addition*, 46. Green also has observed this circumstance (p. 81).
In the following way. Insofar as reducing to the natural was obligatory, singers were required to transpose in their performance whenever their music was written in a transposed tone. Instrumentalists, on the other hand, were not automatically required to transpose. This difference between vocal and instrumental performance was observed by Delair. He wrote:

There is plenty of difference between vocal music and instrumental music. The latter is easier than the former, since the notes are not changed in name, although flats or sharps are encountered immediately after the clef. This [not changing the names of the notes] spares great difficulty, which cannot be avoided in vocal music.3

Thus, vocal and instrumental practices differed not only in terms of their objectives and the kinds of signatures they adopted, but also in the constraints they placed upon the performer.

I propose to examine successively the methods of transposition for singers and instrumentalists outlined by a number of authors from the period. The sources will be examined in approximate chronological order, beginning with Rousseau's *Méthode* (c.1678?) and continuing through F. Campion's *Addition au traité* (1730).

3. Delair, 4. See Loulié's statement above concerning the identity of C and Ut in instrumental music. Also see Montéclair, 22.
Transposition by Singers

Transposition, for singers, commonly involved two distinct yet complementary practices: the transposition of the tone and the transposition of the notes. Church musicians and non-church musicians alike commonly transposed the pitch of their vocal music in order to adapt it to the range of their voices. They arrived at a suitable pitch through the practice of preluding, which was described in detail by Frère. The authors did not refer to the singers' practice of adapting their music to the range of their voices as "transposition."

The transposition of the notes comprised the practice of reducing transposed music to the natural. This activity encompassed two different kinds of circumstances, each of which required a somewhat different approach. The one circumstance involved regularly written signatures and the


5. Frère, 4-11. The prelude also was discussed by a number of other authors in relation to instruments, including Freillon-Ponceln (28f.), Hotteterre (preface, 3, 5f.) and Borin (13); however, Frère's colleagues seem to have devoted their attention to other matters in their singing manuals. This circumstance perhaps may indicate that they took the practice for granted because it was rather commonly employed.
other, irregular signatures. In the interest of facilitating an understanding of those different circumstances and their associated methods, each will be discussed in detail: the former under the heading Basic Concepts and Methods, and the latter under Methods for Dealing with Irregularly Written Signatures.

The methods of transposition employed by French singers of the late seventeenth and early eighteenth centuries obviously are quite different from practices followed by singers today. The transposition of the notes—"reducing to the natural"—had great practical value to "the ancients," but today their practices appear superfluous with the movable-Do solmization (which they nonetheless anticipated). With the former methods of transposition, the written pitch that was indicated by the supposed clef was different from that of the original clef. The discrepancy between the original and the supposed pitches was enhanced by the singer's practice of taking the Air at a higher or lower pitch at will in order to accommodate the music to his voice. One would suspect that such practices might have had troublesome consequences for students with absolute pitch, who presumably might read—and hear—the written melody in one mode or tone and yet would be obliged to sing it in another. Evidently, familiarity with this practice accustomed students to overlook the discrepancy. Moreover, since absolute frequencies for pitches had not yet been
established in late seventeenth-century France, it perhaps would not have been as difficult as one might expect to dissociate a written pitch from the pitch of performance.

**Basic Concepts and Methods**

**Rousseau.**—The author purposed in the Méthode to simplify for students the singing of the transposed tones because of the difficulty of their intonation. His objective is evident in the title of his treatise, which translates: "A clear, certain and easy method for learning to sing." In the preface, he promised to supply "very easy ways to sing [the different transpositions] entirely naturally, both with B-flat and B-natural." 6

Rousseau's method of simplifying the intonation of the transposed tones was to "naturalize" them, i.e., to change the specific assignment of note names with degrees so that pieces could be sung as if they were in a natural tone. He presented his method in a section entitled "Rules for naturalizing the transposed tones." 7 His discussion will be outlined below.

After he had listed the individual transposed tones, Rousseau discussed how one could identify the modality of a piece (see chapter 2). It appears that a knowledge of this

6. See II-127. 7. See II-128.
element was indispensable to his first method of naturalizing the tones (see below).

Rousseau actually had two methods for naturalizing the transposed tones. His explanation of the first of them follows. He began with C minor and B-flat major. In order for one to sing them naturally, he said, one needed to say Ut on the degree where one would say Si with B-natural. What he seems to have meant by this statement is that the singer first of all had to regard the original clef as if it had no flats at all—that is, as if it were a clef for the natural mode "with B-natural." Then he was to locate the degree on which Si (i.e., B-natural) was found. That degree had to be renamed as Ut in order to sing those tones naturally. Having renamed the degree of B as Ut, the singer then could obtain the other notes from there, without being concerned with the given clef and its flats. In the transposed tone of F minor, Sol had to be said in place of Si or B-natural (see example 18 below).

In the transposed tones with sharps, the procedure was analogous to the one discussed above. In G major, one had to say Si on the degree where Fa (F) was found in the natural modes with B-natural. In D major and E minor, one had to say Mi on the degree of F. In A major and B minor, finally, one had to say La in place of F (see example 19). 8

8. Rousseau, Méthode, 23.
Example 18. Selections from the transposed tones with flats that Rousseau naturalized (Méthode, 23).

C minor

\[ \begin{array}{c}
\text{Re Mi Fa Sol La Si Ut Re} \\
\text{[i.e., B]}
\end{array} \]

B-flat major

\[ \begin{array}{c}
\text{Ut Re Mi Fa Sol La Si Ut} \\
\text{Si=}
\end{array} \]

F minor

\[ \begin{array}{c}
\text{Re Mi Fa Sol La Si Ut Re} \\
\text{Si=}
\end{array} \]

Example 19. Selections from the transposed tones with sharps that Rousseau naturalized (Méthode, 23).

G major

\[ \begin{array}{c}
\text{Ut Re Mi Fa Sol La Si Ut} \\
\text{Fa=} \\
\text{[i.e., F]}
\end{array} \]

D major

\[ \begin{array}{c}
\text{Ut Re Mi Fa Sol La Si Ut} \\
\text{Fa=}
\end{array} \]

B minor

\[ \begin{array}{c}
\text{Re Mi Fa Sol La Si Ut Re} \\
\text{Fa=}
\end{array} \]
With this method, Rousseau assumed that the singer previously would have identified the final and its third, even as he had taught in the preceding paragraph (see above).

Rousseau's choice of Si (B) for all the tones with flats and Fa (F) for all those with sharps as the index for the change of the solmization reveals both the coherence and the logic of his method. The degree of Si was that on which the first (i.e., the common) flat, B-flat, occurred in the tones with flats, and the degree of Fa was the one on which the first sharp, F-sharp, occurred in those with sharps. Since the degree of Si was the vehicle by which all the transposed tones with flats were able to be sung naturally, and the degree of Fa was the means by which those with sharps could be naturalized, the degrees of the first flat and sharp in a sense had reciprocal functions, transposition and naturalization. This usage of those elements brought a measure of unity to Rousseau's system of natural and transposed modes.

Immediately following the presentation of his first method, Rousseau presented another. He began: "In order to make this [practice] easier . . ."9 He evidently intended for his second method to be simpler than the first. He explained that in the tones with flats, whenever there were

9. Ibid.
flats influencing (literally, controlling or dominating) two different degrees, one had to change Si (B) to Ut as before. Whenever there were three flats, one had to change B to Sol. In the modes with sharps, whenever there was one sharp, Fa (F) was changed to Si. If there were two different sharps, F was changed to Mi. With three sharps, F became La. The change of the note names or solmization syllables took place on the same degrees with both methods.

Rousseau's second method, unlike his former one, did not require the singer to identify the third of the mode; what was required was the inspection of the signature. In other words, the solmization syllable that was adopted instead of Si or Fa depended solely on the number of different sharps or flats found after the clef; the signatures thus served to indicate the change of the note names (cf. Loulić, below).

It evidently was not Rousseau's purpose to identify the tone of the piece through the signature; Rousseau did not outline the "correct" signatures for the individual transposed tones in this initial statement of his rules. In any case, the signatures alone were insufficient for the positive identification of the tone (i.e., the final), because each signature potentially could indicate either a major or a minor mode, leaving the singer with two options.

10. Ibid.
One evidently had to determine the final by inspection.

The second method had the advantage of greater simplicity than the first but was not always reliable. This was so because the signatures were not always written regularly in the musical practice. In certain cases, one or more of the sharps or flats necessary to form a major or minor mode was missing from the signature and was found instead as an accidental throughout the course of the piece. Whenever the signature was written in such a manner, some method other than the latter one would have been necessary in order for the singer to naturalize the transposed tone.

After he presented his detailed rules, Rousseau supplied a series of examples which demonstrated the relationship that the transposed tones had with the natural ones with B-flat and B-natural by the supposition of clefs. His examples, or "demonstrations" as he called them, adhered to the following plan (see example 20). He first identified the "naturalized" names of the lines of the staff. Each example had a sequence of clefs, the first of which specified the transposed tone with sharps or flats. Following the initial clef with its signature were one or two other clefs with B-flat and one or two with a natural signature. The clefs with B-flat and no flats were the substituted or supposed clefs. Those clefs assisted the

11. Ibid., 24-34.
student in the practice of reading the new names of the notes by permitting them to be read in the natural modes with B-flat or B-natural, respectively. The assumption of

Example 20. Demonstration of the transposed tone with flats in F minor (Rousseau, Méthode, 26-8).

clefs which permitted the music to be sung in a natural tone greatly simplified the intonation for the student.

The clefs which were supposed by the singer in naturalizing the transposed tones were intended to serve only as guides for those who needed them: that is, their use was optional. Rousseau recognized their potential value, indicating that his rules for substituting other note names for Si or Fa in themselves might not be sufficient for all students.
Rousseau's "demonstrations" reveal his concern with method, for he employed each of the seven clef positions with each transposed tone. His usage of the clefs anticipated Loulié's systematic demonstration of them (see example 24).

In the eleventh question, Rousseau was called upon to justify the practice of naturalizing the transposed tones. Evidently, there were those who felt that his desire to naturalize those tones was incompatible with his conviction that they were necessary. Rousseau replied:

The rules that we have given in order to sing the transposed modes naturally have as their objective only to produce facility as regards the intonation which the transposition changes around and renders difficult for beginners to perform. [This is so] because in changing the names of the notes, following the rules that we have given in the Méthode, one intones naturally and easily. 13

Loulié.--Immediately prior to his taking up of the subject of transposition for singers, Loulié discussed the three clefs. He concluded his discussion with an illustration of the seven different positions (example 21) and remarked: "There is no music that cannot be reduced to one of the seven positions above, in whatever transposition it be." 14 His different positions of the clefs, which were

precisely those employed by the seven voice parts, were absolutely indispensable to his method of solmizing.

Example 21. Illustration of the potential possessed by the different clef positions for renaming the individual staff degree (adapted from Loulié, Éléments ou principes, 25).

\[ \begin{array}{ccccccc}
    & B & B & \# & B & B & \\
Ut & Re & Mi & Fa & Sol & La & Si
\end{array} \]

transposed music.

Loulié presented his method in Part 2 of the Éléments. He first redefined transposition in terms of the practice of singers: "By the word Transposition, one can also understand the art of reducing music which is transposed to a Natural Clef." He observed: "In Natural Music, the notes are named in accordance with the clef, as it has been taught. With regard to Transposed Music, the method which follows should be applied." He immediately proceeded to a "Method for reducing transposed music to a natural clef." 15

Loulié initiated his discussion with the observation that two sharps or flats found an octave apart in the signature were considered merely as one. It was necessary that this fact be understood in order for one to avoid the misapplication of his method, as music often was written.

15. Ibid., 22-3.
with certain sharps or flats of the signatures duplicated at the octave (see example 20).

The author stated:

All rules for reducing Transposed Music to a Natural Clef correspond to the following two:

Rule 1. The final sharp signifies a clef of Si.
Rule 2. The final flat signifies a clef of Fa.

That is to say, the degree where one places the final sharp is called Si, as if the final sharp were, so to speak, a clef of Si; and the degree where one places the final flat is called Fa, as if the final flat were a clef of Fa.16

He affirmed that in order to comprehend which was the final sharp or flat, one had to know their order of succession. He explained that the last sharp or flat was the final one according to the order of the sharps or flats:

When there is only one sharp or one flat, it is both the first and last. When there are only two different sharps or flats, the second is the last. When there are only three different sharps or flats, the third is the last. And thus for four, five, and six.17

These statements will seem superfluous to present-day musicians. However, it apparently was necessary for Loulié to make them for the following reason. He seemingly was one of the first in France to discuss the order of the sharps and flats. This concept was vital to the successful employment of his method, and he evidently thought it necessary not to take it for granted. If the singer only looked for the "final" sharp or flat in terms of the

16. Ibid. 17. Ibid.
position on the staff, he might easily be led astray, for
the flats and sharps frequently were found written in an
order that was contrary to their order of succession (see
example 20).

The author stated that the sharps should be put in the
signature a fifth apart ascending or a fourth apart
descending, and he enumerated the sharps in order.\textsuperscript{18} He
then provided examples in which transposed clefs with one
and two sharps were reduced to natural clefs (example 22).

Example 22. Loulié's examples of transposed clefs with
sharps reduced to natural clefs (\textit{Éléments ou
principes}, 28).

\begin{center}
\begin{tabular}{ccc}
\text{a.} & \text{\#} & \text{\#} \\
\text{\textit{B}} & \text{\textit{Si}} & \text{\textit{B}}
\end{tabular}
\end{center}

Concerning his first example (22a), he explained that the
first note of the example was named Si because it was put on
the same degree as the final sharp, and the second note was
Ut.\textsuperscript{19} With the note Si attached to the pitch F, the
placement of the remaining notes followed. All that

\begin{quote}
\textsuperscript{18} Rousseau cited the sharps and flats in the circle-
of-fifths order when he presented the required signa-
tures for the transposed tones in his response to the
tenth question of the \textit{Méthode} (pp. 80-3). However,
he did not discuss the principle governing the succes-
sion of the sharps and flats--i.e., the intervallic
relationship of the fifth.

\textsuperscript{19} Loulié, \textit{Elements or Principles}, 24-5.
\end{quote}
remained to be done was to imagine a natural clef that would reapply C to Ut. The author illustrated further:

It is necessary to think of, and to sing, an Air which is notated with the C-clef on the first line and a sharp immediately after the clef, as if it were notated with the Natural Clef of C placed on the third line. That is known as reducing Transposed Music to a Natural Clef. 20

The preceding statements demonstrate a number of things about Loulié's method. In the first place, they show that it applied to the practice of singers. The method was of no practical use to instrumentalists, and he did not recommend its use by such musicians. Secondly, the statements demonstrate the author's assumption of complete signatures. Loulié did not indicate what one should do if the final sharp or flat were missing from the signature, nor did he even instruct students in his discourse in the way to recognize an incorrectly written signature. 21 Finally, the statements document the indispensability of the imagined clef to Loulié's method and demonstrate the relationships that existed between the transposed and natural clefs. In the Abrégé des principes de musique (Paris, 1696), Loulié catalogued relationships between natural clefs that placed

20. Ibid., 25.

21. In his later manuscript revisions of the Éléments, he cited five circumstances that would indicate an irregularly written signature, and he provided rules for correcting such signatures in order that the music might be sung naturally. See the next part of this chapter.
Ut on successive degrees of the staff and transposed clefs that had up to three sharps and flats, and he utilized all of the seven different positions (see example 24 below).

Following his discussion of two examples with sharps, the author presented the order of the flats, stating that they should be placed a fourth apart, or a fifth apart descending. He then supplied two examples of transposed music with flats reduced to natural clefs (example 23). His explanation of those "third" and "fourth" examples follows:

Example 23. Loulié's examples of transposed clefs with flats reduced to natural clefs (Éléments ou principes, 29).

![Diagram of transposed clefs with flats reduced to natural clefs]

In the third example (23a), the two flats are considered only as one. The flat is placed on B; it is the first and last one. The first note is called Fa, because it is placed on the same degree as the final flat, and the second note is called Sol.

In the fourth example (23b), the three flats are considered only as two. The second flat is placed on E, and it is the last one. The first note is Fa, and thus the others.

Loulié's notion of reducing to a Natural Clef merits comment. While his contemporaries Rousseau and L'Affilliard (1694f.) had accomplished similar objectives, their terminology had differed. Loulié evidently was among the

22. Loulié, Elements or Principles, 25.
Example 24. "Positions of Ut on all the degrees, with the relationship of the transposed clefs to one of the natural clefs" ("Positions de l'Ut sur tous les Dégrez, avec le rapport des Clefs Transposées à une des Clefs Naturelles"; Loulie, Abrégé des principes, 38-9).

See the Éléments, p. 52.
earliest authors to use the expression *régirre* with reference to the transposition of music back into a natural state, with the tones or modes reduced to two or three octave species. Mersenne had investigated the possibility of reducing all the tones and modes of music to B-natural and B-flat, but he evidently was dealing with the reduction of the eight or twelve modes to the *cantus durus* and *cantus mollis* systems. L'Affillard himself had used the term *régirre* to express the fact that all the different modes in reality were representatives of only two basic types, the major mode and the minor mode (see example 2). Loulié's associate Brossard, like his colleague, employed the term *régirre* to refer to the process of transposing music back into a natural condition: he explicitly stated that a transposed mode could be reduced to a natural one. It appears that "reducing to the natural" was a familiar practice in Loulié's day, and he cited a number of equivalent expressions which were in use by his contemporaries (see below).

In his discussion of transposition in the third part of the *Éléments*, Loulié elaborated on notions he had presented earlier and again applied his method to the practice.


He stated:

But it happens that when one wishes to perform an Air combining a voice with an instrument, if the C Ut of the instrument is too high or too low for the voice, the instrument is obliged to take the Ut a step lower, that is, on B, or a step higher, that is, on D.

An example will make this clear. [Let us suppose] that one wishes to perform the following Air, which rises up to C, with a voice whose highest note is B♭, together with an instrument.

[example 25.]

Since the melody rises up to C, and the voice being used cannot rise above B♭, the instrument must take Ut a step lower, that is, on B♭, in order to accommodate itself to the voice. In order to indicate on what note-name the instrument should take Ut, the Air is written a step lower than it would naturally have been written. That is, Ut, which in the scale is applied to the letter C, is found here transposed to the letter B♭. And it is this that is called transposition. One marks immediately after the clef the steps where the natural half-tones Mi-Fa and Si-Ut are found, either with sharps or flats, as needed. Here, flats are needed [see example 26 below].

Airs or musical works in which Ut is on a letter other than C are known as Transposed Music, which is evident by the presence of one or several sharps or flats immediately after the clef.

To conceive and to sing Transposed Music as if it were written in a Natural Clef—for example, if one conceives and sings the Air above [sic], in which the Ut is represented by a B♭, as if it were notated with a G-clef on the first line, in order to apply the Ut to the letter C without changing
the placement of the notes--is known as "to reduce Transposed Music to a Natural Clef." ... Note that, to be brief, one says, "to reduce Transposed to Natural," or simply, "reduce to Natural." 25

In the preceding discussion, Loulié made reference to different instances of transposition. He first cited the necessity for the transposition of the accompanying instrument in order to adapt its ambitus to that of the singer's voice. Transposition in performance for the sake of the singer seems to have been a familiar practice among accompanists, and one at first might assume that Loulié was referring to it. However, such clearly is not the case, for he introduced a written-out transposition both for the accompanist and for the singer, in B-flat major instead of in C. As a result of marking the natural half-steps Mi-Fa and Si-Ut after the clef, using flats, he obtained a signature of two flats. Loulié thus was describing what

25. Loulié, Elements or Principles, 53-4. Cohen regularly capitalizes AIR in his translation of the Éléments. He also uses the verb "solmizate" (cf. II-26 below). His practice has been followed throughout this paper.
Rousseau had termed "transposition in composition": his statement in paragraph three above consists of a synthesis of two of his basic definitions from the second part of the Éléments.

Once he had rewritten his example in B-flat, Loulié proceeded to identify the natural clef position which would have to be imagined by the singer in order to put Ut back upon C again without changing the positions of the notes (Ut, Re, Mi, etc.) on the staff. The natural clef changed the pitch letters assigned to the various degrees so that the pitches were associated with the note names in the same way as in the single-column scale (C with Ut, D with Re, and so on). With Ut attached to C, the music would be easier to sing than previously. The natural clef was the vehicle through which the music was made singable via the gamme and therefore was made easy to sing. Loulié's practice suggests that he did not feel comfortable with Ut dissociated from C in vocal music.

In his manuscript revisions of the Éléments, he addressed the problem of how one could solmizate music which modulated or perhaps underwent a change of mode. He stated:

There are pieces which pass from Natural to Transposed Music, or . . . from [less] Transposed to further Transposed or back to Natural, [or which pass to the minor,] etc. There are two manners of solmizing these types of music:

The first is for those who have not gained skill other than of changing the transposition [of solmization syllables] at the very moment that the music [itself] changes, in which case the final
note of a previous section should be named as if it were the first note of the one which follows.

[example 27.]

In the example above, the final note [of the first part], marked A, must be considered Ut in reference to the key-signature that follows, without changing the pitch. (Natural tones, found on the same degree, are performed at the same pitch.)

The other manner of solmizating these types of pieces is to name the notes as if the music were marked Natural [that is, not transposed], [but] observing and following the [exact] pitches [noted]. This is a skill that [one] must strive to acquire, for it can be troublesome. To do this, do not begin with excessive transpositions. Rather, gain the skill, little by little, by practicing on exercises having at first only one sharp or one flat (such as music in G Major or G Minor). Then progress, by step, to Transposed Music having two sharps or two flats, [etc.].

The two methods described above differ in complexity and concept; each will be discussed in turn. The first manner of solmizating apparently was intended for the less advanced student and involved a change of the note names or syllables at the appearance of the new mode. It thus was a quasi movable-Ut procedure. The method required the student

26. Ibid., 57. Also see the "Supplément des Principes ou Éléments de Musique," f. 136.
to rename the last note of the prior section as the final of the music which followed (i.e., as Ut or Re). The change of the note's name was to be accomplished without changing the pitch.

Loulié elaborated on this method, stating:

In the middle of a piece, when a clef is repeated from the beginning and is followed by sharps or flats [not found at the beginning], the final note of the section immediately preceding the change must be named in accordance with the new signature, without changing the [actual] pitch.

[example 28.]

In the example above, the note Re (marked with an A), being found immediately before the second clef, is the final note of the first part. This note should be called by the name Ut in reference to the signature which follows, without changing its pitch (Re).

[Example 29.]

In the second example above [example 29], the name of the note marked B should be changed from Sol to Re, without changing its pitch. And thus the others.27
The latter example suggests that the concluding pitch of the previous section was retained as a common tone with the new final regardless of whether or not that concluding pitch was the final of the former mode.

As has been stated, singers of Loulié's day apparently often performed their solo music at a pitch which was determined by the limitations of their ranges. It appears that Loulié took advantage of the independence of the written pitch and the pitch of performance in the practice of singers, for in the procedure discussed above, the new final often would have to be sung at a pitch which differed from the written one.

The practice of singers rendered Loulié's method acceptable. His method actually appears to be a realization of his concept of the separability of pitch and vocable. It is consistent with (and in a sense is an expression of) his definition of transposition since, according to Loulié, transposition in vocal music involved the combination of Ut with a pitch letter other than C.

There apparently was both an advantage and a disadvantage to that method. On the one hand, it simplified the intonation by keeping a common tone between the previous mode and the new mode. Because that common tone was taken to be the new final, the method seemingly facilitated the

27. ibid., 58-9.
singer's orientation to the new mode. On the other hand, in the transition from the former to the latter mode, the interval between the finals often was not maintained, and consequently the proper aural relationship between the tones was lost.28

The second method of solmization which Loulié discussed required the naming of the notes as if the music had been written without sharps or flats (i.e., naming them according to the given clef), while one intoned correctly the sharped or flatted notes as well as the natural ones. That in reality was a fixed-Ut method of solmization. Loulié admitted that the skill required effort to acquire, and he cautioned the student not to begin with signatures having more than one sharp or flat. Loulié's presentation of two methods of solmization demonstrates his thoroughness as a pedagogue and his interest in instructing the advanced student as well as the beginner.

Differences in the methods of Rousseau and Loulié.--- The methods that Rousseau and Loulié initially employed to naturalize transposed music have certain similarities but

28. One wonders what practical purpose Loulié's quasi movable-Ut method might have had. While it might have been useful in the unaccompanied practice of solo music, it would seem to have been out of the question for accompanists to have transposed their parts in order to allow the singer to maintain a common tone following every change of signature within the music.
also are marked by numerous contrasts. The similarities include elements such as the ultimate aims of their methods, their assumption of regular signatures, and their use of degrees corresponding to prominent sharps and flats as references for the assignment or change of the note names (i.e., their adherence to a single principle in their dealings with transposed vocal music).

The authors' assumption of regular (i.e., complete) signatures follows from the indispensability of such signatures to their methods. Loulié's method absolutely required complete signatures for the transposed modes, for if the last sharp or flat was missing from the signature, his method would lead one astray.29 For Rousseau, regular signatures were essential only to his "easier" method which depended upon the inspection of the signature.

Loulié employed a conspicuous chromatic sign, the final sharp or flat of the signature, as an index to the solmization of transposed music. Although the final sharp and final flat occurred on different pitches or degrees of the staff in the different transposed tones, they occupied the same relative position in each tone: the final flat occurred on the fourth degree and the final sharp on the

29. If the final sharp or flat were missing from the signature, the rule would be applied to the wrong sharp or flat, and one thereby would obtain an incorrect final and solmization.
seventh. Loulié of course was able to employ the final sharp or flat as an index to the solmization because the patterns of whole tones and semitones and the sequence of note names for correctly written instances of each mode were identical.

Rousseau appropriated the degrees of Fa and Si from the column of B-natural as indices to accomplish a change of the note names or solmization syllables when he naturalized the transposed modes. Those indices were absolute references, for their positions on the staff did not change in the different tones. Thus, Loulié and Rousseau both adhered to one principle, the change of a single element—the solmization (Rousseau) or the pitch letters (Loulié)—through an index which occupied the same absolute position (Rousseau) or relative one (Loulié) in all music. As there were two kinds of transposed music, one with sharps and another with flats, each author consequently had two analogous principles.

Differences in the methods employed by Rousseau and Loulié to naturalize transposed music apparently arose both from the contrasting tonal systems (i.e., scales) that they used and from the divergent concepts of transposition which derived from those systems and were particular to them. The different concepts of transposition resulted in methods which differed in terms of their particular objectives, their essential elements, and their relative degree of
complexity. Differences can be observed with respect to the transposed modes collectively: for example, certain elements were common to the various representatives and others changed from tone to tone; differences also can be seen in the particular factors that remained constant and in the elements that changed when the transposed mode or music was naturalized.

While the general aims of the authors' methods were similar, the means of accomplishing those objectives were different. Rousseau changed the names of the notes so that one would be able to intone the music naturally and easily. Loulié, on the contrary, put Ut back on C by substituting a natural clef.

For Rousseau, Ut apparently always was associated with C, even in transposed music, and in the non-naturalized, transposed modes, a "fixed-Ut" method of solmization was required. As the different final pitches had different names (Ut, Re, Mi, etc.), it was impossible for there to be two different major tones or minor tones which would have the same sequence of note names or solmization syllables above the final. On the other hand, for Loulié Ut was combined with a pitch letter other than C in transposed vocal music: in correctly written music in the major mode, the final was Ut, and in the minor mode it was Re. Thus, there were only two possible sequences of note names or solmization syllables for all correctly written transposed
music. Loulié's method of solmization may be understood as a circuitous "movable-Ut" one which anticipated conventional "movable Do" methods.

In the second place, for Rousseau the order or degree of the intonation of pitches was changed or upset in the transposed modes. For example, in the unnaturalized mode of A major, the pitch C Sol Ut would have been raised a semitone to C-sharp. Thus, Ut had to be sung one half-step sharp. Further, the intonation of the interval Si-Ut would have been changed from the half-step B-C to the whole step B - C-sharp, and so forth. According to Loulié's concept, on the other hand, it appears as if the order of the intonation of the intervals was the same in all correctly written transposed music: Si to Ut, for instance, always would have been sung as a half step.

For Rousseau, the correspondence of staff degree and note name apparently was changed only when the modes were naturalized, and not before; a natural clef could be employed to facilitate the change, but its use was strictly optional. This change of the note names caused the intonation of the intervals to become correct: the semitones were sung as Mi-Fa and Si-Ut, and the remaining adjacencies among the notes were whole tones, just as was found in the natural modes. For example, when the mode of B-flat major was naturalized, the interval originally known as Si-Ut (B-flat - C), which had been augmented to a whole
tone by the B-flat, was sung naturally as Ut-Re, and the remaining whole tones and semitones likewise had syllabic correspondents equivalent to those of the gamme.

For Loullé, on the other hand, the relationship of the pitches and the note names was different in transposed music from what was found in natural music. The pitch letters associated with the notes or syllables had to be changed so that the correspondences found in the scale could be restored "without changing the placement of the notes" on the staff (i.e., C was restored to Ut, D to Re, and so forth). 30

The methods of the two authors also differed in the degree of their complexity. Although Rousseau had one principle for the modes with sharps and another for those with flats, he actually had many different rules. With his method, each pair of modes having the same signature—one with the major third and the other with the minor third—required its particular rule in order to be naturalized. There consequently were as many different rules as there were transposed major modes or minor modes. Loullé likewise had a single, underlying principle for each kind of transposed music, but he had only as many rules as he had principles: the former rule applied generally to all transposed music with sharps and the latter to that with

30. Loullé, Elements or Principles, 54.
flats. His presentation of only two rules represented a simplification of method from that of Rousseau. Simplification apparently was Loulié's purpose, for he observed that all the rules in use for reducing transposed music could be related to the two that he presented.\textsuperscript{31}

Moreover, he hinted at the reformatory character of his notions when he stated in the preface to his treatise: "My intention is to give to the public the shortest method by which to enable a student to dispense with the need of a teacher."\textsuperscript{32}

\textbf{L'Affillard.--}His method of singing transpositions, like Loulié's, required that the singer know the positions of the clefs in use in the musical practice. He presented the different clefs in use by the seven voice parts and the first violins in his "scheme[s] of all the clefs, parts and natural sounds of music sung with B-flat" and "with B-natural" (see example 30 below).\textsuperscript{33} In the editions of 1697 and 1705, he added a "second scheme of all the parts of music, in which the relationship between the different parts is demonstrated" (example 31).\textsuperscript{34} In that "scheme," he provided instances in which he first employed the natural

\textsuperscript{31} Ibid., 23.  \textsuperscript{32} Ibid., xv.

\textsuperscript{33} L’Affillard, \textit{Principes} (1694), 80-1.

\textsuperscript{34} L’Affillard (1705), 158.
Example 30. "Scheme of all the clefs, parts and natural sounds of music sung with B-flat" (L’Affilllard (1694), 80).

Example 31. "Second scheme of all the parts of music, in which the relationship between the different parts is demonstrated" (L’Affilllard (1705), 158).

Copyright 1971 by Minkoff Reprint. Used by permission.
clef position belonging to some part (e.g., bass, soprano, etc.) and then repeated the example with the clef position of another part accompanied by a signature of one flat, with the notes on the same lines and spaces. Both signatures permitted the music to be sung via the two-column scale.

The author's presentation of the different clef positions demonstrates that he recognized a need for familiarity with them in the vocal practice. He also affirmed their necessity: "In order to know music with completeness, one indispensably must be master of those seven positions of the clefs, as well as [of] the natural course of the notes while ascending and descending." 35

L'Affillard's methods for the solmization of the transpositions differed substantially in his editions of 1694 and 1697. In the former edition of his treatise, the author stated:

**General rule for all transpositions, both by flat and by sharp [literally: carrel].**

If the note which descends by step [literally, by conjunct degrees] after the final note proceeds by a semitone, or if it is sharped [i.e., if it is sharped in the regularly written signature], in this case one must sing Ut-Si, and consequently the final note will be called Ut.

But if the note which descends by step after the final note proceeds by a whole tone or, if you please, by a Fa [i.e., by a flat], in this second case one must sing Re-Ut, and consequently the final note will be called Re. 36

35. Ibid.
He thus changed the names of the finals of all the transpositions to Ut or Re. In every case, the name of the final was determined by observing the size of the step that was found below it. While he was not alone in his dependence upon the modal octave's intervallic structure for the identification of the final, he appears to have had some singularity in his appropriation of the step below the final. Musicians more commonly based their determination of the mode and its solmization on the size of the third above the final or on the signature, if Rousseau's first method for naturalizing the transposed modes and Loulié's method represented commonly accepted practices at that time.37

L'Affiliard recognized that his "general rule" was actually two particular ones, stating: "Turn to see the examples of these two rules and the clefs that one may imagine."38 There followed "examples for the transpositions on [or, like] Ut" (example 32) and "examples for the transpositions on [or, like] Re" (see example 33).39

36. L'Affiliard (1694), 85.
37. Loulié was dependent on the intervallic structure in an indirect way, since he relied on the signature, which identified the positions of the half steps Mi-Fa and Si-Ut.
38. L'Affiliard (1694), 85.
39. Ibid., 86-7.
Example 32. "Examples for the transpositions on [or like] Ut" (L’Affilillard (1694), 86).

Example 33. "Examples for the transpositions on [or like] Re" (L’Affilillard (1694), 87).
He evidently regarded his exercises to be transpositions of the octaves of Ut and Re, which potentially could be sung via either column of the scale--i.e., from finals of F or G with signatures of one flat, or from finals of C or D with natural signatures.

He presented each of his examples twice, first with the given clef and signature and then with the "clef that one must imagine" (cf. Monteclair). The imagined clef had a signature that was natural in seven of eight instances; in one instance, it had a single flat. In every case, the examples commenced with the final of the mode, followed immediately by the note one step below it. He presumably employed that particular melodic progression in order to facilitate the application of his rule.

Following the examples of the transpositions on Ut and Re, L'Affillard presented four Airs transposez (see examples 34 and 35). His intent in including those Airs evidently was to provide opportunities for his students to apply his rules for singing the transpositions at sight. At the

40. *Ibid.* Montéclair (1709) employed the same expression ('se figurer), declaring that the clef served merely "to depict more promptly to the imagination the name[s] of the notes that must be supposed" (Montéclair, 44; cf. III-12).

41. L'Affillard (1694), 88.
Example 34. Transposed Air (L'Afflilard (1694), 88).

"One can picture to oneself here the clefs which are at the beginning of the first two lines of this Air."

Example 35. Transposed Air (L'Afflilard (1694), 91).

"One can picture to oneself here the clefs which are at the beginning of the first two lines of this Air."

beginning of each of the Airs, prior to the given clef and signature, he supplied a different clef with a signature of one flat or with a natural signature. That clef, with its signature, was the one that was to be imagined in order to make the transposition easier to sing. He applied the imagined clef both to the vocal solo and to the accompanist’s part. Beginning with the third line, the substituted clefs were deleted and were left to the
imagination of the performer. His inclusion of the
"imagined" clef in the basso continue part is of interest in
view of the independence of the written pitch and the pitch
of performance in the vocal practice and their unanimity in
the practice of instrumentalists.

L'Affillard evidently was not totally satisfied with
his rule (1694) which made the solmization dependent upon
the size of the step below the final, for he abandoned that
rule in subsequent editions of his treatise. In the 1697
edition, he substituted the two rules which Loullé had
presented the previous year in his Éléments. Those rules
made the solmization directly dependent upon the signature
(that is, upon the identity of the final sharp or flat).

The author first referred to the two rules in the
preface. He stated:

In order not to omit anything, I am
presenting [toward the end of this book] two rules
which without fail will remove the difficulties of
all the transpositions. . . . Those two rules are
accompanied by a large number of examples which
will not be useless in making the explanation and
reasoning which precede them more easily
understood. 42

L'Affillard preceded his discussion of the first rule
with the heading "Rule for the sake of making the
transpositions easy which are formed with sharps." 43

---

42. L'Affillard (1697), preface, iii-iv.
43. Ibid., 122.
wrote: "In order to cause you to understand [the rule] easily, you must be taught beforehand about the natural order of the sharps." He then cited the five sharps in order, after Loullé.44

He continued:

Having thus observed this order, you are given for a sure rule that [if] F-sharp is alone, it can be called Si. When there are two [sharps], C-sharp must be called Si. When there are three of them, G-sharp must be called Si. When there are four, D-sharp must be called Si. When there are five different [ones], A-sharp must be called Si, whence one can infer that it is always the final sharp that must be called Si [emphasis mine].45

L'Affilllard illustrated his method through several examples. In the first group of them (example 36), he

Example 36. L'Affilllard (1697), 122.

\[
\begin{align*}
&\text{[Fa]} & &\text{[Ut]} & &\text{[Sol]} & &\text{[Re]} & &\text{[La]} \\
&\text{Si} & &\text{Si} & &\text{Si} & &\text{Si} & &\text{Si} \\
&\text{F-sharp} & &\text{C-sharp} & &\text{G-sharp} & &\text{D-sharp} & &\text{A-sharp}
\end{align*}
\]

44. Loullé's (1696) and L'Affilllard's (1697) presentations of the order of the sharps appear to be among the earliest in the French treatises. Until Loullé's rules were expressed, the knowledge of the order of the sharps and flats was not an essential component of the practice of simplifying the solmization of transposed music. With those rules, however, that knowledge was vital.

45. L'Affilllard (1697), 122.
placed in each case a note on the final followed by another a step below on the degree of the final sharp (i.e., on the seventh degree of the major mode), and he indicated the latter's assumed name of Si. He resolved Si to Ut, thus demonstrating the cadence on the final (cf. examples 22a and 22b). His examples contained from one through five sharps in their signatures.

In the "other examples for the transpositions which are formed with sharps" (example 37), he demonstrated his method.

Example 37. "OTHER EXAMPLES for the Transpositions which are formed with sharps" (L'Affillard (1697), 123).

46. In the edition of 1705, he indicated both the notes' original names and their new ones; the former are supplied in brackets in examples 36 and 38.
Each of the examples was presented twice: in the former instance, which contained a clef accompanied by a signature of one to four sharps, he identified the note that one would call Si through the application of his rule. In the latter instance, he employed a "clef which one must picture to oneself,"—that is, an imagined or supposed clef, which was accompanied by either a signature of one flat or a completely natural signature, as in the 1694 edition.

L’Affillard’s signatures for the minor mode in the 1697 and later editions differed somewhat from those of the 1694 (i.e., the first) edition: in the earlier one, he had employed the Dorian signature for all the minor transpositions; in that of 1697, he changed to the Aeolian signature for the transpositions with sharps, retaining the Dorian for those with flats. This change of signature type, coupled with the change of the rules for solmization, had definite implications for the solmization of the minor transpositions with sharps, as will be seen.

With the application of L’Affillard’s "general rule" of 1694, transpositions with either the Aeolian or the Dorian signatures would have acquired finals of Re, which was the

47. L’Affillard (1697), 123.
customary final for the solmization of the minor modes.

With the application of Loulié's rules, however, only the Dorian signature yielded the Re final; the Aeolian signature yielded a final of La. That is, the change of the rules, in conjunction with the change of the signature type for the modes with sharps, resulted in a change of the solmization of those modes: L'Affillard demonstrated by his examples that the minor modes were solmizated from Re when the signatures were Dorian (i.e., when they contained flats) and from La when they were Aeolian (when they had sharps; see examples 37 and 39). He thus anticipated the methods of several later authors (e.g., Montéclair, Borin, Campion (1730), etc.), who likewise accommodated themselves to the musical practice through their solmization of the minor modes from the two finals.

The eventual common acceptance, in the practice of singers, of the solmization of the minor modes with sharps from La may have come about in part through the following circumstances. First of all, A minor commonly was found in the practice with the natural signature. It evidently was its natural condition which caused it to be regarded as a prototype minor mode by some musicians. Indeed, it fulfilled Ozanam's and Brossard's requirements for the positions of the modal degrees, with the exception of the raised seventh or leading tone, which was put in as an accidental. Further, there was an increased use of Aeolian
signatures for the minor modes with sharps at the end of the seventeenth century. This occurrence, in conjunction with the increasing popularity of Loulié's two rules for determining the solmization, resulted in a measure of familiarity with the solmization from La.

Following the examples illustrating his first rule, L'Affillard presented his "Rule for making the transpositions easy which are formed with flats." He proceeded as he had done previously, discussing the natural order of the flats (cf. Loulié). He again derived his general rule from particular ones through a process of generalization. He thus demonstrated a usage of inductive reasoning compatible with the philosophical climate of the age.

As before, L'Affillard supplied a number of examples to elucidate his method. His first group (example 38) involved

Example 38. L'Affillard (1697), 124.

```
[Si] [Mi] [La] [Re]
Fe Fa Fa Fa
B - E - A - D -
flat flat flat flat
```

the progression Fa Mi Re and thus illustrated the minor mode. The signatures of one to four flats that he employed

49. Ibid., 124.
In those examples subsequently were used in "other examples as regards the transpositions which are formed with flats" (example 39). Those examples were similar in structure.

Example 39. "OTHER EXAMPLES as regards the Transpositions which are formed with flats" (L'Affilllard (1697), 125).

G minor

C minor

F minor

B-flat minor

to their counterparts with sharps, in that they appeared first with the clef and signature of a transposition and afterward with an imagined clef and a simpler signature.

In the 1705 edition of his treatise, L'Affilllard provided exercises in the form of octave scales which...

50. Ibid., 125. L'Affilllard's treatment of G minor is of interest. For the usual statement he substituted a more tentative expression (see example 39), possibly because G minor lay within the gamme double and therefore required no clef substitution in order to be singable via the scale. See below, 450f.
commenced with the natural finals and thus were to be sung from Ut, Re, Mi, Fa, Sol, La, and Si, respectively (see example 40). Whether he included those exercises for the purpose of preparing students for the singing of the transpositions according to a quasi "fixed-Ut" method is not known. At any rate, he emphasized that it was important, in order to learn music in a short time, that one know how to

---

Example 40. "Progress of the seven octaves of music" (L'Affilllard (1705), 16-7).
name without hesitation the progress of the seven octaves of
music.\textsuperscript{51} He gave to each of the octaves either a signature
of one flat or a natural signature. Thus, the exercises
were variously solmizated via the columns of B-flat or
B-natural; however, whenever accidental sharps were
encountered, one would have had to inflect the pitch one
half-step higher without changing the note’s name, while
accidental flats would have been sung as Fa.

Freillon-Poncein.--In the chapter "Regarding the
voice," Freillon-Poncein declared that his objective was "to
give here a short explanation of the manner in which one
must sing via the natural and transposed modes on the
different positions of the three clefs."\textsuperscript{52} His way was
through the two columns of the scale (cf. Rousseau and
L’Affillard). He affirmed that according to the scale’s
arrangement there were only two modes that could be
discussed (or used) by B-flat or B-natural. The B-flat, he
explained, was the mode of G with B-flat (i.e., G minor).
The B-natural was the mode of C with neither flat nor sharp
(C major).\textsuperscript{53} He thus linked the two-mode, major-minor
concept to the two ways of singing music, with B-flat and
B-natural. His reason for doing so is not stated, but it

\textsuperscript{51} L’Affillard (1705), 16.
\textsuperscript{52} Freillon-Poncein, 48.
\textsuperscript{53} Ibid.
may be that he wished to defend his manner of solmization via the columns of B-flat and B-natural, and possibly his acceptance of the two-fold scale itself, in the wake of an increasing acceptance of the single scale and a single way of singing music naturally. That is, Freillon-Poncein's association of the two modes with the two columns may have been intended to demonstrate the reasonableness of the gamme double at a time when its validity was under attack and when some had abandoned it in favor of the single-column scale.

After he had presented the two ways by which one could sing the natural and transposed modes via the columns of the scale, Freillon-Poncein discussed the necessity of transposition for singers. He observed: "One can easily sing the modes of A minor and D minor with B-natural [i.e., by the column of B-natural], but in regard to all the other modes, they must be transposed for the convenience of the voice." 54 He appears to have been saying that since A minor and D minor had natural signatures, they could easily have been solmizated via the column of B-natural, that is, from finals of La and Re, respectively. However, such was not the case for the other minor modes: it would have been difficult to solmizate them from their finals because the intonation would have been difficult. The transposition accomplished a change of the solmization with the result

54. Ibid.
that the intonation was easier. The author's reference to the solmization of A minor from La, which he personally did not implement (see example 42), demonstrates a tolerance for the restricted use of La as a final.

Freillon-Poncein explained his method of transposition for singers:

Those two modes of which I am speaking . . . must be sung in only two ways, the one with the major third and the other with the minor third.

In order to understand by which of the two [thirds] a melody proceeds, one first of all must count how many tones there are from the final up to the mediant. If there are two of them, the mode or the third is major and one must say Ut on the final, Mi on the mediant, and Sol on the Dominant, and then [must] name the other notes according to their order. If there is only a tone and a semitone from the final up to the mediant, the mode or the third is minor, and one must say Re on the final, Fa on the mediant, and La on the dominant, and in like manner name the other notes following their order. These are the ways which one must use in order to learn to transpose, and not those which the majority of teachers use who, in order to keep students a few months longer, teach them to recognize the piece by the number of sharps or flats which are immediately after the clef . . . .

One always must observe that each clef gives its name to the notes which are on the same line where it is placed, unless one is obliged to transpose the melody into one of the two modes of which I have just spoken for the facility of the intonation.

55. Freillon-Poncein's statement is troublesome. He evidently included F major and G minor in his reference to "all the other modes," yet both could be sung easily according to the column of B-flat. He evidently was saying that the vocables of the modes had to be transposed in order for one to sing them by the column of B-natural.
In his practice of singing transposed music, which involved reducing to the natural, Freillon-Poncein synthesized concepts previously expressed by Rousseau, L'Affillard, Loulié and others. He differed from them in a number of respects, however. In the first place, he did not discuss the use of imagined clefs accompanied by the natural signature or the signature of B-flat. He perhaps did not consider such clefs to be absolutely necessary in order for one to accomplish the change of the solmization. Such a position would reflect that of Rousseau and would anticipate the later use of the movable Do without the substitution of clefs.  

Secondly, for him the final of the mode was the index for the change of the solmization, and the naturalizing of the transpositions was primarily dependent upon the recognition of their thirds rather than upon the mere inspection of the signatures (cf. Frère). The author warned students against using the apparently popular method whereby the solmization (and subsequently the mode) was identified through the number of sharps or flats in the signature. He suggested that that method required an unnecessarily long time in order for students to practice it correctly. It is not certain whether he was referring to Rousseau's second method for singing the transposed modes

56. Freillon-Poncein, 48-50.

57. See the discussion of Rameau below (pp. 283-4).
naturally, which required one merely to count the number of different sharps or flats in the signature, or whether he was referring to the method proposed by Loullé and restated by L'Affillard, which required one to identify the degree of the final sharp or flat as Si or Fa, respectively. Owing to the popularity of the latter, it is likely that he was referring to it.

For the assistance of the performer, Freillon-Poncein twice presented a comprehensive listing of the signatures for the major and minor modes on all of the natural, sharped and flatted finals (examples 41 and 42). In his introduction to his second list, he indicated that he was providing "examples of the transpositions from the natural to the sharp [lit., b carre] and to the flat on all the different positions of the three clefs, both for the voice and for instruments." His intention that the examples be employed by singers is evident from the fact that he identified the final of each major mode as Ut and that of each minor mode as Re, thereby indicating the manner in which the modes should be solmized (see example 42).

It appears that the examples might have had some usefulness to singers as a reference in two respects: 1) they comprehended the finals and signatures found in their music and 2) they demonstrated the required solmization of

Example 41. Freillon-Poncein, 6.
Example 42. Freillon-Poncein's second listing of the natural, sharped and flatted finals (La véritable manière, 51).
each of the transposed modes. They also utilized the different clefs which could be supposed in the practice of singing. On the other hand, the examples found limited application in vocal performance because 1) many of the cited finals and signatures were not actually employed in the practice and 2) singers regularly employed natural signatures or signatures of one flat rather than the more complex signatures when they reduced to the natural.

Freillon-Poncein’s appropriation of signatures for the minor modes--Dorian for C, D, and E minor; Aeolian for F, G, A, and B minor--, created a potential problem for the singer, since the finals of the minor modes always were identified as Re in vocal performance. Whenever the signature was Dorian, it correctly indicated the octave species above Re, and the notes, if found without accidentals, would be sung with the same relative intonation as those of the natural mode of Re. Thus, there was harmony between the signature and the solmization. However, whenever the signature was Aeolian, it indicated an octave species above La, and the notes could not all be sung with the same intonation as in the natural mode: a flat had to be supposed prior to the sixth degree. This was the case because in the natural octave of notes above D Re, the sixth degree Si was a major sixth above the final or a whole tone above the dominant, while in all the modes with the Aeolian signature, the sixth degree was only a minor sixth above the
final or a semitone above the dominant. By the same token, if the sixth degree of music given the Aeolian signature was raised a half step by means of an accidental, the performer was obliged to ignore the accidental and to sing Si with its natural intonation. Such a lack of agreement between the solmization and the signature might have proved troublesome for students, since they were required to remember to make, or to ignore, the alteration of Si whenever their music had an Aeolian signature.

The problem will be illustrated as follows. F minor had the Aeolian signature, with the minor sixth F-D-flat above the final. During the course of the music, a sharp or natural sign could be applied to the D-flat, making the sixth major (F-D). If one were to sing the piece naturally, via the scale, the accidental natural sign on the sixth degree would have had to be overlooked. Similarly, whenever no natural sign was applied to the sixth degree, one would have had to employ a flat there in order to lower the sixth by a half step and make it minor. As long as the performer employed the Dorian signature in his original music, the difficulty would not have occurred.

Brossard.—In his third definition of transposer, (see "TRANSPOSITIO"), Brossard recognized that a transposed mode or tone could be reduced to a natural one. He did not elaborate on how the reduction was to be accomplished, but
merely referred his readers to his examples (10-13) which, he declared, were sufficient for that point. Following his fourth definition, he stated that he had put in examples for the octaves of Ut and Re only, since the finals of all the transposed modes were of Ut or Re. This statement had been anticipated by Delair and Charpentier and represented commonly held doctrine (cf. statements of Loulié and Freillon-Poncein). At the source of the idea was the assumption that in the practice of singers the note names were associated with different pitches in the transposed modes from those with which they had been combined in the natural modes.

The identification of the finals as Ut and Re in the practice of singers by Brossard’s contemporaries will be summarized. For Loulié, the identification of the final pitch as Ut or Re had been the means of determining the mode. Freillon-Poncein, like numerous others, stated the principle in reverse: one first had to identify the third above the final; the quality of the third was the same as the quality of the mode.59 From the size of the third, one then could determine the names of the essential notes, which either were Ut, Mi and Sol, if the mode was major, or Re, Fa

59. The kind of third above the final and the modality obviously were inseparably linked: the recognition of the former provided the identification of the latter. Thus, Rousseau could equate, for example, C "minor third" and C minor. See III-120.
and La, if the mode was minor (cf. Mersenne). Brossard condensed Freillon-Poncein's statement, omitting any reference to the essential notes other than the final (cf. Loulié's manuscript revisions of the Éléments).

Frère.—The author prefaced his method for reducing to the natural with a discussion of the notion of modulation. He stated that it was a kind of prelude that was sung both in order to put an Air within the range of one's voice and in order to understand whether the Air was in a major or a minor modulation; he thus used the term to define the term. One could determine the kind of modulation by inspecting the third: if the third was major, it was major, and if the third was minor, it was minor. Thus, he equated modulation and modality.

He explained how one was to accomplish the prelude: First, one had to know the final of the Air and its third. Then one would look through the piece, identifying its highest and lowest notes. One would choose his tone so that the piece would lie comfortably within the range of his voice, i.e., so that he could sing the highest pitch of the Air without stress. In singing the prelude, he would pass through the fundamental note (the final), the third and the fifth of the mode, as well as through their octave.

60. Frère, 4-11f. 61. Ibid., 12. See note 59 above.
duplicates above and below, as far as was necessary in order
to traverse the entire ambitus of the piece (cf.
Montéclair).\textsuperscript{62} The prelude thus appears to have been the
means through which the student obtained "the assistance of
the modulation."

The practice described above permitted the adoption of
a pitch which was different from the Air’s written pitch:
thus it fit the modern definition of transpose as the "ex
tempore performance of a composition in another key."\textsuperscript{63}

However, as has been mentioned, Frère and his contemporaries
did not refer to that practice as "transposition." This was
the case because to them, transposition with reference to
singers meant something else: the reduction to the natural:
in short, they described as transposition the change of the
names of the notes or the pitch letters but not the singer’s
adaptation of the tone of performance to his voice.

Having thus laid the foundation in his vocal preludes,
Frère then returned to his method of reducing the
transpositions to the natural "by the assistance of the
modulation." His plan was to relate all of the transposed

\textsuperscript{62. Ibid., 6-11; Frère’s instruction to pass through
the essential notes recalls Brossard’s definition of
"MODULATIONE." Montéclair (1709) presented examples of
preludes for the voice which first traversed the
essential notes of the mode through the entire ambitus
and then passed conjunctly to the final (p. 23).

\textsuperscript{63. "Transposition." Harvard Dictionary of Music, 860.}
modulations to those of Ut or Re by changing the last note to Ut if the third was major and to Re if the third was minor (cf. Freillon-Poncein). That change, he professed, was made in order to facilitate the performance of the Airs.

He supplied examples which illustrated that the transpositions had transposed thirds above their finals. He first presented the "transposed" white-note thirds above E, F, G, A and B, along with the "natural" thirds of C Ut and D Re (see example 44 below). He related all the thirds to the latter and described the procedure as the changing of transposed thirds into natural ones. He then supplied examples in which thirds above Ut and Re were altered. In the first instance (example 43a), the final was Ut (i.e., C).

Example 43. Transposed thirds (Frère, 17-8).

a.

\[ \text{Ut Re Mi} \]

minor third

b.

\[ \text{Re Mi Fa} \]

major third

and a flat was applied to the third (E), making it minor; in the second instance (example 43b), the final was Re (D), and a sharp was applied to the third (F), making it major.

64. Frère, 13. 65. Ibid., 14-16.
Example 44. Transposed and natural thirds (Frère, 14).

Transposed minor third of Si.

Transposed minor third of La.

Transposed major third of Sol.

Transposed major third of Fa.

Transposed minor third of Mi.

Natural minor third of Re, to which one must relate all the other, transposed minor thirds.

Natural major third of Ut, to which one must relate all the other, transposed major thirds.

66. Ibid., 16-8. Similar examples were cited by Loullé in his proposed revisions of the *Eléments* (Elements or Principles, 55).
The altered thirds illustrate Delair's statement that a transposed piece was one whose final did not have the third which naturally was proper to it during the course of the piece. Frère's concept of "transposed third" actually was more inclusive than Delair's, however, for Frère had considered any third other than the natural ones above C and D to be transposed. Accordingly, Frère's selection of natural thirds was more limited than Delair's. The latter had regarded any third to be natural whose upper note was unaltered by an accidental; i.e., for him, the "natural" third was simply the natural third degree above the final.\(^67\)

Having limited himself to the C clef on the first line for some time, Frère then reintroduced the F and the G clefs. He emphasized that one must employ the "altogether plain" (or, simple) clef, that is, the clef regarded initially without its accompanying sharps or flats, in order to identify the final and its third.\(^68\) It appears that Frère's instruction was necessitated by the notion, which had been articulated by Loulié and may have been widely held, that the presence of sharps or flats after the clef caused a change in the note names (i.e., the solmization). If one was to depend on the new note names in such a case,

\(^67\) See Delair, 55-7 and table 3.

\(^68\) Frère, 19-20.
he might become confused in his efforts to determine the size of the third.

Frère provided several examples in the form of melodic excerpts, with signatures containing both sharps and flats, to illustrate his procedure for reducing to the natural. Groups of examples followed his presentation of each of the particular kinds of "transposed" thirds. In the first case, he changed "transposed" major and minor thirds on the white notes into natural thirds (see example 45). 69

Example 45. Frère, 15-6.

a. 

Sol
changed to Ut

b. 

La
changed to Re

Following his examples of transposed thirds which utilized a sharp or a flat on the third degree, Frère presented two melodies in which the thirds above the finals were altered and again demonstrated his method for reducing to the natural. First, he identified the final and its third, regarding the clef as "plain," i.e., without sharps

69. Ibid., 15-16.
or flats. Then he inspected the given clef. In the first instance (example 46), he discovered flats there, which were flatson.

Example 46. Another example to illustrate "reducing to the natural" (Frère, 20).

Frère thus employed the signature, but he did not merely perform the mechanical operation of identifying the number of sharps or flats or the final one. In the instance cited above, he used the signature to find out if the third was flatted and therefore if the modulation (i.e., the mode) was transposed. He affirmed that sharps or flats after the clef merely signified that the third was not natural. Like Freillon-Poncein, he based his practice of determining the solmization ultimately on the third, i.e., on the modality, rather than on the signature itself.

The author considered the argument that his practice of

70. Ibid., 20-1.
transposition might be unnecessary for students if they were taught from the beginning to solmizate the notes just as they were written. He was referring to the fixed-Ut method of solmization, which apparently was in some use, at least by relatively advanced students (cf. Loulié’s instructions). He replied to that argument with the objections that 1) through such a method, students would become dependent upon an instrument for the accuracy of their intonation, and 2) the method would be extremely difficult, requiring much time to learn. He insisted that his method was simpler. He also declared that the practice of singing the notes under their actual names would not acquaint students with the seven different positions of the clefs, which he regarded to be useful to the singer (see below). He observed, finally, that it would make no difference to the accompanist whether one solmizated the pitches under their given names or under the substituted names. 71

Frère presented the seven clef positions in an order that put C Ut on consecutive degrees of the staff (example 47). He thus demonstrated that Ut could be located on any degree when the appropriate clef was employed. That is, he proved that the final note of the transposition could be changed to Ut (or Re), and one of the natural clefs could be supposed, regardless of the positions of the final and the

71. Ibid., 16, 23-4.
other notes on the staff; he later testified that after transposed music had been reduced to the natural, it could

Example 47. Placement of Ut on consecutive degrees of the staff by the seven clef positions (Frère, 24).

\[ \text{Ut} \quad \text{Ut} \quad \text{Ut} \quad \text{Ut} \quad \text{Ut} \quad \text{Ut} \quad \text{Ut} \]

only fall into one of those seven positions. He believed that the pains taken to learn the different clef positions would pay off, insisting that once the singer had learned those clefs, transposition would be "nothing" for him.\(^\text{72}\)

The author provided no instances of the use of the natural clefs in any of his examples that he reduced to the natural (cf. Freillon-Poncein). His accompanying discussions also did not refer to the supposition of the natural clefs. However, it is evident from his statements above that he did expect his students to utilize appropriate clef substitutions when they reduced transposed music. Thus, the omission of the natural clefs from his examples is puzzling.

Continuing to expand his notion of transposed, Frère observed that sharps or flats caused transposition when they were found on the finals even as they did when they were

\(^\text{72}\) Ibid., 24-5.
found on the thirds. He discussed Airs with sharped and flatted finals and affirmed that after one had reduced to the natural, the sharps or flats in the signature were unnecessary. That is, after the music had been "naturalized," one simply could ignore the given signature, since it had been rendered superfluous.

His final examples in the first part of his treatise had both final and third sharped or flatted (example 48).

Example 48. Two more examples illustrating "reducing to the natural" (Frère, 28-9).

Having thus demonstrated his method on "Airs" that employed all manner of transposed thirds, he concluded the first part of his treatise with the affirmation that his method was "the most certain way to reduce every kind of transposed music to the natural when it is written regularly," that is, when all the sharps or flats necessary to its signature were placed correctly after the clef.

73. Ibid., 25f.  74. Ibid., 28-9.  75. Ibid., 30.
Montéclair.—His methods for transposing the vocables were dependent upon notions previously expressed by Loulié, L'Affilllard, Freillon-Poncein and Frère. His work is significant in that it was one of the first to contain a method which explicitly adopted A minor as a model for the solmization of the minor modes with sharps.

Montéclair's instructions regarding the solmization of the notes in the major and minor modes are detailed. He initially provided examples of lessons in C, F and G major and in D and A minor on various positions of the clefs with natural signatures. The notes in each case were sung under the names given them by the clefs. Montéclair wrote the names of the notes (Ut, Re, Mi, etc.) on the degrees of the staff in place of the notes themselves, presumably to facilitate performance of the lessons (see example 49). 76

Example 49. Lesson in G major (Montéclair (1709), 5).

<table>
<thead>
<tr>
<th>Re</th>
<th>Ut</th>
<th>Si</th>
<th>La</th>
<th>Sol</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Re</th>
<th>Mi</th>
<th>Re</th>
<th>Ut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Si</td>
<td>La</td>
<td>Sol</td>
<td>Sol</td>
</tr>
<tr>
<td>Sol</td>
<td>Ut</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

His inclusion of those lessons indicates that he regarded the solmization of the notes under their given names (i.e.,

76. Montéclair, 4-6.
according to a fixed-Ut method) to be an acceptable option for the singer, at least in certain cases.

The author also provided exercises for "forming a [whole] tone and a semitone between two conjunct degrees,"77 evidently to accustom the students to the correct intonation of the note names when they were altered either by the sharp or by the flat (see table 8). He then applied that practice to the activity of intoning the major and minor modes on the seven natural notes, as well as the major modes on E-flat and B-flat, with the notes sung under their given names, as above (see table 9 below). He stated: "In order to perform well the two modes on each of the seven notes, one must practice the following tables and observe the [whole] tones and semitones in the places to which the flats and sharps transport them."78 Montéclair's tables obviously demonstrated a fixed-Ut approach to the solmization of the notes.

The author stated that it was not enough merely to be

77. Ibid., 20. 78. Ibid.
Table 9. Montéclair, 20.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Mode</th>
<th>Mode</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>major</td>
<td>minor</td>
<td>major</td>
<td>minor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ut</th>
<th>Ut</th>
<th>Re</th>
<th>Re</th>
<th>Mi</th>
<th>Mi</th>
<th>Fa</th>
<th>Fa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Si /</td>
<td>/</td>
<td>#Ut /</td>
<td>#Re /</td>
<td>Mi /</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>bSi /</td>
<td>/</td>
<td>Re /</td>
<td>bMi /</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>La /</td>
<td>/</td>
<td>Si /</td>
<td>Ut /</td>
<td>Re /</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>bLa /</td>
<td>bSi /</td>
<td>Ut /</td>
<td>bRe /</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Sol</td>
<td>Sol</td>
<td>La</td>
<td>La</td>
<td>Si</td>
<td>Si</td>
<td>Ut</td>
<td>Ut</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Fa</td>
<td>Fa</td>
<td>Sol</td>
<td>La</td>
<td>La</td>
<td>bSi</td>
<td>bSi</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Mi /</td>
<td>/</td>
<td>#Fa /</td>
<td>#Sol /</td>
<td>La /</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>bMi /</td>
<td>Fa /</td>
<td>Sol /</td>
<td>bLa /</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Re</td>
<td>Re</td>
<td>Mi</td>
<td>Mi</td>
<td>#Fa</td>
<td>#Fa</td>
<td>Sol</td>
<td>Sol</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Ut</td>
<td>Ut</td>
<td>Re</td>
<td>Re</td>
<td>Mi</td>
<td>Mi</td>
<td>Fa</td>
<td>Fa</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Mode</td>
<td>Mode</td>
<td>Mode</td>
<td>Mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>major</td>
<td>minor</td>
<td>major</td>
<td>minor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

able to perform the ascending and descending octaves of his table. One further had to reckon off all the intervals of each octave "in order to be able to sing them entirely accurately." He then supplied a "lesson on the accidental flats and sharps" (example 50), of which he stated: "This exercise, at any rate, will serve to obtain the accidental

79. Ibid., 21.
flats and sharps, that is, those which are encountered by chance in the course of a melody. 80 His statements and example emphasized the singing of the notes under their given names when accidentals were found during the course of the music.

Montéclair provided two more examples, the first in A major and the second in F minor (see examples 51 and 52 below), in which the notes were to be sung without changing their given names. 81 Those examples clearly illustrated a fixed-Ut manner of performance of the transpositions where the necessary sharps and flats were found in the signatures.

He maintained that there was an alternative to the practice of singing the notes under their given names, stating:

---
80. Ibid. See also III-79.  81. Ibid.
Example 51. Example in A major, with the notes sung under their given names (Montéclair, 21).

Those who will find too much difficulty in singing the transposition [i.e., the transposed mode] in this manner will be able for greater convenience to transpose the name[s] of the notes in the following way.

When the mode is major, whether naturally or accidentally, one gives the name of Ut to the final and fundamental note, on whatever degree that it is found. Example [53.]
When the mode is minor, one says Re or La on the fundamental note, on whatever degree that it is found:
Re, when there are flats after the clef; La, when there are sharps.

Example [54.]

[Example 55a.]
One must say Ut on this final instead of Re because the mode is major.

[Example 55b.]

Minor mode on C
One must say Re instead of Ut because the mode is minor by means of flats.

[Example 55c.]

Minor mode on E
One must say La instead of Mi because the mode is minor by means of a sharp. 82

82. Ibid., 21-2.
A number of comments will be made relative to the discussion above. In the first place, Montéclair's recognition that the identification of the mode was the basis for the determination of the final and the corresponding solmization recalls the approach taken by Freillon-Poncein and reaffirmed by Frère. However, there was a notable difference in his doctrine: he declared that the minor modes with sharps had La as their final. He thus brought the "way of transposing" the note names into agreement with the musical practice, as L'Affilardiard (1697) had done previously (see example 37); he simultaneously eliminated the problems that had accompanied the methods of certain of his predecessors. Those problems will be reviewed presently. Freillon-Poncein had adopted the final of Re for all of the minor modes, including those for which he presented Aeolian signatures: F, G, A and B minor and their sharped and flatted counterparts (F-sharp minor, F-flat minor, etc.); he thus observed in those modes conflict between the signature and the solmization. Frère (cf. Rousseau and Louillé) had endeavored to make the signatures for the minor transpositions agree with the solmization from Re; he consequently had required Dorian signatures for the modes with sharps as well as for those

83. The expression is Frère's (Transpositions de musique, 24).
with flats. His proposal was unrealistic because it was contrary to established practice in which the transpositions with sharps regularly had Aeolian signatures.

Montéclair's solution to the problem of solmizing the minor modes (which L'Affillard had already adopted) was to utilize the signatures that were in customary use in the musical practice and to implement solmization patterns which were in conformity to those signatures. His (i.e., L'Affillard's) compromise evidently gained some acceptance, for it was restated a number of times by other authors such as Borin (1722), Campion (1730) and François David (1737). Its popularity may derive from the fact that it represented a practical solution to the problem of singing the minor transpositions with sharps during the era preceding the universal acceptance of the natural mode on A La as the model for all the minor modes.

In the preface, Montéclair had stated: "I teach transposition in different ways. Each will choose the [way] which suits him the best." He recognized that the method described above for changing the names of the notes would not be preferred by everyone, and he was not insistent upon its use. He stated: "If the method I have used in order to

---


85. Montéclair, preface, v.
transpose the name[s] of the notes does not give satisfaction, one will be able to choose the one which follows. It seems to me the most certain.  

The method that followed was stated in two parts, each of which was entitled "manner of transposing the name[s] of the notes and of supposing a natural clef." Montéclair first discussed signatures with flats, restating L'Affillard's (1697) individual rules and adding the fifth flat (example 56). He then cited melodies in the major and minor modes.

Example 56. "Manner of transposing the name[s] of the notes and of supposing a natural clef" (Monteclair, 28).

86. Ibid., 27.  87. Ibid., 28-9.
minor modes with signatures which had from one to five flats (example 57). The flats were numbered, presumably to facilitate the application of his rules.

Example 57. Excerpts from Montéclair's examples of melodies with flats (Nouvelle méthode, 28).

\[ \text{Example 57. Excerpts from Montéclair's examples of melodies with flats (Nouvelle méthode, 28).} \]

Next, the author discussed signatures with sharps. He proceeded in like manner (see example 58 below); there followed examples of melodies with signatures containing from one through five sharps, with the sharps numbered (example 59).
Example 58. "Manner of transposing the name(s) of the notes and of supposing a natural clef" (Montéclair, 29).

Example 59. Excerpts from Montéclair's examples of melodies with sharps (Nouvelle méthode, 29).

a. major mode

b. major mode

c. major mode

d. major mode

e. major mode
Montéclair's notions clearly derive from his predecessors. His indebtedness to L'Affillard is obvious; he appears to have been obliged to Loulié as well. For example, he reduced transposed pieces always to a strictly natural clef, never to one accompanied by a flat. Thus, he seems to have espoused the single scale. Further, he indicated, like Loulié, that the sharps or flats of the signatures actually changed the names of the vocables associated with the pitches.

He presented detailed "tables" which illustrated the relationships between clefs accompanied by flats and sharps and the supposed natural clefs (examples 60 and 61 below). His examples were comprehensive, with signatures of one through five components. The author commented on their inclusiveness: "One sees by the preceding tables that there is no transposition at all which is not reduced by supposition to one of the seven positions of the clefs."88

The tables of Montéclair recall similar ones that had been presented by Loulié for the use of singers in his Abrégé of 1696 (see example 24). While it appears that the authors basically were demonstrating the same thing in their tables—namely, the relationships between the natural and the transposed clefs—, the manner of organization of their tables differed. Loulié demonstrated that clefs accompanied

88. Ibid., 32-4.
Example 60. "Table of the clefs followed by flats and the natural clefs that one must suppose" (Monteclair, 32).

<table>
<thead>
<tr>
<th>Clef of</th>
<th>Clef of</th>
<th>Clef of</th>
<th>Clef of</th>
<th>Clef of</th>
<th>Clef of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fa on the 4th line and clef of Sol on the 1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ut on the 1st line</td>
<td>Ut on the 2nd line</td>
<td>Ut on the 3rd line</td>
<td>Ut on the 4th line</td>
<td>Sol on the 2nd line</td>
<td>Fa on the 3rd line</td>
</tr>
<tr>
<td>first flat on Si</td>
<td>second flat on Mi</td>
<td>third flat on La</td>
<td>fourth flat on Re</td>
<td>fifth flat on Sol</td>
<td></td>
</tr>
<tr>
<td>b^f</td>
<td>b^f</td>
<td>b^f</td>
<td>b^f</td>
<td>b^f</td>
<td>b^f</td>
</tr>
</tbody>
</table>
Example 61. "Table of the clefs that one must follow by sharps and the natural clefs that one must suppose" (Monteclair, 33).
by one, two or three sharps and flats could be related to
natural clef positions with Ut placed on consecutive degrees
of the staff. The layout of his tables suggests the a
priori derivation of the transposed clefs from the natural
ones. Monteclair’s tables illustrate the reverse: the
derivation of natural clefs from a graded series of
transposed clefs. His manner of organization appears to
have been particularly useful to the performer, for it
allowed him readily to locate the clef found in his
music—with its accompanying signature—and then to see
immediately the natural clef that had to be supposed.

Montéclair observed that a change of mode did not cause
a change in the pitch of the "fundamental note" (i.e., the
final), even though such a change would give that note
another name by supposition. He thus emphasized the
independence of the note names and the pitches; that is, he
reemphasized the separability of vocable and pitch letter
(cf. Loulié). He illustrated his point with several
examples. He later elaborated on the notion, stating:

As the notes can change names on [the] same
degree as many times as the flats and the sharps
change [their] disposition, in order to determine
each of the seven degrees, one up to now has used
the first seven letters of the alphabet, each of
those letters being inalterable [and] fixed, and
[one] absolutely determines its degree without
considering the name of the note which is

89. Ibid., 40.
encountered there. One ordinarily combines with those letters the natural nomination of the notes, and that is what is called [the] scale.  

Dupont.—In *Principes de musique par demande et par réponce* ("Principles of music by question and answer"; 2d. ed., Paris, 1718), Pierre Dupont discussed the transposition of the note names by flats and sharps. He first discussed the office of the flats. He observed that it did not suffice to know the notes by the natural clef and stated: "One must know them besides by the transposition by the flats which are put after the clef. [Those] flats take the place of the clef and serve thence for the nomination of the notes or degrees." The author explained that the flat served to say "Fa" where it was put (cf. practices of hexachordal solmization). When there were several flats in the signature, he said, one always had to take the last flat put in the signature to express "Fa." He concluded that through the "rule of the flats," "the last [flats] are the masters, since they govern." He then proceeded in like manner to discuss the sharps. He explained that the sharp served to express Si where it was put; when there were several sharps, one had to take the last one put in the signature to be Si.

90. Ibid., 45.  
91. Dupont, 3.  
92. Ibid.  
93. Ibid., 6-8.
With characteristic thoroughness, the author illustrated his rules concerning the transposition by sharps and flats with examples of octave scales that began usually on the degree fixed by the clef (or its octave, in the case of the bass clef); he placed the names of the notes by transposition above the written notes (example 62). The

Example 62. "Example in order to understand those notes or degrees by the G clef with five flats" (Dupont, 6).

examples illustrated all the possible transpositions of the notes, for Ut was placed on all of the degrees of the staff by the three clefs accompanied by the various signatures.

While Dupont's rules obviously were a restatement of Louliée's two for "reducing to a natural clef," Dupont neither discussed the supposition of a natural clef nor made reference to "reducing to the natural." He apparently felt that the final flat or sharp itself was a sufficient guide in order for one to change the solmization. This
identification of the final sharp or flat as a clef recalls Loulié's statement that the final flat was a clef of Fa and the final sharp was a clef of Si. In other words, he held to the separability of Ut and C, but (unlike Loulié) he did not require that Ut must be restored to C. Dupont seemed to have espoused a concept which, by its neglect of the "supposed" natural clef, approached more closely than the method of his predecessor to later movable-Do methods of solmization.

Mattheson.--He forcefully repudiated the concept of a relationship between natural and transposed tones. Foundational to such a relationship was the notion (which the anonymous author had stated) that there were only two kinds of tones, major and minor. With that accepted, the author had declared that all of the transposed Airs could be written in natural modes of one of those two kinds, "unless anything basically was changed as regards the course of the modulation, for if there was found any difference in the melody, it no longer would be the same Air." 94 Mattheson attacked the author's premise:

It is true that the thirds generally divide the modes into major and minor, and if the elements of the tones or modes consisted solely in the thirds to the exclusion of every other interval, in that case there clearly would be only two kinds of tones, since that very well can be said with

regard to the thirds. But as there are yet many other elements for the sake of forming a tone or mode in particular sound, this principle is subject to some very great exceptions, and one could not conclude anything from it here.95

At the basis of the capability of reducing to a natural mode lay the assumption that an Air was the same Air whether it was sung in a natural tone or in a transposed one. While he did not dispute the assumption on the surface, Mattheson again pointed out that the issue was the change of the intervals. He stated:

Considering the disposition of melodies roughly, the transpositions seem to change nothing in them, but there is basically much change as regards the intervals of the modulation, which never remain at the same measurements or proportions. Besides that, it is not a question here of changing an entire melody, but of changing the tone and the forms, sizes and succession of the intervals in the modulation, which one must not confuse.96

His belief that the melody (chant) and the Air were not precisely the same when performed on different tones, because the disposition of the intervals differed, contradicted the author's assumption. Mattheson wrote further:

It is evident that in following the false assumption above in order to write all pieces either in C major or in D minor, one would never sing but those two wretched tones, or one would be obliged to sing entirely after a different manner than it is written, which would agree very well with the perverse doctrine of Alexandre Frère.97

95. Mattheson, Réflexions, 2.
96. Ibid., 3. 97. Ibid., 10.
Mattheson's comment that one would have to sing in a different manner than the music was written is of interest. He stated that the author's proposal corresponded to the teaching of Frère. Perhaps it was the practice of preluding in order to adapt the Air to the range of the voice, which Frère described in detail, to which Mattheson was referring. Certainly, given the differences of the intervals in the different tones, whenever one sang an Air that had been written in C major or D minor on another tone, one would have been singing in another manner, in a certain respect.

In describing Frère's doctrine as perverse, Mattheson evidently was rejecting not only his particular teaching, but also that of his predecessors and contemporaries who proposed methods for reducing to the natural. Such a blanket denunciation seems to be implicit in Mattheson's attestation that "we have already recovered from an infinity of [the ancients'] pedantic rules and methods, above all in regard to the knowledge of the sounds . . . "

Mattheson's attack on Frère's doctrine was not limited to the passage cited above. He gave the Frenchman's treatise a scathing review:

I have observed with amazement what pains Alexandre Frère has taken in the treatise of his workmanship which he calls Transpositions of music reduced to the natural. Let not one expect there to be the slightest word of the basis. It is a

98. Ibid., 30.
poor, yet very puzzling, invention to facilitate the manner of solmization. On top of all that, the prejudices and false principles in it are observable at every turn.99

The statement appears as a footnote to Mattheson's remarks where he argued against the idea that the transposed tones were more difficult than the natural ones for the singer to perform. He was attempting to refute the very notion which lay at the basis of the necessity for reducing transposed music to the natural. He emphasized that it was as easy for the singer to sing in C-sharp major as in C-major.100 His argument appears to have missed the author's point, however. The author had wished to simplify the notation of the Airs, which in turn would have simplified the intonation of the notes; he certainly would have agreed with the statement that one as easily could sing on C-sharp as on C, if the statement was understood to refer only to the pitch of performance and not to the necessity of reading notes accompanied by sharps.

Continuing his line of reasoning, Mattheson insisted that the perceived greater difficulty of performance of the "transposed" tones on the keyboard was the result of "bad habit and little application."101 He illustrated this point with an example:

99. Ibid., 8, footnote.
100. Ibid. 8.
101. Ibid.
A child, for example, who learns to play the clavecin will perform a piece in C-sharp major with the same facility as [one] in C major, because he has not yet acquired the bad habit of playing certain ordinary tones without playing the rest. On the other hand, if one has that child always play in C-sharp or in the other chromatic tones, he will find some difficulty in playing in C or in the other diatonic tones, which the partisans of the claimed transposed tones cause [to be] considered the most natural. 102

He summarized his view as follows: "It is not the tone which causes difficulty on instruments, but [rather] it is ignorance and [a] too-confined experience which produce [that difficulty]." 103

Rameau.—By renaming the tonics of all the major tones Ut and of the minor ones Re (later, La), Rameau (1722) put into practice the potential separability of the pitch letter and the vocable, which already had been discussed by Loulié and others (e.g., Montéclair, Dupont) with reference to the vocal practice, but which generally had not been accepted in instrumental performance, as a number of authors testified. Rameau's detachment of Ut from C apart from a strict reference to the vocal practice and without the supposition of a natural clef perhaps demonstrated a flexibility with regard to the appropriation of the vocables in instrumental music. It appears to have demonstrated a freedom from dependence upon the natural gamme (cf. Dupont),

102. Ibid., 8-9. 103. Ibid., 9.
anticipating movable-Do systems of solmization which operated without the supposition of the natural clefs.

**Borin.**--The anonymous author restated Montéclair's first method for transposing the names of the notes, adding the requirement of "supposing at the beginning of all those Airs reduced to the natural the clef[s] that their finals require." The author elsewhere emphasized that a natural C, F or G clef position existed for all of the clefs with sharps or flats: "All the clefs accompanied by sharps and flats in the transposed tones are related to and reduce to the natural nomination of one of the [positions of the] three clefs." He later illustrated his statement through examples entitled "Concerning the tones and their reduction to the natural" (see examples 63 and 64 below).

Borin observed that singers could not always sing the pitches at the perfect unison when they changed clefs while singing through a score; this was so because of the limitations of their voices' ranges. In such cases that singing at the actual (i.e., the perfect) unison was impossible, singers would have to sing at the "supposed unison" (l'Unisson supposé; actually, the octave or

104. Borin, 7.
105. Ibid., 14.
106. Ibid., 90-1.
Example 63. "Concerning the tones and their reduction to the natural" ([Borin], La musique theorique et pratique, 90).

Example 64. "Continuation of the tones and their reduction to the natural" ([Borin], 91).
fifteenth). The adjustments that the singer would have made while singing at the supposed unison paralleled those that the instrumentalist made when he substituted clefs while transposing. They also recall the practice the singer followed when he supposed a clef foreign to his voice's range in an Air that he had reduced to the natural.

Campion.---He subtitled his Traité (1716) as follows: "work generally useful for transposition by those who apply themselves to singing and to instruments of harmony or of a single part . . ." He discussed transposition as practiced by singers, stating that "the secret of transposition" was observed by students of singing in his two series of octaves (see example 65). His "secret" was found in the familiar doctrine that all the major tones were solmizated by the octave of Ut and all the minor ones by the octave of Re; those octaves appeared at the head of his respective series of octaves of the major tone and the minor tone. He declared: "The whole secret for the student is

107. Ibid., 14. In the Méthode, Rousseau had presented a table entitled "Demonstration of the exact and supposed unisons in order to sing alone through a score." See his remarks following the third question (p. 68f.)

108. Campion, Traité, title page.

109. Ibid., 17. The "series of octaves" to which the author was referring were octave scales for the major and minor tones written in the bass clef with accompanying figures, which he supplied for the practice of accompanists (example 65).
Example 65. Campion’s “series of octaves” representing the minor tone (*Traité*, insert following p. 9).
to discover what tone he is in, major or minor."^110

Campion's statements invite a number of comments. The method he described was similar to that which had been presented by Freillon-Poncein, Frère and Loulié (in his manuscript revisions of his Éléments; see below); it represents the continuation of a conservative practice. Campion at this time had not yet adopted the more progressive method outlined by Montéclair (1709), whereby the minor modes with sharps were solmizated from La. His requirement of the solmization of all minor modes from Re resulted in a contradiction between the solmization and the signatures in the modes with sharps, which regularly lacked the final sharp necessary for the correct intonation of Si.

Campion declared: "There is no need for mathematics to discover how many sharps and flats are necessary in order to transpose from one tone to another, as one author-mathematician has written."^111 The reference to the "author-mathematician" is intriguing. Although he did not name that author, he may well have been referring to the anonymous writer of the twice-published and evidently highly controversial L'art de transposer tout sorte de musique (Paris, 1709, 1711).

^110. Ibid.

^111. Ibid. See III-109.
Campion referred to the solmization of the major and minor tones from finals of Ut and Re as "the way of the octaves." He evidently regarded that manner of solmization to be analogous to his rule of the octaves for instrumentalists. Certainly, in both circumstances he was concerned with the path or course of the notes through the octaves. He declared that the rule of the octaves was no less important for singers than for instrumentalists who played a single line. He further affirmed that his way of the octaves for singers was trustworthy, and their practice produced a musical and infallible ear.

To the title of his *Addition au traité d'accompagnement et de composition par la règle de l'octave* (Paris, 1730), Campion appended the phrase: "with the manner of transposing instrumentally and of solmizing vocal music easily without the use of the gamme [emphasis mine]." He thus announced two of the topics he would address in his treatise, transposition as practiced by singers and by instrumentalists. His discussion of those subjects will be examined under the respective subheadings of this chapter.

Campion's explanation that his vocal method did not employ the scale suggests that the natural clefs were superfluous to his method. A number of others had employed

those clefs in order to transpose the transpositions back into the scale; Campion, however, neither mentioned nor illustrated them (cf. Dupont, Rameau).

He presented a "Way of solmizating and transposing vocal music--very brief system." He wrote:

Several singing instructors are in doubt and in dispute about the way of solmizating the minor tone. Some want Re to be [the] only model, and others claim that it is La, but by their different erroneous opinions, they confuse the matter.

Those who admit only Re [must by] necessity [make] an addition or supposition of a sharp in the signature [literally, "at the clef"] in A minor (which must not have any at all) in order [for it] to be solmizated from Re. In like manner, [they must] add one beyond the ordinary [number] in the Lavenne octaves, that is, in those which have sharps in their signatures.

Those on the contrary who admit only La [must by] necessity [make the] addition or supposition of a flat in the signature in D [minor] (which must not be there at all), and in like manner [must] add one beyond the ordinary [number] in the Révenne octaves, that is, [in those] which have flats in their signatures.

These two ways of solmizating are equally faulty. One no doubt will avow to me that it is not at all natural to persuade a student who has good sense to imagine, as [an] indispensable necessity, [the] addition or supposition of that which is not visible, and one will agree that those means are full of difficulty.

It is with rules as with machines: the simpler they are, the better they are. [That practice] is a vanity founded on the obscurity of the matter--; it is to run after the imaginary bone of the fable--; to wish not only to split hairs but even to destroy by false principles the rule generally received and approved, which is to say Si on the most extraordinary sharp in the signature and Fa on the most extraordinary flat [emphasis mine]. Nothing is more sensible than this rule. As my rule of the octave is related to this scheme, as you are going to see, I say by correction that the octaves or modulations which have neither sharps nor flats in their signatures
are sung naturally, that is, without disguising the name of the note.

Those octaves are three in number, namely, Ut [C] major, Re [D] minor and La [A] minor. Those three octaves are [the] models of all the others, which borrow their nomination:

All the major octaves without exception take the nomination of Ut major.

The minor octaves are divided between Re minor and La minor. That is to say, those which have flats in their signatures take the nomination of Re minor—those are the Révennes--, and those which have sharps in their signatures take the nomination of La minor—those are the Lavennes. Note well that this generally simple rule is so much the more estimable, just as I have said, as it is in agreement with that other rule which causes Si to be said on the most extraordinary sharp in the signature and Fa on the most extraordinary flat.116

Campion's statements above are of interest, because they reveal that the solmization of the minor modes was a topic over which there indeed was much controversy in his day. On the one hand, it appears that the practice of solmizing all of them from finals of Re, as Rousseau had obtained and Freillon-Poncein, Frère and Loulié had proposed, had yet a large following at the time. On the other hand, there apparently were a number who had accepted the argument of Saint-Lambert—or who at least were tacitly compliant with it—that the third, sixth and seventh above the final were minor intervals in the minor mode; like Rameau in the "Supplément" of the Traité, those had adopted A (La) minor as the model for all of the minor modes.

116. Ibid., 48-50.
Campion rejected the practices of solmizing all of the minor modes from a single final of either Re or La. His arguments for his rejection of a solitary model emphasized the resultant lack of harmony with the musical practice: He observed that with the adoption of one model for the minor modes, it was necessary to add (or to suppose) either a flat in the modes with flats or a sharp in those with sharps in order to permit them to be solmized from the chosen final. He evidently recognized the necessity for the agreement between the solmization and the octave species designated by the signature. He also pointed out that the adoption of a single final, with the concomitant adjustment by the singer for the sake of the correct intonation of the pitches, was absolutely contrary to the simpler rule of calling the final sharp Si and the final flat Fa, which he affirmed was both widely accepted and extremely sensible.

Like Montéclair before him, Campion endeavored to restore the harmony between the signature and the solmization by requiring the natural octaves to be sung naturally—, that is, by having C major, D minor and A minor sung from finals of Ut, Re and La, respectively; those octaves were the models for the solmization of all the other modes. He emphasized that his practice was so much the more worthy of esteem because it was in harmony with the rule of the final sharp and the final flat. (It appears that he invoked Loullé's rules both in order to emphasize the
correctness of his own method and to discredit the methods of those who employed a single model for the minor tones.)

His method represented a synthesis of Montéclair's two ways of transposing the names of the notes, albeit without the use of the supposed natural clefs.

He observed that his directive to sing the modes that had natural signatures under their natural names represented a "correction." It appears that he was consciously correcting not only the statements of those whose "faulty" methods he recently had described, but also his own statements from his Traité, where he had declared that all the minor tones, including A minor, were solmizated by the octave of Re. The fact that he addressed and attempted to refute practices which employed a single pattern for the minor tones indicates that those practices had not entirely been eliminated by the three-pattern method of Montéclair.

Campion secured the approbations of certain estimable French musicians upon his method, which appear at the conclusion of the Addition. One of them reads:

**OFFICIAL APPROVAL**

Having read and examined carefully the present system for solmizating and [having] heeded that it corresponds perfectly with the rule which causes Si [to be] said on the most extraordinary sharp and Fa on the most extraordinary flat, we have very much sanctioned that one must solmizate the minor octaves which have flats in the signatures from Re, and the other minor octaves, which carry sharps in the signatures, from La. We in like manner have censured the uselessness of
saying Fa on the accidental flat. Done in Paris, July 25, 1729.

The approbation was signed: "Clerambault, Forqueray, T. Bertin." 117

**Methods for Dealing with Irregularly Written Signatures**

Rousseau.--The author discussed at length a method for dealing with irregularly written signatures in his response to the tenth question of the Méthode. The question was asked:

> How can one know the flats which must govern in the tones transposed by [the] flat and the sharps which must govern in the tones transposed by [the] sharp [literally, *b quarre*], and how must one practice them when they are not marked [in the signature]? 118

Rousseau began his response as follows:

> It is true that one often finds pieces of music in which the flats and the sharps are not marked exactly after the clef in the transposed tones, which often causes difficulty for those who are learning, and which makes it impossible for them to be able to make use of the rules that we have given for naturalizing the transposed tones. Therefore, in order to give all the necessary clarification and facility concerning this subject, here are rules by which one easily will be able to know the flats and sharps which must govern in each transposed tone, and what one must observe in each particular one. 119

Rousseau thus began his response by observing the existence of irregular signatures in the music of his day.

117. Ibid., 55.
118. Rousseau, Méthode, 79. 119. Ibid., 79-80.
Such signatures, he affirmed, were troublesome for students and rendered the rules useless. He may have been referring particularly to the rules he had cited in his second method for naturalizing the transposed tones. It appears that those rules were useless in dealing with irregular signatures for two reasons: they assumed complete signatures and, like the rules of his first method, they made no provision for dealing with sharps or flats essential to, but missing from, the signature which were found accidentally during the course of the music. Rousseau recognized that in order for one to have facility with the irregular signatures, one first had to have a knowledge of the regular ones.

He lay the groundwork for his method by defining the natural and transposed tones in terms of the constitution of their signatures. As already has been observed, the natural tones were those with either B-flat or the natural signature, while the transposed tones were those whose signatures had two or more flats or one or more sharps.

Rousseau's detailed discussion regarding the naturalizing of the irregularly written transpositions is too lengthy to reprint in full, but two instances will serve to illustrate it. He stated:

In C minor or C minor third—they are the same thing, which is a tone transposed by [the] flat, there must be a flat on the degree on which Si [B] would be said with B-natural and another on the degree on which Mi [E] would be said with the
same B-natural. Yet sometimes only one flat is put after the clef on the degree of B, and a flat is put by each E that is encountered in the course of the piece. [That flat] ought to be supposed after the clef. It suffices to know that the piece is in C, and that it is sung with B-flat, to know that beside the flat which is on the degree of B, it also must have one on the degree of E. Then one must suppose it after the clef and follow the rules which we have given for this transposed tone. [We must] observe that if in the course of the piece there is any E which is not preceded by a flat, one must suppose a sharp there. Moreover, if there is encountered any piece of music in C which does not have any flat after the clef, it will suffice to see that in the course of the piece each B and each E is preceded by a flat in order to suppose them at the beginning as if they were marked there. [One must] observe always that if any B or E has no flat, one must suppose a sharp, but when the two different flats are marked after the clef, one must not suppose anything. . . .

In A major, there must be three different sharps after the clef, namely, one on the degree of F, another on the degree of C, and the third on the degree of G. If it is found that fewer of them are marked, it suffices that there is one [sharp] in order to suppose the others. [One must] observe always to suppose a flat on each of those notes which will not have any sharp. Moreover, if there is not any sharp marked after the clef, which does not happen, or very rarely [happens], one will understand that they must be supposed when in the course of the piece each of those notes will be preceded by a sharp. Yet also one will have to suppose the flat before those notes which will not be preceded by the sharp. . . .

When one supposes flats and sharps at the beginning of a piece of music after the clef [i.e., in the signature] in the transposed tones, one must count as insignificant those which are encountered in the course of the piece on the same degrees, and one must omit them as if they were not there. 120

It should be observed that in Rousseau’s time the flat was

120. Ibid., 80-9.
used to cancel the sharp, and the sharp was used, along with the natural sign, to cancel the flat. In modern times, however, both instances of cancellation are accomplished uniquely by the natural sign.

Rousseau added that all the suppositions or substitutions made with sharps in the transposed tones with flats when notes requiring flats lacked them, and all those made with flats in the transposed tones with sharps when notes requiring sharps lacked them, happened only incidentally and rarely, since the substitutions were not native like the flats and sharps which by nature were required in the signatures of the transposed tones.

As one examines Rousseau's discussions of the sharps and flats necessary to each signature, one observes that in every case he enumerated them in the order of their succession: he cited the sharps in the order F-sharp, C-sharp, G-sharp and the flats in the order B-flat, E-flat, A-flat. This observance of order contrasts with his previous indifference toward it in his musical notation. In the signatures found in certain of his "demonstrations" of the "Rules for naturalizing the transposed tones," the flats appeared out of order. This is particularly apparent in a

121. See Rousseau's examples in the *Méthode*, 22.
majority of his instances of F minor: in the first, for example, the flats appeared on the staff in the order E-flat, A-flat, B-flat, E-flat (see example 20).

The procedure outlined above, which Rousseau evidently would have followed with all of the transposed tones whose signatures were written irregularly, will be summarized briefly. The author first of all cited the required signature, since a knowledge of the correct signature was a prerequisite for the successful handling of the incorrect one. Next, he posed an instance of an irregularly written signature found in the musical practice. Then he explained how one could adjust to the particular situation in order to sing the given piece naturally. There appear to have been several steps to his method: First, one had to recognize the final. Next, one had to look at the signature to observe the number of sharps or flats that it contained. Then followed a step which Rousseau evidently assumed: one had to recall the correct signatures for both the major and minor tones on the given final in order to determine by comparison which of those the given signature represented. Sometimes either might be a possibility, as when no sharps or flats appeared after the clef. Then one determined—by inspection, if necessary—, which sharps or flats were missing from the signature, and he added the missing components. When the inspection of the music was required, if any particular note was regularly found with an
accidental necessary to the signature, one was to suppose that sharp or flat after the clef. Having obtained the required signature, one then had to apply the rule previously given for naturalizing the tone; that is, one had to change the names of the notes, beginning with the degree of the first sharp (Fa) or the first flat (Si). One also had to remember to ignore the sharps or flats which had been added after the clef whenever they were encountered during the course of the piece. Finally, whenever a flat that was supposed in the signature was not present in the music on the degree on which it regularly was found, one was to suppose a sharp there, and vice versa for the sharp.

Near the conclusion of his response to the tenth question, Rousseau embarked on a discussion which demonstrated the inherent logic governing the relationship between the natural and transposed tones. He remarked:

One yet must observe that if I call "Si, Mi, and La" the three degrees which are governed by three flats in the tones transposed by [the] flat, and [if I call] "Fa, Ut and Sol" the three degrees which are governed by three sharps in the tones transposed by [the] sharp [literally, b quarre], it is in order that by supposing the natural tone with B-natural, one can execute those guides with more facility, and not in order to obligate singers to name them so in the transposed tones. [This is the case] since, on the contrary, the three degrees which are governed by three flats in the tones transposed by [the] flat are called "Fa, Ut, and Sol," and the three degrees which are governed by three sharps in the tones transposed by [the] sharp are called "Si, Mi and La."
Rousseau evidently was saying that if he named the three flats and three sharps in the transposed tones by means of the given clef, that is, as Si, Mi, and La (or B-flat, E-flat and A-flat), and as Fa, Ut and Sol (or F-sharp, C-sharp and G-sharp) respectively, he did so only in order to facilitate the performance through the naturalizing of the transposed tones and not so that singers would have to name them under their original names. This was evident, he felt, because once the transposed tones were naturalized, the names of the flatted and sharped notes actually would be interchanged so that the flats would be sung as Fa, Ut and Sol, and the sharps as Si, Mi and La (see example 66). Thus, the names of the three flats in the transposed tones would correspond to the names of the three sharps in the naturalized ones, and vice versa.

The relationships that Rousseau observed between the names of the sharps and flats of the transposed and the naturalized tones are essentially simple and doubtless have been restated by others. Yet for all their simplicity, the fact that he cited those relationships is no less remarkable, for it demonstrates Rousseau's interest in buttressing his method with a logical framework. Perhaps his discussion was motivated by the following circumstance:

123. Ibid.
Example 66. Reciprocal relationship exhibited by the transposed and naturalized tones.

a. Names of flats in the natural and transposed tones with flats.

b. Names of sharps in transposed tones with sharps.

Names of their degrees following substitution of clefs in order to sing by the natural tone with $B\flat$.
he evidently was the earliest French author to present a published method for the naturalizing of the transposed major and minor modes, and he therefore may have felt obliged to act as the apologist on behalf of the method.

Rousseau concluded his response to the tenth question with the observation that when the flats or sharps belonging to the signatures were placed on degrees other than those on which they should be found (which, he declared, often happened in printed music), one would recognize that circumstance through the previous rules. He evidently was referring to the occurrence of typographical errors in printed editions. He seemed to have been saying that a knowledge of the regular signatures, which was taught by his rules, would enable one to identify signatures that had been written incorrectly. Thus his rules were shown to be useful for the correction of inaccurate as well as incomplete signatures.

Loulié.--In his proposed revisions to his Éléments found in the manuscript fonds français, n.a. 6355, Loulié presented a method by which irregular signatures could be recognized and subsequently corrected, in order that transposed music could be reduced to a natural clef. He

124. Ibid.
cited five different circumstances which would indicate an irregular signature, stating:

Sometimes there are found pieces of Transposed Music in which the transposition is not marked exactly after the clef. This is obvious:
1. When the piece ends with a note other than Ut or Re (Ex. A) [Example 67a.].
2. When the piece ends on Ut [and] the third of the Final is minor (Ex. B) [Example 67b.].
3. When the piece ends on Re [and] the third of the Final is major (Ex. C) [Example 67c.].
4. When during the course of a piece sharps are found applied to notes other than Fa or Sol (Ex. D) [Example 67d.].
5. When during the course of a piece flats are found applied to notes other than Si or Mi (Ex. E) [Example 67e.]. 125

According to Loulié, then, the following circumstances were sufficient to indicate that the signature had been written irregularly: 1) an incorrect final--i.e., any final other than Ut or Re; this could be determined by the application of the appropriate rule for reducing transposed music to a natural clef; 2) any disagreement between a final and its third--Ut naturally had the major third, Re

125. Loulié, Elements or Principles, 55.
the minor third; 3) unusual accidentals (either sharps or flats) encountered during the course of the music. That is, Loulié seems to have been saying that the application of his two rules was sufficient to demonstrate whether a signature had been written regularly or irregularly: one would recognize an irregular signature (after applying the relevant rule) whenever any of the circumstances cited above pertained. In short, it appears that the knowledge that a signature had been written irregularly derived from the knowledge of the solmization, which was obtained from the given signature through the application of his rules, coupled with the identification of the accidentals found in the course of the music.

An examination of Loulié's five examples is informative. One can observe that all of them employed natural signatures; Loulié apparently wanted to present the simplest examples possible in order for his method to be clearly understood. He first presented an example in A minor with the natural signature, which demonstrated that for him, La was not a correct final for the minor mode (see below). The second and third examples demonstrated that one could have finals of Ut or Re and yet could have an incorrectly written transposition if the third was altered in the course of the piece and consequently disagreed with the final. In other words, the consistent alteration of the third during the course of the music was sufficient to
indicate that the transposition had not been written regularly. Apparently, instances could be found in the practice where the third above the final was so altered. Frère observed the circumstance (and also cited examples) where the thirds of transpositions in the minor mode were flatted during the course of the music rather than in the signatures.126

The fourth and fifth instances demonstrated that certain accidentals in the course of the piece did not cause one to question the correctness of the signature, while others indicated that it had been written irregularly. For example, sharps could be applied to Fa and Sol during the course of a piece, and the presence of such sharps would not necessarily indicate an incorrectly written signature. This may have been the case because Fa-sharp and Sol-sharp were the leading tones of the dominants of the major and minor modes, respectively. Those accidentals prove to be among the ones most often encountered during the course of the music in the relatively common bipartite pieces: instances in the major mode regularly modulated to the dominant, and thus required its leading tone, Fa-sharp, while those in the minor mode modulated often to the relative major, with leading tone Mi, and sometimes to the minor dominant, with

126. Frère, 76-7. See also Rousseau’s discussion of C minor, cited above (II1-120).
leading tone Sol-sharp. (It is puzzling that along with Fa-sharp and Sol-sharp, Loulié did not also cite Ut-sharp, which was the ubiquitous leading tone of the minor mode.) In example 67d, it apparently was the sharp on Re that indicated to Loulié that the transposition had been written irregularly.

Loulie also indicated that flats applied to Mi or Si were not signs of an irregularly written transposition. Si-flat was the lowered sixth degree of the minor mode, which was common in descending. Mi-flat was the flatted second degree (the Neapolitan) of the minor mode; it also was the lowered third above Ut. His inclusion of it among the accidentals that he believed did not indicate an irregularly written transposition is of interest, for he previously had identified Mi-flat as an accidental that illustrated an irregular signature when it represented the third of Ut.127

According to Loulié, flats applied to notes other than Mi-flat and Si-flat signified an irregularly written signature. He illustrated the circumstance through an example of a melody which ended on Ut, had a natural signature, and also had flats on Mi and La during the course of the melody (example 67e). But for his exemption of the

127. Perhaps he intended to permit its use in the temporary change of mode from major to minor.
lowered third Mi-flat, one might have expected Loullé to have cited it as the indicator that the signature had not been written regularly. This was the case because the third determined the modality and therefore was a vital component of the signature. However, Loullé chose La-flat, the lowered sixth, instead. Perhaps he specifically did so because he previously had dealt with the occurrence of the lowered third above Ut (example 67b).

Loulle discussed how music like that demonstrated by his examples could be reduced to a "Natural Clef." He required, like Freillon-Poncein, Brossard and Frère, that one examine the third: if it was major, the final ought to be Ut; if it was minor, the final ought to be Re. He continued:

When the name of the Final is determined, if the clef [i.e., the signature] of the piece is natural or has sharps or if the third of the Final is not flattened, the degree of Si in regard to the Final, Ut or Re, should be found and raised by means of a sharp (which is the final one [of the key signature]). If the clef has one or several [i.e., one or more] flats, or if the third of the Final is flattened, the degree of Fa in regard to the Final, Ut or Re, should be found and lowered by means of a flat (which is the final one [of the key signature]).

A number of observations may be made with respect to Loullé's method outlined above. The knowledge of the third

---

128. Loullé, Elements or Principles, 56. For Loullé, the following expressions evidently were synonymous: reducing to a natural clef and "reducing to an exact transposition."
above the final was of primary importance, for the third
determined the final's name and therefore identified the
mode and its solmization. Once the final had been
determined, the signature had to be completed: the final
sharp or flat had to be identified and it and the prior ones
supplied after the clef. This was the case because a
correctly written signature was essential in order to be
able to reduce to a natural clef via the rules.\(^{129}\)

In order to obtain the complete signature, one first
applied Loulié's rules for reducing transposed music to a
natural clef in reverse: rather than beginning with the
final sharp or flat and naming its degree as Si or Fa, one
proceeded in the opposite direction, beginning with the
degree of Si or Fa and placing there the final sharp or flat
of the signature. The necessity of reversing the order of
the rules resulted from the fact that the known and unknown
factors were interchanged: Si and Fa were known as a
consequence of the identification of the final as Ut or Re,
while the identity of the final sharp or flat had to be

\(^{129}\) Loulié's method did not embrace the hypothetical
situation in which transposed music in the major mode
requiring up to five flats might have had none of the
necessary flats marked in the signature. For example,
if the final was F, the mode major, and the clef natu-
ral, and the necessary B-flat was indicated in the
course of the music instead of after the clef, the
conditions technically would not have been met for the
application of the correct rule. One assumes that
situations like this one may have been rare or perhaps
even nonexistent in the French practice.
determined. Once it was known, the preceding sharps or flats presumably could be recalled, since Loulié had taught the correct order of the sharps and flats and had illustrated the signatures for the major tone in the Éléments.

Loulie applied his method to his first two examples.

Of the former (example 67a), he reasoned:

The third of the Final in Example A is minor; the Final should be called Re. The third is not flattened. I look for the degree of Si in regard to this final, Re, and I place a sharp on that degree; it is the final sharp, and the transposition is thereby exactly marked.\(^{130}\)

He indicated that the transposition was exactly marked when there was one sharp in the signature; he thus demonstrated his acceptance of the Dorian signature for A minor. The sharp was necessary in order to obtain the agreement of the solmization from Re with the octave species designated by the signature. Loulié did not permit the minor mode to be solmized from a final of La, which technically would have been required if he had accepted the natural signature for A minor.

Of his second example (67b), he wrote:

The Final in Ex. B is Ut, but the third is minor; this Final should therefore be a Re, but the third is Mi-flat [E-flat]. I look for the degree that corresponds to Fa in regard to this Final; I find that it is the space above the third line. I place a flat there, and it is the

\(^{130}\) Loulié, Elements or Principles, 56.
final one. This final flat is then the second; it is both Fa [in regard to the Final as Re] and Mi [i.e., E-flat] [in regard to the Final as Ut].

Loulie's method for dealing with irregularly written signatures may be evaluated briefly. On the positive side, it demonstrated a measure of unity and coherence because it employed the same two rules as had been used when the signatures were written regularly. The fact that the rules were employed in reverse order when the signatures were irregular demonstrates the utility and symmetry of those rules. On the other hand, the method seems to have a significant drawback in that it was circuitous; its author followed a roundabout course by depending on his rules to reconstruct the signatures. Today's musicians justifiably might object to his method as a waste of time. One could argue that it would have been much simpler to learn the regular signatures, even as Rousseau suggested in his response to the tenth question and Frère advocated in his treatise, than to obtain them via "the back door" as Loulié taught.

Differences in the methods of Rousseau and Loulié.-- The methods Rousseau and Loulié employed to naturalize transposed music with irregular signatures perhaps are more different than alike. There are at least two significant

131. Ibid.
similarities between them, however. First of all, both possessed a remarkable unity and coherence. In Rousseau’s method, the names of the flats in the transposed tones were the same as the names of the sharps in the naturalized ones, and vice versa. Loulié’s method employed two reversible principles which could reduce any kind of transposed music to a natural clef. He could as well say that Si represented the position of the final sharp as he could say "The final sharp signifies a clef of Si." Both methods further required the determination of the regular signatures.

One obvious difference in the methods involved the status of the regular signatures. With Rousseau’s method, one absolutely had to know the sharps or flats that were proper to each of the signatures in order to discern which sharps or flats had been omitted. With Loulié’s method, on the other hand, the student was not required to know the regular signatures beforehand. Rather, he merely reconstructed them by appropriating the rules.

Another difference concerned the treatment of accidentals that were essential to the signatures but which had been omitted from them. Rousseau presented a precise method for dealing with such accidentals, but Loulié ignored the issue. Since he failed to refer to the practices of overlooking and substituting accidentals in the course of the music, his method appears to have lacked the completeness of Rousseau’s.
A third difference involved the authors' selections of irregular signatures. Rousseau referred to a number of particular ones for the transposed tones he discussed; his examples comprised a partial compendium of irregular signatures. Louillé, on the other hand, limited his examples to natural signatures only, and those examples constituted an inventory of different types of circumstances which indicated that the signatures were written irregularly.

A final difference involved the length of the methods: Rousseau's relatively lengthy presentation contrasted with Louillé's shorter one. However, Rousseau's discussion was longer because he first presented the regular signatures. In reality, his method appears to have been the more direct of the two, as he did not require the reconstruction of the signatures.

The differences between the methods of Rousseau and Louillé may be summarized as follows. Rousseau's method had at its basis a knowledge of the regular signatures, to which the irregular signatures could be compared. The fact that his primary concern was with the signature makes his discussion of assumed and substituted accidentals seem appropriate, if not necessary. By way of contrast, Louillé's method had at its basis the identification of the third above the final, which third determined the final's name. His primary emphasis seemed to be on the solmization rather than on the signature, and therefore his failure to discuss
the matter of accidentals in the course of the music perhaps should come as no surprise.

Frère.--In his preface, Frère attacked the method which caused, as he said, the final sharp to be called Si and the final flat Fa. (He did so, however, without mentioning Loullé or L'Affillard by name.) He objected that the method could lead to confusion whenever one or more sharps or flats were omitted after the clef. He later affirmed that if even one of the sharps was missing, the method would be almost useless, because often the final sharp was one of the ones which was missing from the signature. He further contended that one had to spend a lot of time in discovering the final sharp or flat of the signature; this task he regarded to be especially time-consuming when, as often was the case, certain sharps or flats were repeated or doubled at the octave. One can infer from his remarks that the sharps or flats sometimes appeared out of sequence (cf. Rousseau's "demonstrations").

At the conclusion of the first part of his treatise, Frère commented that composers sometimes wrote music in such a way that all the necessary sharps or flats were not placed exactly after the clef. In the second part, he then attempted to provide a way to overcome the difficulties of

132. Frère, i. 133. Ibid., 25-6. 134. Ibid., 30.
such irregularly written transpositions. The fact that that part of his treatise is more than twice the length of the first part demonstrates his keen interest in making irregularly written transpositions easy to sing.

Frère stressed that his secret to overcoming the difficulties of irregularly written transpositions was to learn all the admissable finals and their necessary sharps or flats. That is, his secret was simply to memorize the regular signatures for the transpositions. It was Frère's objective to provide students with a "specific aid" in order that they might manage those transpositions in which sharps or flats had been omitted after the clef; it appears that the knowledge of the correct signatures was that aid. Frère emphasized that correct signatures for the major and minor modulations were necessary in order to be able to change the finals to Ut or Re. He explained further that with a knowledge of the regular signatures, one would recognize whether a piece of music was written correctly or not and would easily understand which sharps or flats were missing after the clef in order to make up their deficiency.

Frère outlined the six major and six minor modulations written with sharps and flats (see examples 68A-68D). He

135. Ibid., 31. 136. Ibid., 46.
137. Ibid., 36-7f. 138. Ibid., 46.
Example 68. Frère's twelve major and twelve minor transpositions (*Transpositions de musique*, 36-44).

A. Example of the six major modulations written with the exact number of sharps which is necessary in order to be able to change the last note to Ut.

- **G major**
  - Sol changed to Ut
- **D major**
  - Re changed to Ut

- **A major**
  - La changed to Ut
- **E major**
  - Mi changed to Ut

- **B major**
  - Si changed to Ut
- **F-sharp major**
  - Fa[sharp] changed to Ut

B. Example of the six minor modulations written with the exact number of sharps which is necessary in order to be able to change the last note to Re.

- **A minor**
  - La changed to Re
- **E minor**
  - Mi changed to Re

- **B minor**
  - Si changed to Re
- **F-sharp minor**
  - Fa changed to Re

- **C-sharp minor**
  - Ut changed to Re
- **G-sharp minor**
  - Sol changed to Re
Example 68, continued. Frère’s major and minor transpositions.

C. Examples of the six minor modulations written with their exact number of flats.

G minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Sol minor
changed to Re

C minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Ut minor
changed to Re

F minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Fa minor
changed to Re

B-flat minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Si-flat minor
changed to Re

E-flat minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Mi-flat minor
changed to Re

A-flat minor

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Le-flat minor
changed to Re

D. Example of the six major modulations written with their exact number of flats.

F major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Fa major
changed to Ut

B-flat major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Si-flat major
changed to Ut

E-flat major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Mi-flat major
changed to Ut

A-flat major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

La-flat major
changed to Ut

D-flat major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Re-flat major
changed to Ut

G-flat major

\[
\begin{array}{c}
7\frac{3}{2}
\end{array}
\]

Sol-flat major
changed to Ut

Re-flat major
changed to Ut
attempted to present both the sharps and flats and the individual signatures in a manner that would be easy to remember, stressing their relationship through the interval of the fifth or the fourth, as others had done. The space that he gave to the presentation of those things—his discussion covers sixteen pages—demonstrates the strength of his conviction that their acquaintance was necessary in order for one to manage irregularly written transpositions effectively. Throughout Frère’s discussion, his pedagogical bent is evident in his simplified manner of presentation and his extensive repetition.\footnote{Ibid., 34f.}

Frère stated that the minor modulations with sharps usually were found written with one sharp too few.\footnote{Ibid., 48.} He argued that if one employed the familiar method of calling the last sharp Si, one would have to change the name of the final pitch to La (cf. L’Affillard), which was not as natural as Re. He recognized that in order to be able to reduce those minor modulations to the natural with finals of Re, one would have to write them with one more sharp than they ordinarily had.\footnote{Ibid., 49.} He accordingly gave the minor modulations with sharps the additional sharp, which produced Dorian signatures (see example 68B). He thus set himself in opposition to customary practice. Even A minor was given the Dorian signature of one sharp. Consequently, there was

\footnote{139. Ibid., 34f. 140. Ibid., 48. 141. Ibid., 49.}
no change of principle between the minor modulations with flats and those with sharps. Frère's endorsement of the Dorian signature parallels that of Loulié in his revisions of the Éléments.

Frère sought to justify the addition of a sharp in the minor modulations. He replied to the objection that the sixth was minor in the minor modes by stating that the solmization from A La (which would be required in the event that his sharp was not added) created difficulties: one rather commonly would encounter the notes Fa-sharp and Re-sharp which, he declared, were "not very familiar to students" and often could hinder them. ¹⁴²

It would be interesting to consider both how Fa-sharp and Re-sharp might be unfamiliar to students and how those same notes might rather commonly be encountered in the solmization from A La. ¹⁴³ To begin, in the minor mode solmized from Re, Re-sharp and Fa-sharp represented the raised final and the raised third, respectively, both of which were infrequently encountered in the music. In the solmization of the minor mode from La, however, Re-sharp was the raised fourth degree, which was the relatively common leading tone of the dominant; Fa-sharp proved to be the

¹⁴². Ibid., 49-50.
¹⁴³. He evidently intended to limit the scope of his remarks to the minor mode, for in the major mode, Fa-sharp was the familiar leading tone of the dominant.
raised sixth degree, which frequently was encountered in the stepwise ascent from the dominant to the final (examples 69a-69b). Those degrees were sung under more familiar names with the solmization from Re: the raised fourth was sung as Sol-sharp and the raised sixth was sung naturally as Si (see examples 70a-70b).

Example 69. Solmization of the minor mode from A La.

Example 70. Solmization of the minor mode from D Re.

While he effectively pointed out potential difficulties that attended the solmization from La, Frère did not deal with the problem of the solmization of Si-flat, the lowered sixth degree (i.e., the minor sixth) above Re, which frequently was encountered in descending passages. He perhaps did not regard it as problematical because of its familiarity.

He insisted that the view that the sixth of the minor mode had to be minor was vain and that the added sharp made
the performance easier. He affirmed that if one argued that the sixth of the minor modes had to be minor in order to justify the writing of the minor modulations without the proposed sharp, then by the same argument one would be required to add a flat in the minor modulations with flats. This would be undesirable, he declared, because it would not allow one to change the final to Re and consequently would make the Air more difficult to perform.144

Frère desired that all composers would write music in such a manner that one easily could change the finals to Ut or Re. That is, he wished for them to employ the regular signatures that he had proposed for the major and minor transpositions. However, he also was a realist. He recognized that up to the present there had not been any consensus regarding his regular signatures (for the minor modes with sharps), and he was not certain whether musicians would want to accustom themselves to his practice. He accordingly observed that it was necessary to examine incidents of irregularly written transpositions.145

Frère's notions concerning the causes of irregularly written transpositions deserve comment. As has just been discussed, he recognized that certain "irregular" signatures were justified by some through the argument that the sixth degree of the minor modes ought to be minor, like the third;

144. Frère, 50. 145. Ibid., 51-2.
in such cases the final sharp, that of the sixth degree, was omitted from the signature. Frère also seems to have recognized that in certain instances, irregular signatures resulted from carelessness on the part of composers. This view is suggested through his frequent use of the verbs oublier and négliger to refer to the omission of flats or sharps after the clef. 146

He discussed irregularly written transpositions with sharps and flats separately. He first of all presented a step-by-step method for reducing to the natural when the signature had been written irregularly with sharps. First, one had to identify the third above the final and to change it to the natural third which it was like—namely, to the third of Ut or Re. Secondly, one had to determine whether any sharp had been omitted after the clef. That is, one had to compare the given signature to the regular signature for the modulation and to observe which sharps were missing from the given signature. Whenever one encountered one of those sharps in the course of the music, one was to regard it as unnecessary and superfluous. Whenever a note which was supposed to have one of those sharps appeared without it, one was to imagine a flat there. The author stressed that his method would apply for all the transpositions with

146. Ibid., 52f.
sharps which lacked one or more of them in their signatures. 147

He presented a number of examples. The first complete Air he dealt with (example 71) was written in A minor and

Example 71. Air written irregularly in A minor (Frère, 54).

One will find the Air which follows [sic] fashioned on La [A] minor. Although there is neither sharp nor flat after the clef, which may cause [one] to believe that the modulation is not [sic] natural, it nevertheless is certain that many students will falter the first time in solmizing it just as it is written.

But if one wishes to change the last note to Re, which is the most natural minor modulation, and [if one wishes] to recall that there is one sharp neglected after the clef in the degree of F, when one will encounter this sharp on that degree

147. Ibid., 52.
In the course of the Air, one will take care to regard it as unnecessary and superfluous. Yet when one no longer will find it near the notes, which are on that same degree, one will take care to assume flats there. It is certain that a student who will have some difficulty in performing it just as it is written the first time [see example 71] will gain it in the first attempt just as it is written the second time [example 72]. In order to make what I am explaining more perceptible, one will find two little dots on the notes where one will have to assume flats.148

Example 72. Air (corrected) in A minor (Frère, 55).

Frère repeated his affirmation that the former instance was written irregularly, insisting that it "ought to be written with one sharp after the clef on the degree of F, in order to be able to reduce its modulation to the natural by changing the last note to Re."149 The example demonstrates

148. Ibid., 53. 149. Ibid., 54.
conclusively that the author did not admit any minor mode with a natural signature beside D (Re) minor, which was the one to which he reduced all the minor transpositions. When he repeated the Air with the signature of one sharp, he stated: "It is easy to judge by experience which of the two manners of solmization is the easiest." 150

In his examples of the irregularly written transpositions, Frère's pedagogical intent is demonstrated in various ways. First of all, he presented his examples in an orderly fashion; he began with the simplest signatures and proceeded through increasingly complex ones, with the finals progressing approximately through the circle of fifths. Secondly, he demonstrated an interest in making his method simple to use by providing cues in the course of the music where a sharp or a flat had to be supposed: his cues were the two small dots placed over the notes which required the accidentals (see examples 71, 73 and 75).

Frère dogmatically insisted that his method constituted the only way to be able to manage irregularly written transpositions with sharps. 151 His method, however, was not new. It was identical in many respects to the one presented by Rousseau in his reply to the tenth question of the Méthode. It is likely that Frère was familiar with his

150. Ibid., 55. 151. Ibid., 69-70.
predecessor's method, but he gave Rousseau no credit for his notions.

Frère next presented his method for reducing transpositions with flats to the natural when they were written irregularly. He proceeded analogously, first observing that one could manage them with the same consideration as had been given to those with sharps, with the following difference: whenever one found flatted notes on degrees on which flats were required by, but omitted from, the signature, one was to regard the flats as unnecessary; whenever notes on the same degrees were encountered without flats, one was to assume sharps.152

His first example was in B-flat major with a signature of one flat (see example 73 below). He declared:

I am beginning with the simplest modulation that one often finds [irregularly] written with one flat. Two flats would be necessary in order to be able to change the third of the last note to the natural and by this means to make the melody easier to perform.153

These statements appear to contain a contradiction. Upon examining the Air, one observes that the given flat (B-flat) is sufficient in order to produce the major third, B-flat - C - D, above the final. It might seem then that this flat alone ought to have sufficed in order for one to be able to reduce the third "to the natural," because it was

152. Ibid., 75. 153. Ibid.
Example 73. Air in B-flat major (Frère, 76).

Example similar to the natural third C-D-E, with its two whole tones. Frère, however, required that the second flat, E-flat, also be present, even though it lay outside the third on the fourth degree of the scale. Perhaps his requirement can be understood as follows. He evidently held that the entire octave must correspond to the one above Ut in order for one to be able to change the third to the natural one of Ut Re Mi. In other words, the third could not be changed to the natural unless the octave species was identical to the one of Ut. Consequently, the second flat would be necessary, and there actually would be no contradiction in Frère's statements. One may observe that Frère's given octave, spelled B-flat, C, D, E, F, G, A, B-flat according to the signature (example 74a), did not correspond to the octave of Ut (which has half steps between
the third and fourth and the seventh and eighth degrees; example 74b), but rather corresponded to the octave of Fa (example 74c). With the addition of E-flat, Frère's octave

Example 74.

Frère's octave

octave of Ut

octave of Fa

like the octave of Ut

N.B. Half steps are marked with brackets (\(^\wedge\)).

would be like the one of Ut and the third could be reduced to the natural one (example 74d).

Frère commented on the extent to which signatures with flats were written irregularly in the practice:

The majority of those who compose or write music are not content merely to omit a few flats by the clef. Often they neglect to put the most essential [ones] there, without which it is rather difficult to understand in the first attempt if the modulation is major or minor. I am speaking of the flat by which one can know the third of the last note—, that is, the flat which must be on the degree which forms the third of that final note.154

He stressed:

154. Ibid., 76-7.
There is no other help at all in overcoming this obstacle than to examine with a little care the degree which forms the third of the last note in the course of the proposed Air. If one commonly finds a flat there, one must judge from this that its third will be minor. 155

The author illustrated this circumstance with an example of a transposition in F minor (example 75), stating:

Example 75. Air in F minor (Frère, 77).

As one already finds two flats after the clef, one must believe that this is not the modulation of F major, since it never is written except with one flat in the signature. On the contrary, one must suspect that since one finds two flats, there is more likelihood that it is F minor and that the essential flat which must be on the degree or note which terminates the third of the last note may indeed be omitted in the signature. In fact, if one wishes to examine this degree (which is A) in the course of the Air, one commonly will find a flat there. Then one no longer must doubt that it is a minor modulation. One therefore must change the last note, which is Fa, to Re, and to recall that F minor requires three flats in the signature. The example previous to this discussion has only two flats; the third [flat], which ought to be on A, is omitted, and is found accidentally [i.e., incidentally] in the course of the Air. Therefore, whenever one will encounter it on this degree of A, one will regard it as superfluous, but whenever one no longer will find it near the notes which are on that degree, one will assume a sharp there. Thus [will one do] with all the

155. Ibid., 77.
flats that one will understand to be omitted after the clef; one will find two dots above the notes where one will have to suppose a sharp.156

Frère's example brings to mind Rousseau's similar discussion of the two-flat signature for F minor and also his reference to C minor with a signature of one flat: in both cases, the final flat on the third degree was omitted.157

While Frère dealt extensively with irregular signatures for French music in part two of his treatise, he also was aware of the frequent occurrence of such signatures in Italian music, and he concluded his work with an example of an Italian Air in A-sharp minor whose irregularity of composition far exceeded that of any of the French examples he previously had discussed (see example 76 below). He said that that Air was written on a tone that could be termed superfluous because it was put a semitone higher than it ought to be, on a tone that was not in use. He maintained that since the required sharps (with the exception of F-sharp) were not placed in the signature but rather were found accidentally in the course of the Air, it would be very difficult for the performer to understand whether the modulation was major or minor without diligently examining the final and its third. He observed that the final was A-sharp and its third was C-sharp and declared:

156. Ibid., 77-8.  157. Rousseau, Méthode, 81.
Example 76. Italian Air in A-sharp minor (Frère, 95-7).

Pian-

It may be said that this Air is fashioned [travaillement] on La (A) minor, put a semitone higher, and that this semitone higher sincerely ought to be B-flat minor. 158

158. Frère, 97-8. Frère frequently employed the term
He evidently was not actually equating A-sharp and B-flat, for in the temperaments in use in his day, those pitches customarily were nonenharmonic (i.e., B-flat was higher than A-sharp). He merely was indicating that the tone on which the Air should have been written was B-flat.

Frère believed that the Air was so difficult that it would trouble even the experts. He continued:

What makes it more difficult is that it appears that the beginning is not in the same modulation as the end. In order to be able to perform it, one must sing it up to the seventh measure just as it is written, in conformity to the clef, by performing the sharps as one will find them . . . Then one can begin to sing it without considering any sharp up to the end. Here, I believe, is the only way to be able to manage the performance of this Air.

As has been stated, the Air’s given signature contains

travaillé in reference to the act of composing a piece of music. (See, for example: Ill, 12, 19.) Borin used the term similarly (cf. IV-49). E. Littré, in the Dictionnaire de la langue française, tome quatrième (Paris: Librairie Hachette et Cie, 1885), 2323, defined travaillé secondly as “term pertaining to [the] fine arts: carefully formed,” and thirdly as “fashioned” (or “wrought”). Adolphe Hatzfeld and Arsene Darmesteter, in the Dictionnaire général de la langue française du commencement du XVIIe siècle jusqu’à nos jours, 8th ed. (Paris: Delagrave, 1926), vol. 2, 2185, similarly stated in their second definition of travailler: “to subject (a material) to a continuous action in order to fashion it—iron, stone, wood, . . . .” Both lexicographers also provided another definition of the term relative to musical performance, however. Hatzfeld and Darmesteter, for example, cited the expression “[travailler] the piano, the violin.”

159. Frère, 98.
only one sharp, but sharps later are sprinkled throughout the course of the music. In the first three measures, the modulation of E minor is in force; the given signature is in agreement with the practice, for E minor customarily was written with the Aeolian signature of one sharp. However, in the fourth measure the melody begins to modulate; then, in measure 5, it begins to outline the mode of C-sharp major and later appears to alternate between C-sharp major and A-sharp minor through its emphasis on the essential notes of those modes. The modulation of A-sharp minor is strongly impressed upon the listener near the end of the Air (measures 15 and 16), where twice the falling fourth from A-sharp to E-sharp, also previously found in measure 10, emphasizes the final and its dominant. The final pitch of A-sharp ultimately confirms the tone as A-sharp minor; however, one should note that C-sharp major frequently is established within the course of the Air through the falling fifth and fourth, G-sharp - C-sharp and vice versa, which emphasize the final and dominant pitches (measures 5, 7 and 12), and by the termination of phrases on essential notes: C-sharp (measures 5 and 13) and G-sharp (measure 9).

In view of the melody's character, Frère's performance instructions are of interest. He intended that the singer at first sing the notes in relation to the given clef and to inflect the sharps, evidently without changing the names of the notes. This would constitute a fixed-Ut manner of
solfmization (cf. the instructions of Loulié and Montéclair). Frère's permission of the method here is interesting in view of the fact that in the first part of his treatise he had rejected it in favor of "the way of transposing" (i.e., the practice of reducing to the natural). He apparently felt that the unusual nature of the circumstances, i.e., the modulatory character of the melody, justified the use of the "fixed-Ut" method. He probably thought that the employment of that method throughout the first several measures would be easier for the performer than the alternation of methods, with the music reduced to the natural in those passages which were stable or non-modulatory. Had Frère chosen the latter approach, he might have required: 1) in measures 1-3, the reduction to the natural so that the melody in E minor could be sung from the final of Re; 2) in measure 4, a fixed-Ut manner of solmization; 3) in measures 5-9, the reduction to the natural so that the melody could be sung with C-sharp regarded simply as Ut rather than as Ut-sharp.

Frère prescribed a different method of solmization for the Air from its seventh measure to the end: the melody was to be sung without considering the sharps at all. He did not explain that the melody should be reduced to the natural. Perhaps he intended for the singer merely to solmizate it naturally from A La, while overlooking the sharps that were found on each note. This seems likely,
even though previously he had opposed solmization from finals other than Ut or Re.

In view of the structure of the Air (see figure 10),

\[
\begin{array}{cccccc}
1 & 3 & 4 & 5 & 9 \\
E \text{ minor} & \text{modulatory} & C\text{-sharp major} \\
\hline
10 & 11 & 12 & 13 & 14 & 15 & 17 \\
A\text{-sharp minor} & C\text{-sharp major} & & A\text{-sharp minor} \\
\end{array}
\]

Figure 10. Frère's Italian Air.

Frère's recommendation to change the method of solmization in measure 7 is puzzling. One might expect for him to have called for the change in measure 5, at which point C-sharp major becomes recognizable; it appears that one easily could solmizate the notes through the remainder of the Air by overlooking all the sharps from that point, since in both C-sharp major and A-sharp minor, all the notes of the octave were sharped.

Perhaps Frère's instructions with respect to the Italian Air can better be understood through a comparison of the two methods of solmization that he recommended for it. With both methods, the singer in effect would sing the note names indicated by the clef. Thus, it would seem that the change from the first method to the second could be
accomplished easily, since there would be no change of the names. However, there was an essential difference between the methods: with the former one, the singer was obliged to watch for the occasional sharp and to intone the sharped note differently from the natural note, whereas with the latter method, the singer overlooked all of the sharps.

Though Frère was unbending in his requirements for the signatures of the minor transpositions, he evidently demonstrated a certain amount of flexibility with respect to the solmization of melodies which did not lend themselves readily to the application of his method of reducing to the natural. Two such melody types were found in Frère’s Italian Air: a modulating melody (measures 1-5), which was solmized without reducing to the natural, by a fixed-ut method; and a melody whose every note was sharped (measure 5 to the end), which in part was solmized simply by overlooking all of the sharps and naming the notes according to the given clef.

Finally, though one at first might believe Frère to have been out of touch with current musical practice because of his insistence on Dorian signatures for all of the minor modes, one should recall that the practice recently had undergone change, and he was not alone in his desire to return to a previously accepted usage (cf. Loulié’s revisions of the Éléments). Additionally, he dealt extensively with the music of his day in his examination of
instances of irregularly written transposition. His practical attitude concerning the performance of music is summed up in the final words of his treatise:

After that, we are not obliged to be on trial at the caprice of those who like to fashion difficulties of this nature for us [i.e., like that of the Italian Air]. We will find enough incidents in the permitted modulations that can be found written irregularly without our being troubled with incidents that can be fashioned for us in those modulations which are not in any use. 160

Comparison of the methods of Rousseau, Loulié and Frère.—The methods of transposition for singers that were presented by Rousseau, Loulié and Frère may briefly be compared and contrasted. Regarding the similarities, one will observe first that each of the methods evidently was based upon the scale. Secondly, the authors all baptized the transpositions into a two-mode system of solmization. Thirdly, they all indicated that sharps and flats were the causes of transposition. Fourthly, the authors uniformly regarded as regular the Dorian signature for transposed music in the minor mode.

Concerning the differences, perhaps the most obvious derives from the fact that the authors differed in the kinds of scales they accepted and therefore in the quantity of natural modes they obtained (see table 1). That is, they

160. Ibid.
differed concerning the number of tones to which they could reduce transposed music. Rousseau, who had embraced the two-column scale, presented four natural tones: F major and G minor from the first column and C major and D minor from the second. He gave a completely natural signature to A minor, but he did not naturalize any transposed tones to it. Loulié, on the other hand, adopted the single scale and consequently demonstrated tones with natural signatures only, i.e., C major and D minor. For him, Rousseau's modes with one flat represented "Transposed Music." Frère accepted C major and D minor as the most natural of the modulations.

Secondly, the authors differed in their point of reference for the change of the note names. Rousseau changed the names (i.e., the solmization) on the degree of the first flat or sharp. In his method of the Éléments, Loulié held that one could identify the note names by means of the final sharp or flat of the signature. Frère simply changed the final to Ut or Re. Contrary to Loulié and Rousseau, he depended not on the signature or on associated degrees of the staff, but rather on the modulation. He divorced the reduction process from the signature and reapplied the principle of modality.

Rousseau's use of the degree of the first sharp or flat for the change of the note names gave him many rules, for the name of that degree, though it was constant in the
transposed modes, differed in the individual, naturalized modes. On the contrary, Loulié's choice of the final sharp and flat yielded only two rules, for the names of the associated degrees, Si and Fa, remained the same in all the modes. His method thus represented a simplification of Rousseau's. Rousseau may have recognized the potential hazard of employing the final sharp or flat and therefore appropriated a method which would not have been useless with incomplete signatures.

The authors differed in their notions of what they were accomplishing by reducing to the natural: Rousseau changed the solmization so that the transposed modes could be sung naturally: Loulié endeavored to reapply Ut to C; Frère wished to change the transposed thirds into the natural ones of Ut or Re. The authors also differed in terms of their use of the natural clefs. Rousseau changed the solmization first: then he substituted a natural clef in order to guide students in finding the notes. Loulié adopted the natural clef in order to reapply Ut to C. Frère, unlike Rousseau and Loulié, did not actually employ the imagined natural clefs in his examples, though he recommended their use.

They differed in their degree of emphasis upon the following elements: 1) the final and its third and 2) the signature. In his first method, Rousseau assumed the student's ability to identify the final and the third in order to determine the tone and mode. Frère went to great
lengths in his method to teach the student to identify correctly the final and its third. Rousseau's second method did not absolutely require a prior knowledge of the final or its third; with that method, the author merely applied his rules mechanically and assumed that the signature had been written correctly. Loullé's method likewise was a mechanical operation, and like Rousseau, the author initially did not make any allowance for irregularities within the signatures. While in the first part of his treatise, Frère assumed that the signatures were written regularly, he evidently did so only for the sake of simplicity; in part two, he took up irregularly written signatures, and in dealing with them he made no such assumption.

As has been observed, all three of the authors dealt with irregular signatures, although Rousseau and Loullé took them up only later, after they had presented their initial methods. The practices that each of the authors discussed, which employed their earlier rules, also exhibited certain similarities. The similarity of Frère's discussion regarding the supposition and overlooking of accidentals to that of Rousseau suggests that Frère likely was familiar with the supplement to the Méthode and particularly with the tenth question and accompanying response. Loullé, like Frère, required students to examine the third and from it to identify the final as Ut or Re.
Of the three authors, Rousseau and Loulié are significant as innovators of transpositional practices. Frère, however, is important not as an innovator but rather as a transmitter of the notions and methods of others; his thoroughness is unsurpassed by his contemporaries in their discussions of reducing to the natural in their treatises.

Transposition by Instrumentalists

The transposition of the tone by the substitution of clefs accompanied by sharps or flats was a well-established practice in the late seventeenth century. It was founded upon 1) the inseparability of C and Ut and 2) the identity of the written pitch and the pitch of performance in the instrumental practice. With regard to the former, the transposition did not yield any change in the correspondences between note names and pitch letters. With either flats or sharps placed on any or every degree, the note names of the pitches remained constant: C-sharp and C-flat retained the name of Ut, D-sharp and D-flat the name of Re, and so forth (see example 1).

While it is beyond the scope of this paper to trace the beginnings of transposition by instrumentalists, a few statements will be made in an attempt to illustrate the earlier life of the practice. To begin, the need for transposition among organists is evident; organists frequently had to transpose the tone of their music in
alternatim performances of Mass sections and in performances of Magnificat verses in order to accommodate the pitch to levels comfortable for the choir. The parallel systems of cantus durus with B-natural and cantus mollis with B-flat provided for the transposition of the tone up a fourth through the use of B-flat. Further, the two-flat cantus flectus signature achieved the transposition of the pitch down a whole tone.161

The practice of transposition among organists evidently was a contributing factor in the establishment of the conglomerate modal system which employed the cantus durus and cantus mollis scales. Banchieri (1614) described such a system of modes based on the eight psalm tones. He first presented the "intonation, middle and end of the plainchant" for each psalm tone at its customary pitch. He then illustrated each tone "transposed for compositions in polyphony for the choir"; the transpositions were made within the cantus durus-cantus mollis systems.162 Such modal systems as Banchieri's of course represented written-out transpositions (see chapter 2).

161. Powers, 414. Zarlino observed the occurrence, in the music of his day, of the transposition of the modes up a diatesseron (i.e., a perfect fourth) or down a diapente (a perfect fifth), through the use of the B-flat (On the Modes, 61, 64, 67, 70, 72, 74, 76, 81, 83, 86 and 88). See also this paper, p. 197, footnote 4.

Transposition in performance also was discussed by a number of authors. For example, Michael Praetorius (1619) instructed the performer to imagine different clefs or to affix them to his music with wax. A number of late seventeenth-century and early eighteenth-century French authors also discussed the practice. Some merely made passing reference to it or described or defined it. Others, like Rousseau, Louillé and the anonymous author of *L'art de transposer tout sorte de musique, sans être obligé de conoître le ton ni le mode*, discussed methods of transposition in detail. I will consider both circumstances separately. In order to put the statements of the French authors into a broader perspective, I also will examine notions expressed by selected authors of other nationalities (who often wrote in languages other than French). Thus, the study will include a discussion of the methods of both Gasparini (1708) and J.P.A. Fischer (1728).

The implementation of the substitution of clefs and signatures by instrumentalists was essentially simple, but the practice was complicated by the use of two different kinds of signatures for the minor modes in early eighteenth-century France. The performer had a choice whenever he transposed from a tone which characteristically employed the one kind of signature to another that regularly

---

163. Praetorius, 83. See also Lampl, 143.
used the other kind. He either could adopt the conventional signature and thereby not obtain an exact transposition, or he could attempt an exact transposition in spite of the resultant disagreement with the customary signature. The latter practice was advantageous in certain respects and appears to have been relatively widely recommended by French authors.

**Brief References to Transposition by Instrumentalists**

**Ozanam.**—Ozanam declared that transposition was done in order to accommodate oneself to a voice or another instrument. That is, transposition was necessary as a result of differences in the ambiti of voices and instruments or differences in the intonation of the latter. Evidently, instruments were not always tuned to exactly the same pitch. Consequently, whenever two or more instruments were combined in an ensemble, one of the instrumentalists might have had to transpose his part a semitone higher or lower in order to be in tune with the other instruments (cf. Freillon-Poncein).

**L'Affiliard.**—The author said that if instrumentalists wished to play the *Airs de mouvement* found in his treatise, they would only have to transpose them into the tone(s)

which best suited the ranges of their instruments (cf. Freillon-Poncein, Montéclair). He thus recommended the practice without explaining how it was accomplished.

**Brossard.**--In the first definition of "TRANSPOSITIO," Brossard referred to transposition by accompanists. Like Loulié, he provided examples which ostensibly were given to illustrate transposition in performance but which rather yielded written-out transpositions. He further discussed the practice in his definition of "TRANSPONENDO," stating:

TRANSPONENDO una Terza, una Quarta, &g. piu basso, o piu alto, &g. I have put this Italian phrase at the head of the seventh motet of my Prodromus Musicaalis, in order to indicate that by transposing the basso continuo a third or a fourth lower, this motet which has been made for a counter-tenor can be sung by a soprano or a tenor. And one will be able to find similar things again in those motets that follow, since one of the principal uses of transpositions is to reduce the thoroughbasses to a certain height of pitch which does not inconvenience or force the voices that must sing, either at the top or at the bottom [of the singer's range]. That is done only by transposing the thoroughbass [part] higher or lower on the instruments.

Brossard’s affirmation that one of the chief uses of transposition was to reduce (réduire) the thoroughbass to a pitch that did not force the singer’s voice testifies to

---

165. L’Affillard (1705), 6. See also his previous use of declayer instead of transposer in a similar statement from the 1694 and 1697 editions (preface).

the frequent necessity for the transposition of the
accompaniment in order to adapt it to the range of voices.

Frère.--Frère indicated that the assumption of an Ut
or Re final was immaterial to instrumentalists, since they
performed the sharps and flats mechanically and were not
dependent upon the note names for the correctness of their
intonation. He observed that for them, the performance of
the sharps and flats therefore was easier than it was for
singers.167 His statements recall similar ones of Delair.

Methods of Transposition for Instrumentalists

Rousseau.--The author discussed in detail
transposition in relation to instrumentalists in the Traité
de la viole (1687). He stated that to transpose in
performance was to play music a second, third, fourth or
fifth higher or lower than it was written--, i.e., to
perform music on any final other than that on which it had
been composed (see chapter 2). He emphasized the necessity
of the skill of transposition for those involved in two
kinds of performance situations, accompaniment and ensemble
music. He affirmed that such musicians "must be able to

167. Frère, 22-3.
transpose at sight" onto all the tones, both natural and transposed.\textsuperscript{168}

He observed the indispensability of the knowledge of the clef positions in the practice of transposition:

In order to transpose at sight onto all sorts of tones, it is necessary to know [the principles of] music thoroughly. Further, one must know how to play on all the positions of the clefs with flat[s] and sharp[s] [literally, b\textsubscript{モ} and b\textsubscript{カレ}] on the natural and transposed tones. Finally, one must be able to play easily and at sight the higher parts below and the bass parts above, because there never is encountered any note in music which does not have reference to some clef. In transposing higher or lower, the note often (and nearly always) has reference to a higher clef--I mean to the C clef or G clef in all of their positions. [Therefore], there is no more certain and easier way to transpose than to make [all the positions of those clefs] familiar to oneself in the bass [register]. For then one must only substitute the clef to which the notes have reference while transposing, and the transposition will not cause any difficulty.\textsuperscript{169}

Rousseau supplemented his discussion of transposition with several pages of examples which he called "Models for transposition" ("Modelles pour la Transposition . . ."; cf. Borin). Given "to facilitate the practice of transposition," they demonstrated clef substitutions which accomplished transposition by various intervals onto "all the natural and transposed tones" (see examples 77-80 below).\textsuperscript{170} Rousseau stated that through the use of his

\textsuperscript{168} Rousseau, \textit{Traité}, 116-7.

\textsuperscript{169} \textit{Ibid}., 117-8.
models, one would understand the relationships that existed between the clefs while transposing. He added:

By this same means [i.e., the use of the clef substitutions found in his "models"], one will be able to transpose onto all of the accidentals [literally, Feintes] and to discover the relationship between the clefs that will have to be supposed in performing the upper parts below [their indicated octave registers] and the bass parts above.\textsuperscript{171}

In his "Models," Rousseau employed as initial clefs the F clef and the C clef on the third and fourth lines for every interval of transposition. With the addition of the clefs that he substituted, he employed the seven different positions. The only one lacking was the French violin clef. Since it put the pitches on the same lines and spaces as the somewhat more familiar bass clef (albeit in a different register—see example 17), it represented a redundancy, and Rousseau's failure to use it is not surprising.

Rousseau recognized that in transposing music by various intervals, the instrumentalist sometimes had to suppose a clef whose octave register differed from that indicated by his own clef. Because of the differences of register that could be found between the original clef and the clef that was supposed, the notes often had to be

\textsuperscript{170} \textit{Ibid.}, 118. See III-171. The "Models" are found at the conclusion of the treatise, 120-51.

\textsuperscript{171} \textit{Ibid.}, 118.
realized by the performer in a register different from that which the supposed clef indicated. Rousseau's statements above indicate that the realization of parts in the "wrong" register, through the performance of the notes in a lower or higher octave than that which the clef indicated, was integral to the practice of transposition.

Various substitutions of clefs required the performer to play the music an octave higher, with no change of register, or one or two octaves lower than the supposed clef indicated, in order to keep the notes in the most suitable ambitus for his instrument. For instance, when the bass clef was the original clef and the C clef on the second or third line was supposed, the notes presumably would have been played an octave lower than they were indicated (example 77a). Likewise, if the C-clef on the third line was given and the bass clef was supposed, the notes evidently would have been played one octave higher than the supposed clef indicated (example 77b). Whenever the bass and baritone clefs were juxtaposed, no change of register presumably would have been necessary for the realization of the music by the performer (example 77c). Finally, if the bass clef was given and the treble clef was supposed, the notes presumably would have been realized two octaves lower than the supposed clef indicated (example 77c). Thus, Rousseau's examples proved to include instances in which music put into a higher register by the supposed clef would
Example 77. Selections from Rousseau's "Models for transposition" (Rousseau, Traité, 120, 123, 131). (N.B. "Tone" indicates a whole tone.)

a. a tone higher a tone lower

\[ \begin{array}{c}
\text{G minor} \\
\text{A minor} \\
\text{F minor}
\end{array} \]

b. a tone higher a tone lower

\[ \begin{array}{c}
\text{A minor} \\
\text{B minor} \\
\text{G minor}
\end{array} \]

c. a major third a minor third

\[ \begin{array}{c}
\text{F major} \\
\text{A major} \\
\text{D major}
\end{array} \]

have been played in a lower register, and music put into a lower register by the substituted clef would have been realized in a higher one (cf. Rousseau's statement above).

In the "Models," the relationships between the signatures of the given tones and those of the transpositions are of interest. Rousseau consistently employed signatures in the transpositions which were similar in type to those found prior to the transposition. This was the case even when the signatures obtained after transposition differed from those that the author previously had presented for those tones. For instance, in his examples of transposition from A minor to finals higher and lower, Rousseau employed Aeolian signatures in the tones to which he transposed, even though he previously had presented
them with Dorian signatures (see example 77b). Likewise, whenever he transposed any mode to A minor, he supplied the latter with the Dorian signature of one sharp, although he initially had employed the natural, Aeolian signature for A minor (see examples 77a and 80b). By this means, Rousseau avoided any change in the size of the sixth above the final following the transposition. Thus, an accidental that was applied to the sixth degree of the original tone likewise was applicable to the sixth degree following transposition. The ease this practice afforded the performer must have been regarded as an advantage.

Rousseau's models demonstrate his interest in cataloging all the possible transpositions with regard to the tones that currently were in use in France. He employed six different intervals of transposition: the ascending and descending second, third and fourth. He limited the intervals to those because transposition by the fifth, sixth and seventh (the inversions of the fourth, third and second, respectively) would have duplicated the tones obtained through transposition by the former intervals. The only difference, for example, between the transposition by an interval above a given tone and the transposition by its transposition by a degree (i.e., a second) are found on pp. 120-30 of the Traité, those for transposition by a third on pp. 130-40, and those for transposition by a fourth on pp. 141-51.
inversion below was the octave register in which the transposition was indicated. For instance, transposition a perfect fourth above c\(^1\) yielded a transposed final of f\(^1\), and transposition a perfect fifth below c\(^1\) yielded a transposed final of f. Thus, for all practical purposes, transposition by the two intervals was equivalent, and the same equivalence is observable with the transposition by any other interval and its inversion. The differences in the octave registers would have been immaterial to the performer, given the independence of the octave register of performance and the octave register of the supposed clef.

Since Rousseau transposed the nine major and minor modes by the six intervals, he obtained one hundred eight (eighteen times six) non-duplicative, ordered, two-mode pairings. He actually demonstrated thirty-six different instances of each interval (and a greater number with alternative clef substitutions), as he subjected eighteen different tones to transposition by both the ascending and the descending interval. In the following paragraphs, the intervals of transposition will be discussed in turn.

The great majority of the "models for transposition a degree higher and lower" ("Modelles pour la Transposition d'un degré plus haut, & d'un degré plus bas")—twenty-nine out of thirty-six instances—employed whole step, or major second, movement as opposed to half-step, or minor second, movement. Rousseau transposed to a natural final in a
majority of those instances (in twenty-four out of twenty-nine cases). He transposed by a major second to altered pitches only five times: twice to B-flat (which was diatonic), twice to E-flat and once to F-sharp (see table 12). In three of those five instances, he obtained more complex signatures than he would have obtained if he had transposed by the minor second (see examples 78a-78c).

In each of the seven instances of transposition by the minor second, the transposed final was natural and had a less complex signature than would have been obtained if the major second had been the interval of transposition and a chromatic final had been obtained. Rousseau evidently chose the minor second in order to avoid the less familiar chromatic and nonenharmonic finals (in those particular cases: C-sharp, D-flat, F-sharp and A-flat) and their relatively complex signatures.

It appears that the general tendency for the major second rather than the minor second results from the interaction of two factors: the structure of the scale, which is composed mostly of whole steps, and Rousseau's evident preference for diatonic or natural finals. The latter supposition also is apparent from the fact that only 19.4 per cent (i.e., twenty-one of one hundred eight) of Rousseau's pairings involved transposition to finals outside the two-column scale (cf. table 12).
Example 78. Selections from Rousseau's "Models for transposition a degree higher and lower" (Traité, 121, 124-5).

N.B. Tones followed by an asterisk (*) in examples 78-9 have been supposed by this author for purposes of comparison.

The "models for transposition a third higher and lower" (*Modelles pour la Transposition d'une Tierce plus haut, &
d'une Tierce plus bas") do not exhibit a strong preference for either the major or the minor interval: both are relatively frequent. The choice of one third over the other as the interval of transposition apparently was influenced, as before, by Rousseau's tendency to avoid the non-diatonic, chromatic finals other than E-flat (i.e., C-sharp, F-sharp and G-sharp) as well as all of the nonenharmonic finals. The models also exhibit some tendency for the use of the third which obtained the transposed final with the simpler of the possible signatures in individual cases.

In the transpositions a fourth higher and lower, the interval nearly always was the perfect fourth. Rousseau generally employed it even when he obtained a chromatic final. Had he altered the fourth in those instances, he could have obtained diatonic finals and simpler signatures (see examples 79a-79c). There is a notable exception to that practice, however. He augmented the fourth in his

Example 79. Selections from Rousseau's "Models for transposition a fourth higher and lower" (Traité, 145).

\[
\begin{align*}
&\text{Bb minor} & &\text{Eb minor} & &\text{F minor} \\
&\text{Bb major} & &\text{E minor}^* \\
\end{align*}
\]
transposition of the major and minor modes on E-flat a fourth higher (examples 80a and 80b), obtaining the diatonic final of A natural. He perhaps did so in order to avoid both a non-enharmonic final and a complex signature for the minor tone.

Example 80. Selections from Rousseau's "Models for transposition a fourth higher" (Traité, 146).

a.
Example 80, continued.

b.  
```
Eb minor   A minor   Bb minor
m          m          m
```

Loullé.—Loullé did not discuss a method of transposition for instrumentalists either in the Éléments themselves or in their proposed revisions in the manuscript fonds fr. n.a. 6355. However, in another essay in that same manuscript, he described such a practice. The tract, entitled "Rules or method for discovering which clef (i.e., signature) must be imagined when one wishes to perform a piece on another tone . . . which is called 'to transpose,'" appeared at the beginning of Part XVII.  

Loullé wrote:

If the tone onto which one wishes to transpose requires sharps immediately after the clef, one must imagine a sharp after the imagined clef which is a degree lower than the final of the written piece, and that is the final sharp.

If the tone onto which one wishes to transpose requires flats immediately after the clef, one must imagine a flat on the third degree below (sic: above) the final of the written piece, and that is the final flat.

---

173. F. 127r. Also see Cohen, "Étienne Loullé as a Music Theorist," 72. The parts of the manuscript were numbered by Brossard, and his numbering has been employed in this citation and others (see table 4). Richard Semmens also has translated the essay and has included the French text in his dissertation, 36.

174. See III-174.
A number of observations can be made with regard to Loulié's statements. First of all, one recognizes the absence of any reference to the vocables (i.e., the note names). This circumstance reflects the fact that the method was intended for instrumentalists, who did not employ the vocables in their performance in the same manner that singers did. Secondly, it is evident that some prior knowledge was required of the performer: he had to know whether the tone onto which he was going to transpose required sharps or flats. Thirdly, Loulié employed his familiar two rules in reverse—as he also did in his method for reducing irregularly written transposed music to a natural clef—, in order to reconstruct the signatures. In this case, he substituted for Si and Fa in his rules the corresponding degrees relative to the final; that is, he identified the location of the final sharp and flat without reference to the vocables.

Loulié's discussion of the degrees on which the final sharp and flat were found is of interest. In his rule for transposing onto a tone with sharps, he required the student to imagine a sharp "one degree lower than the final," that is, on the seventh degree of the tone. The seventh degree was precisely the location of the final sharp in the major mode. Thus it is evident that the author had that mode in mind. In his rule concerning transposition onto a tone with flats, on the other hand, he evidently was referring to the
minor mode. It appears that he did not actually intend to designate the third degree below the final, as he wrote, for in such a case his reference would have been to the sixth degree of the mode and would have indicated an endorsement of the Aeolian signature. That would be surprising, as it would contradict his teaching of the Éléments and its "Supplément." It seems reasonable to assume that Loulié actually was referring to the third degree above the final, which was the location of the final flat with the Dorian signature (which he endorsed).

Freillon-Poncein.—The author made a number of statements concerning transposition by instrumentalists. In his discussion of the prelude, he cited a practical benefit of transposition:

By means of transposition into all sorts of modes, one will be able to cause [the author’s preludes for the flute] to suit all other instruments, by raising or lowering them by that which will be necessary in order to make them playable on such instruments as one desires.\textsuperscript{175}

In other words, through transposition one could adapt those preludes to the ambiti of other instruments, and thus one could perform them on those instruments.

While he discussed the usefulness of the skill to instrumentalists, Freillon-Poncein did not discuss in any

\footnote{\textsuperscript{175} Freillon-Poncein, 28; cf. 38.}
detail the conventional method involving the substitution of clefs with suitable signatures, as Rousseau had done in the *Traité*. His failure to do so may indicate that he believed it to be very well understood and/or that he thought his examples of the forty-two signatures of the major and minor modes in all of the different clef positions (example 42) would suffice to familiarize students with the clefs and signatures that they would have to employ in their practice.

The method that the author eventually did discuss with reference to instrumentalists involved the transposition from a natural final up or down a semitone to a chromatic or nonenharmonic pitch. The practice involved the sharpening or flattening not only of the natural final but also of every degree of the mode. It was a realization of his concept of transposition from the natural finals to the sharped and flatted tones.

Freillon-Poncelin observed that with certain instruments, transposition onto all of the chromatic pitches was possible. He stated:

> Although Airs in those transposed sounds [i.e., the sharped or flatted pitches—see example 1] appear [to be] very difficult to perform, one however can play them very easily, with a little practice and application, by observing always that the flat lowers by a semitone and the sharp raises by as much.

> I am not speaking here of the difference between major or minor semitones, because in the instruments in which the ear guides the sounds, one can make all [the semitones] equal. Thus, the transposition onto every kind of semitone [i.e., chromatic or nonenharmonic final] can be performed
with as much justness [i.e., precision] as [the transposition] onto the natural [tone].

In other words, the semitones of the scale could be made equal by ear on instruments in which the ear played a role in determining the pitch, and consequently one could play as well in tune on the chromatic and nonenharmonic finals as on the natural ones. He thus suggested the feasibility of a spontaneous equal temperament in the practice. His statements appear to represent an attempt to justify the usage of the chromatic and nonenharmonic pitches both as finals and as constituents of the modal octave. He apparently wished to vindicate his concept of transposing by a semitone from the natural finals to the sharped and flatted ones.

In the chapter on the voice, he again discussed the practice of transposing and stated that it was done for the sake of the singer:

One transposes only for the facility of voices. When an Air is composed in a high mode where voices could not go, one must lower it in order to have the accompaniment of instruments. Thus, by means of the flats that are put on each degree, one lowers the Air or the melody a semitone from the natural [tone], without going out of the mode on which it has been composed [emphasis mine], and likewise in order to raise it a semitone from the natural [tone], one puts sharps on each degree.

176. Ibid., 9-10.

177. Ibid., 50.
According to Freillon-Poncein, one could raise or lower the Air a semitone from the natural final by placing sharps or flats on each degree, and yet that transposition would not cause one to go out of the mode in which the Air was written. The non-departure from the mode following transposition by a semitone perhaps was explainable through the identity of the pitch letter and vocable: C, C-sharp, C double-sharp, C-flat and C double-flat were all identified as Ut, and so forth. Performers may have regarded the possibility of transposition without departing from the given mode as desirable or advantageous in certain circumstances, in view of the fact that different passions or effects commonly were attributed to the different modes.

The author's method was simple in the respect that it did not require the substitution of an imagined clef, and the performer would find the pitch letters unchanged from the degrees of the staff on which they had been indicated prior to the transposition. The method must have had a certain amount of difficulty, however, in that it required the performer to raise or lower by a semitone every sound of the mode on the natural final.

Prior to his first list of the natural, sharped and flatted finals (example 41), Freillon-Poncein explained that he was providing examples of all that could be done in terms of instruments (i.e., the potential that the instruments possessed) and the principles of music. It appears that
that list of finals was intended exclusively for instrumentalists in their practice. This supposition is supported by his non-identification of the finals of the modes as Ut or Re and also by the following circumstance. Instrumentalists were required in certain cases to transpose Airs a semitone higher or lower than the natural final; in such cases, if they retained the given clef, they often were obliged to assume more complex signatures. By way of contrast, his second list of the finals (example 42), from the chapter on the voice, was intended both for singers and for instrumentalists, but it appears that the flatted and sharped finals and their associated signatures would have been principally useful to the latter.

Saint-Lambert.---In the *Nouveau traité* (1707), the author observed that whenever one accompanied a singer who could not accommodate himself to the key of the accompanying instrument, "one necessarily must transpose or tune the instrument to the pitch of the voice."179 He observed that the latter option (i.e., of retuning the accompanying instrument) was not always preferable or possible for two reasons: first, there were instruments whose pitch could not be changed, such as flutes and all other wind instruments; secondly, most of the stringed

instruments which were used in accompaniment would take too much time to retune (raccorder).\textsuperscript{180}

The author next discussed how to transpose:

In order to transpose easily, one pictures the notes to oneself under other [letter] names than those which they have naturally. In order to do that, one supposes another clef than that which presides. That further obliges [one] to suppose sharps or flats on certain degrees, according as one transposes from a tone which has the major mode onto another which naturally has [the] minor [mode], or on the contrary from a tone which has the minor mode to another which naturally has [the] major [mode]. [For example], if one transposes from C [major] to A, one is obliged to suppose three sharps: one on C, another on F, and another on G. [This is the case] because C has the major third, sixth and seventh, and A \textit{[i.e., A minor]}, on the other hand, has [the] minor [third, sixth and seventh], [and] it [therefore] would not correspond to C [major] without those three sharps. If, on the contrary, one transposed from A [minor] to C, one would have to suppose three flats: one on B, another on E and another on A. [This is the case] because A [minor] has the minor third, sixth and seventh, and the [same] intervals above C cannot have correspondence with it without those three flats.\textsuperscript{181}

In brief, sharps or flats had to be supposed in the signature of the transposed tone in order for the intervals of the third, sixth and seventh to correspond to those of the tone from which one transposed. His method of transposition clearly derived from his definitions of major and minor modality.

\textsuperscript{180} Ibid.

\textsuperscript{181} Ibid., 32-3.
Gasparini.--In chapter XII, "How to Transpose through All Keys," Gasparini (1708) discussed the conventional method. He first observed the usefulness of an instinctive knowledge of the clefs to the acquisition of the skill, stating:

I consider transposition through every key and genus essential to the good organist. But since this comes exclusively with practice, I can think of no better way than to make a special point of knowing all the clefs instinctively; thus when it becomes necessary to transpose a fourth, fifth, or third, either up or down, or a second higher or lower, one can picture immediately in which clef to read the composition.

Gasparini taught that in order to picture readily the clef required for transposition by a desired interval, one should study his examples and observe the placement of the clefs in the different instances. He presented examples of a tone with a natural signature, a tone with flats, and one with sharps, each of which he transposed by a whole tone, a third, and a fourth higher and lower, as well as by a semitone, through the substitution of various clefs and clef signatures.

182. Gasparini, 95. Gasparini's notion of picturing clefs in the process of transposition represented a commonly held idea which was similarly expressed by a number of other authors, including Praetorius (1619), L'Affilllard (1694f.), Gottfried Keller (English translation, 1707), and the anonymous author of L'art de transposer. See Godfrey (Gottfried) Keller, A Compleat Method for Attaining to Play a Thorough Bass, Upon Either Organ, Harpsichord, or Theorbo-Lute (London, 1707), 8.

183. Gasparini, 95.
signatures (cf. Rousseau's models). He declared: "One must note which [of the illustrated] transpositions of keys [i.e., tones] with sharps or flats are least inconvenient and most natural." By least inconvenient, he evidently was indicating transpositions which required relatively simple signatures.

His teaching with respect to the clefs encompassed ideas previously expressed by others (viz., Rousseau and Freillon-Poncein). He first of all emphasized the accompanist's need of realizing the music an octave lower than the clef designated when substituting a clef that pertained to a higher register. Secondly, he recognized the possibility of transposition a semitone higher without a change of the clef. He stated:

The key of B-flat ... may be transposed a semitone higher if so desired, but it is a little inconvenient because of the many sharps; still, it is easy to read because the bass clef is retained, it being necessary only to imagine the sharps added to it.

He listed the following "rules" of clef substitutions to make the accompanist "more secure" in the use of the different clefs:

A tone higher becomes mezzo-soprano (C-clef on the second line).
A third higher becomes baritone (C-clef [sic: F-clef] on the third line)
A fourth higher, or a fifth lower, becomes soprano (C-clef on the first line).

184. Ibid., 97. 185. Ibid., 98.
A fifth higher, or a fourth lower, becomes tenor (C-clef on the fourth line).
A tone lower becomes contralto (C-clef on the third line).
A third lower becomes violin 6 sol re ut (on the second line).

He illustrated the relationships of each of the substituted clefs to the accompanist's proper bass clef in a "table of all the musical clefs." His specification of the particular relationships through the examples accompanying his rules and through his table again recalls the "models" of Rousseau's Traité; Rousseau's models were far more comprehensive, however, as he had catalogued relationships among the clefs when the transposition was accomplished from four different clefs: bass, baritone, tenor and alto.

Gasparini observed that following the substitution of the clef, additional steps were necessary in the transposition of music. One next had to determine whether the composition was of the kind with the major third or of that with the minor third above the final; finally, one had to "make appropriate use of the correct accidentals; otherwise great disorder could arise, changing the quality of the key [i.e., tone], and the composition would be ruined." He cautioned:

For this reason be sure to retain the same species of fourth and fifth, so that they remain correct.

186. Ibid., 99. 187. Ibid., 99-100. 188. Ibid., 99.
and make use of accidentals where necessary in order to reproduce each interval as it occurs in the composition. 189

Like Rousseau and others, he was concerned that the transposition should be indicated exactly. His admonition to retain the species of fourth and fifth recalls the doctrine of the sixteenth-century Swiss and Italian theorists Glareanus and Zarlino, who held that the identity of the mode depended upon the species of diatesseron (or fourth) and diapente (fifth) found within the diapason (octave). 190 Gasparini explained that he could demonstrate "other ways of transposing," but that such were superfluous. 191

Montéclair.—In his "Airs de Dance in all kinds of meters," 192 Montéclair frequently supplied alternative clefs and signatures which permitted the Airs to be transposed onto other tones. In his twelve "lessons in two parts," 193 he again provided choices of clefs. The various options in every case appear to have been intended for the use of instrumentalists.

189. Ibid.

190. Glareanus (see 68-9, 194). Zarlino, On the Modes. 35-41; cf. 51.


193. Ibid., 48-64.
He spoke of the correspondence among the supposed clefs and explained how they might be used:

All the clefs which are at the beginning of each lesson correspond as regards the names of the notes through different transpositions, and all produce the same mode on different tones or notes. One will be able to play those lessons on all sorts of instruments by choosing the clef which produces the most commodious tone for the instruments which one will use. If, for example, two recorders wish to play the first lesson [see example 81 below], they will not be able to do it with the G clef put on the second line ([clef] A), because they do not descend low enough. Therefore, they will be obliged to make use of the G clef on the first line followed by three flats ([clef] B), or four sharps ([clef] C), in order to transpose it a third higher. If two violins wanted to play it in D [major], namely, a whole tone higher than it actually is [written], one would have to choose the C clef put on the third line followed by two sharps ([clef] D), observing to play at the octave above, because the C clef is too low for the violin, [and] so forth.

Example 81. Montéclair’s first lesson in two parts (Montéclair, 48).

First lesson

194. Ibid., 47. He employed in each instance the same kind of signature in the given and transposed tones.
His statement that the substituted clefs corresponded "as regards the names of the notes" must be understood from the perspective of the singer.

L'art de transposer.--An unconventional and perhaps unprecedented method of transposition for instrumentalists appeared in 1709 in the October issue of the Memoires de Trevoux. The tract, entitled "L'art de transposer tout sorte de musique, sans être obligé de conoître le ton ni le mode" ("The art of transposing every kind of music, without being obliged to know either the tone or the mode"), was published anonymously by a professed amateur musician. It was reprinted in 1711 with an extended Introduction.

To the title of the reprint the author attached the phrase: "with some reflections on the necessity of this work." In his reflections, he first made several claims concerning the superiority of his method and addressed a number of shortcomings of the conventional one.

To begin, he declared that he intended his method for the professional and amateur alike and affirmed that his method was "infallible, easy to comprehend and [easy] to practice even by simple [-minded] students." He further

196. Ibid., 1, 3.
professed that his method was trustworthy, "even before the
ear judges [the music]." 197

He believed that his method placed few requirements
upon the performer. With it, all that was necessary was a
knowledge of the given clef and its accompanying signature.
One did not even have to know the tone of the piece. He
declared:

Musicians would not be able to transpose if
they did not know what tone the music to be
transposed was in. Through my method it suffices
to observe the clef and the number of sharps or
flats which accompany it. With that [knowledge]
alone one can understand the transposition of
every kind of music without troubling oneself
with the tone or the mode. 198

This was the author's basic premise, and he restated it
again and again.

According to the author, the utility of his method was
two-fold. In the first place, the method was direct. He
stated: "With this method, one knows at once the clef which
one must imagine in the music to [be] transpose[d] and the
number of sharps [or flats] which must be in that
signature." 199 This knowledge must have been regarded by
the author as particularly advantageous in view of the lack
of standardization of the signatures for the minor tones in
the practice. He professed that the number of sharps or
flats that was required in the signature was a matter "of

which many composers are ignorant." 200 Secondly, the author believed that his method was beneficial because his principles allowed him both to transpose and also "to demonstrate immediately and without [an] instrument the infallible rules of transposition." 201

The author addressed at length the shortcomings of the practice of transposition commonly employed by instrumentalists of his day. First of all, he denied that musicians generally had sure principles by which they could see all at once what had to be done in order to transpose. 202 He declared that the clavecinist and viole player required the use of their instruments in order to determine the number of sharps or flats necessary in the signature:

Ask a clavecin player or a violist which clef will have to be imagined, and by how many sharps or flats it will be accompanied, when there will be presented to him for transposition six semitones higher, for example, some music which is in the bass clef without either sharps or flats. That musician requires first the clavecin or the viole, but how is it that he cannot tell it without the assistance of an instrument? If he were consulted about this before a large audience, what would he reply?

He will say at once what clef must be imagined, but as for the number of sharps or flats which must accompany that clef, he will say nothing about them; all are mistaken, and if someone happens upon [it] exactly, it is rather by chance than by knowledge . . . 203

200. Ibid., 9. 201. Ibid., 5.
202. Ibid., 2f. 203. Ibid., 3-4.
The author proceeded to describe the conventional method of transposition.

If one offers a musician some music to transpose, he considers first what tone it is [in], [and] what tone it will become through transposition. He knows through practice that such a tone requires so many sharps or flats; with that knowledge he takes an instrument and puts himself in a position of transposing according to the suppositions that he has just made. As he plays, the course of the melody and the ear assist him in rectifying the falsity of his suppositions. I say falsity because it is not true that a tone through transposition always has the same number of sharps or flats in the signature that the same tone would have in composition. 

The statements cited above illustrate a number of defects of the customary practice, according to the author: first of all, it required a knowledge of the tone of the transposition, which could lead one astray when one subsequently endeavored to determine its required signature. The author believed that the "prejudice with regard to the tone" prevented "the majority of musicians" from understanding his own method. The second shortcoming followed from the first: the musician required the assistance of an instrument in order to correct the false assumptions he had made with respect to the sharps or flats required in the transposed tone.

The author thus identified the basic error of his contemporaries with regard to the tones obtained by

204. Ibid., 5.  
205. Ibid., 8.
transposition. The assumption that the tone of transposition necessarily had the same signature as the identical tone in the compositional practice was false because two different kinds of signatures, and hence two different octave species, commonly were employed for the minor modes, the Aeolian and the Dorian; in order to obtain an exact transposition, one of course had to employ the same kind of signature in the initial and transposed tones, regardless of whether or not the signature obtained for the transposed tone was the customary one (cf. Rousseau).

He stated:

The musician who has only practice [literally, "the routine"] for [his] guide is obliged in the course of the Air to increase or reduce the number of sharps or flats which he at first has wrongly supposed at the beginning of the music which he is transposing.206

He affirmed further that the lack of either sufficient practice or "justness of hearing" resulted in the fact that "very often they [i.e., musicians] perform wrong notes of which they sometimes are aware; that however does not prevent the mistake [from] having been made before the ear informed them of it ...."207

The author insisted that though the conventional method might be called by musicians a principle of transposition, it in reality was "the same as a blind man would follow to
whom one would sing, for example, a minuet in D [minor], which however would have been begun on A-sharp . . . " He continued:

The greatest practitioners of music do more or less the same thing; sometimes they are carried away in the performance of the music by the power of the melody and an excited imagination, without their paying any attention either to the clef or to the note, and they become—if it may be so said—machines, set like a carillon which plays [or operates] by itself. I confess that it is pleasant to be able to transform oneself into [a] machine like that, but my method does nothing but enrich that machine and at the same time helps the persons who are not quite automatons as regards music.  

Besides the fact that in the conventional practice of transposition, there was uncertainty with regard to the number of the sharps or flats required in the transposed tone, the lack of sure principles made it impossible for musicians to demonstrate or teach their practice to others. The author admitted that those who already knew how to transpose without his method did not need it in order to do so. But, he insisted:

The question here is not only of transposing; it further is a question of a sure principle by which one may [both] transpose and teach transposition. What does it matter to me, I will say in my turn, that such a musician knows how to transpose, if he is not able at all to show it to others? Now it seems absurd to me to consent that a master of [an] instrument not be obliged to know how to demonstrate transposition.  

208. Ibid., 7.

209. Ibid., 4.
The author believed that no one was truly a master of the art of transposing who could not teach it to others. He recognized that his method would not be accepted by those who did not take the time to examine it in depth. He anticipated that the professional musician, upon hearing of his method, would say that it was "smart and curious, but at the same time useless and troublesome." He also expected persons of literature to consider it "more curious than useful; they may even have doubted if it was easier than those [methods] which musicians practice." Following his "reflections," the author cited and refuted nine objections to his method. These will be discussed in part. In his reply to the first of them, he refuted the notion that his method and table were useless if they did not provide facility in the performance of the transposition. He said that practice was not acquired by theory alone, but added that one could have the ability to perform and yet not know how to transpose for "lack of principles [of transposition]." He claimed that with his method, "at least I will immediately know how one must practice without performing any wrong note, [which is] an advantage that no musician of Paris could give a student for want of principles." Some persons who had read the author's method without understanding it raised a second

210. Ibid., 5. 211. Ibid., 2. 212. Ibid., 9-10.
objection, namely that the method was performed "only by very difficult rules of mathematics." The author's reply was that it sufficed to know simple addition and subtraction.

The fourth objection, and the author's reply, follow:

They ask how it is that I put [in] 5, 6, 7, 8 [and] 9 sharps in the signatures, since that [practice] is not in any use. To that I reply that without changing [the] clef, one cannot transpose a piece of music without employing a very great number of sharps or flats, but by changing [the] clef one reduces the great number of sharps to a small number of flats, and the great number of flats to a small number of sharps, [and] sometimes even to the natural [au nature]. This method allows a choice and gives the principle for both ways.

The author thus recognized that certain musicians regarded signatures of five or more sharps to be not in use in the practice. He explained, however, that such signatures could not be avoided when transposing without a change of the clef. His citation of hypothetical signatures which contained up to nine sharps (see table 10) recalls the lists of signatures of Freillon-Poncelin (see examples 41 and 42) and Saint-Lambert (1707). His recognition of the

---

213. Ibid., 11/12. N.B. Page 11/12 is a single page in which 11 and 12 are indicated in the upper left- and upper right-hand corners. Page 13/14 is similar in format.

214. Ibid., 11/12, 13/14.

possibility of transposition without a change of clef also brings to mind Freillon-Poncein.

The fifth objection and the following reply will be cited in part.

They say that I am ignorant of the nature of the natural [bécarré] and the flat to wish that one may play the same music alike by the use of the flat or the sharp. It further is said that music composed with the natural [i.e., sharp] is no longer entirely the same when it is performed with [the] flat. I believe that it is here a question of name, because unless one is absolutely ignorant of what transposition is, one must know that every kind of music passes from the natural [i.e., sharp] to the flat and from the flat to the natural [i.e., sharp], without there being any perceptible change other than that of the transposition. 216

His reply to the ninth objection further justified his position (see below).

The author presented his case as follows. He first stated that if one were to transpose music written without sharps or flats three whole tones higher, one could employ a signature either of six sharps or of six flats. Those signatures, equivalent in their complexity, also yielded an identical realization on keyboard and wind instruments. He then refuted the notions that the sharps or the flats must be preferred in transposition, citing examples which illustrated that signatures of a great many components would

216. L'art de transposer, 13/14.
have resulted if either were accepted to the exclusion of the other. He affirmed:

One will be constrained to confess that one cannot be spared from playing music with nine sharps and nine flats, if one does not wish to change clef and to choose equally [among] the sharps or the flats, which[ever] is the least difficult and which[ever] fatigues the imagination the least. Thus, in the proposed example, this table presents the F clef on the third line with three flats instead of nine sharps with another clef and [presents] the G clef on the second line [i.e., the treble clef] with three sharps instead of the nine flats on a different clef.217

Thus, the author demonstrated himself to be a pragmatist in his choice of signatures.

The sixth objection questioned the usefulness of the author's method if one was not experienced with the eight different clef positions he employed in his table. It was declared that some musicians were familiar with only one or two of them. The author confessed that his table was nearly useless to such musicians. He explained, however, that he did not make his table either for them or for those who were ignorant of music. He insisted: "It is for them [either] to learn it or to admit that they are ignorant of transposition."218 He thus held firm to his conviction that a knowledge of the clef positions was indispensable.

He did admit the possibility of an alternative method of transposition which in fact did not require that

knowledge, however. He described a practice whereby the musician successively transposed each note as he played, "by imagining at the appearance of each note the interval of transposition which supplies the transposed note." He affirmed that the method was very uncomplicated but also was very difficult to perform. He expressed doubt that many musicians made use of it.\textsuperscript{219}

The seventh objection was directed toward the signatures one obtained by means of the table, which often differed from those customarily found in the compositional practice, in that they had "more sharps or flats than are necessary in certain tones."\textsuperscript{220} With the Aeolian and Dorian signatures evidently standard for the minor tones with sharps and flats, respectively, the circumstance of more sharps or flats in the signatures than was necessary occurred whenever one transposed from a minor tone with flats to one with sharps, and vice versa. This was the case because the transposition was exact with the author's method, and the kind of signature obtained in the transposed tone was the same as that of the initial tone. Thus, in transposing from a minor tone with sharps to one with flats, one obtained one more flat in the signature than was found in the ordinary Dorian one. Likewise, in transposing from a minor tone with flats to one with sharps, one acquired one

\textsuperscript{219} Ibid., 16. \textsuperscript{220} Ibid.
more sharp than was found in the customary Aeolian signature.

The objection was illustrated through an example in which a melody in D minor was transposed a whole tone higher to E minor. The critic observed that only one sharp was necessary in E minor, but that the author's table put in two of them (see table 10). He concluded that the table therefore was erroneous. The author replied:

That is precisely what deceives musicians, because they confuse the tone of composition with the tone of transposition, and it is in that that this table is more exact and rectifies their faults. If one considers that in the proposed example, all the Bs as well as the Es must be raised by a [whole] tone, the same argument which causes a sharp to be given to the F requires one for the C, and at the same time [that sharp is required] in order to do away with the flat which accidentally will be found before the Bs of music in D minor, which through transposition will be found before the Cs of music in E minor. [Thus], that example which is brought in against this table serves to show its correctness and at the same time [shows] the incorrect principles of musicians.

The eighth objection actually contained two criticisms of the author's method. The former asserted that the author gave an erroneous idea of the clefs and also employed them

221. The author was in agreement with the practice of Rousseau (Traité, 120f.) but was at variance with the example of Brossard, who had presented the same incident of transposition from D minor a whole tone higher and had put in the C-sharp accidentally rather than in the signature (see example 13).

222. L'art de transposer, 16-7.
contrary to ordinary usage. The critic cited an example in which the C clef on the first (sic: second) line was imagined in order to transpose a whole tone higher music written in the bass clef. He argued that according to custom, the C of the imagined clef (middle C) was the fifth of F (of the bass clef), but by inverting the interval (or "turning the agreement around"), that F became the fourth above C (see example 82). The result of such a practice of clef substitution was that intervallic relationships between pitches were visually inverted on the staff, because the substituted clef indicated the pitches in an octave register that was different from that of the given clef. The author replied:

This table employs the ordinary clefs only in order to indicate the transposed note (i.e., irrespective of its octave register). Musicians who have confused the tone of composition with the one of transposition must avoid confusing the actual clefs of composition with those that are imagined in transposition.

That is, the imagined clefs were more limited in their signification than the actual clefs of composition.

The latter criticism, and the author's rebuttal, follow:

Some say that those who accompany from the clavecin find in my table several minor acords [sic] which must be major, which renders my table erroneous. People who transpose must know that transposition does not at all change the nature of the acord. The same interval is always observed [in the transposition,] whether ascending or descending; this table does not in any way disturb the acords indicated for the clavecin. That is a matter of fact and is no more contrary to this table than to the other ways of transposing. 225

The author confessed that the ninth and final objection appeared to have the greatest strength of all of them, but he insisted that it was "contrary to musical instruments rather than to this table." He cited the objection:

It is said that this table could not be just [i.e., exact], by confusing the low-pitched sound and the high-pitched sound [and also] the major semitone and the minor semitone. [It is said that] there further is some difference [between the semitones], since several broken clavecins [i.e., clavecins with divided sharps] have some keys [both] sharped and flatted, etc. 226

In his statements above, the author again cited two objections. The first concerned octave register differences among the clefs; he had observed that circumstance in his previous response. The second considered the existence of

different sizes of semitones on the keyboard instruments of his day. The critic invoked the existence of clavecins with split keys as evidence of the differences between the semitones (cf. Rousseau).

The author’s reply to the objection was as follows.

I confess that in the rigor of harmonic proportions, this table is defective. It has that in common with all musical instruments, and what one says about the broken [i.e., split-key] clavecins perhaps is a shortcoming rather than a perfection [or virtue], because other instruments, for example, those which have frets on the neck, are unable to observe those differences [in the sizes of the semitones]. That can only produce a very bad effect in an ensemble.

This table is only for the practice. Now I suppose rightly that all the semitones must be regarded as equal [emphasis mine], or indeed one must say that transposition is impossible with the instruments that one has today. One must have a very just [i.e., accurate] ear in order to perceive quarter-tones. Who then will be conscious of the difference between one-fourth and one-fifth of a semitone? It is obvious that that is only for theory and not for practice. Thus, the usefulness of this table still stands.

If it was necessary to perform and transpose music according to the exact harmonic proportions, transposition would be impossible, because the tones are unequal, and one would not be able to observe those differences . . .

His remark that one would have to have a very accurate ear in order to observe minute differences in the proportions of the intervals while transposing anticipated statements of Mattheson (1720).

227. Ibid., 18-9f.
The author's observation that the combination of fretted instruments (such as the lute, chitarrone, guitar, etc.) with the split-key clavecin would result in a very bad effect in an ensemble evidently was based on the fact that the former instruments customarily were tuned according to an equally tempered division of the octave; under such circumstances, they would have been unable to perform the difference between the major and the minor (i.e., the diatonic and the chromatic) semitones. In other words, those instruments could have made no distinction between nonenharmonic counterparts, such as C-sharp and D-flat.

The author argued further:

One reply without rejoinder against this objection is that clavecins have been made whose keyboards, [when] pushed to the right or left, raise or lower every kind of music by a semitone. Now that cannot be done except by supposing the equality of the semitones, at least in the practice.

Hubbard describes such a transposing clavecin, whose keyboard apparently could be shifted sideways so that each key lever would be brought under the adjacent jack. Evidently, a displacement of about an inch would have produced a shift of two key levers and consequently transposition by a whole tone. The instrument had been in the possession of the French harpsichord maker Denis.

229. L'art de transposer, 20.
Having successfully rebutted the nine objections, the author presented his "method for transposing every kind of music." He stressed again that all that was required in order to transpose was the knowledge of the clef and its signature, affirming that "with that [knowledge] alone one can easily transpose any music whatsoever." He stated that since his table was addressed to musicians, a familiarity with basic musical notation and a knowledge of the clefs, the order of the sharps and flats, and the extent of the intervals in terms of semitones could be assumed. "Therefore," he remarked, "the transpositions will be indicated here merely from semitone to semitone," rather than in terms of the intervals' numerical sizes (third, fourth, etc.; see table 10).231

The author discussed in detail the composition and layout of his table. He explained that in order to avoid crowding within his tables' cells, the number of sharps or flats of the signatures was designated by a figure, and the clefs were put only at the left end of each row. He insisted that the clefs were to be imagined for every cell of their respective rows. He explained further that there was only one semitone of transposition from one row to the next, and that in order to raise or lower music by a semitone without changing the clef, it was necessary to

Table [10]
"for finding every transposition of music easily"

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>Nothing</td>
<td>1b</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
<td>7b</td>
<td>8b</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>Nothing</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
</tr>
<tr>
<td>4</td>
<td>B</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
</tr>
<tr>
<td>5</td>
<td>B</td>
<td>1#</td>
<td>Nothing</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
</tr>
<tr>
<td>6</td>
<td>B</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>Nothing</td>
</tr>
<tr>
<td>7</td>
<td>B</td>
<td>11#</td>
<td>10#</td>
<td>9#</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
</tr>
<tr>
<td>8</td>
<td>B</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>Nothing</td>
<td>1b</td>
<td>2b</td>
</tr>
<tr>
<td>9</td>
<td>B</td>
<td>9#</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
</tr>
<tr>
<td>10</td>
<td>B</td>
<td>2#</td>
<td>1#</td>
<td>Nothing</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
</tr>
<tr>
<td>11</td>
<td>B</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
</tr>
<tr>
<td>12</td>
<td>Nothing</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
<td>7b</td>
</tr>
</tbody>
</table>
employ the same clef position in two adjacent rows.
Likewise, it was necessary to divide the second and seventh rows into two subrows, each with its own clef, so that one could determine the higher signatures by the upper clef and the lower signatures by the lower one.

The author declared what his table could do:

By means of this table, all music can be put alike in sharps or flats even without transposing [the pitch of performance on conventional instruments]. By this same table, one also can transpose all music in twelve ways, and one can perform it in twenty-five ways, namely, twelve times in sharps, twelve times in flats, and once without sharps or flats, which will facilitate the practice of all the transpositions.232

He continued his explanation, observing that each row could be prolonged on both sides to infinity through the continuation of the arithmetic progression; this progression was governed by the rule that nothing ever could come between the agreement of the sharp and the flat. The columns, on the other hand, could not be prolonged beyond the twelve semitones of the octave without repetition.233

An examination of the author's table reveals several things. First, he employed all of the eight positions of the clefs. Secondly, he included signatures having as many as eleven sharps and nine flats. Thirdly, his divided rows contained signatures with sharps in one sub-row and flats in the other: the pair of signatures within each cell

232. Ibid. 22. 233. Ibid., 23.
indicated tones that were approximately enharmonically equivalent, although they were not precisely so in the temperaments of the time. The numerical sum of the sharps and flats in those cells always was twelve. In table 11 below, the associated major tones (assuming Ionian signatures) have been indicated beneath the numbers designating the sharps or flats of the individual cells.

In the section entitled "Use of the table," the author presented a step-by-step method for determining the clef and signature of the tone to which one wished to transpose. He stated:

In order to transpose any music whatsoever:
First, look in the table for the clef of the music to be transposed.
Second, look about that clef for the number of sharps or flats which are after it in your music.
Third, from the cell in which that number of sharps or flats is found, go up or down one row or one cell for each semitone by which you want to raise or lower your music, and you will find the clef and the number of sharps or flats which must be imagined.

He followed his explanation with two examples that demonstrated how the table worked.

The author set out to prove the table's validity in his "Demonstration of the table." He asserted:

All the possible transpositions are contained within the octave, since the others are only replicas or repetitions of them. Now the octave contains five tones and two semitones—that is,

234. Ibid., 23-4.
Table 11. Table based on the anonymous author's table.

N.B. Letters identify the finals of the major tones designated by the given signatures.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>0#</td>
<td>1b</td>
<td>2b</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
<td>G</td>
<td>C</td>
<td>F</td>
<td>Bb</td>
</tr>
<tr>
<td>2</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
<td>7b</td>
<td>8b</td>
<td>9b</td>
</tr>
<tr>
<td></td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
<td>Db</td>
<td>Gb</td>
<td>Cb</td>
<td>Fb</td>
<td>Bbb</td>
</tr>
<tr>
<td>3</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>0#</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>D</td>
<td>G</td>
<td>C</td>
<td>F</td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
</tr>
<tr>
<td>4</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
</tr>
<tr>
<td></td>
<td>G#</td>
<td>C#</td>
<td>F#</td>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
<td>G</td>
</tr>
<tr>
<td>5</td>
<td>1#</td>
<td>0#</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>C</td>
<td>F</td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
<td>Db</td>
<td>Gb</td>
</tr>
<tr>
<td>6</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>0#</td>
<td>1b</td>
</tr>
<tr>
<td></td>
<td>F#</td>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
<td>G</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>7</td>
<td>11#</td>
<td>10#</td>
<td>9#</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
</tr>
<tr>
<td></td>
<td>E#</td>
<td>A#</td>
<td>D#</td>
<td>G#</td>
<td>C#</td>
<td>F#</td>
<td>B</td>
<td>E</td>
</tr>
<tr>
<td>8</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
<td>7b</td>
<td>8b</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
<td>Db</td>
<td>Gb</td>
<td>Cb</td>
<td>Fb</td>
</tr>
<tr>
<td>9</td>
<td>9#</td>
<td>8#</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
</tr>
<tr>
<td></td>
<td>D#</td>
<td>G#</td>
<td>C#</td>
<td>F#</td>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>10</td>
<td>2#</td>
<td>1#</td>
<td>0#</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>G</td>
<td>C</td>
<td>F</td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
<td>Db</td>
</tr>
<tr>
<td>11</td>
<td>7#</td>
<td>6#</td>
<td>5#</td>
<td>4#</td>
<td>3#</td>
<td>2#</td>
<td>1#</td>
<td>0#</td>
</tr>
<tr>
<td></td>
<td>C#</td>
<td>F#</td>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
<td>G</td>
<td>C</td>
</tr>
<tr>
<td>12</td>
<td>0#</td>
<td>1b</td>
<td>2b</td>
<td>3b</td>
<td>4b</td>
<td>5b</td>
<td>6b</td>
<td>7b</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>F</td>
<td>Bb</td>
<td>Eb</td>
<td>Ab</td>
<td>Db</td>
<td>Gb</td>
<td>Cb</td>
</tr>
</tbody>
</table>

369
twelve semitones. Therefore, all the possible transpositions are included in the table, which instructs [one how] to transpose [by] one [and] up to twelve semitones.235

He presented his proof in five sections. In I, he affirmed that since the sharp raised the pitch of the note to which it was applied by a semitone and the flat lowered the pitch by the same degree, and since two sharps or two flats applied to a single note raised or lowered it by a whole tone, the sharp and the flat therefore neutralized one another. This was the basic premise on which his method depended.

He continued:

II

If one wishes to raise some [piece of] music by a semitone, each note of the octave must be raised a semitone by [means of] a sharp on each note. Accordingly, as there are seven notes in the octave, one must imagine seven more sharps after the clef [i.e., in the signature] of the [piece of] music to [be] transpose[d]. Hence, one must reckon seven sharps for each semitone of transposition higher (fourteen sharps for a whole tone, etc.).

III

On the other hand, if one wishes to go down a semitone, each note of the octave must be lowered a semitone by [means of] a flat on each note. Therefore, one must imagine seven more flats after the clef of the music to [be] transpose[d]. Accordingly, one must reckon seven flats for each semitone of transposition lower (fourteen flats for a whole tone, etc.).

235. Ibid., 24-5.
When the clef of any piece of music goes down one degree, the five whole tones and the two semitones of the octave each go up by another degree. Hence, the five whole tones, each going up by a whole tone, receive the value of ten sharps, and the two semitones, each ascending by a semitone, receive the value of two sharps. Therefore, the entire octave receives the value of twelve sharps for each degree that the clef descends. Consequently, in order to do away with twelve sharps, [one has] only to lower the clef by one degree, and so forth.236

The author's statements in IV will be illustrated by means of an example. In example 83a, the clef "goes down one degree" with the substitution of the alto clef for the treble clef. The change of clef produces the following changes of pitches on the degrees of the staff: G goes up two semitones to A, A goes up two to B, B goes up one to C, C goes up two to D, D goes up two to E, E goes up one to F, and F goes up two to G. Each semitone of ascent is equivalent to one sharp. Thus, the twelve semitones that the notes ascend through the change of the clef are

236. Ibid., 25-6.
equivalent to the addition of twelve sharps without any change of clef. The correspondences between the pitches are as follows: G-double sharp in the treble clef with twelve sharps corresponds to A in the alto clef with the natural signature, A-double sharp corresponds to B, B-sharp to C, C-double sharp to D, D-double sharp to E, E-sharp to F and F-double sharp to G. The alto clef in effect does away with the twelve sharps of the treble clef.

In V, the author explained how the ascent of the clef by one degree eliminated twelve flats from the signature. He wrote:

So if the clef of some [piece of] music goes up by one degree, the five whole tones and two semitones of the octave descend another degree. Therefore, the five whole tones receive the value of ten flats, and the two semitones [receive] the value of two flats. Hence, the entire octave receives the value of twelve flats for each degree that the clef ascends. Consequently, in order to do away with twelve flats, one has only to raise the clef one degree, and so forth.

This being granted, it clearly follows that all transposition of music is accomplished through the addition or subtraction of sharps and flats or through the change of clefs. This is the principle of the composition of this table.237

The author’s statements again will be illustrated briefly by means of an example (see example 83b). The substitution of the tenor clef for the treble clef causes the clef to go up one degree. G-double flat in the treble clef with twelve flats corresponds to F in the tenor clef,

237. Ibid., 26-7.
F-flat corresponds to E, E-double flat to D, D-double flat to C, C-flat to B, B-double flat to A, and A-double flat to G. Thus it is seen that the substitution of the tenor clef produces the same effect as the addition of twelve flats in the treble clef. That is, the tenor clef effectively does away with the twelve flats. The author thus demonstrated that every transposition could be accomplished both by means of the addition or subtraction of sharps or flats and by means of the change of the clef.

He concluded his demonstration with several examples which applied his principles and demonstrated their correctness. The first two examples were reciprocal. He began:

I wish to raise by four semitones [some] music which is on the F-clef on the fourth line [i.e., the bass clef] with one sharp. By section two, one must reckon seven sharps for each semitone of elevation, that is, twenty-eight sharps for my four semitones, which (twenty-eight sharps) added to the one of the signature make twenty-nine. Now by section four, one nullifies twelve sharps by lowering the clef one degree. Therefore, one can nullify twenty-four sharps by lowering the clef two degrees. There remain therefore five sharps to suppose after the F-clef on the third line [i.e., the baritone clef], as one finds in the table by following the practice indicated above.

Then suppose that I wish to lower by four semitones that [piece of] music which is on the F-clef on the third line with five sharps. By section three, one must reckon seven flats for each semitone of lowering, that is, twenty-eight flats for my four semitones. Now by the fifth section, one can nullify twelve flats by raising the clef one degree. Hence one nullifies twenty-four flats by raising the clef two degrees. There remain therefore four flats. Now the music
to be transposed had five sharps, of which four
are nullified by the four flats (section I).
[There] remains therefore one sharp to imagine
after the F-clef on the fourth line, as it is
found in the table. These two examples make use
of one another as proof.238

The author then provided two examples that illustrated
the usefulness of his divided rows in permitting the change
from sharps to flats or vice versa, without necessitating
the transposition of the pitch. He wrote:

But suppose [that] without transposition [of
the pitch] I wish to perform with flats some
[piece of] music which is on the G-clef on the
second line [i.e., the treble clef] with seven
sharps. By the fourth section, the entire octave
receives the value of twelve sharps for each
degree that the clef descends. Now imagining the
C clef on [the third line instead of] the G-clef
on the second line, my clef descends by one
degree. Therefore, the octave of my music
receives the value of twelve sharps. Now in the
supposition there were only seven of them.
Therefore, there remain five of them to nullify,
which is done (section I) by imagining five flats
after the C clef on the third line, just as one
can see in the fourth cell of the second
horizontal row of this table.

On the other hand, if I wish to perform with
sharps [a piece of] music which is on the C-clef
on the first line with four flats, by section five
the entire octave receives the value of twelve
flats for each degree that the clef ascends. Now
supposing the F-clef on the third line instead of
the C-clef on the first line, my clef ascends by
one degree. Therefore, my music receives the
value of twelve flats. Now in the supposition,
there were only four of them. Hence, there remain
eight of them to be nullified, which will be done
by imagining (section I) eight sharps after the
F-clef on the third line, just as can be seen in
the fourth cell of the seventh horizontal row of
this table.239

238. Ibid., 27-8. 239. Ibid., 28-9.
The author affirmed that in order to operate on every kind of music in the same way, one had only "to lower the clef one degree in order to change the sharp into [the] flat, and to raise it one degree in order to change the flat into [the] sharp, observing that the number of sharps and flats which must be reciprocally [i.e., mutually] substituted for one another always makes twelve," just as could be seen in the individual cells of the divided rows.240

In summary, transposition via the author's table was exact. That is, one obtained the same kind of signature in the transposed tone as was found in the initial tone (cf. Rousseau, et al). This circumstance usually presented no difficulties in the transposition of the major tones, since their signatures were uniform in the practice. However, in the transposition of the minor tones, the existence of two signature types--Aeolian for A minor and the tones with sharps, and Dorian for D minor and the tones with flats--resulted in a contradiction between the signature obtained via the table and the customary signature for the transposed tone whenever the transposition was accomplished from a tone having the one kind of signature to another which regularly had the other kind--i.e., whenever one

240. Ibid., 29.
transposed from a tone with sharps to one that required flats, and vice versa. It was this circumstance that motivated the author to make the distinction between the "tone of transposition" and the "tone of composition."

Hotteterre.—The full title of Hotteterre's treatise is rather extensive. It reads, in part: *L'art de prêluder sur la flûte traversière, sur la flûte à bec, sur le haubois, et autres instrumens de dessus, avec des prêludes tous faits sur tous les tons . . ., ensemble des principes de modulation et de transposition . . .* ("The Art of Playing Preludes on the transverse flute, the recorder, the oboe and other treble instruments, with ready-made preludes on all the tones . . ., together with principles of modality and transposition . . "). The treatise is permeated with instances of transposition. For example, each of the sets of preludes on the individual tones is followed by a substituted clef (generally, the treble) with its accompanying signature. It appears that in every case, the author used the same kind of signature in the transposition as was found in the given preludes prior to transposition. Thus, whenever the pieces were transposed from a tone in the minor mode with sharps to one with flats or to D minor,

---

Hotteterre employed one more flat than was customary, and vice versa. For example, consider the G minor preludes of chapter 3, which were given the customary signatures of one flat. With the indicated substitution of the treble clef, they would be transposed into E minor. Hotteterre supplied the two-sharp, Dorian signature for the transposition instead of the customary one-sharp, Aeolian one in order to obtain agreement with G minor. He observed: "One ordinarily does not put any sharp at all on C in the signature of this mode [i.e., E minor]. I have done it in order to reconcile the two different situations." 242

Hotteterre discussed the practice of transposition in Chapter 10, which he entitled "Method for learning to transpose onto all the clefs and tones." 243 He declared that the most frequently used clef for treble instruments was the G clef. He assumed that his readers were thoroughly familiar with that clef in its location on the first line (the "French violin clef"). He then discussed the remaining clef positions in turn and demonstrated their relationships to the familiar clef.

He first considered the G clef on the second line (the treble clef), stating:

One will endeavor to imagine that the line at the top is transported below the others [see

example 84a.), or one indeed will suppose during some measures that it [i.e., the bottom line] is not there at all [example 84b.].

Example 84. Relationship between staves governed by the French violin and treble clefs (Hotteterre, 52).

Hotteterre's transportation of a line of the staff in order to reconcile a less-familiar clef position to a well-known one must have been regarded as an effective pedagogical tool. Similar reasoning perhaps lies at the basis of modern efforts to simplify the comprehension of the alto and tenor clefs by relating them to the grand staff (see examples 85a and 85b below).

It should be emphasized that the practice described above does not in any real sense represent the transposition of the tone. Hotteterre merely transcribed his examples in another clef but on the same pitch, in order to illustrate the relationship between staves governed by different clefs.

244. Ibid., 52.
Example 85.

a. Relationship of the alto clef to the grand staff.

b. Relationship of the tenor clef to the grand staff.

Thus the notes were transferred to other degrees, but those different degrees represented the same pitches in both clefs.

He continued with the C clef on the first line (which, he declared, was its most ordinary position). He illustrated the relationship of that clef to the familiar G clef (example 86) and declared:

Example 86. Relationship between staves governed by the French violin and soprano clefs (Hotteterre, 52).

One then must suppose that the G clef is on the third line, in the same way as one sees it above put before the C clef, and to endeavor again to imagine that the two lines at the top, depicted with dots, are transported to the bottom, where one sees two others also depicted with dots and distinguished by "first" and "second." These suppositions, combined with practice, soon will make [one] well acquainted with this transposition. 245
He then supplied examples of de facto transposition involving the substitution of the G clef for the C clef discussed above; he observed that that substitution would transpose a fifth higher (example 87). From his examples,

Example 87. Transposition a fifth higher (Hotteterre, 52).

It appears that he wished to demonstrate the possibility of transposing pieces that were written on another clef position, and for another instrument, onto the student’s own G clef, for performance on his instrument (the transverse flute, recorder or oboe).

He observed:

This last operation does not contain any difficulty in comparison with that which precedes it. One must apply oneself a lot to [the former operation], because it directs [one] to be able to play the Airs in their true tone and at the unison with the voice.246

In other words, according to the author, it was much simpler to substitute the familiar clef and an appropriate signature—i.e., to transpose after the conventional fashion—than to relate the staff governed by the C clef to that governed by the familiar clef in order to perform the

245. Ibid., 52. 246. Ibid., 53.
music according to the unfamiliar clef, without transposition.

Hotteterre then proceeded to give rules for the remaining, unfamiliar clef positions. He began with the C clef on the third line (i.e., the alto clef). As before, he related the degrees of the staff to the staff governed by the familiar clef:

This C [of the alto clef], as well as all the other notes, will be found one degree higher than [they are] in the clef of G on the first line. I therefore must suppose them all in my head one degree lower than they are in that clef until I have acquired the practice of this transposition. One can practice this rule in the examples after this written in the C clef. 247

In the given case—and in subsequent cases—, there was no correspondence of the lines and spaces, as had been evident with the previous clefs. Rather, the lines of one staff corresponded to spaces of the other (see example 88).

Example 88. Relationship between staves governed by the alto and French violin clefs (Hotteterre, 53).

Hotteterre again supplied examples in which melodies first were written in the unfamiliar clef, and then the familiar clef was substituted with the appropriate signature

247. Ibid.
(see example 89). He explained that that substitution would result in the transposition of the pitches a second higher.

Example 89. Transposition a second higher (Hotteterre, 53).

He then proceeded to describe and demonstrate the relationships of the C clefs on the fourth and second lines, respectively, to the G clef. He again provided examples and explained that the substitution of the familiar clef for the C clef on the fourth line would transpose the notes a fourth higher, and the same substitution for the C clef on the second line would lower the notes by a tone. He declared his plan to be the simplest and most easily understood for putting the other clef positions into use.248

Hotteterre completed his discourse on the clefs with a discussion of the bass clef, remarking:

Although this clef is not at all in use for the transverse flute, one nevertheless will be able to receive some benefit from it, as in playing the bass [parts] which do not have too great a range and also the vocal [i.e., bass] Airs which have graceful melodies [i.e., which therefore are suitable for performance on the flute].249

248. Ibid., 54.
249. Ibid., 55.
He observed the correspondence between the two clefs:

One then will have to play on the F clef on the fourth line in the same way as on the G clef on the first line, with this difference, that when one substitutes the G clef for the F clef, one always will put the notes an octave lower than they are indicated by the G clef, as much as that will be able to be done without making any bad melody, however.250

The substitution merely displaced the notes one octave higher than the bass clef indicated. Thus, there would be no transposition of the pitch class.

He stated that if one wished to play on the flute an Air written in the bass clef which descended below the D of the third line, one would have to suppose either the C clef on the first line or the treble clef in order to put the tune into a suitable range; that is, one would have to transpose. This was necessary because the transverse flute could not sound any pitch lower than d1.

The author concluded his chapter on transposition as follows:

It remains to me yet to deal with the manner in which one can transpose an Air from one tone to another, because there are not any [Airs] at all which cannot be played in all the modes, as I am going to demonstrate. I will choose for this [demonstration] that former Brunette known by everybody. It is in minor [see example 90a]. One sees that this Air is transposed into the seven degrees by raising it always by an entire tone [or pitch of the natural scale, i.e., by raising it to

250. Ibid.
each of the natural finals]. Following this method, one will be able then to transpose every kind of music, provided that one observes that the tones are everywhere in the same interval with the first (i.e., the given) subject. One would be able also to transpose by semitones, but as that would lead to modulations [which are] very bizarre and not at all in use, I will not give any method at all for it. One nevertheless will be able to make oneself [such transposition] on the same principles as I have just discussed, if one has much desire for it.

Example 90. Hotteterre's "former Brunette" followed by three of the written-out transpositions "into the seven degrees" (Hotteterre, 56).

Hotteterre's examples are of interest (see examples 90b-90d). One would expect him to have illustrated the conventional method of transposition, as he previously had done through numerous instances. However, he instead supplied written-out transpositions in A minor, B minor, C minor, D minor, E minor and F minor.252 His discussion

251. Ibid., 56.
and examples recall similar ones of Louillé (examples 25-26) and Brossard (examples 10-13) and demonstrated the close relationship that existed between transposition and the transpositions.

In his discussion of transposition in Chapter 10, Hotteterre expanded upon the conventional method, which required and assumed rote proficiency with all of the clef positions from the beginning. His assistance of the performer in the task of acquiring the use of the unfamiliar clef positions, through his demonstration of the correspondences between the staves governed by familiar and unfamiliar clefs, appears to have been innovative. His reason for his efforts may derive from the following circumstance: flutists may not have been required, in the course of their regular training, to have been familiar with the seven or eight different clef positions, as was the case with accompanists (e.g., clavecinists, organists and theorists) and singers. If flutists were to be persuaded to acquire the art of transposition, Hotteterre may have reasoned, their acquisition of the clefs ought to be simplified as much as possible.

252. In this author's transcription of Hotteterre's brunette and its transpositions, the treble clef has been substituted for the given G clef on the first line.
Borin—Borin observed that the principle of clef substitution facilitated the transposition of Airs onto all kinds of tones in addition to those with natural signatures, and he described the conventional method.\textsuperscript{253} He later supplied an illustration entitled "Concerning the transpositions of tones onto other transposed tones,"\textsuperscript{254} which he evidently intended to serve as a guide to the instrumentalist (example 91). Borin's example, which

Example 91. "Concerning the transpositions of tones onto other transposed tones" ([Borin], 92).

\begin{center}
\begin{tabular}{cccc}
\textbf{G major} & A tone lower & A tone higher & Semitone lower (rare) \\
\end{tabular}
\end{center}

\begin{center}
\begin{tabular}{cccc}
\textbf{Semitone higher} & lower (rare) & higher & Two tones higher \\
\end{tabular}
\end{center}

\begin{center}
\begin{tabular}{cccc}
Two tones lower & Two and a half tones & Two and a half tones lower \\
\end{tabular}
\end{center}

N.B. By "tone" is understood "whole tone." "Half" refers to the semitone.

\textsuperscript{253} Borin, 7. \textsuperscript{254} Ibid., 92.
recalls Rousseau's "models" of the *Traité*, presented the clef positions and signature substitutions necessary in order to transpose from G major to tones higher and lower, in semitonal increments from a single semitone to two whole tones and a semitone (*i.e.*, the perfect fourth).

Following his explanation of the customary method of transposition, he presented another which depended upon the intervallic succession or "progress" of the octaves of the major and minor modes. He began:

> There is besides another way that I have found for transposing an Air onto all sorts of tones. It is a consequence of the principles and the knowledge of the modes and tones, which already have been explained.

In order to practice this second way of transposing, one must only call to mind again the progress of the notes of the major mode and the minor mode from the final of an Air up to its octave. If, for example, I had to transpose to B an Air which ended on D in the major mode, I would begin by naming that final B by supposing (or putting in) the clef that would cause the final which formerly was D to be named B. Next, I would say [that since] the Air I wish to transpose is on D in the major mode, I must give the progress of the major mode to the octave of B ... Now the progress of the major mode from the final up to its octave is (as I have already said) a major third, a minor third (with) the semitone first, a major third, and a semitone. Thus, in order to find the same progress in the octave of B ..., for the first major third one must put at the beginning by the clef sharps on C and D, which will make B, C-sharp, D-sharp. For the minor third (whose) semitone is first, one must employ a sharp on F: thus, D-sharp, E, F-sharp. For the second major third, one further must put sharps on

---

255. See Borin, Article II, "Des Modes" ("Concerning the modes"), 4-5.
G and A: thus, F-sharp, G-sharp, A-sharp, to which, adding the semitone B, one will have the exact progress of the major mode thusly: B, C-sharp, D-sharp, E, F-sharp, G-sharp, A-sharp, B. 256

He later restated his method with reference to the minor mode:

In order to transpose in [the] minor mode, one in like manner must recall its progress, which is a minor third [with] the semitone after the tone, a major third, a second minor third [with] the semitone first, and a whole tone: thus, A, B, C, D, E, F, G, A. [With that] understood, here is how one must make its application.

If, for example, one gave me an Air which ended on G [in the] minor mode to transpose to E, I would begin by supposing a clef which would cause me to name [as] E the G which I wish to transpose. Then, running through the octave of this same E, I would say the progress of the minor mode, requiring at first a minor third [with] the semitone after the tone. I must put a sharp on the F of my first minor third in order to make it similar to its model, which will make E, F-sharp, G. The major third, next, is found natural: G, A, B. The second minor third is found there naturally [also]: B, C, D, [as is] also the whole tone that falls onto E, which concludes the octave. [Its] progress--E, F-sharp, G, A, B, C, D, E--is similar to the model of the minor mode. Thus, in order to transpose by this second way in [the] major and [the] minor mode[s] onto all sorts of tones, [one must] only suppose a suitable clef and add at the beginning, by the clef, the number of sharps or flats necessary in order to make the progress of the octave of the transposed tone (whether [it be] major or minor) similar to the pattern of either of those two modes. 257

The author's method of transposition outlined above differed from the usual one in that it caused the process to depend ultimately upon the octave species of a model tone.

256. Ibid., 8-9. 257. Ibid., 9-10.
(cf. Zarlino) rather than upon the signature of a given one. It was the very factor of requisite conformity to an archetype which became a potential source of difficulty for the performer. Since the progress of the minor mode derived from the model on A, Borin obtained Aeolian octave species in every instance of transposition; the signatures he obtained in the transposed tones presumably also were Aeolian in every case. Those signatures of course would have differed from the customary ones whenever the latter were Dorian. Additionally, whenever one transposed from any tone which had the Dorian signature, one presumably would not have been able to obtain an exact transposition, since the transposed tone always would have had the Aeolian octave species. The author's discussion of the circumstance of transposing from G minor, with its regular, Dorian signature, to E minor illustrated this circumstance. When Borin duplicated the progress of the minor mode above E, he obtained an Aeolian octave and signature.258

In its patterning of the minor octaves after the natural model on A, the method proved to be both founded on established dogma and forward-looking. The former circumstance is evident because the author's "progress" of the minor octave corresponded to Ozanam's and Brossard's specifications, minus that of the leading tone, and it

258. Ibid., 11, 94.
Illustrated Saint-Lambert’s definition of minor modality; the latter circumstance is apparent because of the eventual universal acceptance of A minor as the model for all of the minor tones.

Borin’s method of recalling the “progress” of the mode appears to have been novel. His duplication above the final of a pattern of three consecutive thirds followed by a step appears to have been unprecedented. However, the root concept behind the method, that transposition was the reconstruction of a given octave species above another tone, was neither new nor passé, for it was the basis of the method of transposition described a few years later by J.P.A. Fischer.

Fischer.—In 1728, Fischer’s treatise on transposition was published in Utrecht. The work was entitled Kort en grondig onderwys, van de transpositie, benefens eenige korte aenmerkingen over de musiek der ouden, de onnodigheid van eenige modis, en het ut, re, mi, als mede de subsemitonia, of gesneedeklavieren, waer noch bygevoegd is, eene korte en gemakkelyke methode, om een klavier gelyk te Stemmen (“Brief and thorough instruction on transposition, with some brief remarks on the music of the ancients, the needlessness of any mode and Ut, Re, Mi, as well as the subsemitonia or keyboards [with] split [keys], whereunto has been added a short and easy method for
successfully tuning a keyboard instrument). Perhaps one of the more significant early eighteenth-century musical treatises written in the Dutch language, the work nevertheless clearly lies outside the sphere of French writings and would appear to be peripheral to the thesis of this paper. However, it has been included for the sake of establishing a broader perspective and because of its commentary on Frère's work (see below).

Fischer stated in his forward that transposition was "most necessary" to anyone who sought to do anything worthwhile with music, and particularly to those who wanted to instruct others. He then began to demonstrate the need for his work, stating that no one, as far as he knew, had written anything about transposition in any of the Low German languages up to that time. This circumstance puzzled him because he believed that nothing in music could be understood fully without the knowledge of transposition. He recognized, however, that his treatise was not the first in any tongue to address the subject: "It is true indeed that Mr. Alexandre Frère has written a treatise in the French language, but since it is more grief than profit for a pupil because of its prolixity and obscurity, I deemed it necessary to write this treatise."259

259. Fischer, 1.
Fischer insisted that his aim was not to correct that which a famous man had written, but rather to demonstrate another, easier way that was based upon his own experience with the tones. He declared that he had taught his method and had observed that students were able in a short time to transpose everything that he put before them. Those same students, he observed, previously had troubled themselves for a long time with Frère's treatise without ever having understood the least bit of it. Fischer concluded that his method was shorter than Frère's and also was easier and more comprehensible for students.  

He headed his instruction with the subtitle "Transposition, what is meant by it, and its uses." First briefly defining the term, he then proceeded to discuss conditions which required transposition. His statements recall the teachings of the French authors. He observed, first of all, that one (i.e., the keyboard player) had to transpose higher or lower if a piece of music was too low or too high for a voice or if instruments which could not be made to change pitch (oboes, flutes, trumpets, horns, etc.) were not in tune with a harpsichord or organ. Secondly, he observed that an instrumentalist would be required to transpose whenever he performed a piece written for a different instrument which contained notes beyond the
range of his own instrument. Thirdly, he observed that transposition was very useful to those who did not want to wrangle with the sharps and flats, either because of ignorance or for the sake of convenience. This was so because all pieces of music, he affirmed—even those which had many sharps or flats in their signatures—, allowed themselves to be transposed onto a natural clef, provided that the range of pitch of the instrument or voice permitted such a change. Finally, the author declared that transposition was most necessary for those who wanted to become professional music teachers or organists because of the frequent necessity for the transposition of the psalms.

He realized that while transposition frequently was required in performance, there were limitations to its use which resulted from the temperament of keyboard instruments. He stated that one should never transpose anything without necessity (cf. Mattheson), particularly if one had a keyboard instrument on which there were "several unusable thirds," because if one transposed a piece into a tone in which any of those thirds appeared, it would not only lose all of its appeal, but would produce such a (dis)harmony that one's ears would hurt from it. He added that if instruments such as flutes, oboes, trumpets and suchlike

262. Ibid., paragraphs 1-4, pp. 4-5.
(which could not adjust their tuning to the inequalities of the keyboard instruments) were involved, the instruments would harmonize together in such a way as if the composer wished to exemplify the struggle of the dogs over the hurled down body of Jezebel. He concluded: "For that reason, the one whose claviers or organs are so tuned must take care that they do not transpose anything into those tones or pitches, since false thirds appear there."263

Fischer actually presented two methods of transposition, which will be discussed in turn. He stated at the outset that in order to transpose something, one first had to determine that the twelve pitches of the octave—C, C-sharp, D, D-sharp, E, F, F-sharp, G, G-sharp, A, A-sharp, B, (C)—, differed equally from one another, because in transposition one did not recognize small or large (i.e., chromatic or diatonic) semitones, but considered the twelve intervals to be equal, as they were supposed to be.264 It appears from his statements that he was not actually referring to an equally tempered scale; rather, he seems to have held that minute differences in the sizes of the semitones had to be overlooked in order to transpose (cf. Mattheson and the anonymous author of L'art de transposer).

263. Ibid., par. 4, p. 5. 264. Ibid., par. 5, p. 6.
He outlined his first method of transposition, citing the following steps: First, look for the final of the piece to be transposed. Next, write out an octave of notes, beginning with that final. Include in the octave the sharps or flats found in the signature. Then, determine between which of the notes the semitones are found. Their positions can be marked by drawing arcs above the notes involved. Then, write out another octave of notes, beginning with the tone onto which one desires to transpose the music. Make the two semitones of the octave fall in the same relative positions so that they will have an equal proportion with the octave that is to be transposed. All the sharps or flats that are used to put the semitones in their correct positions must then be placed in the signature.

The author's statements indicate that in the duplication of a particular species of octave at another pitch, the sharps or flats which put the semitones in the same relative positions were the components of the signature of the transposition. He was careful to observe that accidental sharps or flats, which appeared during the course of the piece, were retained in the music; that is, they were not included in the signature of the transposed tone.

265. In this author's transcription of Fischer's examples, the arc sometimes appears beneath the pair of notes.

266. Fischer, par. 6-8, p. 6. 267. Ibid., par. 9, p. 7.
Fischer included a number of examples to illustrate his method (see A-N of example 92). He first demonstrated the

Example 92. Fischer's examples, in part (*Kort en grondig onderwys*, 31-2).
process of transposing a piece that was in C major. In the octave of that tone, he observed, the semitones occurred from E to F, or 3 to 4, and from B to C, or 7 to 8 (example A). In transposing the piece a tone higher, he explained, the semitones fall in the wrong places; therefore, one has to bring them to their right places by means of sharps or flats. He insisted that if one wished to elevate the piece by a whole tone without placing any sharps in the signature, the piece no longer would be recognizable; the semitones would fall between the second and third and the sixth and seventh notes (example B), and thus the octave would not possess equal proportions with the octave to be transposed. In order to remove the discrepancy and to retain a resemblance with (or an equivalence to) the octave of C, he said, one should place sharps by the F and the C, and the semitones would be brought into their correct places (example C). The author then described in similar fashion the transposition of the octave of C onto F (examples A, D and E).268

Fischer's method appears to have been well suited to the transposition of the twelve modes (i.e., the six modes, if one overlooked authentic-plagal distinctions, as often was done). This is the case because the distinguishing feature of the modes was the different positions of their

268. Ibid., par. 10, pp. 7-8.
semitones within their octaves. Fischer insisted that with his method, one could transpose everything, regardless of how irregular the mode might be. He supplied an example to illustrate the transposition of the voqs of Psalm 145 from D onto F (see examples F and G). Elsewhere, he affirmed that if one expended only a little effort, one would be able by his method to transpose even the most difficult and chromatic tones.

He demonstrated the possibility of transposing from flats to sharps without changing the pitch (cf. L'art de transposer), citing an example on E-flat which was transposed to D-sharp (examples H and I). He observed that the sharps would stand for the same thing as the flats; that is, the notes would differ in name but not in sound on the instruments. Therefore, he observed, one could express even the natural tones with sharps or flats: for example, C could be begun on B-sharp, F on E-sharp, B on C-flat, and E on F-flat (see examples K, L, M, and N). In such a manner, one could make for oneself all kinds of conception (i.e., ideas or designs), provided that the two semitones occurred in the same positions in the original piece and in the transposed music. He warned that in such transposition, one above all must pay attention to the double sharps or double

269. Ibid., par. 11, p. 8.
270. Ibid., par. 14, p. 11.
flats. While the author recognized the hypothetical nature of such circumstances, admitting that transposition with double sharps or double flats seemed to serve awkwardness more than necessity, he nevertheless believed that it was good for one to understand it, so that one could help oneself out in case it ever occurred (cf. Freillon-Poncein). 271

He remarked that a basso continuo could be transposed more easily if one of the seven clef positions (example 0) were substituted, because with the assistance of those clefs, the seven pitch letters could be put on a single line or space (see example 21). He observed that in certain cases, the notes would be played one or two octaves lower than the clef indicated which one visualized (cf. Rousseau). He also cautioned that if one transposed a basso continuo, one must take care to picture by the (imagined) clef the chromatic pitches (i.e., the sharps or flats) required of the tone into which one transposed. 272

Following his first method of transposition, the author presented a "Second way to transpose via the added figure. 273 The figure to which he referred (figure 11) was a circular device that indicated the twelve pitches of the octave on an outer circle and the seven vocables or note

271. Ibid., par. 12, pp. 9-10.
272. Ibid., par. 13, p. 10. 273. Ibid., 11.
names, Ut, Re, Mi, Fa, Sol, La and Sl, on an inner circle. Through the manipulation of the circles, any of the modal scales could be obtained on each of the pitches of the octave. That is, the device ostensibly enabled the user to determine instantly the constitution of any of the six different modes on each of the twelve pitches. The modes included, among others, the major mode ("Ionicus Tertia Maior") and the two modes whose octave species yielded the customary signatures for the minor mode (the "Dorius Tertia Minor" and the "Aeollus Tertia Minor").
The author explained how to prepare the figure for use: first, one was to cut around the perimeter of the inner circle and to paste a piece of paper to the outer circle in its place. Then one was to take a piece of thread and attach the cut-out inner circle to the outer circle by threading the yarn through the centers of both circles. This was to be done in such a way that it would appear that the inner circle had not been cut out at all, but yet so that it could be turned.\textsuperscript{274}

At the beginning of his treatise, the author illustrated the usefulness of his device for the identification of the essential notes of the major and minor modes on the individual pitches. Describing the device as a "transporter," he stated:

By means of the transporter, one easily can find the thirds as well as the fifths of all the tones in the following manner. If, for example, one desires to know the major third of D, set the line where Ut is on D; then Mi will indicate the third and Sol the fifth. [If one desires] to know the minor third, place the line Re on D; then Fa will indicate the third and La the fifth, and so [it] follows with all the others.\textsuperscript{275}

After he discussed the assembly of the figure, he further demonstrated its use. He began as he had done with the first method, instructing the student to do the following: 1) look for the final of the piece; 2) write

\textsuperscript{274} Ibid.

\textsuperscript{275} Ibid., "Verklaringe" (precedes preface). "N.B."
down an octave of notes, beginning with the final; 3) put
in the necessary sharps or flats that belong to the
signature. He included a number of examples in which he
appropriated his device in order to facilitate the
acquisition of the sharps or flats that were necessary in
the tone to which one transposed.276

Campion. -- In his Traité d'accompagnement et de
composition (1716), Campion spoke of the need for the
transposition of the series of chords on the successive
degrees of the major and minor tones onto the "eleven other
semitones" (i.e., finals), "in order to attain to a complete
understanding of composition and accompaniment."277 In the
Addition au traité d'accompagnement et de composition
(1730), he then presented in detail a "Way of transposing
instrumental music."278 He prefaced his discussion with a
number of comments.

He at once spoke of the necessity of transposition by
instrumentalists for the sake of singers (cf. Rousseau):

We observe nothing more common in ensembles
than the necessity of transposing. An accompanist
or orchestral player is requested to transpose a
[whole] tone higher or lower, a fourth higher or
lower, and other intervals at the will or
malicious trial of singers. If one is not

276. Ibid., par. 15-7f., pp. 11-12f.
277. Campion, Traité, 17.
278. Campion, Addition, 45-8.
accustomed to this practice, one may fail at it most frequently. To be able to succeed confidently in it is a glory which is uncommon.\textsuperscript{279}

He then turned his attention to the minor tone, which he believed was more difficult than the major one:

The whole difficulty lies in the minor tone, because the major tone simply recalls its sharps and flats while transposing its clefs, but the minor tone has to suppose the addition of one sharp along with the ordinary sharps in the signature and the addition of one flat along with the ordinary flats in the signature in certain transpositions.\textsuperscript{280}

The author then set forth his method. He first related it to the vocal practice, affirming: "We establish in vocal music two models for the minor tone, which are Re and La."\textsuperscript{281} He observed that the principal consideration in the transposition of the minor tones was the difference in the sizes of their sixths ascending and descending. He accordingly established two categories of octaves: the first included those which followed the natural model on D (the Révennes); the second included those which followed the natural model on A (the Lavennes). He stated:

Look at my table of minor octaves (example 65). You will find that Si [i.e., B natural] is [the] natural major sixth in ascending the octave of Re [that is, D minor], and that the sixth in descending is preceded by a flat. The final five octaves on the same page, which follow this model, are similarly formed.

We shall name them [the] Révenne octaves for the clear understanding of this operation.

\textsuperscript{279} Ibid., 45. \textsuperscript{280} Ibid. \textsuperscript{281} Ibid.
The octave of La [i.e., A minor] has the sixth in ascending preceded by a sharp, and the sixth in descending is naturally minor. The following five octaves on the same page are similarly formed. We will call them [the] Lavenne octaves.

You will perceive the usefulness of these two adjectives that we have invented [for the purpose of] assisting the memory.282

Campion demonstrated first the transposition from D minor into the Lavenne octaves and then the transposition from A minor into the Révenne octaves:

In order to transpose music which is in D minor a fourth lower [into] A minor, the accompanist must suppose in the signature a sharp on the sixth [degree] of the tone, which represents Si, the natural major sixth of the octave of D ascending, because in descending, [the sixth degree] is marked with a flat [as a] minor sixth; thus [it is] for the other Lavenne octaves. This supposition of [a] sharp is made beyond the necessary sharps in the signature.

Example [93.]

Transposition from Re [D minor] to . . .

La [A minor]
When music is written in A minor, there is no sharp at all in the signature; we are supposing one there. In E minor, a single sharp [ordinarily] must be put into the signature; we are supposing a second [one] there for our transposition, just as you can convince yourself by transposing the same music into the other Lavenne octaves.

In order to transpose music in A minor a fourth higher [into D minor], the accompanist must suppose in the signature a flat on the sixth degree of the tone, because the sixth in ascending [in D minor] is naturally major, and so for the other Révenne octaves. Example (94.)

Transposition from La [A minor] to...

283. Ibid., 46-7.
He summarized:

Observe that this addition or supposition of a sharp or a flat in the signature takes place only in the transposition of the Révenne octaves into the Lavennes, and vice versa; to transpose from one Révenne octave to another or from one Lavenne octave to another, there is nothing to suppose or to add in the signature beyond the ordinary. Example [95.]

Transposition of two Révenne octaves from Sol [G] minor to . . .

284. Ibid., 47.
A few comments will be made with respect to this method of transposition. The author evidently patterned it after the vocal practice in order to justify the occasional addition of the sharp or the flat in the signature of the transposed tone. Campion's method, not uniquely, yielded an exact transposition, even when the transposition was made to a minor tone that regularly had the alternative signature type. His requirement of an added sharp in the transposition from a Révenne octave to a Lavenne and a flat
in the transposition from a Lavenne octave to a Révenne had numerous antecedents. For example, Rousseau in his Traité de la viole (1687) had added a flat or subtracted a sharp whenever he had transposed from A minor, which was given the natural, Aeolian signature, to one of the other minor tones, which regularly had the Dorian one. Likewise, whenever he had transposed from any of the other minor tones to A minor, he had added a sharp to the latter’s signature.

Through his method, Campion was attempting to put the transposition of the minor tones on a firm footing, so that when one transposed from tones with sharps to tones whose signatures required flats and vice versa, one would avoid uncertainty in the performance of the sixth degree. The potential uncertainty resulted from the circumstance that the Révenne octaves, which contained flats, had the natural major sixth above the final, while the Lavenne octaves, which contained sharps, had the natural minor sixth (example 96). Whenever the accompanist transposed from one Révenne octave to another, he could observe the flat added next to

Example 96. Natural sixths in the Révenne and Lavenne octaves.

Révenne octave  
(Dorian signature)  

Lavenne octave  
(Aeolian signature)  

natural major sixth  
natural minor sixth
the sixth degree in descending passages as his cue to lower that degree. In ascending passages, he merely would perform the natural sixth as written. However, whenever one transposed from a Révenne octave to a Lavennœ, if he employed the customary Aeolian signature for the latter, he would have to overlook the accidental flat found beside the sixth degree in descending passages, since the sixth naturally was minor, and he would have to assume a sharp beside that degree wherever it occurred without an accidental—i.e., in ascending passages—for the same reason. Likewise, whenever one transposed from one Lavennœ octave to another, he could observe the sharp added next to the sixth degree in ascending passages as his cue to raise that degree. In descending passages, he merely would perform the natural sixth as written. However, whenever one transposed from a Lavennœ octave to a Révenne, if he employed the customary Dorian signature for the latter, he would have to overlook the accidental sharp found beside the sixth degree in ascending passages, since the sixth naturally was major, and he would have to lower that degree wherever it was indicated without an accidental—i.e., in descending passages—for the same reason.

Campion removed the uncertainty in the performance of the sixth degree by employing the same type of signature in the transposed tone as he had employed in the initial one. In transposing from D minor to E minor, for example, he
adopted a signature of two sharps for the latter tone instead of the customary, one-sharp signature. Therefore, the sixth degree was raised in the ascending scale, and the flat found beside the sixth degree in descending passages could be observed in order to lower the sixth and thereby to obtain an exact transposition. (This was possible because the flat cancelled the sharp.) He evidently felt that in transposing from one kind of octave to the other, it would be more sensible for the accompanist to suppose an additional sharp or flat in the signature of the transposed tone, so that he could employ as a cue the existing flat or sharp beside the sixth degree, than to choose the alternative: to adopt the customary signature of the transposed tone, to ignore the flat or sharp beside the sixth degree in the course of the music, and to assume a sharp or flat there where one was not marked.
CHAPTER IV

OBSERVATIONS ON THE FINALS AND SIGNATURES OF
THE NATURAL AND TRANSPOSED MODES

The finals and signatures found in the French musical practice and in French treatises in the period from c. 1680–c. 1730 are of interest for at least two reasons. First, there appears to have been an increasing acceptance and usage of the chromatic finals. Secondly, the signatures for the minor tones for awhile were in a state of flux. Lyn Tolkoff has observed:

The essence of the minor mode lay not in the sixth and seventh degrees [N.B., which were variable] but in the particular construction of the fifth on the tonic since each of the various permutations of the sixth and seventh degrees when added to the invariable lower fifth was still capable of producing a recognizable minor mode. Furthermore, the fact that the theorists themselves freely mixed different forms of the two degrees within the course of their examples regardless of which minor they had previously selected as their basic minor scale suggests that there was no definitive form for them either.¹

Among factors contributing to an increased acceptance of formerly unfamiliar tones and signatures, practices of transposition by instrumentalists (which were considered in chapter 3) certainly ranked highly; also, advances in the

temperament of instruments by Neidhardt, et al., no doubt were a factor among German-speaking musicians. It appears that practical transpositions by organists beyond the cantus mollis and cantus fictus systems both were made possible by an increased acceptance of the chromatic finals and the more complex signatures and further stimulated their use. The relationship between customary temperaments and the accepted finals in late seventeenth-century France evidently was a vital one: it appears that the usage versus the non-usage of individual modes and consequently of their associated signatures was to a large degree dependent upon the temperaments, which rendered certain tones more in tune, and thus more usable, than others. Hubbard observes:

> Generally speaking, the meantone system of tuning produced six practicable major scales (C, G, D, A, F, and Bb), and three minor scales (A, D, and G). The farther one modulated from C, the less satisfactory the intonation became.2

Hubbard’s statements invite further comment. The major scales that he described as "practicable" prove to be those whose signatures contained up to three sharps or two flats. It makes sense that those scales would be practicable because they included only the sharps or flats which customarily were in tune on keyboards and on woodwind instruments, given the temperaments of the period. It is interesting that Hubbard’s selection of minor scales is more

2. Hubbard, 35.
limited. Perhaps this circumstance follows from the fact that in the minor scales, the sixth and seventh degrees were variable. The minor scales whose pitches were in tune according to the given signatures and whose sixth and seventh degrees also were in tune both in their natural and altered states were precisely those cited by Hubbard. A minor employed the altered notes F-sharp and G-sharp, D minor, B-flat and C-sharp, and G minor, E-flat and F-sharp. All the other minor modes were out of tune through one of the following circumstances: 1) they had nonenharmonic flats or sharps in their signatures, 2) they had nonenharmonic lowered or raised sixths (e.g., C minor had A-flat), or 3) they had nonenharmonic leading tones (e.g., E minor had D-sharp).

The principal change that occurred in the signatures of the minor modes in France between the late seventeenth century and the early years of the eighteenth was the transition from the earlier widespread use of Dorian signatures for the minor modes with both sharps and flats (with the exception of A minor, which evidently often had the natural signature) to the later general usage of Dorian signatures for D minor and the minor modes with flats and Aeolian signatures for A minor and those with sharps. That change did not occur as a gradual shift from one practice to the other, and it was not accepted by all simultaneously. Some—notably certain teachers—opposed the usage of the two
signature types for the minor modes, desiring to retain the Dorian signatures for all of them in order to preserve the compatibility of the solmization from Re and the octave species. Others, by advocating the adoption of Aeolian signatures exclusively, anticipated future practice. In spite of the evidence of both progressive and retrogressive doctrines, however, the musical practice evidently stabilized around the two signature types for some time.

In the present study, this author has endeavored to document (to a limited degree) the usage and non-usage of finals and signatures both in the music and particularly in the musical treatises, through selected statements and examples. Through the observation of the usages or recommendations of individual authors, the reader perhaps will come to understand how each supported or opposed the customary practice and how some may have contributed to change in that practice, particularly with respect to the signatures for the minor modes. The investigation has been made under the following headings: Signatures recommended or presented as regular by the authors and finals accepted by them; Signatures regarded by the authors to be irregular; Signatures observed in the musical practice,

3. The majority of the data will derive from the treatises. A limited amount of music also will be examined (which, however, will not constitute a valid sample for purposes of statistical analysis).
with a résumé of the transition from a single signature type to two for the minor modes.

Signatures Recommended or Presented as Regular by the Authors and Finals Accepted by Them

Rousseau

In his "Rules for naturalizing the transposed tones" of the Méthode, Rousseau discussed modes whose finals included the natural pitches and B-flat, thus limiting his selection of finals to the notes of the two-column scale (cf. Delair). While the number of the modes that he dealt with seems rather limited (he cited only twelve), he professed to be including the ones currently in use in his native land. He was concerned only with the present practice and was not interested in listing all the tones that could possibly be put into use. The ones he cited were those that had up to three sharps or three flats in their signatures, excluding E-flat major and A minor. 4

Rousseau's examples accompanying his "rules" demonstrated uniform octave species, according to the signatures, among all the major tones and among all the minor tones. Both the natural and transposed major tones had Ionian octaves. Likewise, the natural and transposed

4. Rousseau, Méthode, 24 (cf. 22-34). He later admitted E-flat as a final in the Traité, 125f.
minor tones had Dorian ones. The identity of the octave species of each group's natural and transposed members was a necessity in order for the latter to be naturalized.

In his response to the ninth question, when Rousseau listed the tones suitable for the expression of individual passions, his selection of finals and signatures was essentially the same, except that he failed to include finals of B-natural or B-flat (whose exclusion may be totally coincidental), and he included a fifth natural mode, A minor. His use of Dorian signatures for all of the minor tones except A minor was followed by Masson (1694f.).

In his "Models for transposition" of the *Treaté* (1687), Rousseau again illustrated the natural and transposed tones that he believed to be in use; he established his models on initial finals that included all of the natural pitches with the addition of B-flat and E-flat (cf. Charpentier, Masson, L'Affillard and Montéclair). He included both the major and the minor tones on each of the finals and thus obtained a total of eighteen tones, or five more than he had cited in the *Méthode*. In his transposition of initial finals to other tones, he added another two: F-sharp minor and F-sharp major. He obtained the former as the result of transposition both a whole tone higher from E minor and a fourth lower from B minor. He acquired the latter as the

result of transposition a fourth lower from B major. Those tones for which he first provided examples in the Traité included E-flat major, E-flat minor, E major, F-sharp minor, F-sharp major, B-flat minor and B major.

Rousseau's attitude toward the chromatic finals or accidentals (feintes) can be observed from more than one statement of the Traité. He said that by means of his "Models for transposition," one would be able to transpose onto all of them. While confessing that such transposition was rather difficult, he insisted that it was not impossible. He declared that it sometimes was necessary and that serious accompanists therefore were obliged not to ignore the chromatic finals.6

Rousseau argued for the feasibility of transposition onto all of the chromatic finals by pointing out two things: first, many pieces already were composed on those finals; secondly, such pieces were performed "with as much facility and perfection" as if they had been written in the natural modes (cf. Mattheson). He supported his argument with indisputable evidence: Monsieur Marais played pieces written on the accidental finals with great facility.7 Marais himself testified to the ubiquitous use of all the finals in the French practice, declaring: "Presently in

6. Ibid., 118-9. 7. Ibid.
France everyone transposes so easily onto all the tones and semitones.\textsuperscript{8}

An examination of the frequencies of the finals of Rousseau’s “Models” is informative. First of all, one may observe a preference for natural finals, both in the initial modes and in those obtained as the result of transposition. Also, Rousseau readily transposed to B-flat, which was regarded as diatonic because it was found within the two-column scale. Of the two remaining altered finals that he employed, he transposed to E-flat rather frequently and to F-sharp rarely (see table 12 below and also examples 78 and 79). He avoided using any of the other chromatic or nonenharmonic finals.\textsuperscript{9}

One observes that the altered finals that Rousseau employed relatively frequently were the flatted notes which were in tune on the instruments, given the temperaments of his day: B-flat and E-flat. The ones that he tended to avoid were the sharped notes on the instruments: F-sharp, C-sharp and G-sharp (particularly the last two). Those evidently were the last of the pitches of the keyboard to be

\textsuperscript{8} Marin Marais, \textit{Basse-continues des pièces à une et à deux violes} (Paris, 1689), 2. Marais’ first suite was composed on the "semitone" of F-sharp minor (72f.).

\textsuperscript{9} The term "chromatic" is used here to refer to the sharped and flatted notes other than B-flat that were found on keyboard instruments of the period, while "nonenharmonic" is intended to designate all the remaining sharped or flatted pitches (see chapter 2).
Table 12. Frequencies, in Rousseau's "Models," of altered finals which occurred as the result of transposition.

<table>
<thead>
<tr>
<th>Altered final</th>
<th>Frequency of individual finals obtained by particular intervals of transposition:</th>
<th>Cumulative % of 108 instances of each following transposition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Second                Third          Fourth</td>
<td></td>
</tr>
<tr>
<td>B-flat</td>
<td>2                     4              4</td>
<td>10</td>
</tr>
<tr>
<td>E-flat</td>
<td>2                     4              2</td>
<td>8</td>
</tr>
<tr>
<td>F-sharp</td>
<td>1                     0              2</td>
<td>3</td>
</tr>
<tr>
<td>All other</td>
<td>0                     0              0</td>
<td>0</td>
</tr>
<tr>
<td>altered finals</td>
<td></td>
<td>19.4% (percentage of total)</td>
</tr>
<tr>
<td></td>
<td>Altered finals</td>
<td>Natural finals</td>
</tr>
<tr>
<td></td>
<td>(percentage of total)</td>
<td></td>
</tr>
</tbody>
</table>

Employed in the practice. They seem to have been accepted as components of signatures before they were employed as finals. The usage of the flatted finals and the relative non-usage of the sharped ones perhaps stems in part from the greater simplicity of the signatures of the former: B-flat major and E-flat major required two flats and three flats, respectively, while F-sharp, C-sharp and G-sharp minor required four, five and six sharps, assuming the use of Dorian signatures for those modes.10

10. Signatures with sharps evidently became generally employed in the practice around the middle of the seventeenth century. See II-55. Also cf. the earlier practice of transposing up a fourth via the flat: from the natural hexachord on C, one obtained that on F with B-flat; further transposition yielded the hexachord on B-flat with two flats.
The order of appearance of the tones in Rousseau's "models" is interesting. The author presented two groups of tones, in each of which the finals were arranged in a stepwise series. He maintained those groups through all the intervals of transposition and for each initial clef. The former group included D minor, C major, B-flat major, A minor, G minor, F major and E minor. The latter contained D major, C minor, B-flat minor, B minor, B major, A major, G major, F minor, E-flat major, E-flat minor and E major. The finals and the thirds of the former group comprised the pitches of the first column of the scale; perhaps Rousseau regarded the column with B-flat as the logical place to begin. His latter group of tones included the alternative tone on each of those finals with the addition of the major and minor tones on B-natural and E-flat. The tones of the former group had the simpler signatures, with no more than two sharps or two flats. Those of the latter group, whose thirds in a majority of cases were altered, for the most part had more complex signatures. Rousseau's grouping of the modes reveals his didactic bent and probably represents one way in which he made the practice of transposition easier for the performer.

The signatures of the Méthode and the Traité invite comparison. The signature types that Rousseau employed in his "models" paralleled those he had included in the Méthode: For the major tones, he supplied modern, Ionian
signatures. For the minor tones, he employed Dorian signatures for every initial tone except A minor, to which he gave the natural, Aeolian signature. Signatures of greater complexity appeared in the *Traité* than in the *Méthode*, however: Rousseau included in his "models" initial signatures having up to five sharps and flats, and a signature of six sharps was obtained as the result of transposition (see example 79c).

**Delair**

The author discussed the uses of the sharps and flats in the signatures. He stated that besides those which were put in "in order to change the nature of the thirds in the transposed modes," other sharps and flats frequently were encountered which served in the transposed major and minor modes to restore the natural order of the notes in relation to Ut or Re (see chapter 2). He continued:

But in accompaniment, the aforementioned sharps or flats serve to avoid false intervals and to supply the cadences of the essential notes of each tone. Thus, one first of all must know the essential notes of each tone. We shall see afterwards what cadences are, merely in relation to accompaniment. This knowledge will lead us to that of the notes which must be sharped or flatted according to the differences among the tones.11

Delair gave rules both for making a correct bass cadence and for avoiding false intervals. He observed,

first of all, that in order for a cadence to be made on a note, that note had to have a perfect fourth below it (i.e., a perfect fifth above). Consequently, the essential notes of the mode (i.e., the final, mediant, and dominant pitches), which were the usual cadence tones, had to have those perfect fourths. If any of them did not have the perfect fourth naturally, one supplied that deficiency by putting the appropriate sharp or flat in the signature. This was the second cause for the flats or sharps that were in the signatures.12

Delair then stated that one neither ascended nor descended by a step which contained more than a whole tone. He cited the following intervals as examples of what was to be avoided: F-natural to G-sharp and C-sharp to B-flat, both of which were augmented seconds. When such intervals were encountered either in the bass part or in the instrumental "accompaniments" (i.e., the parts above the bass, which collectively were played, together with the bass, on the clavecin, theorbo, etc.), one made up their deficiency by "sharpening the semitones or flattening the [whole] tones at the beginning by the clef." This was the third cause of the sharps and flats that were in the signatures. Delair summarized: "Thus, the sharps and flats at the beginning by the clefs have three uses, namely, to

12. Ibid., 54.
change the thirds, to supply the cadences, and to avoid false intervals.\textsuperscript{13}

Delair's notion that the knowledge of the uses of the sharps and flats would lead one to an understanding of the correct signatures is of interest. He apparently felt that one could obtain the signatures by reasoning them out. In other words, the signatures did not have to be merely assumed; they could be intelligently derived. It may be said that Delair presented a rationale for the signatures of the major and the minor modes in terms of the practice of accompaniment.

According to Delair, the uses of the sharps and flats were limited to the functions he discussed above. He apparently regarded all other uses of them to be superfluous to the determination of the signatures. For example, he failed to cite the establishment of the minor sixth above the final as a cause for a flat in the signatures of the minor mode. Thus, the sixth degree regularly was unaltered in those signatures, leaving the sixth major. Of course, the sixth degree normally would have been altered in the course of the music: it generally was raised from its natural state in ascending passages in modes whose signatures required sharps and in A minor; likewise, it was

\textsuperscript{13} Ibid.
characteristically lowered from the natural in descending passages in the modes with flats and in D minor, in order to be major in ascending and minor while descending in both cases (example 97).

Example 97. Customary alterations in the minor modes with sharps and flats.

Delair presented "Rules for knowing the notes which must be sharped or flatted in each natural or transposed tone in particular" (see example 98). He discussed the

Example 98. Examples accompanying Delair's "Rules for knowing the notes which must be sharped or flatted in each natural or transposed tone in particular" (Delair, 55-7).

a) C sol ut na- Cadence of the Cadence of the Cadence of the
tural ou bquare principal Mediant Dominant

\[C\text{ major}\]

b) C sol ut bemol \[C\text{ minor}\]

c) D la re natural ou bemol \[D\text{ minor}\]

d) D la re bquare \[D\text{ major}\]

14. Ibid., 55.
tones individually and rationalized every sharp or flat in each of their signatures. In order to provide some insight into Delaix's methodical and apparently innovative manner of justifying the sharps and flats, his presentation in part will be quoted below.

C Sol Ut natural or major has neither sharp nor flat, having its third and the cadences of the essential tones naturally.

C Sol Ut minor has by nature E and B flatted. The first flat (i.e., E-flat) is used in order to change the nature of the third, and the second is in order to accomplish the cadence of E, which is its mediant. . . .

E Si Mi major has by nature C, D, F and G sharped. The G-sharp is in order to change the nature of the third. The D-sharp and F-sharp are in order to make up the cadences of G[(-sharp)] and
B, which are the mediant and the dominant. The C-sharp is in order to avoid the false interval which would be encountered from C-natural to D-sharp... F Ut Fa natural or major has its third and the cadences of its essential tones naturally. Nevertheless, one does not leave off flating the B, although it does not enter into any cadence. This is done in order to avoid the false interval that exists from F to B...

B Fa Sl-flat natural [i.e., B-flat major] also has E-flat, because it is necessary that the principal pitch of the tone have by nature the just [i.e., perfect] fifth as well as the [perfect] fourth descending. That is also the reason for which the B is flatted in the tone of F Ut Fa natural [F major].

A few comments will be made relative to Delair's statements above. In his discussion of F major, he identified the augmented fourth from F up to the fourth degree, B, as a false interval which required B-flat in the signature in order to correct it. His previously cited instances of false intervals always had been augmented seconds. In discussing B-flat major, he introduced yet another cause for the flat on the fourth degree, explaining that the "principal pitch" or final of the mode had to have the perfect fifth as well as the perfect fourth below it. He thereby declared the necessity of a correct pitch for the subdominant note. That pitch was essential for the establishment of the pre-dominant (i.e., subdominant function) harmony, e.g., the 11g, in the authentic cadence; it also was necessary for the plagal cadence. The

15. Ibid., 55-7.
requirement of the perfect fourth and the perfect fifth below the final ensured the stability of the tone.

Delaire demonstrated both a major mode and a minor mode on each of the natural finals from C through A. He also presented the major mode on B-flat and the minor mode on B-natural. He thus included examples of one more mode than Rousseau had done in his "Rules," and his signatures were slightly more complex than Rousseau's, having as many as four sharps (for E major; see example 98). Delair's systematic presentation of both the major and the minor mode on nearly every diatonic final is consistent with his suggestion that a piece potentially could be identified as having either the major third or the minor third, and it illustrated the necessity for the performer to approach each tone with the realization that two options existed.

His signatures for the tones were of three types: Ionian, as expected, for the major modes, Aeolian for A minor and the minor modes with sharps, and Dorian for D minor and the minor modes with flats (example 98). Delair's examples may be among the earliest in a French treatise to demonstrate the two customary signature types for the minor

16. He used neither the term "subdominant function" nor chord numbers; his approach to harmony, as a Baroque musician, was intervallic. See, for example, William J. Mitchell, "Chord and Context in Eighteenth-Century Theory," Journal of the American Musicological Society XVI/2 (Summer, 1963), 221f.
modes in the distribution or apportionment which became common in France. He may have been a primary source for L'Affillard's similar division of the minor modes in the 1697 edition of his treatise. His use of the two kinds of signatures also served as a precedent for Freillon-Poncein's later use of the same signature types, although the latter distributed the Aeolian and Dorian signatures among the finals in a manner that was quite different from Delair's and L'Affillard's practice.

L'Affillard

L'Affillard's "Examples for the transpositions" (1694) included instances with finals of Ut followed by others with finals of Re (see examples 32 and 33). With the former, the author employed the Ionian signature, and with the latter, the Dorian one. He used the Dorian signature even for an example of the minor mode with sharps, giving to E minor the signature of two sharps (example 33). In his subsequent Airs transposez, he again used the Dorian signature type alone for the minor mode (see example 35), though he previously had included several examples of pieces in A minor with the natural, Aeolian signature. In the following edition of 1697, however, he followed a different practice, employing Aeolian signatures when he demonstrated

17. L'Affillard (1694), 86-7.
the minor mode with sharps: in his "other examples for the
transpositions which are formed with sharps," he gave E
minor and B minor signatures of one sharp and two sharps,
respectively (example 37).18

L'Affilllard's change of signature type for the minor
modes with sharps in the 1697 edition is of interest for its
historical implications. It appears that the Dorian
signature initially was regarded to be the correct one for
the minor modes with both sharps and flats,19 but in the
last years of the seventeenth century the practice was in a
state of flux. Both Dorian and Aeolian signatures have been
observed in music of the period which was written in A minor
and D minor (see examples 110-13). During that time, A
minor and the tones with sharps regularly came to be written
with Aeolian signatures, while D minor and those with flats
characteristically retained the Dorian signatures.
L'Affilllard's adoption of the Aeolian signature for the
minor mode with sharps, which Delair's earlier practice had
anticipated, probably reflects an increased occurrence of
that signature in the music.

L'Affilllard's "other examples as regards the
transpositions" of the 1697 edition demonstrated two
apparently contradictory practices.20 In the first place,

the author alternatively employed a signature of one flat 
and a natural signature for the mode of D minor in order to 
make one or another of his transpositions easy to sing: He 
used the one-flat (i.e., the Aeolian) signature in order to 
simplify a minor transposition written with sharps which had 
the Aeolian signature (example 37), and he used the natural 
(Dorian) signature to render more easily singable three of 
his examples of the minor transpositions with flats, which 
had Dorian signatures (example 39). His employment of the 
two signatures for D minor can be said to result from his 
use of the same kind of signature in the "reduced" mode as 
he employed in the transposition.

The second contradictory practice involved one of his 
examples of the transpositions, which was in G minor with a 
signature of one flat (see example 39). That example has 
implications with respect to notions of the transpositions 
and the scale, for in the same edition the author transposed 
(i.e., reduced) an exercise in F minor to G minor with the 
one-flat signature (example 39). Thus he both called the 
mode of G minor a transposition itself and appropriated it 
in order to make another transposition easy to sing. His 
use of G minor therefore was inconsistent.

L’Affilllard may have felt uncomfortable about his 
two-fold use of G minor in the 1697 edition, for in a later 

20. L’Affilllard (1697), 123, 125.
edition (see the one of 1705), he changed the mode to which he "reduced" F minor to D minor with the natural signature, which was the mode to which he transposed G minor in both editions. He at that point discontinued his usage of G minor as a way to make the transpositions easier to sing (example 39).

The author's change of mind with regard to G minor will be briefly summarized (see table 13 below). In the 1694 edition, G minor was employed strictly in order to make the transposition of F minor easy to sing via the scale. In the 1697 edition, G minor was used both as above (i.e., as a mode to which one transposed or reduced music for the facility of the intonation) and as a transposition. In the 1705 edition, G minor was included only as a transposition. If one regards transpositions to have existed only outside of the scale and considers those tones to which the transpositions were "reduced" to have possessed the characteristic of inclusion within the scale, then L'Affi1 lard's changing practice may be restated as follows: in the 1694 edition, G minor was found within the scale; in 1697 it was found both within and outside of the scale; in 1705, G minor existed only outside of the scale (see examples 37 and 39).

The author's elimination of his two-fold use of G minor in the 1705 edition of his treatise failed to resolve the inconsistency with respect to his use of the B-flat
Table 13. Tones and signatures in three of L’Affillard’s editions.

<table>
<thead>
<tr>
<th>Element</th>
<th>1694 ed.</th>
<th>1697 ed.</th>
<th>1705 ed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature maxima</td>
<td>4 sharps, 4 flats</td>
<td>5 sharps, 4 flats</td>
<td>same as 1697</td>
</tr>
<tr>
<td>Cited tones</td>
<td>Major and minor tones on all pitches of column of Bb (7 finals)</td>
<td>same as 1694 plus Bb (all pitches of 2-col. gamme)</td>
<td>same as 1697 plus Eb (major tone only)</td>
</tr>
<tr>
<td>Natural signatures</td>
<td>C, Dm, Am</td>
<td>same as 1694: D minor found both with natural, Dorian and with one-flat, Aeolian signatures when used to make transpositions easy to sing</td>
<td></td>
</tr>
<tr>
<td>Irregular signatures</td>
<td>G major, natural signature; Bb major with one flat</td>
<td>G major, no sharps (89); Bb, 1b (34, 84, 86)</td>
<td>Natural signatures for: Em, F, G, Bm (pp.16-17)</td>
</tr>
</tbody>
</table>

Tones to which music was transposed to facilitate the singing of transpositions:

- a. Natural signatures
  - C major, D minor
  - C major, D minor, A minor

- b. One-flat signatures
  - F major, G minor
  - F major, G minor, D minor

Use of G minor (relationship to gamme)

- transposed to it in order to simplify intonation (within gamme) both a transposition and a tone to which one transposed (outside and within gamme)
signature. This is the case because, while he employed G minor strictly as a transposition in that edition, at the same time he continued to transpose to tones having signatures of one flat in order to make his transpositions with sharps easier to sing. Thus, he still had signatures of one flat at both ends of the process of reduction.

It indeed is curious that L’Affilllard could regard a mode with a signature of one flat as a transposition, and at the same time could transpose to a mode with that signature in order to facilitate the singing of the music via the scale. Perhaps his inconsistent practice can be explained in terms of the current upheaval with regard to the constitution of the scale and the definition of the natural and transposed modes. As has been observed, there was an increasing tendency to regard the column of B-flat—and therefore the modes with signatures of one flat—as transposed. It appears that L’Affilllard accommodated himself to the notion, for he included signatures of one flat among his “transpositions,” beginning with the 1697 edition.

L’Affilllard’s practice represents the elimination of a distinction made by Rousseau concerning the relationship of the natural and transposed modes to the gamme. For L’Affilllard, the column of B-flat had lost its identity as the repository of only natural modes, and thus it lost its justification for inclusion within the scale proper. It
would seem that that column eventually would have to be eliminated from the scale under such circumstances. In fact, L’Affillard’s position portended the eventual withdrawal of the column of B-flat from the scale and the resultant reduction of the number of signatures by which one could more easily sing transposed music to merely the natural signature. Although he perhaps merely was documenting a changing musical practice, his doing so may have further contributed to the demise of the two-column scale and to the wider acceptance of the single-column one, if the perpetuity of his treatise is an accurate indicator of its influence.

The author discussed limits for the complexity of signatures (1697f.), first observing that signatures with sharps frequently were limited to four or five components: "Very often, when there are five or more sharps, it may be that one party [i.e., sharp] is only the repetition or octave of one of the five which have just been spoken of." He was even more firm regarding the flats: "If more than four [flats] are found, you are informed that they are only the repetition or octave of any of the four which have just been spoken of."  

21. Ibid., 122. See III-44. 22. Ibid., 124.
Loulié

In both the *Éléments* and the *Abrégé des Principes de Musique*, Loulié presented signatures for only the major mode.23 In the former treatise, he cited instances having up to six sharps and flats. His inclusion of signatures of that magnitude allowed him to obtain the major tones on all of the chromatic finals or their nonenharmonic counterparts. The sixth sharp and flat acquired F-sharp and G-flat major, a nonenharmonic pair. He thus demonstrated that he was not merely interested in constructing a single major mode on each pitch of the octave as Ozanam had done.24 He also differed from Ozanam in that his predecessor had employed as finals strictly the chromatic pitches, *i.e.*, those that were in tune on keyboards, while he freely employed nonenharmonic notes, *viz.*, A-flat, D-flat and G-flat (through signatures of four, five and six flats). For Loulié, the controlling factor in the selection of finals was the quantity of sharps or flats rather than the temperament of the instruments.

While Loulié did not supply examples of signatures for the minor mode in the *Éléments* proper, his comments indicate


24. Loulié may have felt obligated to include both the sixth flat and the sixth sharp for the sake of a balanced system, although one or the other of them would have completed the series of major modes on the twelve pitches.
that he understood the correct signature for that mode to be the Dorian one, after the natural model on D Re. In his revisions of the treatise, he indicated that the Dorian signature of one sharp was the required one for A minor. The F-sharp yielded the major sixth above the final, which was necessary to obtain the Dorian octave. His position appears to have put him in opposition to the musical practice of his day. At the same time, his presentation of A minor with the natural signature in an example reflects his interest in dealing with current practice. He, like Frère, evidently believed that that practice was in error.

Freillon-Poncein

A number of observations will be made concerning Freillon-Poncein's examples of the finals (examples 41 and 42). His order of presentation of them is in conformity with his doctrine of "transposition of the seven major modes and the seven minor modes from the natural [finals] to the flat or to the natural or sharp." He began with the natural finals C, D, E, F, G, A, and B, providing examples of the seven major modes and seven minor modes with their respective signatures. He then repeated his presentation for the "sharped finals" and the "flatted finals." He thus

obtained twenty-one different finals with associated signatures for both the major and the minor modes, for a total of forty-two instances of signatures. This evidently is the most exhaustive inventory of the finals with their signatures to appear in any French treatise up to its time.

Freillon-Poncein included signatures with as many as twelve sharps (B-sharp major) and eleven flats (F-flat minor). Consequently, double-sharps and double flats occurred frequently in his signatures. One would suppose that signatures with those kinds of components would not be found in the compositional practice; this assumption indeed is verified by Freillon-Poncein. However, the signatures apparently did have some use in performance. The author explained that it was advantageous for the performer to know the modes with double sharps and double flats in their signatures because, though tones with such components were not in use in composition, there were some who were experienced with them. In the author's opinion, that fact, coupled with the difficulty of execution of those tones, was reason enough for performers to become acquainted with them. 28

The author's examples of signatures for the minor modes invite comment. Freillon-Poncein employed the familiar two kinds of signatures, Dorian and Aeolian. His use of them

reflects the fact that there were two minor modes with natural signatures, D minor with the Dorian and A minor with the Aeolian, which served as models for the remaining minor modes.

The author's distribution of the minor signature types among the various finals appears to be novel (examples 41 and 42). He appropriated Dorian signatures for the tones with finals of C, D and E and also for the tones formed as a result of sharpening or flattening those finals, while he utilized Aeolian signatures for the tones with finals of F, G, A and B and also for the tones resulting from sharpening and flattening them. His practice differed radically from that of his predecessors Delair and L'Affillard (1697f.); in his examples, the two signature types occurred in different pitch-class regions around the natural prototypes: the Dorian signatures were found in the neighborhood of D and the Aeolian ones in the vicinity of A (see figure 12).

![Figure 12. Concentration of common signature types in two pitch-class regions in Freillon-Poncein's examples of the finals (see examples 41-2).](image)

N.B. Circled finals are natural models or prototypes.
Perhaps the criterion for the author's designation of a particular signature type for an individual final was the proximity of that final to the prototype final of D or A. One can observe that of the seven finals, only F did not fulfill the proximity criterion, as it was slightly nearer D than A, being three half steps from the former and four from the latter. It is interesting that F minor nonetheless was assigned an Aeolian signature, after the model on A. The possibility of his deliberate assumption of a rationale for the distribution of the signatures perhaps is not out of the question in view of the penchant of writers of the period for building logical systems.

**Brossard**

The reasons that Brossard offered for the use of the sharps and flats in the transposed modes consisted of his stated requirements regarding the essential, natural and necessary notes. They recall Delair's "causes" for the sharps or flats of the signatures but differed somewhat from them: Delair first enumerated the causes of the sharps and flats of the signatures generally and then identified the reason for each particular sharp and flat of the individual signatures, while Brossard listed generally the requirements that necessitated sharps or flats in the transposed modes.

which did not necessarily have to be met through the signature; for example, his required alteration to obtain the semitone below the final (i.e., the leading tone) of the minor mode was made during the course of the music. Additionally, Delair's causes had reference to the art of accompaniment, while Brossard's requirements concerned the octave species of the tone.

The examples accompanying Brossard's fourth definition of "TRANSPOSITIO" include transpositions of the natural octave of Re (i.e., D minor) both a major second higher to E and a major second lower to C (see example 13). His transposed modes actually were written-out transpositions—that is, instances of transposition in composition. The former example is interesting, because he began with the Dorian signature on D and arrived at the Aeolian on E. His use of the two different kinds of minor signatures can be understood in terms of his evident accommodation to the musical practice. By accommodating himself, however, he was unable to indicate the transposition exactly in the signature. He needed two sharps in order to duplicate on E the natural octave species above D. Since the practice called for only one sharp (F-sharp) in the signature, he chose to place the second sharp (C-sharp) outside of the signature, i.e., in the course of the octave. He thereby reconciled the usage of
different signature types for the minor tones with the requirement for strict transposition.

Saint-Lambert

In Les principes (1702), Saint-Lambert cited both the greatest number of sharps and flats that he at that time evidently believed could possibly be employed, which was seven, and the maxima that ordinarily were observed, three sharps and two flats. (He indicated that the occurrence of more than three sharps was rare and that more than two flats was unusual.) He thus demonstrated an awareness both of future potential and of current practice. While he was not the first to discuss differing limits for the sharps and flats—L'Affillard's examples (1697) had up to five sharps and four flats—, his maxima are of interest for a couple of reasons. In the first place, he actually was indicating the sharps and flats which were found on the keyboards and woodwind instruments of his day. As a result of the existence of only three sharps and two flats on the instruments, modes with a greater number of sharps or flats required nonenharmonic notes, e.g., A-flat in all the modes having more than two flats and D-sharp in all those with

30. Saint-Lambert, Les principes, 38-9. In the Nouveau traité, the author continued to make the distinction between signatures that were theoretically possible and those that were in common use (pp. 28-30).
more than three sharps. Such notes would have been played out of tune, by substituting their nearest approximates, e.g., C-sharp for D-flat, etc. Saint-Lambert’s observations concerning the number of sharps and flats in use suggest that there was a positive correlation between the degree of usage of the modes and the temperament of their pitches on instruments.

The author’s observations also indicate that natural finals generally were more commonly employed than chromatic ones. That such is the case is evident from the fact that in the major modes, natural finals appeared as far as five sharps and one flat, and in the minor modes with their customary signatures, such finals were found through signatures of two sharps and three flats. Consequently, out of thirteen major and minor modes whose signatures had no more than three sharps or two flats, only two ordinarily would have had chromatic finals: F-sharp minor, with three sharps and B-flat major, with two flats.

**Growth in the Acceptance of Finals and Signatures**

One may observe in the treatises of certain French authors from approximately the final decade of the seventeenth century to the early eighteenth some evidence of the employment of an increasingly wider selection of finals (see table 14 below) accompanied by a progressively greater quantity of sharps and flats in the signatures (table 15).
Table 14. Selections of finals of the modes cited or employed by various authors.

N.B. Altered finals are designated in brackets.

A. Pitches of the two-column gamme [B-flat]
   Rousseau, Méthode (c. 1678?)
   Delair (1690)
   L’Affilllard (1694, 1697; see table 13)

B. Two-column gamme with E-flat [B-flat, E-flat]
   Rousseau, Traité (1687; also F-sharp as the result of transposition; cf. table 12)
   Charpentier (c. 1692)
   Masson (1694?)
   L’Affilllard (1705; cf. table 13)
   Montéclair (1709, but cf. IV-45, IV-46)

C. Twelve customary pitches: chromatic scale following the conventional keyboard [F#, C#, G#, Bb, Eb]
   Ozanam (1691) (N.B. He admitted possibility of "enharmonic" finals; cf. Freillon-Poncein.)
   Brossard (1703)
   Campion (1716)*
   Rameau (1722)* (N.B. He included both D# and Eb as finals of the minor mode but later eliminated D# in the "Supplément")

D. Twelve customary pitches with nonenharmonic notes**
   Loulié (1696) [F#, Bb, Eb, (Ab, Db, Gb)] (examples for the major mode only)
   Frère (1706) [major transpositions: same selection as Loulié; minor ones: F#, C#, G#, Bb, Eb, (Ab)]

E. Seven pitch letters natural, sharped and flatted: seven pitch letters with three conditions = 21 finals [sharp and flat of every natural pitch]
   Freillon-Poncein (1700)
   Saint-Lambert (1707)
   Borin (1722)

* He substituted the nonenharmonic A-flat for G-sharp as a final of the major mode.

** Nonenharmonic finals (listed in parentheses) were obtainable on certain keyboard instruments by means of split keys for one or more of the three sharps (see chapter 2).
The net result appears to have been an increase in the number of major and minor modes employed in the practice. The data appears convincing, but it would be dangerous to attempt to make sweeping statements from the few sources cited, particularly since one is not always certain whether

Table 15. Comparison of signatures discussed or illustrated by selected authors.

<table>
<thead>
<tr>
<th>Source</th>
<th>Maxima sharps</th>
<th>flats</th>
<th>Extraordinary (nonenhar.) sharps</th>
<th>flats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rousseau, Méthode</td>
<td>3</td>
<td>3</td>
<td>D, A, E</td>
<td>A</td>
</tr>
<tr>
<td>Rousseau, Traité</td>
<td>6</td>
<td>5</td>
<td>A, D, G</td>
<td></td>
</tr>
<tr>
<td>Delair, Traité</td>
<td>4</td>
<td>3</td>
<td>D</td>
<td>A</td>
</tr>
<tr>
<td>L’Affiliard (1694)</td>
<td>4</td>
<td>4</td>
<td>D</td>
<td>A</td>
</tr>
<tr>
<td>L’Affiliard (1697, 1705)</td>
<td>5</td>
<td>4</td>
<td>D, A</td>
<td>A, D</td>
</tr>
<tr>
<td>Masson (1694f.)</td>
<td>5</td>
<td>5</td>
<td>D, A</td>
<td>A, D, G</td>
</tr>
<tr>
<td>Loulié (1696)</td>
<td>6</td>
<td>6</td>
<td>D, A</td>
<td>A, D, G, C</td>
</tr>
<tr>
<td>Freillon-Poncein</td>
<td>12</td>
<td>11</td>
<td>D, A</td>
<td>A, D, G, C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B; also</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>double sharps</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>double flats</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of F, C</td>
<td>B, E, A, D</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>G, D, A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D, A, E</td>
<td>A, D, G, C, F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Saint-Lambert (1702)</td>
<td></td>
<td></td>
<td>(numbers in parentheses reflect common usage)</td>
<td></td>
</tr>
<tr>
<td>Frère (1706)</td>
<td>6</td>
<td>6</td>
<td>same selection as Loulié</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(cf. IV-83, 84)</td>
<td></td>
</tr>
<tr>
<td>Saint-Lambert (1707)</td>
<td>12</td>
<td>11</td>
<td>cf. Freillon-Poncein</td>
<td></td>
</tr>
<tr>
<td>Gasparinii (1708)</td>
<td>4</td>
<td>3</td>
<td>D</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>same as Campion</td>
<td></td>
</tr>
<tr>
<td>Montéclair (1709)</td>
<td>5</td>
<td>5</td>
<td>same as Masson</td>
<td></td>
</tr>
<tr>
<td>Campion (1716, 1730)</td>
<td>7</td>
<td>5</td>
<td>D, A, E</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A, D, G</td>
<td></td>
</tr>
<tr>
<td>Rameau (1722)</td>
<td>7</td>
<td>5</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>(Supplément:</td>
<td>7</td>
<td>6</td>
<td>same as Campion</td>
<td></td>
</tr>
<tr>
<td>Borin (1722)</td>
<td>12</td>
<td>10</td>
<td>added C b)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>same as Freillon-Poncein</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and Saint-Lambert except</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>lacked D double flat</td>
<td></td>
</tr>
</tbody>
</table>
a particular author was declaring (or illustrating) what he personally felt to be acceptable limits as regards either the breadth of the selection of finals or the quantity of sharps or flats, or whether he was rather documenting actual usage as a result of his thorough observation of the musical practice. In short, one cannot affirm with certainty that the finals and signatures cited by an individual author reflected the state of the musical practice at any particular moment. Nonetheless, the citations at least perhaps illustrate a trend in the thinking of musicians.

Rousseau's employment of six sharps and five flats in the Traité (1687) may seem to disprove the hypothesis of a progressive increase in the complexity of the signatures, for in that instance he preceded L'Affillard with a signature of greater complexity. However, the circumstance perhaps may be satisfactorily explained through a look at the Traité's intended audience and practice as opposed to those of the Principes. The latter was addressed at least principally to singers and dealt with their practice to a large degree, while the Traité was addressed to instrumentalists. Evidently, instrumentalists sometimes had to transpose to tones having numerous sharps or flats in their signatures to accommodate the ranges of singers or the tuning of other instruments whose pitch differed slightly from that of their own instrument. Singers, on the other hand, generally were not required to employ signatures which
were more complex than those which were written. Thus it seems only reasonable that more complex signatures would be found in the *Traité de la viole* than were included in contemporary vocal treatises such as L’Affillard’s.

**Frère**

Frère provided Dorian signatures for all of the minor modulations, contrary to the practice of his day (see examples 68B and 68C). He recognized that some musicians would have to be persuaded to accept signatures in which the sixth degree above the final was raised by means of a sharp. In the practice of his time, the sixths generally were left natural in the signatures, which resulted in minor sixths and Aeolian signatures for the modes with sharps, and major sixths and Dorian ones for those with flats. He also addressed a viewpoint which he confessed was espoused by certain "more advanced musicians": they would object to his proposed addition of a sharp on the grounds that the sixth above the final was minor in the minor modulations. This view was fairly commonly held among musicians of his day. Saint-Lambert (1707) distanced himself from Frère when he reiterated this distinction between the major and minor modalities. Lyn Tolkoff has observed that the principal

31. Frère, 37.

32. *Ibid.*, 49. See also pp. 40-4 of this paper.
point of controversy following the theoretical acceptance of the major-minor system was "the nature of the sixth and seventh degrees of the minor mode." 33

Frère did not explain why he limited the signatures of his transpositions to six sharps and flats. His probable familiarity with Loulié's Éléments may have been a contributing factor. Frère and Loulié perhaps wished to avoid signatures of seven sharps and seven flats because the modes they would have obtained with those signatures—C-sharp major and D-sharp minor, and C-flat major and D-flat minor—, represented nonenharmonic respellings of transpositions which already were available through simpler signatures of five flats (D-flat major and E-flat minor) and five sharps (B major and C-sharp minor), which had fewer out-of-tune notes. For example, the mode of D-flat major had only three badly tuned notes: A-flat, D-flat and G-flat, whereas its nonenharmonic counterpart, C-sharp major, had four of its notes out of tune: D-sharp, A-sharp, E-sharp and B-sharp. Frère's evident desire to avoid more complex signatures when simpler alternatives were available is understandable in view of the problems of intonation that attended the use of the transposed modes, given the customary mean-tone and irregular temperaments of the time.

33. Tolkoff, 151.
Saint-Lambert

The signatures that Saint-Lambert presented as regular in the *Nouveau traité* (1707) were those which produced octave species conformable to his requirements for major and minor modality. Since the Ionian and Aeolian octaves alone fulfilled his criteria for the two modes, the signatures were solely of those two types.

He declared in his preface that he would anticipate a few objections which could be made over his work. One of those objections was: Why did he put one more flat than was usual in all the tones that had the minor mode? He replied as follows:

As for the flat, it is absolutely necessary, because every tone which has the minor mode has the sixth above the final essentially minor. It is because of that one must put the flat by the clef [i.e., in the signature] and not in the course of the Air as accidental, as is practiced ordinarily. That is a considerable error, which has not been recognized up to the present.34

He regarded as erroneous the widespread practice of leaving the sixth degree natural in the signatures of the minor tones with flats, because the natural sixth was major in those cases and had to be made minor in order to have the necessary conformity to the minor mode. By adding an additional flat beyond the ordinary number, he acquired the minor sixth and obtained the Aeolian octave and signature.

Saint-Lambert presented in two columns the octaves with accompanying signatures for the major and minor modes on all the tones, beginning with the seven natural tones and then proceeding in turn to the sharped and flatted finals (cf. Freillon-Poncein). In his "Demonstration of the Tones and Modes" (as he termed his examples), he employed capital letter references to designate pairs of nonenharmonic finals which indeed were, as he said, "the same under different names," as far as their performance on instruments was concerned.

He recognized that his list of the tones and modes was not limited to those in common use, and he defended its inclusiveness:

Among those tones there are some which are in greater use than others. There are even some which perhaps have never been put into use, but I did not want to omit any of them in the Demonstration, because it may indeed happen that since the majority of our composers are now using several which were not formerly in use, that they finally will make all of them equally common in usage. He pointed out that there were tones which required all the notes of the octave to be marked with a sharp or a flat and that there were some notes which were doubly sharped or flatted. In order to clarify which were the doubled sharps and flats, he separated the single ones from their duplicates by means of a barline. He also indicated the

35. Ibid., 28f. 36. Ibid. 27. 37. Ibid.
number of components by means of a figure placed beneath the
signature.

His opinions concerning the relative usage of
individual tones are of interest. He identified as "rare,"
i.e., uncommon or unusual, all of the modes on the sharped
and flatted finals with the exception of B-flat major (two
flats) and E-flat major (three flats). He also regarded as
rare one mode on a natural final, B major (five sharps).
His instances that were not marked "rare" had signatures
with up to four sharps and four flats. It appears
therefore that four was the maximum number of sharps and
flats that he regarded to be in common use. As James
Burchill has observed, Saint-Lambert's indications from the
Nouveau traité regarding the rarity of certain signatures
are not entirely consistent with his prior statements of Les
principes that more than three sharps or two flats were rare
or unusual. The discrepancy perhaps is explainable:
Saint-Lambert to some degree may have documented in the
Nouveau traité an increased acceptance of the nonenharmonic
sharps and flats in the practice.

The lists of finals and signatures presented by
Freillon-Poncelin and Saint-Lambert were equally
comprehensive and invite comparison. Saint-Lambert's finals
were precisely the same, and appeared in the same order, as

Freillon-Poncein's. However, the authors' signatures for the minor modes differed. That their purposes also differed is evident from the fact that Freillon-Poncein employed all the different clef positions (see example 42), while Saint-Lambert limited his selection to a single one, the bass clef, which generally was familiar to accompanists (clavecinists, organists, and viole players).

Burchill has observed that Saint-Lambert was the earliest French theorist to adopt the modern key signatures for all the minor tones, which reflects a choice of A minor rather than D Dorian as the model.40 This circumstance is especially interesting in view of the fact that his examples followed by only one year Frère's presentation of Dorian signatures for all of the minor modes. At first glance, Saint-Lambert's practice appears to represent the swing of the pendulum away from Frère's conservatism. It should be pointed out, however, that both Frère's and Saint-Lambert's practices were untimely, for in 1706-1707, the minor modes with flats evidently were customarily written with Dorian signatures and those with sharps with Aeolian ones. Moreover, Saint-Lambert's "innovation" was not entirely novel, for Freillon-Poncein had anticipated his compatriot's later exclusive use of the Aeolian signature by his own adoption of that signature for F minor and G minor.

40. Ibid., 35.
Montéclair

From his earliest presentation of the major and minor modes, Montéclair gave A minor (with the natural, Aeolian octave) a position of prominence beside C major. The first lessons he included to illustrate the two modes were on those tones. When he presented the essential notes of the major and minor modes, he utilized finals of C Ut and A La with their natural signatures (see example 99). The example 99. Essential notes of the major and minor modes on C Ut and A La, respectively (Montéclair, 19).

<table>
<thead>
<tr>
<th>Major mode</th>
<th>Minor mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Octave or Replica</td>
</tr>
<tr>
<td>6</td>
<td>Fifth or Dominant</td>
</tr>
<tr>
<td>5</td>
<td>Third or Median</td>
</tr>
<tr>
<td>3</td>
<td>Fundamental or Final</td>
</tr>
</tbody>
</table>

Principal note

natural modes on C and A also were the patterns for the modes on the natural finals which he presented for solmization according to a fixed-Ut method (see table 9); this is evident through the fact that he lowered with a flat the natural sixths of the minor tone on D and the tones with flats. He defended his position, citing Saint-Lambert's criteria for the minor mode: the minor third, sixth and seventh. Having done so, he nonetheless elsewhere adapted

41. Montéclair, Nouvelle méthode, 4, 19.
himself to the customary practice (see example 54), even as he declared that he would do, with one exception. In his eleventh lesson in two voices, which was in D minor, he adopted a signature of one flat. 43

Montéclair limited the selection of pitches which could serve as finals of the major and minor modes. Of the former, he stated:

The major mode must not have for [the] fundamental note any other flats at all than those of B-flat and E-flat. It must never be situated on a sharp; because that transposition is too severe, it would produce a disagreeable effect on instruments. 44

It is interesting that the altered finals he allowed, B-flat and E-flat, were the only ones on which Saint-Lambert (1707) constructed the major mode without appending the term "rare."

He continued: "The minor mode ought never to have a flat [sic: sharp] for [the] fundamental note." 45 He evidently intended to exclude the sharps rather than the flats, just as several of his predecessors had done, for he presented lessons both in B-flat minor and in E-flat minor, but he included no examples of the minor mode on the sharped finals. 46

42. Ibid., preface. 43. Ibid., 61-2.
44. Ibid., 26. 45. Ibid., 27.
46. Ibid., 27-8.
Besides limiting the pitches that could be employed as finals, Montéclair observed—or imposed—limitations on the number of flats or sharps in the signatures. He first declared: "One rarely finds four and five flats after the clef and never any more, because a greater number would be useless." Thus, he classified as rare the modes of B-flat minor and E-flat minor, which he nevertheless employed in his examples. His limitation of the signatures to five flats at the greatest (cf. Masson, Dupont) resulted in the exclusion of the nonenharmonic C-flat (cf. Frère).

He then cautioned: "One must never put more than five sharps after the clef. A greater number renders the modulation too difficult on instruments." This particular limit (cf. Dupont) perhaps was a necessary consequence of his prohibition of sharped finals. One indeed would not have encountered such finals for the major tones as long as the signatures had no more than five sharps. With six sharps, both the major and minor modes would have been situated on sharped finals.

Montéclair's strictness with regard to allowable finals and signatures contrasts sharply with the freedom of Saint-Lambert and brings the authors' differences of emphasis into relief: Saint-Lambert wished to open the door

47. Ibid., 28. 48. Ibid., 29.
for the future use of signatures and finals which at the
time were nonexistent in the practice, while Monteclair
apparently was monitoring the practice and wished to reflect
the status quo.

Borin

Borin supplied a "table of all the tones on which an
Air can be fashioned [literally, travaillé] and transposed,
both in the major mode and in the minor mode, with the
number of sharps and flats which is suitable to them."49 He
confessed that his table was drawn from Saint-Lambert's book
on accompaniment.50 While Borin's table was similar to
Saint-Lambert's in that it included the twenty-one finals,
there was an essential difference: Borin adopted the
customary signatures for the minor tones. He also listed
the tones in a different order, according to the circle of
fifths, by progressively increasing the number of sharps and
flats of the signatures. He included major and minor tones
whose signatures had up to twelve sharps and ten flats.

Rameau

Rameau gave the twenty-second chapter of the third book
of the Traité (Principles of Composition) the title: "On

49. Borin, 93f. See Frère's usage of travaillé (III-158).
50. Borin, 92. He was referring to the Nouveau traité,
28-30.
keys [literally, "tones"] and modes in general." 51  There he discussed and provided examples of the transposed major and minor tones on all the pitches of the octave, excepting those on which his models were constituted. He included the nonenharmonic pair of D-sharp and E-flat. 52

He began with the major tones, stating:

Since any note may be taken as the tonic, as long as the progression of its octave is made to conform to that of Do [i.e., Ut] when the key is major, we should use sharps and flats to augment or diminish by a semitone intervals which could hinder this conformity. We need only know, then, how many sharps or flats are usually placed after the clef. 53

Then followed his examples of "all the transposed major keys" [lit., tons] with their accompanying signatures (see example 100 below).

Discussing next the minor tones, he observed that the octave of Re usually was taken to be the model for all of them. He supplied examples of "all the transposed minor keys" (example 101) and stated that the modulation or progression of each octave conformed to that of Re. 54

51. Rameau, Treatise, 263f.

52. He employed both as finals for the minor mode only. See also his examples of figured octave scales, with accompanying signatures, for the major and minor tones from chapter seven of book four (Treatise, 399-401).

53. Ibid., 263.

54. In the "Supplément" to the Traité, he changed his mind about the exact model for the minor tones, however, embracing the octave of La (see below).
emphasized that the tonics of all of the major and minor
tones themselves were called Ut or Re; this apparently was
done in order to illustrate the desired conformity to the
given models. 55  He supplied signatures for the major tones
which had up to seven sharps and four flats (i.e., for

Example 101. "All the transposed minor keys" (adapted from
Rameau, Treatise, 265).

---
C-sharp and A-flat major) and signatures for the minor tones that contained up to six sharps and five flats (i.e., for D-sharp and E-flat minor).

His remark that the modulation or the progression of each octave conformed to that of the octave of Ut or Re is of interest. His examples of the major tones uniformly employed the customary Ionian signatures, with the result that the tones exhibited an exact conformity to their model of C major. His initial examples of the minor tones likewise employed the customary signatures, with the result that the tones with sharps did not demonstrate exact conformity from the standpoint of the signatures.

Rameau's practice with regard to the minor mode is explainable. The "octave of Re" to which he related the minor octaves was precisely the melodic form of the scale. (N.B. He also cited the harmonic form of the scale, terming it the "model" for the minor tones.) As the sixth degree was variable (i.e., alternately major and minor) in the melodic form, it is not surprising that he could accommodate to his notion of conformity the two signature types which specified the different sizes of sixths. His practice was freer than that of the Renaissance musicians, who had obtained conformity by the use of a signature which reproduced a given octave exactly on another tone. Rameau's freedom recalls that of Brossard when he transposed the natural octave of D up a whole tone to E (example 13).
In the "Supplément," Rameau again provided examples of the major and minor tones on each of the pitches of the octave, but in that instance, he did so without any duplication of the tones on nonenharmonic finals. 56 He declared A minor with the natural signature to be the model for the minor tones and revised the signatures of the tones with flats accordingly (see example 102), adding one more.

Example 102. "The order of the sharps and flats which should be placed after the clef to indicate the transposition of the modes" (adapted from Rameau, Treatise, 173).

56. Ibid., 171-4.
flat than he had given them in the Traité proper. Thus, he obtained signatures having up to six flats (E-flat minor).

With the added flat in the minor tones, the signatures became uniformly Aeolian, and harmony was obtained between the solmization from La and the signatures generally.

Rameau's employment of Aeolian signatures for all of the minor tones anticipated, and probably helped to establish, the general adoption of Aeolian signatures throughout the French practice.

**Campion**

In his tables of octaves of the Traité (example 65), Campion followed the customary practice with respect to the signatures for the minor modes (see tables 20 and 21). He included minor modes on all the natural pitches and the customary chromatic ones and major modes on all the natural pitches, the chromatic pitches except G-sharp, and one nonenharmonic pitch, A-flat (cf. table 14). His choice of A-flat as a final rather than G-sharp evidently derived from the greater simplicity of its signature.

He insisted that the signatures given in his table of octaves were regular, and he described those musicians who failed to follow his practice as "ignorant or negligent" (cf. Frère). He also argued against identical limits in regard to the number of sharps and flats in the signatures:
Those lastly who allow as many flats as sharps [to be] possible in the signature do not consider that in the situation of the twelve common semitones of music, there are three sharps and only two flats. Consult my table of [the] octaves: you will find up to seven sharps in the signature[s] and only five flats.

Campion endeavored to justify the omission from the signatures of the flat pertaining to the sixth degree of the minor modes. In a "Remark concerning the sixth [degree] of the minor tone, descending," he stated:

The sixth [degree] of the minor tone descending is the flat, [the] sensitive note of the minor octave like the sharp, which is difficult to understand as regards transposition. Yet one must observe at a glance how the octaves are written. It no doubt is this consideration which causes many Italians to put a flat in the signature in the octave of Re [D minor], which to me does not seem appropriate, in that from the dominant or fifth [degree] of the tone one ascends to the eighth [degree; i.e., the octave of the final] by major degrees in passing over the sensitive sharp [i.e., the leading tone] of the octave. One descends by minor degrees in passing over the flat or the note which takes [its] place on the sixth degree of the tone, in order to fall upon the dominant. Consequently, the flat must not at all be [in] the signature, since it is accidental, like the sharp.

He explained how it happened that in the octaves of A minor and the minor tones with sharps, the natural note of the sixth degree literally took the place of the sensitive flat:

57. Campion, Addition, 50.
58. Ibid., 50-1.
Those notes which take the place of the flat are sharpened in ascending the octave; being made natural in descending, they are perceived to be the sensitive flat.

In the rest of the octaves, where there are one or more flats in the signature, the sixth degree of the tone is less difficult, in that it is marked with an accidental flat. 60

Campion's argument rested on the hypothesis that the lowered sixth descending, like the raised seventh ascending, was the notte sensible of the minor tone. The parallel between those degrees resulted from the fact that one ascended via major intervals (i.e., the major sixth and seventh) from the dominant to the tonic and descended via minor intervals; consequently, just as one passed over the sensitive sharp to come to the tonic a semitone above, one passed over the flat on the sixth degree to come to the dominant a semitone below. As the positions and functions of those degrees were analogous, their nature likewise was observed to be analogous. The sensitive sharp, or leading tone, was customarily regarded to be accidental and non-essential to the signature. Accordingly, the lowered sixth was treated as an accidental by analogy.

Campion went to great lengths to demonstrate the concept of the notte sensible in the tones with sharps, identifying in each tone the note which took the place of the flat. He observed that in the tones with flats, the

60. Ibid. See IV-59.
sixth degree was less difficult to perceive, because in
descending passages it was marked with a flat.

In view of the fact that he was in agreement with the
customary practice of excluding from the signature the flat
that pertained to the sixth degree, it is interesting that
he nonetheless should wish to defend the accidental
character of that flat. Perhaps the practice he observed in
the music of "many Italians," the use of the one-flat
signature for D minor, was beginning to be in evidence in
his own country. At any rate, his failure to justify the
accidental nature of the sharp on the sixth degree ascending
in the tones with sharps probably is due to the fact that
the signatures for those tones were not in much dispute at
the time; one recalls that the sixth degree fulfilled in
its natural condition the accepted criterion of a semitone
above the dominant pitch or a minor sixth above the final.

Signatures Regarded by the Authors to be Irregular

The signatures which individual authors regarded as
irregular sometimes prove to be regular by modern standards,
and vice versa. Two cases in point concern the Aeolian
signatures for the minor modes with sharps, in Frère's
opinion, and his recommended Dorian signatures for those
modes. The present study will examine the particular
signatures that individual writers regarded to be irregular
and will consider their reasons for their notions, if they
stated any. In short, the term "irregular signature," in the context of this chapter (and in this paper generally), will be understood from the viewpoint of the individual author whose signatures are under scrutiny.

In the period under discussion, considerable diversity of opinion existed with regard to the correct signature(s) for the minor modes. Many musicians accepted the Dorian and Aeolian signatures in their customary distribution (see above). Others regarded one signature type or the other to be the correct one for all the minor modes and attempted to bring them all into conformity to a single model, D minor or A minor. Since different viewpoints existed, the question of the identity of the "correct" versus the irregular signatures is moot. However, it will be pointed out once again that the musical practice of the early eighteenth century stabilized around the use of the two signature types.

It is evident that the irregularly written signatures, considered from the point of view of the individual author, most often were incomplete ones. Thus, for example, the minor modes with sharps, according to Frère, commonly were written irregularly without the "required" final sharp. Notable exceptions to this thesis include Saint-Lambert's signatures for the minor modes with flats in the Nouveau traité, as regarded from Frère's perspective, and Frère's signatures for the minor modes with sharps, from
Saint-Lambert's point of view. Frère would have regarded his contemporary's signatures for the minor modes to contain one flat too many, while Saint-Lambert would have considered Frère's signatures to have one sharp more than they ought to have had.

The signatures that customarily or occasionally were written irregularly in the late seventeenth and the early eighteenth centuries comprehend both the major and the minor modes and appear to have resulted from a variety of causes, certain of which will be discussed in the following study. It first of all will be observed that this author's viewpoint differs somewhat from the one cited below.

Harold Powers has expressed the evidently widely held notion which links certain commonly occurring "irregularities" of signature type in early eighteenth-century music to the alleged transposition of individual members of the eight or twelve modes. He moreover has invoked those irregular signatures as evidence of "the heterogeneously agglomerated major-minor key system."61 The signature types that he has observed to be "most conspicuous" among the numerous instances include those for the minor "keys" with one sharp too many or one flat too few, which he terms transpositions of mode 1 or mode 2 (i.e., the Dorian or the Hypodorian), those for the major

61. Powers, 416.
"keys" with one sharp too few, which he identifies as transpositions of mode 8 (the Hypomixolydian), and signatures for the major "keys" with one flat too few, which he says represent the use of a signature of one or two flats as if it were cantus mollis or cantus fictus. The last circumstance evidently involved the use of the Lydian signature in a piece which in reality was in the Ionian mode as the result of the consistent alteration of the fourth degree by means of a flat during the course of the music.

While Powers' comments certainly have validity, and while vestiges of the modal system of the "ancients" can be identified in the works of at least some of the composers of the period, the hypothesis that certain signatures represented transpositions of the eight or twelve modes does not fully explain their occurrence in the practice. Other factors also seem to have contributed in varying degrees to the perpetuation of individual signature types, such as: 1) practices of solmization of the modes; 2) the option of obtaining the required positions of certain scale degrees through accidentals put in during the course of the music, rather than through the sharp or flat put into the signature; 3) the tendency for composers and performers to employ an economy of means in their writing of signatures.

62. Some authors (e.g., Campion) rationalized the accidental character of certain notes.
for the major and minor modes; and 4) the freedom that generally was allowed or taken with respect to the writing of signatures. Further, while the irregular signatures generally can be linked to the eight and/or to the twelve modes by means of the octave species, their use evidently represents the habitual continuation of former practices beyond the demise of, and without reference to, those systems, for the modes effectively had been reduced to two in the practice. Although the continued use of the earlier modal signatures might be regarded as anachronistic by modern scholars, musicians of the late seventeenth and early eighteenth centuries evidently conceptualized the modes not as late representatives of a past system of eight or twelve octave species, but rather as alternative representatives of two distinct types distinguished first and foremost by the size and construction of their thirds and fifths above their finals. This characteristic eclipsed the emphasis on the exact placement of the upper semitone—the one found above the dominant pitch—of the octave species, whereas the placement of the two semitones, along with the final, ambitus and cadence tones, had been essential criteria for the identification of the modes in the systems of the ancients. In other words, the definition of the modes had changed; consequently, the observations cited by Powers, while accurate from an analytical standpoint, seem to a degree to miss what the irregular signatures represented.63
Methods of dealing with irregular signatures in the vocal practice, which involved reducing the music to the natural when the signatures were incomplete, have been discussed in chapter 3. In the present chapter, this author will attempt to discuss the signatures independently of such methods. However, there necessarily will be some overlap of content between chapters 3 and 4.

Rousseau

Rousseau dealt with the signatures of the transposed tones in his response to the tenth question of the Méthode (1691f.). He discussed particular irregular signatures for a majority of them, and in nearly every case he supplied more than one instance. For example, he cited signatures of one sharp and no sharps for the tone of A major.64

His examples of irregular signatures have been tabulated in table 16 below. The signatures in every case were incomplete ones. Nearly one-half of them were Mixolydian. If one excludes those which he said occurred either rarely or very rarely, the relative frequency of the Mixolydian signature proves to be much greater. Before one

63. It should be observed that while this author rejects the practice of identifying the irregularly written music as representatives of the former system of six or twelve modes, he freely has employed the nomenclature of that system for the sake of identifying types of irregular signatures.

64. See III-120.
Table 16. Irregularly written signatures discussed by Rousseau (*Méthode*, 79-83).

<table>
<thead>
<tr>
<th>Tone</th>
<th>Required Signature</th>
<th>Irregularly written signatures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Components</td>
<td>Frequency</td>
</tr>
<tr>
<td>C minor</td>
<td>Bb, Eb</td>
<td>N.C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-flat major</td>
<td>Bb, Eb</td>
<td>N.C.</td>
</tr>
<tr>
<td>F minor</td>
<td>Bb, Eb, Ab</td>
<td>N.C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G major</td>
<td>F#</td>
<td>N.C.</td>
</tr>
<tr>
<td>D major</td>
<td>F#, C#</td>
<td>&quot;they are marked rather regularly&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E minor</td>
<td>F#, C#</td>
<td>N.C.</td>
</tr>
<tr>
<td>A major</td>
<td>F#, C#, G#</td>
<td>N.C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B minor</td>
<td>F#, C#, G#</td>
<td>N.C.</td>
</tr>
</tbody>
</table>

N.B. The abbreviation N.C. indicates that Rousseau provided no particular comment. Statements in quotes are Rousseau's.

attaches great significance to its frequency, however, one first should consider the particular circumstances which gave rise to the signature in the major and minor tones. Each of those cases will be considered separately.
The instances of Mixolydian signatures among the major tones included D major with one sharp and G major with a totally natural signature (see example 103). In both cases, Rousseau did not specifically identify this signature, but his statements seemed to provide for its potential occurrence.

It was the final sharp, i.e., the leading tone, which had been omitted from the signature. The leading tone therefore would have had to be sprinkled throughout the music in order to obtain the cadences on the final.

Rousseau’s instances of the Mixolydian signature for the major mode were not unique in the French practice. L’Affilllard (1694f.) included examples of Airs in G major with the natural signature.65 Another example appeared in the anonymous La musique theorique et pratique (1722). The author (Borin) included a Gavotte by M.F.-Philidor in G major, likewise with the natural signature.66

The circumstances discussed above to some degree paralleled the practice of the Italian Gasparini (1708). An examination of Gasparini's examples illustrating "the technique of modulating through all the keys" (literally, tones) reveals a tendency for the signatures of the major tones to lack the final sharp (i.e., the leading tone; see example 105 below). Such instances illustrate the survival of the Mixolydian signature contemporaneously with the reduction of the modes to two, major and minor.

The association of the Mixolydian signature with the major mode had its roots in the earlier practice of mixing the Mixolydian mode with the Ionian. In *L'istituzione harmoniche*, part 4, chapter 30, Zarlino had attested to the mixture of the eighth and the eleventh modes (i.e., the Hypomixolydian and the Ionian) in the music of sixteenth-century Italy. This author has documented the mixture of the Mixolydian and Ionian modes in seventeenth-century music—namely, in the seventh and ninth motets of Schütz' *Geistliche Chormusik* (1648).

Rousseau's two examples of Mixolydian signatures for the minor tones had an entirely different origin: they


prove to be incomplete signatures for the Dorian mode with the final flat, that of the third above the final, missing (see example 104). It thus was the most essential flat—

Example 104. Mixolydian instances among examples of irregular signatures for the minor tones cited by Rousseau (Méthode, 80-1).

\[
\begin{align*}
\text{C minor} & \quad \quad \quad \text{F minor} \\
\end{align*}
\]

that which indicated the minor modality—which was omitted. The neglect of the essential flat on the third degree, later discussed by Frère, seems to have had no justification. Frère merely observed that composers often omitted that "most essential" of the flats from their signatures. Perhaps the occurrence of the accidental flat on the third degree following modal interchange to the parallel minor from C major, G major or one of the major tones with flats rendered the accidental character of the flatted third less bizarre in the minds of practitioners.

In summary, one will observe that in every instance, the Mixolydian signature resulted from the omission of one sharp or flat after the clef; namely, the omission of one sharp in the major tones or the neglect of one flat in the minor ones (i.e., one flat fewer than the quantity found in the regular, Dorian signatures). Stated another way, of the
Irregular signatures cited by Rousseau, those which occurred the most often involved two types of irregularities: the failure to mark the leading tone in the major modes and the failure to indicate the minor third above the final in the minor modes.

It is disappointing that Rousseau did not cite any particular irregular signatures for the minor tones with sharps, E minor and B minor. He merely stated that their necessary sharps had to be supposed if they were not marked after the clef. His failure specifically to discuss Aeolian signatures for those tones may reveal that such signatures were not yet generally accepted in 1691. Alternatively, his non-citation of them may have stemmed from a desire to avoid meddling with a practice that perhaps was becoming increasingly prevalent in France early in the final decade of the seventeenth century. At any rate, his avoidance of instances of Aeolian signatures for the minor tones with sharps contrasts greatly with Frère's later emphasis on them in his treatise. Frère observed that the minor modulations with sharps were those whose signatures ordinarily were written with the final sharp (i.e., that which pertained to the sixth degree) omitted. It would be interesting to know precisely how prevalent the practice described by Frère was in 1691 and also what Rousseau thought of it.

Rousseau's comments accompanying his non-Mixolydian instances of irregular signatures are interesting. His
The author first observed that "the majority of pieces" in F minor were written with signatures which lacked the A-flat; i.e., they were found with Mixolydian signatures. He also cited a signature with only one flat, of which he said: "It will suffice to see that in the course of the piece each E, but particularly each A, is preceded by a flat in order to suppose them after the clef ..." For Rousseau, the flat on the third degree was more influential in deciding the mode than the flat on the seventh degree. His position was corroborated by the musical practice, where the seventh degree of the modal octave frequently was raised by means of an accidental in ascending and also was found raised in the dominant harmony.

In his discussion of A major, Rousseau first cited the required three sharps. He then made an informative statement, remarking that if fewer than three of them were found in the signature, the presence of even one sharp would be sufficient in order for one to assume the remaining sharps. That is, if one knew that the final was A and that the signature contained only F-sharp, one would know that the mode was major and one therefore could add C-sharp and G-sharp to the signature. In other words, the Dorian signature was sufficient to imply the major mode. Now if

---

70. Rousseau, Méthode, 81. 71. Ibid. 72. See III-120.
that signature indicated the major mode, it obviously could not simultaneously have indicated the minor one. Rousseau evidently did not regard the one-sharp signature to be the regular one for A minor (cf. Loulié). The only possibility remaining for A minor was the natural, Aeolian signature with no sharps or flats. 73

Delair

After he had discussed generally the causes of the sharps and flats of the signatures from the perspective of the accompanist. Delair cautioned that one must observe in detail the notes which had to be sharped or flatted in every natural and transposed tone. That knowledge was necessary for two reasons. In the first place, it was required because the frequent use of incomplete signatures in Italian music rendered the accompaniment of much of that music very difficult. Delair affirmed that without the knowledge of the correct signatures, it would be impossible to accompany the majority of Italian pieces, because one often found "transposed" pieces (i.e., pieces in transposed modes) in which the flats or sharps native to the tone of the piece

73. That evidently was its customary signature, in Rousseau's opinion, for in his response to the ninth question (Méthode, 79), he included A minor when he cited the natural modes. He also presented the natural signature for A minor in his "Models" of the Traité. See above.
were not marked after the clef. Instead of finding all the necessary sharps and flats in the signature, he remarked, "one [often] finds only one flat or one sharp on the first note to inform one of the tone of the piece." Delair's testimony brings to mind Gasparini's example of B-flat major with a signature of one flat (example 105e; see also L'Affillard's examples cited below). According to Delair, if one were given such signatures and lacked the knowledge of the correct ones, the following would occur: in the transposed pieces in minor, one would perform major acords [sic] where they should be minor, and vice versa.

One needed to know the proper signature for each tone in the second place in order to deal with the very frequent changes of mode or tone in Italian pieces, which disarranged the entire order of notes and acords. In other words, according to Delair, incomplete signatures at the beginning of such pieces or disorder within them following the change of either the tone or the mode demanded a knowledge of the required signatures for the modes.

Delair's singling out of the Italians for criticism because of their incomplete signatures perhaps should not be surprising. If the relatively high frequency of irregular signatures (i.e., signatures which were irregular by contemporaneous French standards) in the musical examples of

74. Delair, 54-5.  75. Ibid., 55.
Gasparini's treatise reflects current musical practice in Italy—and this appears to be the case—, then incomplete signatures must have been quite common in Italian music during the early years of the eighteenth century. 76

Gasparini

An examination of the signatures in Gasparini's examples of figured octave scales is informative (see example 105 below). Seven of the ten instances of the major tones were written irregularly according to contemporary French practice: of the six examples requiring sharps, four lacked a single sharp, one lacked two sharps, and one was written correctly. Of the three examples with flats, two lacked a single flat while one was correct. In short, in a majority of the examples of the major tones, the signatures lacked a single component (i.e., the final one). The omission of the final sharp, the more common occurrence, yielded the Mixolydian signature (cf. examples 105a, 105d, 105m, and 105r). The omission of the final flat—a less frequent happening—produced the Lydian signature (see examples 105e and 105k). It may be that Delair in part was endeavoring to prevent the latter practice when he emphasized both the necessity of avoiding the false fourth above the final of F through the use of B-flat in the

76. See Gasparini, 66, 73-5.
Example 105. Gasparini’s examples which illustrated the technique of modulating through all the tones (adapted from Gasparini, 73-5).

"Others of enharmonic or chromatic genus that might occur in the course of modulation"
signature and the requirement of the perfect fifth as well as the perfect fourth below the finals of B-flat and F.

By way of contrast, only two of Gasparini's eleven instances of the minor tone were written irregularly: both of them contained flats. In one case, the final flat was omitted (example 105q). In the other, the final two flats were lacking (example 105t). The remaining nine instances of the minor tone were written "regularly" according to the French practice: the examples with sharps had Aeolian signatures and those with flats had Dorian ones.

It perhaps is significant that while nearly one-half of Gasparini's examples of the tones were written irregularly by French standards, in the majority of those "irregular" examples, the third above the final was indicated exactly by the signature. If Gasparini's examples indeed reflect the contemporaneous practice of the Italians, then it would appear that at least the exact indication of the third in the signature was habitual among Italian musicians.

Gasparini observed a uniformity of solmization among examples of major and minor thirds. In the following comment on his examples, he remarked:

Notice in all these cases that--either naturally, or by the use of accidentals--one may read do, re, mi for the major and re, mi, fa for the minor, since the flat changes the note, giving it the nature of fa, and the sharp, on the other hand, changes it by giving it the nature of mi.
As has been observed, in the system of the hexachords the potential existed for identical major or minor thirds, according to the solmization, without uniform octave species in the associated modes. This potential to a certain degree may have accounted for the divergence of the Italian practice from that of the French.

The signatures of Gasparini's examples, in sixteen of twenty-one instances, contained the minimum number of components that would produce a correct major or minor third. His practice of indicating the required third as economically as possible through the signature may in part explain the higher incidence of irregular signatures in the examples illustrating the major tones as opposed to those in the minor tones. To begin, the minimum number of sharps or flats required to obtain an intervallic pattern capable of being solmized as Ut Re Mi was insufficient to produce an exact, Ionian octave species above Ut and therefore did not yield the regular signature (see examples 106a and 106b).

Example 106. Examples of signatures containing the minimum number of components to produce the third Ut Re Mi.

a) A major (Mixolydian)  b) B-flat major (Lydian)

\[\text{Example 106:}\]

\begin{align*}
\text{a) A major (Mixolydian):} & \quad \begin{array}{c}
\text{Ut Re Mi}
\end{array} \\
\text{b) B-flat major (Lydian):} & \quad \begin{array}{c}
\text{Ut Re Mi}
\end{array}
\end{align*}

77. Ibid., 66-7.
This was the case because the final sharp or flat needed to complete that octave species lay outside of the third: on the seventh degree of the modes with sharps and on the fourth of the modes with flats. On the other hand, the minimum number of sharps or flats required to produce the pattern Re Mi Fa was sufficient to produce a Dorian or Aeolian octave and thus a "correct" signature (see examples 107a and 107b). This was so because the final sharp or flat necessary to either of those signatures lay within the third Re Mi Fa: the final sharp of the Aeolian signature was found on the second degree of the mode, and the final flat of the Dorian signature occurred on the third degree. Consequently, it would have been impossible for one to have a "correct" minor third according to the signature and yet to have an incomplete signature, from the standpoint of the contemporary French practice.

In brief, the Italians may have regarded the primary function of the signature to be the correction of the third. They seem to have considered the inclusion of the final sharp or flat of the major tones, which lay outside of the
third, to be less necessary. As Gasparini did not discuss any other uses for the sharps and flats of the signatures, such as the causes cited by Delair, one might conclude that the signatures he quoted were irregular or incomplete according to French musicians because the rationale for those signatures was incomplete.

**L'Affillard**

It might be profitable to examine the signatures of the Airs and dances of the various editions of L'Affillard's treatise for examples of irregularity. In the 1694 edition, the author included a number of instances which illustrated the one-flat signature for B-flat major and the completely natural signature for G major. The same signatures recurred in the 1697 edition. The kinds of irregularities demonstrated by those signatures—the omission of the final sharp or the final flat in the major mode—evidently had some frequency in the musical practice. L'Affillard's use of the two signatures probably served a pedagogical purpose, however: he evidently wished to limit the signatures of his examples either to one flat or to the natural signature, prior to his presentation of his rule(s) for making the transpositions easy to sing, in order for his students to be able to sing those examples via the two-column scale.

78. For instances of the former, see L'Affillard (1694), 32-3, 64-5, and 66-7. For instances of the latter, see note 65 above. Cf. table 13.
Frère declared that the irregularly written transposition "often is found not only in Italian music, but also in French music." It appears from his statement that numerous instances of irregularly written transpositions could be found in Italian music (cf. Delair, Gasparini). Frère's declaration that such irregularities frequently occurred in French music as well is noteworthy. As previously has been seen, he observed that the final sharp (i.e., that of the sixth degree of the octave) nearly always was omitted from the signatures of the minor mode in the French practice. He also stated that composers often neglected to put in the final flat of the third degree of the minor mode. He thus observed the omission of the final chromatic sign from the signatures of the minor modes. In the signatures with sharps, the "omission" yielded the Aeolian octave species (see example 108b below), while in

Example 108.

a. Correctly written signature and modal octave for B minor, according to Frère

\[ \begin{array}{c}
\text{Re (Dorian octave)} \\
1 2 3 4 5 6 7 1
\end{array} \]

b. Customary, but incorrectly written, signature for B minor, in Frère's opinion

\[ \begin{array}{c}
\text{La (Aeolian octave)} \\
1 2 3 4 5 6 7 1
\end{array} \]

79. Frère, 31.
those with flats, it produced the Mixolydian one through the omission of the required flat on the third degree of the Dorian octave (see example 109b).

Example 109.

a. Correctly written signature and modal octave for G minor, in Frère's opinion

```
Re (Dorian octave) Sol (Mixolydian octave)
```

His examples of irregularly written transpositions invite examination collectively (see tables 17-19). The great majority of the examples with sharps—eight out of ten instances—are in the minor mode. On the other hand, the examples with flats divide themselves nearly equally between the major and the minor modes: there are five examples in the major and six in the minor mode. The examples with sharps contained from zero to four sharps in their given signatures but required from one to six sharps (except for the Italian Air), while the examples with flats contained from one to four flats but required from two to six. The fact that the number of sharps or flats was limited to four in the signatures may suggest that certain composers were accustomed to avoiding more complex signatures (cf. Delair, L'Affillard (1694); also see table 15 above).
Table 17. Signatures employed in Frère's examples of irregularly written Airs.

<table>
<thead>
<tr>
<th>Page</th>
<th>Mode</th>
<th>Type of Signature</th>
<th># of Components</th>
<th>Essential Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Given</td>
<td>Omitted</td>
<td>Correctly Put</td>
</tr>
</tbody>
</table>

**A. Transpositions with sharps**

<table>
<thead>
<tr>
<th>Page</th>
<th>Mode</th>
<th>Type of Signature</th>
<th># of Components</th>
<th>Essential Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>A minor</td>
<td>Aeolian</td>
<td>0</td>
<td>1, 3, 5</td>
</tr>
<tr>
<td>56-7</td>
<td>E minor</td>
<td>Aeolian</td>
<td>1</td>
<td>1, 3, 5</td>
</tr>
<tr>
<td>59-60</td>
<td>E minor</td>
<td>Phrygian</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>61-3</td>
<td>B minor</td>
<td>Aeolian</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>64-7</td>
<td>A major</td>
<td>Mixolydian</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>67-9</td>
<td>B major</td>
<td>Aeolian</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>70-1</td>
<td>F# minor</td>
<td>Phrygian</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>72-3</td>
<td>C# minor</td>
<td>Locrian</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>74</td>
<td>G# minor</td>
<td>Phrygian</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>95-7</td>
<td>A# minor</td>
<td>XXXXX</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

**B. Transpositions with flats**

<table>
<thead>
<tr>
<th>Page</th>
<th>Mode</th>
<th>Type of Signature</th>
<th># of Components</th>
<th>Essential Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>Bb major</td>
<td>Lydian</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>77</td>
<td>F minor</td>
<td>Mixolydian</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>79-81</td>
<td>F minor</td>
<td>same as p. 77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>Eb major</td>
<td>Lydian</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>83-4</td>
<td>Bb minor</td>
<td>Ionian</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>84-6</td>
<td>Ab major</td>
<td>XXXXX</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>87-9</td>
<td>Eb minor</td>
<td>Lydian</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>89-90</td>
<td>Eb minor</td>
<td>same as pp. 87-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91-2</td>
<td>Db major</td>
<td>XXXXX</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>92-3</td>
<td>Gb major</td>
<td>XXXXX</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>94</td>
<td>Ab minor</td>
<td>Ionian</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: Rarely in use.
Frère's examples obviously illustrated incomplete signatures, and with the exception of the Italian Air, all of them lacked from one to three sharps or flats. He indicated accordingly that different compositional practices sometimes resulted in the omission of up to three sharps or flats from the signatures. In his and others' examples, whenever a single sharp or flat was omitted, the deficient item in every case was the final one; whenever two were omitted, they were the final two, and so forth. This circumstance indicates that composers adhered to the order of the sharps and flats, though not always to the required number. The frequencies of his instances lacking different numbers of sharps or flats in the signatures are tabulated below in Table 18.

Table 18. Frequencies of instances lacking different numbers of sharps or flats in Frère's examples of irregularly written signatures.

<table>
<thead>
<tr>
<th>number of sharps or flats lacking</th>
<th>number of instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>one sharp</td>
<td>4 of 10</td>
</tr>
<tr>
<td>two sharps</td>
<td>3 of 10</td>
</tr>
<tr>
<td>three sharps</td>
<td>2 of 10</td>
</tr>
<tr>
<td>seven sharps (Italian Air)</td>
<td>1 of 10</td>
</tr>
<tr>
<td>one flat</td>
<td>4 of 11</td>
</tr>
<tr>
<td>two flats</td>
<td>4 of 11</td>
</tr>
<tr>
<td>three flats</td>
<td>3 of 11</td>
</tr>
</tbody>
</table>

80. Ibid., 67.
Thus one can see that the number of instances varied
approximately inversely with the number of sharps or flats
omitted from the signatures.

It is interesting to observe the extent to which the
three essential notes (the final, mediant and dominant) were
situated correctly according to the signatures, even when
those signatures were incomplete (see table 17). Excluding
the final Italian Air, each of the instances which lacked
only the final sharp had the essential notes so situated.
Each instance lacking two sharps also had the essential
notes properly indicated, and the instances which lacked
three sharps had two of the three essential notes correctly
situated. Of the examples with flats, in eight of eleven
instances only two of the three essential notes were
correctly situated as a result of the given signatures.
(All of the essential notes were situated exactly in two of
eleven cases.) In short, the signatures with sharps
frequently contained a sufficient number of sharps necessary
to express the triad composed of the three essential notes
(i.e., the "tonic" triad), while those with flats more often
did not. Accordingly, the former signatures often contained
a quantity of sharps sufficient to produce the correct third
above the final.

These circumstances perhaps can be explained in part as
follows. In the minor transpositions with sharps, the final
two sharps of the "regular," Dorian signature are found on
the second and sixth degrees: the preceding sharp is found on the dominant note. Thus, at least three sharps had to be omitted from the signature before any of the essential notes became displaced. On the other hand, in the major transpositions with sharps, which more rarely were written irregularly in the French practice, the final sharp is found on the leading tone and the penultimate one on the mediant, an essential note. In the major transpositions with flats, the final flat is on the fourth degree and the penultimate one is on the final pitch. Thus, only two sharps or flats needed to be omitted from the signatures of the major transpositions in order to displace an essential note. As already has been observed, in the minor transpositions the final flat occurs on the mediant, an essential note.

Consequently, a greater degree of irregularity could exist, without disrupting the required positions of the essential notes, in the minor transpositions written with sharps than in the others.

Frère commented on the relative degree of usage of certain "modulations." He stated that the first four minor ones with sharps, A minor, E minor, B minor, and F-sharp minor, were "those which are more commonly composed upon." The final two, C-sharp and G-sharp minor, evidently were less common in the practice. In his discussion accompanying

an example in G-sharp minor, the author stated that that modulation "is practiced rarely, but . . . can be encountered."82

It would be interesting to consider why A, E, B, and F-sharp minor might have been more commonly employed in composition, while C-sharp and G-sharp minor may have been less frequently found. The first four transpositions customarily were found with signatures that contained only the sharps found on the keyboard and wind instruments; they therefore were played in tune, except for certain of their altered notes. The fifth modulation, C-sharp minor, contained one sharp (D-sharp) not found on the instruments, which consequently was not played in tune; the sixth, G-sharp minor, had two such sharps (D-sharp, A-sharp). It appears that some composers did not feel comfortable with the inclusion of nonenharmonic notes in their signatures, perhaps because the temperament suffered increasingly as the number of sharps was progressively increased beyond the three found on the instruments.

Frère also observed that the sixth flat, C-flat, was "of little use."83 Indeed, the nonenharmonic B-natural would have been substituted for it on the keyboard. When he presented examples of the modulations which employed that

82. Ibid., 74.  83. Ibid., 41.
flat—namely, G-flat major and A-flat minor--, he stated that they were "scarcely in use." Thus he effectively limited the number of flats to five (cf. Masson, Montéclair and Dupont).

It is interesting to consider both the modes that Frère included in his examples of irregularly written transpositions and those that he excluded (see table 19).

Table 19. Modes both included and excluded in Frère's examples of irregularly written transpositions.

<table>
<thead>
<tr>
<th>Transpositions with sharps</th>
<th>Included</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>A minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-sharp minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-sharp minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E minor)/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-sharp minor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transpositions with flats</th>
<th>Included</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>A minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-sharp minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-sharp minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E minor)/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-sharp minor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

He presented instances on the white key finals of E, F, A, and B and on the chromatic pitches customarily found on the instruments. He also included modulations on the less familiar finals (i.e., the nonenharmonic notes) of A-flat, D-flat, G-flat, and in the Italian Air, A-sharp. His relatively large number of examples with altered finals is

84. Ibid., 92.
interesting in view of his statement that the semitones were not as commonly composed upon. It appears that the less common modulations were among those which more frequently tended to be written irregularly, in his opinion. This notion is consistent with the hypothesis that certain composers may have been reluctant to employ more than four sharps or flats in their signatures, for the altered finals frequently required the introduction of a number greater than four.

One can only speculate concerning the modes that Frère did not include in his examples of irregularly written transpositions. Perhaps those were excluded which usually were written regularly. If this were the case, then it would follow that among the modulations with sharps, those in the major mode more frequently were written regularly than those in the minor mode. This deduction is supported by Frère's remarks. If it is accurate, it indicates that the French practice with respect to the writing of the major tones differed substantially from that of the contemporary Italians.

One also might infer from Frère's examples that among the modulations with flats, the simpler modulations tended to be written regularly, while those with a greater number of flats, both in the major and the minor modes, often were

85. Ibid., 30.
written irregularly. To properly verify these hypotheses, one would need to examine Urtext scores of a significant amount of French music from the period. Such a task, however, is beyond the scope of this investigation.

**Hotteterre**

While Hotteterre frequently illustrated the customary signatures in his examples of preludes on the major and minor tones, he also discussed and demonstrated signatures which were irregular by the standards of his day. In chapter 9, "Method for knowing at the beginning of a piece what tone it is in . . . ," he cited signatures and identified the particular tones that could be represented by each.

If there is one flat by itself [in the signature], it [i.e., the tone] can be only G minor or F major, (and) sometimes D minor, but rarely. If there are two [flats], namely, one on B and the other on E, it can be only B-flat major or C minor, (and) sometimes also G minor, but rarely. If there is one sharp on F, it can be only G major or E minor. If there are two of them, namely, one on F and the other on C, it can be only D major or B minor, (and) sometimes A major, and so for the other modes . . . .

The tones for which he listed irregular signatures included D minor (with one flat instead of the customary, natural signature), G minor (with two flats instead of one),

86. Hotteterre, 49.
and A major (with two sharps rather than three). The former instances involved the addition of a flat in the minor tones with flats, which resulted in Aeolian signatures; the final one involved the omission of the final sharp in the major tone, resulting in the Mixolydian signature (cf. Gasparini’s examples). Evidently, such instances were uncommon in the French practice.

Hotteterre’s preludes on the minor tones of D, G and C frequently were written with one more flat than was customary (i.e., with Aeolian signatures). The three preludes in C minor from Chapter 3, for example, were given signatures of three flats. He recognized that his practice was unusual, for at the end of the first prelude of that set, he explained: "Ordinarily, no flat is put on A in the signature in this mode." 88 Likewise, the preludes in D minor from the same chapter were provided with signatures of one flat. His usage of the one-flat signature for D minor represents a practice that was relatively common among Italian composers, if Campion’s observation (1716) is accurate. 89 The usage of Aeolian signatures for D minor, G minor and C minor anticipated the ultimate triumph of the Aeolian signature in the practice.

88. Ibid., 12. See also his prelude in G minor with a signature of two flats, pp. 64-5.

89. Campion, Traité, 13.
Rameau

In the "Supplément" of the Traité, Rameau discussed irregularly written signatures. He began by observing the prevalent "inaccuracy" concerning the number of components put into the signature to show the degrees native to the transposed tone. That inaccuracy, he affirmed, often obliged one "to designate as Sol the note which should be called Do [sic], and as Re the note which should be called La." In other words, the practice of writing incomplete signatures frequently required one to solmizate the major and minor tones from finals of Sol and Re, rather than from their proper finals of Ut and La (see examples 103 and 107a). Those circumstances reflected the omission of the final sharp in the major tones and the final flat in the minor ones. The omissions yielded Mixolydian signatures in the former case and Dorian signatures in the latter. The omitted final sharp was that of the seventh degree, the leading tone, which had to be marked as ficta during the course of the music. The omitted flat was that which was appropriated to make the natural sixth degree minor. Rameau identified those practices as characteristic of the Italians and French, respectively: "Though French musicians omit a flat in transposed minor keys, almost all Italians on the

other hand omit a sharp in transposed major keys, from the key of La to the last key using sharps. His first step in dealing with such omissions was to indicate the correct signatures for the transpositions (example 102; cf. Frère).

He affirmed that just as there was only one natural major tone, there likewise should be only one minor tone without any sharps or flats in the signature. French musicians, he realized, did not adhere to that view, but rather failed to differentiate the tones of D minor and A minor (i.e., by giving both the natural signature; see table 20). Consequently, they called the tonic sometimes Re

Table 20. Selections of modes given natural signatures by representative authors (cf. table 1).

<table>
<thead>
<tr>
<th>Modes with natural signatures</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>C major, D minor</td>
<td>Loulié (1696)</td>
</tr>
<tr>
<td></td>
<td>Frère (1706)</td>
</tr>
<tr>
<td>C major, A minor</td>
<td>Saint-Lambert (1707)</td>
</tr>
<tr>
<td></td>
<td>Rameau, <em>Traité</em>, Supplément</td>
</tr>
<tr>
<td>C major, D minor, A minor</td>
<td>Rousseau, <em>Méthode</em>, <em>Traité</em></td>
</tr>
<tr>
<td></td>
<td>Delair (1690)</td>
</tr>
<tr>
<td></td>
<td>Masson (1694f.)</td>
</tr>
<tr>
<td></td>
<td>L’Affillard (1694f.)</td>
</tr>
<tr>
<td></td>
<td>Freillon-Poncein (1700)</td>
</tr>
<tr>
<td></td>
<td>Saint-Lambert (1702; see the examples on p. 27 of his treatise)</td>
</tr>
<tr>
<td></td>
<td>Montéclair (1709, 1736)</td>
</tr>
<tr>
<td></td>
<td>Campion (1716, 1730)</td>
</tr>
<tr>
<td></td>
<td>Rameau, <em>Traité</em> (1722)</td>
</tr>
<tr>
<td></td>
<td>Borin (1722)</td>
</tr>
<tr>
<td></td>
<td>Corrette (1753)</td>
</tr>
</tbody>
</table>

and at other times La, since both of those tones might be taken as a model. He referred to that practice as a "mistake" which "has already been recognized for some time." He concluded that the reason the error had not been corrected evidently was the large amount of music that had been composed with the two different signatures up to that point.

Rameau then critiqued Frère's efforts to revise the signatures for the minor tones:

Mr. Frère might perhaps have succeeded in making musicians more accurate in this respect, if he had not fallen into one error to avoid another. Instead of placing the flat after the clef in the minor key (lit., ton) of Re, designating that the sixth is minor as it always should be in the minor mode, he wishes on the contrary to add a sharp to the signs ordinarily found after the clef in these minor keys (lit., tons). This sharp would then designate a major sixth, thus destroying the order of the minor modulation (emphasis mine). There was some foundation for this, since Frere's idea was to call each tonic note of the transposed minor mode by the same name. Had he given the same consideration to the key of La that he showed to Re, however, instead of destroying this natural order he would have kept it. We are obliged to him nonetheless, for at least he considered the matter. It would have been better still (assuming that this matter is important enough to be worthy of our attention) to conform the order of all transposed minor keys to the order of the octave of La, and consequently to call each tonic note of these minor keys La, just as we called each tonic note of transposed major keys Do.93

92. Ibid., 172. He may have had in mind the practice of solmizating the minor tones which was recommended by Montéclair (1709) and others.

93. Ibid.
Rameau recognized that his statements represented a reversal of his previous position, in which he had held that the tonic was called Re in the minor tones (cf. Campion's change of mind on the same issue). He said that the former statement was an error and explained that he had made it both in order to be conformed to contemporary practice and "to avoid posing as a tedious reformer in inconsequential matters." He stated that he was discussing the matter at that moment only because he had observed that his rule of conforming the order of the minor tones to that of the octave above La was "contradicted by the bad habit . . . of omitting one flat after the clef in all minor keys, from that of Re to the last key using flats." That is, he recognized the practice of employing Dorian signatures for the tones with flats to be both customary and erroneous.

He affirmed that the errors of the French and Italian musicians could be avoided through the adoption of correct finals. He declared: "We shall never err if we call the tonic note of all major keys Do and that of all minor keys La." He recognized that the name of the tonic note was dependent upon the order of the octave (i.e., the octave species) that was indicated by the signature (cf. Loulié).

Rameau declared that unless one could identify whether the tones were major or minor, observations regarding the

94. Ibid.; cf. 266. 95. Ibid., 172-4. 96. Ibid., 174.
effect of incomplete signatures on the note names would be useless. He advised that if one were unable to distinguish the tones according to type, it would be best to name the final sharp Si and the final flat Fa. He then qualified the usefulness of Louillé’s rules, both restating Frère’s objections and admitting that the rules were "advantageous" at least "when the order of sharps and flats just prescribed is observed" (i.e., when the signatures were written regularly and when the sharps or flats were found in their correct sequence). 97

Campion

Campion (1730) commented on the responses of experts and scholars to music with incomplete signatures.

In regard to music whose clefs are stripped of their necessary sharps or flats, the expert will decipher it as one does Gothic [i.e., medieval] music. It is a trifle for scholars to make up the deficiency for want of [the] orthography of the writer. However, they do not fail to laugh about it [i.e., the music with the incorrect signatures]. 98

He cited an instance in which an author wrote a piece in E-flat minor with only two flats in the signature instead of the five which, according to him, were necessary. Frère previously had cited two instances of Airs in that tone with the same two-flat signature. 99

Campion also discussed examples of unacceptable modes:

I was told recently that one composer had written some music in D-flat minor ([an] octave which cannot be allowed). I say that that composer, in order to multiply the difficulties and make the music more obscure, was able to apprehend the minor sixth of that octave, which is B-double flat, in order to establish [yet] another modulation there: and so from modulation to modulation, he could put in flats even [up] to little families. . . . In order to write music in D-flat minor, seven flats would be necessary in the signature; [by] writing [music] in C-sharp minor, as one is obliged [to do], only four sharps are necessary. Those who write music in C-sharp major fall into the same error, because eight sharps are necessary in the signature and the F-sharp is doubled there ridiculously; whereas, [by] writing it in A-flat major, only four flats are necessary in the signature. 100

Since the minor sixth was the notte sensible of the minor tone, it was indispensable. The occurrence of a double flat on a note vital to the modulation was distasteful to Campion and contributed to his rejection of D-flat minor and its seven-flat signature.

He rejected the mode of G-sharp major on two grounds: its requirement of the doubled sharp in the signature and the existence of a nonenharmonic substitute (A-flat) whose signature was simpler. (The latter circumstance likewise contributed to his rejection of D-flat minor, which could have been written more simply on C-sharp.) It is interesting that he referred to the F-double sharp in the signature as ridiculous, yet he evidently allowed its use

100. Campion, Addition, 50.
during the course of the music for the leading tone of G-sharp minor (see example 65). It further is of interest that while he seemingly accepted the accidental F-double sharp, he condemned the use of the accidental B-double flat to procure the lowered sixth of the tone of D-flat minor.

Campion elsewhere observed that certain sharps or flats pertained uniquely to signatures of either the major or the minor tone, with the result that some modes were excluded:

The sixth and seventh sharps appertain to the major tone, the octaves of D-sharp [minor] and A-sharp [minor] being not admissible at all. . . . The fifth flat belongs uniquely to E-flat minor, D-flat minor [sic: major] being not at all admissible. This will be profitable for students [who are] not very well-informed, who imagine erroneously that a [piece of] music is solely minor because there are many flats in the signature or that it is solely major because there are many sharps in the signature. 101

It would be interesting to ascertain the cause of his rejection of D-sharp minor, A-sharp minor and D-flat major. No doubt the nonenharmonic nature of the finals was a contributing factor.

He commented on the nonuniformity observable in the Italian practice and defended his position that the sensitive note (i.e., the leading tone) must always be placed in the signatures of the major tones.

All Italians are not in agreement at all as regards [the] equipping [of] their clefs [i.e., signatures] [with sharps and flats]. Some put

101. Ibid., 53-4.
more or fewer sharps and flats there than others. For example, in A major, the majority put G-sharp not in the signature. [That is, they put it in the course of the music.] I do not at all approve of that, since the major tone ascends as it descends, having only one sensitive note, the sharp which is always in the signature. I have accommodated myself in that [case] to the practice of our more expert [musicians].

The usage versus the non-usage of Mixolydian signatures for the major tones seems to have been one of the chief distinctions between the notational practices of Italian and French musicians.

Signatures Observed in the Treatises and the Practice: Résumé of the Transition from a Single Signature Type to Two for the Minor Modes

The signatures illustrated in the treatises and employed in the music of late-Baroque French musicians exhibited divergent tendencies: those for the major tones, uniformity; those for the minor ones, great diversity. Ionian signatures were employed for the major modes in the treatises generally and seem to have been customary in the practice. Dorian signatures were given for all, or for practically all, of the minor modes in numerous sources dating from the time that the transposed modes first were reduced to two in the treatises (and throughout the ensuing years). Pierre Berthet, in his Leçons de musique (1691),

102. Campion, Traité, 14.

103. E.g., Rousseau, Méthode, Traité; L’Affilliard (1694); Masson; Loulié; Frère. See table 21 below.
Table 21. Kinds of signatures for the minor modes cited by selected authors.

<table>
<thead>
<tr>
<th>source</th>
<th>signatures given tones commonly found natural</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tones with sharps</td>
</tr>
<tr>
<td>Rousseau Méthode</td>
<td>Dorian</td>
</tr>
<tr>
<td>Traité</td>
<td>Dorian</td>
</tr>
<tr>
<td>Delair</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Masson</td>
<td>Dorian</td>
</tr>
<tr>
<td>L'Affillard (1694)</td>
<td>Dorian</td>
</tr>
<tr>
<td>(1697f.)</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Loulié</td>
<td>Dorian</td>
</tr>
<tr>
<td>Freillon-Poncein</td>
<td>finals C-E:</td>
</tr>
<tr>
<td></td>
<td>finals F-B:</td>
</tr>
<tr>
<td>Frère</td>
<td>Dorian</td>
</tr>
<tr>
<td>Saint-Lambert (1707)</td>
<td>Aeolian</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Montéclair (1709, 1736)</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Campion (1716, 1730)</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Rameau (1722)</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Supplément</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Borin</td>
<td>Aeolian</td>
</tr>
<tr>
<td>Corrette</td>
<td>Aeolian</td>
</tr>
</tbody>
</table>

* A minor received one sharp whenever it was obtained by transposition in Rousseau’s Traité.

** D minor sometimes also was given one flat when it was employed in order to make transpositions easy to sing.
supplied Dorian signatures for all of his musical examples in the minor mode which were given signatures, including the examples with sharps: he provided signatures of two, three and four sharps for examples in E minor, B minor and F-sharp minor, respectively.¹⁰⁴

Frère's anachronistic presentation of Dorian signatures for all the minor transpositions and Loulié's illustration of the one-sharp signature for A minor perhaps were not the last demonstrations of Dorian signatures for the minor modes with sharps. Bernier (1665-1734), in his undated manuscript treatise on composition, cited the following minor modes and gave to each the Dorian signature: C minor, F-sharp minor, F minor and G minor.¹⁰⁵

The exclusive or principal use of Dorian signatures for the minor modes by Rousseau and others in their singing treatises often appears to indicate a concern for the agreement of the octaves designated by the signatures with the solmization, for the minor modes customarily were solmized from Re. However, perhaps more significantly, it

¹⁰⁴ Pierre Berthet, *Leçons de musique ou exposition des traits les plus nécessaires pour apprendre à chanter à livre ouvert* (Paris, 1691), 37, 41, 43.
also reflects the fact that the Dorian signatures were much in use in the practice, both for the minor mode with sharps and for that with flats, in early examples. Imogene Horsley has observed:

This association of Dorian with minor was also soundly based upon seventeenth-century practice. In strict modal writing, Aeolian was usually mixed with Phrygian. It was Dorian, with an occasional inflection of D-Aeolian produced by flattening the B, that provided the clearest intimation of "modern" minor. It was also the Dorian signature—one less flat or one more sharp than the signatures for minor used today—that was used for most of the early works that were definitely in the minor key. 106

The prominent use of the Dorian signature in early instances of the minor mode is illustrated in the collection of Airs, dated 1693, that was appended at the end of a copy of Berthet's treatise. 107 The pieces in the minor mode largely were given Dorian signatures, including two of the five examples in A minor (see example 110). 108 One perhaps can regard Rousseau and Berthet to have documented, and Louillé and Frère to have looked backward to, a practice which the latter wished to perpetuate. Frère's and Louillé's endorsements of the Dorian signature had the argument of history as well as that of the correct intonation of the

107. The copy is owned by the Library of Congress; see 4-5, 13-17, 20-21, 24, 27-30, 33f.
108. See also p. 60 of the manuscript.
Example 110. Air in A minor with the Dorian signature of one sharp (manuscript collection of Airs appended to a copy of Berthet's treatise, 24).

notes with the solmization from Re.

While Dorian signatures were much in evidence in the treatises of the period (see table 21 above), and at first evidently were widely used in the French practice, the practice actually was in a state of flux for some time. This is illustrated by the fact that in the manuscript collection of Airs cited above, there not only are numerous instances of Dorian signatures, but there also are found a few examples of Aeolian signatures (see examples 111-112). Evidence that the signatures for the minor modes were not standardized is seen, for example, in the fact that there are Airs in A minor both with the natural, Aeolian signature and with the Dorian signature (see examples 111 and 110). Such diversity of practice can be

Example 111. Air in A minor with the natural, Aeolian signature (manuscript collection of Airs appended to Berthet's treatise, pp. 37-9).
observed even in the works of a single composer. For example, there are Airs in D minor attributed to du Buisson which have signatures of one flat and no flats, respectively (examples 112 and 113).

Toward the close of the seventeenth century in France, it appears that the Aeolian signatures became increasingly prevalent for the minor modes with sharps, while the minor modes with flats tended uniformly to retain the Dorian

Example 112. Air in D minor with the Aeolian signature of one flat (manuscript collection of Airs, pp. 125-6).
Example 113. Air in D minor with the natural, Dorian signature (manuscript collection of Airs, pp. 127-9).
different octave species and signature types for the modes with sharps and flats. As the sixth degree was variable in the practice—it normally was raised (or major) in ascending and lowered (or minor) in descending—, the use of the natural sixth in the signatures could be observed to be correct in both cases. With the sixth left natural, the Dorian and Aeolian signature types were the simplest possibilities for the modes with flats and sharps, and their use can be understood to represent an economy of means on the part of composers (example 114; see also example 96).

Example 114. Natural sixths above the finals of the minor tones with sharps and flats, given the customary signatures

a. Tones with sharps  b. Tones with flats
   (Aeolian signatures)    (Dorian signatures)

   m 6   m 6   M 6   M 6   M 6

By the end of the seventeenth century, it appears that the signatures for the minor modes to some degree had crystallized around the two types in the practice. The dichotomy that appeared effectively prevented—at least for awhile—the reduction of the signatures of those modes to a single type.
CHAPTER V

CONCLUSIONS

The period from c. 1680 to c. 1730 in France was characterized by differences of concepts (and, to a lesser degree, differences of methods) of transposition as well as differences in the ranges of the natural and transposed modes or tones. Those elements were interactive, and their confluence precipitated changes in each of them.

Natural and Transposed Tones and Related Concepts

To begin, different criteria for naturalness, according to individual authors, resulted in different domains of natural and transposed tones. In the late seventeenth century, two concurrent and yet diverse notions were in evidence. Evidently by far the most widespread associated "natural" with inclusion within the scale (i.e., the gamme); that is, the criterion for naturalness was total diatonic pitch content, as specified by the signature. Brossard seems to have had this notion in mind in his definition of Naturale. He stated: "In music, this term often is taken as diatonic."

The association of nature with the scale was a relationship of dependence, and any change in the scale necessarily would affect the boundaries of what was natural. When the scale was reduced from two columns to a single one, the total pitch content of the scale was diminished, and consequently the number of the natural modes found within the scale was reduced.

Rousseau, like other French musicians of his day, adopted the two-column scale as his tonal basis. That scale for him was the repository of the natural modes and therefore was the measuring stick for establishing the identity of both the natural and the transposed modes: any mode found within the scale was natural and any that was outside of the scale was transposed. He recognized in 1691 that his view was not held by all.

L'Affillard exhibited a different point of view and seemed to stand midway between Rousseau and Loulié; he retained the former author's manner of singing music via the columns of B-flat and B-natural but also demonstrated (1697f.) that a signature of B-flat sometimes indicated a transposition. For him, the transposed modes had intruded into the first column of the scale; therefore, he could not affirm that natural elements alone occurred within the gamme and transposed elements existed uniquely outside it.

Loulié demonstrated a more consistent point of view. He limited the natural modes to the column of B-natural and
took the radical step of eliminating the column of B-flat. He consequently restored the distinction that had been made by Rousseau, whereby what was inside the scale was natural and what was outside it was transposed.

From the views discussed above, one may observe a progression of thought with regard to the relationship of the natural and transposed modes to the scale. From a scale of two columns, both of which were natural (Rousseau), there was a shift of concept to a two-column scale where only the second column evidently was always natural (L’Affillard). Following this, there was the notion of a single or simple scale of one column with B-natural (Louilé). If a scale whose content was exclusively natural may be described as stable and a scale which contained both natural and transposed elements can be termed unstable, then the progression cited above may be described as one of stability to instability and then to stability again.

It perhaps is a moot question whether the change of scalar type actually was the cause or the effect of the revision of concepts of natural and transposed. At any rate, it appears that the relationship between *naturel* and *gamme* was to some degree reciprocal. That is, the change of mind that musicians experienced about what was natural music and what was transposed both contributed to change in the structure of the scale and was perpetuated by that change.
An apparently less widespread view narrowed the focus of "natural tone" to a single diatonic pitch, the final of the tone or mode (cf. Ozanam). The result of such a view was an enlargement of the domain of the natural tones: While Rousseau had accepted five natural tones and Loulié regarded two to be natural (though he avoided using the term "natural tone"), Ozanam presented sixteen natural modes (eight major and eight minor ones).

Simultaneous with an increased number of natural tones, there was a shrinking of the range of the transposed ones. While Rousseau and Loulié had regarded any sharps or flats representing non-diatonic pitches to be indicators of transposition when they appeared in the signatures, Ozanam did not, and his natural modes often required numerous sharps or flats. For him, the non-diatonic final signified a transposed mode. He cited only eight of them: namely, the major and minor ones on the four chromatic finals. The expansion of the domain of the natural tones beyond those contained within the scale, and the concomitant shrinking of the number of the transposed tones, likewise was obtained by Saint-Lambert (1702), who presented yet another criterion for naturalness, the satisfactory temperament of the accords.
The Demise of the Transposed Tones

The period encompassed by the present study witnessed the beginnings of the demise of the transposed tones. A number of factors evidently contributed to the disappearance of the long-held distinction between the natural and transposed tones. These include the following: the linking of the notion of "transposed" with the temperament, the establishment of two types of signatures for the minor tones (i.e., for tones with sharps and flats, respectively), the transition from a two-column scale to a single-column one, and the recognition of a system of major and minor keys. Each of the cited factors will be discussed in turn.

The linking of "transposed" with the temperament by Saint-Lambert prepared the way for the eventual elimination of the distinction between natural and transposed: with the ultimate adoption of equal temperament in nineteenth-century France, his criterion for the transposed tone, viz., the out-of-tune condition of the accords, disappeared in the practice. That is, the differences of intonation that formerly had marked the tones no longer were in evidence (cf. Rameau). Consequently, there no longer could be said to be "natural" and "transposed" tones, but only different ones. It is interesting that for Saint-Lambert, differences of intonation were the very criterion for the definition of the transposed tone, while for Mattheson those differences
constituted one of the strongest arguments against the acceptance of the notion (cf. chapter 2).

The usage of two kinds of signatures for the minor tones in the late seventeenth-century and early eighteenth-century practice conflicted with the notion of "transposed tone" as a member of a closed set of exact transpositions of a single model. This was the case because the signatures designated two different octave species for the minor tones. Consequently, those who spoke of the natural and transposed tones or finals and yet accepted the customary signature types were faced with an inconsistency. Moreover, those who adhered to the traditional solmization of the tones from Re were faced with a contradiction between the solmization and the signature in certain instances. Such was the dilemma of Freillon-Poncein (1700) and particularly Campion (1716); the latter eventually removed that discrepancy by his acceptance of two models—and two signatures—for the minor tones, after Montéclair (cf. L’Affillard (1697)).

As has been observed, the transition from a two-column scale to a single-column one resulted in upheaval with regard to the definitions of the natural and transposed tones. While the relationship of that occurrence to the disappearance of the distinction cannot be documented exactly, contemporaneous instances may be cited in which various authors avoided the use of the terms "natural" and "transposed" with reference to the tones and substituted
alternative terminology, for whatever reasons. To begin, Loulié referred to "Natural" and "Transposed Music." Others avoided the qualifiers "natural" and "transposed" altogether, though some referred to the transpositions. Masson (1694?) employed the terms "major mode" and "minor mode," and L’Affillard, Freillon-Poncin and Campion used "major tone" and "minor tone." Campion also employed the terms octaves Lavennes and octaves Révennes.

To what degree an author’s non-usage of the terms "natural tone" and "transposed tone" constituted a denial of their existence is a moot question. However, such non-usage invites speculation. Perhaps some authors felt that since the basis for the distinction (that is, the scale) had changed, that basis no longer was trustworthy. One recalls that Saint-Lambert rejected the scalar basis in his definition of the natural and transposed tones, substituting the notion of the temperament. Others may have questioned the validity of the distinction between "natural" and "transposed" after the former definitions had been rendered obsolete by the elimination of a column of the scale; at any rate, certain authors cited notions which were contradictory to (or raised objections to) the distinction between the natural and the transposed tones. The anonymous author of L’art de transposer toute sorte de musique (1711) stressed the difference between the "tone of transposition" and the "tone of composition." His statements struck at the
basis of the notion of the transposed tone as an entity with an unvarying, proper signature that was derived from the a priori transposition of a natural tone. This was the case because the signature of the tone of transposition often differed from the signature of the corresponding tone of composition.

The notion that the major and minor tones or keys were independent entities without hierarchical distinctions among them which derived either from their relationship to the scale or from the temperament lay at the basis of Mattheson’s rejection of the “transposed tone.” It appears, however, that his differences from the French position were largely semantic. For many Frenchmen, the divisions of “natural” and “transposed” evidently represented convenient categories by which music capable of being sung via the scale could be distinguished from that which contained non-diatonic notes; the transposed tones were related to the natural ones through the identity of their octave species.

Mattheson’s view has been reiterated by Carl Dahlhaus, who reflects:

The distinction between “transposed” and “untransposed” scales comes to nothingness with major-minor tonality. It is indifferent as [a] relative [concept], misplaced as [an] absolute [one]. If F major is the fundamental key of a composition, the C major scale can be classified as transposed, the D minor scale as untransposed . . . 2
Clearly, the notion of "transposed" today is limited to performance.

The disappearance of the transposed tones contributed to later developments in the musical practice. Not only did the notion of a system of independent keys hasten the demise of the "transposed tones," but the elimination of the distinction between natural and transposed itself permitted the fullest realization of that system. Those circumstances moreover allowed the development of movable-Do (i.e., movable Ut) methods of solmization that operated without reference to the "supposed" or substituted clefs.

Transposition by Singers

The transition from a two-column scale to a single-column one also contributed to a revision of practices of vocal transposition (i.e., methods of "reducing to the natural"). Differences of method are marked in the late seventeenth-century works of Rousseau, L'Affillard and Loulié; their works were strongly influential on later

---

2. Carl Dahlhaus, *Untersuchungen über die Entstehung der harmonischen Tonalität*, vol. II of *Saarbrucker Studien zur Musikwissenschaft* (Kassel: Bärenreiter, 1968), 142. He evidently identified D minor as "untransposed" in this instance because of the relationship of its key signature to that of F major—the signatures were identical. N.B. Such relative keys are termed *Parallel* by the Germans.
writers. Pronounced differences also may be observed in certain sources of the first decade of the eighteenth century, notably those of Freillon-Poncein (1700) and Montéclair (1709). Frère's method (1706) is of interest because its author claimed to be presenting a new method while he instead merely synthesized concepts and methods of his predecessors.

The French authors regularly changed the names of the notes or pitches in order to permit the music to be sung with uniform solmization patterns via the scale. Many substituted clefs in order to achieve, or merely in order to facilitate, these changes (e.g., note names: Rousseau; pitches: Louliè). Some authors (e.g., Rousseau) no doubt regarded the substituted clefs to be optional, and some (e.g., Frère) neglected to apply them to particular instances of reducing to the natural.

The means by which individual authors accomplished or identified the changes of the names varied. Rousseau and Louliè presented rules which renamed the degrees of the first sharp and flat and the final ones, respectively. Others rejected rules founded upon the signature and embraced methods based on the modality. They evidently preferred the latter as a more certain principle than Louliè's rules because of the potential variability of the signatures in the practice. Those authors simply examined
the third above the final and changed the final’s name. Representatives included Freillon-Poncein and Frère.

Authors after Rousseau regularly identified the finals of the major and minor tones in discussing transposition for singers. L’Affillard (1694), Loulié (1696), Freillon-Poncein, Frère, Campion (1716), and others called the finals Ut and Re. Later writers often accepted two finals for the minor tones, Re and La. L’Affillard (1697) evidently was the earliest to do so. He was followed by Montéclair (1709), Borin (1722), Campion (1730), François David (1737) and others. A minority accepted only the final of La. Although Rameau at first accepted Re as the proper final for all the minor tones, in the "Supplément" of the Traité he endorsed La instead. He appears to have been dependent upon Saint-Lambert’s Nouveau traité (1707) in that circumstance.

The frequent choice of Ut and Re by those who identified the finals of the major and minor modes for purposes of solmization, and by those who identified models for instrumentalists, is of interest. The usage persisted in spite of the widespread occurrence of two signature types for the minor tones by the end of the seventeenth century and appears to represent the continuance of conservative pedagogy. With the adoption of Aeolian signatures for the tones with sharps, the pedagogy became incompatible with the practice, for the octaves of those tones disagreed with Re minor (as far as the signatures were concerned).
The acceptance of both Re and La as finals for the minor modes accomplished the reconciliation of pedagogy and practice, but this achievement was short-lived. The eventual uniform usage of Aeolian signatures, coupled with the general adoption of A minor as the model (which was anticipated by Saint-Lambert), provided a permanent solution to the rift between pedagogy and practice. In fact, that practice had finally come into agreement with the conservative modal doctrine which prescribed a major third and a major sixth above the finals of the major tones and a minor third and a minor sixth in the minor tones.

Both Rousseau’s method of dealing with irregularly written signatures and Loulié’s practice of simplifying the singing of regularly written transposed music appear to have had considerable influence on later authors. The former practice evidently was widely known at home and abroad, for Frère’s version of it (Paris, 1706) was criticized by Mattheson (Hamburg, 1720), Rameau (Paris, 1722) and J.P.A. Fischer (Utrecht, 1728). The rules of Loulié, viz., the renaming of the final sharp or flat as Si or Fa, became commonplace in French singing treatises through at least the early decades of the eighteenth century. Examples include the works of L’Affilllard (1697f.), Montéclair (1709, 1736), Dupont (2d. ed., 1718), Borlin (1722), David (1737), Antoine Dumas (1753) and Campion (1730), the last of whom testified to their universal acceptance.
The practice of singing music naturally, as taught by French singing instructors of the late seventeenth and early eighteenth centuries, eventually fell into disuse. Jean-Jacques Rousseau's opinion of it, expressed in his Dictionnaire de musique (1768), was prophetic: "It will be found that what French musicians call 'solfizating naturally' is entirely unnatural. . . . nothing is more natural than to solfizate by transposition when the mode is transposed." Rousseau clearly rejected the method in favor of a fixed-Ut manner of performance.

Transposition by Instrumentalists

The change of practice that is observable in methods of transposition for singers contrasted with a relative continuity among methods for instrumentalists, with the notable exception of those discussed by Freillon-Poncein (1700) and Louillé (n.d.). The perceived greater similarity generally among instrumental methods derives in part from the fact that instrumentalists did not change the names of the notes when they transposed; accordingly, they were not constrained to deal with solfization patterns and their compatibility or incompatibility with the customary signatures. Furthermore, their practices evidently were not

unduly affected by the conceptual upheaval that occurred during the period of transition from the two-column scale to the single one.

Perhaps another factor contributing to the perpetuity of the instrumental practice was its relative simplicity: instrumentalists merely substituted the appropriate clef and the required signature in order to accomplish the transposition of their music by any desired interval. The major difficulty that instrumentalists faced in their transposition was the performance of the sixth degree of the minor tones. That degree was potentially problematical only when one transposed from a tone which regularly had the Dorian signature to another which customarily had the Aeolian one, and vice versa.

The practice of transposing music by substituting clefs appears to be in very little use among instrumentalists today and may be described as a lost art. Instrumentalists tend to become familiar with only those clefs necessary in order to read their music fluently and perhaps with those required to accompany others from the keyboard. Thus, few acquire proficiency in reading more than two or three clefs. Charles Leonhard, describing "usual procedures in transposition," cited intervallic reading, harmonic analysis and playing by ear, as well as singing the melody on scale degree numbers or solfege syllables (i.e., tonal indexing),
none of which obviously involve the use of substituted clefs.  

In an experimental two-semester course at Columbia University Teachers College, Leonhard taught techniques of transposition at the piano by the use of the seven clefs. After the course was ended, he concluded that while transposition by means of clefs was "psychologically and musically sound," the skill would not be useful to most pianists, since they might have to transpose only occasionally, and constant use of the clefs was necessary in order to maintain facility. He stated further:

It is doubtful that a course in transposition with clefs should be included in the curricula of teacher training institutions. It is desirable, however, that students in such institutions be acquainted with the clefs and be aware of the possibilities of their use in transposition. This could well be a part of the regular classes in music theory and keyboard harmony. If a student gains an understanding of and an insight into the process, he will be able to concentrate on the development of the skill if the need for it arises.

The course should have a place in curricula of conservatories and schools of music concerned with the training of professional accompanists.


5. Ibid., 76.

6. Ibid., 76-7.
Observations on the Finals and Signatures

Prior to the latter years of the seventeenth century, there was a tendency to limit both the constituents of signatures and the selection of finals to pitches that were in tune on instruments according to the current mean-tone and irregular temperaments. The components common in the signatures were B-flat and E-flat and, after about the middle of the century, F-sharp, C-sharp and G-sharp. The sharps were even less quickly accepted as finals than as members of signatures.

Some late seventeenth-century authors (viz., Delair, Ozanam, Freillon-Poncein, Saint-Lambert) documented or justified the use of certain altered notes beyond those mentioned above (i.e., the nonenharmonic notes), while both earlier and later authors (e.g., Schlick, Praetorius, Chaumont, Ozanam) discussed or observed practices of detuning chromatic pitches in order to render their nonenharmonic alternatives more agreeable when playing in less-used keys. Thus there was an increasing awareness of the potential for the use of such notes. It appears that instrumentalists employed numerous altered finals and complex signatures in their practices of transposition; this circumstance in turn contributed significantly to a wider acceptance of those entities in composition. As notions of equal temperament overflowed the province of speculation (e.g., Werckmeister, Neidhardt) and entered the
arena of practice, the temperament of all of the keys became equally resonant to the ear, and the difficulties of the nonenharmonic notes ceased with the appearance of enharmonic equivalents on keyboard instruments.

The signature types commonly found in the French musical practice from approximately the turn of the century through 1730 and later might perhaps be described as relatively stable or continuous. Following an early period characterized by much usage of the Dorian signature as well as much nonuniformity in the signatures of individual minor tones, there was a stabilization of the minor signatures around the two models of D and A; this circumstance was still in evidence in Montéclair’s treatise of 1736 and Corrette’s work of 1753.\(^7\) The crystallization of the signature types, with the Dorian used for D minor and the tones with flats, and the Aeolian employed for A minor and those with sharps, perhaps can better be understood in the light of the criteria for minor modality in the practice. It appears that the modality primarily was determined by the third above the final. The customary practice of leaving

---

the sixth degree natural in the signatures of the minor
tones, which yielded the signature types cited above,
represented an economy of means on the part of the
practitioners.

* * * * * * * * * * * * * * * * * * * * * * * * * * * *

While it would be interesting to discuss concepts and
methods of transposition presented in contemporaneous
sources from countries other than France, such a study
quickly would exceed the scope of this paper. Therefore,
only a few of the authors or sources will be mentioned. In
England, those who discussed the practice of transposition
included Godfry (i.e., Gottfried) Keller (1707) and
Alexander Malcolm (1721). In Spain, Pedro de Ulloa
discussed transportar (1717). Mattheson's Réflexions sur
l'éclaircissement d'un problème de musique pratique
(Hamburg, 1720) and J.P.A. Fischer's Kort en grondig
onderwys van de transpositie (Utrecht, 1728), which have
been discussed in chapters 2 and 3, represent major
contributions from Germany and Belgium. An important German
source from a slightly later date is C.J.F. Haltmeier's
Anleitung, wie man einen Generalbass, oder auch Handstücke,
in alle Tone transponiren könne (*Introduction: how a

8. Keller, 8; Malcolm, chapter 11, 361f.

9. Música universal, Ôprincipios universales de la
musica (Madrid, 1717), 29-32.
thoroughbass or likewise pieces could be transposed to all tones"). The work originally was published in Hamburg (1737) and later was reprinted, with annotations by Lorenz Mizler.10

In brief, this study has addressed a number of questions, yet one question has not been considered. That is: What factors contributed to the eventual disappearance of the requirement for singers and instrumentalists to transpose? In the former instance, it appears that the triumph of fixed-Do solfege in French conservatories (and of movable Do in certain other places) removed the necessity for the supposition of the clefs. In the latter instance, a number of factors may have contributed: In the first place, the establishment of absolute standards of pitch on instruments, with the result that one no longer would have had to transpose his music in order to play in tune with other performers whose instruments were tuned a semitone higher or lower; secondly, the proliferation of Airs for particular instruments, as opposed to Airs intended generally for treble or other instruments (cf. Freillon-Poncein's and Hotteterre's collections), the latter of which might have had to be transposed in order to

accommodate the range of one's own instrument; thirdly, the publication of collections of accompanied Airs in a variety of keys suitable to the ranges of the different vocal parts.
APPENDIX

FOREIGN LANGUAGE SOURCES

CHAPTER I


I-13. Principes très-faciles pour bien apprendre la Musique: qui conduiront promptement ceux qui ont du naturel pour le Chant jusqu’au point de chanter toutes sortes d’Airs proprement, & à Livre ouvert.

I-22. J’ay renfermé dans ce petit Traité tout ce qui m’a paru utile pour l’Instruction de ceux qui ne sont pas ou en lieu ou en état d’avoir les plus habiles Maîtres; & je puis les assurer qu’ils trouveront chaque chose disposée dans un ordre qui les conduira aisément à une parfaite exécution de toutes sortes de pièces en quelque transposition que ce puisse estre, pour peu qu’il ait de genie & d’inclination à l’apprendre.

I-32. J’espère que ceux qui prendront la peine de le lire, voudront bien excuser quelques répétitions qu’on ne peut éviter, quand on veut rendre les choses sensibles.

I-33. Première partie: de la manière de réduire au naturel toute sorte de Musique transposée, par le secours de la Modulation.

I-35. La seconde, explique la manière de surmonter les difficultes de la Transposition irrégulièrement écrite, c’est à dire, celle dont les Dièses ou Bémols qui luy sont nécessaires, ne sont pas mis régulièrement après la Clef.

I-40. tous les Principes de Theorie & les Exemples de Pratique qui doivent précéder la Composition.

I-42. De la theorie; De la pratique ...
II-3. Le premier Cercle contient le Clavier du Clavessin.

II-7. du second Cercle, lesquels degrés servent à transposer et à fournir les accords possibles. On verra l'utilité de ces notes doublement diézées, dans la distinction des accords.

II-8. Il y a des Clavessins où les touches étant coupées, chaque note soit naturelle ou transposée à sa touche particulière, mais lesdits Clavessins ne sont guère en usage, à cause de la difficulté qui se rencontre à s'en bien servir.

II-14. Je scay que ces notes doublement diézées, paroîtront d'un invention nouvelle, à ceux qui n'ont pas à profondy les règles des transpositions, mais je leur diray que l'on ne doit pas plus s'étonner de voir les dites notes doublement diézées, que de rencontrer des dièzes sur les mi, les si, et les la, lesquelles étant naturellement diézées, se rencontrent néanmoins encor dièzes, or l'ut, le fa, et le sol, dièzez au commencement de la Clef, dans les tons transposées en bquarre, tiennent lieu du mi, du si, et du la, ainsi dans le cours des pièces, les dites notes peuvent estre encor dièzes une fois aussi bien que le mi, le si, et le la. Javoûe que cela est rare, mais cela se rencontre quelque fois, et j'ay une pièce Italiennne imprimée où il se trouve un re, dièze avec la tierce majeure, marquée au dessus, laquelle tierce doit estre le fa, doublement dièze.

II-15. Nous apellerons dorénavant Chromatiques toutes les cordes qui sont marquées de #, ou de b. Celles qui ont un b, étant au naturel, comme l'on voit dans un Clavier d'Orgues, dont nous mettons ici une Octave, & où toutes les Touches d'en bas sont Diatoniques, & celles d'en haut Chromatiques.

Or si nous voulios employer des cordes Enharmoniques, il faudroit qu'il y eût par tout, entre deux cordes Diatoniques deux autres, qui fissent chacune avec chacune des Diatoniques un Demiton mineur, comme quelques Musiciens l'ont pratiqué sur des Instrumentes à Clavier, comme l'on peut voir dans la figure suivante.

Il entre de cette manière dans l'étendue d'une Octave neuf cordes Enharmoniques, sçavoir

D. la. re. p mol.
D. la. re. Diezé.
E, si, mi, Diezé.
F, ut, fa, b mol.
G, re, sol, b mol.
A, mi, la, b mol.
A, mi, la, Diezé.
[C, fa, si, Diezé.]
C, sol, ut, b mol.

& ainsi chaque corde Diatonique a son Diezé, & son b mol.

II-18. Les Intervalles les plus petits de ce Système sont des Diezés Enharmoniques.

II-19. Mais comme il serait trop difficile de jouer de ces sortes d'Instruments si composez, & qu'on a trouvé le moyen de se passer des cordes Enharmoniques en affaiblissant les Accords des autres, ces cordes ont été rejetées de nos Instruments.

II-22. Dans la modulation naturelle il n'y a que deux notes où l'on mette des b mols et des b carrés, savoir au si, & au mi, & trois où l'on mette des Diezés, savoir au fa, au sol, & à l'ut.

II-27. Ton et Mode c'est la même chose dans la composition: Car quand on dit qu'une Pièce de Musique est du premier Ton, du second Ton &c. Jusqu'au huitième, c'est comme si l'on disoit que la Pièce est du premier Mode, du second Mode &c. Or les termes de Ton et de Mode ne veulent dire autre chose que la manière & l'ordre quel on doit garder dans l'invention, & la conduite des chants, en passant par de certaines cordes, & dans une certaine étendue qui appartient à chaque Ton ou Mode: Car chaque Ton ou Mode a ses Cadences particulières, dans une étendue qui ne convient point à un autre...

II-30. Règle pour connoître en quoi est une pièce.

II-31. Pour connoître si la pièce est en bémol, ou en carré on observera la tierce de la dite dernière note, laquelle étant mineure naturellement, ou artificiellement, durant le cours de la pièce, la dite pièce est en bémol. Lors que la tierce de la finale est naturellement, ou artificiellement majeure durant le cours de la pièce, la dite pièce est en carré.

II-34. Quelques Musiciens au lieu d'user des termes de majeur & de mineur pour exprimer le mode d'un Air, se servent des anciens termes de Bécarre & de Bémol. Pour marquer par exemple qu'un Air est en C Sol Ut Mode mineur, ils disent qu'il est en C Sol Ut Bémol; Pour marquer qu'un
autre est en D La Re Mode majeur, ils disent qu’il est en D La Re Bécarre, & ainsi des autres; mais ces expressions qui sont peut-être les plus communes, ne sont pas néanmoins si convenables que les autres.

II-36. Le MODE est un certain ordre dans l’invention d’un chant, qui nous engage à employer plus souvent certaines cordes que d’autres, parce qu’elles sont naturelles ou essentielles au Mode, & qui nous oblige à éviter certaines autres cordes qui n’en sont pas, & enfin à finir par une certaine corde, qui est celle qui donne le nom au Mode.

Par exemple quand nous finissons par F. ut. fa. Nous disons que la Pièce est en F. ut. fa, c’est à-dire dans le Mode ou le Ton de F. ut. fa; car le mot de Ton est souvent employé dans le même sens que celuy de Mode.

Cette corde s’appelle la Finale, ou la Note du Mode; la Quinte au dessus se nomme la Dominante; & la Tercer la Mediante. Or comme la Tercer peut être Majeure ou Mineure, cela fait naître deux espèces de Modes, dont les uns s’appellent de b quarce, les autres de b mol. . . .

Tous les Modes ont outre cela un Ton naturel au dessus de la Finale, & au dessous de la Dominante, & un Demiton essentiel au dessous de la Finale.

Les Modes de b mol ont encore au dessus de leur Dominante un Demiton essentiel, & les Modes de b quarce un Ton naturel.

II-37. Il y a deux fois autant de Modes que de cordes dans l’étendue d’une Octave; chacune de ces cordes donne le nom à deux Modes, dont l’un procède par la Tercer Majeure & l’autre par la Mineure. Ainsi comme l’octave contient douze cordes, il y a vingt quatre Modes.

II-42. Denn da es zwei Tongeschlechter gibt, Dur und Moll, die sich, mit demselben untersten Ton anfangend, dadurch unterscheiden, dass der dritte und der sechste Ton in Dur um eine Diesis höher ist als in Moll, so kann die dritte und die sechste Saite nicht für beide Geschlechter gleichbleiben.

II-44. Tout Mode Majeur doit avoir la Sixième Note Majeure, de même tout Mode Mineur doit avoir la Sixième Note Mineur, surtout en descendant, Car autrement la Basse irait dans un autre Mode.

II-47. Il y a autant de Modes que de Notes . . .
Tous les Modes se peuvent rapporter au Mode d’Ut ou au Mode de Re.
Le Mode d’Ut a la 3ce majeure.
Le Mode de Re a la 3ce mineure.
Tous les Modes qui ont la Tierce majeure ressembler au Mode de l'Ut.
Tous les Modes qui ont la Tierce mineure ressembler au Mode du Re.

II-53. Par où l'on peut conclure qu'il n'y a que deux Modes qui soient différents en leurs cadences, ou chordes principales, & que ceux qui réduisent tous les tons, & les Modes à deux sortes de modulations, ou de deductions, à sçavoir au quartre, & au b.mol, ne parlent pas sans raison: car la plus grande différence des Modes vient de ce que les uns ont la Tierce mineure, où les autres ont la majeure; ce qui arrive par le moyen du b.mol & du . . .

II-54. Il est certain que dans tout le Chât parlant généralement, il n'y en a que de deux sortes (de Cadences), toutes les autres n'êstant différentes que par accident, l'une que le nomme Cadence de b.mol, ou de Tierce mineure; l'autre Cadence de quartre, ou de Tierce majeure: Celle de b.mol est formée sur tous les degrés de la Gamme ou l'on dit Ré, & celle de quartre prend sa naissance sur les degrés ou l'on dit Ut.

II-56. Par le mot de Mode ou Ton, on entend la maniere de commencer, conduire & conclure un Air sur certaines cordes ou notes propres à chaque Mode ou Ton.

II-58. Tous les Tons ou Modes de la Musique se peuvent réduire à deux, sçavoir au Ton majeur, & au Ton mineur. Le Ton majeur procède par une Tierce majeure. Le Ton mineur procède par une Tierce mineure.


II-62. les sept Modes majeurs & . . . les sept mineurs sur les finalles naturelles . . .

II-63. Il y a deux Modes principaux d'où dépendent tous les autres, qui sont le Mode de C, sol, ut, sans b.mols ny dieses, & celuy de D, la, re, de même. On traite celuy de C, sol, ut, de Majeur, parce que de la finale, qui est l'ut jusqu'au mi, qui est la médiane, il y a deux tons, & de la médiane jusqu'au sol, qui est la Dominante un ton & demy. Celuy de D la re est mineur, parce que du re, qui est la finale, jusqu'au fa qui est la médiane, il n'y a qu'un ton
& demy, & du fa au la, qui est la dominante, il y a deux tons.

II-68. Il faut encore observer qu'outre ces trois Cordes essentielles rapportées cy dessus, il y en a encore dans chaque Mode deux autres qu'on nomme naturelles, parce que l'on ne peut faire un beau Chant, ny même une Harmonie gratifique sans leur secours.

II-69. Ces deux Cordes, sont 1. dans quel que Mode que ce soit, un demiton majeur, soit naturel, soit accidentel, au dessous de la Finalle. 2. Pour les Modes mineurs, un demiton majeur au-dessus de leur Dominante. 3. Pour les Modes majeurs, un Ton plein au dessus de leur Dominante.

II-71. Tout Air ou Pièce de Musique est composée sur un certain ton, & dans un certain mode... Ainsi transposer un Air n'est autre chose que le tirer de son ton, pour le mettre sur un autre, sans néanmoins rien changer à son mode.

II-72. Le Mode est la determination du chemin que doit tenir le chant d'un Air, & celui de ses parties, quand il en a, le tout par rapport à la note finale. C'est ce qui constitué l'espèce de chaque intervalle; C'est le sisteme particulier sur lequel une Pièce de Musique est bâtie.

Il n'y a que deux Modes en Musique: le Mode majeur, & le Mode mineur.

Le Mode d'un Air est majeur quand la tierce, la sixième, & la septième de la finale ou note tonique sont majeures.

Le Mode est mineur quand la tierce, la sixième, & la septième de la finale sont mineures.

II-76. Le ton & le mode d'un Air sont deux choses absolument inseparables, & l'on ne peut aussi jamais parler du premier, sans exprimer en même temps le second, ou du moins sans le sousentendre.

II-77. Il y a néanmoins des modulations qu'on sousentend ordinairement sans les exprimer, parce qu'on les regarde comme naturelles à certains tons.

II-81. La division de l'Octave en douze parties comme nous la faisons, nous donnant douze sons différents, qui peuvent être pris chacun pour la note Tonique d'un Air, fait qu'on peut dire que nous avons douze tons dans notre Musique...

Cependant, parceque des douze sons qui naissent de cette division de l'Octave, il y en a neuf qui peuvent être considérez chacun sous deux idées différentes, cela
multiplie le nombre des tons jusques à vingt & un; mais ce ne sont vingt & un tons que de nom, car en effet il n'y en a que douze.

II-82. Le mode mineur pour être régulier doit avoir la 3e. la 6e. et la 7e. mineures, comme le mode majeur les doit avoir majeures; cependant je n'ay pas laissé que de me conformer à l'usage ordinaire dans la suite de ce Livre.

II-96. On réduit la conduite d'un Air ou d'un Chant à deux Modes; l'un s'appelle Mode majeur, & l'autre Mode mineur.

La diversité du Progres de ces sept Cordes dans l'Octave, fait la différence du Mode majeur d'avec le Mode mineur.

II-98. Le modèle du Mode majeur, est le Ton d'Ut, qui par consequent ne demande ny Dièzes ny Bémols au commencement de sa Clef.

II-99. Le modèle du Mode mineur est le LA, c'est pourquoy il ne demande ny Dieze ny Bémol; quelques personnes regardent aussi comme modèle le Ton de D-LA-RE.

II-102. Progrès des sept Octaves de la Musique

II-103. Ton, mode, modulation, octave ou notte tonique, sont sinonimes & signifient la même chose.

II-111. Il y a deux Voix; sçavoir b mol & b quarre; tout ce que l'on chante est par l'une ou l'autre des deux.

II-116. Je ne croy pas qu'il soit icy hors de propos de dire, que c'est sans fondement que quelques personnes veulent réduire ces deux chemins en un seul, j'avouë que le chemin en est plus court pour la Nomination des Notes, mais il est certain que l'Intonation qui est plus considerable que la Nomination, s'y trouve tellement embarassée & si difficile à pratiquer, que le temps que l'on pretend abrégé sur la Nomination, se trouve prolongé quatre fois d'avantage sur l'Intonation des Notes particulièrement dans les Tons transposez, & il est impossible qu'une personne pusse apprendre parfaitement à chanter la Musique par cette Méthode. Il la faut laisser à ceux qui joüent seulement des Instrumentes, parce qu'ils ne sont point occupez de l'Intonation qui est toujours juste sur l'Instrument quand on touche juste: Or pour toucher juste il suffit de connoître le nom des Notes.

II-126. Éclaircissement sur plusieurs difficultez.
II-127. les différentes Transpositions, qui renversent l'ordre de l'Intonation assigné au nom de chaque Note, font de la peine à plusieurs personnes, qui trouveront ici des moyens très faciles pour les chanter toutes au naturel, tant par b mol, que par b quarre; et même pour chanter toutes sortes de Musique par b quarre seulement, ou par b mol sans embarras, et d'une manière fort naturelle.

II-128. Règles pour naturaliser les tons Transposez.

II-129. Comme il se rencontre souvent des Tons transposez par b mol & par b quarre, qui causent du changement dans l'ordre de l'Intonation, ce qui fait de la peine à plusieurs personnes; parce qu'il se rencontre des Tons où il y avait des Sémitons, & des Sémitons où il y avait des Tons . . .

II-130. Il faut premièremenent savoir qu'il y a des Tons transposez par b mol & d'autres par b quarre.

II-134. Les Tons naturels par b mol, sont ceux où après la Clef on marque un b mol sur le degré ou l'on diroit Si par q quarre, & où l'on dit Fa à cause du b; & les Tons naturels par q quarre, sont ceux où après la Clef on ne marque ni b mol ni Dièze: En sorte que tous les autres Tons qui ont plus d'un b différent après la Clef, c'est à dire qui ne sont pas à l'Octave, sont des Tons transposez par b mol, & que ceux qui ont un ou plusieurs Dièzes après la Clef, sont des Tons transposez par q quarre.

II-137. Le mot de Transposition est un terme équivoque, qui convient à la Composition des Pièces de Musique, & qui convient aussi à leur exécution: mais la pratique en est différente; car Transposer dans la Composition, c'est changer l'ordre de l'Intonation assigné au Nom Naturel de chaque Note, & à faire Majeur ce qui est naturellement Mineur; comme aussi à faire Mineur ce qui naturellement est Majeur, & Transposer dans l'exécution, c'est jouer un Ton, une Tierce, une Quarte, ou une Quinte plus haut, ou plus bas que ce qui est marqué sur le papier par supposition de Clefs, en faisant rencontrer l'ordre de l'Intonation juste par rapport à celui que l'on observeroit si on ne transposoit pas, en sorte que souvent l'ordre de l'Intonation assigné au Nom de chaque Note y est renversé, & aussi quelquefois il y est remis en son Naturel; car quand on Transpose un Ton Naturel, il passe souvent dans les Tons Transposez de la Composition, & quand on Transpose un Ton Transposé de la Composition, il rentre souvent dans l'ordre de l'Intonation Naturelle, & quelquefois dans son Ton Naturel.
II-139. On appelle pièces transposée en terme général de Musique, celles, lesquelles par le moyen des dièses, ou bémols, sont plus hautes, ou plus basses quelles [sic] ne doivent estre naturellement, et pour lors l'ordre naturel, des notes par rapport aux tons et aux semitons est renversé.

II-141. L'ordre naturel des notes par rapport aux tons et aux semitons, est souvent changé soit par le bémol qui se fait ainsi,♭, lequel baisse d'un semiton, les notes ou il est attaché ou qui se trouvent sur la même ligne, ou par le dièze qui se fait ainsi,♯, lequel élève d'un semiton les notes qui le suivent immédiatement, ou qui se rencontrent sur la même ligne, ainsi les tons naturels deviennent semitons, par le moyen des bémols, et les semitons naturels, deviennent tons, par le moyen des dièses.

II-142. Pour les transpositions.

II-143. On appelle pièce transposée, entere de composition, et d'accompagnement, celle dont la finalle n'a point durant le cours de la pièce la tierce qui lui convient naturellement, laquelle tierce est hors de son naturel par quelque dièze, ou bémol, qui l'augmente ou diminue d'un semiton de plus ou de moins quel ne n'a naturellement, ainsi il ny a point de pièce transposée sans quelque dièze ou quelque bémol, quoi qu'il se puisse trouver quelque bémol ou dièze au commencement de la clef dans les tons naturels comme nous verrons dans la suite.

II-144. Outre les dièses ou bémols qui se mettent au commencement de la clef, pour changer la nature des tierces dans les tons transposées il s'en rencontre souvent d'autres qui servent dans le chant à retablir l'ordre naturel des notes par rapport à l'ut, dans les pièces transposées en bguarre et par rapport au re, dans les pièces transposées en bémol, aux quels tons, tous les tons transposez se rapportent . . .

II-146. On les peut diviser en deux classes, en mettant dans la premiere ceux qui ont pour Finale une corde Diatonique, & dans la seconde ceux dont la Finale est une corde chromatique.

Les uns peuvent être apellez Naturels, les autres Transpozes. Parmi les Naturels, les uns ont la Mediente Diatonique, & les autres l'ont chromatique. Ceux là sont au Naturel, & s'expriment simplement par le nom de la Finalle: mais à ceux-cy il faut ajouter si c'est par b guarre, ou par b mol. Par exemple, quand on dit simplement le Mode de C. sol, ut, ou de D. la, re, on entend qu'ils sont au Naturel, & que par consequent l'on va par b guarre, & l'autre par b mol: Mais quand c'est le contraire, il faut l'ajouter, &
Les Modes Naturels au Naturel.
C. sol, ut.
D. la, re.
E. si, mi.
F. ut, fa.
G. re, sol, par b mol.
G. re, sol, par b quarre.
A. mi, la.
B. fa, si, b mol.
B. fa, si.

A cause que les deux cordes b & q passent toutes deux pour Diatoniques, il faut exprimer laquelle c'est des deux.
Les Modes Naturels par les chromatiques.
C. sol, ut, par b mol.
D. la, [re,] par b quarre.
E. si, mi, par b quarre.
F. ut, fa, par b mol.
A. mi, la, par b quarre.
B. fa, si, b mol, par b mol.
B. fa, si, par b quarre.

Les Modes Transposez.
C. sol, ut, Dièze, par b quarre.
C. sol, ut, Dièze, par b mol.
E. si, mi, b mol, par b quarre.
E. si, mi, b mol, par b mol.
F. ut, fa, Dièze, par b quarre.
F. ut, fa, Dièze, par b mol.
G. re, sol, Dièze, par b quarre.
G. re, sol, Dièze, par b mol.

II-147. La nouvelle gamme.

II-148. Les Modes Transposez s'apellent ainsi, parce qu'on ne s'en sert presque jamais, si ce n'est par nécessité, quand on est obligé pour s'accommoder à une voix, ou à quelque autre Instrument d'y transposer une Pièce, qui aura été composée dans un Mode naturel. Par exemple, quand un Instrument est plus bas qu'un autre d'un Demi ton, ce que l'un jouera en C. sol, ut, l'autre le pourra jouer à même temps en C. sol, ut, Dièze par b quarre.

II-149. Si nous voulons supposer les neuf cordes Enharmoniques, nous aurons encore dix-huit Modes transposez. Mais quoi que nous ne mettions pas ces cordes en usage, cela n'empêche pas que leurs noms ne puissent être donnés aux Modes qui leur répondent, & que nous n'apélitions par exemple, D. la, re, Dièze, par b quarre celui que nous
venons de marquer par le nom de E. si. mi. b mol. par b guarre, & ainsi des autres conformément à ce que nous avons dit cy-dessus en parlant des cordes Enharmoniques.

II-156. La Gamme ou aucun des sept sons n'est alteré ny par dièse ny par b mol s'appelle Gamme Naturelle. Les autres Gammes où les sons sont alterées ou par dièses ou par b mol[s] s'appellent Gammes de Transposition. . . . Gammes Transposées par Dièses selon l'Ordre des Nottes. . . . Gammes Transposées par Bémol[s] selon l'ordre des Nottes.

5e Question[:]. Scavoir s'il est plus facile d'entonner la Musique transposée sans la réduire au naturel qu'en la réduisant pur. On répond[:]. Il est plus facile d'entonner la Musique transposée en la réduisant au Naturel qu'en ne la réduisant pas[,] Parceque quand on entonne sans réduire au naturel on est obligé d'appeler [?] et nommer un même Intervalle de sept manières différentes. Par Ex. On est obligé selon les différentes transpositions d'appeler le 1e. semiton, mi fa, fa sol. sol la la si, si ut, ut re, re mi, Mais quand on entonne la Musique transposée en la réduisant au Naturel on nome [sic] chaque Intervalle toujours du même Nom par Ex le 1e. semiton se nommer toujours Mi fa.

Si l'on ne réduit pas les transpositions cy dessus au Naturel il faut les chanter de sept manières différentes ce qui est fort incommode pour des Écoliers. Si on réduit au Naturel il ne . . . les faut chanter que d'une manière ce qui est très commode.

II-171. J'enseigne ensuite . . . la transposition du naturel au b mol ou au b carre ou dièze des sept Modes majeurs & des sept Modes mineurs.

II-172. J'entens par le mot de transposé, que c'est par b. mol ou par b. carre.
II-173. On appelle une pièce par B mol lors qu'il y a des B mols sur la corde finale, & par B carre quand il y a des Dièzes, & non pas, comme la plupart disent, que lors qu'il y a des Dièzes ou des B mols après la Clef au commencement d'une pièce, tout le reste l'est aussi.

II-176. Le Flageolet est très-propre pour jouer des airs gais, comme ceux du Mode de C sol ut, comme étant les plus éclatans & les plus naturels.

II-177. Si toutes ces Chordes se trouvent naturellement placées ainsi que nous venons de dire, pour lors le Mode est naturel: mais si l'on est obligé de se servir du secours des ♯ ♯ ou des ♭ ♭ soit immédiatement après la Clef, ou dans la suite du chant, pour mettre cet ordre entre les Cordes d'un Mode, pour lors, c'est un Mode transposé. Sur ce principe il n'y a que le Mode C. sol. ut qui soit véritablement Diatonique ou Naturel. Tous les autres, ayant besoin de quelques ♯ ♯ ou de quelques ♭ ♭ soit pour mettre leur Finale dans le degré qu'on veut, & pour lors ils sont transposées chromatiquement: soit pour rendre leur 5. juste, soit pour faire leur Tercie maïjore ou mineure: soit pour faire qu'il n'y ait qu'un demiton au-dessus de la Dominante, ou au desous de la Finale; soit enfin pour faire qu'il y ait un Ton plein au-dessus de la Dominante, & au-dessous de la Finale.

II-178. TRANSPOSIT10. Mot Latin duquel les Italiens ont fait Trasportazione, ou Transpositione. & les François TRANSPOSITION. Transposer en fait de Musique, c'est ôter ou de placer un Chant de sa situation naturelle, ou du moins de celle où il est noté, pour le mettre plus haut ou plus bas selon le besoin qu'on en a, C'est à dire, pour s'accommoder à l'étendue, à la portée, ou à la force des Voix ou des Instrumente &c. Exemple.

[Example 10a]
Chant au Naturel ou Diatonique.

[Example 10b]
Chant transposé une Quarte plus haut.

2. Ou bien c'est mettre un Chant dans un autre espèce d'Octave que celle où peut être il a d'abord été composé, ou du moins que celle où il est actuellement noté; de manière cependant que les Semitons des deux Tétrachordes ou Quartes qui composent chacune de ces Octaves, c'est à dire, mi, fa & si, ut, se trouvent par le moyen des ♭ ♭ & des ♯ ♯ précisément dans le même rang, ou dans les mêmes degrés dans l'une & dans l'autre de ces Octaves. Exemple.

[Example 11]
Octave Diatonique, ou Naturelle. Octave transposée un Ton plus haut, où par le moyen des ♭ ♭ les deux Quartes
sont terminées en haut chacune par un Demi ton comme dans l’Octave Naturelle.

3. Ou bien c’est se servir d’une ou plusieurs Chordes Chromatiques au lieu des Chordes Naturelles ou Diatoniques, pour établir un Mode. C’est à dire, pour mettre la Finalle dans le degré qu’on souhaite, ou pour rendre la 5. au-dessus de la Finalle juste pour en faire la Dominante; ou pour rendre la 3. majeure ou mineure, &c. Voyez, MODO. n. 10. Car il faut bien remarquer 1. qu’il n’est pas possible de transporter un Chant purement Diatonique plus haut ou plus bas, sans se servir au moins d’un des signes Chromatiques, c’est à dire d’un ♭ ou d’un♯, & très-souvent de plusieurs. Par consequent quand on trouve un, ou plusieurs ♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭♭biaura

II-186. Il y a des Pièces qu'on appelle TRANSPOSÉES, & ce sont celles dont les clefs sont accompagnées de plusieurs Dièzes, ou de plusieurs Bémols, de la manière que l'expose l'Exemple qui suit. Voyez les Remarques.

II-191. Le ton est composé de deux semi tons, scávoir un mineur & un majeur. La tierce mineure est composée pour estre bonne de trois semi tons: scávoir deux semi tons majeurs & un mineur; La tierce mineure mauvaise est composée (de) deux semi tons mineurs & dun (sic) majeur: la tierce majeure est composée pour estre bonne de quatre semi tons: deux majeurs & deux mineurs: La tierce majeure mauvaise est composée de quatre semi tons, scávoir trois majeurs & un mineur . . .

II-192. Un Accord est une production de plusieurs sons tout à la fois, lesquels forment par leur assemblage une Consonnance agréable: Or quand on dit une production de plusieurs sons, cela s'entend aussi-bien de deux comme de quatre ou de six . . .

On appelle Accord l'union de trois ou quatre Sons différents.

II-196. la plus naturelle; la plus aisée à entonner; une Tierce transposée, & difficile à entonner.

II-201. Les bémols et les dièzes qui sont immédiatement après une Clef . . . dérangent les demi-tons de leur lieu naturel en les transposant ou plus haut ou plus bas.

II-203. On regarde comme Ton naturel celuy qui n'employe ny Dièze ny Bémol pour exprimer le progres du Mode dans lequel un Air est composé, c'est ce qui fait que le Ton de C-Sol-Ut est remarqué comme le modèle du Mode majeur, auquel tous les Tons transpossez en Mode majeur doivent se rapporter. Et il n'y a proprement que le Ton de C-Sol-Ut qui soit pur & naturel; car le ton d'A-Mi-La qui est regardé comme le modèle naturel du Mode mineur, auquel les tons transpossez en Mode mineur se rapportent, est très-souvent aitéré de quelque dièze. On peut aussi rapporter au Ton de D-La-Re, les Tons transpossez en Mode mineur, quoique ce rapport soit moins parfait; ainsî il faut regarder comme Ton transposé tout Air qui ne finit point en Ut en Mode majeur, & en Re ou en La en Mode mineur; & qui par consequent aura au commencement de sa Clef un ou plusieurs Dièzes, [ou] un ou plusieurs Bémols selon l'exigence du ton de l'Air transposé.
II-208. Meinet der Herr Author 8. neue und
gebrauchliche Tonos aufs Tapet zu bringen. Es sind aber
lauter Transpositiones der vorigen e.g. c dis g. f gis. ě. b
[gis: h] d fis. fis a cis. ist so viel als d f a. und als a
č ě. re fa la. b d f. dis g b. e gis h. a cis ě. ist so viel
als c e g. g h d. ut mi sol.
Mit denen 8. Tonen &.10. hat es eben diese Bewandniss/
und ist nichts anders als Transpositio toni naturalis ad
tonum fictum, welche Transposition zu verwerffen.

II-215. Pourquoi se sert-on des Tons transposez,
puisqu'ils ont rapport aux naturels; & pourquoi les
nomme-t-on transposez.

II-218. La seconde raison, est pour trouver des Tons
propres à exprimer les passions différentes qui se peuvent
rencontrer selon les différens sujets que l'on traite: Car
quoique la maniere d'entonner soit la meme dans les Tons
transposez comme dans les naturels, cependant la Modulation
est bien differente.

II-219. Il y a des Tons propres pour le serieux, comme
sont D la re mineur, & A mi la mineur, qui sont des Tons
naturels. Il y en a pour les choses gayes & pour celles qui
marquent de la grandeur, comme sont C sol ut majeur qui est
naturel, & D la ré majeur qui est transpose. Il y en a pour
le triste, comme G ré sol mineur qui est naturel, & il y en
a pour le tendre, comme sont E si mi mineur, & G ré sol
majeur qui sont transposez. Pour les plaintes & tous les
sujets lamentables, il n'y a point de Tons plus propres que
C sol ut mineur, & F ut fa mineur, qui sont transposez, &
pour les Pieces devotes ou chants d'Eglise, F ut fa majeur
qui est naturel, & A mi la majeur qui est transpose, y sont
tres-propres.

II-220. Mais ce changement du nom des Notes, qui donne
de la facilite à l'Intonnation, ne change rien à la
Modulation qui est toujours celle du Ton transpose, & cette
Modulation ne depend aucunement du nom des Notes.

II-221. La Modulation est la maniere de faire promener
un chant dans son Mode, d'en sortir à propos pour entrer
dans un autre, d'y rentrer de meme sans que l'oreille en
soit choquee, & enfin de finir sur le Ton, ou la corde du
Mode.

II-222. Moduler selon les Modernes, c'est non seulement
faire passer un Chant par les Chordes essentielles &
naturelles d'un Mode plus souvent que par les autres; mais
aussi se servir des meme Chordes dans les Parties qui font
harmonie, plus souvent & preférablement à d'autres qu'il
faut éviter; non qu’elles ne fussent bonnes, mais parce qu’elles feroient sortir souvent mal à propos du Mode. Moduler est aussi sortir quelques fois hors du Mode, mais pour y rentrer à propos & naturellement.

II-226. La différence de ces deux Semitons se voit sensiblement sur le Monocorde, & nous connaissons la nécessité d’y en faire, par les Clavecins coupé ou à doubles feintes dont se servent les Italiens; c’est pourtant ce qui ne se pratique point en France, & qui cause souvent de mauvais effets dans les Tons transposez, où les cadences qui se font sur les feintes ne sont pas toujours bien justes, particulièrement sur le Clavecin.

II-229. Je ne veux pourtant pas dire qu’on ne puisse exprimer sur d’autres Tons les différentes passions dont je viens de parler, mais il est certain que ceux que j’ai cité y sont plus propres qu’aucun autre. C’est pourquoi on peut connaître que quand il n’y aurait que cette raison, elle est assez forte pour prouver l’utilité des Tons transposez.

II-230. Il y avoit entre ces Modes une différence fort essentielle, qui consistoit en la différente situation du Demiton mi, fa, lequel étant autrement placé dans un Mode que dans un autre, changeoit autrement l’ordre & la manière de la Modulation; au lieu qu’il n’y a dans nos Modes de différence essentielle qu’entre les Modes de b quarre, & ceux de b mol. Mais entre les différents Modes de b quarre, non plus qu’entre ceux de b mol, il n’y a qu’une différence accidentelle, qui vient de ce que les Voix & les Instruments sont bornés dans leur étendue vers le grave & l’aigu, ce qui fait une différence de situation des cordes principales de chaque Mode.

Par exemple, si l’on suppose qu’une voix de Dessus n’ait pour toute étendue que huit cordes depuis G. re, sol en bas jusqu’à G. re, sol en haut; il est visible que le même Mode de G. re, sol aura la Finale dans les deux extrémités de la voix, que ceux de C. sol. ut, ou de D. la, re l’auront presqu’au milieu, que les autres l’auront plus près du grave ou de l’aigu, & que par consequent la situation de la Médiane & de la Dominante changera à proportion, ce qui ne laisse pas de faire une diversité remarquable dans la Modulation de chaque Mode.

Si nous accordions nos Instruments dans l’exactitude que la juste division du Monocorde demande, il y auront encore entre nos Modes une autre différence, qui consisteroit en ce que les Intervales semblables des Modes semblables ne se trouveroient presque jamais exactement égales, & qu’un Mode seroit plus ou moins Harmonieux & Melodieux qu’un autre semblable.
Quelque précaution que nous prenions en accordant nos Instruments pour en rendre tous les Accords égaux, il ne laisse pas de s'y trouver toujours quelque inégalité: & c'est ce qui fait que nous remarquons un je ne sçai quel de triste ou de guay, de melodieux ou de dur, qui nous fait dis-[tinguer] un Mode d'avec l'autre par le secours de l'oreille.

II-231. C'est la même inégalité des Intervales semblables, qui faisoit une des plus grandes différences des Modes des Anciens: car ils s'en tenoient exactement à la division Harmonique du Monocorde, & même ils avoient plusieurs différentes divisions du Monocorde, qui s'éloignoient encore davantage de la nôtre . . .

II-232. nostre accord ordinaire & Harmonique . . . l'accord musical & harmonique . . .

II-235. Il faut néanmoins avouer que d'autres circonstances y contribuent aussi, comme la propriété des Instruments, la coutume qu'on a de pincer ou de manière autrement une corde qu'une autre, suivant la commodité qu'on en a, & l'habitude de l'oreille d'en juger sur ces circonstances, & plusieurs autres, sans y faire réflexion.

II-236. Pourquoy les Transpositions des Modes.
La première et moindre Raison, c'est pour rendre la même piece de Musique chantable par toute sorte de voix. La seconde et principale Raison, c'est pour l'expression des différentes passions, à quoy la différente Énergie des Modes est très propre.

II-237. Energie des Modes
C. 3 ma. Gay et guerier
C min. Obscur et Triste
D. min. Grave et Devot
D maj. Joyeux et tres Guerier
E. min. Effenné Amoureux et Plaintif
E maj. Querelleux et Criard

II-238. L'on voit par cette Table, 1. que si l'on prend RA & même LO pour Son fondamental ou pour la finale d'un chant ou d'un air, tous les Intervalles Diatoniques temperez sont justes; que si l'on prend un autre Son pour finale, il y aura plus ou moins d'Intervalles alterez. 2. Par cette Table l'on voit quel Son du Clavecin peut estre le plus avantageux pour servir de finale à une pièce qui seroit en Tercer majeure ou en Tercer mineure, ou dont les Intervalles justes ou alterez peuvent marquer plus pathetiquement la passion que l'on veut exprimer.
II-242. En effet, qu'on donne à chanter, par exemple, un air noté ou en C sol ut naturel, sans aucune dièse au commencement des lignes, ou en D la re majeur avec dièses au commencement des lignes: celui à qui l'on donnera cet air à chanter, s'il est habile, trouvera par ces deux sortes de notes, précisément le même chant & le même air; l'on en peut dire autant à proportion de quelques tons transposez que ce soit.

II-247. S'il n'y avoit point d'autre différence entre les tons transposez & les naturels, que d'être executez ou plus haut ou plus bas, ce seroit accuser les Musiciens de prévention dans leurs idées, quand ils disent qu'un ton est ou plus beau, ou plus piquant, ou plus tendre qu'un autre, il ne diffèrera donc pas de cet autre uniquement parce qu'il est exécuté un degré plus haut ou plus bas. Si cela étoit, il n'y auroit qu'à jouer un air sur un instrument monté ou plus haut ou plus bas, pour produire tout l'effet [sic] de la transposition; & c'est néanmoins ce qui n'arrive point.

II-248. Je fis exécuter sur le même Clavecin, une pièce en C sol ut naturel; & la faisant jouer ensuite un demi ton plus haut en C sol ut dièze, tous les auditeurs s'aperçurent, qu'il y avoit une différence très-grande & très-sensible: au lieu que cette différence ne se retrouve nullement en faisant jouer la même pièce sur deux Clavecins, dont l'un seroit monté un demi ton plus haut que l'autre.

II-249. Si en particulier on vouloit en accordant un clavecin faire toutes les quintes très justes, le total du clavecin seroit manfement mal accordé.

II-250. On en peut dire autant à proportion des autres instrumens de Musique; que si l'on comprend une fois ceci, il est aisé d'apercevoir pourquoi une pièce exécutée sur un ton transposé, produit à l'oreille un effet autre que dans un ton naturel. C'est qu'alors elle n'est plus jouée par des intervalles de l'instrument Musical qui soient précisément d'une même étenduè que les intervalles du ton naturel.

II-253. Les connoisssseurs la distinguent très-bien, & c'est cette différence dont je dis qu'il est impossible de trouver le fondement, que dans le partage inégal des tons ou intervalles sur les instrumens: de [sic: de] là vient aussi que ceux qui ont un grand usage des instrumens prétendent que certains tons sont plus gracieux, ou plus doux, plus vifs, ou plus hardis que d'autres. Il pourrait bien à la verité se mêler un peu d'arbitraire, dans cette différence de caractères prétendus des tons; mais il est certain qu'il s'y en rencontre quelqu'une.
Ainsi en général les tons naturels sont une musique plus unie & plus simple, parce que leur partage est le plus exact qui ait pu se faire dans la pratique. Au contraire, les tons transposed sont plus singuliers & plus étranges, le partage de leurs intervalles étant un peu moins juste; mais c'est ce défaut même de justesse exacte, qui en fait l'agrément: cette petite bizarrerie tirant l'âme par-là, d'un sentiment trop commun & trop uniforme, révèle son attention, & lui donne une pointe de plaisir. C'est à peu près ce qui arrive dans les ragouts: on y met plus de vinaigre, de poivre, & d'autres épices, qu'il ne faudrait dans un assaisonnement ordinaire, & le plus convenable à la santé. Ce léger dérèglement, donne à l'âme un sentiment de haut goût qui plaît, ne fût-ce que par la nouveauté. Il apporte assez de variété pour rejoindre, & trop peu pour méconnaitre les impressions qui doivent se faire le plus naturellement & qui au fond sont les plus parfaites; c'est-à-dire, que dans la vie, la perfection même trop uniforme n'est pas ce qui contente le plus, & il faut quelquefois en sortir un peu, afin de la mieux goûter.

II-256. Je n'ai jamais mis le pié en France.

II-259. Pour couper court: il n'y a point de tons transposed au monde; car des 12. sons, dont on se sert, chacun est un vrai original & très-naturel, ayant ses propriétés & ses attributs particuliers, qui le distinguent de tout autre son ou ton. On a des Airs transposed; mais on n'a point de tons ou modes qui le soient. C'est justement renverser l'ordre de la nature, établir de faux principes & donner des idées qui jettent absolument dans l'erreur, que de parler de tons transposed; puisqu'ils sont tous également naturels.

II-261. mais les sons ont été constitués par le Createur, n'ayant besoin ni de notre art ni de notre transposition.

II-262. Il ne faut pas demander, si un tel Air demeure le même Air étant transposed: car, personne ne le contredira; mais la question est, si le ton ou mode demeure le même ton au [sic: ou] mode dans ses proportions & intervalles, lorsqu'un Air peut être exécuté sur douze cordes différentes. Il me semble, que quand on repaîse si fort une melodie, & qu'on la représente sous des deguisement si différents, cela doit causer des changemens, non seulement accidentels, mais véritablement essentiels, par rapport à la disposition de la matière, je veux dire, à la grandeur & mesure de ses proportions & intervalles.
II-263. La connaissance des sons, qui ont tous la même simplicité originelle, si on sçait comment les bien temperer. Par conséquent une Musique peut être aussi une & naturelle dans les tons les moins usitez, qu'on appelle par abus transposez, que dans ceux que l'on nomme naturels.

II-264. D'ailleurs les dièses & les bb ne sont aucunement des signes de transposition, car on s'en sert fréquemment dans les tons ou modes qui ne sont rien moins que transposez; ces figures ne font que marquer les sons, tous également naturels, comme les voix humaines le prouvent suffisamment.

II-265. L'on en parle, comme si ces notes, ces dièses, ces lignes rendoient un ton moins naturel qu'un autre. On parle des tierces, des quartes &c, comme si toutes les tierces & quartes étoient d'une même proportion. Ce qui n'est pourtant pas. Les tons seront les mêmes tons, incapables de transpositions, tous également naturels, n'y eut-il ni notes, ni lignes, ni dièses au monde. Ces choses dépendent des tons; mais les tons ne se règlent pas sur elles. Ce sont des marques; & non des maîtres. . . La Gamme, l'échelle, ou la suite diatonique des sons dans l'Octave étant facile & commune à tout le monde, on s'est avisé de donner à ces sons le nom de tons naturels, dans un siècle, où le monde étoit tellement naturel ou simple, que ceux qui faisoient voir le moindre art, passoient pour des hommes surnaturels & même pour magiciens.

II-266. pourquoi devons nous suivre les doctrines & les expressions defectueuses des anciens?

II-267. Ce n'est qu'elle [i.e., l'ignorance] seule qui ait inventé les beaux mots de tons naturels & transposez, dont la distinction n'est qu'une pure chimère.

II-268. mais ce qui a donné lieu à leur erreur c'est, qu'on s'est trop attaché aux premières impressions, sans approfondir la nature des choses, & sans connaître la véritable forme des intervalles.

II-269. Ce sont les Airs qui se transposent dans les tons différents, mais tous originaux, particuliers, divers & naturels.

II-270. Pour moi, je me declare ouvertement contre toutes transpositions, si elles ne se font par nécessité.

II-271. Mais il y a des transpositions, ou Airs & morceaux d'Airs transposez, pour lesquels, (n'en deplais a
maître habile) la composition à de grandes règles. Où sont elles? me demandera-t-on. Je réponds: Qu'on les trouve principalement dans toutes les fugues & contrepoints doubles, qui au fond ne sont autre chose, que des transpositions d'un même sujet dans d'autres tons: ce qui est la seule espèce de transposition legitimate & agréable, toutes les autres n'étant que corruptions & mutilations, qu'un compositeur, qui entend précisément la doctrine des proportions harmoniques, ne souffre jamais que par nécessité.

II-272. On demande aux Musiciens, puisque le chant est toujours le même dans les tons transposez & dans les tons naturels, pourquoi employez-vous les tons transposez qui sont d'une exécution beaucoup plus difficile; au lieu des tons naturels dont l'exécution est plus aisée?

II-273. Puisque la supposition n'est pas juste, & que le chant d'un Air transposé n'est pas précisément le même dans toutes ses parties ou proportions; on peut répondre à la question précédente: que c'est même à cause de la grande varieté qui se trouve entre les tons, qu'on employe tantôt l'un tantôt l'autre, pour rendre les airs plus agréables, & pour mieux toucher l'âme & l'oreille, qui se plaisent à la diversité.

II-274. Ce partage inégal des tons ou intervalles, qui n'est qu'en partie le fondement de la difference en question, est autant suivi & imité par les voix, qu'il se trouve inevitable sur les instrumens; au moins si on les doit accorder ensemble.

II-275. Tout cela est vrai, non seulement à l'égard des instrumens: mais il l'est encore principalement par rapport aux voix. Et ce qui ne m'étonne pas peu c'est, de voir que l'on parle ici des intervalles des instrumens d'une manière si particulière, comme si la voix humaine n'avait pas dans toute son étendue les mêmes intervalles, & par consequent le même pouvoir qu'ont les clavecins & autres instrumens, de produire un effet différent par chaque changement des tons. . . . Cependant lorsque ceux qui accordent les instrumens sont obligez de rendre certains intervalles moins justes; ceux qui chantent sont indispensablement réduits à la même nécessité, & leurs oreilles les y portent sans qu'ils s'en apperçoivent.

II-276. Un ton n'est il pas le même ton, soit qu'on le joue ou qu'on le chante?
II-277. La différence d’un ton plus bas ou plus haut est fort considérable, à cause des vibrations fréquentes ou moins fréquentes . . .

II-278. J’affirme que si les tons, qu’on prend inconsiderément pour tons transposez, n’avoient pas d’autre prérogative que celle du haut & du bas, elle suffiroit pour des différences fort sensibles, à cause de ce que nous en avons touché ci-dessus. Ce n’est donc pas uniquement, mais principalement de là que se tire la raison, non des agréments, mais des changemens qu’on éprouve par les tons en question.

II-280. Il est bien vrai, qu’au dernier cas la différence n’est pas tout à fait si grande, qu’elle l’est au premier, parce que les intervalles p.e. du mode ou ton C sol ut sont par tout les mêmes, quant à leur proportion, soit qu’on les hausse ou baisse. Cependant c’est ouvertement donner le dementi aux sens, que d’avancer, que cette différence ne se trouve nullement au dernier cas: car on n’a qu’à mettre les deux Clavecins, dont l’un seroit monté d’un demi-ton plus haut que l’autre, dans une même chambre, & à jouer successivement sur l’un & l’autre la même pièce, des mêmes touches &c. on s’apercevra, sans hesiter un moment, de la grande différence causée par le haut & bas, qui est justement ce qu’il y a de plus perceptible dans cette Affaire, les proportions des intervalles l’étant toujours moins, particulièrement aux oreilles ignorantes.

II-281. Accordez p.e. l’Octave de D la re majeur d’un de vos Clavecins précisément à l’exemple des intervalles, qui se trouvent dans l’Octave de C sol ut (appelé naturel) qui d’ailleurs sont fort divers; mais n’abaissez pas le ton, & vous trouverez, qu’en jouant vôtre Air premièrent du D la re majeur sur l’un, & immédiatement après du C sol ut sur l’autre Clavecin, qu’il que les intervalles y ayent pour le coup la même proportion, tout le monde présent, & même les enfans s’appercevront de la difference.

II-283. J’en ai fait l’expérience & j’ai trouvé, qu’il faut avoir l’oreille fine & docte, pour remarquer en quoi consiste la différence qu’il y a effectivement dans ces intervalles; ce qui pourtant se connoit aisément, quand on joue des deux Clavecins à la fois. Il me semble aussi qu’il faut faire cela pour en bien juger.

II-284. Je conclus de tout cela, que la partie la plus grossière de cette différence entre les tons depend réellement du haut & du bas qu’il y a dans leur constitution; & que la partie la plus fine & la plus
delicate depend de la proportion diverse des intervalles qui portent des noms communs.

II-285. Si donc la différence particulière, qui résulte des diverses proportions dans les tons ou modes, est si petite (comme j'en suis déjà convenu ci-dessus dans la réflexion sur le 8) que pour l'apercevoir il faille avoir un très-grand usage des sons; & si d'un autre côté la différence générale dans les Airs transposées est très-grande & très-sensible, comme notre Auteur l'a fort bien experimenté: n'est il pas raisonnable d'attribuer, comme je fais, la plus grande part de cette différence au plus ou moins d'élevation du son, soit sur les instruments, soit dans les voix? Pour ce qui est de cette partie de la différence que nous appelons petite, elle n'est difficile à appercevoir qu'à l'égard de la juste mesure ou grandeur des intervalles. Car on s'aperçoit facilement que cela diffère; mais il n'y a que les savans qui trouvent comment & combien cela diffère.

II-286. Si l'on veut seulement temperer toutes les quintes un peu plus également, & s'approcher des règles du Sieur Neidhardt, l'inexactitude deviendra bientôt plus générale, & elle sera même suffisante, sans nous priver de l'agrément de la différence.

II-290. Qu'on me laisse ce brillant & cet éclat (pour ne rien dire des autres qualités) à certains tons, quels qu'ils soient, préférablement aux autres; ces différences me suffisent: puisqu'il est très-certain, que ce brillant & cet éclat sont des choses aussi estimables dans la Musique que dans les joyaux.

II-292. Pour conclusion, si l'on me demandait donc en général: Pourquoi l'on emploie quelque fois dans la composition un ton (quel qu'il soit) préférablement à un autre? je répondrais: Qu'en parlant seulement de transposition, où les tierces ne changent point de majeures en mineures, (1.) le plus ou moins d'élevation des sons, (2.) la diversité inévitable des proportions & intervalles, soit sur des instruments ou dans des voix accompagnées, produisent des différences très-sensibles, qui agissent physiquement de douze manières distinctes sur nos sentiments; & qu'en parlant de la composition, comme fait le Problème, la qualité des tierces majeures & mineures, jointe aux deux articles susdits, fait naître 24 changemens réels, qui entre les mains d'un habile homme contribuent infiniment à exciter toute sorte de passion dans les Auditeurs.
En voilà sans doute la véritable raison!
II-294. Mon Intention en publiant ces Réflexions n'est pas de réfuter l'Auteur de l'Éclaircissement, ni de faire tort à qui que ce soit; mais le seul but, que je m'y suis proposé, est la recherche de la vérité.

II-295. Je lui sais bon gré de sa belle pièce, que je viens de mettre au rang de ce que j'ai de plus estimable dans ce genre, espérant qu'il ne sera pas fâché de mes innocentes réflexions.

CHAPTER III

III-2. Dans cette pratique, on n'a pas l'avantage de la transposition vocale, qui est de supprimer dièses, & bémols; il faut au contraire se les rappeler tous dans le besoin.

III-3. Il y a bien de la différence entre la musique vocale et la musique instrumentale, la dernière étant plus facile que la première, d'autant que l'on ne change point les notes de nom quoy qu'il se rencontre des bémols ou des dièses immédiatement après la Clef, ce qui épargne une grande difficulté que l'on ne peut éviter dans la musique vocale.

III-9. Pour rendre cecy plus facile . . .

III-12. Mais comme plusieurs personnes auraient peut-etre de la peine à trouver les Notes sans se régler sur une Clef: Voicy des démonstrations où l'on connaîtra le rapport que ces Tons transposez ont avec les naturels par b mol & par b quarre par supposition de Clefs.

III-13. Si les Tons transposez sont nécessaires, pourquoi avoir donné des Règles pour les chanter au naturel.

Les Règles que nous avons donné pour chanter au naturel les Tons transposez, n'ont pour but que de donner de la facilité [facilité] pour l'Intonnation que la transposition renverse, & rend de difficile exécution pour ceux qui commencent; parce qu'en changeant les noms des Notes suivant les Règles que nous avons donné dans la Méthode, on entonne naturellement & facilement.

III-33. Plan de toutes les Clefs, Parties, & Sons naturels de la Musique chantez par b mol . . . . chantez par b carre.

III-34. Autre plan de toutes les parties de la musique, dans lequel on fait voir le rapport qu'il y a des unes avec les autres.
III-35. Pour scévoyer la Musique en perfection, il faut indispensabellement bien posséder ces sept positions de Clefs, de même que la suite naturelle des Notes en montant & en descendant.

III-36. Règle générale pour toutes les Transpositions, soit par b mol, soit par q carre.

Si la Note qui descend par degrés conjoints, après la Note finale, procède par un demi-ton, ou si elle est dièisée, en ce cas il faut chanter, ut, si, & conséquemment la Note finale s'appellera ut.

Mais si la Note qui descend par degrés conjoints après la Note finale procède par un ton plein, ou si vous voulez, par un fa, en cet autre cas il faut chanter ré, ut, & conséquemment la Note finale s'appellera ré.

III-38. Tournez pour voir les Exemples de ces deux Règles & les Clefs qu'on se peut figurer.


Exemples pour les Transpositions en Ré.

III-40. Clef qu'il se faut figurer.

La clef qui préside au commencement des lignes détermine la partie qui doit chanter, et celle que l'on se figure pour chanter plus facilement la Transposition, ne sert qu'à représenter plus promptement à l'imagination le nom des nottes qu'on doit suposer.

III-41. On peut icy se figurer les Clefs qui sont au commencement des deux premières lignes de cet Air.

III-42. Et pour ne rien omettre, j'y donne deux règles qui appliqueront infailliblement les difficultés de toutes les Transpositions; la première servira pour les Transpositions qui se font avec des dièzis, & la seconde pour les Transpositions qui se font avec des [b]mols: Ces deux Règles sont accompagnées de quantité d'exemples qui ne seront pas inutiles pour faire plus aisément comprendre l'explication & le raisonnement qui les précède.

III-43. Règle pour rendre faciles les Transpositions qui se font avec des Dièzis.

III-44. Pour vous la faire aisément comprendre, il faut auparavant vous instruire de l'ordre naturel des Dièzis. Cet ordre naturel est, que, quand il n'y a qu'un Dièzis, ce n'est jamais ailleurs que sur le Fa qu'il doit estre placé; que quand il y en a deux, c'est en ce cas le Dièzis de l'Ut qui doit l'accompagner; que quand il y en a troies, c'est
pour lors le Dièzis du Sol qui doit accompagner les deux autres, que quand il y en a quatre, c'est le Dièzis du Ré qui doit accompagner les trois autres; que quand il y en a cinq, c'est en ce dernier cas le Dièzis du La qui doit accompagner les quatre autres, de manière qu'ils se trouvent tous cinq à la quinte l'un de l'autre en montant, ou bien à la quarte en descendant, que très-souvent, lorsqu'il y en a cinq ou davantage, il se peut qu'une partie ne soit que la répétition, ou l'octave de quelques-uns des cinq dont on vient de parler.

III-45. Cet ordre ainsi remarqué, on vous donne pour règle certaine que le Dièzis du Fa estant seul, on peut l'appeler Si, que quand il y en a deux, il faut appeller Si le Dièzis de l'Ut; que quand il y en a trois, il faut appeler Si le Dièzis du Sol; que quand il y en a quatre, il faut appeler Si le Dièzis du Ré; que quand il y en a cinq différents, il faut appeler Si le Dièzis du La; d'où l'on peut inférer que c'est toujours le dernier Dièzis qu'on doit appeler Si. Pour le bien concevoir regardez les Exemples qui sont dans ces deux pages.

III-47. Autres exemples, pour les Transpositions qui se font avec des Dièzis.

III-48. Clef qu'il se faut représenter.

III-49. Règle pour rendre faciles les Transpositions qui se font avec des b mols.

Cet ordre ainsi remarqué on vous donne pour règle certaine que le b mol du Si se trouvant seul il faut l'appeller Fa; que quand il y en a deux, il faut appeler Fa le b mol qui est sur le Mi; que quand il y en a trois, il faut appeler Fa le b mol qui est sur le La; que quand il y en a quatre, il faut appeler Fa le b mol qui est sur le Ré; d'où l'on peut inférer que c'est toujours le dernier b mol qu'on doit appeler Fa.

III-50. Autres Exemples pour les Transpositions qui se font avec des b mols. Autre Clef qu'on peut se représenter.

III-52. Pour la voix. C'est pourquoi je me contente seulement de donner icy une petite explication de la manière dont on doit chanter par les Môdes naturels & transposez sur les différentes positions des trois clefs.

III-53. Suivant son ordre [i.e., de la Gamme], il n'y a que deux Môdes que l'on puisse traiter de b.mol ou de b. carre. Le b.carre est celui de C sol ut, sans b.mol ny dièze, le b.mol celui de G re sol avec des b.mols sur les si.
À celuy de C sol ut b. carre, il faut prendre la
deuxième voix de la Game, par exemple, de l'F ut fa le fa,
de G ré sol le sol, d'A mi la le la, de B fa si le si, de C
sol ut l'ut, de D la ré le ré, & d'E si mi le mi.
À celuy de G ré sol b. mol il faut prendre la première
voix de la Game qui est de l'F ut fa l'ut, de G ré sol le
ré, d'A mi la le ml, de B fa si le fa, de C sol ut le sol,
de D la ré le la, & d'E si mi le si.

III-54. On peut aisément chanter par b. carre le Môde
d'A mi la & de D la ré tierce mineure; mais à l'égard de
tous les autres Môdes ils doivent être transposez pour la
commodité de la voix.

III-56. Ces deux Môdes dont je parle, & dont j'ay parlé
dans la page 4. cy-devant, ne se doivent chanter qu'en deux
manières, l'une par la tierce majeure, & l'autre par la
mineure.

Pour connoître par laquelle des deux un chant procède,
il faut d'abord conter combien il y a de tons depuis la
finale jusqu'à la médiane. S'il y en a deux, le Môde ou la
tierce est majeure, & il faut dire ut sur la finale, ml sur
la médiane, & sol sur la dominante, & nommer ensuite les
autres notes suivant leur ordre. S'il n'y a qu'un ton &
demi depuis la finale jusqu'à la médiane, le Môde ou la
tierce est mineure, & il faut dire ré sur la finale, fa sur
la médiane, & la sur la dominante, & nommer pareillement
les autres notes suivant leur ordre. Voilà les manières
dont on doit se servir pour apprendre à transposer, & non
pas de celles dont se servent la plupart des Maîtres qui
enseignent, lesquels pour garder des Écoliers quelques mois
de plus, leur apprennent à connoître le chant par le nombre
des dièzes ou des b. mois qui sont immédiatement après la
clef...

Il faut toujours observer que chaque clef donne son nom
aux notes qui sont sur la même ligne où elle est posée, à
moins que l'on ne soit obligé de transposer le chant sur
l'un des deux Môdes dont je viens de parler, pour la
facilité de l'intonation.

III-58. Pour donner une entière connoissance de ce que
j'ay dit, on verra dans les trois pages suivantes, les
exemples des transpositions du naturel au b carre & au b mol
sur toutes les positions différentes des trois Clefs, tant
pour la voix, que pour les instrumens.

III-65. Tierce mineure transposee du Si... La...
Tierce majeure transposee du Sol... Fa... Tierce
mineure transposee du Mi. Tierce mineure naturelle du Ré, à
laquelle il faut rapporter toutes les autres Tierces
mineures transposees. Tierce majeure naturelle de l'Ut, à
laquelle il faut rapporter toutes les autres Tierces majeures transposées.

III-68. Car pour savoir sur quelle corde de la Gamme est travaillée une pièce du Musique, il faut connaître la dernière note par le secours de la Clé toute simple, comme si elle étoit seule, sans avoir égard aux Dièses ou Bémols qui sont après elle, que lorsqu’on en veut connaître la Tierce.

III-72. Les Écoliers ne doivent donc point s’allarmer de la transposition qu’autant qu’ils n’ont point de pratique des sept positions des clés ci-dessus; car s’ils les avaient pratiquées en particulier, ils verroient bien que la transposition n’est rien pour celui qui chante.

III-75. Voilà la Manière la plus sûre pour réduire au naturel toute sorte de Musique transposée, lorsqu’elle est régulièrement écrite, tant sur les tons qui sont en usage, que sur ceux qu’on appelle les demi-tons, sur lesquels on ne travaille pas si communément, mais dont on se peut aisément tirer, en changeant la dernière note d’une pièce, dont la modulation est majeure en ut, & la dernière note d’une pièce, dont la modulation est mineure, en ré; toute l’application ne consiste donc qu’à pouvoir connaître la tierce de la dernière note de quelque pièce qu’on nous puisse donner, & la changer dans une naturelle, si elle ne l’est pas.

III-77. Il est temps de s’exercer à former un ton et un demi-ton entre 2. degrés cojoints.

III-78. Pour bien pratiquer les deux modes sur chacune des sept nottes, il faut s’exercer sur les Tables suivantes, et bien observer les tons et les demi-tons dans les endroits où les bémols et les dièses les transportent.

III-79. Il ne faut pas seulement monter et descendre l’octave de chaque colonne des Tables précédentes, il faut encore en déconter tous les intervalles pour les pouvoir chanter bien juste; cet exercice servira du moins à pratiquer les bémols et les dièses accidentels, c’est à dire ceux qui se rencontrent par hasard dans le cours d’un Chant.

III-80. Leçon sur les bémols et sur les dièses accidentels.

III-82. Ceux qui trouveront trop de difficulté à chanter la Transposition de cette manière pourront pour plus grande commodité transposer le nom des nottes en la manière suivante.
Lorsque le mode est majeur soit naturellement soit accidentellement, on donne le nom d'ut à la notte finale et fondamentalle, en quelque degré qu'elle se puisse trouver.

Ex: 
Lorsque le mode est mineur, on dit Ré, ou La, sur la notte fondamentalle, en quelque degré qu'elle se puisse trouver.

Ré quand il y a des bémols après la clef; La, quand il y a des dièzes.

Exemple.

Mode majeur sur le Ré. Il faut dire Ut sur la finale, au lieu de Ré, parce que le mode est majeur.
Mode mineur sur l'Ut. Il faut dire Ré au lieu d'Ut car le mode est mineur par le moyen des bémols.
Mode mineur sur le Mi. Il faut dire La, au lieu de Mi, parce que le mode est mineur par le moyen d'un dièze.

III-83. la maniere de transposer

III-85. J'enseigne la Transposition de differentes manières. chacun choisira celle qui lui conviendra le mieux.

III-86. Si la maniere dont je me sui servy pour transposer le nom des nottes ne satisfait pas, on pourra choisir celle qui suit. elle me paroit la plus certaine.

III-87. Maniere de Transposer le nom des nottes, et de suposer une clef naturelle.
Lorsqu'il y a un bémol immediatement après la clef il se pose sur le Si, et change le nom de ... Si, en Fa.
Le second bémol se pose sur Mi, et change ... Mi, en Fa.
Le 3e. bémol se pose sur La, et change ... La, en Fa.
Le 4e. bémol se pose sur Ré, et change ... Ré, en Fa.
Le 5e. bémol se pose sur Sol, et change ... Sol, en Fa.

... Quand il y a un dièze immédiatement après la clef, il se pose sur le Fa, et change le nom de Fa, en Si.
Le second dièze se pose sur Ut, et change ... Ut, en Si.
Le 3e. dièze se pose sur Sol, et change ... Sol, en Si.
Le 4e. dièze se pose sur Ré, et change ... Ré, en Si.
Le 5e. dièze se pose sur La, et change ... La, en Si.
III-88. Table des Clefs suivies de Bémols, et des Clefs naturelles qu'il faut suposer. Table des Clefs suivies de Dièzes, et des Clefs naturelles qu'il faut suposer.

On voit par les Tables précédentes qu'il n'y a point de Transposition qui ne se réduise par suposition à l'une des sept positions des clefs.

III-90. Comme les notes peuvent changer de nom sur un même degré autant de fois que les bémols et les dièzes changent de disposition, pour définir chacun des sept degrés, on s'est servy jusqu'à présent des sept premières Lettres de l'Alphabet, chacune de ces Lettres étant immuable, fixe et détermine absolument son degré sans avoir égard au nom de la note qui s'y rencontre, on joint ordinairement à ces Lettres la nomination naturelle des notes, et c'est ce qu'on appelle Gamme.

III-91. Demande]. Suffit t'il de connoître ces notes, ou degrés par la clef de g. re. sol.
Réponse]. Non. Il faut encore les connoître, par la transposition des b. mols que l'on pose après les clefs, les quels b. mols prennent la place de la clef et en servent, pour la nomination des notes, ou degrés.

Réponse]. Que les derniers sont les maîtres, puis qu'ils commandent.

III-94. On supose comme un principe évident à tous ceux qui ont quelque usage de la Musique, qu'il n'y a que deux sortes de tons, ou modes; sçavoir, le majeur, tel que C sol ut naturel, & le mineur, tel que D la re naturel. Ainsi les airs les plus transposez & notez avec la plus grande quantité de Dièzes & de B mols au commencement des lignes (qui y sont des signes de transposition) tous ces airs, dis je, pourroient être notez en un ton naturel, tel que C sol ut naturel, s'ils sont majeurs, ou D la re naturel, s'ils sont mineurs, sans qu'au fond il y eut rien de changé pour la suite de la modulation. Car s'il se trouvoit quelque différence dans le chant, ce ne seroit plus le même air . . .

III-95. Il est vrai que les tierces divisent généralement les modes en majeurs [et] en mineurs; & que, si les éléments des tons ou modes consistoient uniquement dans les tierces, à l'exclusion de tout autre intervalle, il n'y auroit évidemment en ce cas que deux sortes de tons, puisque cela se peut fort bien dire à l'égard des tierces: mais comme il y a encore beaucoup d'autres éléments pour former un ton ou mode en son particulier, ce principe est
suivra à de très grandes exceptions, & l'on n'en saurait rien conclure ici.

III-96. À considérer la disposition des mélodies en gros, les transpositions n'y semblent rien changer; mais il y a au fond bien du changement pour les intervalles de la modulation, qui ne gardent jamais les mêmes mesures ou proportions. Outre cela il ne s'agit pas ici de changer une mélodie entière; mais de changer le ton, les formes, les grandeurs & la suite des intervalles dans la modulation, ce qu'il ne faut pas confondre.

III-97. Il soit évident, qu'en suivant la fausse supposition ci-dessus, pour noter toutes les pièces ou du C sol ut, ou du D la re, on ne chanterait jamais que ces deux pauvres tons, ou l'on serait obligé de chanter tout autrement qu'il n'est noté: Ce qui s'accorderait fort bien avec la doctrine perverse d'Alexandre Frère.

III-98. Nous sommes déjà revenus d'une infinité de leurs règles & méthodes pédantesques; sur tout par rapport à la connaissance des sons . . .

III-99. * J'ai vu avec surprise, quelle peine s'est donnée Alexandre Frère dans le Traité de sa façon qu'il appelle: Transpositions de Musique réduites au naturel. Que l'on ne se flatte pas, qu'il y ait dans cet ouvrage le moindre mot du fondement; c'est une pauvre invention mais fort intriquée pour faciliter la manière de Solfier, & au dessus de tout cela les préjugés & faux principes s'y font remarquer à chaque bout de champ.

III-100. Je ne sais aussi que trop, que la mauvaise habitude & le peu d'application en sont la véritable cause.

III-102. Un enfant, par exemple, qui apprend à jouer du clavessin, exécutera avec la même facilité une pièce du C sol ut dièse, que du C sol ut; parce qu'il n'a pas encore contracté la mauvaise habitude de jouer certains tons communs, sans toucher au reste. Au contraire, si l'on fait jouer cet enfant toujours du C sol ut dièse, ou des autres tons chromatiques, il trouvera de la difficulté à jouer du C sol ut, ou des autres tons diatoniques, que les partisans des prétendus tons transposez font passer pour les plus naturels.

III-103. J'en ai fait l'essai & j'ai trouvé que ce n'est pas le ton, qui cause de la difficulté sur les instrumens; mais que c'est l'ignorance & la pratique trop resserrée qui l'enfantent.
III-104. On tire aussi de ces connaissances, la raison & la manière aisée de réduire à une nomination naturelle tous les Airs transposez quelques chargez qu'îls soient de Dièzes & de Bémols, en nommant simplement UT, la Finale de tous les Airs transposez en Mode majeur; en nommant LA, la Finale des Airs transposez par des Dièzes en Mode mineur; en nommant RE, la Finale des Airs transposez par des Bémols aussi en Mode mineur; & en supposant au commencement de tous ces Airs réduits au naturel, la Clef que leurs Finales demandent.

III-105. Toutes les Clefs accompagnées de Dièzes & de Bémols dans les Tons transposez se rapportent & se réduisent à la nomination naturelle de quelques-unes des trois Clefs.


III-108. Ouvrage généralement utile pour la Transposition, à ceux qui se messent du Chant & des Instrumens d'accord, ou d'une partie seule ...

III-109. Ceux qui apprennent à chanter, voyent dans les deux planches d'octaves le secret de la transposition, en ce que tout le ton majeur se solifie par la première octave d'ut, & le ton mineur par la première octave du ré. Il n'est pas besoin de Mathematiques pour découvrir combien il faut de dièzes & de bémols, pour transposer d'un ton à un autre, comme l'a écrit un Auteur Mathématicien.

III-110. Tout le secret pour l'Ecolier, est de découvrir en quel ton il est, du majeur, ou du mineur.

III-112. Le chemin des octaves

III-115. Avec la manière de transposer instrumentalement, & de solfier facilement la Musique vocale sans l'usage de la Gâme.


Plusieurs Maîtres à chanter sont dans l'incertitude, & dans la dispute sur la manière de solfier le ton mineur. Les uns veulent que ce soit le ré, qui soit modèle unique; & les autres prétendent que c'est le la; mais, par leurs différentes opinions erronées, ils embrouillent la matière. Ceux qui n'admettent que le ré, sont dans la nécessité de faire une addition, ou supposition d'un dièze à la clef dans le la mineur (qui n'en doit point avoir) pour être
solfifié par ré: & d'en ajouter un pareillement, outre l'ordinaire, dans les octaves Lavennes; c'est-à-dire, qui ont des dièses à la clef.

Ceux au contraire qui n'admettent que le la, sont dans la nécessité de faire addition, ou supposition d'un bémol à la clef dans le ré (qui n'y doit point être) & d'en ajouter un pareillement outre l'ordinaire dans les octaves Révennes; c'est-à-dire, qui ont des bémols à la clef.

Ces deux moyens pour solfier sont également vicieux; & l'on m'avoûtera sans doute, qu'il n'est point naturel de persuader à un écolier qui a du bon sens, d'imaginer addition, ou supposition de ce qui n'est pas visible, comme nécessité indispensable: & l'on conviendra que ces moyens sont pleins d'embarras.

Il en est des règles, comme des machines: plus elles sont simples & mieux elles valent: Et c'est une vanité fondée sur l'obscurité de la matière: c'est courir après l'os imaginaire de la fable, que de vouloir, non-seulement rafiner, mais encore détruire par de faux principes la règle généralement reçue & approuvée, qui est de dire, si, sur le dièze le plus extraordinaire à la clef, & fa, sur le bémol le plus extraordinaire à la clef. Rien n'est plus sensible que cette règle. Ma règle de l'octave se rapportant à ce système, ainsi que vous allez voir, je dis donc, par correction, que les octaves ou modulations qui n'ont ni dièses ni bémols à la clef, se chantent naturellement; c'est-à-dire, sans déguiser le nom de la notte.

Ces octaves sont au nombre de trois. Scavoir, ut majeur, ré mineur, & la mineur. Ces trois octaves sont modèles de toutes les autres qui empruntent leur nomination. Toutes les majeures, sans exception, prennent la nomination de l'ut majeur.

Les octaves mineures sont partagées entre le ré mineur, & le la mineur. Scavoir, celles qui ont des bémols à la clef, prennent la nomination du ré mineur, ce sont les Révennes; & celles, qui ont des dièses à la clef, prennent la nomination du la mineur, ce sont les Lavennes.

Notez bien que cette règle simple en général est d'autant plus estimable, ainsi que j'ai dit, qu'elle se rapporte à cette autre qui fait dire, si, sur le dièze le plus extraordinaire à la clef, & fa sur le bémol le plus extraordinaire à la clef.

III-117. APPROBATION

Ayant lu & examiné avec attention le présent système pour solfier, & attendu qu'il répond parfaitement à la règle qui fait dire, si sur le dièze le plus extraordinaire, & fa sur le bémol le plus extraordinaire, nous avons très-approuvé qu'il faut solfier les octaves mineures qui portent des bémols à la clef, par ré: & les autres mineures, qui portent des dièses à la clef, par la. Nous

CLERAMBAULT, FORQUERAY, T. BERTIN.

III-118. Comment peut-on connaître les bemols qui doivent dominer dans les tons transposes par bemol, & les dièses qui doivent dominer dans les tons transposes par quarre, & comment les faut il pratiquer quand ils ne sont pas marquez.

III-119. Il est vray que l'on trouve souvent des pièces de musique où les bemol & les dièses ne sont pas marqués régulièrement après la clef, ce qui cause souvent de l'embarras à ceux qui apprennent, & qui ne met dans l'impossibilité de pouvoir se servir des règles que nous avons données pour naturaliser les tons transposes. C'est pourquoi pour donner tout l'éclaircissement & la facilité nécessaire sur ce sujet, voici des règles par lesquelles on pourra facilement connaître les bemol & les dièses qui doivent dominer en chaque ton transposé, & ce qu'il faut observer en chacun en particulier.

III-120. En C sol ut mineur, ou tierce mineure, c'est la même chose, qui est un ton transposé par bemol, il faut qu'il y ait un bemol sur le degré où l'on dirait Si par quarre, & un autre sur le degré où l'on dirait Mi par le même quarre. Mais comme quelquefois après la clef, on ne met qu'un bemol sur le degré du Si, & qu'à chaque Mi qui se rencontre dans la suite de la pièce on met un bemol, qui devroit être mis après la clef, il suffit de connaître que la pièce est en C sol ut, & qu'elle se chante par bemol, pour savoir qu'outre le bemol qui est sur le degré du Si, il doit aussi y en avoir un sur le degré du Mi; alors il faut le supposer après la clef, & suivre les règles que nous avons données pour ce ton transposé, & remarquer que si dans la suite de la pièce il se trouve quelque Mi qui ne soit pas précédé d'un bemol, il y faudra supposer un dièse. De plus, s'il se rencontre quelque pièce de musique en C sol ut qui n'ait aucun bemol après la clef, il suffira de voir que dans la suite de la pièce chaque Si & chaque Mi est précédé d'un bemol, pour les supposer au commencement comme s'ils y estoient marqués, observant toujours que si quelque Si ou quelque Mi n'a point de bemol, il faut supposer un dièse, mais quand les deux bemols différents sont marqués après la clef, il ne faut rien supposer. 

En A mi la majeur, il doit y avoir trois dièses différents après la clef; savoir, un sur le degré du Fa, un autre sur le degré de l'Ut, & le troisième sur le degré du Sol, & s'il se trouve qu'il y en ait moins de marqués, il suffit qu'il y en ait un pour supposer les autres, observant toujours de supposer un bemol à chacune de ces notes qui n'aura
point de Dieze. De plus, s’il n’y a aucun Dieze marqué après la Clef, ce qui n’arrive point, ou très-rarement, on connaîtra qu’il les faut supposer lorsque dans la suite de la Pièce chacune de ces Notes sera précédée d’un Dieze, mais aussi il faudra supposer un B devant celles qui ne seront pas précédées d’un Dieze.

Il faut remarquer quand on suppose des B mols & des Diezes au commencement d’une Pièce de Musique après la Clef dans les Tons transposez, qu’il faut conter pour rien ceux qui se rencontrent dans la suite de la Pièce sur les mêmes degrés, & qu’il les faut oublier comme s’ils n’y estolent pas.

III-122. Il faut aussi remarquer que toutes les suppositions que nous avons dit qu’il fallait faire d’un Dieze dans les Tons transposez par B mol, lorsque la Note qui doit avoir un B n’en a pas, & d’un B dans les Tons transposez par B| quarre, lorsque la Note qui doit avoir un Dieze n’en a pas, que ces suppositions n’arrivent que par accident & rarement; parce qu’elles ne sont pas naturelles comme celles des B mols & des Diezes, qui doivent dominer naturellement après la Clef dans les Tons transposez.

III-123. Il faut encore remarquer que si je nomme Si, Mi, La, les trois degrés qui sont dominés par trois B mols dans les Tons transposez par B mol, & Fa, Ut, Sol, les trois degrés qui sont dominés par trois Dièses dans les Tons transposez par B| quarre, c’est afin qu’en supposant le Ton naturel par B| quarre, on puisse pratiquer ces Règles avec plus de facilité, & non pas pour obliger ceux qui chantent à les nommer ainsi dans les Tons transposez, puisqu’au contraire les trois degrés qui sont dominés par trois B mols dans les Tons transposez, se nomment Fa, Ut, Sol, & que les trois degrés qui sont dominés par trois Dièses dans les Tons transposez par B| quarre, se nomment Si, Mi, La.

III-136. un secours particulier

III-139. Exemple des six Modulations majeures, écrites avec la juste quantité de Dièses qui leur est nécessaire, pour pouvoir changer la dernière note en Ut. [etc.] Exemple des six Modulations mineures, écrites avec leur juste quantité de Bémols. [etc.]

III-140. Les Modulations mineures, écrites avec des Dièses, sont celles qu’on trouve ordinairement sans la juste quantité qui leur est nécessaire, pour pouvoir les réduire au naturel, en changeant la dernière note en ré, suivant ce que j’ay établi ci-devant pour toutes les modulations mineures . . .
III-142. Il s’en trouvera beaucoup qui seront bien-aisés de trouver un chemin, pour pouvoir surmonter les difficultés que cause cette modulation du la, tierce mineure, puisqu’on y rencontre assez communément le fa & le ré dièze, lesquelles cordes n’étant pas bien familières aux Ecoliers, peuvent souvent les arrêter.

III-148. On trouvera l’Air qui suit travaillé sur le la tierce mineure; & quoiqu’il n’y ait ni Dièze ni Bémol après la clef, qui puisse faire croire que la modulation ne soit pas naturelle, il est cependant certain que beaucoup d’Ecoliers hésiteront la première fois à le solfier tel qu’il est écrit.

Mais si l’on veut changer la dernière note en ré qui est la modulation mineure la plus naturelle, & se souvenir qu’il y a un Dièze de négligé après la clef dans la corde du fa, lorsqu’on rencontrera ce Dièze dans la suite de l’Air sur cette corde, on aura soin de le regarder comme inutile & superflu; mais lorsqu’on ne le trouvera plus près des notes qui seront sur cette même corde, on aura soin d’y supposer des Bémols; il est certain qu’un Écolier qui aura de la peine à l’executer tel qu’il est écrit la première fois, l’emportera au premier coup tel qu’il est écrit la seconde: & pour rendre ce que j’explique plus sensible, on trouvera deux petits points sur les notes où il faudra supposer des Bémols.

III-149. Air travaillé sur le la tierce mineure, qui devroit être écrit avec un Dièze après la clef dans la corde du Fa, pour en pouvoir réduire la modulation au naturel, en changeant la dernière note en Ré.

III-150. Il est aisé de juger par expérience laquelle des deux manières de solfier est la plus aisée.

III-153. Je commence par la plus simple modulation qu’on trouve souvent écrite avec un Bémol, & à laquelle il en faudroit deux, pour pouvoir changer la tierce de la dernière note en naturelle, & rendre par ce moyen le chant plus aisé à exécuter.

III-154. La pluspart de ceux qui composent de la Musique, ou qui l’écrivent, ne se contentent pas seulement de négliger à la clef quelques Bémols; mais souvent ils négligent d’y mettre le plus essentiel, & sans lequel, il est assez difficile de connaître au premier coup si la Modulation est majeure ou mineure: Je parle du Bémol, par lequel on peut connaître la tierce de la dernière note, c’est-à-dire celui qui doit être sur la corde qui forme la tierce de cette dernière note.
III-155. Il n'y a point d'autre secours pour surmonter cet obstacle, que d'examiner avec un peu de soin dans le cours de l'Air proposé, la corde qui forme la tierce de la dernière note: si l'on y trouve communément un Bémol, on doit juger de-là, que la tierce en sera mineure.

III-156. Comme on trouve déjà deux Bémols après la clef, on doit croire que ce n'est pas la modulation du fa tierce majeure, puisqu'elle n'est jamais écrite qu'avec un Bémol à la clef, & au contraire se méfier, que puisqu'on en trouve deux, il y a plus d'apparence que c'est le fa tierce mineure, & que le Bémol essentiel qui doit être dans la corde ou note qui termine la tierce de la dernière note, peut bien être négligé à la clef. En effet, si l'on veut examiner cette corde qui est le la dans le cours de l'Air, on y trouvera communément un Bémol, & c'est pour lors qu'on ne doit plus douter que c'est une modulation mineure: il faut donc changer la dernière note qui est un fa en ré, & se souvenir que le fa tierce mineure demande trois Bémols à la clef, que l'exemple ci-devant n'en ayant que deux, le 3e. qui devroit être dans le la, est négligé, & se trouve accidentel dans la suite de l'Air: c'est pourquoi lorsqu'on le rencontrera sur cette corde du la, on le regardera comme superflu, mais lorsqu'on ne le trouvera plus près des notes qui sont sur cette corde, on y supposera un Dièze: & ainsi de tous les Bémols qu'on connaîtra être négligés après la clef: on trouvera deux points sur les notes où il faudra supposer un Dièze.

III-158. On peut dire que cet Air est travaillé sur le la, tierce mineure, mis un demi-ton plus haut, & que ce demi-ton plus haut devroit être de bonne foy le si bémol, tierce mineure.

2. . . . Terme de beaux-arts. Fait avec peine. 3. Façonné. . . .
2. Soumettre (une matière) à une action continue pour la façonner.—le fer, la pierre, le bois. . . .
Famîl. _____ le piano, le violon.

III-159. Ce qui le rend plus difficile, est qu'il paroit que le commencement n'est pas dans la même modulation que la fin, & que pour le pouvoir exécuter, il le faut chanter jusqu'à la septième mesure tel qu'il est écrit, par rapport à la clef, en faisant les Dièzes à mesure qu'on les trouvera jusqu'à la septième mesure, qu'on peut commencé à le chanter sans avoir égard à aucun Dièze jusqu'à la fin: voila je crois la seule manière de se pouvoir tirer de l'exécution de cet Air.

III-160. Apres cela nous ne sommes pas obligez d'être à l'épreuve du caprice de ceux qui voudront nous former des
difficultez de cette nature; nous trouverons assez d'incidents dans les modulations permises, & qu'on peut trouver irrégulièrement écrites, sans nous embarasser de ceux qu'on nous peut former dans celles qui ne sont d'aucun usage.

III-166. TRANSAPONENDO una Terza, una Quarta, &c. plus basse, ou plus alto, &c. J'ay mis cette Phrase Italienne à la tête du vile Motet de mon Proedomus Musicalis; pour marquer qu'en transposant la Basse-Continué une 3e ou une 4e plus bas, ce Motet qui a été fait pour une Haute-Contre peut être chanté par un Dessus ou par une Taille. Et l'on en pourra trouver encore de pareilles dans la suite, puisqu'un des principaux usages des Transpositions, est de réduire les Basses-Continués à un certain degré de son grave, ou aigu, qui n'incommode ou ne force point tant en haut qu'en bas, les Voix qui doivent chanter. Ce qui ne se fait qu'en transposant sur les Instrumens la Basse-Continué plus haut ou plus bas, &c.

III-168. Tous ceux qui s'attachent au Jeu de l'Accompagnement, & qui aiment le Concert, doivent savoir Transposer à l'ouverture du Livre sur tous les Tons Naturels & Transposez.

III-169. Pour Transposer à l'ouverture du Livre sur toutes sortes de Tons, il est nécessaire de savoir la Musique à fond, & de plus il faut savoir jouer sur toutes les positions des Clefs par b mol. & par b carré, sur les Tons Naturels, & sur les Transposez. Il faut enfin savoir jouer facilement, & à l'ouverture du Livre les Parties Supérieures en Basses, & les Basses en Supérieures; parce qu'il ne se rencontre jamais aucune Note dans la Musique qui n'ait rapport à quelque Clef, & comme en Transposant plus haut ou plus bas, la Note a souvent & presque toujours rapport à une Clef Supérieure, je veux dire à la Clef de C Sol Ut, & à la Clef de G Re Sol, dans toutes leurs positions, il n'est point de moyen plus assuré & plus facile pour Transposer, que de se les rendre familières en Basse; car alors il ne faut que supposer la Clef à laquelle les Notes ont rapport en Transposant, & la Transposition ne fera aucune peine.

III-171. Pour faciliter la pratique le la Transposition, je donne cy-après des Modèles sur tous les Tons Naturels & Transposez, où l'on connaîtra le rapport des Clefs en Transposant d'un degré plus haut, & d'un degré plus bas, D'une Tierce plus haut, & d'une Tierce plus bas; & enfin d'une Quarte plus haut, & d'une Quarte plus bas, & l'on pourra par ce même moyen Transposer sur toutes les Feintes, & trouver le rapport des Clefs qu'il faudra
supposer en jouant les Parties Supérieures en Basses, & les Basses en Supérieures.

III-174. Si le Ton sur lequel on veut transposer demande des Dièses immédiatement après la clef il faut concevoir un Dièze après la Clef concevue qui soit d'un degré plus bas que la finale de la pièce écrite et c'est le dernier dièze.

Si le Ton sur lequel on veut transposer demande des Bémols immédiatement après la clef il faut concevoir un Bémol au troisième degré au dessous [sic: au dessus] de la finale de la pièce écrite et c'est le dernier Bémol.

III-175. Par le moyen de la transposition sur toutes sortes de Môdes, on pourra les faire convenir à tous les autres instruments, en les haussant ou les baissant de ce qui sera nécessaire pour les rendre jouables à tels Instrumens que l'on voudra.

III-176. Quoique des airs dans ces sons transposse paroissent fort difficiles à exécuter, on peut cependant avec un peu d'habitude & d'application, les jouer fort aisément, en observant toujours que le B mol baisse d'un demy ton, & que le Dièze hausse d'autant.

Je ne parle point icy de la différence qu'il y a des demy tons majeurs ou mineurs, parce que aux Instrumens où l'oreille conduit les sons, on peut les faire tous égaux; ainsi la transposition sur toute sorte de demy ton se peut exécuter avec autant de justesse que sur le naturel.

III-177. On ne transpose que pour la facilité des voix; & lors qu'un air est composé sur un Môde élevé où les voix ne scaurient aller, il le faut baisser pour avoir l'accompagnement des Instrumens; ainsi par le moyen des b. mols que l'on met sur chaque corde on descend l'air ou le chant d'un demy ton du naturel, sans sortir du Môde sur lequel il a été composé, & de même pour le hausser d'un demy ton du naturel, on met des dièzes sur chaque corde.

III-179. Quand on accompagne une voix qui ne peut se conformer au ton de l'Instrument dont on l'accompagne, il faut nécessairement transposer, ou accorder l'Instrument au ton de la voix.

III-181. Pour transposer facilement, on se représente les notes sous d'autres noms que ceux qu'elles ont naturellement; & pour le faire, on suppose une autre Clef que celle qui préside. Cela oblige encore à supposer des dièzes ou des bémols sur certains degrés, selon que l'on transposes d'un ton qui a le Mode majeur sur un autre qui l'a naturellement mineur, ou au contraire d'un ton qui a le Mode
mineur, à un autre qui l'a naturellement majeur; comme si l'on transpose du C Sol Ut à l'A Mi La, on est obligé de supposer trois dièses, l'un à l'Ut, l'autre au Fa, & l'autre au Sol; parce que le C Sol Ut ayant la tierce, la sixième, & la septième majeures, & l'A Mi La au contraire les ayant mineures, il ne se rapporterait pas au C Sol Ut sans ces trois dièses. Si au contraire on transposoit de l'A Mi La au C Sol Ut, il faudroit supposer trois bémols, l'un au Si, l'autre au Mi, & l'autre au La; parce que l'A Mi La a la tierce, la sixième, & la septième mineures, & que les intervalles du C Sol Ut ne s'y peuvent rapporter sans ces trois bémols.

III-192. AIRS de Dance, sur toutes sortes de mouvements.

III-193. Leçons à deux Parties.

III-194. Toutes les Clefs qui sont au commencement de chaque leçon se rapportent pour le nom des nottes par différentes transpositions et produisent toutes le même mode sur différents tons ou cordes. On pourra jouer ces leçons sur toutes sortes d'Instruments en choisissant la clef qui produit le ton le plus commode aux Instruments dont on se servira. Si deux Flûtes à bec, par exemple, veulent jouer la première Leçon elles ne pourront le faire par la clef de Sol posée sur la deuxième ligne, A, car elles ne descendent pas assez bas, c'est pourquoi elles seront obligées de se servir de la clef de Sol, sur la première ligne suivie de trois bémols B, ou de quatre dièses, C, afin de la transposer une tierce plus haut. Si deux Violons voulent la jouer en D, ré savoir un ton plus haut qu'elle n'est effectivement, il faudroit choisir la clef d'Ut posée sur la troisième ligne suivie de deux dièses D, observant de jouer à l'octave au dessus, car la clef d'Ut est trop basse pour le violon, ainsi du reste.

III-195. avec des réflexions sur la nécessité de cet Ouvrage

III-196. Elle est infaillible, facile à comprendre, & à pratiquer même par de simples Écoliers.

III-197. La méthode que je donne est un principe infaillible, même avant que l'oreille en juge.

III-198. Les Musiciens ne sauront transposer s'ils ne savent de quel ton est la Musique à transposer, & par ma méthode il sufrit de voir la cle & le nombre de Diesis ou de Bmol qui l'accompagnent; avec cela seul on peut savoir la
transposition de toute sorte de Musique sans se mettre en peine du ton, ni du mode.

III-199. Avec cette méthode on sait sur le cham la clé qu'il faut imaginer à la Musique à transposer, & le nombre de diesis qui doivent être à cette clé.

III-200. L'on aura encore l'avantage de savoir toujours au juste le nombre de Dièsis ou de Bmol qui doivent être à la clé, ce que bien des compositeurs ignorent . . .

III-201. Il doit donc se servir des principes que je lui done pour transposer & pour montrer sur le cham & sans instrument, les règles infaillibles de la transposition.

III-203. Demandés à un Joueur de clavecin ou à un Joueur de viole quelle clé il faudra imaginer, & de combien de diesis ou de B mol elle sera accompagnée, lorsqu'on lui présentera à transposer six demi tons plus haut, par exemple, quelque Musique qui est à la clé de fa sur la quatrième ligne en haut, sans diesis ni B mol. Ce Musicien demande d'abord le clavecin ou la viole; mais d'où vient qu'il ne peut le dire sans le secours d'un instrument? S'il étoit consulté là-dessus en pleine assemblée que répondrait-il?

Il dira bien d'abord la clé qu'il faut imaginer; mais pour le nombre de diesis ou de B mol qui doivent accompagner cette clé il n'en fera rien, tous s'y trompent, & si quelqu'un rencontre juste, c'est plutôt par hazard, que par connaissance . . .

III-204. Si l'on propose à un Musicien, quelque musique à transposer, il regarde d'abord de quel ton elle est, de quel ton elle deviendra par la transposition; il sait par routine qu'un tel ton demande tant de diesis ou de B mol; avec cela il prend un instrument & se met en état de transposer, selon les suppositions qu'il vient de faire. A mesure qu'il joue, la suite du chant, & l'oreille lui aident à rectifier la fausseté de ses suppositions: je dis fausseté parce qu'il n'est pas vrai qu'un ton par transposition ait toujours à la clé le même nombre de diesis ou de B mol, qu'aurait le même ton par composition.

III-205. Le préjugé à l'égard du ton empêche la plupart des Musiciens de comprendre cette méthode.

III-206. Le Musicien qui n'a que la routine pour guide, est obligé dans la suite de l'air, d'augmenter ou de diminuer le nombre de Dièsis ou de Bmol qu'il a d'abord mal supposé, au commencement de la Musique qu'il transpose.
III-207. Or come tous ceux qui se mêlent de transposer n'ont pas une égale routine, ni une égale justesse d'oreille, il arrive bien souvent qu'ils font de fausses notes dont ils s'aperçoivent quelquefois, ce qui n'empêche pas cependant que la faute n'ait été faite avant que l'oreille les en avertît . . .

III-208. Bien loin que les Musiciens puissent appeler principe de transposition la pratique qu'ils suivent, ils doivent remarquer que c'est le même que suivi un Aveugle à qui l'on chanterait, par exemple, un menuet en D la ré naturel, & que cependant on aurait commencé sur le la Dièses, il est visible que cet Aveugle s'il a quelque habitude sur le manche de son violon, jouera le menuet, faîlût-il passer par dessus tous les Dièses, c'est à quoi il ne prend pas garde, il n'est attentif qu'à trouver le chant qu'on lui siflè come à un oiseau; les plus grands Practiciens de la Musique font la même chose, du plus au moins, quelquefois la force du chant, l'imagination échauffée, les emportent dans l'exécution de la Musique, sans qu'ils fassent aucune attention, ni à la clé, ni à la note, & ils deviennent pour lors, s'il est permis de le dire, des machines montées come un carillon qui va de lui-même. J'avoué qu'il est agréable de pouvoir se transformer en pareille machine; mais ma méthode ne fait que l'enrichir cête machine, & en même temps secourir les personnes qui ne sont pas tout-à-fait automates en fait de Musique.

III-209. Mais la question ici n'est pas seulement de transposer; il s'agit encore d'un principe certain, par lequel on puisse transposer & enseigner la transposition. Que m'importe, dirai-je à mon tour, qu'un tel Musicien sache transposer, s'il ne sait point le montrer aux autres; or il paraît, ce me semble absurde, de vouloir qu'un Maître d'Instrument, ne soit pas obligé de savoir montrer la transposition.

III-210. Quelque Musicien de profession, qui ne la comprenant point, aura dit qu'elle pouvait être belle & curieuse; mais en même temps inutile & embarrassante.

Quelques personnes de littérature, qui savent de la Musique, l'auront peut-être un peu examinée, & comme les autres l'auront trouvée plus curieuse qu'utile, ils auront même doute si elle étoit plus aisée que celles que pratiquent les Musiciens.

III-211. Mais l'on peut avoir déjà l'habitude de jouer de la Musique, & ignorer la transposition faute de principes; du moins sur le chant je saurai comment il faut étudier sans faire aucune fausse note; avantage qu'aucun
Musicien de Paris ne saurait donner à un écolier, faute de principes.

III-213. Il y a eu des personnes qui aïant lu cette méthode sans la comprendre se sont imaginé qu'elle n'était faite que par des règles très difficiles de Matématiques.

III-214. L'on demande encore d'où vient que je mets 5. 6. 7. 8. 9. dièses aux clés, puisque cela n'est d'aucun usage. A quoi je réponds que sans changer de clé l'on ne peut transposer une pièce de musique sans employer un très grand nombre de dièses, ou de B mol; mais en changeant de clé on réduit le grand nombre de dièses à un petit nombre de B mol, & le grand nombre de B mol à un petit nombre de dièses, quelquefois même au naturel. C'est méthode laisse le choix, & donne le principe pour l'une & pour l'autre manière.

III-216. On dit que j'ignore la nature du becarré & du B mol, de vouloir que l'on puisse jouer également la même musique par l'usage des B mol, ou par celui des dièses. On dit encore que la musique composée par becarré n'est plus tout à fait la même, dès qu'elle s'exécute par B mol. Je crois que c'est ici une question de nom; car à moins que d'ignorer absolument ce que c'est que transposition, l'on doit savoir, que toute sorte de musique passe du becarré au B mol, & du B mol au becarré sans qu'il y ait autre changement sensible, que celui de la transposition.

III-217. On sera contraint d'avouer que l'on ne peut se dispenser de jouer de la musique avec neuf dièses & neuf B mol, si l'on ne veut changer de clé, & choisir indifféremment dans les dièses ou dans les B mol, ce qui est le moins difficile, & qui fatigue le moins l'imagination. Ainsi dans l'exemple proposé cette Table donne la clé de fa sur la troisième ligne avec trois B mol, au lieu de neuf dièses avec une autre clé; & la clé de G re sol sur la seconde ligne en bas avec trois dièses, au lieu des neuf B mol à une clé différente.

III-218. C'est à eux à l'apprendre, ou à convenir qu'ils ignorent la transposition.

III-219. Il peut successivement transposer chaque note, à mesure qu'il joue, en imaginant à la vue de chaque note, l'intervalle de transposition qui lui fournît la note transposée.

III-220. C'est Table, dit-on, met souvent à la clé plus de dièses ou de B mol qu'il n'en faut à certains tons.
III-222. C'est justement ce qui trompe les Musiciens, parce qu'ils confondent le ton de composition avec le ton de transposition, & c'est en cela que c'est Table est plus exacte, & qu'elle corrige les fautes des Musiciens. Si l'on fait réflexion que dans l'exemple proposé tous les si, aussi-bien que les mi doivent être élevés d'un ton, la même raison qui fait donner un Dièses au fa en demande un pour l'ut, & en même temps pout [sic: pour] détruire le B mib qui par accident se trouvera devant des si de la musique en D la re, & qui par transposition, se trouvera devant des ut de la musique en E si ml. De sorte que cet exemple que l'on rapporte contre c'est Table sert à en faire voir l'exactitude, & en même temps les principes fautifs des Musiciens.

III-224. Cet ut, dit-on, selon l'usage, est la quinte du fa au lieu qu'en renversant l'accord vous faites devenir le fa la quarte de l'ut. Cette Table emploie les clés ordinaires seulement pour marquer la note transposée. Les Musiciens qui ont confondu le ton de composition avec celui de transposition doivent éviter de confondre les clés réelles de la composition, avec celles que l'on imagine dans la transposition.

III-225. Quelques-uns disent que ceux qui accompagnent du Clavecin, trouvent par ma Table plusieurs acords mineurs qui doivent être majeurs; ce qui rend ma Table fausse. Celui qui transpose doit savoir que la transposition ne change point la nature de l'accord; le même intervalle est toujours observé soit en montant soit en descendant; cette Table n'altère en aucune manière les accords marqués pour le Clavecin: c'est une chose de fait que cela, & qui n'est pas plus contre cette Table, que contre les autres manières de transposer.

III-226. Voici l'objection qui paraît avoir le plus de force, & qui est plutôt contre les instrumens de musique, que contre cette Table, j'en fais juge le Lecteur. L'on dit que cette Table ne saurait être juste qu'en confondant le son grave, & le son aigu, le demi ton majeur & le demi ton mineur; qu'il y a cependant quelque différence, puisque plusieurs Clavecins brisez ont des notes diesées & b molisées, &c.

III-227. J'avoue que dans la rigueur des proportions harmoniques, cette Table est défectueuse: elle a cela de commun avec tous les instrumens de musique; & ce qu'on dit des Clavecins brisez est peut-être un défaut plutôt qu'une perfection, parce que les autres instrumens, ceux qui ont des touches au manche, par exemple, ne pouvant observer ces différences, cela ne peut que produire un très mauvais effet dans un concert.
Cet table n’est que pour la pratique: or je suppose avec raison que tous les demi-tons doivent être regardés comme égaux, ou bien il faut dire que la transposition est impossible avec les instrumens que l’on a aujourd’hui; il faut avoir l’oreille bien juste pour sentir les quarts de ton. Qui est ce donc qui sentira la différence du quart ou du cinquième du demi-ton? Il est visible que cela n’est que pour la théorie & non pour la pratique, ainsi l’utilité de cette table subsiste toujours.

S’il fallait exécuter & transposer la musique selon les justes proportions harmoniques, la transposition serait impossible, parce que les tons sont inégaux, & l’on ne pourrait observer ces différences qu’en donnant 162 Schisma au ton, dont un clavier de 4. octaves en contiendroit environ 4050. à 16. Schisma pour un comma neuvième partie d’un ton. Or qui pourrait jouer sur un clavier de 4050. touches, & avoir l’oreille assez délicate pour sentir ces petits intervalles, savoir la 162e partie d’un ton.

III-229. Mais une réponse sans replique, contre cette objection, c’est que l’on a fait des clavecins dont les claviers étant poussés à droite ou à gauche élèvent ou abaissent d’un demi-ton, toute sorte de musique: or cela ne peut se faire qu’en suposant l’égalité des demi-tons, du moins dans la pratique.

III-231. Méthode pour transposer toute sorte de musique. 

... il suffit de savoir sur quelle Clé est cette Musique, & de combien de Dièse ou de B moll cette clé est accompagnée. L’on va démontrer, qu’avec cela seul on peut aisément transposer quelque Musique que ce soit.

Come c’est aux Musiciens que l’on présente cette Table, il est inutile d’expliquer les termes de Clé, de Note, de Dièse, de B moll &c. ... L’on suppose encore que le Musicien sait de combien de demi-Tons sont composés les intervalles de Tierce, de Quarte, de Quinte &c. C’est pourquoi l’on ne marquera ici les transpositions, que de demi-Ton en demi-Ton.

III-232. Par le moyen de cette Table, toute Musique peut être mise indifféremment en Dièse ou en B moll même sans transposer. L’on peut aussi par cette même Table transposer de douze manières toute Musique, & l’on peut l’exécuter de vingt-cinq manières: savoir, douze fois en Dièse, douze fois en B moll, & une fois sans Dièse ni B moll: Ce qui facilitera l’usage de toutes les Transpositions.

III-234. Usage de la Table.

Pour Transposer quelque Musique que ce soit.

1. Cherchez dans la Table, la Clé de la Musique à transposer.
2. Cherchez sur cette Clé, le nombre des Dièses, ou des Bmols qui sont après la Clé de votre Musique.

3. De la Celule où se trouve ce nombre, montez, ou descendez d'un Rang, ou d'une Celule, pour chaque demi Ton, dont vous voulez éléver ou baisser votre Musique, & vous trouverez la Clé & le nombre des Dièses, ou des Bmols qu'il faut imaginer.

III-235. DEMONSTRATION de la Table.
Toutes les Transpositions possibles sont comprises dans l'Octave, puisque les autres n'en sont que les repliques, ou répétitions. Or l'Octave contient cinq Tons & deux demi Tons: c'est à dire, douze demi Tons; donc toutes les Transpositions possibles sont comprises dans la Table qui enseigne à transposer depuis un jusqu'à douze demi Tons.

III-236.  I.
Un Dièse précédant la Note élève d'un demi Ton: donc si deux Dièses précédent la même Note, ils l'élèveraient d'un Ton. Un Bmoll précédant la Note la baisse d'un demi Ton: donc deux Bmols la baisseraient d'un Ton: Ainsi le Dièse & le Bmoll se détruisent l'un l'autre.

II.
Si l'on veut éléver d'un demi Ton quelque Musique, il faut que chaque Note de l'Octave soit élevée d'un demi Ton par un Dièse à chaque Note; donc y ayant sèt Notes dans l'Octave, il faut imaginer sèt Dièses de plus après la Clé de la Musique à transposer: donc il faut compter sèt Dièses pour chaque demi Ton de transposition en haut, quatorze Dièses pour un Ton &c.

III.
Au contraire, si l'on veut descendre d'un demi Ton, il faut que chaque Note de l'Octave soit baissée d'un demi Ton par un Bmoll à chaque Note; donc il faut imaginer 7. Bmols de plus après la Clé de la Musique à transposer; donc il faut compter 7. Bmols pour chaque demi Ton de transposition en bas, quatorze Bmols pour un Ton &c.

IV.
Lorsque la Clé de quelque Musique descend d'un degré, les cinq Tons & les deux demi Tons de l'Octave montent chacun d'un autre degré; donc les cinq Tons montant chacun d'un Ton, reçoivent la valeur de dix Dièses; & les deux demi Tons montant chacun d'un demi Ton, reçoivent la valeur de deux Dièses; donc l'Octave entière reçoit la valeur de douze Dièses pour chaque degré que la Clé descend; donc pour détruire douze Dièses, il n'y a qu'à baisser la Clé d'un degré, &c.
III-237. V.
Que si la Cle de quelque Musique monte d’un degré, les cinq Tons & les deux demi Tons de l’Octave descendent d’un autre degré; donc les cinq Tons reçoivent la valeur de dix Bmol, & les deux demi Tons la valeur de deux Bmol: donc l’Octave entière reçoit la valeur de douze Bmol pour chaque degré que la Cle monte: donc pour détruire douze Bmol, il n’y a qu’à éléver la Cle d’un degré, &c.
Cela posé, il s’ensuit évidemment que toute transposition de Musique se fait par l’Addition, ou par la Soustraction des Dièses & des Bmols, ou par le changement des Clés. Voilà le principe de la composition de cette Table.


III-239. Mais si sans transposition je veux exécuter avec des Bmols, quelque Musique qui est sur la Clé de Sol à la deuxième ligne avec 7. Dièses. Par le §. 4. l’Octave entière reçoit la valeur de 12. Dièses pour chaque degré que la Clé descend. Or imaginant la Clé d’Ut sur [la troisième ligne au lieu de], la Clé de Sol à la deuxième ligne, ma Clé descend d’un degré; donc l’Octave de ma Musique reçoit la valeur de 12. Dièses: Or dans la supposition il n’y en avoit que 7; donc il en reste cinq à détruire: ce qui se fait §. 1. en imaginant 5. Bmols après la Clé d’Ut a la troisième ligne, ainsi que l’on peut voir dans la quatrième Cellule du second rang Horizontal de cette Table.
Au contraire si je veux exécuter avec des Dièses de la Musique qui est sur la Clé d’Ut à la première ligne avec 4.
Bmol, par le $\frac{3}{5}$, l'Octave entière reçoit la valeur de douze Bmol pour chaque degré que la clé monte; Or imaginant la clé de Fa sur la troisième ligne au lieu de la clé d'Ut à la 1. ligne, ma Clé monte d'un degré; donc ma Musique reçoit la valeur de douze Bmol: Or dans la supposition il n'y en avait que quatre; donc il en reste huit à détruire; ce qui se fera en imaginant §.1. huit Dièses après la Clé de Fa sur la troisième ligne, ainsi que l'on peut voir dans la quatrième Celule du septième Rang Horizontal de cête Table.

III-240. Pour opérer de la même manière sur toute sorte de Musique, il n'y a qu'à baisser la Clé d'un degré, pour changer le Dièse en Bmol: & l'élèver d'un degré pour changer le Bmol en Dièse; observant que le nombre des Dièses & des Bmols qui doivent être réciproquement substitués les uns aux autres, fasse toujours douze. Ainsi qu'il paraît dans toutes les Celules du second & du septième Rang de cête Table.

III-242. On ne met point ordinairement dès ce Mode de $\#$ sur l'Ut à la Clef; je l'ay fait pour concilier les deux différentes positioâ.

III-243. Methode pour apprendre à transposer sur toutes les Clefs et sur tous les Tons.

III-244. Cette clef étant ainsi transposée de deux degrés, transpose pareillement toutes les notes qu'elle gouverne, de sorte que le Sol que l'on étoit accoutumé de trouver sur la 1ère ligne sera dorénavant sur la seconde. On tâchera donc de s'imager qu'il en haut est transportée au dessous des autres. Ou bien l'on suposera pendant quelque temps qu'elle n'y soit point du tout.

III-245. Il faut donc supposer que la clef de G. Re, Sol est sur la 3e. ligne, ainsi qu'on la voit cy dessus posée avant celle de C. Sol, Ut, et tâcher encore de s'imager que les 2. lignes d'en haut, décrites par des points, sont transportées en bas ou l'on en voit deux autres décrites aussy par des points et distinguées par 1ère. et 2e. Ces suppositions jointes à la pratique pourront bientôt mettre au fait de cette transposition.

III-246. Cette dernière operation ne renferme aucune difficulté en comparaison de celle qui la précède, à laquelle on doit beaucoup s'attacher, parce qu'elle conduit à pouvoir jouer les Airs dans leur veritable ton, et à l'unisson de la voix.
III-247. Cet Ut se trouvera un degré plus haut qu’il n’est à la Clef de G. Re, Sol en 1ère ligne, aussi bien que toutes les autres notes, je dois donc les supposer dans mon idée toutes un degré plus bas qu’elles ne sont sur cette Clef jusqu’à ce que j’aye acquis l’habitude de cette transposition. [Exemple]. On peut pratiquer cette Règle sur les Exemples cy après notées à la Clef d’Ut.

III-249. Quoy que cette Clef ne soit point en usage pour la Flûte-Traversière, on en pourra cependant tirer quelqu’utilité, c’est de jouer les Basses qui n’ont pas une trop grande étendue, et aussi les Airs à chanter qui sont d’un chant gracieux.

III-250. Il faudra donc jouer sur la Clef d’F. Ut, Fa en 4e ligne de même que sur la Clef de G. Re, Sol en 1ère. avec cette différence que l’on mettra toujours les notes une octave plus bas qu’elles ne sont, autant que cela se pourra faire cependant sans faire de mauvais chant.

III-251. Il me reste encore à traiter de la manière dont on peut transposer un Air d’un Ton à un autre, car il n’y en a point qui ne puisse se jouer dans tous les Modes, ainsy que j’en vais donner la démonstration, je choisiray pour cela cette ancienne Brunette connue de tout le monde. Elle est en 3ce. mineure. [Exemple] On voit que cet Air est transposé dans les 7. degrés en le montant toujours d’un ton entier, on pourra donc suivant cette méthode transposer toute sorte de Musique, pourvu que l’on observe que les tons soient par tout dans un même intervalle du 1er. sujet. On pourroit aussi transposer par demi-tons: mais comme cela conduiroit à des modulations fort bizarres et point usitées je n’en donneray point de méthode. On pourra néanmoins s’en faire une sur les mêmes principes que je viens de traiter, si l’on en a bien envie.

III-253. Ces Principes rendent encore très-facile la Transposition d’un Air sur toutes sortes de Tons, puisqu’il ne faut pour y parvenir, que supposer une Clef convenable, & accompagner cette même Clef du nombre de Dièses & de Bémols essentiels au Ton dans lequel on souhaite que cet Air soit transposé.

Quelques Exemples vont éclaircir cette pratique: Suppose donc que je veuille transposer en Mi, un Air dont la Finale est en UT Mode majeur, je commence par regarder cette Note Ut, qui est la Note finale de l’Air que je veux transposer en Mi, comme si véritablement c’était un Mi qui le devient effectivement, en écrivant au commencement de l’Air la Clef qui fait réellement nommer cette dernière Note Mi, ensuite je fais réflexion qu’un Air qui finit en Mi mode majeur, est un Ton transposé, puisqu’il n’y a que le
Ton d'Ut qui soit le modèle & le ton naturel du Mode majeur. Je remarque encore que le Ton de Mi mode majeur, est transposé par des Diezes, parce que pour former la Tierce majeure, depuis le Mi note finale, jusqu'au Sol qui est la médiane de l'Air, il faut des Dièzes; ainsi il ne me reste plus qu'à savoir combien j'en dois mettre au commencement de la Clef. . . .

III-254. Des Transpositions de Tons, sur d'autres Tons transposé.

III-256. Voicy encore une autre manière que j'ay trouvée pour transposer un Air sur toutes sortes de Tons, c'est une suite des Principes, & de la connaissance des Modes & des Tons qui ont déjà esté expliqués.

Il ne faut pour pratiquer cette seconde manière de transposer, que se resouvenir du progres des cordes du Mode majeur & du Mode mineur depuis la Finale d'un Air jusqu'à son Octave. Si j'avois par exemple à transposer en Si, un Air qui finiroit en RE mode majeur, je commencerois par nommer SI, cette Finale, en supposant ou en mettant la Clef qui ferait nommer SI, la Finale qui étotit auparavant un RE; ensuite je dirois, l'Air que je veux transposer étant en RE mode majeur, il faut que je donne le progrès du mode majeur à l'Octave du SI qui est le Ton sur lequel je veux transposer. Or le progrèz du mode majeur depuis sa Finale jusqu'à son Octave, est comme je l'ay déjà dit, une Tierce majeure, une Tierce mineure le demi-Ton le premier, une Tierce majeure & un demi-Ton; ainsi, pour trouver le même progrès dans l'Octave du SI, qui est le Ton sur lequel je veux transposer, il faut pour la première Tierce majeure, mettre au commencement de la Clef, un Dièze sur l'Ut & sur le Re, ce qui fera SI, Ut#, Re#. pour la Tierce mineure le demi-Ton le premier, il faut mettre un # sur le Fa, ainsi Re#. Mi, Fa#, pour la seconde Tierce majeure, il faut encore mettre un # sur le Sol & sur le La, ainsi Fa#, Sol#, La#, auquel ajoutant le demi-Ton SI, on aura le progrès juste du Mode majeur, ainsi Si, Ut#, Re#, Mi, Fa#, Sol#, La#, Si.

III-257. Pour transposer en Mode mineur, il faut pareillement se resouvenir de son progrés qui est une Tierce mineure le demi-Ton après le ton, une Tierce majeure, une second Tierce mineure le demi-Ton le premier, & un Ton, ainsi La, Si, Ut, Re, Mi, Fa, Sol, La; ce qui étant connu, voicy comme il en faut faire l'application.

Si l'on me donnoit, par exemple, un Air qui finiroit en Sol mode mineur, à transposer en Mi, je commencerois par supposer une Clef qui me feroot nommer Mi, le Sol que je veux transposer, ensuite parcourant l'Octave de ce même Mi, je dirois le progrès du mode mineur, demandant d'abord une Tierce mineure le demi-Ton après le ton, je dois mettre un
dieze sur le Fa de ma première Tierce mineure pour la rendre semblable à son modèle, ce qui fera Mi, Fa♯, Sol, la Tierce majeure se trouve ensuite naturelle Sol, La, Si, la seconde Tierce mineure s’y trouve naturellement Si, Ut, Re, & le ton aussi qui tombe sur le Mi qui termine l’Octave, dont le progrès Mi, Fa♯, Sol, La, Si, Ut, Re, Mi, est semblable au modèle du Mode mineur: ainsi donc, pour transposer par cette seconde manière, en mode majeur & en mode mineur sur toutes sortes de Tons, il n’y a qu’à supposer une Clef convenable, & ajouter au commencement de la Clef, le nombre de Dièzes ou de Bémols nécessaires pour rendre le progrès de l’Octave du Ton transposé, soit majeur ou mineur, semblable au modèle de l’un ou de l’autre de ces deux Modes.

III-259. Dat de Transpositie aen elk een, die in de Musiek iets met grond soekt te profiteren, ten hoogsten nodig is; en wel besonder aen de geene, die andere willen onderwysen, behoef ik geen wydloopig ondersoek te maken.

Het is wel waer, dat Monsr. Alexandre le Frere, een Tractaatjen heeft geschreven, in de Franse Tael: maer dewyl het voor een leerling, wegens sijne wydloopigheit, en duysterheit, meer tot verdriet als voordeel dient, heb ik geoordeelt nodig te sijn, dit Tractaatje te schryven.

III-261. TRANSPOSITIE: wat door deselve verstaen word, en haer gebruik.

III-263. Maer hier by staat noch aen te merken, dat men noyt iets sonder nootsaekelijkheit transponeeren moet; bysonder aen een klavier heeft, waerop verscheydene onbruikbaere Tertzen syn. Want als men een stuk transponeerde, daer eenige van dese tertzen voorquaemen, soude het niet alleen alle aengenaemheit verliesen, maer soo eene harmonie veroorsaeken, dat een d’ooren daer van seer souden doen, en so daer instrumenten als Fluyten, Hobois, Trompetten en diergelyken by waeren, soude het t’samen accordeeren, als of den Componiste hadde den stryt der honden over het afgesmeetene lichaem Jesabels willen verbeelden. Weshalven de geene wel op let ten moeten, die haere klavieren, of orgels so gestelt syn, dat se niets transponeeren in sulke toonen daer de valsche tertzen in voorkomen.

III-264. Om nu iets te transponeeren, moet men voor eerst vast stellen, dat dese twaelf naevolgende geluyden, evenveel van malkander verschillen: als c, c↓, d, d↓, e, f↓, g, g↓, a, a↓, b, c↓: Want in de transpositie, kent men geen kleyne of groote halve toonen, maer considereert de twaelf intervallen even groot, soo als se ook in der daet behooren te syn.
III-266. 6. Soekt het final, 't welke de laatste noot van een Musiek stuk is, dat men wil transponeeren.

7. Als dit gedaan is, set eene octaef nooten van het final beginnende, voor al is 'er noodig de Chromatique teekenen die by de Sleutel staen, mede in de octaef nooten te setten: alsdan moet men sien, tusschen welke nooten de halve toonen staen, (want elke octaef moet 'er nootsaekelyk twee hebben) tot meerder seekerheid, kan men de twee plaetsen daer se staen, met een boog overtrekken.


III-269. Door dese voorschrevene Methode kan men alles transponeeren, al was een Modus noch soo ongeregelt.

III-270. twyffele ook niet, indien men zich maer een weynig moeite geeft, of men sal nae dese voorschrevene Methode alles kunnen transponeeren: ja selfs, door de allerswaerste, en Chromatigste toonen.

III-273. Tweede Manier, om door de hier bygevoegde Figuur te Transponeeren.

III-275. N.B. Men kan ook door de Transporteur gemakkeiyk de Tertzen en quinten op de naevolgende manier van alle Toonen vinden: By voorbeeld, als men begeert te weeten, de groote Tertz van D, set de linie waer ut staet op D, als dan sai mi de Tertz, en sol, de quint, aenwyse, en om de kleyne Tertz te weeten, set de linie Re op D, dan sal Fa de Tertz, en La de quint aenwyse, en so vervolgens met d'andere.

III-277. Pour parvenir à la connoissance parfaite de la composition & de l’accompagnement, il faut non seulement pratiquer ces accords, ainsi qu’ils sont écrits; mais les transposer dans les onze autres semi-tons.

III-278. Maniere de transposer la Musique instrumentale.

III-279. Nous ne voyons rien de plus ordinaire dans les concerts que la nécessité de transposer. On prie un accompagnateur ou simphoniste de transposer un ton plus haut, un ton plus bas: une quarte plus haut, une quarte plus bas, & autres intervalles, au gré ou à l’épreuve
malicieux des Chanteurs. Si on n'est pas routiné dans cet exercice, l'on y échoue le plus souvent; & c'est une gloire, qui n'est pas commune, d'y pouvoir réussir surement.

III-280. Toute la difficulté est dans le ton mineur, car le ton majeur rappelle simplement ses dièses, & bémols, en transposant ses clefs: mais le ton mineur a l'addition d'un dièze à supposer avec les dièses ordinaires à la clef, & l'addition d'un bémol avec les bémols ordinaires à la clef, dans certaines transpositions.

III-281. Nous établissons dans la musique vocale deux modèles du ton mineur qui sont ré, & la.

III-282. Regardez mon tableau d'Octaves mineures: vous trouverez que le si est sixième majeure naturelle en montant l'octave du ré; & que la sixième en descendant est précédé d'un bémol. Les cinq dernières octaves de la même page, qui suivent ce modèle, sont pareillement configurées.

Nous les nommerons octaves Révennes pour l'intelligence de cette opération.

L'octave du la, à la sixième en montant précédée d'un dièze, & la sixième en descendant est naturellement mineure. Les cinq octaves suivantes dans la même page sont pareillement configurées. Nous les nommerons octaves Lavennes.

Vous connoîtrez l'utilité de ces deux adjetifs que nous leur avons forgé pour soulager la mémoire.

III-283. Pour transposer une musique qui est en ré mineur, d'une quarte plus bas, qui est la mineur, il faut que l'accompagnateur supose à la clef un dièze à la sixième du ton qui représente le si sixième majeure naturelle en montant de l'octave du ré; parce qu'en descendant, elle est marquée d'un bémol sixte mineure: & ainsi des autres octaves layennes. Cette supposition de dièze se fait outre les dièses nécessaires à la clef. [Exemple]

Transposition du ré en... la

en mi octave layenne et en sol dièze octave layenne

Quand on écrit de la musique en la mineur, il n'y a point de dièze à la clef: nous y en suposons un. En mi mineur, on y doit mettre un dièze seul: nous y en suposons un second pour n'ôter transposition: & ainsi que vous pouvez vous en convaincre en transposant la même musique dans les autres octaves Lavennes.

Pour transposer une musique en la mineur, d'une quarte plus haut, qui est ré: l'accompagnateur doit suposer à la clef un bémol sur la sixième du ton; parce que la sixième en montant est naturellement majeure, & ainsi des autres octaves Révennes.
III-284. Transposition du la en . . . . ré . . .
en sol octave réyenne . . . et en ut octave réyenne.

III-285. Remarquez que cette addition ou supposition
d’un dièze, ou d’un bémol à la clef, n’a lieu que dans la
transposition des octaves Réyennes aux Lavennes, & des
Lavennes aux Réyennes: car transposer d’une octave Réyenne
à une autre Réyenne; ou d’une Lavenne à une autre Lavenne,
il n’y a rien à supposer, ou ajouter à la clef outre
l’ordinaire. exemples.
Transposition de deux octaves réyennes.
du sol mineur en . . . ut mineur.
Transposition de deux octaves layennes
du fa dièze mineur en mi mineur.

CHAPTER IV

IV-7. Puis qu’on compose bien des Pieces d’Harmonie sur
ces Feintes, & qu’on les exécute avec autant de facilité &
de perfection que les Tons Naturels, comme le fait Monsieur
MARAIS, à l’admiration de tous ceux qui l’entendent, il ne
doit pas paraître impossible de se rendre cette
Transposition familière.

IV-8. Présentement en France chacun transpose si
facilement sur tous les Tons et Demi-tons.

IV-11. Mais dans l’accompagnement, lesdits dièzes, ou
bémols, servent à éviter les faux intervalles, et à fournir
les cadences des cordes essentielles de chaque ton, ainsi il
faut d’abord connoître les cordes essentielles des tons:
ous verrons ensuite ce que c’est que cadences, seulement
par rapport à l’accompagnement. cette connaissance nous
conduira à celles des notes qui doivent estre dièzées ou
bémolisées selon la différences des tons.

IV-13. Lors que les dits Intervales se rencontrent, non
seulement dans les basses, mais aussi dans les
accompagnements, on y supplée dièzant les semitons, ou
bémolisant les tons, au commencement de la Clef, c’est le
troisième fondement des dièzes, et bémols, qui se trouvent
au commencement des pièces, ainsi les dièzes, et bémols au
 commencement des Clefs, servent à trois usages, savoir pour
changer les tierces, pour fournir les cadences, et pour
éviter les faux Intervals.

IV-14. Règles pour connoître les notes qui doivent
estre dièzées ou bémolisées à chaque ton en particulier soit
naturel ou transposé.
IV-15. C. sol ut naturel ou binaire n’a ny dièze ni bémol ayant naturellement sa tierce et les cadences de ses cordes essentielles, exemple.

C. sol ut bémol a naturellement le mi et le si bémolisez, le premier bémol est pour changer la nature de la tierce, et le second est pour fournir la cadence du mi, qui en est la médiane, exemple.

E si mi binaire, a naturellement l’ut, le re, le fa, et le sol dièsez, le dièze du sol, est pour changer la nature de la tierce, le dièze du re et du fa, sont pour fournir les cadences du sol et du si qui sont la médiane et la dominante le dièze de l’ut, est pour éviter le faux Intervalle qui se rencontrerait de l’ut, naturel au re dièze, exemple.

F. ut fa, naturel ou binaire, a naturellement sa tierce et les cadences de ses cordes essentielles, néanmoins on ne laisse pas de bémoliser le si, quoi qu’il n’entre point dans aucune cadence, ce qui se fait pour éviter le faux Intervalle qu’il y a du fa, au si, exemple.

B. fa si bémol naturel, a aussi le mi bémol, par ce qu’il faut que la principale corde, du ton ayt naturellement la quinte juste en descendant, aussi bien que la quarte, c’est aussi la raison pour laquelle le si, est bémol, au ton d’F. ut fa naturel, exemple.

IV-22. s’il s’en trouve davantage que quatre, l’on vous avertit qu’ils ne sont que la répétition, ou l’octave de quelques-uns des quatre dont on vient de parler.

IV-28. Quoyqu’on ne trouve pas des pièces où il y ait de semblables choses, il est bon néanmoins de les savoir, parce qu’il se peut rencontrer quelques personnes exercées sur ces tons-là, lesquelles pourroient embarrasser le plus habilé exécuteur de tous les autres Tons.

IV-32. Ceux qui seront plus avancez dans la pratique des sons, auront peut être peine à consentir que je veuille ajouter ce Dièze dans chacune de ces modulations, & m’opposeront que la sixte des modulations mineures étant mineure, ce Dièze peut n’être pas nécessaire.

IV-34. Pour le Bémol il est absolument nécessaire, parce que tout Ton qui a le Mode mineur, a la sixième de sa finale essentiellement mineure. C’est pour cela qu’il faut mettre le Bémol à la Clef, & non pas dans le courant de l’Air comme accidentel, ainsi qu’il se pratique ordinairement; ce qui est une erreur considérable qui n’a pas été reconnu jusqu’à présent.

IV-35. Demonstration des Tons & des Modes.
IV-36. La Demonstration suivante vous représente tous ces tons; Et comme il y en a plusieurs qui, comme j'ay dit, sont les mêmes sous des noms différents, j'ai marqué d'une même Lettre ceux qui se rapportent entre eux.

IV-37. Parmi ces tons il y en a qui sont d'un plus grand usage que les autres. Il y en a même quelques uns qui n'ont peut-être jamais été mis en oeuvre; mais je n'en ay voulu omettre aucun dans la Demonstration, parce que la plus part de nos Compositeurs en employant maintenant plusieurs qui n'étoient point en usage auparavant, il se pourra bien faire qu'ils viendront enfin à les rendre tous aussi communs les uns que les autres.

IV-44. Le mode majeur ne doit point avoir pour corde fondamentale d'autres bemols que ceux de Si♭ et de Mi♭. Il ne doit jamais être assis sur un dieze, car cette Transposition étant trop forte elle produiroit un effet désagréable sur les Instruments.

IV-45. Le mode mineur ne devroit jamais avoir un bémol pour corde fondamentale.

IV-47. On trouve rarement quatre et cinq bémols après la Clef, et jamais davantage car un plus grand nombre seroit inutile.

IV-48. On ne doit jamais mettre plus de cinq dièses après la clef un plus grand nombre rend la modulation trop dure sur les Instruments.

IV-49. TABLE de tous les Tons sur lesquels un Air peut-être travaillé & transposé tant en mode Majeur qu'en mode Mineur, avec le nombre de Diezes & de Bemols qui leur conviennent.

IV-57. Ceux qui écrivent de la musique, sans se soumettre à ce principe, sont ignorans, ou négligens.

IV-58. Ceux enfin, qui admettent autant de bémols que de dièses possibles à la clef, ne considèrent pas que, dans l'exposition des douze semitons simples de la musique, il y a trois dièses, & il n'y a que deux bémols. Consultez mon Tableau d'octaves, vous trouverez à la clef jusqu'à sept dièses, & vous ne trouverez que cinq bémols.

La sixième du ton mineur en descendant est le bémol, note sensible de l'octave mineure, comme le dièze, ce qui est embaressant a connoistre pour la transposition; mais il
faut observer d’un coup d’œil comment les octaves sont écrites. C’est sans doute cette considération, qui fait mettre à beaucoup d’Italiens un bémol à la clef dans l’octave du ré, ce qui ne me paraît pas juste, en ce que, de la dominante ou de la cinquième du ton, on monte à la huitième par degrés majeurs, en passant sur le dièse sensible de l’octave; & on descend par degrés mineurs en passant sur le bémol, ou la notte qui y tient lieu à la sixième du ton, pour tomber sur la dominante; par conséquent le bémol ne doit point estre [à] la clef, puisqu’il est accidentel, comme le dièse. 

Dans l’octave du la, le fa est dièse en montant, & en descendant il est naturel, & est sensé bémol.

Quand il y a un dièse à la clef, l’ut tient lieu de bémol.

Quand il y a deux dièses, le sol tient lieu de bémol.

Quand il y a trois dièses à la clef, le ré tient lieu de bémol.

Quand il y a quatre dièses, le la tient lieu de bémol.

Quand il y a cinq dièses, le mi tient lieu de bémol.

Ces Nottes qui tiennent lieu de bémol sont dièses en montant l’octave, & étant rendues naturelles en descendant, sont sensées estre bémol sensible.

Dans le reste des octaves, où il y a un, ou plusieurs bémols à la clef, la sixième du ton y est moins embaressante, en ce qu’elle est marquée par un bémol accidentel.

IV-70. Mais comme dans la pluspart des Pièces de Musique de ce Ton [i.e., en F ut fa mineur], on n’en marque que deux [b mois] après la Clef, un sur le degré du Si, & l’autre sur le degré du Mi . . .

IV-71. S’il se trouve qu’il n’y ait qu’un b après la Clef sur le degré du Si, comme si le Ton estoit naturel par b moi, il suffira de voir que dans la suite de la Pièce chaque Mi, mais particulièrement chaque La, est précédé d’un b, pour les supposer après la Clef . . .

IV-74. Ces règles supposéez il faut voir en détail les notes qui doivent estre dièses ou bémolizées à chaque ton, soit naturel, ou transposé, sans ladite connoissance, il serait impossible d’accompagner la pluspart des pièces Italiennes, d’autant que l’on en trouve souvent de transposées, ou les bémols, ou dièses, naturels au ton dont est la pièce ne sont point marquez. on trouve seulement un bémol, ou un dièze, sur la première note, pour avertir du ton dont est la pièce.

IV-79. J’apelle Transposition irrégulièrement écrite, celle dont tous les Dièzes ou Bémols qui lui sont
nécessaires, ne sont pas mis exactement près la clef dans leur situation & juste quantité: on en trouve souvent non seulement dans la Musique Italienne, mais aussi dans la Française.

IV-81. les quatre premières (Modulations mineures, écrites avec des Dièses) sont celles sur lesquelles on travaille plus communément . . .

IV-82. Air travaillé dans une Modulation qui se pratique rarement, mais qu’on peut rencontrer.

IV-83. Enfin si l’on veut savoir sur quelle corde se pose le sixième Bémol d’une modulation qui en demande six, quoique peu d’usage . . .

IV-84. Quoique les tons sur lesquels sont écrits les deux Airs suivants ne soient guère en usage, & que beaucoup de gens ne conviennent pas qu’on y puisse travailler, je ne laisseray pas d’en donner un exemple . . .

IV-86. Méthode pour connoître au commencement d’une Pièce en quel Ton elle est . . .

IV-87. s’il y a un b.mol seul, ce ne peut estre que G. Re, Sol 3ce. mineure, ou F. Ut, Fa naturel. Quelquefois D. La, Re, mais rarement, s’il y en a deux, savoir un sur le Si, et l’autre sur le Mi ce ne peut estre que B. Fa, Si, b mol, 3ce. naturelle, ou C. Sol, Ut, 3ce. mineure, quelquefois aussi G. Re, Sol, 3ce. mineure mais rarement. S’il y a un dièze sur le Fa ce ne peut estre que G. Re, Sol, 3ce. majeure, ou E. Si, Mi naturel. S’il y en a deux, savoir un sur le Fa, et l’autre sur l’Ut ce ne peut estre q; D. la, re, 3ce. majeure ou B. fa, si naturel quelquefois A. mi, la, 3ce. majeure, et ainsi des autres modes . . .

IV-88. On ne met point ordinairement dans ce Mode de b.mol sur le la, à la Clef.

IV-98. A l’égard des musiques dont les clefs sont dénuées de leurs dièzes ou bémols nécessaires, l’expert les déchiffrera comme on fait les gothiques. C’est une bagatelle pour les érudits que de suppléer au défaut d’orthographe des écrivains: cependant ils ne laissent pas d’en rire.

IV-100. On me dit dernièrement, qu’un Auteur avait écrit de la musique en r[é] bémol mineur (octave qui ne peut être admise,) je dis que cet Auteur, pour multiplier les difficultés & rendre sa musique plus obscure, pouvoit prendre la sixte mineure de cette octave, qui est le si
bémol doublé, pour y établir encore une modulation: & qu'aussi de modulation en modulation, il pourroit mettre des bémols jusqu'aux petites Maisons. Frustra fit per plurapudoc potest fieri per pauctora. Pour écrire de la musique en ré bémol mineur, il faudroit sept bémols à la clef: & l'écrivant en ut dièze mineur, comme on le doit, il ne faut que quatre dièzes. Ceux qui écrivent de la musique en sol dièze majeur, tombent dans la même faute parce qu'il faut à la clef huit dièzes, & que le fa dièze y est doublé ridiculement: au lieu que l'écrivant en la bémol majeur, il ne faut que quatre bémols à la clef.

IV-101. Le sixième & septième dièzes appartiennent au ton majeur, les octaves du ré dièze, & du la dièze n'étant point admissibles. . . . Le cinquième bémol appartient uniquement au mi bémol mineur, le ré bémol mineur [sic: majeur] n'étant point admis, ceci sera profitable pour les Écoliers peu éclairés qui s'imaginent par abus, qu'une musique est uniquement mineure, parce qu'il y a beaucoup de bémols à la clef, ou qu'elle est uniquement majeure, parce qu'il y a beaucoup de dièzes à la clef.

IV-102. Tous les Italiens ne s'accordent point, pour armer leurs clefs. Les uns y mettent plus, ou moins de dièzes, & de bémols, que les autres. Par exemple, dans le la majeur: la plupart mettent le sol dièze de moins à la clef. Ce que je n'approuve point, d'autant que le ton majeur monte, comme il descend, n'ayant qu'une note sensible qui est le dièze toujours à la clef. Je me suis conforme en cela à l'usage de nos plus habiles.

CHAPTER V

V-1. Ce mot se prend souvent en Musique pour Diatonique.


V-3. L'on trouvera que ce que les Musiciens Français appellent solfier au naturel est tout-à-fait hors de la nature. . . . rien n'est plus naturel que de solfier par transposition lorsque le Mode est transposé.
BIBLIOGRAPHY

Primary Sources


Berthet, Pierre. Leçons de musique ou exposition des traits les plus nécessaires pour apprendre à chanter à livre ouvert. Paris, 1691.

[Borin, ____] La musique théorique, et pratique, dans son ordre naturel; nouveaux principes par Mr.*****. Paris, 1722.


Campion, François. Addition au Traité d'Accompagnement et de Composition par la Règle de l'octave; ou est compris particulièrement le Secret de l'accompagnement
du Théorbe, de la Guitare & du Luth. Avec la manière de transposer instrumentalement, & de solfier facilement la Musique vocale sans l'usage de la Game.


Dumas, Antoine Joseph. L'art de la musique enseigné et pratiqué par la nouvelle méthode du bureau


Fischer, J.P.A. *Kort en grondig ondervwyg, van de transposi- sitie, beneffens eenige korte aanmerkingen over de muselek der ouden, de onnodigheyt van eenige modis, en het Ut, Re, Mi, als mede de subsemilonia, of gesneede-klavieren, vaer noch bygevoegd is, eene korte en gemakkelijke methode, om een klavier gelyk te stemmen*. Utrecht, 1728.


Elements or Principles of Music. Translated and edited by Albert Cohen. Vol. 6 of


Marais, Marin. Basses continues des pièces à une et à deux violons, avec une augmentation de plusieurs pièces particulières en partition. Paris, 1689.


Montéclair, Michel Pignolet de. Nouvelle méthode pour apprendre la musique; Par des demonstrations faciles
suivies d'un grand nombre de Leçons à une et à deux voix, avec des Tables qui facilitent l'habitude des transpositions et la connaissance des différentes mesures. Paris, 1709.


Rousseau, Jean. Méthode claire, certaine et facile pour apprendre à chanter la musique. 4th ed. Amsterdam: Estienne Roger, [1700].


Saint-Lambert, _____ . Les principes du clavecin, contenant une explication exacte de tout ce qui concerne la tablature et le clavier. Facsimile


Secondary Sources

A. Contemporaneous Dictionaries, Encyclopedias and Journals


Green, Robert A. "Annotated Translation and Commentary of the Works of Jean Rousseau: A Study of Late


C. Catalogs, Dictionaries, Encyclopedias and General References


D. Articles and Essays


