A Survey of Keys in Symphonies and Slow Movements in the Viennese Symphony♥ (Chapter IV)

ELIYAHU GREENZWEIG

The aim of this survey is to examine and compare some ways and habits of composers—at times even temporary preferences—in choosing keys for syms and for slms, with special attention to the use of s/d and dom keys, as well of the use of choices which were not customary. Included are composers who were active in the second half of the eighteenth century in or around Vienna, or were in some way connected with Vienna, and have a convenient number of syms for generalizations. This paper deals not with the content of the syms, and only barely with any of their inner qualities, even if they may be factors in choosing keys.

The basis of the survey is symphonic material, though many of the principles seem to be valid for related genres, noting that most composers felt more freedom and opportunity for experimentation in less representative works such as chamber music, mostly for strings.

Over 560 slms are included in Table A by eight composers: Dittersdorf (118 slms), J. Haydn (105), M. Haydn (42), Hofmann (52), Mozart (63), Ordonez (69), Pleyel (40) and Vanhal (76). All were born within some 25 years.

Wagenseil, who belongs to the older generation and who was a leading figure for quite some time, is not included here though he wrote some of his 63 syms into the late 1760s. But he was conservative and retained old-fashioned patterns, including his attitude to the choice of the keys of the slms: the t/mi and rel/mi amount to approximately 80 percent of his syms in the major mode that have slms, leaving only a narrow margin for other considerations. This includes 8 s/d-s, out of which 3 are taken by syms in Bb, also 1 dom and 2 med-s; as well as 3 s/med-s in syms in minor.

The following abbreviations and symbols are used in the text:

sym = symphony	slm = slow movement	TKM = trio in the key of the minuet
mvt = movement	Opslm = opening slow mvt	TKslm = trio in the key of the slow mvt

choice = the relationship of the key of a slm to the key of its symphony, as the choice of the tonic minor, etc.
tSy = "The Symphony 1720-1840", the Garland Series

T = tonic (in major mode syms only)	[M] = (of a) sym in a major key
t = tonic (in minor mode syms only)	[m] = (of a) sym in a minor key

rel/mi = relative minor	t/M = tonic major	med = mediant
rel/M = relative major	s/d = subdominant	s/med = submediant
t/mi = tonic minor	dom = dominant	low = lowered

This article deals with extant authentic and probably authentic material only.

From among the younger symphonists, Gassmann, who wrote 32 syms in the 1760s, was left out on the ground of a similar principle:[1] the percentage of the s/d-s—excluding his 3 syms in minor—is over 80 percent and it looks like a theoretically

♥**The writer wishes to express his gratitude to Prof. Bathia Churgin for stimulating discussions on the subject.**

The two chapters in this article (Chapters IV and V) are part of a more extensive paper, which includes data on the Early Symphony.

[1] Although they are both mentioned at times in reference to other aspects.

predetermined concept.[2] The remainder contains 1 dom in a relatively early work and 4 rel/mi-s; and in minor mode syms 2 rel/M-s and 1 s/med. He has no tonic connections whatsoever and it seems that the complete absence of these is not unintended, while others used them frequently (see Table D). All rel/mi-s appear in syms in keys with up to 4 flats, and not using the s/d in order to avoid too many flats, can be considered a sound practice, although Gassmann himself has a trio in Db after a minuet in Ab in Sym H65 (1768).[3] Interestingly 3 out of these 4 rel/mi-s appear in syms that are placed fifth in chronological groups of 6 syms each—as if opuses, outlined by Hill—and both rel/M-s are third in these groups. He ascribes to Gassmann a complex way in planning the keys for his syms, which are organized in series of fifths or thirds.[4]

Neither of these two composers used an intuitive approach, which is the concern of this survey. Were they included here, it could have changed the average ratio in either direction, but neither had a decisive or lasting influence in these matters and remained isolated in their views.

Dates

For the particular purposes of this survey, lists of true dates were sought which, however, were not available for all of the works.[5] As a result, conclusions regarding individuals differ greatly. The more exact the dating—as in the case of the Haydns–the more notions of the composer can be discerned.

[2] This holds for his 26 overtures as well.

[3] Vanhal has a trio in Bb minor, after the minuet in Sym Bb4, 1760-62?.

[4] See his commentary in *The Symphony 1720-1840*, vol. B/X, p.xviii (the Garland Series). In this article Hill does not touch on the matter of keys of the slms, though this finding of systematic placement of the rel/mi-s and rel/M-s may confirm some of his views.

[5] In J. Haydn's syms, Larsen and sometimes Landon too are followed. In Mozart's works the basis is *Mozart's Symphonies* by Zaslaw, who in that book includes syms derived from orchestral serenades and overtures. For M. Haydn's syms, Sherman's Them. Ind. in tSy shows that most of them have dated autographs. Ordonez's syms appear in a "Hypothetical Chronology" by A. Peter Brown. Dates of Dittersdorf's works were generously offered in a private correspondence by Margaret Grave. Dates for Vanhal's syms are listed in Paul R. Bryan's recent book on the composer. As for Pleyel's dates, Smith in tSy follows Benton with no reservations. In his commentary on Hofmann's syms, Kimball gives little more than terminal dates.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Table A Directional Master Chart

I. Slow Movements from Symphonies in Major Keys

	C	D	Eb	E	F	G	Ab	A	Bb	B	total	%
s/d	F:60	G:66	Ab:6	A:6	Bb:32	C:30		D:26	Eb:33		259	49.3
dom	G:21	A:40	Bb:32		C:14	D:17	Eb:1	E:13	F:15		153	29.1
t/mi	Cm:10	Dm:15		Em:6	Fm:4	Gm:8		Am:9		Bm:1	53	10.1
rel/mi	Am:8	Bm:1	Cm:9		Dm:4	Em:1			Gm:2		25	4.7
T	C:3	D:4	Eb:5	E:2	F:5	G:4		A:6	Bb:1		30	5.7
unusual	A:1		G:1					Dm:1	Dm:2		5	1.0
total	103	126	53	14	59	60	1	55	53	1	525	99.9

II. Slow movements from Symphonies in Minor Keys

	Cm	Dm	Em	Fm	F#m	Gm	Am	Bm	total	%
s/d mi	Fm:1								1	2.5
dom mi	Gm:1								1	2.5
t/M	C:1	D:1	E:2	F:1		G:1	A:1		7	17.5
rel/M	Eb:4	F:3	G:3	Ab:2	A:1	Bb:3	C:2	D:1	19	47.5
t		Dm:3		Fm:1					4	10
unusual		Bb:2				Eb:5	F:1		8	20
total	7	9	5	4	1	9	4	1	40	100

The Average Ratio

Table A is a summary of 8 subtables concerning the composers included in the survey. This Directional Master Chart shows the grouping of the slms in relation to the different choices from the total of the syms in each key. Thus, out of the total 103 slms originating in syms in C, there are 3 times as many s/d-s than dom-s, and accordingly 6 times as many than t/mi-s.

The term “average ratio” is used here for the proportional relationship between s/d and dom choices in major key syms. Deduced from the figures of average percentage appearing in the last column (%) at the end of the first two lines in Table A, the ratio stands at 5:3 (49.3:29.1), which means that for every 5 slms that are cast in the s/d of any major key there are 3 slms that are cast in the dom of any major key.

The figures in the directional subtables “A” of the different composers (not printed here) are so dissimilar, that the average percentage—and most of the personal percentages as well—may be taken for no more than bottom-line calculations, though they are still integral parts of the general picture. Few groups, perhaps one per composer, reflect more or less his personal ratio of s/d:dom. Nevertheless, several patterns are shared by some, as Opslm syms, TKM, TKslm or others, at times perhaps as a result of a personal relationship.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Individual Ratios

Table B is based on the subtables summarized in Table A.

The first column here shows the actual number of s/d and dom choices for each composer. The second column indicates how many s/d-s the composer has for one dom of his own. This determines the order of the names in Table B, from the least on the top down to the most at the bottom. The third column is actually a repeat of the first but in the form of a ratio, which is more convenient to deal with. The ratios were derived by occasional omission or addition of one choice in any direction. These are the ratios that at times are referred to in the text.

Table B Individual Ratios

	number of slms in s/d:dom	number of s/d choices to 1 dom	approximate ratio
Hofmann	16:17	0.94	1:1
Dittersdorf	50:43	1.2	7:6
M. Haydn	21:13	1.6	3:2
Table A	259:153	1.7	5:3
Ordonez	29:16	1.8	7:4
J. Haydn	49:25	1.9	2:1
Pleyel	21:10	2.1	2:1
Vanhal	35:15	2.3	7:3
Mozart	38:14	2.7	8:3

There are considerable differences between the composers: Mozart, for example, has over twice as many s/d-s to dom-s than has Dittersdorf.[6] However these figures do not encompass elements like periods of composition: Sammartini, Ordonez, Dittersdorf and Pleyel have most of their dom-s precede the final phase of their s/d-s.[7] In J. Haydn's case, it is a matter of gradual development (see chart below); Vanhal has more dom-s in the second half of his work; Mozart's dom-s are evenly distributed. For half of his dom-s M. Haydn made a one-time decision; Endler of Darmstadt possibly had an inspiration arising from a particular event.[8]

[6] A comparison between Mozart and Hofmann would be less meaningful: Hofmann wrote syms only until about 1767 (the figures are almost 3:1).

[7] These are isolated instances of a similar phenomenon and should be considered independent developments.

[8] Endler's personal ratio (1:1, or in actual figures 8:8) is very close to that of Stamitz (6:5, or 23:19) or to that of Dittersdorf (see Table B). Two dom-s appear relatively early, but 6 come in a row among his last 8 syms, 2 of which have no slms; all in D. The first of these dom-s is dated just five months after Stamitz's death. Among the works copied in Darmstadt there are over a dozen syms by Stamitz, 5 slms of which are in the dom, 2 or 3 of them in Endler's handwriting.

About half of the dominants of M. Haydn too, appear in his last syms, but he acted on a rather speculative basis.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Reciprocal Connections

In Table A there are apparent similarities between certain figures. For example, in the group of the 53 syms in Bb there are 33 slms in the s/d Eb, and in the group of the 53 in Eb there are 32 slms in the dom Bb. However, these are summaries of eight very different personal charts, and the most they may imply are general orientations. When such similarities appear within one personal chart (sometimes even within a limited period) then —and only then—they may become meaningful, hinting at possible subconscious (or conscious) connections.[9]

A good example of such a reciprocal connection is the pair of syms by J. Haydn, ## 86 & 88, where the main component is a slm in the reciprocating sym's main key. Beyond this, both have slow introductions and a matching order of movements, the keys of the trios duplicate the keys of their own minuets; they were also composed within a

#86: D~D-G-D/D-D	Larsen: 1786; Landon: 1786
#88: G~G-D-G/G-G	Larsen: ?1787; Landon: 1787

relatively short time and perhaps for the same orchestra and audience. It is possible that this phenomenon is not restricted to a particular period, though the best examples come after 1770, from the syms of the Haydn brothers. Actually the lack of many specific dates, especially in the 1760s, does not facilitate their identification.[10]

Extremes

Table A points to a greater readiness to use four sharps than four flats, due probably to more problems of intonation and techniques posed by flats. Both the fingering on the string instruments and their open strings contribute to this. In this survey, in 53 syms in Eb only 6 slms were found in the s/d Ab,[11] but 13 slms in the dom E in 55 syms in A.[12] The 14 full syms in E[13] versus 1 in Ab[14] plus 4 in Fm[15] provide added emphasis.[16]

More slms in E come from 2 syms in Em as t/M-s and another 2 as T-s from E, making the total 17.[17] However, on the flat side there are only 2 more slms in Ab which are rel/M-s from Fm.[18] It is only Ordonez who has two slms in Ab,[19] while

[9] This kind of connection between Bb and Eb does appear in some personal subtables: J. Haydn has 6 s/d-s from syms in the key of Bb to 6 dom-s from Eb; Vanhal 5:4; Pleyel 4:5; also Vanhal between F and Bb 5:5.

[10] Cf. M. Haydn and Hofmann.

[11] Slms in Ab that come from syms in Eb were written by Ordonez, Dittersdorf, Vanhal, Mozart, the Haydns; also Gassmann; Pl. von Camerloher, ca. 1755-63; one each.

[12] Here the older option of not using the wind instruments in a slm may give a partial answer.

[13] Full syms in E can be found in Vanhal 5, Ordonez 3, J. Haydn, Dittersdorf and M. Haydn, two each.

[14] Vanhal has one full sym in Ab; also Gassmann (not counted).

[15] Ordonez, Vanhal, J. Haydn and Pleyel, have full syms in Fm, one each.

[16] Most of the full syms in E—and slms as well—were written well before 1773.

[17] Slms in E: Ordonez has as many as 6, Vanhal 4, Hofmann 3, Dittersdorf 2, the Haydns one each, Mozart none.

[18] More slms in Ab: Ordonez and Pleyel.

[19] One s/d and one rel/M.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

others did not use this key more than once. A good example is given by Gassmann, who has relatively more s/d-s than any of his contemporaries: out of his 3 syms in Eb only the first (1765) has its slm in the s/d Ab, while in the two later instances (1768 and 1769) he chose the rel/mi. Obviously, in the group of Eb in Table A the number of the s/d-s (slms in Ab, four flats) is much lower than in any other group, amounting to 11 percent. For comparison, in the sharp extreme there are more dom-s in the group of A (slms in E, four sharps) and those come to 24 percent.

The other possibility of slm with four flats is Fm, showing 6 items,[20] of which 4 are t/mi-s from syms in F, one is t (an Opslm) in a sym in Fm and one is a s/d in a sym in Cm. These bring the total of the slms with four flats in the survey to 14.

As a result of the tonal contrast between mvts in the above 14 full syms in E, most slms show lessening of sharps: 6 are in the t/mi and another 6 in the s/d; only 2 remain in T with four sharps. Inversely, out of the 5 syms with four flats 3 slms stay in the original key signature,[21] the one in Ab goes to the dom Eb and only one is in the t/M and shows a lessening of three flats.

J. Haydn

J. Haydn used for his 106 syms 9 major and 6 minor keys. The group of D, his largest, has 23 syms and the second largest, C, has 20 cycles. Until ca. 1766, in his first 35 syms 8 cycles are in C, 9 are in D, 10 in other keys with sharps and 8 are in flats.[22] The preference for C and D diminished somewhat in later years, and in his final third more works appear in flat keys, mainly in place of those in C.

In the extremes Haydn has 1 sym and 2 slms in Fm and 1 slm in Ab; in the sharp section there are 2 early syms and 1 slm in E and later 1 full sym in B.[23]

Over the years there is a decrease in the use of A: there are no slms in this key after 1777 and only one full sym out of the total of 8. As well there are no slms in the dom E among these syms in A.

As for the choices for the slms, Haydn's personal ratio is 2:1 (see Table B) and it is not far from the average percentage in Table 1 (5:3). The s/d became a routine choice already in his first years as symphonist on the side of the tonic and relative choices. This mirrors well Vienna of those years, where only Wagenseil could not detach himself from the consistent use of the t/mi and rel/mi.

The first dom-s also came quite early, though in a somewhat limited quantity. The growth in these is seen quite clearly in the 12 syms in Bb, which appear in equal numbers throughout the decades of the 1760s, '70s and after 1780 (4-4-4). During these decades the number of the dom-s (slms in F) increases (0-2-3) while the s/d-s (slms in Eb) thin out (3-2-1). In spite of this, the actual number of the slms in Eb does not decrease after 1780, but even increases somewhat with 2 rel/M-s from syms in Cm and one s/med from Gm. There is also a considerable growth in the full syms in Eb, for 6 out of the total 11 fall in this period.

[20] J. Haydn and Vanhal have slms in Fm, two each; Ordonez and Dittersdorf, one each.

[21] Also the one by Gassmann.

[22] Cf. M. Haydn, who has quite a similar combination of keys.

[23] It is not impossible that Haydn chose the key of B for Sym. #46 on the same extramusical basis as he did F# minor for #45 ("Farewell Symphony"), both from 1772. It is most likely the first sym in the key of B since the one by Monn, after more than two decades, and the last for quite some time.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

A chronological list of his syms divided into thirds shows that the number of the tonic connections diminishes in time and their place is taken by the dom-s, while the number of the s/d-s remains remarkably steady throughout the years.
The number of the dom-s in the last third increases toward the number of the s/d-s. Here the number of the unusual choices (s/med and med) grows too.

	tonic connections	relative connections	s/d	dom	s/med	med
I	11	1	17	4	1	---
II	8	2	16	8	---	---
III	2	3	16	12	2	1

In spite of the lessening in the tonic connections shown in the chart, Haydn has more of these (21 syms) than the average that appears in Table 1 (15.8 percent). This deviation from the average percentage is due to the MmTC syms (major and minor movements on the same tonic), among them the Opslm syms, of which T is characteristic.

The increase in the use of the key of F for slms is general: until 1768 in 43 syms there is only one slm in this key in a very early sym, vs. 15 in the 63 cycles that follow. This holds true for the slms in Bb too: 3 until that same year and 8 later.

In the syms in G too, there is a modest addition in the dom choices in place of s/d-s in later years. But it should be emphasized that after the first 5 syms that Haydn wrote in G until the mid-1760s, there was a strange interval of nearly twenty years (with over 40 syms) when he wrote only 2 cycles in G. After 1784 he returned to a more frequent use of this key. The nature and the cause of this phenomenon are still unidentified. This polarized concentration on the key of G in early and late periods appears no less pronounced in the slms: over half of the total 24 appear until 1766, several more are scattered until 1790 and after that nearly one half of the syms have their slms in this key.[24]

[24] The Piano Sonatas mirror quite well this temporary change: out of the 7 sonatas in G 4 appear until 1766, 2 after 1780 and only one in between, dated 1776.

In the related field of string quartets—excluding Op. 51—the situation is completely different, probably due to the limitations in choosing keys arising from the fact that most quartets are grouped six in an opus. In most opuses there is one quartet in G. There is only one instance of two quartets in the same key within one opus, early in Opus 1.

Moreover, a chart based on chronological thirds of the quartets shows only an increase in the use of the key of C, while those in sharps and flats stay quite steady in their proportions.

The accompanying chart shows their distribution in the various keys, all as a result of the different principles in choosing them for syms or quartets; still, interestingly, the bottom-line data for G are quite similar: 11.3 percent in syms and 11.8 percent in quartets.

	C	D	Eb	E	F	G	A	Bb	B	Cm	Dm	Em	Fm	F#m	Gm	Am	Bm
symphonies %	19	21	10	2	6	11	7	11	1	3	3	1	1	1	3	--	--
quartets %	14.5	12	13.5	5.5	8	12	5.5	13.5	--	2.8	1.4	--	2.8	1.4	2.8	1.4	2.8

Op.51, "The Seven Last Words," is originally an orchestral work, rearranged by Haydn himself for string quartet. The keys for the introduction and the 7 pieces form an ascending chain of fifths from Eb to E (cf. M. Haydn), when the four mvts in the extreme keys (Eb, Bb & A, E) are in major mode, and those in between in minor. The key of the finale, called "Earthquake" is a repeat of Cm. The actual

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

The 20 syms in the group of C have quite a good distribution over the years, though for a period after 1780 there are relatively fewer than before. The 10 s/d-s to the 6 dom-s mirror well the average ratio, more so than any other group in his syms. Among the first 10 slms (until about 1770) there are only 3 s/d-s, while in the rest there are only 3 that are not s/d-s. Among all of them there are 6 dom-s and 4 out of these appear in the first third of his syms, see chart above.

The distribution of the 7 slms in the key of C too shows an interesting picture: 3 examples until 1764; 2 after 1791; and around 1774 there are another 2 isolated neighbors.

In the group of G there are somewhat more dom-s than in C, and there are still more in Bb. Calculated for 6 s/d-s, the figures for C are 3.6; for G 4 and for Bb 5 dom-s. As can be expected, the highest rate of dom-s appears in Eb, where it comes to 55 percent of the choices (1 s/d to 6 dom-s), falling somewhat from the average in Table A. There is only one dom to 4 s/d-s in the group of F.

A curious phenomenon appears in the detailed chart in the group of the syms in D, his largest, with 22 slms. For the existing 16 s/d-s (slms in the key of G) the number of the dom-s indicated by the average ratio in Table A would be 9.6, and according to Haydn's personal ratio, over 8 slms. In reality there are only a meager 3,[25] far from what was practiced by most of the Viennese. Their incidence is also unique: 8 out of these 16 s/d-s appear in the early 1760s; 7 more in the years after 1780, and only one in not less than the fifteen years in between, a period that coincides with the above mentioned silent years in the syms in G-s. Those 3 dom-s of syms in D that were just referred to (slms in the key of A) appear within this time

---

placement of the mvts in the various keys indicates very careful planning, based on increase and decrease in the number of sharps or flats.

keys of the mvts in the order of the performance:	Dm	Bb	Cm/C	E	Fm	A	Gm/G	(Eb)	(Cm)
key signatures	1b	2b	3b	4#	4b	3#	2b 1#	(3b)	(3b)

Another work of this kind, also by J. Haydn, which is purely vocal, is the "Ten Commandments," comprising ten 3 to 5 part rounds. The first four show the idea clearly, having zero, one, two and three sharps or flats. Round 8 has four sharps and round 10 four flats and can be considered the peak in the middle of the series. Round 5 has two flats, and rounds 6, 7 and 8 have no key signatures, so two of these can be fitted into the diminishing part of the scheme. This makes the plan evident, though not carried to completion. Among the other rounds that Haydn wrote, it is possible to find some in the missing keys, which originally could have been parts of the series but were removed and provided with new text.

Actual order:

Commandments:	1	2	3	4	5	6	7	8	9	10
Keys:	C	G	Bb	Eb	Gm	C	Am	E	C	Fm

Order showing the scheme:

Commandments:	1	2	3	4	8	10	7	5	6	9
Keys:	C	G	Bb	Eb	E	Fm	(A?)	Gm	(F?)	C
Key signatures:	--	1#	2b	3b	4#	4b	(3#)	2b	(1b)	--

[25] #42, 1771; #61,1776; and #53, 1777.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

(actually in only six or seven years): none before and none after. Reciprocating during this decade and half there are 3 s/d-s in syms in A (slms in the key of D),[26] not unlike Mozart in the same matter and the same time.

More reciprocal connections between singular syms—as in the two mentioned above as examples—are evident more clearly in the chronological listing of all his syms. There are four pairs of this kind in the 10 syms between 1785 and 1791: ##84 & 85; 86 & 88; 89 & 90 and 92 & 93. Five more pairs come from some fifteen years earlier: ##65 & 42; 64 & 61; 47 & 57; 51 & 55; and 66 & 67; these ten are listed among the 17 syms between 1771 and 1776 (Larsen's dates).[27]

Haydn has 11 syms whose 1st mvt is in minor. Only 5 of these (##39, 44, 49, 52 & 78) begin and end in the minor and can safely be counted as syms in the minor mode. Of the remainder, Sym. #26 has no finale and the others have their last mvt or part of it ("Farewell Symphony") in a major key.

	1st	2nd	M/T	Finale
#26	Dm	F (slm)	Dm/D	----
34	Dm (Opslm)	D	D/D	D
45	F#m	A(slm)	F#/F#	F#m/A
80	Dm	Bb(slm)	Dm/D	D
83	Gm	Eb(slm)	G/G	G
95	Cm	Eb(slm)	Cm/C	C

For both Syms. #26 and #95, the choice for the slm is rel/M, accepted in syms in minor mode and so is t (tonic in syms in minor mode) for the minuets and t/M for the trios. In Sym. #80 the s/med in the slm as well as t in the minuet with t/M in the trio are decisively characteristic of syms in minor.

In #83 the choice for the slm is s/med, which points to the minor mode, but T/T in the M/T unit (Tonic in both Minuet and Trio) is customary in syms in major. In Sym. #45 there is no need to apply these principles because of the extramusical factors involved.

However, in #34 both choices of keys—t/mi for slm and T/T for M/T—are frequent practices in major, therefore it should be considered a sym in major with an Opslm in the t/mi. The same should be said of Dittersdorf's Sym.
Dm1 (Dm-D-A/Am?-D).

Mozart

Zaslaw, in his book *Mozart's Symphonies* (1997), lists 63 extant works as syms, in which he includes 12 cycles that were connected with stage works in one way or another. Only 44 cycles are named as pure concert syms, not counting the Haffner Symphony (K.385), which he considers one of the 7 syms extracted from Orchestral Serenades.[28]

His largest group is that of D, with 26 syms, which amount to over 40 percent of his total, highest among all composers surveyed here. Second to it is the key of C

[26] #28, 1765; #65, 1771-73; and #64, 1775.
[27] Some more possibilities of reciprocal connections are not listed here.
[28] In correspondence both father and son refer to K.385 as a symphony.

which has 10 cycles. Together, these come to over 56 percent of his total. The rest are distributed in 7 more keys, out of these 3 in minor (two concert syms in Gm and the overture K.118 in Dm). These keys are in use until ca. 1773, after which—in about the last 20 syms—there are only 4 which are not in C or D (see fn.74).

Mozart's ratio—2.7 s/d-s to 1 dom[29]—doesn't appear the same way in any key. The closest groups are F and G, with 5:1 each. It is in the same group of D-s that the deviation from the ratio is greatest: there are as many as 9 slms in the dom A to 13 s/d-s in G, which is just twice his personal ratio.[30] This leaves only 5 of the anyway small number of dom-s: 2 for the Eb-s and one or none for 5 more keys.

Interestingly, these 9 dom-s of D (that are slms in A) were written within a relatively short time of some six or seven years, none before nor after. But among these there are only 3 concert syms,[31]—the rest being overtures and syms derived from orchestral serenades—while the dates correspond to his only 3 syms in A,[32] all of which have their slms in D. The same kind of reciprocal relationship between the groups of D and A appears in J. Haydn's works as well, in about the same period and quantity (see above).

Out of the 10 syms in C, Mozart wrote 8 after the age of 16, when he had written about half of his syms.[33] As a result, in his second chronological half there is 1 in every 5 syms in this key. Thus the key of C became his second largest group with over 15 percent in his total. 7 out of the existing slms are in the s/d and only one in the dom. One is in the t/mi and the first (K. 35) has no slm.

In the key of A neither he nor J. Haydn have even one dom, Haydn's only slm in E is a t/M in a sym in Em, Mozart has none.

In the flat extreme there are only 4 syms in Eb (the last of which has a slm in Ab), in spite of the large number of other works in this key, especially those employing wind instruments.[34] In his first 35 slms he uses the key of F sparingly—not unlike J. Haydn—and the key of D as well: until ca. 1772 only one in each of these, when the totals are 7 and 5 respectively. After 1773 there are no more full syms in F, and only one each in G, Eb and Bb.

Mozart has 6 tonic connections (3 t/mi-s, 2 T-s and 1 t) which add up to less than 10 percent of his choices. Out of these only one is a concert sym (K.96, 1771), and this brings him down to the bottom of the list in Table D, which should be considered the progressive standing. The lead in these matters is taken by Hofmann, with over 21 percent of tonic connections, although he was active some two decades earlier.

---

[29] This is the same ratio that appears in Table B as 8:3.

[30] Cf. J. Haydn. He uses very few dom-s in D.

[31] K.84, 1770; K.133, 1772; and K.202, 1774.

[32] K.114, 1772; K.134, 1774; and K.201, 1774.

[33] Papa in his 36 authentic and probably authentic syms has altogether 2 in C; he composed all his syms before 1775. J. Haydn and his age group did use this key including the decade of the 1760s, but some of the others, whose foundation was laid earlier, had less of it: Stamitz and Agrell one each, Endler and Monn none, though Wagenseil's group comes to 14, and of his pupil, Hofmann, to 12. Adlgasser—a decade Leopold's junior—has the highest percentage: 4 out of his 10 extant syms are in C. In a volume entitled "Orchestral Music in Salzburg" Cliff Eisen edited 8 syms by mostly lesser known composers. Among these there is only one in C.

[34] The first sym in Eb is K.16, 1764, his first sym. Another is K.543, 1788, one of his last ones (in its slm in Ab there is a modulation to Bm, which is 6 fifths away). In the middle it is K.132, 1772, with 2 slms in the dom; also K.184, 1773, which is an overture.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

There maybe 4 pairs of reciprocal connections, all in concert syms, but 2 of them are of only three mvts[35], and 2 are not congruent, the trios duplicating neither the key of the slms nor that of the minuets.[36]

Preference of Keys

Table F, an extract from Table 7 (distribution of syms by 25 composers, by keys, not printed here) shows the groups of syms in major keys of the eight Viennese, with the corresponding figures of percentage. In the column of the preferences for syms two branches appear: those in which the largest group is D and those in which the most frequent choice is C.

Table F: **Preference in Keys**

	C	D	E♭	E	F	G	A♭	A	B♭	B	syms in minor	total		Order of preferences of keys in syms							Order of preferences of keys in slms*						
Ordonez	12	10	4	3	11	5	-	10	8	-	5	68		C	F	D	A				G	E♭	B♭	F	C	D	E
%	18	15	6	4	16	7		15	12		7		%	18	16	15	15				%	13	11	11	10	9	9	9
Hofmann	12	10	7	-	6	4	-	7	6	-	0	52		C	D	B♭	G				E♭	F	G	Dm	A		
%	23	19	13		12	8		13	12				%	23	19	13	13				%	13	13	13	11	10		
J. Haydn	20	23	11	2	6	12	-	8	12	1	11	106		D	C	B♭	G				G	F	E♭	B♭	D		
%	19	22	10	2	6	11		8	11	1	10		%	22	19	11	11				%	22	14	11	10	9		
M. Haydn	7	10	3	2	5	3	-	4	6	-	1	41		D	C	B♭	F				F	B♭	D	G	A		
%	17	24	7	5	12	7		10	15		2		%	24	17	15	12				%	17	17	14	14	12		
Dittersdorf	18	32	11	2	13	15	-	13	7	-	5	116		D	C	G	F	A			G	F	C	A	B♭		
%	16	28	9	2	11	13		11	6		4		%	28	16	13	11	11			%	18	15	13	13	13		
Vanhal	16	10	7	5	6	9	1	7	4	-	12	77		C	D	G	B♭	A			F	G	B♭		D		
%	21	13	9	7	8	12	1	9	5		15		%	21	13	12	9	9			%	18	15	15		9		
Mozart	10	26	4	-	6	7	-	3	5	-	3	64		D	C	G	F	B♭			G	A	F	B♭			
%	15	40	6		9	11		5	8		5		%	40	15	11	9	8			%	24	14	12	12			
Pleyel	9	6	5	-	4	4	-	3	6	-	3	40		C	D	B♭	E♭				F	E♭	B♭				
%	22	15	12		10	10		7	15		8		%	22	15	15	12				%	25	15	15				

* The column for slow movements is based on a table like the one on the left for symphonies. Details are not shown.

In the center of the branch of the D-s is Mozart, flanked by Dittersdorf and both Michael and Joseph Haydn. Their cultural, social and personal ties were so strong that they can be considered to have had an effect on this.

Mozart in his first and last chronological thirds has almost half of his cycles in D, which may be safely defined as a preference. In his total this comes to a record high of over 40 percent in this key, clearly separated from his second group in C, which is 15 percent only. His groups in the keys of Eb and A are definitely smaller than those by J. Haydn and Dittersdorf, though they wrote most of their syms in A before 1770.

Dittersdorf's first two largest groups are as well D and C, which come to 43 percent, much like the Haydns', but his third choice is G. His group of Bb—the third choice of the Haydns—is a minor one.

It leaps to the eye, that the Haydns go hand in hand in what they do, as if as a result of direct communication for long periods of time. Their first three

[35] K.128 & K.129, 1772; K.199 & K.181.
[36] K.133 & K.134, 1772; K.201 & K.202, 1774.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

preferences—D, C and Bb—are identical; moreover, their percentages are quite alike, in spite of the basic differences in the circumstances of their activities.

Among those whose largest group is C, Pleyel shows clear signs of preference for the key of C. There are traces of this starting in his early works, namely the year of 1786, in which he has no less than 4 cycles in this key, about a third of his output dated in that year. His total for this group is over 22 percent, which is underscored by smaller second and third groups of 15 percent each. The choice for slms in 8 out of the 9 syms in C is the s/d, and with these the key of F comes to 25 percent of the total, which is the highest percentage for slms in one key in this survey. His second and third groups in slms are in the keys of Eb and Bb, each with 15 percent.

In the first chronological half of his works Vanhal has an equal number of syms in C and in D. The significant increase in C[37] takes place in his third quarter—in which he has not even one cycle in D—but especially in his last quarter, in which he has a ratio of 1 sym with no key signature to 2 in any other key.

Hofmann's ties with Wagenseil were most probably instrumental in his large number of cycles in C, where the percentages of pupil and teacher are just the same: 23 percent and 22 percent in C as well as 19 percent and 18 percent in D.[38] However, in the key of C, Hofmann has only two more syms than in D, and this definitely does not imply a preference.

Ordonez's large groups are C, F, D, A and Bb, in which there are 12, 11, 10, 10 and 8 syms respectively. These figures are so close to each other that they indicate a hard-to-achieve balance rather than any preference, with no one resembling this among the 25 composers in Table 7. This is still much more so in his slms, as is shown in the similarly constructed Table 8 (neither of these Tables are shown here): in the 15 keys Ordonez uses, 9 groups have between 5 and 9 items each, which amount to 60 slms out of his 68. This leaves the remaining 6 keys with 1 or 2 mvts each.

From Table 8 (distribution of slms by 25 composers, by keys) it emerges that there are fewer very large groups in the slms than in the syms, unlike those heavy concentrations of syms in D by Mozart and Dittersdorf, in place of which there are more and smaller groups. Hofmann's slms as well as those of Ordonez, M. Haydn,[39] Vanhal and even those of Dittersdorf, all point to this. Others have a larger marginal difference between first and second groups.

Dittersdorf

Dittersdorf wrote 116 syms, the largest oeuvre of those written in and around Vienna.[40] His most substantial group is D with 32 syms, which amount to 28 percent of his total. C with 18 and G with 15 cycles are also of considerable size, A and F

[37] This is about contemporaneous with his turning to the 3-mvt cycle.

[38] The first 9 cycles out of the total 14 in C by Wagenseil appear in the first half of his syms, until n.l.t. (=no later than) 1757, and only 3 later (two more syms in C are not dated). There are no such data available concerning Hofmann's syms, though he was 19 years old in that year, and apparently had already composed quite a few of his syms.

[39] The column "order of preference of keys in slms" in Table F shows for M. Haydn 17, 17, 14, 14 and 12 percent for the keys F, Bb, D, G and A, which represent 7, 7, 6, 6, and 5 slms. These figures indicate no preference. Some others too, have similar data.

[40] Pokorny of Regensburg has over 145 cycles.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

have 13, Eb 11 and Bb 7 items. He uses altogether 12 keys; 5 works are in 4 minor keys.

From a detailed chart, in which his syms are grouped chronologically, 28, 30, 27 and 27, the following information is available:

Whatever his distribution of syms is in the different keys, it proves so stable over time, with only minor changes during decades, that no Viennese—or anybody else—matches it. In his first 28 syms all 8 major keys have from 2 to 5 cycles. Starting in about the mid 1760s, there is a modest increase in preponderance of the syms in D among those in sharp keys, and interestingly in quarters 2, 3 and 4 the number of the cycles in D is evenly 9. In the key of E there are only 2 syms and 2 slms, all from before the mid-1760s, resembling J. Haydn's attitude. For some time after this period the group of A swells too, until ca. 1770. In the 1770s, with a drop in the A-s to 2 cycles in a quarter, the group of G grows, but it becomes smaller in the '80s. The last of 6 syms in Bb appears in ca. 1768, after which there is only one single cycle in this key, in 1789. Their place is taken by the Eb-s and F-s. Two slms have 4 flats: one in Ab (?ca.1773-78), and one in Fm, 1781. However, all these changes are moderate and the balance remains in effect.

Dittersdorf has many dom-s to s/d-s. His ratio is 7:6 (s/d:dom), very near to Hofmann's equilibrium (see Table B). The consistent distribution over the years is apparent in his choices for slms as well: there are only modest changes in these, which do not affect the general picture. A mild shift like this is evident in a temporary increase in the relative number of dominant choices: in his second chronological quarter he has 1.5 times more dom-s than s/d-s; yet in his more mature third and fourth quarters things change around in favor of the s/d-s: there are nearly twice as many as dom-s. This phenomenon—more dom-s before more s/d-s—appears in the works of Sammartini, Ordonez and Pleyel too, but not in those by the Haydns. Vanhal has more dom-s in his later syms.

In Dittersdorf's choices there is a gradual decrease in the t/mi-s over the years, as it appears in J. Haydn's works.

A preference for the key of F for slms seems to be present in Dittersdorf's approach. This appears not only in the 10 s/d-s in the group of the C-s vs. 4 dom-s (when his ratio would call for 7.5 vs. 6.5) but also in the 5 dom-s out of the 6 syms in the group of the Bb-s, which leaves only one slm for the s/d, the key of Eb, itself unusual in Vienna. Two T-s appear in F, which—apart from two early works by Ordonez—can be found in no other Viennese. A sole F as a s/med in a sym in Am deserves special attention, this being in a definitely mature work.

Two—perhaps three—reciprocal connections can be shown,[41] all in the 1780s. There are possibly a few more in larger groups of uniform dating.

Vanhal

For his 77 syms Vanhal used 15 keys, a variety that J. Haydn achieved too, probably on the merit of the "Farewell Symphony" and one sym in B from the same year. His largest group is C with 16 cycles, second is D with 10 items. Another 39 syms are divided between six more major keys in groups of 9 to 4 and one in Ab. There are 12

[41] D6 & A11, 1788; Eb6 & Bb1, 1789; and D1 & G15, c. 1781. .

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

syms in six minor keys, which make over 16 percent of his total, highest among the Viennese.

The number of the keys he uses is largest in his second quarter, when nearly one third of the cycles are in minor mode, by itself a unique phenomenon. In his third quarter there is a basic change in the picture: after the aforesaid flow of cycles in minor there is only one in Em, while in the very central key of D there is not even one work. It is about this time that Vanhal shifts to the 3 mvt cycle. The significant increase in the syms in C starts in the beginning of the third quarter and culminates in the fourth: in his next to the last group of 11 syms (1775-78?), there are as many as 5 cycles in C.

Vanhal has 5 syms in E, more than anybody surveyed here, and 4 slms in E (3 of which appear in his later syms, itself a rarity in the 1770s), second to the 6 by Ordonez. At the other extreme he has one sym in Ab and one in Fm; the above mentioned one slm in Ab and two more in Fm.

Many of Vanhal's slms are cast in keys that have more flats—or less sharps—than their syms. This is a direct result of the sum of his s/d-s and t/mi-s (the connections that move with one or three fifths toward the flat extreme, see Table E) which comes to as much as 60 percent of all his choices. Similar percentage have J. Haydn, Mozart and Pleyel.

In the group of C he prefers the s/d to the dom even more than Dittersdorf himself: 11 slms are in F and only 2 in G,[42] and in the group of F 5 s/d-s in Bb to none in the dom C. The group in Bb has no dom-s, but—as expected—only 4 s/d-s in Eb. Of the slms in the 10 syms in D, the majority of 6 is in the s/d G and only 2 in A, approximating his ratio of 7:3. Furthermore, the 9 slms in the t/mi effect the balance in the same direction within the circle of the fifths. These amount to nearly half of his slms and, together with another 10 scattered in other keys, the total comes to 46 slms moving "down" the circle of the fifths. Moving the other way there are 20 slms, which are dom-s and t/M-s; another 10 T-s and relative connections are stationary.

Slms in Syms in Minor Keys

This survey has found 40 syms in minor keys, which constitute 7 percent of the total. The large groups are Gm and Dm, each with 9 syms; and Cm with 7 cycles. The groups of good size in the slms are Eb with 9 items, Bb with 5, F and G with 4 slms each.

As many as 19 of the choices - nearly half - are rel/M-s, which in principle parallel the 25 rel/mi-s; these make up less than 5 percent in the major key syms. Second largest group of choices is that of the s/med-s, with a surprisingly high number of 8 items, which is 20 percent, meaning that it became a choice of routine. The only group that may parallel them in the major section is that of the unusual choices, which has 2 med-s, 1 s/med and 1 s/d mi[M], and these come to 1 percent of the total. The s/d and dom choices – which make up the great majority of all the choices in major key syms—have only a nominal analogy in the minor section (see Table A).

Concerning locating in the minor section a parallel line to the development of choices in the major key syms (T → t/mi → rel/mi → dom → s/d), all attempts

[42] Cf. Dittersdorf, Mozart and Pleyel.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

proved fruitless, though a comparison of figures between t and T, as well as t/M and t/mi, as they appear in Table A, offers interesting results, as follows.

The 4 t-s, which constitute 10 percent of the total choices in Symphonies in Minor Keys in Table A correspond to 30 T-s, which constitute 5.7 percent in the major mode section. By comparison, the 7 t/M-s im the minor section are 17.5 percent while 53 t/mi-s amount to 10.1 percent in the Symphonies in Major Keys. The ratios are amazingly similar, for t:T (10 %:5.7 %) gives 1.75 and t/M:t/mi (17.5 %:10.1 %) is 1.73.

However, this is no basis for generalization, for all that is needed is one more or one less instance of t/M (and much more so with t-s) and this equilibrium, which is accidental, disappears.

The point here is that the same kind of comparison between rel/M and rel/mi (47.5%:4.7%) is of no practical value, not to mention dom-s (2.5%:29.1%) and s/d-s (2.5%:49.3%). These two choices make up about 80 percent in the major key syms, but are practically missing from the minor section. The row ends with two of these rarest combinations in the classical period: one s/d-mi[m][43] and one dom-mi[m],[44] with which slms in minor mode in syms in minor keys come to 6.[45] Among these 6 only one in three mvts is entirely in minor;[46] two are Opslm syms, which start in minor and end in major;[47] and the remaining three have modal contrast between minuet and trio.[48]

Table C Symphonies and Slow Movements in Minor Mode

	syms	%	slms	%
Vanhal	12	16	13	17
J. Haydn	11	10	16	15
Pleyel	3	7.5	6	15
Ordonez	5	7.3	12	17
Mozart	3	4.7	7	11
Dittersdorf	5	4.3	15	13
M. Haydn	1	2.5	4	10
Hofmann	0	0	14	27

[43] Vanhal: Cm3; first instance since two of this kind by Sammartini in the 1750s. Also Boccherini in two string quartets.

[44] Vanhal: Cm2; probably an only occurrence.

[45] Wagenseil has 3 syms in minor keys; all are in Gm, all 3 slms are in the s/med Eb. Gassmann has one sym each in Cm, Gm and Bm: the first 2 slms are in Eb (rel/mi and s/med) and 1 in D (rel/M).

[46] Mozart's K.118, Dm-Dm-Dm, 1771, an overture. Also entirely in minor are a sym by C.P.E. Bach: #661, Bm-Bm-Bm, 1773; and two by Sammartini: JC5, Cm-Fm-Cm, 1750-51 and JC56, Gm-Cm-Gm, 1759, all in three mvts.

[47] J. Haydn #34, Dm-D-D/D-D, c. 1766 and Dittersdorf Dm1, Dm-D-A/Am?-D, 1773-80. These two maybe considered syms in major mode with Opslms in the t/mi.

[48] Two of these are the above Cm-s by Vanhal: Cm2, Cm-Fm-Cm/F-Cm, 1764-67? and Cm3, Cm-Gm-Cm/Eb-Cm, 1762-64?; the third is J. Haydn's #49, Fm-Fm-Fm/F-Fm, 1768.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

The order of the composers in this table was set according to the percentage of syms in minor in their oeuvre, from the highest on top to the lowest at the bottom, as it appears in column two. This order fits fairly well column four too, in which the percentage was derived from the number of existing slms in minor. The correlation is evident: more syms in minor keys are associated with more slms in minor mode.

This proportionality is not upheld by Hofmann's data, in which there are no syms in minor but there is a high percentage (27 percent) in minor mode slms, which mirror the frequent use of the rel/mi and t/mi. This obviously points to the influence of his teacher Wagenseil, whose figure for the same is 78 percent, while Monn has 56 percent. Gassmann's corresponding figures are 3, 9, 5 and 16, and it is easy to determine his place in Table C.

Concluding from Kimball's study, Hofmann's years as symphonist roughly parallel Wagenseil's Period III, which ended "no later than 1768." Monn preceded both, but Wagenseil remained conservative and Hofmann was following him in these respects. Thus all three actually represent a concept from earlier times, when the rel/mi and the t/mi were more in use. These two choices decrease with time: in the later syms of the Haydns, Mozart and Dittersdorf a slm in minor mode is a rare occurrence. In this period the use of the major mode for a slm is considered a progressive trait.

Hofmann

Hofmann wrote syms in major keys only.[49] According to Kimball's estimate, he composed his 52 extant syms within a decade or so, which was over in about 1767.[50]

The keys of his syms are divided quite evenly between keys with flats (19) and those with sharps (21), with a large group in C (12), which approaches a quarter of his total. He mostly refrained from using the extremes: no syms or slms beyond 3 flats; no syms in E , though he does have as many as 3 slms in this key.

He is the only Viennese whose dom-s exceed his s/d-s. The figures are 17:16, which together make up nearly two-thirds of his total. The rest includes 6 t/mi-s, 7 rel/mi-s, 5 T-s and one s/d mi[M] (=s/d minor in a sym in a major mode).

The fact that Hofmann has no syms in minor keys brings him down to the bottom of Table C. Still the percentage of his slms in minor is higher than that of anyone else here, and is a result of his having employed 11.5 percent t/mi-s, 13.5 percent rel/mi-s and 2 percent s/d mi[M] (way above the average in Table A), seemingly a direct influence of his teacher. 9 out of 13 such choices appear in syms of 3 mvts, which is the cycle Wagenseil cultivated. More than half of these are dated as "very early" works, which may be understood as some time before 1759 (which means that he was younger than 21), including at least one sym in 4 mvts, which shows that Hofmann was attentive to the developments around him even at an early

[49] Also L. Mozart, Adlgasser, J. Camerloher, Agrell, Stamitz; padre Martini and more, mainly Italian opera composers.

[50] This was about the time when Wagenseil composed his last syms too.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

stage. He wrote 3 Opslm syms of the type S-F-M/T-F, in which the natural choice for the slm is T or t/mi. Two have terminal dates of 1761 and 1762 and one is dated "probably by 1760." If this dating is based on stylistic considerations, it could mean that all three may have been written parallel to—or even preceding—J. Haydn's first two syms of this kind, #5 & #11, both dated by Larsen as well as Landon in ca. 1760.[51]

In general Hofmann's choices are such that in more of his choices he moves away from the center C (18) rather than closer to it (12). This adds sharps or flats to the slms and may be expressed in problems of intonation, especially in the sharp extreme. So, too, in the syms in Bb he goes more toward Eb than F (5:1), which was an accepted practice in the area. There are more dom-s than s/d-s in the group of the D-s (4:3), and out of the 7 syms in the group of A he has a surprising 3 dom-s in E[53] and not one s/d in D, which is itself quite unusual. Actually, he has only one slm in D—a lone dom in the 4 G-s—which is uncommon in an oeuvre of over 50 syms. 5 more slms scattered in other keys move outward from the center, among them 3 t/mi-s. He has a quite unusual s/d mi[M] in a very early work.

Tonic Connections

The chart that shows the decrease in the tonic connections (choices) in J. Haydn's syms (see above) is indicative of the general picture in most of its components.

Vivaldi used tonic connections in his earliest works that can be traced; they are present in the Baroque suite and other multimovement genres. Early symphonists as J. Camerloher, Graupner, Agrell, Chelleri and others—active mostly in the second quarter of the century—used them quite frequently. Wagenseil, who was writing even in the late 1760s, has over 50 percent of his slms in the t/mi.

Hence the figures in Table D for the 1760s do not show the culmination in the use of tonic choices; moreover the impressive increase from the 1750s is specious, for it represents data from only the last few years of that decade. The table does however show the decline in their use in the Viennese symphony as they gradually disappear, while other choices take their place.

[51] Ordonez has one of this type with no finale, mentioned among his earliest syms, and a later one with a terminal date of 1760. Both have fugues in them, which is characteristic of multimovement cycles of earlier times.

[53] He has no full syms in E.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Table D Decline in the Use of the Tonic Connections

	Symphonies in Major Keys (t/mi & T)						Symphonies in Minor Keys (t/M & t)					
	1750s	'60s	'70s	'80s	later	total	'50s	'60s	'70s	'80s	later	total
Hofmann	3	8				11						
Ordonez	6	5	2			13			1			1
Vanhal		9	3			12		2	2			4
J. Haydn	5	10	3			18		1	2			3
M. Haydn		3	2	1		6						--
Dittersdorf		7		4	1	12		3	1			4
Pleyel				1	3	4						--
Mozart		1	4			5			1			1
total	14	43	14	6	4	81	--	6	7	--	--	13

The summaries of the totals is 94, which is about 17 percent of the total of surveyed connections in Table A.

The decrease by decades, which appears clearly in the totals of the syms in major mode, shows the thinning out of these choices over time.

Another conclusion from this chart is, that the share of the minor mode syms of all tonic connections is 14 percent (namely 13 of the total 94), which is just twice their part in the whole of the survey (7 percent).

Hofmann, Ordonez and Vanhal have 21 percent of their total in tonic choices, J.Haydn 20 percent, M. Haydn 15 percent, Dittersdorf 14 percent, Pleyel 10 percent and Mozart 9.4 percent. [55]

Most choices of T in syms are associated with Opslm cycles, a symphonic descendent of the Baroque sonata da chiesa. Its main phase lasted from the late 1750s into a good part of the '60s, with sporadic occurrences before and after 1780, by M. Haydn and Dittersdorf, who may have had extramusical reasons for them. Parallel to

[55] Gossec has more tonic choices than could be expected. He is of the same age group as J. Haydn, he was clearly influenced by Stamitz (whose pool of choices predicts that of J. Haydn), and was active in France during long periods of development. His combination of choices resembles somewhat that of Wagenseil, having 23 t/mi-s and T-s, plus 3 rel/mi-s in 51 syms, just over 50 percent. His s/d-s do increase on account of the t/mi-s, though only in the second chronological third of his syms, but later there are fewer s/d-s and the percentage of the t/mi-s increases again.

However, in France, symphonists had their own attitude to this: in 54 syms written by Frenchmen 33 tonic connections and 10 s/d-s & dom-s are to be found, as much as in 111 syms written by mostly German-speaking foreigners working in France there are quite similarly 32 tonic choices but 51 s/d-s & dom-s, still far from the Viennese (see Table A). The composers whose works are summarized here are mentioned in the Garland Series "The Symphony 1720-1840." Gossec's figures, 23 t/mi-s & T-s and 23 s/d-s & dom-s are not included in this chart.

	T	rel/mi	t/mi	s/d	dom	s/med	other	t	rel/M	t/M	other	total
Frenchmen	11	6	18	3	7	--	1	3	4	1	--	54
Foreigners	11	18	19	42	9	3	1	1	5	1	1	111

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

these subsequent ones there are several isolated “regular” choices of T, mainly among the later 3 mvt syms by Ordonez and Vanhal.

Other tonic choices are also rare after 1775 in concert syms: there are only 7 t/mi-s and one t/M and they thin out over time. Four are by Vanhal and later an additional four are by Pleyel, who in his first 25 syms has only one, dated 1786, after ca.1790 another two, and one as late as 1803. Actually, in this—as in some other devices—he went back to an earlier means and renewed it, an attitude that at times seems anachronistic.

Beethoven used t/mi in his Seventh Symphony, Op.92, in 1812.

Again, in chamber music there is a greater freedom than in the syms: among some two dozen syms that J. Haydn wrote in the decade of 1770 he used the t/mi the last 3 times, but 8 times in a smaller number of quartets in the same period.[56]

Ordonez

The 68 extant syms by Ordonez are divided in the different keys in quite an unusual way: in the keys of C, F, D and A he has 12, 11, 10 and 10 cycles respectively and in Bb another 8 items (see "Preference of Keys"). There is no one or two major groups, as in the works of most composers; it is quite possible that he did this intentionally.

Based on a chart of “Hypothetical Chronology for Extant Symphonies” (compiled by A. Peter Brown) it seems that some kind of equilibrium in the use of the different keys was in effect during most of his years as a symphonist, as he has nearly as many syms in flat keys (27) as in sharp ones (29).[57] A mild variation in this is seen in his middle period, when a few more cycles in C and D seem to appear. The only real change in this respect is a decrease in the use of the key of A in his late period – only one cycle out of the total 10.

In the extremes he has 1 sym in Fm and 3 in E. Out of the E-s 2 are late syms, which is quite unusual.

He has 3 slms with four flats: two in Ab and one in Fm, the same number that Vanhal has. At the sharp extreme he has 6 slms in E, more than anyone else in the Vienna area. In this, too, he has a point in common with Vanhal, together having over half of all the slms and syms in E that came up in this survey. The two—

[56] A rather clear-cut example of replacing an old habit of tonic and relative connections with s/d-s is seen in those works by Placidus Camerloher (1718-82) that are unquestionably written by him or counted as authentic. As long as such changes seem to be gradual among the Viennese, and spread over longer periods, he changed his attitude within several years.

In his Op. 1, based possibly on studies at Ettal, early experience and perhaps on contact with his older brother Joseph, there are only relative and tonic choices. In 1745 he got his appointment in Freising, where he came in contact with current developments, which—among other changes—resulted in over 80 percent of s/d-s in Opp. 2 & 4.

	rel/mi	T	t/mi	s/d	s/d mi
Op.1 ca. 1747-50	2	2	1	--	--
MSS ca. 1752-57	--	4	--	7	--
Op.2 ca. 1757-60	--	--	1	4	1
Op.4 ca. 1757-61	--	1	--	5	--

In his 43 syms Joseph has only relative and tonic choices, save 2 dom-s and 2 s/d-s. He died in 1743.

[57] A. Peter Brown mentions 5 lost authentic syms, whose distribution doesn’t change this picture: 2 are in keys with flats, 1 in C and 2 with sharps.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

independently—continued using the key of E for both syms and slms even in their late works, unlike the Haydns, Mozart and Dittersdorf.[58]

It should be mentioned that Ordonez has 2 series of 6 syms each, the keys of which are planned the same way as some of the works of C.P.E. Bach, Gassmann, M. Haydn, Gossec and others. In one—dated ca. 1775—the keys spell out a hexachord from C to A. In the other—after 1775—there are 5 syms organized in a chain of ascending fifths from Bb to D with C in the center.[59] These sequences seem to have no effect on the keys of the slms.[60]

It is certain that the idea of organizing cycles into a larger complex was present in his—and in others'—approach long before these two series of late syms: in his string quartets only the key of Eb is short of 2 works to make all 7 keys have 4 cycles each, save F, which has 5 quartets (none are in minor keys). This was certainly a lasting project, carried out almost to its end over a period of long years. There are traces of this in his string trios as well.

His personal ratio is 7 s/d-s to approximately 4 dom-s, when proportionately more dom-s appear in the second chronological third of his syms, and nearly half of the tonic connections show up in the first third.

More often than not, Ordonez chose keys for slms which have more sharps or flats than the syms to which they belong. So out of his 11 syms in F there are 6 slms in Bb, 1 in Fm and only 2 in C, while 2 others stay in F. In the group of 8 Bb-s 6 go to Eb and only 1 to the mediant Dm. Of the 10 syms in A 5 have slms in the dom E, which in itself is noteworthy,[61] and only 3 in the s/d D. Together with more, smaller groups there are 27 slms that move outward from the center C and 19 in which there are fewer sharps or flats, without considering 13 in the group of C. Another 10 slms keep the key signatures of their first mvts.

More or Less Sharps or Flats in the Key Signatures of the Slow Movements?

Table E is a concentration of the movements the choices create along the circle of the fifths, "away from" or "toward" the center C. Thus, when a slm in Bb comes from a sym in F, it creates a move "away" from the center C and down the circle of the fifths.

The first column shows the actual number of the slms moving "away from" (A) versus (:) "toward" (T) the center C (e.g. 31:58). Thus, Dittersdorf has 31 syms in which the slms have more sharps or flats than their first mvts, and 58 syms in which the slms have fewer sharp or flats than those in the main key of the cycle. The second column is actually the same, in more convenient figures for comparison, reckoned for

[58] One could expect a still greater frequency in the use of these keys in Ordonez's chamber music for strings. However, in 50 different compositions, out of which 8 are in A, though none in E, there are only a lukewarm 3 andantes in E, and not one full work, nor even a single mvt with 4 flats.

[59] The sixth sym in Bm does not fit into this scheme, though—at first glance—it is the key that would make a full diatonic scale out of the hexachord in the first series. The same sym in Bm fits into the first series, even if it is looked at as another chain of fifths, starting on F and ending on a seventh member, B.

[60] With a touch of speculation, it is possible to find a line of alternating minor and major thirds between the keys of the slms in the series of 5 syms that create the chain of fifths, including the sixth sym in Bm, which is not a part of the chain. However, in the first 4 slms (F-D-Bb-G) the line is descending and then it changes direction, going back on keys already touched (Bb-D).

[61] Cf. Hofmann

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

a constant 2 slm "away", determining the order of the composers. The third column shows the number of syms in C or Am, not included hitherto, as their direction of move may be only "away" or they can be stationary. All connections which cross the center C (like D-Dm etc.) are considered moving "away." The fourth column shows more stationary choices—T, t and relative—not counted as yet.

Table E Away From or Toward the Center C

	A:T	A:T	C/Am	Stationary
Dittersdorf	31:58	2:3.5	19	10
J. Haydn	28:46	2:3.33	20	11
Pleyel	13:14	2:2.15	9	4
Mozart	24:24	2:2	6	9
M. Haydn	16:16	2:2	7	3
Vanhal	26:23	2:1.8	17	10
Ordonez	27:19	2:1.8	13	10
Hofmann	18:12	2:1.3	12	10

In spite the fact that the personal ratios of Hofmann and Dittersdorf do not differ much—as is seen in Table B—here they end up far from each other.

It seems that the order from most A:T down to least (see column two) does have to do with the personal ratio of the s/d:dom itself, but the effective placement of the same in the particular keys is no less important. Consequently Dittersdorf and J. Haydn cast the majority of their slms in keys closer to the center C.

Being in the upper part of this table can be related to crystallized orchestral experience and search for good sound, in which these composers have an advantage.

M. Haydn

Michael Haydn chose keys for his 41 syms in a manner that is very closely related to his brother's, in spite of the basic differences in their general conditions in composition. The only real dissimilarity is in the number of cycles in minor keys: 1 of Michael's vs. 11 of Joseph's.

Until ca. 1770—in his first 20 syms—the keys of C and D appear in 5 works each; there are 6 in other sharp keys and 4 in flats.[62] Later, with an increase in the syms in flat keys there are fewer cycles in C and the distribution looks more even.

In the extremes he has 2 syms and 1 slm in E, all before 1771; and there is a good size 4 cycle group in A, of which 3 slms are in the s/d and the 1 in the dom E. In the flat region 2 syms in Eb mark the borderline, both being late works, 1 of these has a slm in Ab. Joseph has 11 in Eb, most of them as well in his last third. The division of slms in the group of Bb is 3 in F, 2 in Eb and 1 in Bb.

Resembling his brother, Michael too has an uneventful period in using the key of G: he wrote no syms or slms in this key for some fifteen years, including the 1770's. 4 out of the 5 cycles in F are dated after 1779.

In his figures he is perhaps the closest to the average ratio shown in Table A, when modest deviations are due mainly to the small number of tonic choices, a part of

[62] Cf. early syms of J. Haydn.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

which (at least the 2 Opslms in the T and 1 t/mi in a sym with a Fugato, all after 1778) probably point to the peculiar conditions of the instrumental music existing in Salzburg.[63]

M. Haydn has 21 s/d-s to 13 dom-s, a ratio almost of 5:3, well within the average ratio in Table A. The dom-s are divided in a very unique way: the first 6 are scattered in the first half of the syms, until 1778, some of them in reciprocating pairs; among these only one work is in a key with flats. The other 7 come in a row of consecutive syms in his last years as symphonist,[64] and among these there are only two syms in sharp keys. This reflects the increase in the use of the flat keys in the syms—as well as in the slms—in the course of time. After all these dom-s the last 2 syms have s/d-s.

There are perhaps four pairs of reciprocal connections. The first of these includes two early syms, in the extreme sharp keys: #5, A-E-A/Am-A, 1763; and #7, E-A-E, 1764. The fact that after #6 (C-Cm-C) he came back to the same sharps strengthens the feeling that the two are closely related. What further underlines the connection is the short time of some two months during which he composed syms ##4-7, as dated autographs indicate.[65] These are his first syms beyond two sharps (P.36, 1760-62), and the last in the same keys for a good seven more years, until #16 and #17 in 1771.

Sherman numbers	fast	slow	M/T	finale	choice	date		
4	Bb	Eb	--	Bb	s/d	December	7	1763
5	A	E	A/Am	E	dom	December	29	"
6	C	Cm	--	C	t/mi	January	14	1764
7	E	A	--	E	s/d	January	25	"

Another reciprocating pair comes more than two decades later, with #31: F-Bb-F and #33: Bb-F-Bb, in 1785 and 1786, again skipping #32 in D.

Sherman numbers	fast	slow	finale	choice	date		
31	F	Bb	F	s/d	May	30	1785
32	D	--	D	--	May	30	1786
33	Bb	F	Bb	dom	September	28	"

Possibly two more pairs can be found in #36 and #40, as well as in #37 and #41, though Haydn had done a lot of composing in between (see below). However, in this period a more complex version of this relationship by "skipping one" comes to the fore.

[63] Without these Haydn has only 2 t/mi-s in early syms and one T in a sym derived from an orchestral serenade, which would come to a marginal 7 percent altogether, lower than most of those discussed here.

[64] For a similar phenomenon cf. Endler's works, fn. 8.

[65] J. Haydn wrote his first sym in E, #12, in 1763, and his second in A, #21, in 1764. Both have dated autographs. The brothers' two syms in E have three mvts and the two in A have four, all scored for the standard 2Ob 2Hn & Str. Several circumstantial similarities around these four syms are so prominent that communication between the two about these matters should not be considered unlikely.

"The Haydn brothers met only occasionally (Michael lived in Salzburg), but maintained a regular correspondence" (H.C Robbins Landon in *Haydn, a Documentary Study*, p.162).

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Starting with #34, the next 6 syms are geared to the dom in two ways. For one, all the choices are dom-s. For another, the keys—systematically skipping a sym—create two chains by ascending fifths: in the keys Eb-Bb-F with flats (##34-36-38), and in G-D with sharps (##35-37). The last one is #39 in the center C, away a fifth from both #38 in F and #35 in G,[66] which makes it one continuous row of 5 fifths.

The double concept of the dominants ends at #39, and with it the period of some two months it took him to compose these 6 works. This group is neatly isolated from other syms by two silent periods, each of over a year.

Sherman numbers	fast	slow	fast	choice	date		
34	Eb	Bb	Eb	dom	January	2	1788
35	G	D	G	dom	January	13	"
36	Bb	F	Bb	dom	January	22	"
37	D	A	D	dom	January	30	"
38	F	C	F	dom	February	10	"
39	C	G	C	dom	February	17	"
40	F	Bb	F	s/d	July	15	1789
41	A	D	A	s/d	July	26	"

One more, a bit witty, structural feature appears in these connections. Counting fifths downward from A, the key of Sym #5, one finds 3 of these to C, the key of the "skipped" Sym #6, and back to E, Sym #7, there are 4, all together 7 fifths.

The number 7 is often ascribed mystical connotations; but if it occurs once, it will most likely be taken for a mere coincidence. However, both the number 7 and the same pattern of keys reappear in the second reciprocal group in syms ##31-32-33, F-D-Bb, over two decades later, this time in the opposite way within the circle of the fifths.

Moreover, in the group of the 6 dom-s the exact same pattern with the number 7 is again dominating. It appears not less than 3 times, starting with #34, in alternating directions, and woven one into the other. No phenomenon parallels this in Joseph's syms.[67]

It seems that in addition to all this, Haydn had still more designs in mind: the keys in the above mentioned syms ## 5, 6 and 7 form the triad A-C-E, and the keys of syms ## 31, 32 and 33 the triad Bb-D-F (see above). Were this to occur sporadically, it probably would not attract attention, but there are as many as 9 such groups in his oeuvre and one ascending chain of thirds of five members. No less than three-quarters of his 41 syms are bound up in these structures, mostly in a strict consecutive manner. Furthermore, a good part of these triads can be connected meaningfully as harmonies according to the book. This emerges from a chronological list of his syms, based on the *Chronological Thematic Catalogue* by Sherman and Thomas.

[66] Ordonez has such a series of 5 syms in ascending fifths, see above. Gassmann has 5 syms in descending fifths (1765), 5 in ascending fifths (1767) and 6 in alternating minor and major thirds, descending (1769). Also Gossec, in fifths, Op. XII (1769).

[67] What may point this way is the series of "Scherzandi" (Hob. II:33-38) for Fl, 2 Obs, 2 Hns, 2 Vns, and Bass. These are 6 four mvt divertimenti—each in a different key—of mostly very short pieces, dated in 1765. Hoboken's order is F-C-D-G-E-A, which clearly affirms neither a chain of fifths nor a diatonic hexachord.

A very interesting use of the same idea is found in his String Quartet Op. 51, "The Seven Last Words" (see fn. 24).

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Pleyel

Pleyel was born in 1757, a year after Mozart. His third sym though—which was followed by another 25 within a decade and a half—is dated 1782-84, when Mozart was already past K.385 ("Haffner Symphony").

Smith in tSy lists 42 syms, counting separately two versions of one sym, as well lost or identical mvts, without which 40 seems to be correct for the purpose of this survey.

His largest group is C, with 9 cycles; another 28 are divided between 6 more major keys. 3 syms are in the minor. Pleyel often used flat keys, especially in his second chronological third, when he had as much as 70 percent of his syms in those keys. In the extremes he has 1 sym in Fm, from the same period, whose slm is in Ab, but no syms or slms are in E, and in the group of the A-s there are only 3 cycles, with 2 slms in D.

There are 10 slms in F, out of which 8 come as s/d-s from the group of C. In those syms there is a recurring pattern of C-F-C/C-C (TKM) for the first 5, and C-F-C/F-C (TKslm) for 3 more after 1790. There is one more late TKslm sym, a plan J. Haydn used frequently in the 1760s.

After his period of apprenticeship and after such a late start it seems somewhat odd that he has as many as 4 t/mi-s (a round 10 percent), as 3 of these come after 1790 when Dittersdorf and J. Haydn had little or none of them. Their distribution shows a process opposite to that seen in J. Haydn's approach of thinning them out.

In principle, Pleyel's percentage of the choices is quite close to the average in Table A. The figure for the dom-s is somewhat lower, most of which appear in the first chronological half of his syms. Absence of T-s, t-s and "unusual" raise the percentage of the s/d-s, dom-s and the relative connections.

Shifting from Sharp Keys to Flat Ones? (Chapter V)

Out of over 100 syms that were composed in the early 1760s in the Vienna area by four leading composers, 55 are written in keys that have sharps as key signatures. 27, or about the half of these, are syms in keys with flats and 19, about a third, are in C or Am: 27/19/55 (b/C/#).

This emerges from a master chart in which data are arranged in half decades (see Table G). Included are Joseph and Michael Haydn, Dittersdorf,[68] Vanhal, Mozart and Pleyel. The developments that precede 1760 involve earlier Viennese: Monn, Wagenseil, Hofmann and Ordonez on the one hand; Sammartini and more Italians on the other.

Sammartini, whose many works were heard in Vienna, wrote nearly two-thirds of his 18 early syms (from the late 1720s to ca. 1739) in flat keys. After a radical

[68] Over a third of Dittersdorf's syms are dated by Margaret Grave in small or large uniform groups (like ?ca.1773-80 etc.), which don't fit readily with this chart, and it was necessary to make adjustments—to which she agreed.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

change, which came apparently some time shortly before 1740, he used sharp keys for as much as two-thirds of his 37 middle syms (ca. 1740 to ca. 1758).[69] Moreover, the figure for the same in his 12 late syms (ca. 1759 to ca. 1774) is 75 percent, a very high percentage.

P. Martini—a teacher of Italians as well as ultramontani—has his 3 earliest syms in F. About the same time when Sammartini switched to sharp keys, he started using the key of D and used it for a decade or so in 9 consecutive cycles. He has 15 in this key among the total of his 24 syms.

Whether or not, directly or indirectly, under Italian influence, Monn has no less than 12 syms in sharp keys, which is 75 percent of the 16 he wrote between ca. 1735-50, about parallel to Sammartini's middle period. He has 3 syms in the key of A, 1 in E and 1 in B, a key that later only J.Haydn reached.

Wagenseil has 6 out of his 10 overtures in sharp keys in his Period I, which are almost parallel to Monn's activities. In his Period II however (n.l.t. 1755-58, 19 mostly concert syms), only one-third is in sharp keys, another third is in flat ones, and the remainder creates an unusually large group in the key of C.[70] After this there is an upward trend in sharp keys in Periods III/a and III/b (n.l.t. 1760-62, 13 syms; and n.l.t. 1764-68, 15 works): these amount to 54 percent and 60 percent respectively. However, most of his syms have only terminal dates, a fact that points to a possibility of earlier true dates.

Hofmann's estimated period of symphonic composition lasted "hardly a decade" from the late 1750s to ca. 1767, while a good part of his 52 extant syms date from the beginning of the 1760s or earlier. He has almost as many cycles in flat keys as in sharps: 19/12/21.

Ordonez[71] too—several years Hofmann's senior—wrote his first syms in the 1750s, but he remained active later. His figures, too, show almost an equilibrium: 27/12/29. Furthermore there are no major changes in this balanced state throughout the years,[72] save a temporary increase in the number of syms in C, as well as a decrease in the cycles in A.

It is not without a precedent that the Haydns, Dittersdorf and Vanhal, when entering the scene in the decade of 1760, stressed the use of the sharp keys, as it emerges from Table G. Young and eager in their twenties, they composed large quantities of works, but this shortly came to a halt. The enormous emphasis on the sharp keys—well over 50 percent of the rich yield—disappeared with almost no trace in the second half of that decade: the combined output of the four dropped nearly by half, when the main loss came in the sharp keys, with a sizable cutback in the C-s as well. Now the groups of flats and sharps are balanced: 24/9/24, which is a significant increase in the percentage of flat keys, in spite of the decrease of 3 cycles in reality. Progressing to the early 1770s, the four—who are not only of the same age group but

[69] Manuscript copies of 40-45 syms of Sammartini are found in Austria and Bohemia.

[70] It is about this time that Hofmann was his pupil; he also has a large group in C.

[71] Ordonez's syms are organized in a "Hypothetical Chronological Order" by A. Peter Brown. About 22 out of the 68 extant syms are defined as early syms and 28 as middle works, composed in the "1750s" through "1760s" to the "late 1760s"; another 18 are late syms and they spread from then to until "after 1775."

[72] This is no more than a presumption, but it is possible that this combination of keys was intentional rather than arrived at by intuition. This condition of steady evenness doesn't fit easily into the general picture (see remark about the keys in his chamber music for strings on p. 20).

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

had close personal ties as well—had no change in their half-decade total, though the number of cycles in sharp keys, and still more those in C, increased while flats decreased: 17/14/27 (b/C/#).

Table G: **Periodic Changes in Keys of Symphonies**

	1760-1764			1765-1769			1770-1774			1775-1779			1780-1784			1785-1789			after 1790			totals****			tot
	♭	C*	#	♭	C	#	♭	C	#	♭	C	#	♭	C	#	♭	C	#	♭	C	#	♭	C	#	
J. Haydn	8	8	18	6	2	4	4	5	8	4	2	4	6	-	4	5	2	4	5	1	6	38	20	48	106
%	23	23	54	50	17	33	23	30	47	40	20	40	60		40	46	18	36	42	8	50	36	19	45	
M. Haydn	2	3	5	2	-	1	-	1	5	1	1	2	2	1	2	7	1	5				14	7	20	41
%	20	30	50	67		33		17	83	25	25	50	40	20	40	54	8	38				34	17	49	
Dittersdorf **	11	4	21	7	4	12	4	2	6	4	3	11	3	3	6	2	3	4	-	-	2	33	20	63	116
%	31	11	58	31	17	52	33	17	50	22	16	62	25	25	50	22	33	45				28	17	55	
Vanhal	6	4	11	9	3	7	9	6	8	1	5	8										25	18	34	77
%	28	19	53	47	16	37	39	26	35	7	36	57										32	24	44	
half-decade totals	27	19	55	24	9	24	17	14	27	10	11	25													
%	27	19	54	42	16	42	29	24	47	22	24	54													
	101			57			58			46															
Mozart	1	-	-	6	2	8	8	4	21	1	1	5	-	2	1	2	1	1				18	10	36	64
%				38	12	50	24	12	64	14	14	72		67	33	50	25	25				28	16	56	
Pleyel***										-	1	1	2	-	1	8	4	5	7	4	5	18	9	13	40
%																47	24	29	44	25	31	45	22	33	
half-decade totals				30	11	32	25	18	48	11	13	33	13	6	14	24	11	19	12	5	13				
%				41	15	44	27	20	53	19	23	58	39	18	43	45	20	35	40	17	43				
				73			91			57			33			54			30						

* Including Am **Not including 4 undated syms. *** Not including 2 undated syms. **** Totals include undated syms.

However, these were the most prolific years of the young Mozart: 8/4/21 (over 63 percent in sharp keys); he and Dittersdorf have the highest percentage of sharp keys in their totals (56 percent and 55 percent). Including his figures brings the half-decade harvest—including its components—of the early 1770s to a level much resembling the figures of the early '60s: 25/18/48.

Later, in the 1770s, the gradual decrease in the number of works of the four continues, but Mozart has an extra large drop in syms to 1/1/5. At this point the general output comes down again drastically, to 11/13/33. From here the figure of the flat keys starts building up.

The low output half-decade was in the early 1780s: without the first 3 syms of Pleyel it came to just one-third of the earlier greater volumes. Flat keys again grew in percentage, while sharp keys lost over half of their figures from the end of the 1770s, and the group of the C-s decreased as well, partly because Vanhal left the scene: 13/5/14. Beginning with this balanced state there is a significant step-up in the flat keys and in the C-s in the late 1780s, though less so in the sharps: 24/10/19. At this time, J. Haydn, Dittersdorf and Mozart show little change, only the share of M. Haydn is up from 5 to 13 syms. His 7 cycles and 8 of Pleyel's make up about two-thirds of the syms in flat keys in this half-decade.

Concerning syms in flat keys, their share in the early 1760s comes to over a quarter of the total (27/19/55). Resulting from the large loss of cycles in sharp keys in the second half of that decade, the percentage of flat keys jumps to over 40 percent (see Table G), though actually there are 3 cycles fewer. The preferred practical way of evaluating this specious leap leads to a composite figure of 33 percent for the decade, even including data from the young Mozart. From this point on there was a gradual decrease in the flats, coming down to 20 percent in the years 1775-79, followed by a

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

significant increase that climbed as high as 45 percent in the late 1780s, in which Pleyel, too, has an active part.

The group of C and Am fluctuates between 15 percent and 23 percent, when Vanhal's contribution to the half-decade totals is constantly rising toward 40 percent of the 13 cycles present in the late 1770s. In the early 1780s—after his last syms—there is a noticeable drop in those.

The share of individual composers in these up-and-down trends—clearly visible in Table G—is of great interest. The **Haydn brothers**' figures rise and drop almost together, especially in the syms in sharps, and those in flats are almost as consistent; moreover, their preferences for specific keys show amazing similarities (see Table F). Support for this comes from the personal charts of chronological thirds or quarters (not shown here). All this happens in spite of the fact that Michael's total is completely different from that of Joseph's, and that he did not compose symphonies in a regular manner, as did his brother.[73] In addition, his choice of keys for his syms seems at times influenced by ideas that do not exactly settle with a spontaneous attitude. After the boom of the early 1760s—and of sharp keys in it—there was a period of waning which lasted until the early '80s. However, in the course of time, the Haydns started using more flat keys, which in the 1780s came to just over 50 percent of their syms, way above the percentage in their totals (Joseph: 36 percent, Michael: 34 percent).

From a closer look at a chart of J. Haydn's syms, it emerges that the increase in flat keys—which is characteristic of his later years—goes on the account of the sharp keys in his second chronological third and clearly on the account of the C-s in the final phase. In Michael's case it is just the other way around: the first to give way are the C-s and afterwards the sharp keys.

Mozart's largest portion of flat keys is 38 percent in 1765-69 (in his early teens), which represent 6 syms out of his half decade total of 16. In the early 1770s there is a specious decrease from 38 percent to 24 percent. This is specious because, in reality, there is an increase from 6 to 8 cycles in the flats. The deceptive effect is due to the twofold growth of his half decade total from 16 to 33. But, over time, there is a gradual decrease in the percentage of flat keys down to none in 1780-84. The last one of the above mentioned 8 cycles in flats is the "Little Gm" K.183, 1773, and from then until 1788, (#39, K.543, in Eb and #40, K.550, in Gm) there is only one sym in a key with flats (Bb, K.319, 1779) vs. 17 in sharp keys and the key of C, a trend which is opposite to that of the Haydns but not at all close to that of Dittersdorf.

Between 1770 and 1774 (in his mid-teens), Mozart wrote 33 cycles, among them 24 concert syms, over half of all his works in this genre. About two-thirds, or 21, are in sharp keys, the above 8 cycles in flats and 4 in C. These numbers completely upset the descending tendency of the half-decades' totals, derived from data by the older and more experienced Haydns, Dittersdorf and Vanhal. This tendency starts with the large volume of the early 1760s, and gradually leads on to the much fewer but more complex symphonies of the '80s.

As it appears in Table 6 (not given here), out of Wolfgang's chronological thirds his first, 7/2/12, is the closest to Leopold's totals (10/2/24); one noticeable feature of both father and son is the little use they make of the key of C. In later

[73] Michael Haydn has 10 syms in 2 series: he composed each series within some two months and these make up 25 percent of his total; or in about 10 years he wrote his last 21 syms, which is over 50 percent. Most of these have dated autographs.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

years, Wolfgang focused more attention on this key and it became his second largest group after D. In his chart of chronological thirds, the changes appear rather gradual, but it is clear that the group of flats diminishes steadily while the group of the C-s gains; the figures for sharp keys stay absolutely stable throughout, showing over 56 percent of his total, highest in this survey. After 1773 most of his syms are written in D (9) or C (5), with only 5 more syms in other keys, showing polarization much as in Stamitz's works.[74]

Dittersdorf always had a high percentage of sharp keys in his syms. His total shows 55 percent, as high as that of Mozart; in most of his quarters the figure is about the same, if not higher. In his first quarter he has as much as 35 percent in flat keys, which decrease gradually to about 22 percent in the final phase, and in this he differs basically from the Haydns. Paralleling this, there is an increase step by step in the syms without key signature from 11 percent to 22 percent. This is one point that he has in common with Vanhal, though Dittersdorf's highest figure appears a decade and a half after that of his pupil. This increase is accompanied by a thinning out in the neighboring keys of F and G.

The distribution of his syms in the different keys remains stable over the decades, with only relatively modest changes, as above. Similarly, the key of D—his largest group—shows 5 items in his first quarter, but a constant 9 in all the others. Yet their relative weight within the group of the sharps increases gradually over the years.

Vanhal's figures from his first quarter (6/4/11) show that over half of the cycles are in sharp keys, as was common among the Viennese at that time; about 30 percent are in flats and almost 20 percent in C. In his second quarter, basic changes occur: sharps drop to 37 percent, while flats rise to 47 percent and the group of C-s with Am shows only 3 items.

From this relatively high proportion of flats, there is a gradual decrease to 19 percent in the last quarter, lowest in all these charts, while those in sharps in time gain back much of the loss from their initial figure. However, the most significant change is the increase in syms with no key signature to an unprecedented 33 percent in his last quarter, which in his total comes to a leading 24 percent. The growth in C is accompanied by a gain in D and A, while Eb-s decrease greatly, and the key of Bb disappears completely. In his last quarter he has only 4 cycles in flat keys (one each in Eb, F, Dm & Fm) v. 17 others; 10 with sharps and 7 in C or Am.

When **Pleyel** started putting out syms, J. Haydn was already in the phase of using more flat keys than is shown in his average. In this respect he followed his teacher's line, having in his first third 30 percent in flats, and an equal number in sharps. The surprise is in the high number of syms in C (4/5/4), 4 of which appear almost consecutively among some 11 cycles dated in the year 1786. In those years J. Haydn—and others—used this key very sparingly.

In his second third there is a radical change: he wrote over twice as many cycles in flats than in sharps and in C together, over two thirds of his total in this period. In the final third there is a gain in the sharps and the C-s in place of flats.

In his totals, flats add up to 45 percent, more than anyone else's here, as sharps come to a record low of 33 percent. The group of C-s constitutes a reputable 22 percent, not unlike in Vanhal and Dittersdorf.

[74] Stamitz's syms are spread to 7 major keys. The narrowing down starts after the only sym in C, classified as pre-Mannheim. In time, he refrained from using Bb and A, later G and F too, and about the last dozen of his syms are either in D or in Eb.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Conclusion

Most of Sammartini's middle syms, many of which were heard in and around Vienna, are cast in keys with sharps, and so are most of Monn's syms and most of Wagenseil's overtures from his Period I. No doubt this had to do with the high percentage (55 percent) of sharp keys in the first very rich output of syms by the younger Viennese in the early 1760s (see Table G).

After this serious volume there was a sharp decline in production, down to about half in the number of syms written. Interestingly enough, the decrease was mostly in those in sharp keys. This can be seen mainly in the works of J. Haydn and Dittersdorf, though not in those by Vanhal, whose works at that time seem to be distributed more evenly. Just about the same happened to the young Mozart several years later, who, until his 19th birthday, composed nearly 50 cycles, after which his average fell to less than 1 sym per year.

Some time later, the Haydns started using more flat keys in their syms than before, reaching over 50 percent of their cycles in the 1780s. Pleyel, who entered the picture by then, went along with the stream, while Vanhal and Ordonez wrote their last syms before 1780. It was Dittersdorf who stayed with his earlier approach and kept using sharp keys in over half of his syms, until the latest of his works. Mozart wrote most of his later syms in D or C.

Among the later great symphonists who followed the Haydns and Pleyel in this respect, are Beethoven, Spohr and Schumann, though not Schubert or Mendelssohn.

Over the years the symphony became longer, and more complex. Together with this, there was another significant decrease in the output and it developed into a more personal genre.

Bibliography

Brook, Barry S. Editor, *The Symphony 1720-1840.* New York & London: Garland Publishing Inc., 1986.
Volumes: A/II, A/III, A/IV; B/I, B/III, B/IV, B/VII, B/VIII, B/X; C/II, C/III; C/VII, D/III, D/IV, D/V, Vol. #60.
Brown, A. Peter. "The Symphonies of Carlo di Ordonez," *Haydn Yearbook*, 12 (1981): 5-121.
Brown, A. Peter. *Carlo d'Ordonez 1734-1786, A Thematic Catalog*. Detroit, 1978.
Bryan, Paul R. *Johann Wanhal, His Life and Musical Environment*. New York, 1997.
Churgin, Bathia. *The Symphonies of G. B. Sammartini.* Ph.D. dissertation, Harvard University, 1963.
Eisen, Cliff. *The Symphonies of Leopold Mozart*. Ph. D. dissertation, Cornell University, 1986.
Eisen, Cliff. *Orchestral Music in Salzburg 1750-1780.* A-R Editions. Madison, 1994.
Forsberg, Suzanne. *The Symphonies of Placidus von Camerloher (1718-1782) and Joseph Camerloher (1710-1743), An Investigation of Style and Authorship*. Ph. D. dissertation, New York University, 1990.
Hill, George R. *A Thematic Catalog of the Instrumental Music of Florian Leopold Gassmann.* New Jersey, 1976.
Hoboken, Anthony, van. *Joseph Haydn: Thematisch-Bibliographisches Werkverzeichnis.* Mainz, 1957-78. Jenkins, Newell, and Churgin, Bathia. *Thematic Catalogue of the Works of Giovanni Battista Sammartini: Orchestral and Vocal Music*. Cambridge, MA, 1976.
Joseph Haydns Werke. Munich, 1956--.
Landon, H. C. Robbins. *The Symphonies of Joseph Haydn*. London, 1955.
Landon, H. C. Robbins. *Haydn, a Documentary Study*. New York 1981.
Mozart, Wolfgang Amadeus 1756-1792, *Neue Ausgabe samtliche Werke*. Kassel, 1956-91.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.

Sherman, Charles H., and Thomas T. Donley. *Johann Michael Haydn, a Chronological Catalogue of His Works.* New York, 1993.
Wolf, Eugene K. *The Symphonies of Johann Stamitz*. Utrecht, 1981.
Zaslaw, Neal. *Mozart's Symphonies.* Oxford, New York, 1997.
Zaslaw, Neal. "Mozart, Haydn and the Sinfonia da Chiesa," *Journal of Musicology*, 1 (1982): 95-124.

sym=symphony; mvt=movement; slm=slow movement; Opslm=opening slm; TKM=trio in the key of the minuet; TKslm=trio in the key of the slm.