Mozart Studies 2

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CLIFF EISEN

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Composer and works	Mozarts' copy	Remarks
Trio in C	—	See entry for J. Haydn, Trio in C.
Composers unidentified		
Instrumental movement	A-Wgm	K. *deest* (K³ Anh. 223*c*, K⁶ Anh. A 50). Autograph of W. A. Mozart, copied *c.*Mar. 1773–*c.*1775. Thirteen mm. in score for 2 solo vn., 2 vn., va., 2 ob., 2 hn., obbligato vc., and b.
2 keyboard fugues	US-NYpm	K. 154*a* (K³ Anh. 109^{VIII}, K⁶ Anh. A 61–2). Autograph of W. A. Mozart, copied *c.*1772.
Adagio for keyboard	A-Sm	K³ Anh. 206*a* (K⁶ Anh. A 65), autograph of W. A. Mozart, not datable. Copy by L. Mozart (S-Smf) probably made 1771–2.
Concerto for keyboard in C	—	Autograph cadenza (K. 626*a*/II/N) I-MC; concerto and composer unidentified.
Concerto for keyboard in C	—	Autograph cadenza (K. 626*a*/II/O) I-MC; concerto and composer unidentified.
3 arias	—	Cited by L. Mozart in letter of 4 June 1768 (*Briefe*, i. 268; *Letters*, 87).
Arias	—	Cited by L. Mozart in letter of 22 Dec. 1769 (*Briefe*, i. 295; not in *Letters*).
Concerto	—	Cited by L. Mozart in letter of 7 Jan. 1770 (*Briefe*, i. 302; not in *Letters*). Possibly identical to unidentified concerto cited in letter of 17 Feb. 1770 (*Briefe*, i. 316; not in *Letters*).
Symphonies	—	Cited by L. Mozart in letter of 7 Jan. 1770 (see previous entry).
Minuet	—	Cited by W. A. Mozart in letter of 24 Mar. 1770 (*Briefe*, i. 323; *Letters*, 121), stating belief that it was by Starzer or Deller.)

Tonal Organization in the *Opera Buffa* of Mozart's Time

JOHN PLATOFF

'TONAL organization', 'tonal planning', and 'high-level tonal structure' are terms referring to the relationships between the tonic keys of the separate musical numbers of a work. Underlying the use of these terms, which are prevalent in many recent analyses of Mozart opera, is the assumption that these relationships contribute significantly to the structure and meaning of Mozart's operatic works.

Yet neither the extent nor the importance of such high-level tonal relationships has ever been systematically examined. Claims abound that, for instance, an act or an entire opera is 'in' a key, or that the relationships between the tonic keys of successive numbers constitute a 'progression'; but neither the perceptual status nor the fundamental value of such claims are assessed. Frequently cited, for example, is the fact that in each of Mozart's mature operas the overture and final number share the same key. Or, to take a specific example from *Le nozze di Figaro*, critics point out that Figaro's aria 'Non più andrai', the final number of Act I, is in C, a fifth lower than the preceding musical number, and thus the act is supposedly closed by a V–I progression. But what is the meaning of these relationships? Are they likely to be perceived by an audience listening to and watching an opera in the theatre? If not, are they none the less important as part of our understanding of how Mozart constructed an opera? Or are they essentially the incidental result of other decisions by the composer, and therefore without real significance?[1]

In this essay I attempt to provide a more secure foundation for examinations of high-level tonal planning in Mozart's operas. In part the attempt depends on the detailed consideration of quantitative evidence, drawn both from Mozart's own operatic works and those of his contemporaries. Even the strongest such evidence,

Parts of the present essay appear in an abridged form in John Platoff, 'Myths and Realities about Tonal Planning in Mozart's Operas', *Cambridge Opera Journal*, 8 (1996), 3–15.

[1] It should be quite clear that not every relationship is a significant relationship. If it turned out that the number of notes in the Count's 'Vedrò mentr'io sospiro' were exactly twice the number in the Countess's 'Dove sono', we would presumably (in the absence of some complex dramatic-numerological hypothesis, backed up by other evidence) dismiss the fact as meaningless.

however, is meaningful only within a framework of hypotheses about how the phenomena being studied work in relation to one another.[2] I therefore begin by examining some of the premisses—largely unspoken—that seem to underlie previous discussions of tonal planning, and by proposing a stronger theoretical framework upon which future investigations might rest.

I. Background and Theoretical Considerations

One crucial premiss behind much of the writing about tonal organization involves the relationship among tonal planning, unity, and value. The Romantic 'belief in unity as the ultimate criterion of aesthetic value', a view 'based on organicism and evolutionism', has influenced the study of Mozart's operas ever since the work of the Wagnerian opera scholar Alfred Lorenz in the 1920s.[3] It may be schematized as follows: if unity is closely linked with greatness, then Mozart's operas, being great, must be unified. And, what is central for our purposes, a prime way of demonstrating unity is by showing tonal schemes that knit an act or a whole opera together. The desire to find high-level tonal plans in Mozart's operas, then, follows naturally from the view that they are great works.[4]

A few recent scholars have argued effectively and forcefully that applying such beliefs to eighteenth-century operatic music is misplaced and problematic. But the very energy of their writing—especially the self-consciously polemical stance of Carolyn Abbate and Roger Parker—testifies to the still-widespread acceptance of the older view.[5] I need not restate here the challenges already put forward, but I can offer two further considerations. First, it seems to have been generally overlooked that an opera is inherently unified, by virtue of presenting a coherent story involving a group of characters.[6] A spoken drama has no music at all, yet any good

[2] Leonard B. Meyer, *Style and Music: Theory, History, and Ideology* (Philadelphia, 1989), 57–61.

[3] James Webster, 'Mozart's Operas and the Myth of Musical Unity', *Cambridge Opera Journal*, 2 (1990), 200. The importance of Lorenz (and Wagner himself) for Mozart operatic analysis is treated at greater length in Carolyn Abbate and Roger Parker, 'Dismembering Mozart', *Cambridge Opera Journal*, 2 (1990), 187–95. Lorenz also wrote on Mozart: see his 'Das Finale in Mozarts Meisteropern', *Die Musik*, 19 (1926–7), 621–32.

[4] Some writers, like Gerald Abraham, are content to explain the unity simply by reference to the keynote (the key shared by the overture and the last finale). 'Whatever the *genre* to which Mozart's operas belong, he conceived them as unified musical compositions. . . . The unifying element in every case is tonality; each opera ends in the key of the overture, however remote or complicated the key-system of the intervening numbers.' ('The Operas', in H. C. Robbins Landon and Donald Mitchell (eds.), *The Mozart Companion* (New York, 1956), 291.) And Charles Rosen, in *The Classical Style* (New York, 1971), 304–5, makes the same point in much the same way. For these scholars at least, the keynote seems to be a sufficient condition of tonal unity in an opera.

[5] Webster, 'Mozart's Operas'; Abbate and Parker, 'Dismembering Mozart'.

[6] The problem of 'unity' is complicated by the fact that writers who invoke this quality do not explain what they mean by it. I view 'unity' in an 18th-c. opera to lie not in any sort of uniformity—clearly the successive musical numbers of an opera are different from one another in all sorts of obvious ways—but in the sense of 'an arrangement of parts or material that will produce a single harmonious design or effect' (from *Webster's New World Dictionary of the American Language*, Second College Edition (New York, 1972), s.v. 'Unity', 6a). This definition may be seen to be fulfilled by a reasonably coherent dramatic narrative, with or without music.

play is commonly seen as unified. And while musical numbers of wildly differing styles might somehow be perceived to undermine the unity of an operatic story, music is certainly not *necessary* to unify it.

A second point concerns the way operatic music in the late eighteenth century was listened to. There is wide-ranging evidence attesting to the relative lack of attention paid to an opera by audiences; talking, flirting, card-playing, and eating went on throughout the performance, with listeners quieting down only occasionally, when their favourite numbers were heard.[7] The success or failure of a work often rested on the presence or absence of two or three 'hit' pieces in the entire score. These circumstances would hardly have led composers to work for tonal unity, for a plan that linked the many musical numbers of an opera to one another, since such factors were exceedingly unlikely to have been noticed, let alone appreciated. Admittedly, Mozart frequently created music of a complexity and richness far beyond the ability of his contemporaries to appreciate it fully; he could certainly have done the same thing with respect to high-level tonal plans. It would none the less follow that modern critics, in linking the greatness of a Mozart opera to such a plan, were praising it for qualities unrelated to the way it was perceived and appreciated by the listeners of Mozart's own time.

Any 'number' opera is full of high-level tonal relationships, in the obvious sense that the tonic of each number has a relationship to the tonic of every other one. But in reality, some relationships may be a significant part of the structure of the work, while others will not be. Any given tonal relationship stands somewhere along a continuum that may be described in terms of its end-points and a point somewhere in the middle.[8] I will discuss each of these three points in turn.

1. At one end are relationships perceptible to an audience hearing and seeing an opera in the theatre.
2. In the middle are relationships that are not perceptible to an audience, but that analysts studying an opera find meaningful.
3. At the other end are relationships that neither audience nor analysts perceive as meaningful.

Because scholars often discuss tonal planning in terms of a composer's intentions, rather than simply of an opera's characteristics, it may be useful to define the same continuum in these terms as well:

[7] e.g. Mary Hunter, in *The Poetics of Entertainment* (Princeton, N.J., 1998), 11, cites a poster for a Burgtheater production (probably of 1778) that advertises card-tables for rent. And many contemporary reports mention—sometimes with amusement or horror—how little attention audiences paid most of the time to what went on on stage.

[8] Of course, the continuum contains more than just these three points. It is also the case that individual listeners hear differently from one another; I return to this issue below.

1. Relationships intended by the composer to be perceived by an audience.
2. Relationships chosen by the composer but not expected to be perceived by an audience.
3. Relationships that arise incidentally, as by-products of other choices, rather than from being themselves chosen by the composer.

Of course, it is one thing to propose such a continuum of tonal relationships, and quite another to say where any particular relationship lies along that continuum. But the attempt to do so, to distinguish between significant relationships and insignificant ones, is crucial. In an opera like *Figaro* with twenty-nine musical numbers, the number of tonal relationships between pairs of pieces is over 400. Clearly, only a small number of those relationships can be noticed by an audience; and, presumably, Mozart was thinking about no more than a few of them as he composed.

1. *Relationships Perceptible to an Audience*

This first category would seem to be the least problematic: any relationship that listeners can readily hear is surely of importance to our understanding of a work. An example in which two tonic keys are juxtaposed in a direct way comes from Act I of *Così fan tutte*. After the C major trio 'Una bella serenata' for Ferrando, Guglielmo, and Don Alfonso, in which they seal their bet, the duet 'Ah guarda sorella' for Fiordiligi and Dorabella follows immediately in A. (By 'immediately' I mean without recitative—there will surely be applause, as well as a scene-change on stage.) This striking change of key, appropriate to the end of one scene and the beginning of a different one in a new location, is easily perceptible. But such direct juxtapositions between numbers are actually quite rare in eighteenth-century *opera buffa*. In almost every instance recitative intervenes, sometimes at considerable length and moving through a number of keys.

Generally speaking the central question—what can listeners hear?—has been begged more than it has been answered: critics rely on the simple expedient of pointing out a tonal relationship without addressing the question of whether an audience hears it. For instance, Tim Carter states of *Figaro* that 'the E flat major of the [second-act] finale is the same as the key of the Countess's "Porgi amor qualche ristoro" (No. 10); thus the whole of Act II might be said to elaborate the Neapolitan (flat supertonic) area of the opera's main key, D major.'[9] Carter makes two points: that since Act II begins and ends with numbers in E flat, the act 'elaborates' that key; and that E flat is the Neapolitan of the 'main key' of the whole

[9] *W. A. Mozart: 'Le nozze di Figaro'* (Cambridge, 1987), 119. This claim and many of those cited below are critically examined by Webster in 'Mozart's Operas'.

work. But he does not assert that listeners hear these things; nor does he explain, if they are *not* heard, what importance these relationships might have.

The question of what listeners hear is still more troublesome in Andrew Steptoe's discussion of tonal planning in *Don Giovanni*:

> The key of B♭ major is therefore employed as a contrast to D minor/major throughout *Don Giovanni*. The whole score is characterized by abrupt shifts from flat keys (B♭, E♭, and F major) to keys nearer the home key (A and G major). By using B♭ major in this fashion, Mozart was able to increase tension through tonic–dominant patterns without invading the remoter harmonic reaches. For instance, the closing stages of Act I present a continuous rise in harmonic tension, from the B♭ major of Don Giovanni's aria ('Fin ch'han dal vino'), through Zerlina's F major aria, to the Finale in C major.[10]

Having previously asserted that 'the tensions of [operatic plots] were matched in modulations to the dominant',[11] Steptoe finds a 'rise in harmonic tension' in the successive steps of B flat, F, and C in the final three numbers of Act I. That a listener perceives such a rise in tension is implicit, though never stated outright. Further, the phrase 'Mozart was able to increase tension' implies that Mozart was seeking to do such a thing—that the rise in tension is something that the composer intended, not merely a feature that happens to be present in the work. One possible objection to Steptoe's claims is put concisely by Julian Rushton: 'Are discrete numbers experienced sufficiently as a series to warrant this description of their relationship? What of the recitative?'[12] In addition, Steptoe is guilty of confusing levels here: a modulation to the dominant within a musical number is one thing, while the succession from one number to a following one whose tonic is a fifth higher is quite another. Yet Steptoe treats the effect of the two procedures as the same.

Daniel Heartz's analysis of Act II of *Idomeneo* suggests even more strongly that key relationships between successive musical numbers are audible. He presents the following chart of musical numbers and their keys, with an explanation.

Number	10a	10b	11	12	13	14	15	16	17	18
Key	C	B♭ →	E♭	D →	G →	C	E - - →	F	c	d

Originally, as the autograph shows, Mozart planned No. 15 in C. Then he changed his mind and wrote the chorus 'Placido è il mar, andiamo' in the rarefied key of E. But this was not enough to interrupt the overall tonal thrust toward F that had been gathering since Idomeneo's great heroic aria in D (No. 12). The chorus, an ineffably beautiful *siciliana*, sounds like a welcome detour in the rigorous chain of resolutions, and it makes possible a subtler tonal relationship with what follows, one that functions like a deceptive cadence.[13]

[10] *The Mozart–Da Ponte Operas* (Oxford, 1988), 193.
[11] Ibid. 192.
[12] Review of Steptoe, *The Mozart–Da Ponte Operas*, *Music & Letters*, 70 (1989), 544.
[13] 'The Genesis of Mozart's *Idomeneo*', *Musical Quarterly*, 55 (1969); repr. in Heartz, *Mozart's Operas*, ed. and with contributing essays by Thomas Bauman (Berkeley, 1990), 24.

It is hard to know whether Heartz believes the 'tonal thrust' to be audible or merely visible to an analyst with a score; but with the words 'sounds like a welcome detour' he implies rather strongly that both the series of descending-fifth relationships (or 'resolutions') and the interruption of that series (an interruption that 'functions like a deceptive cadence') are heard by an audience. The plausibility of claims like these is questionable.[14]

For one thing, is a descending-fifth relationship between the tonics of two numbers a resolution, as Heartz claims? Is it valid to argue that the keys of successive musical numbers create 'progressions'? In discussing the opening numbers of *La clemenza di Tito*, John A. Rice asserts quite explicitly that the tonic keys of discrete musical numbers may be thought of as chords in a high-level tonal progression, here one that makes a full cadence.

> With this duet [No. 3 in C] Mozart completes a large-scale tonal progression, having moved from C major (the overture), to F ('Come ti piace imponi'), to G ('Deh se piacer mi vuoi'), and back to C. This tonic–subdominant–dominant–tonic progression contributes to the solid, monumental quality of *Tito*. Not only does it consolidate C major as the opera's tonal center, it also represents one half of a symmetrical structure that helps to unify the whole opera: the same progression is played out again on an even grander scale in the opera's final scenes.[15]

Webster directly challenges the notion that 'progressions' may be said to operate on this level.

> In an eighteenth-century opera, each number is not only independent, with its own character and form, but is separated from all the others: by recitative [or spoken dialogue], action, entries and exits, dramatic reversals, changes of scene, even perhaps the fall and rise of the curtain. In the absence of strong 'corroborating' evidence (as Tovey would have insisted), the hypothesis that these independent pieces are related like the movements of a symphony, let alone that they articulate a 'progression' like the wholly interdependent sections of a single instrumental movement, is implausible, to say the least.[16]

A further point about such high-level 'progressions' bears on the question of perception. A chord progression such as a IV–V–I cadence operates via the more-or-less direct succession of the chords; the result is a move from relative instability (V) to relative stability (I), from mobility to closure. Indeed in any chord progression, whether cadential or not, the musical effect arises from the relative feel of each chord within the matrix of the key. But in an opera the direct succession of tonic keys, the 'chords' of the progression, never occurs. Each key is established, usually challenged, and re-established over the course of several minutes, and the numbers are separated from one another as Webster indicates (as well as by applause). Moreover, since each tonic is made quite stable while it is occurring, the relative stability or instability of each one within some tonal matrix does not exist. As an audible phenomenon, a succession of numbers in different keys can hardly constitute a 'progression' in the sense that the word is normally used.

Even if we step back from the idea of 'progression', there seems to be no evidence suggesting that audiences normally perceive, or even attend to, tonal relationships between separate numbers—as the writers quoted above seem to assert—especially in Italian opera when simple recitative intervenes. To my knowledge no one has even attempted to argue explicitly for such perception, although as we have seen it is frequently implied in discussions of Mozart's operas. One kind of tonal relationship often discussed is the use of the same tonic key in two or more numbers in an opera; but Rushton expresses considerable scepticism about 'expect[ing] a listener to appreciate the return of a tonality in pieces widely dispersed throughout the opera, separated by recitative (or dialogue), other numbers, or an entr'acte. No composer can reasonably expect to make a dramatic or musical point in this way unless the stages are marked by the return of characteristic melodies and instrumentation.'[17] He goes on to discuss the clearest case of Mozart creating such a long-range tonal relationship—the connection in *Don Giovanni* between the slow opening of the overture and the second-act finale—in which the composer uses the same musical material in both pieces. One might also cite Act II of *Le nozze di Figaro*, in which Figaro quotes his own 'Se vuol ballare' in expressing to the Countess and Susanna his determination to outwit the Count. The recurrence of 'Se vuol ballare' is in F, the same key as in its first appearance, but a listener's recognition that Figaro is recalling his own aria arises from the tune and the orchestration (in conjunction with the key), clearly not from the key alone. These two examples suggest an obvious point: that when a composer wishes to link two widely separated parts of an opera together, the reuse of salient thematic material provides a simple and effective way of doing so.[18] Of course, such a device can work only when the relationship desired is one of identity; if a composer seeks to create a long-term relationship of contrast between numbers, a tonal-thematic recall will not serve.[19]

The above arguments, of course, need to be qualified by the recognition that the Viennese audience was not uniform, either in its attentiveness or in its musical acuity. There were surely listeners with perfect pitch, for whom all

[14] Rushton argues effectively against this view of *Idomeneo*, Act II, in *W. A. Mozart: 'Idomeneo'* (Cambridge, 1993), 131.

[15] *W. A. Mozart: 'La clemenza di Tito'* (Cambridge, 1991), 74.

[16] 'Mozart's Operas', 208.

[17] *W. A. Mozart: 'Don Giovanni'* (Cambridge, 1981), 111.

[18] Another instance is the series of melodic recalls from earlier in the opera in the second-act finale of *Così fan tutte*.

[19] Except by means of a thematic transformation, common enough in 19th-c. instrumental music (e.g. the 'Love theme' at the end of Tchaikovsky's *Romeo and Juliet*) but not to be found in 18th-c. Italian opera.

relationships between tonic keys were accessible. Somewhat more common would have been trained musicians whose sense of timbre enabled them to identify some of the keys being used, or at least to distinguish the brighter sharp keys (with their open-string notes) from the more mellow flat keys. Yet even for these more skilled listeners, there is no evidence that they *thought* in terms of high-level tonal relationships in listening to an opera. Making the connection between key-relationships and other aspects of operatic structure requires not only the ability to hear such relationships, but also the belief that they may be communicating something about the work.[20] That this belief is prevalent in twentieth-century operatic analysis is undeniable, but I find no evidence of it in eighteenth-century thinking.

More important, perhaps, is the fact that the skilled listeners just described constituted the exceptions in the Viennese listening public. Most of the audience were musical amateurs, whose attendance had as much to do with social as with musical concerns; and, as noted above, their level of attentiveness was shockingly low by modern standards. Neither of these facts leads one to the conclusion that high-level tonal relationships would have been perceived by a substantial proportion of the audience.

2. *Non-Audible but 'Chosen' (and therefore Meaningful) Tonal Relationships*

In view of the limited claims that may be plausibly made for high-level tonal relationships that audiences actually hear, the second point on the continuum offers the greatest opportunities for useful discussion of high-level tonal planning in an opera. Siegmund Levarie, in an important contribution to the debate, posits an 'ontic' view of a musical work. With such an approach one can see an act or an entire opera as a static whole, leaving aside the fact that in the theatre the work moves linearly in time (he calls the linear view the 'gignetic'). Levarie therefore feels free to discuss the significance of relationships between keys that may for example occur more than an hour apart.[21]

While many writers on tonality in Mozart's operas seem to have adopted this ontic approach, they do not acknowledge it explicitly—perhaps because Levarie's

[20] Our own lives are full of potentially meaningful 'relationships' to which we pay little attention because we do not believe they are likely to be meaningful. For example, the majority of my male students wear baseball caps to lectures—some worn forwards, others backwards. The number of caps present varies from day to day, as does the ratio of forwards to backwards. I observe these phenomena but do not spend cognitive energy looking for meaning in them, because I have no reason to hypothesize that they have any meaning. Note that if, for example, I were very interested in the relationship between weather and dress, I would probably form a hypothesis about baseball caps; and I would be looking much more carefully each day at the number of cap-wearers.

[21] 'Viewpoint: On Key Relations in Opera', *19th Century Music*, 3 (1979–80), 88–9. His piece is a response to an earlier 'Viewpoint' by Joseph Kerman in *19th Century Music*, 2 (1978–9), 186–91, that in turn responded to Levarie's original article, 'Key Relations in Verdi's *Un ballo in maschera*', *19th Century Music*, 2 (1978–9), 143–7.

own use of the method has led him at times to claims that seem absurd.[22] But the usefulness of considering a large musical work as a timeless whole can be defended, especially if one's investigation focuses on a composer's intentions. Clearly any plan or system used by Mozart to structure his operas is appropriately of interest to the critic, whether or not it is audible to an audience. However, a plan that a composer adopted for his own convenience is fundamentally different from a series of choices that affect the listener's response.[23] To put it another way, any relationship we (as analysts and critics) can uncover in a work is part of its structure and meaning for us, even if the relationship could not be perceptible to an audience; but such a non-perceptible relationship has a very different status in our understanding of a work from a relationship patently obvious to a listener in the theatre. As we have seen, scholars frequently cite high-level tonal schemes without observing this distinction.[24] Is a given tonal relationship important in understanding Mozart's compositional procedure, or in understanding how listeners hear the work? These two are not the same. It should also be clear why the question of the composer's intentions must be explicitly returned to the discussion: if one posits a tonal plan that is not audible and was not chosen by Mozart but simply happens to be present incidentally, it is hard to see why it should merit much attention.

A closer examination of 'chosen but non-audible' tonal relationships reveals that the category actually contains two distinct compositional procedures, which need to be considered separately.

2a. Relationships created more or less automatically, in conformance to accepted conventional procedures.

2b. Relationships created as the result of conscious choices, not for reasons of convention but because they satisfy the composer.

One important difference between the two is that conventional choices do not call for any *ad hoc* explanations—in fact they resist them— while an uncommon relationship invites speculation about the reasons for its existence.

[22] This may be seen both in 'Key Relations in *Un ballo*' and in Levarie's book, *Mozart's 'Le nozze di Figaro': A Critical Analysis* (Chicago, 1952). See e.g. the argument in the former that there exists across the three acts of *Ballo* 'the cadential progression A♭–A–B♭ [which] can thus be understood as a well-balanced widened full cadence: second subdominant to (substitute) second dominant to tonic' (p. 144). Likewise in the latter, Levarie argues for a cadential progression of D–E♭–A–D across the four acts of the opera, despite his own demonstration that the third act is in C, with the opening A minor/major duet being the relative key of C (pp. 233–45).

[23] We may anticipate the objection that aspects of an opera not consciously perceived by listeners may still affect them at some subconscious level. But this potentially powerful argument has never been put forward in a convincing or systematic fashion. At least in principle, features of a musical work are either perceptible or not perceptible. One needs to make the case for any particular tonal relationship (or other feature) that it can be perceived by an audience.

[24] A notable exception is Craig Ayrey, in Rushton, *Idomeneo*, 137–52. In offering a structural and tonal analysis of the role of Elettra, he grants that many of the relationships he cites 'cannot be perceived in performance'; none the less he argues that 'once stated, such analysis can modify the nature of our understanding of a work (and even our perception of it in performance)' (p. 142).

To offer a simple real-life example: if I use the closing 'Yours sincerely' in a letter to a colleague, one may infer that the choice was made more or less automatically; to interpret 'Sincerely' as conveying my intense feelings of sincerity would be unwise, since its use is so conventional. On the other hand, a letter that closes 'With my warmest best wishes' might reasonably be understood as an attempt to communicate a feeling of special affection, since letters do not typically contain such a closing.[25]

Similarly: we would be properly suspicious of an argument like this invented one: 'Mozart deliberately chose to end *Le nozze di Figaro* in D, the key of the overture, to suggest that after all the follies of this "Mad Day", nothing has really changed.' Since virtually all of Mozart's operatic works conclude in the key of their overtures, the claim that Mozart intended something special by it is unconvincing. Conversely, if Mozart had not ended *Figaro* in the key of the overture but in a different key, an *ad hoc* explanation of this choice might be welcome.

In both these cases, distinguishing the conventional choice from the unusual and more highly meaning-laden one is an empirical matter: we recognize the atypical only by knowing what is typical. This was simple enough for Viennese opera-goers, who knew the repertory of their time and could compute frequencies informally and unconsciously. But for us any serious attempt to tease apart the conventional from the special must depend on an improved understanding of the conventions of the period, which can be assisted by careful quantitative evaluation.

3. *Incidental Tonal Relationships*

Incidental tonal relationships constitute a negative category, a kind of repository for relationships that cannot justifiably be placed elsewhere on the continuum. Statistical evidence might contribute to locating a given tonal relationship here; for example by showing that, given the limited number of tonic keys available to Mozart or his contemporaries, it was bound to occur from time to time purely by chance. Ultimately, however, more powerful counter-arguments may be constructed in another way: by showing how the relationship is more likely to have arisen for other reasons having nothing to do with tonal planning.

These other reasons have to do above all with the keys of individual numbers. There is substantial agreement that, at least some of the time, Mozart and other composers chose keys (perhaps especially for arias) by relying on the conventional association of particular keys with certain character-types, affects, or dramatic situations: D major for a noble character or martial sentiments, for example, or G major for peasant simplicity. In fact, Antonio Salieri refers explicitly to this issue

[25] A closer investigation would seek to examine as many of my professional letters as possible, in the hope of seeing whether my conventional procedures mirror those of the profession in general. The goal is to work from the most refined statistical sample available.

in describing how he began setting an operatic libretto to music. After reading it through carefully, and rereading the texts of the lyric numbers, 'I decided first on the key appropriate to the character of each lyric number.'[26] The associations have to do with the general view of the 'character' of each key[27] and with operatic practice and tradition in particular. Instrumentation played a part in the choice of keys as well: for example, Heartz points out that Mozart wrote all his mature operatic finales in C, D, or E flat, the three keys in which trumpets and drums were available.[28] And flutes, clarinets, and oboes each appeared regularly in some keys, while they were omitted in others.[29]

Thus, while Mozart's choices of key cannot be completely explained 'as signs of character, social class, affect or even musical form', there is none the less ample evidence of his general reliance on a group of standard associations. And, as Rushton puts it concisely, 'the claims of affective key symbolism and tonal architecture are virtually irreconcilable'.[30] By 'affective key symbolism', Rushton refers to the associative links between particular keys and various textual or musical affects; by 'tonal architecture' he refers to high-level schemes in which one tonic is related to others in a systematic way. Since the former requires that keys be chosen for reasons intrinsic to each number, and the latter calls for key-choices that are interdependent within some larger framework, the conflict between the two is indeed unavoidable. And the data presented below clearly suggest that composers concerned themselves consistently with choosing keys for their own significance, while the evidence in support of large-scale schemes is far more tenuous.

II. *Statistical Analysis of Tonal Relationships*

Introduction

Like other matters of musical style, high-level tonal relationships in late eighteenth-century *opera buffa* can usefully be assessed in statistical terms. As Leonard B. Meyer points out, since 'all classification and all generalization about stylistic traits are based on some estimate of relative frequency, statistics are inescapable.

[26] From *Ueber das Leben und die Werke des Anton Salieri, k.k. Hofkapellmeisters* (Vienna, 1827), 30–2. See Daniel Heartz, 'Constructing *Le nozze di Figaro*', *Journal of the Royal Musical Association*, 112 (1987), 77–98; repr. in id., *Mozart's Operas*, 133–55. A passage from the Salieri is presented ibid. 154–5; this quotation (trans. Heartz) is on p. 139.

[27] See Rita Steblin, *A History of Key Characteristics in the Eighteenth and Early Nineteenth Centuries* (Ann Arbor, 1983).

[28] 'Constructing *Le nozze*', 83; *Mozart's Operas*, 140. In fact E flat was not a common key for trumpets and timpani: Mozart was the only Viennese composer of his time to use it, as I discuss below.

[29] James Webster, 'The Analysis of Mozart's Arias', in Cliff Eisen (ed.), *Mozart Studies* (Oxford, 1991), 106–7, refers briefly to these practices; to my knowledge no detailed study of instrumental usage in this repertory has yet been made.

[30] *The New Grove Dictionary of Opera*, 4 vols., ed. Stanley Sadie (London, 1992), iii. 495, s.v. 'Mozart'.

This being so, it seems prudent to gather, analyze, and interpret statistical data according to some coherent, even systematic, plan.'[31] Statistical evidence, however crude the process of merely counting may seem to be, tells us what composers did and did not do, and how frequently. It is from this evidence that analysts and critics formulate hypotheses about the workings of a style. And in fact such evidence is presented all the time, in informal ways like 'usually', 'for the most part', 'frequently', and so on. To say that 'Mozart's symphonic first movements are usually in sonata form' is to make a statement based on statistical evidence, however informally it may have been gathered. The more formal statistical evidence presented below has the advantage of being more precise: it relies on large samples, counted as accurately as possible. Therefore the evidence may be used to assess with greater refinement assertions about tonal relationships, including some that may be controversial. In the present case statistical evidence about tonal relationships can suggest whether particular sets of relationships occur merely by chance or were deliberately chosen by composers. While it cannot indicate the reasons for composers' choices, it provides a solid foundation on which hypotheses can be formed.

The statistical sample used for this paper consists of two large groups of works. The first comprises 28 *opere buffe* performed at the Burgtheater, the court theatre in Vienna, between the reinstatement of the Italian company in 1783 and the end of the 1791–2 season.[32] Most of these operas were written for and first performed in Vienna; but a few were popular works written for other cities and brought to Vienna soon afterwards. The second group contains all of Mozart's complete and incomplete operatic works. This group can also be subdivided in various ways: the three Da Ponte operas, with which I will be primarily concerned; all the *opere buffe* (that is, the Da Ponte operas plus *La finta semplice*, *La finta giardiniera*, and the two incomplete works *L'oca del Cairo* and *Lo sposo deluso*); or all the 'mature' operas (those from *Idomeneo* to Mozart's death).

For each group of works, I created a database file with a record for every individual musical number, noting its type (aria, duet, finale, etc.), its orchestration, its key, and its relationship to the key of the preceding number.[33] By sorting and

[31] *Style and Music*, 64.

[32] These works are listed in the Appendix. They include 18 of the 20 *opere buffe* written for and premièred in Vienna during this period (the score of Righini's *L'incontro inaspetto* was not available to me; that for Piticchio's *Il Bertoldo* has been lost), along with 10 other works first performed elsewhere and later produced in Vienna. Collectively these operas represent 36% of the operas performed at the Burgtheater in these years (28 of 78; all but five of the latter were *opere buffe*). But because nearly all of the most popular operas of the decade have been included here, the 28 operas account for 52% of the operatic performances in the decade (626 of 1,203). The performance data come from Otto Michtner, *Das alte Burgtheater als Opernbühne: Von der Einführung des deutschen Singspiels (1778) bis zum Tod Kaiser Leopolds II (1792)* (Vienna, 1970), 473–511.

[33] In dealing with repeated numbers, such as the chorus in G towards the end of Act I of *Figaro*, I have treated such cases as one piece when the repetition is immediate (as in *Figaro*, with only a simple recitative intervening), but as two pieces when the number returns later in the opera.

grouping the records in a variety of ways it is possible to answer questions about the musical numbers: for example, how does the distribution of keys used for arias compare with that used for ensembles? or, does the pattern of key-relationships between finales and their preceding numbers differ from the distribution of key-relationships generally? Use of a statistical software package also makes possible more sophisticated analyses, as discussed below.[34] For reasons having to do with both the sources and the nature of opera, this sample is not and cannot be perfect and unambiguous. Fortunately, because of the large size of the two groups (each containing over 400 musical numbers) these ambiguities do not threaten the statistical accuracy of the evidence presented.[35]

Accompanied recitatives, of which there are on average between three and four per opera, present certain problems. There are a very few self-contained accompanied recitatives that are not associated with any other musical number. These I have included as musical numbers in their own right. Occasionally, one finds a brief passage of accompanied recitative within a longer simple recitative, so that the accompanied passage is not contiguous to any musical number. (Figaro's reprise of his 'Se vuol ballare' in Act II of *Figaro* is an example.) But most accompanied recitatives directly precede and are linked to an aria or (less often) an ensemble. When the recitative begins in the same key as the musical number to which it is linked (and this is quite common), there is no difficulty. But many—about 50 pieces in the 28 operas—begin in different keys, such as the recitative preceding Susanna's 'Deh vieni non tardar': the aria is in F, while the recitative begins in C. Except as indicated below, in my overall statistical evaluations of keys and key-relationships I have ignored the accompanied recitatives. Because of the size of the sample, the effect on the data is relatively small.

It is worth noting that other writers on tonal structure have routinely avoided confronting the problem of accompanied recitatives. Heartz, for example, in the

[34] The data files were created using Filemaker Pro software on a Macintosh computer; the statistical tables and chi-square tests presented below were produced on a software package called JMP.

[35] The data file of 28 Viennese *opere buffe* (including Mozart's three Da Ponte operas) comprises 706 musical numbers whose keys are known; the file of all Mozart's operas (again including the Da Ponte works) comprises 420 numbers. The Da Ponte operas comprise 91 numbers, including the pieces added for the Viennese production of *Don Giovanni* and the two alternative arias for Susanna in the 1789 *Figaro* production. Not surprisingly, some sources are incomplete (e.g. the only known score of Righini's *Il demogorgone* lacks the entire first-act finale), while others transmit multiple versions of some numbers or show signs of rearrangement. The Prague and Vienna versions of *Don Giovanni* illustrate the difficulty. In Prague the four numbers following the Act II sextet were Leporello's aria, Don Ottavio's aria, the cemetery duet, and Donna Anna's *rondò*, in a key succession of G–B flat–E–F. The rising semitone between consecutive numbers is relatively unusual, the tritone (B♭–E) even more so. But in Vienna Leporello's and Don Ottavio's arias were dropped, while a duet for Leporello and Zerlina and an aria for Donna Elvira were added, producing a key succession of C–E flat–E–F. Here the rare tritone relationship has disappeared, while instead there are two consecutive rising semitones. In cases like these I have included, wherever possible, each alternative number with its tonal relationship to the previous one. Accordingly Don Ottavio's B flat aria is listed, shown up a minor third from the preceding piece, and the cemetery duet in E includes the tritone relationship. Likewise the Zerlina–Leporello duet in C is shown down a minor third (from the sextet in E flat), and Donna Elvira's 'Mi tradì' in E flat, up a minor third.

discussion of Act II of *Idomeneo* cited above, makes no mention of the accompanied recitatives preceding both No. 11 and No. 12, each of which affects the tonal successions in important ways. Presumably this situation arises because the many imponderables about the tonal effect of accompanied recitatives interfere with the more simple schemes that can be observed if only the tonics of arias, ensembles, and so on are taken into account. In fact, the tonal fluidity of recitatives, whether simple or accompanied, might in itself cast doubt on structural hypotheses that depend on direct relationships between stable pillars, the tonics of successive numbers.

Tonal Relationships in the Viennese Opera Buffa *Repertory*

Of the twelve possible tonic keys, only eight are ever used in this repertory: A, B flat, C, D, E flat, F, G, and much more rarely E (the relative frequencies are shown in Fig. 1). Figure 1 combines pieces in major and minor keys; but the latter, which are used with five of these tonics—A, C, D, F, and G—are rare indeed: only 18 musical numbers out of 706 use a minor tonic wholly or in large part. Mozart's three Da Ponte operas account for seven of these, meaning that composers other than Mozart wrote only 11 minor-key pieces in 25 operas comprising 615 musical numbers.[36] The avoidance of the remaining four possible tonics—B, C sharp/D flat, F sharp/G flat, and A flat—is understandable enough: these keys are difficult for strings, winds, and brass to play in, creating considerable intonation problems. As may be seen, composers went beyond a signature of three sharps only occasionally (to E), and never beyond three flats. Otherwise the variations in frequency in Fig. 1 do not seem enormously revealing; but they become more so when particular types of musical number are examined.

For instance, the pattern of keys for arias does not differ greatly from a random distribution (omitting E), as may be seen in Fig. 2: the frequencies of the

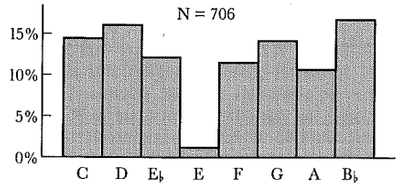

Fig 1. Distribution of tonic keys: musical numbers in the Viennese repertory

[36] I designate as minor both pieces wholly in a minor key, like Barbarina's Act IV cavatina in *Figaro*, and those that rely heavily but not entirely on a minor tonic, such as the Count–Susanna duet from Act III of the same opera. My list does not include lengthy multi-sectional numbers such as finales that may have an internal movement in a minor key (though these too are quite rare).

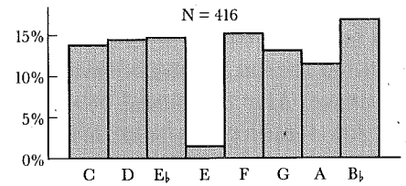

Fig 2. Distribution of tonic keys: arias in the Viennese repertory

other seven tonic keys are virtually the same. But a comparison of the tonic keys used for arias by male and female characters produces clear evidence that composers thought differently about these two categories (see Figs. 3 and 4). D, the most-used tonic in arias for men, is very rarely used for women's arias; conversely F, A and B flat occur much more frequently in women's arias than in men's. Given the very different appearance of Figs. 3 and 4, it is not surprising that the differences in key-distribution for male and female arias are statistically significant at the .001 level.[37] These distinctions reflect the key-associations to which I referred earlier, associations that were clearly understood by composers of the period, and presumably by many listeners as well. For example, D is an ideal 'trumpet and drum' key, brighter than C or B flat, and well suited to martial, noble, or grandiose sentiments, whether serious or comic. We find in the repertory many arias in D for noble characters (such as the Count in *Figaro*) as well as comic figures who ape the noble or martial style (such as Leporello or Dr Bartolo). And this type of aria is almost exclusively a male province; when serious or noble female characters express serious sentiments they do so in a formal but less

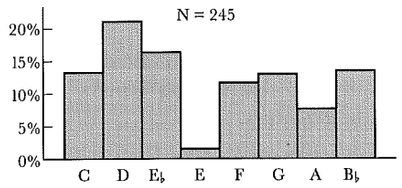

Fig 3. Distribution of tonic keys: male arias in the Viennese repertory

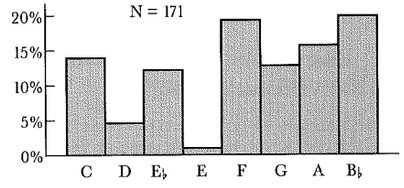

Fig 4. Distribution of tonic keys: female arias in the Viennese repertory

[37] Here and in what follows I rely on the chi-square test, a common measure of the degree of independence between two variables. Very simply, the test gives a measure of the likelihood that the given distribution—here, the frequency of keys for each kind of aria—would occur simply by chance, if the keys chosen for arias had nothing to do with the sex of the character singing them. A result is usually considered to be statistically significant if the probability of the given result occurring by chance is less than .05 (or .01), i.e. if it would occur fewer than 5 times (or once) in 100. In this case the probability that male and female arias would have the distribution of keys shown in Figs. 3 and 4 purely by chance—and not because composers distinguished between male and female arias—is less than 1 in 1,000, or .001.

warlike fashion, frequently in B flat (as in Fiordiligi's 'Come scoglio').[38] F and A carry other associations. They are the most common keys for the *rondò*, the two-tempo show-piece aria written for the leading female singer in the cast and only rarely given to a male singer (Donna Anna's 'Non mi dir' is an example). Moreover F is the prime key for what might be called '6/8 maidservant' arias, expressions of either naïve sentiments (often amorous longings) or their reverse, cynical reflections on men and the game of love, by the inevitable subsidiary female character who is usually the maid. (Despina's 'In uomini, in soldati' illustrates the latter.)

Composers exhibited equally clear, though somewhat different, key-preferences in the case of operatic ensembles. (The overall differences between arias and ensembles may be seen by comparing Figs. 2 and 5.) For ensembles in general (Fig. 5) E flat is clearly not a favoured key, with five other tonics used more frequently. In fact, for duets the key is virtually never used (only three times in 74 pieces). But for large ensembles—quartets, quintets, sextets, and septets—E flat is chosen in strong preference to all other keys (Fig. 6). I know of no particular association that would explain this preference; it seems to have been a traditional or conventional choice, one that composers made in accordance with what previous composers had done.[39]

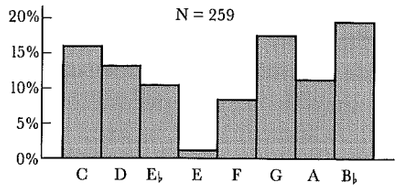

FIG 5. Distribution of tonic keys: ensembles in the Viennese repertory

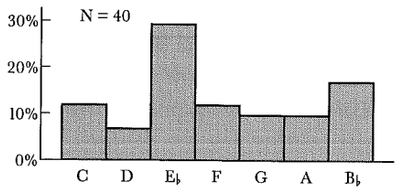

FIG 6. Distribution of tonic keys: quartets, quintets, sextets, and septets in the Viennese repertory

Distinctions such as those outlined in the previous paragraphs could be enumerated further, comparing serious with comic arias, duets with trios, and so on. But the central point would be the same: statistical evidence clearly confirms what we have long accepted to be the case, that the choice of tonic keys for particular types of pieces in this repertory is not random. The tonic of each aria, ensemble,

[38] Some writers have argued that 'Come scoglio' is in fact a parody of serious feelings, and not to be taken seriously. For a variety of reasons I disagree; but in either case the aria none the less represents a perfect example.

[39] My thanks to Mary Hunter (personal communication) for the interesting suggestion that vocal ranges may be involved: that composers may have found E flat to be an ideal key for combining a large number of singers to best advantage.

or instrumental movement was chosen within a matrix of key-associations such as those discussed above, as well as other factors, above all instrumentation and vocal ranges. So far, however, I have focused on reasons intrinsic to each piece itself for the choice of that piece's tonic key; I now take up the question of whether and when matters of higher-level structure govern the key-choices for individual music numbers.

We may begin with tonal closure in an opera, and the question of a 'keynote'. The word is often defined synonymously with tonic, but I will use it here in a much narrower sense to mean the key of an opera's overture and final number, if those two pieces are in the same key.[40] Some Viennese *opere buffe* do have a keynote—10 operas out of 27,[41] far more than could be expected to occur by chance[42]—but the meaning of this fact is far from clear.

As we have seen, composers used eight tonic keys; but the overtures in these operas rely almost exclusively on only two of these. Twenty-one overtures out of 27 are in D, and four of the remaining six are in C. This is presumably for the same reasons that so many eighteenth-century symphonies use these keys: trumpets and timpani are available in C and D,[43] they are easy keys for the woodwinds, and both keys (especially D) can make use of the bright sound of open strings.

The key-distribution for the numbers that end acts—finales or *cori ultimi*—shows clearly that, as with overtures, these pieces were seen by composers as a special category (see Fig. 7). Thirty-seven, or about three-fifths, of the 63 finales or *cori ultimi* use the same two keys, C and D, with 11 in B flat and 15 in all other keys.[44] (Not surprisingly, the three 'trumpet' keys, C, D, and B flat, account for 76% of the act-ending numbers.) The proportion of C or D is just the same in the last act-ending number of each opera: 16 of 27 pieces (59%) are in these two

[40] This is generally the way the term is used by Heartz in *Mozart's Operas*, though at times he also seems to mean something closer to a true, controlling tonic key.

[41] It is 27 rather than 28 because I have been unable to find the key of one overture. In what follows, the figures given will occasionally reflect similar situations: a given piece may be missing from a score, so the total of, say, *introduzioni* or finales may be smaller than it should be for 28 operas.

[42] I mean here that, with 7 tonic keys used with roughly equal frequency (see Fig. 1), the chances of the same key appearing to open and close an opera would be roughly 1/7, or 4 operas out of 28, if the keys were chosen randomly. However, key-choices for overtures and finales are not at all random, as I discuss below.

[43] In the Viennese repertory I identified 124 musical numbers with trumpets, 87 of them in C or D (70%). Trumpets also appear in pieces in B flat with some frequency (21 times), but only rarely in other keys: E flat (6 pieces), A (5), G (4), F (1). The trumpets need not be in the key of the piece, of course; pieces in G or F normally use trumpets in C, as for instance in Guglielmo's 'Donne mie la fate a tanti', and pieces in A use trumpets in D. Of the 52 Viennese pieces that use timpani, 40 are in C or D (77%). An additional 5 are in E flat, and a total of 7 in G, A, and B flat. Interestingly, 5 of these last 7 are by Salieri. Mozart's operatic uses of trumpets and drums follow a similar pattern: in all his works 80% of the numbers with trumpets and 85% of those with timpani are in C or D (in the Da Ponte operas these figures are 77% and 84%).

[44] Most of the operas in this repertory are in two acts; thus their final number is the second-act finale. In the four three-act works—*Fra i due litiganti*, *Il mercato di malmantile*, *Il ricco d'un giorno*, and *Il talismano*—the last number is a short and generally homophonic *coro ultimo*. The two other operas are the four-act *Figaro*, whose two true ensemble finales close Acts II and IV, and Paisiello's four-part *Il barbiere di Siviglia*, with ensemble finales closing parts III and IV.

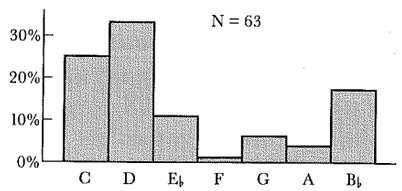

FIG 7. Distribution of tonic keys: act-ending numbers in the Viennese repertory

keys.[45] With virtually every overture in C or D, and so many act-ending numbers in those keys, it is no surprise that a group of operas should display a keynote—as long as it is C or D. Of the ten operas with keynotes, eight employ D and the other two have C.[46] Another eight operas lack a keynote but have a first act that ends in the key of the overture, while the second act (or third, if there is one) closes in a different key. In every such case the opening and closing key of the first act is D. Finally, eight operas have neither structure: their overture, first-act finale and second-act finale are all in different keys.[47]

This information can be interpreted in two basically opposed ways. In one interpretation, a large number of operas are seen to begin and end in the same key—while others open and close the first act in the same key—indicating that this sort of tonal closure was deliberately planned by composers. In the other view, composers are understood to have used C and D for overtures, and C, D, and B flat for act-ending numbers, because of the intrinsic appropriateness of those keys for those kinds of pieces—above all perhaps because they made trumpets and (for C and D) drums available. The fact that some operas or some first acts closed in the same key as their overtures was a more or less incidental result of these key-preferences. The latter interpretation is supported to some extent by the fact that every single instance of tonal closure in an opera or a first act involves either C or D. To be fair, however, the two explanations need not be seen as mutually exclusive: surely composers, just like the rest of us, sometimes have multiple reasons for a particular choice. And some (such as Mozart, as I discuss below) may have consciously preferred to create such tonal closure, while also relying on the common keys for overtures and finales.

In assessing the meaning of the keynote phenomenon, it is perhaps more important to look past the frequency of operas with keynotes to the significance of this

[45] It is therefore obvious that the keys chosen for act-ending numbers differ widely from the overall key-distribution for musical numbers in general. In fact the difference between the key-distribution for act-ending numbers and for all other numbers is highly significant ($p < .0001$).

[46] These are listed in the Appendix.

[47] I include in this group *Il barbiere*, whose second and third parts close in the same key.

organization within each opera. Is the keynote used prominently in other numbers—does it seem central to some overall tonal organization? On the subject of *Figaro*, for instance, writers sceptical about claims of tonal unity have noted that D appears as the tonic of a number only twice between the overture and last finale: in Bartolo's aria (No. 4) and the Count's (No. 18).[48] Generally speaking, composers seem to have taken care not to overuse any one tonic in an opera. On average, the most-used key in any opera serves as tonic in 23% of its musical numbers. Only rarely is a single key employed more than one-quarter of the time, and in only one opera does it approach one-third (Salieri's *Il talismano*, with nine numbers out of 28 in B flat). As in *Figaro*, an opera's keynote does not dominate its tonal scheme. The ten operas with keynotes rely no more heavily on their most-used key than do non-keynote works; in these ten operas the most-used key, usually the keynote, occurs on average in 22% of the musical numbers. These figures do not, of course, eliminate the possibility that the keynote might be used sparingly but for the most significant pieces in an opera, however 'significant' may be defined. A closer examination of the seven non-Mozart operas with keynotes (I return to the Mozart operas below) reveals that in only one, Martín y Soler's *Una cosa rara*, is there any sign of the keynote having special status. The keynote C dominates the initial scene of this work: the overture in that key is linked to an opening chorus in two parts (C minor and C major respectively), with a brief solo melody in C between them. The second number, a trio, is also in C; and following a brief solo piece in F minor, the fourth musical number is an F major cavatina linked by an accompanied recitative to a reprise of the C major portion of the opening chorus. This return serves to create a complex of pieces that encompasses the overture and the first four numbers, bounded by music in C.[49] C also serves as tonic for the opening number of Act II and for the love-duet late in that act, as well as of course for the Act II finale. No such patterns are found in the remaining works with keynotes; instead the use of the keynote as tonic is occasional and rather clearly without relevance to the drama.

With respect to tonal closure within an act—that is, in acts other than the first, or within the first act excluding the overture—much has been made of Act II of *Figaro*, which begins and ends in E flat. Generally, however, this type of tonal closure is neither strikingly rare nor strikingly common, occurring nine times (including *Figaro*'s Act II) in 59 possible acts.[50] Since composers employed seven

[48] e.g. Webster, 'Mozart's Operas', 209; Steptoe, *The Mozart–Da Ponte Operas*, 192, also observes the lack of any important role for D major in much of the opera.

[49] This tonal complex is discussed further in John Platoff, 'A New History for Martín's *Una cosa rara*', *Journal of Musicology*, 12 (1994), 107. In some ways it resembles the opening of *Don Giovanni*, with its emphasis on D minor.

[50] In making this calculation I omitted overtures, comparing the first and last vocal numbers of the first acts. I have excluded the third acts of three-act operas, since these truncated acts invariably contain only two musical numbers.

tonic keys with roughly equal frequency (see Fig. 1—I omit E for the moment), by pure chance the number of acts beginning and ending in the same key should be one-seventh of the total, which would be 8.4 of 59. Thus the statistical evidence does not suggest that composers deliberately planned to ensure that particular acts began and ended in the same key. (However, these figures by no means exclude the possibility that a composer—whether Mozart or someone else—may have planned such tonal closure in a particular case.)

As we have seen, many of the arguments about high-level tonal planning in Mozart's operas depend on statements about what I will call *key-successions*: the relationships between the tonic keys of successive musical numbers. Surveying the overall picture of the frequency of key-successions therefore provides a useful background against which such claims may be assessed. Figure 8 shows the relative frequencies of the 12 possible successions.[51] Some occur much more frequently than others; in particular a descending perfect fifth (P5) is used fully one-sixth of the time, while rising and falling minor seconds (m2) each comprise less than one-twentieth of all successions. Figure 9 presents the same data with rising and falling intervals of the same size grouped together. Here again the perfect fifth (rising and falling) is the most common interval, used in more than one-quarter of all successions. The frequencies charted in Figs. 8 and 9 are, not surprisingly, different from random distributions at a statistically significant level ($p < .001$ in each case).[52] That is: the data indicate that composers, for whatever reason or combination of reasons, preferred some key-successions to others. The relationships between the tonic key of one number and that of the next do not arise simply as the incidental result of the tonic keys themselves.

However, further examination shows that the preferences for key-successions, unlike the choices of keys themselves, do not vary with different kinds of musical number. We saw earlier that composers chose keys very differently for male arias than for female arias, and keys for larger ensembles differently from those for all ensembles taken together (Figs. 3–4, 5–6). But the key-succession figures

[51] These frequencies were tabulated by assigning to each musical piece a numerical value corresponding to the distance in semitones between it and the preceding piece; so, for example, the opening duet of Figaro (in G, following the overture in D) received a 5, representing a rising perfect fourth (or a descending perfect fifth). Overtures and the first numbers of later acts do not figure in the table since no musical number precedes them.

[52] Computing the random distribution is actually quite complex, since the 12 key-successions are not equally likely to occur. For example, a P5 rise could precede a piece in any of the eight tonics except E flat (since there are no numbers in A flat); but on the other hand pieces in four keys—C, D, G, and A—could not be a m2 higher than the preceding piece, since there are no numbers in B, C sharp, F sharp, or G sharp. Given these factors, and the actual percentages of pieces in each of the eight tonic keys, the most likely key-successions to occur if such relationships were chosen randomly are: no change, 12.5% of the time; a P5 rise, 12.3%; a M2 rise, 10.9%; and a P5 fall, 10.8%. The actual frequencies of these key successions, as shown in Fig. 8, are: no change, 7.4%; a P5 rise, 9.5%; a M2 rise, 10.6%; and a P5 fall, 16.7%.

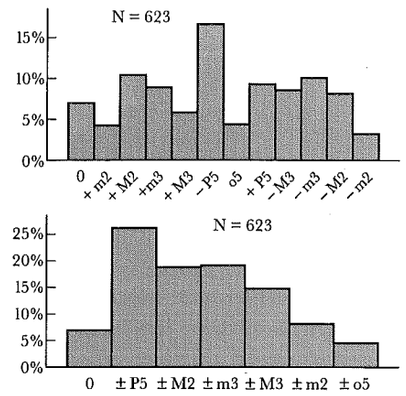

FIG 8. Key successions: musical numbers in the Viennese repertory

The intervals at the bottom represent the distance in semitones between the tonics of successive musical numbers. So, for example, over 15% of the time a piece is followed (after the intervening recitative, if any) by another piece whose tonic is a perfect fifth lower; by contrast a piece is followed by one a minor third lower about 10% of the time.

FIG 9. Key successions: musical numbers in the Viennese repertory

for these subgroups do not vary to the same extent.[53] This may be seen as well in the frequencies for key-successions leading to arias and ensembles, respectively (Figs. 10 and 11). These differ relatively little from one another,[54] though major-second successions are more common leading into arias, and both resemble fairly closely the chart of key-successions for all pieces (Fig. 9). Finally, Fig. 12 shows that no special approach is taken to act-ending pieces; while we saw earlier that the *keys* used for such pieces differed significantly from those of the whole repertory (see Fig. 7), here the pattern of *key-successions* does not do so; it more closely resembles those from the whole repertory (Fig. 9).[55]

We may draw two general conclusions about the relationships between the tonics of successive numbers. First, they do not arise randomly, but reflect clear preferences for some successions rather than others: perfect-fifth successions are favoured, for instance, while successive numbers in the same key are to some extent avoided (they occur only 7% of the time, compared with the 12.5% that would be expected in a random distribution). Second, however, the preferences for some relationships over others are basically constant—they do not differ between some kinds of pieces and others, or between pieces in the middle of an

[53] While the differences in the pattern of keys between large ensembles and all other ensembles are significant ($p < .012$), the differences in the pattern of key-relationships is not ($p < .15$). For male v. female arias, the differences in the pattern of keys are very highly significant ($p < .0001$). The differences in the pattern of key-relationships, though not quite as sharp, are still significant ($p < .005$). I suspect that this result is an artefact rather than a meaningful result; it may be related, as Mary Hunter has suggested to me, to the tendency of male arias to follow female ones and vice versa. The further statistical analysis needed to grapple with this question is beyond the scope of the present paper.

[54] The differences are not statistically significant ($p < .24$). By contrast the differences in keys themselves between solo numbers and ensembles were considerably greater, though also not statistically significant ($p < .14$; cf. Figs. 2 and 5).

[55] The differences are not significant ($p < .18$).

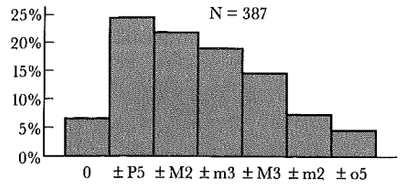

FIG 10. Key-successions: arias in the Viennese repertory

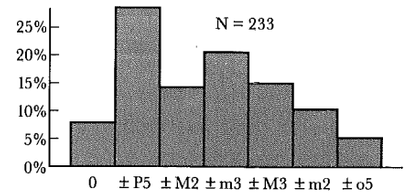

FIG 11. Key-successions: ensembles in the Viennese repertory

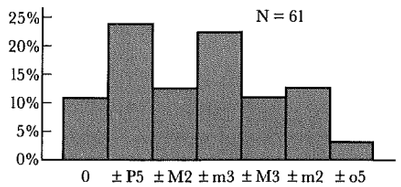

FIG 12. Key-successions: act-ending numbers in the Viennese repertory

act and those at the end. There may be reasons why certain key-successions occur in some situations and not others,[56] but the reasons are not clear from this data.

Composers demonstrated sensitivity to key-relationships in two other ways that have nothing to do with immediate successions. First, they were generally careful not to give an operatic character two arias in the same key, even in different acts. Of 134 characters in my Viennese repertory with either two or three arias to sing, only 14 have two arias in the same key. And second, the tonic key of an act-finale is for the most part avoided in the numbers immediately preceding the finale. Of 56 finales over half (31) are preceded by at least four numbers in other keys. Conversely, only 14 finales have their tonic key used in either of the two immediately preceding pieces.[57]

Mozart's Da Ponte Operas and their Viennese Context

Mozart's choices of tonic keys in his three Da Ponte operas are not markedly different from those of his contemporaries, as may be seen in Fig. 13 (cf. Fig. 1).[58]

[56] An analogy may be noted between these data and the key-relationships between successive sections of multi-sectional finales, in which third-relationships are used less frequently than fifth-relationships but usually with a particular dramatic point. See John Platoff, 'Tonal Organization in "buffo" Finales and the Act II finale of "Le nozze di Figaro"', *Music & Letters*, 72 (1991), 390–3.

[57] 12 of these 14 are the second-act finales; this seems unlikely to be coincidental, though I do not yet have any explanation to offer.

[58] The differences are not significant ($p < .380$).

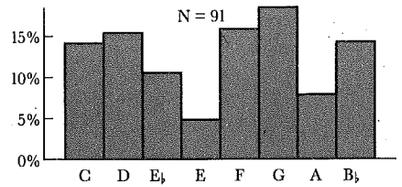

FIG 13. Distribution of tonic keys: musical numbers in the Mozart-Da Ponte operas

The pattern may be summarized as a roughly equal use of seven tonic keys and an occasional reliance on E, though Mozart used E a bit more often and A a bit less often than his Viennese rivals. The avoidance of A occurred in Mozart's arias, not his ensembles, as is clear from Fig. 14, showing the key-distribution of ensemble pieces in the three operas (note the similarity to Fig. 5, the key-distribution of ensembles in the larger repertory of Viennese *opera buffa*).

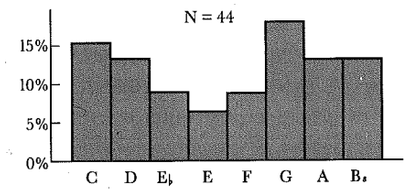

FIG 14. Distribution of tonic keys: ensembles in the Mozart–Da Ponte operas

Like his contemporaries, Mozart chose keys differently for male and for female arias. Female characters sing solos most frequently in E flat, F, and G (63% of the female arias are in these keys), and more rarely in B flat, C, and D (32%). Conversely the male arias, somewhat more evenly distributed, use B flat and D more frequently than do female arias (see Figs. 15 and 16). And Mozart's choices for ensemble keys, like those of other Viennese composers, differentiate between larger and smaller pieces: over half of the duets are in A or B flat, while the keys for all larger groupings (from trios to sextets) are evenly distributed among the eight possible tonics.[59]

But if Mozart's choices of key are like those of his contemporaries, his choices of key-successions are somewhat different. Figure 17 shows the pattern of key-successions in the Da Ponte operas; and while its shape somewhat resembles that of Fig. 9 (key-successions in the entire Viennese repertory) there are some

[59] For a discussion of A and its use as Mozart's 'seduction' key in love-duets, see Richard Stiefel, 'Mozart's Seductions', *Current Musicology*, 36 (1983), 151–66.

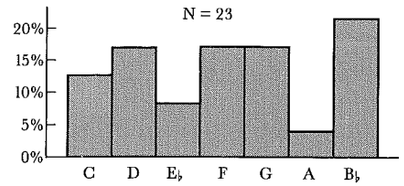

FIG 15. Distribution of tonic keys: male arias in the Mozart–Da Ponte operas

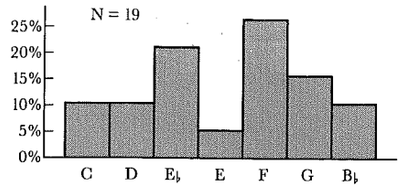

FIG 16. Distribution of tonic keys: female arias in the Mozart–Da Ponte operas

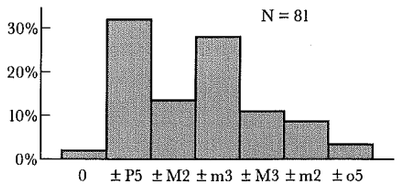

FIG 17. Key-successions: musical numbers in the Mozart–Da Ponte operas

striking differences.[60] Mozart uses more perfect-fifth relationships between numbers (32%, compared with 26% in the Viennese repertory) and considerably more minor-third relationships (28%, cf. 19%); conversely, he employs major seconds a bit less (14%, cf. 19%) and avoids consecutive numbers in the same key almost completely (2%, cf. 7%).

At first glance these differences may not offer any clear rationale, but one possible explanation presents itself. In general, key-successions involving major keys may be divided into those that are diatonic—moving up or down a perfect fifth, and thus to a closely related key—and those that are chromatic—moving to a key at least three steps away on the circle of fifths, and so distantly related. The chromatic category thus includes the rising and falling major third, minor third, minor second, and diminished fifth. But the interval of a major second falls into neither camp; it is neither a truly close key nor a distant one. By grouping the key-successions for Mozart's Da Ponte operas and for non-Mozart operas in the larger Viennese repertory into the diatonic (P5), the chromatic (M3, m3, m2, d5), and all others (M2, no change), we see that Mozart relies more consistently than other composers on either near-key or distant-key successions, and uses the other relationships less often (see Fig. 18).[61] One can hypothesize, then, that Mozart chose

[60] The overall difference approaches but does not reach statistical significance ($p < .075$).

[61] For a rare discussion by Mozart of this sort of issue, see his letter to his father of 26 Sept. 1781, in which he explains his decision to write the last section of Osmin's F major aria 'Solche hergelaufne Laffen' in A minor

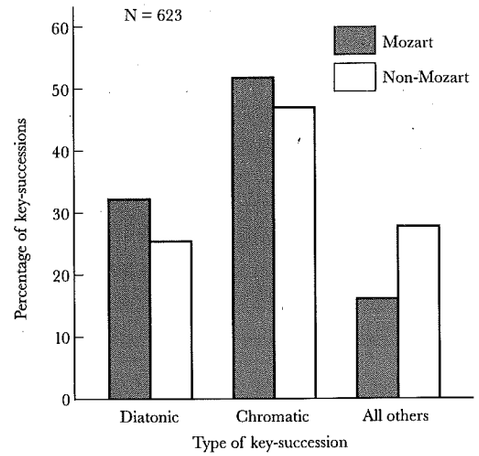

FIG 18. Diatonic and chromatic key-successions

keys of successive numbers in part with an eye to distinguishing between closely and distantly related keys; and, further, that he paid more consistent attention to this distinction than did his Viennese rivals. I return to this matter below.

III. Tonal Organization in Mozart's Da Ponte Operas: Figaro *Reconsidered*

At the outset of this essay I proposed that high-level tonal relationships within an eighteenth-century *opera buffa* be considered along a continuum with three distinct categories: relationships perceptible to an audience; relationships not perceptible to the audience but still meaningful (or still chosen by the composer); and relationships which arise incidentally. The statistical data presented above cannot bear on the distinction between the first two categories. Any claims about the audibility of a tonal relationship must be based on arguments applying to the specific case, relying additionally on the available theoretical or experimental evidence that bears on the powers and limitations of human listening.[62] But statistical

(*Letters*, 769). Of course, this case concerns a key-succession within a single musical number (though spoken dialogue intervenes) rather than one between two separate numbers.

[62] Not much experimental work has yet been done to test listeners' abilities in perceiving tonal closure, whether within a movement or over larger spans. But in a provocative study by Nicholas Cook, 'The Perception of Large-Scale Tonal Closure' (*Music Perception*, 5 (1987), 197–206), subjects were frequently unable to distinguish between pieces of tonal music in their original form and altered versions which ended in a key different from the opening tonic. Cook's discussion makes a point related to my distinction between tonal relationships

evidence can help us distinguish chosen relationships from incidental ones; and it can moreover help to evaluate the two subcategories of chosen relationships: those chosen to conform with conventional practice, and those unconventional choices made in response to the needs of a particular situation in an opera. In reconsidering tonal organization in Mozart's three Da Ponte operas, statistical information both about those works and about the operas that form their musical context permits a re-evaluation of some of the claims that have been made. By way of example I will focus here on *Le nozze di Figaro*, about whose tonal structure a great deal has been written.

Like the other two Da Ponte operas, as we have seen, *Figaro* has a keynote. This reflects Mozart's consistent practice throughout his life, in dramatic works from *Bastien und Bastienne* (1768; opens and closes in G) to his final opera, *Die Zauberflöte* (1791; opens and closes in E flat).[63] Thus Mozart clearly intended his operatic works to have a keynote, even if in some of his contemporaries' operas a keynote may have occurred by chance. But the significance of the keynote varies from opera to opera. In *Figaro*, as discussed above, the keynote of D occurs only twice between the overture and the last finale, neither time in a number of central importance. Conversely, in *Don Giovanni* the keynote of D (both major and minor) reappears far more often and in ways that seem crucial to the drama. But, as noted by Rushton and others, these recurrences are brought to the listener's attention by orchestration and other factors as well; Mozart does not depend on the key alone to make the connections audible, and the use of the minor mode makes an important contribution.[64] *Così fan tutte* presents a somewhat ambiguous case, one in which an argument might be made either for the carefully planned use of the keynote (C) or for its more or less random occurrence. Between the overture and the last finale the key is used four times. In the first act it is the tonic of the third trio, in which the men seal the wager they have made—the wager which is the spring of the opera's plot—and of the sextet, in which the wager may be said to take off, with the introduction of the disguised lovers to the two sisters. These two numbers are thus crucial; but Ferrando's second-act cavatina (C minor/major), in which he laments Dorabella's inconstancy, is less so. It is a response to the realization that he and Guglielmo may lose their bet, but clearly less significant than the duet—in F—in which Dorabella actually succumbs to

perceptible to listeners, and those chosen by composers for their own reasons. 'Theories that explain the organization of Classical and Romantic compositions in terms of large-scale tonal structure may not correspond in any direct manner to the perception of such music, but they may still be of value in revealing something of the manner in which composers of the tonal period conceived their music' (p. 204).

[63] The only exceptions are the Latin intermezzo *Apollo et Hyacinthus* (1767) and the serenata *Il re pastore* (1775).

[64] See among other discussions Rushton, *Don Giovanni*, 111–21; and Steptoe, *The Mozart–Da Ponte Operas*, 186–8, 190–5.

Guglielmo's advances. Finally, Don Alfonso's short number in which he teaches the two lovers his moral, 'Così fan tutte', is understandably in C, since it quotes the slow introduction of the overture in that key.[65]

In terms of the continuum of tonal relationships posited earlier in this paper, Mozart's use of a keynote in *Figaro* (and in most of his other operas) may be characterized as a non-audible but chosen relationship, and moreover one that is conventional rather than special (at least for Mozart, if not for late eighteenth-century *opera buffa* more generally). In *Don Giovanni*, however, the keynote relationship is made audible by other means; and in *Così fan tutte* the use of C throughout the opera offers at least some evidence that the keynote is part of a largely non-audible but specially chosen set of relationships, involving other numbers besides the overture and last finale.

But the Da Ponte operas not only begin and end in the same key, of course; their central finales also consistently avoid the keynote as a tonic. Unlike the use of a keynote itself, however, this practice does not occur throughout Mozart's operatic career; it begins consistently only with *Figaro*, and is found in the three Da Ponte operas, *La clemenza di Tito*, and *Der Zauberflöte*.[66] Mozart's avoidance of the keynote in the central finales of these five operas, and his consistent avoidance of a finale's tonic key in the immediately preceding numbers (see below), suggest that he chose the keys for his finales at a relatively early stage of the compositional process.[67] Here is Heartz's explanation of how Mozart laid out the keys for *Figaro*, though presumably these procedures would apply as well to the other operas written after 1786.

> Choosing the key of the [last] finale meant choosing the keynote of the opera. There were not many possible choices, to be sure, for only three keys commonly accommodated trumpets and drums in the 1780s: C, D, and E-flat.[68] Mozart chose D major. Since he wanted a noisy end with trumpets and drums to the opera's medial finale as well (to ensure applause, as he said in so many words about the finale to act 1 of *Die Entführung*), his choice was narrowed down to C or E-flat—the keynote would not do, for obvious reasons. He finally chose E-flat to end act 2 and, perhaps as an inspired afterthought, also to begin it. This still left C major to close acts 1 and 3 in a blaze of trumpets and timpani, while

[65] For a symbolic interpretation of the keys in *Così* that links sharp keys with sincerity, flat keys with false or shallow feelings, and 'neutral' keys like C with *buffo* realism, see ibid. 230–42.

[66] The same procedure is found in *Lucio Silla* and in *La finta giardiniera*, but it is absent from several other earlier operas and from both *Idomeneo* and *Die Entführung*.

[67] Alan Tyson's studies of the autograph scores of Mozart's operas suggest that he actually wrote down his act-finales relatively late in the writing-down process, after the arias and most of the other ensembles—see *Mozart: Studies of the Autograph Scores* (Cambridge, Mass., 1987), chs. 4, 10, and 13. But this does not preclude his having decided at an earlier point what their tonic keys would be.

[68] In fact, only *two* keys commonly accommodated trumpets and drums in Vienna in the 1780s: C and D. While Mozart wrote seven operatic numbers in E flat that use trumpets and timpani, including two in the Da Ponte operas (the *Figaro* Act II finale and the *Don Giovanni* sextet), the sample of operas studied includes only one such number by any other composer (the Act II finale of Martín y Soler's *L'arbore di Diana*).

providing the needed tonal contrast with acts 2 and 4. With the distribution of his three universal keys, the scaffolding of the edifice was in place. Every subsequent choice of key had to be calculated on textual affect (and traditional musical affect too), from the one side, and relationship to the three act-ending keys from the other.[69]

Note Heartz's assumption that Mozart's choice of the keynote (the key of the last finale) came first, and that the other finale keys were chosen with it in mind. Although this is not unreasonable, I do not see any reason why the finale keys could not have been chosen in the order in which the composer reached them. The overture would not have constrained Mozart's choices, since it was invariably written very late in the process. But somewhat hidden in the last sentence of Heartz's paragraph is a far more controversial claim: that Mozart chose the keys of all the other numbers in part on the basis of their 'relationship to the . . . act-ending keys'. My own reading of *Figaro*'s tonal structure leads me to reject this view. I do not see evidence that, here or in the other Da Ponte operas, Mozart systematically related the tonic keys of individual numbers to the keys of the act-finales. Indeed, the relationships among the tonic keys of the various numbers seem to have been planned only in a partial, limited way; to a great extent they arise as the incidental result of the key-choices made for individual numbers.

Tonal planning may be detected first in the careful avoidance of multiple arias in the same key for any one character. This avoidance characterizes the Viennese repertory generally, and it is even more marked in the Da Ponte operas. Only two characters have two arias in the same key, Donna Elvira and Guglielmo, and in both cases this arose from changes in the score.[70] Another aspect that seems to have been planned (in *La clemenza di Tito* and *Die Zauberflöte* as well as the Da Ponte operas) is that the tonic key of each finale is not used in the numbers immediately preceding the finale. The single exception is the above-mentioned 'moral' in *Così*, heard in C just before the Act II finale in that key.

Beyond Mozart's attention to these two features, we have seen his preference for certain key-successions rather than others. The statistical analysis presented above has suggested that Mozart distinguished between near-key and distant-key successions. We may go further, supporting in part the claims of other scholars, and argue that *sometimes*, and *in a general way*, Mozart used this distinction to underline the dramatic structure of an act.

[69] 'Constructing *Le nozze*', 83–4; *Mozart's Operas*, 140.

[70] Donna Elvira's 'Mi tradì', in the same key, E flat, as 'Ah chi mi dice mai', was a later addition for the Viennese production of *Don Giovanni*; while Guglielmo's 'Non siate ritrosi', like 'Donne mie, la fate a tanti' in G, was a replacement for his original Act I aria in D, 'Rivolgete a lui lo sguardo'. Moreover 'Non siate ritrosi' is directly linked to the trio 'E voi ridete?' in G; this is presumably the reason for Mozart having written the area in that key as well. Of course, it was Mozart who made these changes, suggesting that the avoidance of two arias in the same key for a particular character was preferable, but not a high priority.

Hermann Abert proposed a subdivision of Act I of *Figaro* into four groups of numbers:

I	G major	Figaro, Susanna
	B flat major	Figaro, Susanna
	F major	Figaro
II	D major	Bartolo
	A major	Marcellina, Susanna
III	E flat major	Cherubino
	B flat major	Count, Basilio, Susanna
IV	G major	chorus
	C major	Figaro[71]

As Carter says of this scheme, 'here the keys are largely related by fifths and thirds, the shifts are dictated by entries of new characters or changes in the dramatic situation, and the act elaborates a large-scale V–I progression'.[72] Actually the key-successions between sections are thirds in two cases and a tritone in the other, while within sections they are all fifths except for the minor third, G to B flat, within the first section. The latter key-change, as Webster notes, seriously undermines the plausibility of the proposed division as a consistent scheme connecting tonality with drama.[73] Otherwise, though, Mozart relies (typically for him) on key-successions of either fifths or thirds rather than other intervals. And it is true that, with the one exception noted, the distant-key shifts coincide with entries of new characters or changes in the dramatic situation. We may conclude either of two things: that the relationships in this act are coincidental, arising naturally from Mozart's choices of key for the particular numbers and from his preference for key-successions of fifths or thirds; or that Mozart did distinguish here between near-key and distant-key shifts to underline the dramatic structure, though he was not fully consistent about it. The latter conclusion is bolstered by the presence of similar distinctions between near- and distant-key transitions within the finales to Acts II and IV, as well as in the multi-movement finales of Viennese *opere buffe* generally.[74]

However, further examination of the near-key v. distant-key distinction shows why connecting this distinction with the drama is both a tempting and a problematic notion. Here are the musical numbers in Act II of *Figaro*, as grouped by Abert:

I	E flat major	Countess
	B flat major	Cherubino

[71] See Abert's discussion, with remarks as well on the other acts of *Figaro*, in his introduction to his edn. of *Le nozze di Figaro* (London: Eulenburg, n.d.), pp. xiv–xvii.

[72] *Figaro*, 119. [73] 'Mozart's Operas', 210. [74] Platoff, 'Tonal Organization', 390–3.

II	G major	Susanna
	C major	Count, Countess, Susanna
	G major	Cherubino, Susanna
III	E flat major	finale

Not surprisingly Abert divides the act into three sections: E flat–B flat, G–C–G, and E flat; and not surprisingly he links this organization to the drama:

> The separation of the three tonal spheres fully conforms with the course of the action; Cherubino's comic masquerade with its accompanying phenomena in the middle in G, flanked by the dusky B flat and above all E flat, at the beginning still the Italian key of the God of Love, and at the end, however, the key of dark fate that hangs over all the characters.[75]

A more careful dramatic analysis of the act, however, throws this scheme into disarray. The Countess's 'Porgi amor' in E flat stands by itself, a soliloquy separate from the following action. The next phase is marked by the entrance of two other characters, Susanna and Cherubino, as well as by the entrance and exit of Figaro, who sings a brief reprise of his 'Se vuol ballare'. The following two numbers, Cherubino's 'Voi che sapete' and Susanna's 'Venite inginocchiatevi', go together as part of a scene of teasing and jesting as the two women embark on Figaro's plot to embarrass the Count by disguising Cherubino as a woman. This light-hearted plan turns serious with the surprise entrance of the Count—the plot now concerns not so much Cherubino and his disguise but the Count's jealousy—leading to the threatening trio and then the comic duet for Susanna and Cherubino. This leads in turn to the finale which deals with the same dramatic situation—the Count's jealousy—until the entrance in the *stretta* of Marcellina, Bartolo, and Basilio.

An analysis of the act not biased by considerations of key might divide it into either two or three sections. In the twofold division, the first section would be the opening solo for the Countess, and the second would consist of a series of events and numbers related to Cherubino, to the scheme to disguise him, and to the trouble that results. Alternatively one could argue for a third section beginning at the Count's entrance, giving the following key-structure: E flat; B flat–G; C–G–E flat. In either case, Abert's three-part key-scheme does not correspond to the drama at all.

In fact, a systematic attempt to connect distant-key successions to changes of dramatic situation in the Da Ponte operas meets with a baffling mixture of successes and failures.[76] There are too many counter-examples to permit any more

[75] *Le nozze di Figaro*, ed. Abert, p. xv.

[76] For instance, in Act III of *Figaro* the Countess's 'Dove sono' has nothing whatever to do with the preceding number, the sextet, yet the key succession is a fifth, F–C. Conversely the first five numbers of *Così fan tutte* are related by descending thirds (G–E–C–A–F minor), though the first three are a discrete scene for the men, the fourth is a duet for the sisters alone following a change of location, and the fifth marks the beginning of the intrigue with Don Alfonso's false report that the men have been called away to the army.

exalted claim about this procedure for creating large-scale tonal organization than that Mozart seems to have used it some of the time.

In my view Mozart's attention to high-level tonal structure in the Da Ponte operas is limited to the few features discussed above: the use of a keynote,[77] and the avoidance of that keynote in central finales; an avoidance of the tonic of a finale in the immediately preceding numbers; care that no character has two arias in the same key; a somewhat inconsistent use of distant-key successions to mark scene-changes or changes in the dramatic situation; and a general preference (measured statistically) for certain key-successions rather than others. Note, by the way, that all of these factors fall into the category of chosen but non-audible relationships: they reflect features that Mozart may have chosen for any number of reasons, but not because they affected what audiences perceived in the theatre.[78] For the rest, Mozart chose keys by considering each number on its own terms: the key appropriate to its character and affect (as suggested by Salieri's words quoted earlier), the desired instrumentation, and the ranges of the singers.

In a final test of this central assertion—that with certain exceptions Mozart was not particularly concerned with high-level tonal organization—let me conclude by re-examining some recent claims about tonal structure in *Figaro*, and challenging their premisses or offering other explanations for the features they cite.[79] Take for instance Carter's assertion about Act I of *Figaro*, quoted above, that 'the act elaborates a large-scale V–I progression'. It is related to Heartz's claims about the end of Act I: that Figaro's closing 'Non più andrai' in C is related both to the immediately preceding chorus in G and to Figaro and Susanna's opening duettino, also in G; and that these relationships create a dominant–tonic 'resolution', thus giving the aria 'a sense of inevitability' that 'helps explain why it is at once so satisfying and so electrifying'.[80] As an audible phenomenon, the 'large-scale V–I progression' can be immediately dismissed, for the reasons outlined at the start of

[77] As noted above, the keynote seems to play a more important role in *Don Giovanni* while in *Così* the evidence is ambiguous.

[78] This statement requires one caveat. As noted above, the key-succession between two numbers is audible to all or most of an audience when no recitative intervenes, as between the third trio for men in Act I of *Così* and the duet for the sisters.

[79] In Konrad Küster's *Mozart: A Musical Biography*, trans. Mary Whittall (Oxford, 1996), 219–26, the author offers an elaborate schematic explanation for the tonal structure of the opera. In his view D major represents a tonal 'goal' analogous to the dramatic goal of the action, which is Figaro's wedding; and the succession of tonalities in the work is to be understood as a series of repeated attempts, all but the last unsuccessful, to reach that goal. I became aware of Küster's book only after the completion of this article and cannot address his claim here; but for reasons that I hope the article provides, I find his interpretation quite implausible.

[80] 'Constructing *Le nozze*', 90–2; *Mozart's Operas*, 147–8. Both these claims are refuted by Webster, 'Mozart's Operas', 208–11.

this essay. But what can be made of it as an inaudible feature that may none the less have structural importance? Or to put it another way, does this feature seem to have been specially chosen? We have already seen that the use of C for 'Non più andrai' enables Mozart to use the trumpets and timpani appropriate to Figaro's comically martial depiction of Cherubino's future life as a soldier, and that his other preferred trumpet-and-drum keys—D and E flat—were unavailable in light of Mozart's typical procedures. But G is just the key for a typical rustic chorus of peasants, as I have argued in another context.[81] Moreover, pairs of musical numbers in which the second is a fifth lower than the first are quite common, whether in the Viennese repertory (17%, by far the most common of all successions—see Fig. 8), in Mozart's own operas (15%), or in Mozart's three Da Ponte operas (17%). The percentage is even slightly higher for act-ending numbers in Viennese *opere buffe*, whose tonic is a perfect fifth lower than that of the preceding number 18% of the time. These numbers all suggest that one should be wary in ascribing special significance to the G–C relationship at the end of the act. As for the G of the opening duettino (the *introduzione*, although not so labelled), it is one of the only two likely keys for an *introduzione* after an overture in D (the other being B flat).[82] A key other than G or B flat might have been especially significant, therefore, but G reflects a completely conventional choice. Finally, what is the theoretical rationale for claiming a special relationship between the first *vocal* number of the act and the last? In other contexts (that is, in discussions of the keynote), critics have pointed to the overture, not the *introduzione*, as being of special significance. All these points may not disprove the claim that the G–C relationship in Act I of *Figaro* is significant as opposed to incidental, but they provide counter-explanations that seem more attractive.

The fact that Act II of *Figaro* begins and ends in E flat has been frequently noted; in Carter's words quoted above, 'the whole of Act II might be said to elaborate' E flat. If we reject the idea that the act is actually *heard* as being in E flat (and no one has claimed such a thing explicitly),[83] then what remains is the question of what the relationship signifies. We have seen that in the Viennese repertory generally, 'closed' acts of this sort are neither strikingly common nor strikingly rare, instead occurring at the frequency that would be predicted by chance. Of course, the fact in no way limits Mozart, who could have chosen to create a tonally closed act for some particular dramatic or musical reason.

[81] See John Platoff, 'How Original was Mozart? Evidence from *opera buffa*', *Early Music*, 20 (1992), 107–9.

[82] Of the 19 *introduzioni* after self-contained overtures ending in D, 16 are in one of these two keys (8 in G and 8 in B flat).

[83] I am not rejecting out of hand the possibility that a few listeners might recognize in the E flat of the Act II finale a return to the key of the act's opening number; but the notion that the whole act is heard in E flat implies that the key somehow governs, or remains a presence through, all the intervening numbers in other keys: in my view this possibility may be dismissed.

Strikingly, though, no critic has offered a reason *why* this act should be closed (none of the other acts in the Da Ponte operas is closed in this way); it seems to be taken for granted that a tonally closed act is a good thing. Yet on the other hand Heartz argues tellingly for the choice of E flat in 'Porgi amor' on other grounds. Showing how the key conforms to 'a long tradition adherent to the *aria d'affetto*', he further explores the many connections between this aria and 'Giusto ciel, che conoscete' from Paisiello's *Il barbiere di Siviglia*. Also in E flat and written for the same character (Rosina), 'Giusto ciel' is a piece with which 'Porgi amor' is plainly in competition.[84] In the absence of any argument that a tonally closed second act in E flat has a particular meaning, it seems more reasonable to conclude that Mozart chose E flat for 'Porgi amor' for the reasons intrinsic to that number, rather than because it was the same key as that to be used in the Act II finale.[85]

One of the most striking and original assertions about tonal organization in Mozart's operas is Heartz's detailing of the frequent successive uses of G and B flat (in either order) throughout *Figaro*, successions that, he says, indicate 'how schematic Mozart was in laying out the whole opera in regard to tonalities'. With the help of a chart showing the keys of each musical number in the opera (including the sections within the act-finales), Heartz locates seven instances of G–B flat and B flat–G successions. The Act II and Act IV finales each have one, and there are five more between discrete musical numbers.[86]

No other opera in the Viennese repertory considered here has so many G–B flat successions, or indeed as many as five successions between any two third-related keys. There are only three operas with even four such successions: *Don Giovanni* (with four successions from F to D (major or minor) and vice versa), *Gli equivoci* (four E flat–G juxtapositions), and *L'arbore di Diana* (with four C–E flat pairs and four E flat–G pairs). From another perspective, there are nine third-relations between successive numbers in *Figaro*, of which five employ G and B flat (including the sections of finales, the totals are twelve and seven). Considering that there are seven available third-relations among the tonics used by composers in this period,[87] the preponderance of the G–B flat relation is indeed suggestive.

[84] Heartz, 'Constructing *Le nozze*', 84–6; *Mozart's Operas*, 140–2.

[85] A related claim about this act is that the succession of tonics in its musical numbers—E♭–B♭–G–C–G–E♭—is played out again in the act-finale, whose sections have the tonics E♭–B♭–B♭–G–C–F–B♭–E♭ (see e.g. Stefan Kunze, *Mozarts Opern* (Stuttgart, 1984), 309). But, again, no explanation is offered as to why Mozart might have done such a thing in this particular case, or what significance this relationship has.

[86] Ibid. 148–50; note the 'ontic' perspective in this kind of analytical observation. Heartz goes on to suggest that this 'playing off of a flat key against a sharp key' may have been inspired by Mozart's admiration for Paisiello's *Il barbiere*, though he shows that pairing only once in the latter opera (in the last two numbers of Act I, Pt. 1; it can be found in only one other place, within the terzetto in Act I, Pt. 2, whose sections are in G, B flat, and G respectively).

[87] They are A–C, B♭–D, C–E♭, D–F, E♭–G, F–A, and G–B♭. C–E and E–G are also possible, but as we have seen E is used as a tonic quite infrequently.

But what are we to make of it? Heartz says only that it shows 'how schematic' Mozart was in arranging keys, not why these keys were used, or why in the particular places they are juxtaposed. He does point out that Nos. 7–8 of Act I, in B flat and G respectively, 'mirror' the G–B flat of the opening two duets, and that a similar mirroring occurs between the G–B flat of Marcellina's and Basilio's arias in Act IV and the two penultimate sections of the Act IV finale. And he adds that four of the pairings (all in the order B flat–G) immediately follow numbers or finale sections in E flat. But no further explanation is forthcoming: we are left to infer that such a series of pairings somehow contributes to the organization of the opera, but without knowing what form that contribution might take.

The notion of 'symmetry', which appears in this discussion of G–B flat relationships in *Figaro*, is another example of a feature that critics sometimes value as a good thing in itself. John Rice points to tonal symmetry in the discussion of *La clemenza di Tito* quoted earlier; Stefan Kunze and Abert respectively cite the symmetrical features of the Act II and Act IV finales of *Figaro*; and Heartz concludes his discussion of G and B flat by noting the 'long-term symmetry' created by the last three sections of the Act IV finale, whose succession of B flat–G–D mirrors the keys of the overture and first two numbers of Act I (D–G–B flat).[88] Not only do these discussions avoid the question of audibility, but they shy away from that of meaning as well. The purpose, significance, and value of these symmetries remain unexplained.

Most of the other recent commentaries about tonal issues in *Figaro* bear a quite different relationship to the focus of this study. These are analyses that offer insights into the larger meanings of the keys of particular numbers in association with one another, rather than in harmonic or tonal relation to another. To put it another way, they try to explain why (or what it means that) individual pieces are in the keys they are in, rather than what the tonal relationships between them may mean. Wye Jamison Allanbrook, for instance, outlines a series of numbers in the last two acts, all in flat keys, that add up to a private reconciliation between Figaro and Susanna, somewhat removed from the more public series of events resulting in the Count's humbling and apology.[89] Webster effectively refutes her claim that these numbers—the letter duet (in B flat), Barbarina's cavatina (F minor), Susanna's 'Deh vieni' (F), and two sections of the Act IV finale (E flat and B flat)—constitute a 'key-area plan', or kind of sonata-like form.[90] But there remains an important argument about the associative relationship of these pieces, especially within the context of the 'pastoral' and its meaning as developed throughout

[88] Kunze, *Mozarts Opern*, 310; *Le nozze di Figaro*, ed. Abert, p. xiv; Heartz, 'Constructing *Le nozze*', 94; id., *Mozart's Operas*, 150. For a challenge to Heartz's claim see Webster, 'Mozart's Operas', 215–16.

[89] *Rhythmic Gesture in Mozart: 'Le nozze di Figaro' and 'Don Giovanni'* (Chicago, 1983), 173–4.

[90] Webster, 'Mozart's Operas', 212. He also points to her omission from the group of pieces of Figaro's jealous 'Aprite un po'' in E flat, and the E flat 3/4 Allegro section of the finale.

Allanbrook's book. In a more succinct example, Carter points out that 'keys seem to recur in association with characters or situations: for example "sharp" keys for Marcellina, Bartolo, and the Count; F major for Figaro's "Se vuol ballare" and Susanna's "Deh vieni non tardar, oh gioia bella", as well as the Act 3 sextet, which clears the way for their wedding'.[91] While some of the associations may be more convincing than others, as a whole this way of thinking about tonalities in Mozart's operas seems better founded; particularly in light of Salieri's own remark about his working methods, quoted above, that 'I decided first on the key appropriate to the character of each lyric number'.[92]

It is, in the end, almost impossible to prove a negative. An opera of the late eighteenth century has twenty-five to thirty musical numbers, in only seven or eight keys and involving usually only six or seven characters. Any analysis that seeks to examine tonal relationships and interpret them in dramatic terms is almost certain to find something. What I hope this essay has demonstrated is that statements about tonal structure in a Mozart opera can be held to a higher standard of proof than has typically been applied in the past. The difference between an unusual relationship and a common one, for instance, can be tested statistically. The question of whether a particular relationship is actually audible can and should be explicitly addressed. And, in my view, a writer who claims significance for a tonal relationship has the responsibility of explaining, presumably in terms of the drama, what that significance is. It is no longer enough to assume that all great works have unity, and that finding 'unifying' features is in itself a contribution to the understanding of these works. What the continuing study of Mozart's operas in their full musical context may teach us, in fact, is that the gap separating Mozart from rival composers has more to do with the immeasurable richness of his music at local, foreground levels than with considerations of high-level musical structure. The more we know of the operas by Mozart's contemporaries, the better this assertion too can be tested.[93]

[91] *Figaro*, 118.

[92] See n. 26 above. Steptoe, incidentally, argues in a recent review of Heartz's book (in *Music & Letters*, 73 (1992), 111–13) that Salieri's account offers support for scholars who, like Heartz, seek to show 'the way musical coherence was established through the organization of tonality, thematic material and texture'. Moreover, Salieri's words are said to conflict with the 'dismissal of large-scale musical thought in Mozart's operas' by commentators imbued with the '"postpostmodernism" that has entered American musicology of late'. But Salieri simply describes choosing 'the key appropriate to the character of each lyric number'; he never suggests that the choice involves taking account of the keys of other lyric numbers, let alone working out a set of relationships among them.

[93] I am grateful to Mary Hunter, Dan Lloyd, David Mauro, Leonard B. Meyer, and Julian Rushton for many valuable suggestions.

APPENDIX
Selected *Opere Buffe* Performed at the Burgtheater, Vienna, 1783–1792

Title	Composer	Date[a]	Keynote (if any)[b]	Number of musical numbers[c]
Così fan tutte	Mozart	1790	C	32
Democrito corretto	Dittersdorf	1787	D	26
Don Giovanni	Mozart	1788 (1787)	D	28
Fra i due litiganti	Sarti	1783 (1782)	D	24
Gli equivoci	Storace	1786		26
Gli sposi malcontenti	Storace	1785		22
I finti eredi	Sarti	1786 (1785)		24
I viaggiatori felici	Anfossi	1783 (1780)		21
Il barbiere di Siviglia	Paisiello	1783 (1782)		19
Il burbero di buon cuore	Martín y Soler	1786		25
Il curioso indiscreto	Anfossi	1783 (1777)	D	24
Il Demogorgone	Righini	1786		25
Il finto cieco	Gazzaniga	1786	D	22
Il marito indolente	Rust	1784	D	21
Il matrimonio segreto	Cimarosa	1792	D	21
Il mercato di Malmantile	Barta	1784		24
Il pazzo per forza	Weigl	1788		29
Il pittore parigino	Cimarosa	1785 (1781)		19
Il re Teodoro in Venezia	Paisiello	1784		27
Il ricco d'un giorno	Salieri	1784		29
Il talismano	Salieri	1788		28
L'arbore di Diana	Martín y Soler	1787		33
La cifra	Salieri	1789		27
La grotta di Trofonio	Salieri	1785		24
La scuola de' gelosi	Salieri	1783 (1778)		22
Le nozze di Figaro	Mozart	1786	D	29
Le vicende d'amore	Guglielmi	1784 (1783)		19
Una cosa rara	Martín y Soler	1786	C	31

[a] The date given is that of the Viennese première; for operas first performed in other cities, the date of the first performance is given in parentheses.

[b] I define a keynote as the tonic key shared by the overture and the final musical number of an opera.

[c] These figures are approximate for some operas, because of multiple layers of revisions in the sources.

Mozart's 'Haydn' Quartets: An Evaluation of the Autographs and First Edition, with Particular Attention to mm. 125–42 of the Finale of K. 387

WOLF-DIETER SEIFFERT

MEASURES 125–42 of the last movement of Mozart's String Quartet in G major K. 387 command special attention for two reasons. First, the composition of this passage, which occurs at the beginning of the development, caused Mozart problems: the four different autograph versions not only document his difficulties, but also provide a fascinating, and virtually unique, glimpse into the composer's workshop. Second, these specific measures give rise to a significant and thorny editorial problem. Curiously enough, the first edition, published in 1785 and with the famous dedication to Haydn, supplies a fifth version that differs slightly from the four autograph versions. Was this fifth version authorized by Mozart?

The four autograph versions have been discussed in several detailed studies, none of which, however, successfully manages to draw together and solve their complex, interrelated musical and philological problems. Ludwig Finscher, in the course of a richly detailed study of the compositional process in K. 387, provides only a general outline of the problems, without offering any substantial musical analysis,[1] while Roswitha Schlötterer addresses the basic notational problem, without considering the compositional 'progress' or chronology of the four versions.[2] Ulrich Konrad rightly connects both essential elements of the problem, although he, too, fails to provide a fundamental musical analysis.[3] Only Schlötterer considers Mozart's fifth version, that of the first edition, but she does not address the

[1] 'Aspects of Mozart's Compositional Process in the Quartet Autographs: I. The Early Quartets, II. The Genesis of K. 387', in Christoph Wolff (ed.), *The String Quartets of Haydn, Mozart, and Beethoven: Studies of the Autograph Manuscripts* (Cambridge, Mass., 1980), 121–53.

[2] 'Beobachtungen zur Enharmonik bei Mozart', in Norbert Dubowy and Sören Meyer-Eller (eds.), *Festschrift Rudolf Bockholdt zum 60. Geburtstag* (Pfaffenhofen, 1990), 217–32, esp. 224–7.

[3] *Mozarts Schaffensweise: Studien zu den Werkautographen, Skizzen und Entwürfen* (Göttingen, 1992), 149–50 and 389–93.