

VOLUME XVII, NO. 4
OCTOBER, 1986
THE QUARTERLY
JOURNAL OF THE
RIEMENSCHNEIDER
BACH INSTITUTE,
BALDWIN-WALLACE
COLLEGE
BEREA, OHIO



Bach



**The Quarterly
Journal of the
Riemenschneider
Bach Institute**

Elinore L. Barber, Editor

Volume XVII, Number 4, October, 1986

(PSN 716-280)

The monogram on the cover is from J. S. Bach's signet ring.

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BACH'S "INCOMPLETE" QUADRUPLE FUGUE FROM *DIE KUNST DER FUGUE*
(1752 EDITION PRINT HELD BY THE RIEMENSCHNEIDER BACH INSTITUTE)

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HERETOFORE UNPUBLISHED CONCLUSIONS FOR THE "INCOMPLETE"
QUADRUPLE FUGUE (*DIE KUNST DER FUGUE*) PROJECT,

PART 1: ADEL HEINRICH'S 1986 CONTRIBUTION

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CONTRIBUTORS: Previously unpublished articles or papers presenting materials of interest to Baroque scholars and performers will be given careful consideration for publication in *BACH*. The editor will send a copy of the *BACH Style Sheet* to any prospective contributor. In general, *BACH* follows the practice of Kate L. Turabian, *A Manual for Writers of Term Papers, Theses, and Dissertations*, 4th ed. (Chicago: The University of Chicago Press, 1973). All copy must be typed double spaced on separate sheets.

SUBSCRIPTIONS: All members of the Riemenschneider Bach Institute receive a subscription to *BACH*. Non-members may subscribe to *BACH* for \$16 a year.

ANNUAL MEMBERSHIPS: *LIBRARY* (including 4 issues of *BACH* and the annual addendum volume of the Catalog of Holdings of the Riemenschneider Bach Institute Library), \$22.00.

REGULAR (including 4 issues of *BACH*), \$16.00. *STUDENT AND EMERITE*: (including 4 issues of *BACH*), \$8.00.

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Bach's St. Matthew Passion: A Rudimentary Psychological Analysis, Part II

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Arousal-raising devices: Psychophysical and collative variables

Paradoxical as it may seem, it is generally considered that Bach was able to achieve great variety through his ingenious counterpoint. As Hans David (1966, pp. 34-35) in *The Bach Reader*, puts it, "We are accustomed to considering the consistent application of technical devices in music as an impediment to the free flow of imagination . . . to say that a fugue is expressive in spite of being a fugue." Bach was one of the very rare composers who achieved beauty through unity in variety, not in spite of the contrapuntal devices he used, but through them. Bach's fugue, and to a smaller degree the canon, are, as used by him, ideal tools for manipulating arousal, through contrast, surprise, diversity; yet, the counterpoint unites the subjects delicately, so that the two may be treated as a "super-sign" at any moment when there is a threat for arousal to be pushed beyond the pleasing range due to diversity or to difficulties in perceiving the two subjects simultaneously. To illustrate the ways in which Bach could manipulate arousal through the use of fugue subjects, let me quote another passage from *The Bach Reader* (op. cit., p. 35):

When Bach combines the two subjects, they are almost invariably of different type and motion. One, perhaps, proceeds in skips, the other in steps; one in long notes, the other in short ones. Each has a definite emotional character, and when the two are played together, we experience the mutual penetration of two related or contrasted emotions.

The meaning of a Bach fugue is not reduced to Bach's skill of contrapuntal construction, but also consists of the harmonic purposiveness which informs every part and voice. According to William Scheide (1952), in Bach's music there is a "kind of cosmic purposiveness" [that] takes command, subordinating all musical elements to itself." It is easy to interpret this "cosmic purposiveness" as unity in variety, making possible the formation of successive super-signs, which one may consider as an arousal-moderating device.

Although imitative counterpoint had been well developed before Bach's time (having been treated by a long line of theorists from Pietro Aron and Gioseffi Zarlino to J. J. Fux and having been mastered by many composers

from Dufay and Ockeghem to Buxtehude), it was J.S. Bach who developed the techniques of fugal writing most fully. It was Bach who evolved new and intricate contrapuntal structures; it was Bach whose fugues showed at the same time a unity, a cogency, and a variety far beyond the fugal efforts of his predecessors. Simultaneously, he was vastly superior to his contemporaries in his treatment of harmony. The might of his harmony is expressed in the arousal-raising, overwhelming successions of suspensions which one encounters in such organ works as the toccatas in C major and D minor. He looked upon harmony as the result of combined parts, which made possible the production of infinite varieties of combinations as the result of independent concurrent melodies, with ornaments and passing-notes clashing with one another. The absolute ease with which he manipulated large numbers of parts produced textures of great richness—this complexity presumably being arousal-raising. As much as variety and complexity could be kept under control by the formation of super-signs, the great masses of sound (psychophysical), which he used with as much skill as any composer, were held in check by the subtlety with which he manipulated several parts, and contrasted with passages of elaborate figuration. The pleasing effect is achieved by keeping arousal under control, either by the simultaneous use of arousal-raising and arousal-moderating devices as indicated above or through the introduction of such contrast on the temporal dimension—where one can speak of the arousal boost-jag mechanism. The contrasting elements of the boost-jag mechanism may be separate movements of a piece, as, for example, the relationship between the *Hosanna* and the *Benedictus* in the B Minor Mass. In the *Hosanna*, it looks as if “a host of gigantic angels [is] striding through the heavens” (Scheide, 1952), while the *Benedictus* is a very intimate piece for tenor and one solo instrument, which, as Scheide notes, “thus presents a contrast of the most extreme character” (Scheide, op. cit.). On the other hand, the contrasting elements may follow each other much closer in time, as in cadences, which—particularly in the cases of the suspended and postponed ones—may be regarded as a boost-jag mechanism. An example of this is the last few bars of the *Crucifixus*, which Scheide, incidentally, calls “sublime.” There are indications that many instances of the “sublime” may be interpreted as the arousal boost-jag. Another place where Scheide uses the word “sublime” is in describing the concluding part of the C-Major organ prelude: “The soaring upper voices [arousal-raising] are then rooted to the earth by a fanfare-like ostinato figure [keeping the boost under control], in the pedal, and finally a thunderous unison [boost], bringing the tremendous piece to a close [the last notes of the cadence being the jag part].”

In Bach’s music, polyphonic as it is, there is a constant conflict between melody and harmony with different concurrent melodies depending on each other for the harmonic notes. The weaving of various melodic patterns and their occasional clash, made it quite possible for Bach to introduce dissonances and chromatic notes, which are—through surprise—yet another

arousal-raising device. In view of Bach's complete mastery of the counterpoint, there is no doubt that he employed dissonances on purpose. In view of the relative frequency of dissonances in the *St. Matthew Passion*, which are sometimes "grindingly harsh," it may be that Scheide (op. cit.) is right in his claim that Bach applied them especially when thinking of the Passion. He gives examples of dissonances in the chorale with the passion text *Ein Lämmlein geht und trägt die Schuld* and considers them to be the "musical counterpart of the fundamental conflict of life with life . . . a feature uniquely basic to Bach's esthetic." Hutchings (1958) adds that Bach employed just enough chromatic richness "without spoiling the delight by surfeit."

The polyphonic balance is disturbed by the peculiar, insistent Baroque rhythm, ceaselessly urging melodies and harmonies to fulfillment. As Scheide puts it, the insistent Baroque rhythm "invades the mind and being in such a way that the listener has no rest." Yet, there is a very careful choice of instruments to suit the mood of the arias; for example, the unique and suggestive combination of two *viola d'amore* and a lute in the solemnly pathetic arioso, *Betrachte, meine Seel'* in the *St. John Passion*. Bach plans the order of movements within a piece very carefully, in order to keep arousal within the pleasing range. In the *Magnificat*, the two grand choruses are placed at the beginning and end, while the two subordinate choruses, *Omnes generationes* and *Fecit potentiam*, come in as contrasts to break the monotony of a succession of arias. While the *St. Matthew Passion* is somewhat more hushed in tone (compared to the *St. John*), it has greater variety, for there is no repetition of choruses which is characteristic of the latter. Also, in the *St. Matthew*, there is the pronounced antithesis of sharp and flat tonalities lacking in the *St. John*, and a wider sweep of tonal progression.

Since the manipulation and contrast of tonalities are a powerful tool of arousal control, reviewing them briefly in the *St. Matthew Passion* provides a look at some of the other devices. The opening chorus is built up in a sharp tonality (E minor); the sharp tonalities continue until No. 7, where the flats are first introduced at the mention of "the poor" by Jesus and the disciples, a "sudden poignancy"—as Scheide (1952) notes. Then, there is a swing of tonalities during the Last Supper (No. 15); at "Now when the Even was come. . .," in pour the darker "flats," only to achieve an even darker depth during Jesus's prediction of betrayal (B-flat major) at "The Son of man goeth as it is written of him." As Terry (1926) points out, from this depth, keys begin to rise, and passing through F, C, and G major, culminate in E major with the prophecy of the Resurrection. The boldest sweep of tonalities occurs during the Crucifixion, where they begin in C-sharp minor at the words of accusation; but then the sharps begin to fall out, leaving an apparent C major, which turns into C minor at the words "which were crucified with him." At Jesus's death-cry, "Eli, Eli. . .," B-flat minor is reached. However, as the Evangelist translates "My God, my God. . .," Bach

touches the extraordinarily remote key of E-flat minor, tonally the darkest point in the entire Passion and one of the few places in all of Bach's works where this tonality occurs" (Scheide, 1952). After the death of Jesus there are only flat keys.

Change of tonalities (which is important in itself) is sometimes used to achieve surprise, in addition to its basic function, which may be considered to be variety. Scheide gives the example of Bach's Cantata No. 101 where a line of the old Lutheran hymn *Vater unser* is expected to end in A minor; but Bach forces the phrase over into F-sharp minor, thus achieving surprise through the violation of expectations. Changes of tonality naturally should not be regarded in isolation of other psychophysical and collative arousal-raising variables. The *St. Matthew* opens on a grand scale with the choirs singing the chorale, *O Lamm Gottes unschuldig* in multitudinous polyphony of great strength. The "psychophysical" characteristics of this chorus are augmented by the alternation of utterances between the two choirs, rising at times to high dramatic intensity. Surprise is provided by the polyphonically arranged sharp interjections *wenn, wie, was, wohin*. These short questions have an additional role, as both Parry (1909) and Boughton (1930) point out—that of emphasizing the actuality of the moment by appealing not to history or memory, but to sight: "This is not a Christ who died in Jerusalem centuries ago, but a Christ who is bearing his cross then and there with the Leipsigers themselves" (Boughton, 1930, p. 275). Something that is occurring at the present time, in front of us, is certainly more arousal-raising than something that belongs to the dim past. Jacques Chailley also does not fail to mention this beautiful point: "[Ce choeur a] un mouvement et une vie extraordinaires, grâce aux monosyllabes et aux silences alternés, répartis avec une extrême variété" (1963, p. 292).

Bach pursues a similar idea in No. 15 where upon Jesus's premonition that one of the disciples will betray him, they ask him, one after another, "Lord, is it I?" The question is repeated exactly eleven times, always in a somewhat different way, corresponding to the number of disciples (twelve minus Judas; Bach is very careful about numbers). In No. 32, where Judas betrays Jesus (kisses him, this being a sign for the soldiers), Chailley discovered an excellent example of surprise achieved through the use of an "intended false note." The cadence after "Hail, Master" is postponed, and on "kissed Him" there is the "*fausse note voulue*" (Chailley, 1963, p. 326). This is also an example of Bach's symbolism. In No. 33, there is another example of the unexpected use of a key in order to achieve surprise. Following a great mass of sound representing the roar of thunders (psychophysical-ecological) and the flickering of lightnings (staccato of the flutes and oboes), there is the pause bar, and then the "sudden explosion of the chord of F-sharp major" (Terry, 1926).

The whole No. 33 is but a series of beautifully manipulated arousal-raising and arousal-moderating devices. At the point when Jesus is taken, there is the

infinitely tender duo of Soprano and Contralto (*Andante moderato*), "Behold, my Saviour is taken. . .," with the Choir powerfully interjecting several times to keep the balance, "Loose Him! Leave Him! Bind Him not!" This tender Aria is followed by a fierce *Vivace* (one of the rare occasions where the two choirs unite), "Have lightnings and thunders their fury forgotten?"—a beautiful and frightening polyphony, described above. This number is considered by Karl Geiringer (1967) to be one of the most beautiful examples of unrestrained passion in Baroque music.

In No. 54, where Pilate asks the crowds whom they want liberated, Jesus or Barabbas, there is another example of sheer force of sound combined with surprise. The crowd shouts a blood-chilling "Barabbas!" and to the next question, "What shall I do then with Jesus?", a terrifying polyphonic "Let Him be crucified!" that also ends in an unexpected key. However, at the next question, "Why, what evil hath he done?", Bach finds it necessary to keep arousal under control even at the expense of logic; and a tender *Adagio*, "To all men Jesus good hath done" No. 57), sung by a Soprano solo accompanied by two *oboi da caccia*, ensues.

As previously noted, at Jesus's death-cry, "My God! My God! Why hast Thou forsaken Me?", the tonality goes to E-flat minor, and at the same time the "halo of strings," which accompanies all Jesus's words throughout the Passion, disappears. Although Bach has borrowed the "halo of strings" from Schütz and Telemann, he is the only one who uses it in this way to indicate that at the moment of death, Jesus is human—all authors agree on this point. Apart from its religious connotation, this device is musically important because it facilitates the identification of attentive listeners. Although the *St. Matthew Passion* is an expression of Bach's *Jesusminne* (devotion to Jesus), at this point "the Lord in his suffering approaches mankind, and mankind suffers with him" (Geiringer, 1967, p. 199). What one has here is Bach's expert treatment of arousal, taking into account the associations, based on religious training, that members of the *Thomaskirche* congregation must have had.

Bach manipulates arousal with respect to psychophysical variables, such as volume of sound (e.g., the number of singers in a choir) in a very interesting manner. According to Terry (1926), the Disciples, the "inmost circle of the Christian community" (p. 12), are represented by Choir I, while the larger congregation, "the Faithful," are represented by Choir II. Even though, when the Choirs sing the text that has to do with priests, scribes, and the populace, they often unite and speak with full strength of their resources, they seldom unite when they represent two Christian bodies. Terry concludes that by this device Bach expresses the numerical minority of the Christian community.

Boughton interprets this point further: ". . . the same choristers, who at one moment were singing words of Christian devotion, were presently

singing the anti-Christianity of priests, especially 'chief priests' 'scribes,' and 'elders of the people' " (Boughton, 1930, p. 277). Clearly, the reason for this cannot be that of economy of musical forces, since the choristers are divided into two groups anyway, and can be easily assigned different tasks. So Boughton argues that in this way Bach wanted to express an essential principle of Christianity, "that the opposing powers of Good and Evil are present in every single human being." If Boughton is right, Bach indeed found a very interesting musical way in which to express a fundamental existential conflict.

Ecological Variables

The reference here is to associations learned by contiguity—i.e., through a classical conditioning mechanism; these associations could presumably be aroused by the content aspects of the *St. Matthew Passion* and are related to various activities carried out previously in religious and non-religious settings where they had been accompanied by feelings of fear, bliss, elation, or awe. In this manner, arousal could be controlled through the use of certain kinds of content; in particular, the reference here is to Bach's use of chorales. Chorales used in the *St. Matthew Passion* were popular Lutheran hymns that even the youngest child in the St. Thomas congregation could hum. Boughton (1930) even thinks that Bach encouraged members of the congregation to join the singers in the execution of the chorales, but Terry (1928) disagrees. Irrespective of this, it is well established that in some of his works Bach introduced parts of the tunes of well-known Lutheran chorales to convey a certain meaning, which is a special kind of "intellectual" symbolism. One could say that in this way he wanted to facilitate the identification of worshippers with certain Biblical characters or to facilitate empathy. Chorales, at least in Bach's time, can be considered a powerful tool for the arousal control. As W.S. Hannam (1928, p. 4) puts it, "nothing in music is more wonderful than the power and grip which the chorale or hymn-tune has over all classes of musical listeners and over singers themselves."

To simplify matters, we can treat a chorale as a sign that has as its *designatum* (it has no material *denotatum*) a certain state, feeling, belief, or religious doctrine, to which Bach wants to refer; what is involved here is the semantical dimension of semiosis (Morris, 1939). Hannam's (1928, p. 5) statement that the "influence of . . . the setting or relationship of the chorale in and to the whole composition in which it occurs . . . is very great" may be interpreted as a hint at another source of information—syntactic (Morris's syntactical dimension of semiosis). This is important in view of the second of Berlyne's (1971) statements concerning the effects of a sign, that a sign generates a "disposition" in the interpreter. It may not affect the interpreter's immediate overt behavior, but may influence his attitude to the subsequent parts of the piece; more importantly, the disposition may affect

his future overt behavior in certain situations.

Chorales in the *St. Matthew Passion* consist of popular tunes, and on top of that, Bach introduces a fair amount of variety in order to keep arousal in the pleasing region. As Wendel (1966) points out, "even the straightforward, four-part chorale harmonizations illustrate this [inexhaustible variety]; frequently in them a particular melodic turn of rhythmic pattern is introduced at the beginning and, by the most perfect dovetailing, is carried straight through to the end" (p. 29). In other words, a familiar, association-provoking melody is presented with just the right amount of variety.

Since many of the chorales are sung powerfully, arousal is presumably also affected by the psychophysical variables of volume and intensity. In Bach's Passions and Oratorios chorales add to the sheer size and grandeur. Hans David summarizes some of the points mentioned above: "The Oratorios and Passions likewise show this new monumentality, achieved through the realization of Bach's ideal of unity in diversity . . . Whereas the texts of the Passions of Schütz had been exclusively Biblical . . . and those set by . . . Telemann had consisted exclusively of verses by contemporary writers, Bach's Passions characteristically include not only both of these elements but chorales as well" (*Bach Reader*, 1966, p. 29). It will be recalled that unity in diversity was mentioned in the earlier discussion of Bach's polyphony.

In retrospect, the early "Post-Baroquers" seem curiously near-sighted in their description of Bach's work as repetitive and stubbornly "undevelopmental." Bach's works are full of variety, both within an individual work and from one work to another. This point is well illustrated in Hannam's (1928) analysis of Bach's cantatas. Although Bach assimilated every style, form, or pattern within reach, he took care to treat separately the material he drew from different sources, which was yet another way of introducing diversity into his works. While Francois Couperin, for example, strove to achieve *les goûts réunis*, Bach strove to achieve diversity by keeping them (the different sources and preferences) separate. When he worked with Latin texts, as in the *Mass in B minor*, he freely used Italian stylistic elements, but there is absolutely no trace of such traits in the *St. Matthew Passion*.

Ornaments

Ornaments, graces, agréments, and embellishments are treated separately because they are an important component of Bach's music, but they concern us only insofar as they are related to arousal. Ham (1914) discusses various types of *appoggiature*, the mordent, the turn, the shake, the after-note, the slide, and the arpeggio, as used by Bach and Händel. Putnam Aldrich (1950) analyzes ornaments in terms of (1) "emphasis upon the dissonance or introduction of additional dissonant notes, and (2) "melodic accentuation of the penultimate strong beat of a phrase" (p. 12). Ornaments are also

often involved in cadences, and in this respect Aldrich's quotations from Thomas Morley's *A Plaine and Easie Introduction to Practicall Musicke* (written in 1597) are instructive:

Discords, mingled with concordes not onnlie are tollerable, but make the descant more pleasing if they be well taken. Moreover, there is not comming to a close, speciallie with a Cadence without a discord . . . (p. 16).

So, we have sixteenth-century formulation of arousal-raising and arousal-moderating devices used together, and of an arousal jag. This interesting line of thinking is pursued further. The imaginary pupil in Morley's book asks: "In Cadence there is little shift of varietie, and therefore it shoulde seeme not so often to be used, for avoiding tediousnesse"; to this, the master retorts: "I finde no better word to saie after a good praier, then Amen, nor no better close to set after a good peece of descant, then a Cadence" (p. 17 in Aldrich, 1950).

To conclude, ornaments seem to serve a threefold purpose as far as the collative variables are concerned: they add to complexity, to variety, and occasionally to surprise. Chiapusso (1968) provides an illuminating discussion concerning the differences between Bach's use of ornaments and that of his predecessors and contemporaries. While in the works of, for example, Buxtehude (from whom Bach learned a great deal in Lübeck in his youth), "ornament seems to weigh down and dominate. . . Bach achieves an integration of ornament and melody into a flow of continuous melody of the most expressive quality" (Chiapusso, 1968, p. 81).

Expectations

Although expectations have been briefly dealt with earlier, they deserve separate treatment because of their importance with respect to arousal and hedonic value. Unfulfillment, postponement of fulfillment, and fulfillment of expectations are all important arousal-raising and arousal-moderating devices. Back in 1921, Bissell noted: "But great as is the aesthetic pleasure arising out of . . . heightening of expectations, a far greater degree of enjoyment may at times be attained by a carefully planned surprise" (p. viii). In this sentence we have the statement of the pleasure connected with the rise of expectations and the promise of fulfillment, and also a mention of the pleasing effect of surprise, through a violation of expectations. Quick fulfillment of expectations would presumably be arousal-moderating—the jag part of a boost-jag mechanism.

Bissell also claims that the more complex a system of music, the more opportunity for expectation and its effects. This appears to be true only to a certain extent. If the musical texture is very complex (polyphonic, for instance), then—if one perceives it as a sequence of super-signs—there should

be no more opportunity for building of expectations than in a single melodic line. It is questionable whether one can build firm expectations along many melodic lines at once.

Nevertheless, complexity is clearly another collative variable to which expectation is connected. In a vocabulary that is similar to Berlyne's (1971), Bissell links expectation to hedonic value: 'Aesthetic pleasure and interest can be much increased by the heightening of expectation whereby both satisfaction of relief and surprise are heightened.'

The demand for alertness of expectations in polyphonic music amounts to an arousal-raising intellectual challenge. There are also many ways in which Bach violated his listeners' expectations. In Bach's time, for example, the minor triad was regarded as "rough," so that a major one replaced it in the final chord even if the prevailing harmony of the composition was minor. Bach surprised his listeners by retaining the minor third in many of his preludes and fugues. Quite often Bach also used wide intervallic skips of up to an octave; in fact, Bissell gives an example of a highly surprising sequence of 2-7-1, where Bach lets the melody rise from 2 to the leading tone. This raises a full expectation of the octave, then drops it to the tonic.

Bissell asked himself the question of how does the listener know on hearing the first tone of a melody whether it is a tonic, because nothing can be definitely settled until the next several tones are heard. His answer is that the listeners have a quite definite set of expectations as to what the first tone will be. He has backed this up by examining over two thousand melodies from Bach to Saint-Saëns where he found that 96 percent of the melodies began with one of the three tones of the tonic chord, i.e., with "1," "3," or "5." In Bach's organ works, "1" was nearly twice as frequent as "5," and a similar proportion was found in the preludes and fugues of the *Well-tempered Klavier*. In Bach's lighter pieces and suites, however, there were more of "5" and "3" in proportion, and in the works of composers after Bach, "5" was found to be in the lead as compared to "1." As regards the minor scale, Bissell found that "6" usurps most of the functions of the tonic. In spite of such regularities regarding the first tone, Bissell found many examples of other kinds in Bach.

Bach's use of tonalities and the violations of expectations that he employs in this respect have been discussed at length earlier. However, Bissell's treatment of the topic is interesting. Not counting the *Well-tempered Klavier*, where all tonalities are deliberately included, Bissell finds that Bach used 16 of the twenty-four possible tonalities, "C" and "G" being most numerous, with major and minor tonalities being about equal. After comparing him with many other composers, Bissell finds Bach to rate high on both the variety and balance dimensions. As previously noted, Bach is considered to be a pioneer with respect to the contrasting use of major and minor tonalities for aesthetic purposes. Bissell provides a fine illustration of this: "There are

few finer passages in the organ music than in the great *Fantasia in G Minor* where the bass moves down by whole steps and half steps, interposing a minor chord when a major was expected, but soon restoring the expected major [boost-jag], and continuing this alternation in a sort of majestic procession, and surprising us at the end with a harsh discord.'

Symbols

Symbols (a subset of ecological variables discussed earlier) play a vital role in Bach's music, since, as Geiringer has noted, his work is a masterpiece of synthesis of artistic trends reaching far into the Middle Ages (cf. Geiringer, 1956). Bach uses different kinds of symbolism, one of the most frequent being pictorialism, a technique employed to conjure up, through musical means, visual impressions associated with the words set to music. An example of the typical Baroque form of "sound-painting" can be found in the *Gloria* of Bach's *Magnificat*. At the words, *et Spiritui sancto*, the melodic line is inverted to symbolize the descent of the Holy Ghost. Also, in the chorale-prelude "Old Adam's Fall," the fall from grace to sin is symbolized through a series of more or less gruesome diminished sevenths. There are also numerous examples in Bach's works of the cross motif (*Chiasmus*), an arrangement of notes in the shape of the cross that can be both heard and seen (e.g., in No. 51 of the *St. Matthew Passion*, "Give me back my Lord, I pray ye"). Examples of pictorialism are numerous in the *St. Matthew Passion*. For example, in No. 9, a motif intoned by two flutes conveys the gentle flow of tears. In No. 20, the ascent to the Mount of Olives is indicated by ascending notes. In the same piece, Jesus's prediction of his desertion by the disciples and the words, "The sheep of the flock shall be scattered," are accompanied by the strings in an agitated contrary motion passage between the upper instruments and the bass singers (Terry, 1926). In No. 60, a realistic description of Jesus's flagellation is given. In No. 69 ("Ah, Golgotha"), Bach uses *pizzicati violoncelli* to portray the funeral bells.

There is also a different kind of symbolism, in which Bach uses certain musical forms to convey the true meaning of the text. In No. 39, he uses a canon which is ideally suited to depict the one false witness's repeating every word of the other. In the last number of the work (No. 78), Geiringer (1956) finds that the deeply moving farewell song assumes the character of a lullaby, thus conveying the idea that the end predicts another beginning.

Bach also indulged in number-symbolism, apparently for his private pleasure, for it can be detected much more easily by eye than by ear. As noted previously, in all the scenes in the *St. Matthew Passion* involving disciples, their number is carefully indicated. There are countless examples of this kind.

Although these examples are representative of Bach's use of symbolism, and, as such, serve a purpose in this discussion, it should be noted that soon after Bach's time such pictorialism went completely out of fashion, to the

extent that Spitta (1951) was embarrassed by finding so many examples in Bach, whereas Beethoven wrote an apology at the beginning of his "Pastoral Symphony." Langer (1942), having first dealt with C. Ph. E. Bach's view that a musician cannot move people other than by being moved himself, mounts an attack on *tonmalerei* (sound-painting), so dear to Bach. She traces the implicit assumption that music is a kind of language to Schopenhauer, who "thought of music as an impersonal, negotiable, real semantic, a symbolism with a content of ideas" (Langer, 1942). She goes on to say that the most naive rendering of this "language" is the onomatopoeic one, such as Bach sometimes uses. An example of this use is the famous rendering of the temple curtain in the *St. Matthew Passion* (No. 73). She also quotes an interesting little passage from J.G. Harrer, who actually succeeded Bach as Cantor of St. Thomas: "Our intermezzi are full of fantastic imitations and silly tricks. There one can hear clocks striking, ducks jabbering, frogs quacking, and pretty soon one will be able to hear fleas sneezing and grass growing." This clearly has nothing to do with Bach, but merely shows the poor taste of his imitators. Langer concludes that Pirro's and Albert Schweitzer's efforts to trace Bach's "emotional vocabulary" did not result in the formulation of musical laws of expression, but she admits that they could "show us certain associations in Bach's mind, perhaps also the accepted conventions of his school" (pp. 231-232). However, she forgets that Bach was able to arouse certain associations in the *Thomaskirche* congregation by using special devices out of his "vocabulary." In fact, one may take this a step further; Langer's own position is that the function of art is the symbolic expression not of artist's actual emotions, but of his knowledge of emotion (cf. Osborne's comments on this, 1968, p. 172); so Bach could have used his knowledge of emotions and utilized symbols, among other things, to move and convince his audience, a practice which would be in line with the present treatment of Bach's use of symbol as an arousal device. This simple fact was, in part, recognized long before Langer:

The complete understanding of musical expression involves . . . the recognition of the analogy that exists between music and the noises produced by nature and human activities . . . Through the imitation of their rhythm, force, and tempo, some of these can be directly suggested by musicians (Parker, 1920, pp. 173-174).

Arousal-Moderating Devices

These devices were reviewed in the preceding sections in sufficient detail, concurrently with the arousal-raising ones, and illustrated by examples from both the *St. Matthew Passion* and from other works of Bach. It has been pointed out that they are often used simultaneously with arousal-raising devices, thus helping to keep arousal within the pleasing range. They also may follow arousal-raising devices, either after a longer period of time (as a

separate movement in a piece), or shortly after the occurrence of the former, in both cases representing the jag part of the boost-jag mechanism. In brief summary, some of the devices in this category are: moderate intensity and volume of sound, evocation of soothing associations, prompt fulfillment of expectations, simple and flat melodic line, facilitation of the formation of super-signs, lack of dissonances, lack of clashing notes, little change of tonality, infrequent change of tempo, moderate *tempi*, unaccentuated rhythms, and avoidance of remote keys.

Conclusion

This study has attempted to illustrate some of the principles stemming from Berlyne's (1971) theory that relates arousal, hedonic value, and characteristics of stimuli encountered in works of art. Its subject was a single work of art—the great *St. Matthew Passion*. Other works of Bach were used for the purpose of illustration.

In conclusion, the author would ask the reader to consider the following:

The sequence of his chords may be as modern as Wagner's, chromatic alterations even more subtle; or, as in the organ works, they may move through broad diatonic highways, powerful in suspensions and magnificent in delays. And, as to his power of expression through harmony, let one listen to the recitatives of the *St. Matthew Passion*, one of the immortal, unfathomable creations of man's genius; consider how they move phrase after phrase, page after page, bearing the whole weight of a mighty composition and unaccompanied save by a few scattered chords (W.G. Mason, 1915, p. 477).

This passage illustrates well that much of the content of this essay is not new to musical historians. The theory behind the study is new, and the fact that musicologists' statements are relatively easy to translate into meaningful terms fitting this theory and supported by experimental results offers some hope that a convergence of views could take place sooner than is usually thought.

REFERENCES

- Aldrich, Putnam. *Ornamentation in J. S. Bach's Organ Works*. New York: Coleman-Ross, 1950.
- Berlyne, D. E. *Conflict, Arousal and Curiosity*. New York: McGraw-Hill, 1960.
- Berlyne, D. E. *Aesthetics and Psychobiology*. New York: Appleton, 1971.
- Bernstein, Leonard. *The Joy in Music*. New York: Signet Books, 1967.
- Birkhoff, G. D. *Aesthetic Measure*. Cambridge, Mass.: Harvard University Press, 1933.
- Bissell, A. D. *The Role of Expectation on Music*. New Haven, Conn.: Yale University Press, 1921.
- Blume, Friedrich. *Two Centuries of Bach*. London: Oxford University Press, 1950 (first published by Bärenreiter-Verlag, Kassel, 1947).
- Boughton, Rutland. *John Sebastian Bach*. London: Kegan Paul, Trench, Trubner, 1930.
- Bukofzer, M. F. *Music in the Baroque Era*. New York: Norton, 1947.
- Chailley, Jacques. *Les passions de J. S. Bach*. Paris: Presses Universitaires de France, 1963.
- Chiapusso, Jan. *Bach's World*. Bloomington, Ind.: Indiana University Press, 1968.
- David, Hans T. and Mendel, Arthur. *The Bach Reader*. rev. ed. New York: W. W. Norton, 1966.
- Eysenck, H. J. The Experimental Study of the "Good Gestalt" . . . A New Approach. *Psychological Review*, 49, (1942), 344-362.
- Fux, J. J. *The Study of Counterpoint*. London: E.J. Dent, 1965 (first published as *Gradus ad Parnassum*, 1725).
- Geiringer, Karl. *Symbolism in the Music of Bach*. Washington: The Library of Congress, 1956.
- Geiringer, Karl. *Johann Sebastian Bach*. London: Allen & Unwin, 1967.
- Gotlieb, Heidi, & Konecni, V. J. The Effects of Instrumentation, Playing Style, and Structure in the Goldberg Variations by Johann Sebastian Bach. *Music Perception*, 3 (1985), 87-102.
- Ham, Albert. *Musical Ornaments and Graces*. London: Novello & Co., 1914.

- Hannam, W. S. *Notes on the Church Cantatas of J. S. Bach*. London: Oxford University Press, 1928.
- Hutchings, Arthur. *The Invention and Composition of Music*. London: Novello & Co., 1958.
- Konečni, V. J. "Determinants of Aesthetic Preference and Effects of Exposure to Aesthetic Stimuli: Social, Emotional and Cognitive Factors." In *Progress in Experimental Personality Research* (Vol. 9). Edited by B. S. Maher. New York: Academic Press, 1979.
- Konečni, V. J. Social Interaction and Musical Preference. In *The Psychology of Music*. Edited by Diana Deutsch. New York: Academic Press, 1982.
- Konečni, V. J. Elusive Effects of Artists' Messages." In *Cognitive Processes in the Perception of Art*. Edited by W. R. Crozier and A. J. Chapman. Amsterdam, The Netherlands: North Holland, 1985.
- Langer, S. K. *Philosophy in a New Key*. Cambridge, Mass.: Harvard University Press, 1942.
- Mason, D. G. *The Art of Music, Vol. I: A Narrative History of Music, Book I*. New York: The National Society of Music, 1915.
- Meyer, L. B. *Emotion and Meaning in Music*. Chicago: University of Chicago Press, 1956.
- Morris, C. W. "Esthetics and the Theory of Signs," *Journal of Unified Science*, 1939.
- Osbourne, Harold. *Aesthetics and Art Theory*. London: Longmans, Green & Co., 1968.
- Parker, DeWitt, H. *The Principles of Aesthetics*. Boston: Silver, Burdett & Co., 1920.
- Parry, C.H.H. *Johann Sebastian Bach*. New York: G. P. Putnam's Sons, 1909.
- Scheide, W. H. *Johann Sebastian Bach as a Biblical Interpreter*. Princeton, N.J.: Princeton Theological Seminary, 1952.
- Schrade, Leo. *Bach: The Conflict Between the Sacred and the Secular*. New York: Merlin Press, 1946.
- Spitta, Philipp. *Johann Sebastian Bach: His Work and Influence on the Music of Germany*. Translated by C. Bell and J. A. Fuller-Maitland. New York, 1951 (reprint of the 1884-85 English edition; first published in Leipzig, 1873-80).
- Terry, C. S. *Bach: The Passions*, London: Oxford University Press, 1926.
- Terry, C. S. *Bach: A Biography*, London: Oxford University Press, 1928.