Percussionist

An Official Publication of
PERCUSSIVE ARTS SOCIETY

VOLUME XII, NUMBER 1
FALL, 1974

PERCUSSIVE ARTS SOCIETY
(PAS)

PURPOSE--To elevate the level of music percussion performance and teaching; to expand understanding of the needs and responsibilities of the percussion student, teacher, and performer; and to promote a greater communication between all areas of the percussion arts.

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AN OFFICIAL PUBLICATION OF PERCUSSIVE ARTS SOCIETY

PERCUSSIONIST is published Fall, Winter, Spring, and Summer by Percussive Arts Society, Inc. Office and clerical assistance furnished by Indiana State University. Resolved: That a copy of each issue of "Percussionist" shall be sent to each member of the Percussive Arts Society, Inc., and that of each member's dues or enrollment fees of $7.00 or $10.00, $3.00 shall be paid for a year's subscription to the publication. Second class permit, Terre Haute, Indiana. All correspondence concerning membership, subscription rate, editorial content and change of address notices should be addressed to Neal Fluegel, Editor, PERCUSSIONIST, 130 Carol Drive, Terre Haute, Indiana 47805.

In this issue

U. S. POSTAL SERVICE

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of August 12, 1970: Section 3685, Title 39, United States Code)

SEE INSTRUCTIONS ON PAGE 2 (REVERSE)

1 TITLE OF PUBLICATION: PERCUSSIONIST

2. DATE OF FILING:

3 FREQUENCY OF ISSUE: FALL, WINTER, SPRING, SUMMER

4 LOCATION OF KNOWN OFFICE OF PUBLICATION *(Street, city, county, state, ZIP code) (Not printers)*: 130 Carol Dr., Terre Haute, Vigo, Indiana 47805

5. LOCATION OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHERS *(Not printers)*: 130 Carol Dr., Terre Haute, Vigo, Indiana 47805

6. NAMES AND ADDRESSES OF PUBLISHER, EDITOR, AND MANAGING EDITOR

PUBLISHER *(Name and address)*: Percussive Arts Society, Inc., 130 Carol Dr., Terre Haute, Indiana 47805

EDITOR *(Name and address)*: Neal Fluegel, 130 Carol Dr., Terre Haute, Indiana 47805

MANAGER EDITOR *(Name and address)*: Neal Fluegel, 130 Carol Dr., Terre Haute, Indiana 47805

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B. PAID CIRCULATION 1 SALES THROUGH DEALERS AND CARRIERS, STREET VENDORS AND COUNTER SALES	----	----
2 MAIL SUBSCRIPTIONS	3281	2998
C. TOTAL PAID CIRCULATION	3281	2998
D. FREE DISTRIBUTION BY MAIL, CARRIER OR OTHER MEANS 1. SAMPLES, COMPLIMENTARY, AND OTHER FREE COPIES	----	----
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E. TOTAL DISTRIBUTION *(Sum of C and D)*	3281	2998
F. OFFICE USE, LEFT-OVER, UNACCOUNTED, SPOILED AFTER PRINTING	219	302
G. TOTAL *(Sum of E & F—should equal net press run shown in A)*	3500	3300

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PS Form 3526 July 1971

SHOULD P.A.S. BE CHANGED?
by
George Southgate

Editors Note: This article contains no editorial changes due to the written request of the author.

Ever since the P.A.S. began, several of us have hoped our society was going to be an organization which would be a constant source of inspiration for percussionists at all levels. Unfortunately, some of us feel the P.A.S. has failed miserably in this most important task.

At the December P.A.S. meeting I presented this paper expressing a desire for P.A.S. to take a more active role in educating and exposing ideas to the inexperienced percussionists and to those educators who teach percussionists. I would also like to search for ways of promoting communication among professional-level, performing percussionists.

I admit there is a wealth of information and percussion literature available, perhaps more literature than necessary in some areas, but some of us believe there is misinformation or sometimes meandering, useless information also available. The student who does not have access to an experienced and/or well informed teacher, may have trouble sorting out the necessary from the unnecessary. Also, many students may have a problem in determining the value of one teacher over another. I assume we can acknowledge a difference in the quality and ability of various teachers and the available materials. The P.A.S. could be a guide for the student to appreciate and/or logically evaluate the information received through available books and teachers.

Generally, the P.A.S. appears to have taken a restrained stand on offering material that readily teaches the percussionist to become a better performer. Most articles that appear in the *Percussionist* seem to be attempting to justify percussion from an academic standpoint. Many studies and theses can be found throughout previous issues of the *Percussionist.* Many educators are aware that some educational systems place great importance on the constant production of these academic works for various types of publications. Often, the educational systems will encourage these out-pourings thrtugh financial gains or position promotions to the contributor. I do not want to demean the works that have been done or will be done in the name of percussion education. I do feel articles, which may be interpreted as self-serving by some, should not take up the major portion of our journal. There should be a proportionate number of articles which would be of practical value to the less experienced percussionists, to the non-percussionists who are educators, and to the performing percussionists at all levels.

I am aware of *Percussive Notes,* and I believe it is similar to what some of us feel is needed, but it appears not to be given an equal

amount of space and is not published as often as the *Percussionist*. The impression is that *Percussive Notes* is of lesser importance than the *Percussionist*.

A segment of the *Percussive Notes* which some of us question is the value of taking up paper and space to publish lists of various percussion ensemble programs. While I can understand an interest in seeing what is currently being performed at various performance levels, I am also aware that some directors of these ensembles may be playing a game of trying to impress others with programs showing important or technical works. I am not asking for an investigation as to who is actually teaching the students and who is merely looking for a promotional vehicle; however, perhaps an evaluation of various programs would have more merit than merely publishing an impressive array of works. Another solution might be to publish four or five programs each issue. Clinics and other percussion related performances may also be discussed. Perhaps the programs could be selected because of their outstanding compositions or performances.

At this point, I should give credit to the *Percussionist* for the relatively few but interesting articles on performing certain techniques and compositions. The Charles White article on the "Rite of Spring" and the Max Neuhaus article on "Zyklus" are two examples. The dispute between two artists such as Mr. White and Mr. Goodman was interesting. However, if the P.A.S. were actually interested in encouraging and informing the growing number of student percussionists, the P.A.S. would have stated at the outset that there appears to be a need for the *Percussionist* to distribute the information as to how to play either an established work or a relatively new work of importance. Artists like Mr. Goodman and Mr. White can both offer valuable insight into how they perform and have functioned throughout their distinguished careers.

The professional performers and students of percussion may wish to have information relevant to their immediate situation. While a portion of our organization is made up of highly respected professional percussionists, some of the professionals do not appear willing to take an active role in submitting information to our membership. I sense a definite gap between the percussionists who have primarily had an educational background and the percussionists who are experienced professional performers. The professionals I have had contact with have implied or stated that the *Percussionist* articles usually have little of interest to offer them. I believe most professionals develop types of working solutions to problems they encounter. P.A.S. needs to encourage the professionals to exchange their ideas through the P.A.S. Anecdotes, techniques and technical descriptions of various music could be made. The contributions of the professionals could be reported directly to P.A.S. or indirectly through use of members interviewing professionals on local levels and passing the information

along to the national level. Students could pass along information gathered through their lesson teachers who may be less communicative than desirable with P.A.S. These contributors may be broken down into such labeled formats as concert or symphonic, jazz and/or pop, rudimental, percussion ensemble oriented music, etc. There are many ideas and techniques which might not be described in academic or scientific terms but these ideas might be of great practical value to others. I feel the present format of P.A.S. has not really encouraged many of our members to feel like they can contribute.

Some time ago, noted percussionist, John Noonan, pointed out to some P.A.S. members the need to become more appealing to the student percussionists and perhaps promote at least a portion of the P.A.S. organization in a manner similar to the National Association of Rudimental Drummers. I feel our attempt to appear highly sophisticated has totally negated a large portion of the percussion world. This segment of the percussion world could mean "new blood" to the future of our organization.

A number of percussion clinics have been performed involving what has been called America's real artistic contribution to the world of music; "Jazz." Yet drum set playing and jazz improvisation appear to be of minor importance to the P.A.S. Whatever the area of music in which each member is specifically interested, I think P.A.S. should have regular features on the major areas of music and offerings in the "less popular" forms when available.

Another source of information that appears to be misguided is the newsletter from the state chapters of P.A.S. Some members feel the paper could be put to better use. I have indications that the quality varies greatly from chapter to chapter. While I cannot criticize other chapters because I do not have access to their newsletters, I can criticize the work of my own chapter. There has been little information passed through the newsletter. I think there could be more communication between the state levels. The exchange of information might be of value to the chapters who are pressed for information.

I hear many percussionists who complain about the quality of some of the available percussion instruments. I think we would be doing a great service to all percussionists, music educators, and instrument companies if P.A.S. would try to establish some guidelines for percussionists and percussion manufacturers as to what constitutes an acceptable percussion instrument. If it is possible that P.A.S. members can agree on these guidelines, then it might be feasible for P.A.S. to point up the weaknesses and strengths of various percussion companies. This could be developed into a type of percussion consumer report. I am aware that some of our members, including myself, have close relationships with certain percussion companies; however, if we would open up the possibility of criticizing or commending products, we might get a more accurate picture of what is desired and

appreciated by various educators and percussionists. We might also receive indications of the percussion companies' actual attitudes and the quality of workmanship on their various products. Naturally, the percussion companies should be given a chance to explain their problems of instrument production.

I understand one percussion company contributed a large portion of the funds which support our organization. I think we should make the manufacturer's interest in our organization better known to the general membership and ask for support, where possible, of the companies who are interested in our efforts. Yes, if the above ideas are put into practice, sometimes the companies who support us will receive criticism from the organization which takes their support, but the criticism should be constructive and only in the interest of bettering percussion.

This is not meant to be an indictment of the P.A.S. I do not mean to presume to know more than many of our respected members. I, like others, have remained silent until now, waiting to see if the P.A.S. would move in the direction I was led to believe it would. I hope that these points will be used as guidelines that some of the members would like to see further developed. I hope there are many who are interested in progressing toward these goals and who will feel encouraged to express their ideas.

As a result of this paper I was made chairman of a committee which is trying to determine how much interest there is in these areas and what we can do to bring about change. If there is enough interest, I hope to encourage committees at the state levels to help organize our work. Before we can move in this direction I feel it is necessary to obtain membership reaction to our proposed work. Please fill out the questionnaire and mail your responses to me. If you have additional ideas, feel free to include them. I am anticipating a large response which will make my reply to each individual all but impossible.

P.A.S. QUESTIONNAIRE

Mail to George Southgate, 336 Newport Road, Hoffman Estates, Illinois 60172.

1. Do you feel P.A.S. is adequately covering the entire field of percussion? Yes——— No———.
2. Areas needing more coverage (check one or more if needed).

Percussion Literature ———
Techniques of playing ———
History ———
Foreign music styles ———
Percussion Ensemble ———
"Classical or Concert" ———
Evaluation of equipment ———

Acoustics ———
Manufacturing and construction ———
Education of the young ———
Rudimental or military ———
"Jazz" or Improvisation ———
"Rock and/or Pop" ———
Evaluation of materials ———

3. Is P.A.S. currently valuable to your immediate area? Yes——— No———.
4. Do you feel P.A.S. has been too academic? Yes——— No———.
5. Do you feel that P.A.S. is trying to attract and interest young percussion students? Yes——— No———.
6. Do you feel P.A.S. is mainly a college percussion instructor oriented organization? Yes——— No———.
7. Do you feel you have something to contribute to P.A.S.? Yes——— No———.
8. Have you contributed to the P.A.S. journals in the past? Yes——— No———.
9. Are you a student ——— private teacher ——— band director ——— percussion performer ——— college percussion instructor ———.

other ———

10. If a percussion student, do you plan to become a professional percussionist ——— private percussion instructor ——— school band director ——— college percussion instructor ——— non-music occupation ——— other ———
11. Do you feel the current percussion instruments are constructed of a quality which is acceptable ——— needs improvement ———.

President's Corner

As the Fall season begins, we are always reminded of the diversity of interests and pursuits which exist within the Percussive Arts Society. Percussion students of all ages and abilities are beginning a new semester, percussionists in the many orchestras around the world are beginning a new season, jazz and studio percussionists continue their hectic schedules, and the percussion manufacturers, publishers, and drum shops seem to be busier than ever.

PAS is in the very difficult but exciting position of trying to serve the needs of all facets of the percussion world. To that end, the individual members of the Society must continually strive to support the goals of the national organization through contribution of articles and material for the publications, participation in the growing number of State Chapter activities, attendance at and participation in the increasing number of national meetings, conferences, and conventions. PAS will remain only as strong as the interest and support of its individual members. Let us hear from you through your State Chapter organization or write directly to the national office with your ideas and suggestions about what PAS should be doing.

—————————o—————————

Time and Place

8:00-9:45 A.M.: PAS Executive Board-Commercial Members Breakfast. Room 8.

11:45 A.M. -1:00 P.M.: PAS State Chapter Chairmen Meeting. Room 8.

3:00-4:15 P.M.: PAS Annual Membership Meeting. Beverly Room.

6:00-7:45 P.M.: PAS Board of Directors Annual Meeting. Room 8.

Saturday, December 21:

2:00-10:00 P.M.: PAS National Conference. - Schedule to be announced. International Ballroom (North 2/3).

All Midwest events will be held in the Conrad Hilton.

EIGHT PIECES FOR FOUR TIMPANI BY ELLIOT CARTER

Analysis by Robert M. McCormick

The composer, Elliot Carter, was born in 1908 in New York City. He is considered to be one of the most important composers living today. His composition teachers included Walter Piston, Gustav Holst, and Nadia Boulanger. He received his Bachelor of Arts degree from Harvard in 1930, and in 1932 he went to Paris to study at the Ecole Normale de Musique.[1]

Carter has received two Guggenheim Fellowships, one in 1945 and one in 1950. In 1953 he was awarded the Prix de Rome, and in 1956 became a member of the National Institute of Arts and Letters. He received international acclaim for his second string quartet in 1960, for which he won the Pulitzer Prize in music. In 1960 he was awarded the Sibelius Medal for Music in London, and in 1965 the Creative Arts Award from Brandeis University. Carter holds honorary doctorates from the New England Conservatory and Swarthmore College. He has been composer-in-residence at the American Academy of Rome; and, at the invitation of the Berlin Senate and the Ford Foundation, held a similar position in Berlin.[2]

Carter emphasizes in his music the use of polyrhythms and, also, what he calls "metric modulation."[3] This involves a constant change of pulse caused by an over-lapping of speeds. An example of this would be one voice in triplets entered against another voice in quintuplets; the quintuplets would then fade into a background, allowing the triplets to establish a new speed, providing the basis for the continuation of this kind of relationship of voices. Such a metrical structure allows an impression of changing flux, material, and character. It is significant to note that, in spite of his complex compositional techniques, Carter's music is endowed with sensitive communication which includes wit, tenderness, and dramatic climaxes. These are not common in twentieth century music.[4]

PERFORMANCE TECHNIQUES

The work, *Eight Pieces for Four Timpani*, is a "collection of pieces from which not more than four are ever to be played as a suite in public."[5] The pieces selected should be chosen to provide a variety of interest and techniques. It is suggested in the performance notes that pieces IV, V, VII, and VIII be used as beginning or ending pieces while I, II, III, and VI be performed between them. The performer should also make certain that not more than one pitch be carried over from one piece to the next. This will avoid the possibility of a transposition of the pieces.

The beaters chosen should be those which will bring out the individual character of each piece. For *March* the composer suggested the use of medium hard sticks.[6] In this work the sticks are used in two ways, in the regular manner and reversed so that the stick strikes with the butt or wood end. The way in which the sticks should be used is clearly noted in the score by the designation of the word "Butt" and "Head" in various areas. In *Moto Perpetuo,* the composer specifically calls for the use of rattan sticks covered with corduroy.[7]

Ordinary strokes are used throughout the work, unless otherwise specified. In both *Moto Perpetuo* and *Canaries,* a "dead stroke" is indicated by the sign "DS," found within the rectangle. The "dead stroke" technique is produced by firmly pressing the stick into the drum head after striking. This technique should result in a dampening of all resonance at once.[8]

A variety of striking positions are used. These techniques allow the performer to obtain a wide spectrum of sound qualities. The striking positions are notated by circled numbers: N--normal area of head, C--center of head, and R--near the rim of head. A gradual change of striking is indicated by the use of arrows. Each area of the head should produce a distinctly different sound. When the striking area is not specifically notated, the performer may use his own judgment.

Special effects are further obtained by the use of cloth covered rattan sticks, mentioned above. This is notated by the rectangled "TP," indicating a stroke with the tip of the stick, and "HD," indicating a stroke with the head of the stick.

There are various degrees of accentuation in *Moto Perpetuo.* This involves the use of:

(a) slight accents at the beginning of each measure;

(b) lighter accents at the beginning of each beamed group within the measure;

(c) still lighter accents at the beginning of inner beams of sixteenth notes.[9]

To produce these various levels of accentuation requires much practice by the performer.

CANARIES

The composition entitled *Canaries* has the timpani tuned to E, B, C sharp, and F (low to high). The work begins in 6/8 meter at the speed of a dotted quarter note equal to 90 beats per minute. The main theme is presented in the first four measures. There is no introduction to the work. The first three measures of *Canaries* are struck in the center of the head. There is a gradual movement to the normal striking position in the fourth measure. The fifth measure is played at the rim. This system of striking positions continues throughout the work. It is a unique concept in timpani performance techniques and requires a great deal of attention on the part of the performer.

In measure 10 a rhythmic modulation occurs setting a new tempo of a dotted quarter equal to 120 in measure 11. Measure 15 indicates a meter change to 5/8, changing to 3/4 in measure 18. In measure 19 the triplets provide a modulation to the 3/8 in measure 20, the quarter note being equal to the dotted quarter note. A tempo change to 3/4 with the eighth note remaining equal begins at measure 21. At measure 25 the main theme returns at the original tempo. This time the striking position is at the rim. From this point the eighth note remains constant through measure 46. At measure 47 the dotted eighth becomes equal to a quarter note and remains constant through the following 3/4 and 5/4 time signatures. Measure 49 provides a rhythm modulation to measure 50. This is accomplished by a quarter tied to a sixteenth note rhythm which becomes equal to a quarter note in measure 50.

The first use of polyrhythm begins in measure 61 with a two against three passage. This provides the foundation for a series of polyrhythms and rhythm modulations that continue through measure 75. At measure 78 the striking positions play a significant role; they overlap in sound throughout the continued polyrhythmic passage. A variation of the main theme occurs in measure 107. This is the third time the original meter signature and tempo are used, and the first time they occur when the normal striking position is used. The eighth note now remains constant to the end of the piece. At measure 141 the main theme is presented for the final time. A climactic ending occurs in the last two measures. The composition does not use a conventional form.

MOTO PERPETUO

In *Moto Perpetuo* all notes are of equal time duration with the sixteenth note equal to the sixteenth throughout. Carter has limited himself to using four notes throughout the piece; none of these are greater than the interval of a major third. Within these limitations, however, Carter has found several sound possibilities. These include the use of two minor seconds, a major second, and minor third. These intervals, along with the constantly varying pulse and the variety of sounds produced on each drum, combine to produce a composition with an array of interesting sounds.

The four notes chosen in this work were B sharp, C sharp, D sharp, and E natural. It is interesting to note that Carter labeled the low note as B sharp rather than C natural. Thus he avoided the necessity of using accidentals throughout the piece. The general character of *Moto Perpetuo* is light and rhythmically distinct. This effect is achieved by the ever-changing natural accents and the use of a soft-cloth mallet as is suggested by the composer.

The main motif of the piece is stated at the beginning. It consists of a group of seven notes, followed by six, five, four, three, four and

five. The first four groups are played in the center area of the head. The next group is played in the normal area, with the last group being played at the rim. With no meter signature existing, it is impractical to state exactly with which beat the motif begins and ends. The motif is again restated in the last seven note group of the second measure. The rhythmic groupings are the same as those that occurred in the first statement of the motif.

After the second statement of the motif, the composer used a variety of groupings and playing positions. This produces a diversity of color and natural rhythmic accents. The motif does not reappear until the last grouping of measure 27. It then aphears in the same consecutive rhythmic groupings as the original statement. It is repeated again a second time, immediately after the end of the last grouping of the motif.

The climax of the piece occurs in measure 38. This is the only section of the piece where dynamic markings reach above a mezzo-forte. The forte at this point includes rhythmic groupings of two. This is followed by a group of three which adjoins a pianissimo grouping of eight, providing an augmented answer to the climax. The piece continues with its light, moving character to its end.

MARCH

The composition, *March*, is written for four timpani. The drums are tuned to G, B, C, and E. With these four notes, Carter has several harmonic combinations. These include a C major triad, a C major seventh, the root and third of a G major triad, and the root and third of an E minor triad. Several intervals are used with these four notes.

The title of this work is appropriate. It has definite march-like qualities: the tempo, the rhythm, the harmonic implication of tonic to dominant, and the melody. The rhythm sets up the character of the music by playing a staccato note on every beat. The C to G note relationship is similar to a tonic-dominant bass line. The E to D consists of a fan-fare style melody. The melody and accompaniment parts are intervals of a perfect fourth.

The left hand is notated with the stems down and is played with the butt end of the stick. The right hand is notated with the stems up and is played with the head of the stick. The "head" and "butt" arrangement of the sticks permit a greater range of timbre for the timpani. The performer should have a great deal of independence between the hands. This is necessary because of the cross rhythms, and the different dynamic markings for each hand.

In measure 10 the "common time" march style gives way to a 5/8 time with eighth note equal to eighth. The 4/4 meter signature then comes back building a tension for the rhythm modulation in measure 14. At this point the dotted eighth note becomes equal to the quarter. This brings a tempo change with the quarter note equal to 140 beats per minute. Further contrasts are made possible in this because both

hands are playing with either the butt end or the head of the stick.

At measure 24 the meter signature is 2/4, followed by 10/8 at measure 25. The next rhythmic modulation occurs at measure 28. At this point the meter signature is 2/2 with a quarter tied to a dotted quarter equal to a half note. The half note is then equal to 56 beats per minute. Measure 34, written in 14/16 meter (or double dotted quarter equal to 64), is a transitory passage to the rhythmic modulation of measure 35. The double dotted quarter is then equal to a half note. At measure 39 the quarter is equal to an eighth in 3/8 meter. The eighth note remains equal through a series of meter signatures to measure 42. A rhythmic modulation ftllows with the half note equal to a quarter tied to a dotted quarter. This is the same rhythmic modulation that occurred in measure 27, this time in reverse. The eighth note remains equal through the following series of meter signatures to measure 55. The material of this section still has march-like qualities, uniquely developed through the various meter changes and odd rhythmic groupings.

Measure 55 uses the rhythmic modulation of a half note equal to a double dotted quarter. This modulation also occurred in reverse at measure 35. These measures each contain groups of seven, though in different meter signatures. This is the second time Carter has brought back materials used previously. This gives a unity and form to the work. By measure 55 the quarter note again equals the original tempo of 105 beats per minute. This remains constant to the end. Following measure 60, the original quarter note motif is brought back. This again provides the accompaniment for the right-hand melody that was used in the beginning of the piece. After this material has been redeveloped, the work accelerates and diminishes to a quiet ending.

Elliot Carter's *Eight Pieces for Four Timpani* is replete with rhythmic inventions, dynamic subtlety, and unique sounds. The composer has employed the entire range of sonorous possibilities and has furthered the development of virtuoso timpani performance. His works for unaccompanied timpani are unique.[10]

FOOTNOTES

[1]Richard Goldman, "The Music of Elliot Carter," *Musical Quarterly*, XLVIII/2, April 1957, p. 165..

[2]Peggy Glanville-Hicks, "Elliot Carter," *Groves Dictionary of Music and Musicians*, Ed. Eric Blom, II (5th ed., London: St. Martins Press, 1954), pp. 97-98.

[3]Elliot Carter, "Shop Talk of an American Composer," *Musical Quarterly*, XLVI/2 (April 1960), p. 193.

[4]Goldman, op. cit., pp. 161-162.

[5]Elliot Carter, *Eight Pieces for Four Timpani* (New York: Associated Music Publishers, Inc., 1968), Preface.

[6]Ibid.

[7]Ibid.

[8]Ibid.

[9]Ibid.

[10]James Blades, *Percussion Instruments and Their History* (New York: Frederick A. Praeger, 1970), p. 429.

EIGHT PIECES FOR FOUR TIMPANI
BY ELLIOTT CARTER
Analysis by
Geary H. Larrick

Six of the *Eight Pieces* for timpani were written in 1950 and revised in 1966; the other two pieces *(Adagio* and *Canto)* were written in 1966. The *Recitative* and *Improvisation* were the two unaccompanied middle movements of Carter's *Six Pieces for Kettle Drums and Orchestra.* Titles of the *Eight Pieces,* in publication order, are:

I. Ṣaeta
II. Moto Perpetuo
III. Adagio
IV. Recitative
V. Improvisation
VI. Canto
VII. Canaries
VIII. March

Although all eight are published together, Carter suggests four as the maximum number to be played at one time as a suite for public performance. The composer further stipulates which ones are suitable as beginning or ending pieces, and which ones should be played as inner movements. This discussion will center around four of the pieces: *Recitative, Improvisation, Adagio,* and *March.*

Because of the timbrel limitations of four timpani used as a solo instrument, Carter uses several devices to vary the type of sound. Throughout the various pieces are indications for striking the drums in the center, near the rim, or in the natural playing position. When struck in the center of the head, a deadened sound results; when struck near the rim, a comparatively "light" sound results, with fewer low partials than normal.

In the *Adagio,* Carter asks for the production of octave harmonics. These are produced by pressing one or two fingers on the head midway between center and rim, and simultaneously striking the head with a mallet near the rim. The composer also indicates the use of sympathetic resonance (striking one drum and hearing another one ring) in the *Adagio.* The use of both harmonics and sympathetic resonance is somewhat limited, however, for not all timpani produce the desired sounds.

Other devices include the use of both ends of the mallets in the *March* (assuming that the butt ends of the mallets are made of wood, or produce a much more articulated sound than do the heads of the mallets). Mallet choice in the other movements is left to the discretion of the performer. In the *March,* Carter also asks for the use of mutes (felt pads which deaden the resonance of the drum when laid on the head).

In the *Improvisation* and the *Recitative*, the composer indicates the use of a "dead stroke". This is produced by striking the drum and leaving the mallet on the head; the "dead stroke" can be performed in the center of the head, near the rim, or in the natural playing position.

In the *Adagio*, considerable use is made of *glissandi*, including the *glissando* of sympathetic resonance (a highly optimistic request in most cases) and the *glissando* of harmonics.

Carter's treatment of rhythm is remarkable throughout the pieces. In the *Adagio*, rhythm is very free, with no meter indicated. Thus much is left to the performer's discretion; indeed, probably more creativity is required of the performer in the *Adagio* than in the other movements. Because of the available freedom, one must consider formal priorities, "melodies", repetitions, etc., more than in the performance of the other movements.

In the *March*, one of the major form-producing elements is the steady march tempo that is played by the butt end of the mallets.

As one might expect, considerable use is made of metrical modulation in the *Improvisation*, *Recitative*, and *March*. In the *Recitative* (p. 11-last three staves), a rhythmic group of nine notes becomes regular thirty-second notes in 18/32, 9/32, and 14/32 meters respectively. The thirty-second notes in groups of seven in the 14/32 measure become septuplets in the following 2/4 measure, effecting a marvelous example of camouflage in the speeding up of tempo. Performance difficulty is increased by irregular grouping by accents, in contrast to the metric groupings. Near the resolution of the metrical modulation, however, metric groupings and accent groupings are coincident. In the *Recitative* and *March*, accent and metric groupings are coincident throughout the metrical modulations.

Dynamic contrast is used to good advantage throughout the pieces. In the *Improvisation* (p. 13), dynamic contrast is combined with the use of "dead strokes" and accented groups to assist in producing continuity and development of musical ideas. In the *Recitative*, a roll notated in sixty-fourth notes (pp. 10 and 11), also makes use of *crescendi*, *diminuendi*, and different areas of the heads in effecting musical contrast. In the *Adagio*, dynamic contrast is combined with *glissandi* and harmonics quite effectively.

*Locations in the music will be identified by the use of system (staff) numbers.

Form is treated individually in each movement. In the *Recitative*, the first section (systems 1-6*) is repeated almost intact (systems 7-13); such large-scale repetition is not common throughout the other pieces. After the repetition, the process of metrical modulation begins (systems 14-18); when the modulation is complete, a section in steady tempo begins softly with "dead strokes" (system 18, m. 2). The "dead strokes" are interrupted savagely by loud, small triplet groups (systems 18, 19, 20), and then by loud quintuplet groups (system 22). The alter-

nation of "dead strokes" and triplet groups continues in a steady release of tension to the end of the movement. The release of tension is accomplished by a steady *decrescendo* accompanied by lower density of activity.

Except for the metrical modulation section, Carter presents all of his motivic ideas for the *Recitative* in the first five systems; in order of presentation, they include 1) the notated roll, 2) triplet figure, 3) harmonics in comparatively slow tempo, 4) "dead strokes" in steady tempo, and 5) loud quintuplet groups.

Schematically, form of the *Recitative* can be shown as follows:

	A	A	B	C
system No.	1-6	7-13	14-18	18-25
			(met. mod.)	

The *Improvisation* does not involve any large-scale repetitions as does the *Recitative*. It can be divided into sections, however, as follows:

	A	trans.		B	trans.		C	trans.		D	E
system	No. 1-5	6		6-12	13-15		15-18	19		20- 23	24-28
		met. mod.			met. mod.			met. mod.			

The transition to each section is marked by metrical modulation, resulting in a different meter for the new section in each instance. Each section is characterized by a specific rate of pulse (tempo), and the transitions are characterized by irregular or a changing rate of pulse. Accents are generally regular within the metrical groupings.

The *Adagio* involves many *glissandi*, and can almost be considered tonal, centering around *f*. (Repetition is relatively unimportant in regard to the form of this movement.) In the first two systems all four drums eventually sound an *f*. Movement in the next two systems is toward a third (major or minor) away from *f* in either direction. Distance from the tonic reaches a peak in the fifth system, sounding a *d-flat* on drums 3 and 4 (*d-flat* is a minor third below the upper *f*, but is a tritone above the lower *f*). The *glissandi* in systems 6 and 7 increase the tonal movement, and lead to the relative stability of the last system, which heads toward a final *f* at the end.

The *March* can be sectionalized as follows:

	A	B	trans.	C	A'
system No.	1-4	5-10	11-12	13-17	17-22
			met. mod.		→ muted

Section A at the beginning and end is characterized by a steady march tempo that is played by the wood end of the mallet. Sections B and D include timbrel contrast by alternating passages played by the butt and the head ends of the mallets. Metrical modulation plays a significant role in the transition in systems 11 and 12, while the A sections contain no significant use of the device. Sections B and D con-

tain metrical modulation, but it does not perform as important a formal function as in the transition section. As mentioned, the most significant aspect of sections B and D is the alternation of timbres.

Performance Problems

Elliott Carter does not have a reputation for writing music that is easily performed--the timpani pieces are no exception. The intricate rhythms, irregular accented groupings, use of mutes, and use of double-ended mallets offer a challenge to any timpanist.

As inferred previously, the notation of the *Adagio* makes interpretation problematic. The performer must play with considerably more invention and ingenuity than in the *Recitative, Improvisation,* or *March.* The use of proportional notation might have eased the performance difficulty of the *Adagio.*

A further problem of performance of the pieces involves their "unorthodox" approach to the timpani. Most timpanists are thoroughly schooled as members of an orchestra where the timpani play a tonal-harmonic role; thus the rhythmic-timbrel approach of Carter is somewhat foreign to a timpanist trained in the traditional manner. Similar contrasts are appearing in other areas of modern chamber music, however.

SOME ACOUSTICAL PROPERTIES OF CYMBALS

by Dr. John Baldwin
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Boise Idaho

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EQUIPMENT AND PROCEDURE

Five Cymbals were used: two 16" models marketed by the Avedis Zildjian Company (A.) and Fred Gretsch Manufacturing Company (New K.); one 16" model manufactured by Zildjian (Old K.); and two Paiste cymbals (one 17" model and one 20" model).

As the majority of these instruments were selected from large stocks by experienced professional percussionists (including Dick Schory, James Sewrey, and the late Harold Thompson), it may be assumed that these instruments are of above-average quality according to present standards.

The generalized cymbal in Figure 1 illustrates the various measurements made for this study. The diameters of the hole, the cup, and the entire cymbal are given in the upper portion. In the lower portion, the height of the cup, the height of the bow, and the thickness are indicated. Except for the thickness (measured with a micrometer graduated in thousandths of inches), all measurements were made with a ruler graduated in tenths of inches. Dimensions and distinguishing characteristics of the cymbals used in this investigation are shown in Figures 2 through 6.

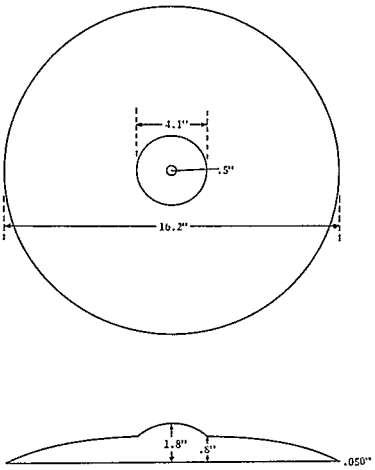


Figure 1.--Generalized Cymbal.

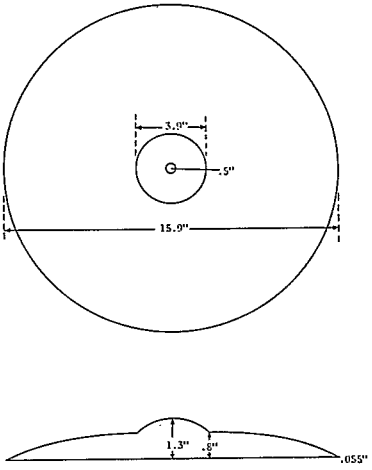


Figure 2.--Avedis Zildjian Cymbal.

Distinguishing characteristics: no unique features compared to the other cymbals.

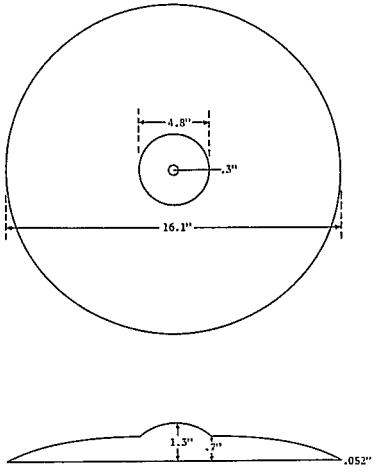


Figure 3.--New K. Zildjian Cymbal.

Distinguishing characteristics: relatively small cup diameter; relatively high cup.

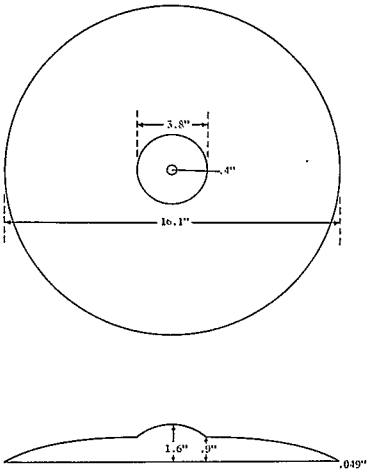


Figure 4.--Old K. Zildjian Cymbal.

Distinguishing characteristics: relatively large cup diameter; flat bow; small hole.

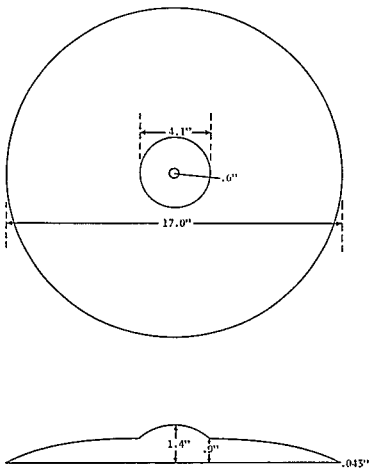


Figure 5.--17" Paiste Cymbal.

Distinguishing characteristics: largest hole of all cymbals studied; thinnest of all cymbals studied.

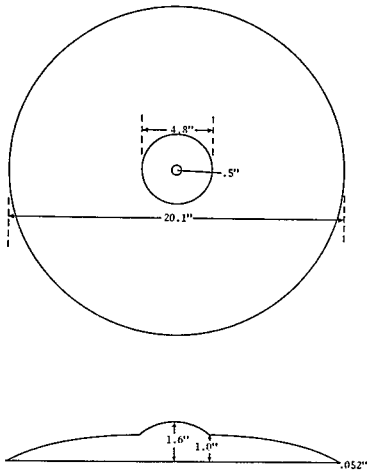


Figure 6.--20" Paiste Cymbal.

Distinguishing characteristics: cup height same as New K. Zildjian; largest bow height; largest overall diameter of all cymbals studied.

The cymbals were supported by a regular floor stand, consisting of a Premier flush-base with rubber feet, a metal shaft, and a Slingerland cymbal tilter. The tilter post was insulated with rubber tubing and the cymbal rested on a felt washer. The stand was adjusted so the edges of all the cymbals were three feet from the floor.

Three implements were used on the cymbals: Musser yellow yarn (M8); Musser red yarn (M6); and Deagan brown cord with red stitching (#2014-C). The Musser series of yarn implements is color and number coded, with the yellow (M8) being larger and softer than the red (M6). The Deagan series of brown cord implements is also color and number coded, with the #2014-C being the hardest of a set of four. Each implement head was mounted on a 3/8" x 13" birch shaft.

The basis of the striking mechanism (Figure 7) was an "Eatons' Vibration Demonstrator" (#3325), a flat-spring apparatus built by the Welch Scientific Company. This apparatus was mounted on a heavy metal stand, adjustable for the proper striking angles, and insulated with rubber tubing. Wooden blocks fastened to the springs were drilled out to accommodate the various implement shafts. An arbitrary scale was also fastened to the apparatus in order to help maintain continuity of the striking forces.

The two striking points used on the cymbals are shown in Figure 8. The first point *(edge)* was located 1" from the edge on the small cymbals, and 1 1/2" from the edge on the 20" Paiste cymbal. The second point *(cup)* was located near the cup, but was still measured from the edge: 5" from the edge on the Avedis Zildjian, the New K. Zildjian, and the Old K. Zildjian cymbals; 5 1/2" from the edge on the 17" Paiste cymbal; and 6 1/2" from the edge on the 20" Paiste cymbal.

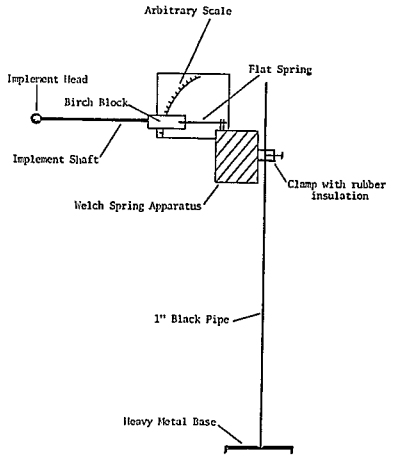


Figure 7.--Striking Mechanism.

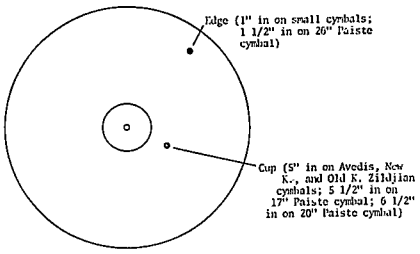


Figure 8.--Striking Points Used on Cymbals.

At both striking points, the implement was parallel to the plane of the cymbal at impact (0^0 striking angle).

The force or loudness of the various dynamic levels used (ff, mf, and pp) was measured by a sound level meter built by General Radio Company (#1551-C). The meter was held at the same position as the microphones--at a distance of 5 1/4' from the instruments and at a height of 6 1/2'. The meter was set on "fast" and the weighting was set on "C" (thus insuring equal influence from 20 to 20,000 cps, limited only by the capabilities of the microphone).

The dynamic levels and their decibel equivalents at impact for the suspended cymbals were as follows: ff = 95 decibels; mf = 85 decibels; and pp = 78 decibels.

Consistency of these levels was maintained throughout the recording sessions by a combined use of the arbitrary scale on the striking mechanism and the VU meter on the recorder.

The microphone used was a Neuman condensor microphone #C-47/64). The microphone was positioned 5 1/4' from the instruments at a height of 6 1/2'.

The recorder used was a Magnecord (#1028). The recording was done on "Channel 1," with the record level set at "4" and with a tape speed of 15" per second. The tape used was Scotch # 210, cut into 31" loops spliced with Scotch splicing tape.

The overall dimensions of the recording studio were: length 21', width = 17 1/4', and height = 8'. The locations of the microphone stand, the instrument stand, other equipment, and miscellaneous furniture, as well as the presence of various wall materials, are indicated in Figure 9. The numbers inside the outlines of the filing cabinets and bookshelves refer to the heights of these items.

The playback machine was an Ampex console-mounted

Recorder/Reproducer (AAG-350). The playback level used was "7" for the cymbals. The sounds of the instruments were analyzed by a Bruel and Kjaer Frequency Analyzer (#2107) and the resulting graphs were printed out by a Bruel and Kjaer Level Recorder (#2305). Figures 10, 11, and 12 show the playback and analyzing setup-as well as the settings used on the analyzing equipment.

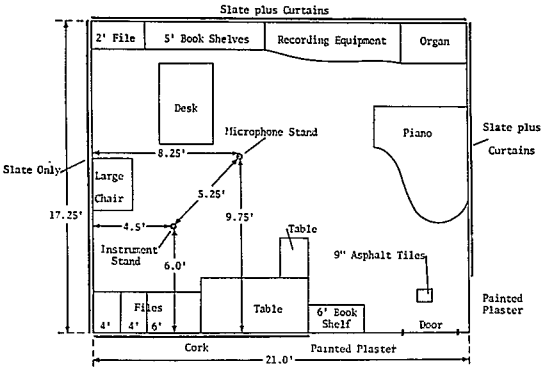


Figure 9.--Recording Studio.

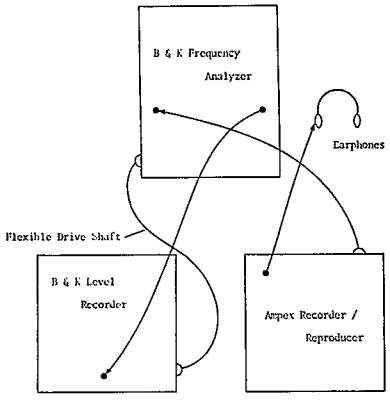


Figure 10.--Playback and Analyzing Equipment.

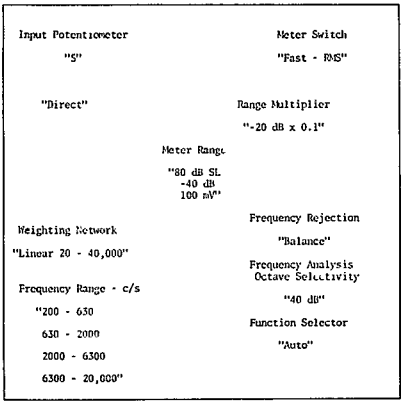


Figure 11.--Settings on Frequency Analyzer #2107

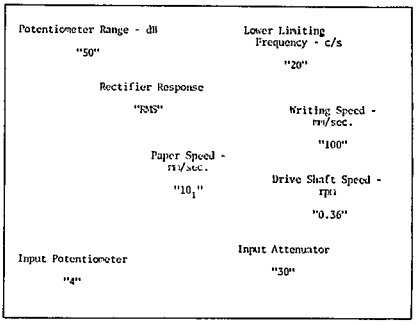


Figure 12.--Settings on Level Recorder #2305.

Following the proper placement and adjustment of all necessary equipment, the various sounds that were produced on the cymbals were recorded. To avoid the influence of initial or impact transient sounds, the recorder was activated slightly less than one second after impact. (Although the author recognizes that initial transients are an important aspect of instrumental timbre, their influence was intentionally avoided in this study.) Within the limitations of the operator's reflexes, there was little or no overlap of recorded sound on the tape loops. This meant that a full two seconds of analyzable sound was obtained.

The tape loops were then played back through a reproducer and the sounds analyzed by a frequency analyzer. The resulting graphs of the sounding partials (from 20 to 20,000 cps) and their relative strengths or intensities in decibels, were printed out by a level recorder.

REPORT OF RESULTS

Three graphs were printed to determine what, if any, sounds might be inherent in the recording studio, and the recording and playback equipment. A graph printed with no tape on the playback machine indicated the presence of detectable sounds at 60 and 500 cps. A graph printed from a blank tape indicated the same two frequencies, plus a band of "noise" from 0 to 200 cps. A third graph printed from a tape of the studio background "noise" indicated a broad band of "noise" from 0 to 2000 cps. However, these sounds and "noise" did not seem to influence the results of the investigation to any noticeable extent.

The fundamental resonant frequencies of the studio were 53.33 cps, 64.99 cps, and 125.76 cps. As all recording was done in the same studio, the extent (if any) of the inhibiting or reinforcing effects of the standing waves was not isolated.

The experimental results of the five cymbals examined are listed in Tables 1 through 5 under these headings: implement (Imp)--yellow yarn (Yel), red yarn (Red), brown cord (Cord); striking point (St Pt)--edge (Edge), cup (Cup); dynamic level (Lev)--ff, mf, pp; fundamental (Fund); upper limit (UL); and Energy Peaks, in Decreasing Order of Intensity.

The fundamentals, upper limits, and energy peaks are given in cycles per second (cps). The energy peaks are further identified by decibel ratings (dB)--e.g., 1220/46 indicates a frequency of 1220 cps at an intensity level of 46 dB. It should be noted that the energy peaks, or partials, are listed in decreasing order of intensity, and *not* in order of frequency.

Table 1.--

Fundamentals, Upper Limits, and Energy Peaks of the Avedis Zildjian Cymbal.

Imp	St Pt	Lev	Fund	UL	Energy Peaks in Decreasing Order of Intensity																											
			cps	cps	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB
Yel	Edge	ff	340	20000+	780	49	1200	46	3700	45	340	43	2150	42	4400	42	2650	42	1700	41	6000	41	550	41	440	40	730	40	9000	32		
		mf	340	7500	340	39	780	58	1700	37	1100	36	2150	32	440	30	3600	29	540	27	2700	26	4400	23	6000	13						
		pp	340	2200	770	35	340	32	430	30	540	25	1100	21	1700	15	2150	3														
	Cup	ff	400	20000+	790	49	3800	45	1100	43	1650	42	2150	21	530	41	2750	40	400	39	7200	36	5600	30	10200	23						
		mf	400	7500	750	38	400	36	2150	34	1100	32	4400	29	2900	28	3600	28	1700	27	5600	26										
		pp	400	5000	740	33	560	33	400	30	1000	26	1110	26	1700	21	2300	14	3100	9												
Red	Edge	ff	340	20000+	790	49	4000	45	1700	43	2700	42	1200	41	340	40	2150	39	6000	39	430	38	550	36	7500	32						
		mf	340	9000	770	39	340	35	3600	34	440	33	1200	33	1700	32	2700	30	2150	29	4400	27	550	26								
		pp	340	5000	760	37	340	31	1200	31	1700	30	425	28	540	25	2150	22	2700	16	3600	14	440	10								
	Cup	ff	400	20000+	800	47	2400	43	4400	42	4650	41	3600	41	2150	41	1700	40	400	39	1100	38	540	34	8800	25						
		mf	400	9000	300	38	1200	37	400	36	2150	36	1100	36	2800	35	3600	34	1700	33	4400	31	7400	10								
		pp	400	4500	1200	32	730	29	400	27	800	26	1675	21	540	19	2350	17	3600	6												
Cord	Edge	ff	340	20000+	760	50	4000	47	1700	43	1200	43	2850	42	2150	41	6000	41	2700	40	340	39	430	38	540	36	8900	35	12000	21		
		mf	340	10000	760	42	3600	40	340	37	1200	37	1700	36	440	35	2350	35	2750	34	2150	33	4500	33	7400	16	8500	12				
		pp	340	7000	770	38	1650	34	1200	34	340	33	420	30	2100	29	550	28	2350	27	2700	25	3600	25	4300	19	5300	9				
	Cup	ff	400	20000+	790	48	1200	48	4000	44	1700	43	2600	42	2100	42	400	38	540	34	6500	34	8800	26								
		mf	400	8500	1200	37	8000	36	400	32	2650	31	3600	30	2150	29	1700	29	4400	29	550	23	7500	6								
		pp	400	6300	1200	38	730	34	920	31	400	28	1660	28	2350	27	2150	26	2650	25	4400	24	540	21	3600	18						

Table 2.--

Fundamentals, Upper Limits, and Energy Peaks of the New K. Zildjian Cymbal.

Imp	St Pt	Lev	Fund	UL	Energy Peaks in Decreasing Order of Intensity																					
			cps	cps	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB
Yel	Edge	ff	255	20000+	4100	45	3200	44	2400	43	550	43	740	42	1700	41	6400	40	1100	39	980	39	7200	38	310	33	235	25
		mf	235	9500	550	42	3200	39	740	38	1650	37	1120	36	2350	35	4200	35	310	24	235	19						
		pp	235	3600	560	38	730	34	1100	27	1650	22	410	19	310	15	2450	15	235	12	3100	8						
	Cup	ff	440	20000+	4000	46	720	44	3150	45	600	43	2350	41	1800	40	7000	39	1050	37	1160	37	440	33				
		mf	370	10000	560	42	720	39	1600	37	2350	34	3150	33	4200	32	1240	32	370	24	7200	13						
		pp	340	2300	410	38	750	27	340	26	1220	20	1900	12														
Red	Edge	ff	235	20000+	3200	43	4100	42	560	42	730	41	1700	40	2350	40	6400	36	1100	36	410	29	310	21	235	12		
		mf	235	10000	560	41	740	38	420	37	2350	37	3200	26	1700	55	1100	34	980	33	310	25	235	14				
		pp	235	6000	560	40	740	36	1700	30	1020	27	2400	26	3200	24	410	23	4100	20	310	17	235	12				
	Cup	ff	360	20000+	4100	45	3200	44	560	43	2350	42	740	42	1700	41	1010	39	7200	36	410	35	360	22				
		mf	420	10000	570	41	3200	40	800	39	1750	38	4200	37	2400	36	420	35	1200	33	1000	32						
		pp	410	5500	540	34	740	32	410	28	970	27	1700	27	1090	26	2300	22	3200	19	4100	14						
Cord	Edge	ff	235	20000+	4100	44	3200	43	560	42	750	41	1650	41	2350	40	1100	39	310	29	235	22						
		mf	235	12000	560	41	740	38	3200	37	2550	36	4100	36	1700	35	1100	33	410	28	310	26	235	13				
		pp	235	6000	600	39	750	35	1550	32	1000	26	2500	26	3200	23	425	20	4250	16	320	12	235	10				
	Cup	ff	410	20000+	3200	42	4100	41	740	41	1700	39	2450	38	6400	36	1020	36	1110	36	410	30						
		mf	410	10000	3200	40	740	38	2250	37	1650	36	560	36	4100	35	1100	34	410	33	7000	20						
		pp	410	6300	560	35	970	32	750	32	1700	30	2350	27	3200	27	410	27	4100	21								

Table 3.--

Fundamentals, Upper Limits, and Energy. Peaks of the Old K. Zildjian Cymbal.

Imp	St Pt	Lev	Fund	UL	Energy Peaks in Decreasing Order of Intensity																											
			cps	cps	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB
Yel	Edge	ff	225	20000+	2400	49	3700	47	1350	46	3000	46	4700	44	780	43	400	42	520	41	6500	39	630	38	310	37	225	20				
		mf	225	6000	520	43	400	40	1900	39	760	38	1350	38	940	36	310	36	2850	33	2500	32	3700	27	225	16						
		pp	220	2100	440	36	520	33	780	32	630	27	310	26	1340	19	220	12	1900	7												
	Cup	ff	330	20000+	1250	50	2900	48	2850	45	750	44	410	42	1250	41	1450	39	640	38	330	37	550	35	8500	24						
		mf	330	5500	750	36	410	35	2000	34	1250	33	525	33	840	32	2900	29	330	29	1500	37	3800	18								
		pp	330	1400	410	31	330	26	700	24	1250	13	1090	11																		
Red	Edge	ff	225	20000+	1950	47	2500	45	2900	44	3600	45	400	42	525	42	880	41	1200	41	1030	40	760	39	310	37	630	36	225	16		
		mf	220	9000	410	42	520	41	2500	40	1900	40	775	38	1350	37	630	35	4000	34	1050	33	310	33	225	13						
		pp	220	3000	410	34	520	31	310	27	760	26	630	20	1090	20	1325	18	1900	13	220	12	2500	5								
	Cup	ff	330	20000+	1900	50	2850	48	3600	46	1300	45	400	43	850	40	760	40	330	37	630	36	520	34	8900	35						
		mf	330	6000	400	42	1250	38	2175	37	740	37	330	34	640	33	1100	33	950	31	2850	30	3650	24								
		pp	330	3000	410	32	700	30	330	26	1250	25	520	24	1100	23	1900	17	2850	6												
Cord	Edge	ff	220	20000+	2000	50	3000	47	3850	45	245	44	400	43	1310	42	1500	42	775	41	6500	29	310	38	500	37	630	36	220	16		
		mf	225	8000	410	43	520	42	760	41	2500	40	1900	39	310	35	630	35	940	34	1075	34	1350	34	3600	29	4400	28	225	15		
		pp	225	4500	410	36	520	36	750	31	1350	28	875	27	310	26	2050	24	1075	23	2500	22	2800	19	225	12	3600	11				
	Cup	ff	330	20000+	2000	47	2950	44	3700	43	1300	42	2500	41	400	41	1000	39	870	37	6500	36	330	34	520	34	770	34				
		mf	330	7500	400	42	840	36	2300	35	1900	35	1450	33	1325	32	1100	32	640	32	2800	31	530	31	330	28						
		pp	330	4500	700	34	410	33	1325	29	825	28	2000	27	930	26	1060	25	330	24	510	24	2850	21	2500	19	3700	12				

Table 4.--Fundamentals, Upper Limits, and Energy Peaks of the 17" Paiste Cymbal.

Imp	St Pt	Lev	Fund	UL	Energy Peaks in Decreasing Order of Intensity																							
			cps	cps	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB
Yel	Edge	ff	285	20000+	740	47	3600	46	2850	45	1500	44	5000	45	540	45	920	42	7000	42	2100	41	1050	41	425	41	350	40	285	37
		mf	285	9300	700	42	1000	37	1500	37	525	35	425	34	2850	33	3700	32	355	30	4700	29	285	25						
		pp	285	3100	700	34	920	31	520	30	1500	27	360	22	285	18	2900	12	2200	10										
	Cup	ff	390	20000+	740	50	290	49	3600	48	920	45	2200	42	290	42	525	41	1475	21	1900	41	1125	40	8500	35	1100	28		
		mf	390	8000	650	48	750	45	390	38	920	38	1200	37	1600	36	2950	35	3900	35	2150	31								
		pp	400	2150	630	36	720	34	400	29	920	22	1200	19	1600	15														
Red	Edge	ff	285	20000+	700	48	2900	46	4100	45	4800	44	6800	45	1500	42	920	41	2100	40	500	49	330	36	11100	31	285	26		
		mf	285	11000	720	46	3600	42	1500	39	1000	39	920	39	530	38	2850	38	4700	37	425	35	2200	34	355	32	285	24		
		pp	290	5000	920	34	725	33	540	30	360	29	1100	28	1500	27	1300	24	2100	21	2850	19	290	18	3600	15				
	Cup	ff	390	20000+	630	50	3800	48	2900	47	2200	44	4700	45	1500	42	390	41	1040	40	1200	39	920	38	7800	38				
		mf	390	9000	650	41	730	38	1640	37	3900	35	1220	33	390	32	950	32	2800	28										
		pp	330	4500	630	40	710	37	900	33	1600	30	390	29	1100	28	2850	21	3850	15										
Cori	Edge	ff	290	20000+	700	49	2900	47	4000	46	1450	43	2050	41	540	41	1200	40	1100	39	910	38	330	36	420	35	11000	33	290	26
		mf	290	11400	740	41	2900	40	3700	39	1500	38	500	37	4750	36	1000	36	2160	35	650	35	450	32	360	30	290	18		
		pp	290	6000	720	34	920	34	1500	29	1100	28	540	28	2900	27	455	26	370	23	290	13								
	Cup	ff	390	20000+	630	50	3900	48	2900	46	740	44	5500	45	900	42	2150	41	1475	40	540	40	390	39	8000	36				
		mf	390	9300	630	45	730	42	1650	39	3900	36	1030	36	1200	34	3200	33	4600	32	390	31	8000	10	9000	7				
		pp	400	6000	630	39	700	37	920	35	1500	33	400	30	1100	29	2900	24	2200	23	3900	20								

Table 5.--Fundamentals, Upper Limits, and Energy Peaks of the 20" Paiste Cymbal.

Imp	St Pt	Lev	Fund	UL	Energy Peaks in Decreasing Order of Intensity																							
			cps	cps	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB	cps	dB
Yel	Edge	ff	330	20000+	3900	50	2300	49	3000	48	1700	47	440	46	1200	45	800	40	630	39	900	37	330	47	8500	34	11000	21
		mf	330	7500	450	45	550	39	2300	37	1200	36	3200	35	1700	35	800	35	330	35	3900	31	1000	31	650	30	5200	23
		pp	320	3500	450	40	540	34	320	35	800	29	660	28	1280	25	1700	22	2200	14	2900	8						
	Cup	ff	380	20000+	380	50	440	49	2900	48	2300	45	1200	42	1700	42	800	41	550	40	5200	40	890	39	11250	16		
		mf	380	6000	380	45	1160	37	560	34	760	34	900	32	1700	30	2250	29	3100	27	4100	19						
		pp	380	2000	380	40	550	26	1300	25	900	22	1000	19	740	19	1900	6										
Red	Edge	ff	330	20000+	3300	50	425	47	2250	45	800	42	1800	41	5100	41	1160	40	1500	40	325	38	630	37				
		mf	330	9000	425	43	1160	40	540	37	800	36	3200	36	2300	36	1700	35	2600	35	3000	35	900	34	3900	33	350	32
		pp	320	5000	390	37	430	36	540	33	320	32	1275	31	800	30	2200	28	1700	27	650	27	2900	22	3300	20		
	Cup	ff	330	20000+	380	47	3000	46	2200	45	3800	44	1800	42	800	40	1200	39	570	38	890	38	650	35				
		mf	380	7000	380	41	1160	38	550	34	2300	33	900	32	1700	31	3000	31	3400	31	730	30	660	28	3800	27		
		pp	380	4000	380	40	1250	30	540	28	900	26	1700	25	2200	23	730	19	2850	17								
Cord	Edge	ff	320	20000+	430	49	2300	47	2900	45	3800	44	1200	43	8000	43	5250	42	1700	42	525	41	660	39	320	38	7700	32
		mf	320	10000	430	42	2900	41	2800	40	8000	38	550	37	1250	37	3350	37	1700	35	1000	33	320	32				
		pp	320	6000	430	41	2200	34	800	33	530	32	1250	32	1800	31	320	31	2900	30	4000	23						
	Cup	ff	380	20000+	380	48	2900	46	2300	44	1200	42	4300	41	5200	40	1800	40	800	38	570	38	650	35	7500	25		
		mf	380	7000	380	42	900	35	520	35	2350	34	2900	33	1100	33	1800	32	3400	32	750	29	3800	27				
		pp	380	5000	380	29	1260	34	1700	29	550	28	2250	28	885	28	2600	26	2850	24	3300	20						

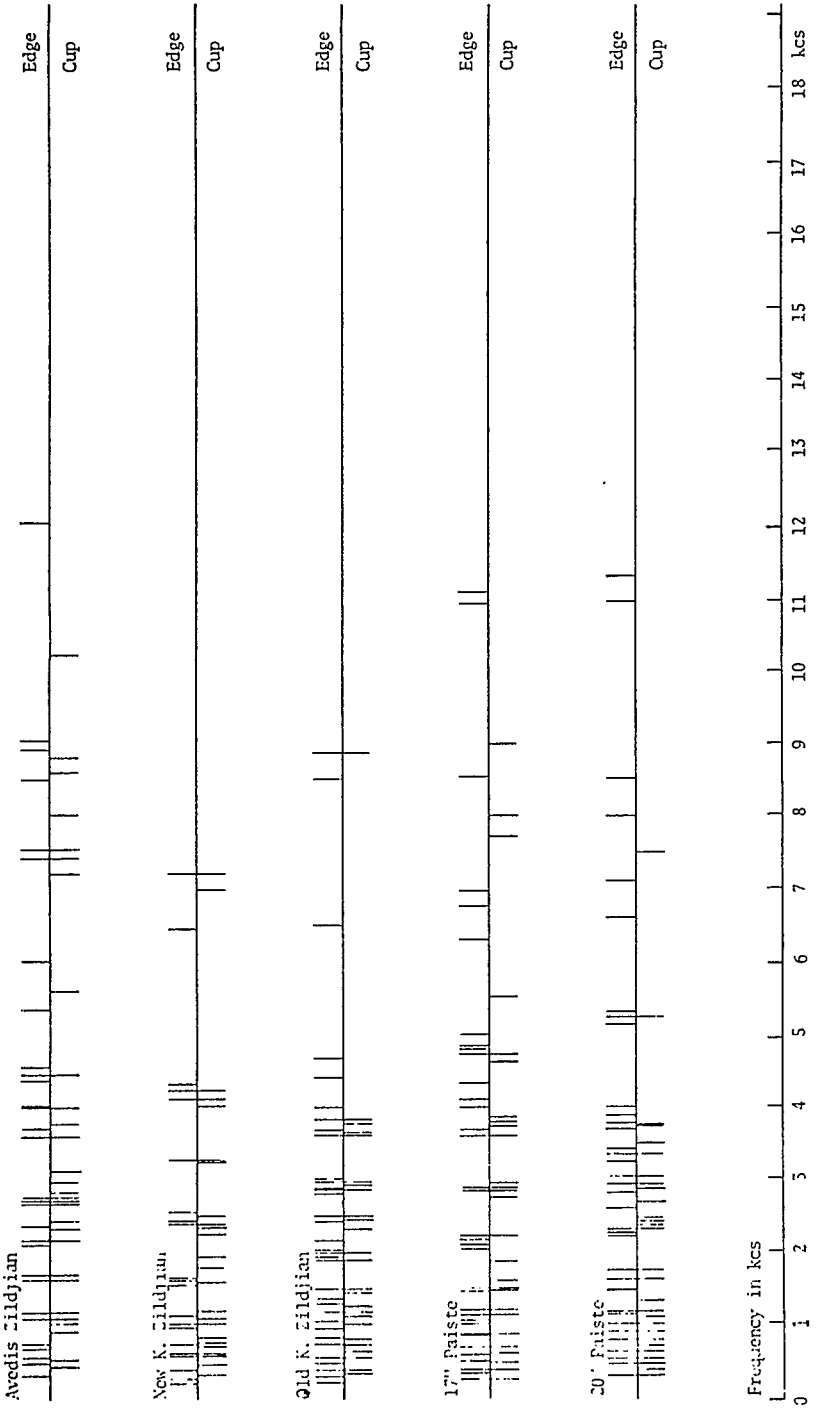


Figure 13.--Analyzed Overtone Structures for Cymbals.

The partials and their frequencies presented above in Tables 1 through 5 form the basis for Figure 13. By plotting each partial's frequency on a horizontal scale marked in thousands of cycles per second (kcs), the overtone structures of the cymbals may be observed and compared. Frequencies produced by striking at the edge of the cymbals are indicated by the vertical lines *above* the frequency scales, and those produced by striking at the cup of the cymbals are indicated by the vertical lines *below* the frequency scales. Overtone intensities are not a factor in Figure 13.

The five cymbals studied, exhibited somewhat similar overtone structures, producing five rather definite groups of partials under 5000 cps. The 20" Paiste cymbal's groups were the lowest in frequency (320 to 1275 cps; 1500 to 1900 cps; 2200 to 2600 cps; 2850 to 3400 cps; and 3800 to 4300 cps), and the 17" Paiste cymbal's groups were the highest in frequency (285 to 1640 cps; 1900 to 2200 cps; 2850 to 2950 cps; 3600 to 4100 cps; and 4600 to 5000 cps).

A further similarity among the cymbals was the presence of relatively few partials above 5000 cps. The Avedis Zildjian cymbal had the most evenly distributed partials, and the New K. Zildjian cymbal had the most clearly grouped partials with wide spaces between the groups.

O

Practical Mallet Studies

By Bob Tilles,
Associate Professor of Music
DePaul University, Chicago, Illinois

Improvising Blues and Tunes

Improvisation contains the ingredients of chords, scales, and accidentals.

When these components are used in an interesting rhythmic structure, a solo has been created and the taste of the player has been presented to the audience.

Obviously, every person has his (or her) idea of what constituites a "Good" solo. The obvious point is that there *is no rule* about soloing other than patterns that fit the tune and the opinion of the player.

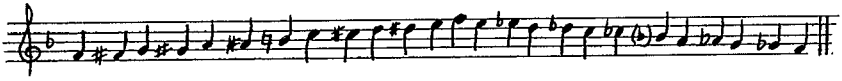
We practice the possible chord, scale tones, and accidentals or alterations to have these ingredients available when needed.

The following exercises are important only in the respect that the scale tones and arpeggios can become part of the players technique and knowledge and can be used instantly when the improvised solo is being created.

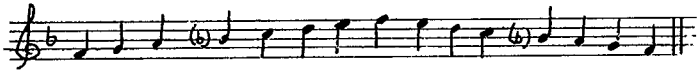
Two mallets - two octaves up and down - use any desired sticking - transpose and play in *every key!*

6 SCALES -- EXAMPLE, F ROOT - ONE OCTAVE-(Extend to Two Octaves).

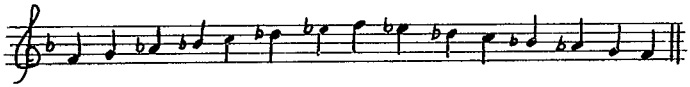
F Chromatic



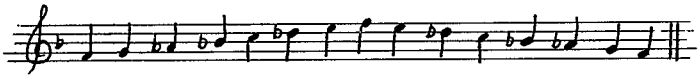
F Major



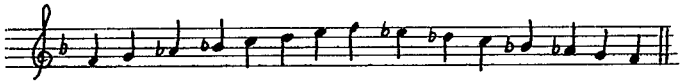
F Natural Minor Scale (Parallel to Ab Major)



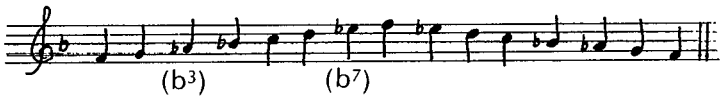
F Harmonic Minor Scale (Parallel to Ab Major)



F Melodic Minor Scale (Parallel to Ab Major)



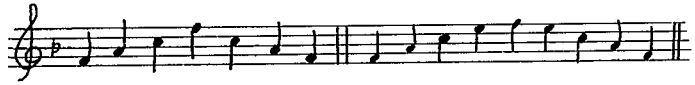
**F Simple Blues Scale* (b^3 and b^7)



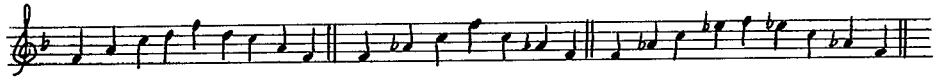
*The Blues Scale is the same as the Dorian Minor Scale

16 CHORDS (ARPEGGIOS)

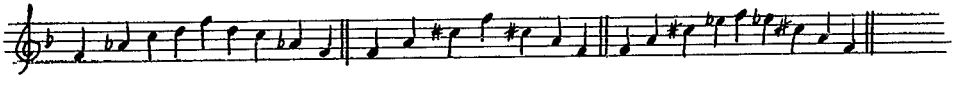
F Major Chord *F Maj.7 Chord*



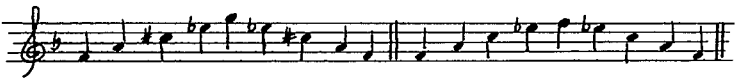
F Maj.6 Chord *F Minor Chord* *Fm7 Chord*



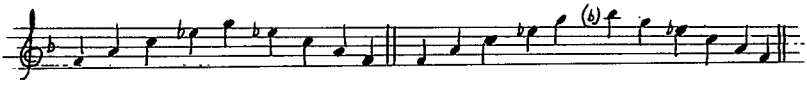
Fm6 Chord *F Aug5th Chord* *F Aug.7th Chord*



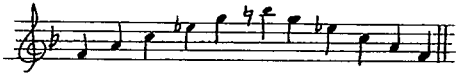
F Aug. 9th Chord *F Dom7 Chord*



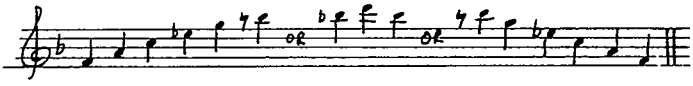
F Dom.9th Chord *F Dom.11th Chord*



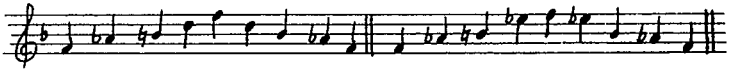
F Aug. 11th Chord



F Dom.13th Chord



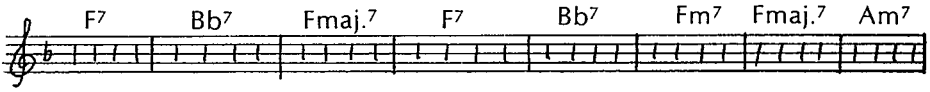
F Dim.7 Chord *F Half Dim. 7th Chord*

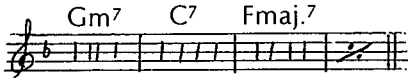


Apply the scale and chord tunes to improvising the following blues in major and minor and then to any tune or progression.

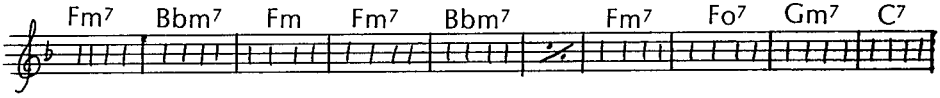
NOTE: It is important to practice these exercises in *every key!*

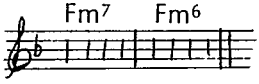
Blues in F Major





Blues in F Minor





PERCUSSION SOLOS AND ENSEMBLES MOST OFTEN PERFORMED IN COLLEGE STUDENT RECITALS

by Merrill Brown

(This article is based on material compiled by the writer in **Wind and Percussion Literature Performed in College Student Recitals (1971-72). Copright 1974. Permission was granted to the Percussive Arts Society to publish the following.)**

About the Author

Merrill Brown is professor and chairman of the music department at The University of Toledo. He received his BM degree from Simpson College, MME degree from Drake University, and PhD from the University of Iowa. His teaching experience includes directing bands and orchestras for ten years in Iowa public schools, eight years at Carthage College, and six years at Dakota State College. He is in his second year at Toledo. Besides his membership in the Percussive Arts Society, his memberships include Pi Kappa Lambda, Phi Beta Mu, Phi Mu Alpha Sinfonia, CBDNA, NACWPI, and MENC. Articles by Brown have appeared in several national music periodicals.

Locating worthwhile and suitable music literature is one of the most important responsibilities facing the applied music teacher. This presents special problems for the percussion teacher since percussionists have not had the extensive or established repertoire from which to make their selections as have wind, string, and keyboard performers. The problem of selection does not automatically become easier as more and more percussion compositions become available. Because it is too expensive to order a large quantity of music in the hope that some of it may be suitable and musically worthwhile some means of selectivity must be found. Knowing what other teachers are using can be helpful. The writer conducted a survey of leading colleges and universities to determine what music is actually being performed in college student recitals.

Various "recommended" solo and ensemble lists are available for percussionists. These lists are usually of value and interest to teachers but the lists understandably reflect the bias and personal tastes of their compiler. The lists below, however, reveal what is actually being performed and thus, in effect, become composite " recommended" lists. By examing these lists teachers may compare their judgment with the collective judgment of their colleagues. Many teachers, especially those new in the field, will discover in these lists some frequently performed literature with which they are unfamiliar. These compositions, which have received the endorsement of their colleagues, deserve investigation for possible use in developing an expanding teaching and performance repertoire. The results of this survey indicate that a standard repertoire for percussionists has not yet emerged as clearly as for the wind instrument players. Nevertheless, the lists can serve as one guide in the selection of music.

To collect the necessary information for this survey a request was sent to 701 college and university music departments in the United States asking that they send a copy of all student recitals performed during the 1971-72 school year. The schools contacted were members of the National Association of Schools of Music and/or schools listed in the **College Music Society Directory** which appeared to have an applied wind and /or percussion staff. Programs were received from 273 schools representing forty-eight states and the District of Columbia.

An estimated 4,500 printed programs were received. From these programs a total of 15,607 performances were tabulated--10,995 solo and 4,612 ensemble. These included 1,700 performances involving percussionists--921 solo and 779 ensemble. This article is concerned only with the results pertaining to percussion performances. Compositions by undergraduate students, where they could be so identified, were not included in the survey results.

Performance Totals, Number of Different Compositions, and Number of Different Composers

Instrument or Ensemble	Total Performances	Number of Different Compositions	Number of Different Composers
Mallet Instrument	397	178	107
Multiple-Percussion	208	84	54
Timpani	191	58	35
Snare Drum	122	71	38
Miscellaneous	3	3	3
Solo Totals	921	394	
Percussion Ensemble	634	356	247
Percussion with Winds	130	62	56
Percussion with Voice	15	9	7
Ensemble Totals	779	427	
Solo and Ensemble Totals	1,700	821	

SOLO PERFORMANCES

The following information concerning each solo is reported.

1. Total number of performances.

2. Number of performances on "General" recitals. These were programs which gave no indication of being either a "Senior" or "Graduate" recital.

3. Number of performances on recitals specified as a "Senior" recital.

4. Number of performances on recitals specified as a "Graduate" recital. These include both masters and doctoral recitals.

A certain degree of musical worth or difficulty may be inferred it a composition was used on a "Senior" or "Graduate" recital.

Because the name of arrangers were so seldom included on the printed program they have not been included here.

Instrument abbreviations: M - Mallet Instrument
MP - Multiple-Percussion
SD - Snare Drum
T - Timpani

Listed in order of frequency of performance

Composition-Composer	Instrument	Total Perf.	Gen	Sen	Grad
Eight Pieces for Four Timpani - Elliot Carter (12 were specifically listed as "Recitative and Improvisation")	T	34	14	17	3
Concertino for Marimba, Op. 21 - Paul Creston	M	30	19	10	1
Concerto in A Minor (Violin) - J. S. Bach	M	15	12	1	2
French Suite - William Kraft	MP	15	7	5	3
Concerto for Percussion and Small Orchestra (Piano) - Darius Milhaud	MP	13	5	7	1
Sonata for Marimba and Piano - Peter Tanner	M	12	8	3	1
Six Unaccompained Solos for Snare Drum (Selections from) - Michael Colgrass	SD	12	9	3	
Sonata for Tympani - John Beck	T	11	10	1	
Sonata - Allegro (Marimba and Piano) - Mitchell Peters	M	11	8	2	1
Sonatina for Timpani and Piano - Alexander Tcherepnin	T	11	6	5	
Three Dances for Solo Snare Drum - Warren Benson	SD	10	7	3	
King of Denmark - Morton Feldman	MP	10	5	3	2
Four Pieces for Timpani - John Bergamo	T	9	5	2	2
Concertino for Tympani and Brass - Michael Colgrass	T	9	5	2	2
Sonata for Three Unaccompained Kettle Drums - Daniel Jones	T	9	5	3	1
Preludes, Op. 37, No. 1-7 - Serge de Gastyne	M	9	4	3	2
26 Solo Etudes for Tympani (Secections from) - Vic Firth	T	8	7	1	
Rondo for Marimba and Piano - Theodore Frazeur	M	8	6	2	
Concerto for Marimba and Vibraphone - Darius Milhaud	M	8	2	4	2
Etude for Marimba - Clair Omar Musser	M	8	2	3	3
Sonata for Three Unaccompained Timpani - Phillip Ramey	T	8	6	2	
Sonata for Percussion and Piano - Armand Russell	MP	8	3	4	1
Toccata for Marimba - Emma Lou Diemer	M	7	5	1	1
Sabre Dance - Aram Khachaturian	M	7	5	2	
Adventures for One - Robert Stern	MP	7	2	5	
Zyklus No. 9 - Karlheinz Stockhausen	MP	7	3	2	2

Valse No. 7, Op. 64, No. 2 - Frederic Chopin	M	6	4	2	
Suite for Marimba - Alfred Fissinger	M	6	2	2	2
Scherzo for Four Timpani and Piano - Didier Graeffe	T	6	5	1	
Sonata No. 3 in F Major - G. F. Handel	M	6	3	3	
Morris Dance - William Kraft	MP	6	2	4	
Inspiratiions Diabolique - Rich Tagawa	MP	6	3		3
Concert Asiatique for Percussion and Piano - Henri Tomasi	MP	6	3	3	
Connecticut Halftime - Traditional	SD	6	4	2	
Partita No. 1 for Solo Violin - J. S. Bach	M	5	1	2	2
Partitia No. 3, from Six Unaccompained Violin	M	5	3	2	
Sonatas and Partitas - J. S. Bach	M	5	3	2	
Hungarian Dance No. 1 & 5 - Johannes Brahms	M	5	3	2	
Spanish Dance - Thomas Davis	MP	5	3	2	
Theme et Variations - Yves Desportes	MP	5	1	4	
Hora Staccato - Grigoras Dinicu	M	5	4	1	
Concertino for Marimba - George Frock	M	5	3	2	
Ballad for the Dance - Saul Goodman	T	5	2	3	
Three Camps - Haskel Harr	SD	5	5		
Shortin' Bread - Joe Morrello	MP	5	4	1	
Rondo for Four Tom Toms - Mitchell Peters	MP	5	2	2	1
Two Archaic Dances - Armand Russell	M	5	4	1	
Four Bagetelles for Vibes - Gitta Steiner	M	5	2	2	1
Concerto for Timpani and Orchestra - Werner Tharichen	T	5	3	1	1

15 compositions received 4 performances
30 compositions received 3 performances
56 compositions received 2 performances
245 compositions received 1 performances

ENSEMBLE PERFORMANCES

Listed in order of frequency of performance

Total Performances	Composition-Composer	Number of Players Required
12	Toccata for Percussion Instruments - Carlos Chavez	6
11	Three Brothers - Michael Colgrass	9
10	Streams - Warren Benson	7
9	October Mountain - Alan Hovhaness	6
8	Duets for Percussion - Michael Colgrass	2
8	The Swords of Moda-Ling - Gordon Peters	8
8	Prelude and Allegro - Edward Volz	5
7	Woodwork for 4 Percussionists - Jan Bach	4
7	Symphony for Percussion - Stanley Leonard	9
6	Sonata for Two Pianos and Percussion - Bela Bartok	4-5
6	Musica Battuta - Harold Schiffman	7
6	Percussion Music for Three Players - Gerald Strang	3
5	Trio for Percussion - Warren Benson	3
5	Interactions - John Bergamo	
5	Four Movements for Percussion ((4 for Percussion) - Donald Erb	4
5	Encore in Jazz - Vic Firth	7
5	Fanfare for Percussion - Alyn Heim	5

5	Contrarhythmic Ostinato - Cole Iverson	6
5	Toccata for Marimba and Percussion Ensemble - Robert Kelly	7-8
5	Sabre Dance - Aram Khachaturian	4
5	Three Dances - Jack McKenzie	3
5	Ionisation - Edgard Varese	13
5	Spice Island - Paul Zonn	

16 compositions received 4 performances
25 compositions received 3 performances
50 compositions received 2 performances
242 compositons received 1 performances

PERCUSSION WITH WINDS

(Does not include brass ensembles using timpani)

Total Performances	Composition-Composer
10	Diversions for Flute and Marimba - Peter Tanner
9	Pastorale for Flute and Percussion (Duet) - Jack McKenzie
9	Pas de Deux for Bb Clarinet and Percussion - Armand Russell
6	Duettino Concertante for Flute and Percussion - Ingolf Dahl
5	The Burning House Oveture for Flute and Percussion- Alan Hovhaness (flute, 3 percussionists)

4 compositions received 4 performances
4 compositions received 3 performances
14 compositions received 2 performances
35 compositions received 1 performance

PERCUSSION WITH VOICE

African Welcome Piece (Percussion ensemble and optional unison voices - 13+ performers) - Michael Udow

1 composition received 2 performances
7 compositions reveived 1 performance

Percussion Material Review

by
Mervin Britton and Sanford Siegal

QUINTETS

CLOCKS For Five Percussionists, Frank McCarty, $2.25; Media Press.

This is a type of chance music within a given structure of repetitive patterns and cues from a conductor. The technical aspects for each performer are not difficult, but each must be secure on his own part in order to have a musical performance of the ensemble.

MARSHALL'S MEDIUM MESSAGE, Roger Hannay, $3.75; Media Press.

Theatric visual images as well as sound are a part of this composition. The improvisational structure falls into seven sections. Graphic notational charts are used as guides for rehearsal, but not for performance.

OBELISK For Five Percussionists, David Cope, $2.50; Media Press.

The entire score and parts for five players consists of one sheet with notes inside two large boxed areas. The players improvise within a set form, following the noted indications inside the boxes.

THREE CINQUAINS For Alto Voice & Chamber Ensemble, Robert Lombardo, $15; Palle D'oro Press.

Vibraphone, flute, bassoon, violin, and contrabass are the instruments for this short three movement work. A great number of meter changes within this short span, combined with interplay of the parts, make this work difficult to put together. Unless the performers are all accustomed to this style, a conductor will be needed in order to save excessive rehearsal time.

PATTERNS FOR PERCUSSION, Robert Keys Clark, $6.50; (Clara Publication) Theodore Presser Co.

As an unpublished manuscript, this composition has had some circulation. It uses standard notation as well as standard percussion instruments. It is a series of rhythmic patterns with some simple development through meter changes. An average university section should find it easy to put together.

OSTINATO FOR PERCUSSION QUINTET, Richard Bernard; Mitchell Peters.

A high school percussion section with good players and four timpam will find this short composition to be a good contest number.

MATINEE D'IVRESSE, Hugh Hartwell; Jaymar Music Limited; Box 3083 London 12, Ontario.

Violin, cello, Bb Clarinet, piano, and percussion are all of equal importance in this difficult composition. It is quite suitable for graduate level or faculty recital. A score is apparently necessary for each performer. The score is printed on large unbound pages only on one side in order to avoid problems of page turns.

PROGRAM NOTES For Flute, Bass Clarinet, Vibraphone, Soprano, Contrabass; Robert Lombardo, $20; Palle D'oro Press.

Although written in metered standard notation, this composition of six minutes will pose some problems without a conductor. It is written in the contemporary idiom.

MARCH HUMORESQUE, Rex Hall, $2; Carl Fischer, Inc.

Humoresque is aptly titled. It is a parody on the old vaudeville percussion sound effects. Instruments include train bell, wind whistle, bird call and many others written among the five performers.

CRAZY RHYTHM, Meyer, Kahn, arr. Feldstein, $2.50; Warner Bros. Seven Arts, Inc.

Two mallet players capable of simple double stop performance are necessary for this easy quintet. The piece would be good for students and audience who like to hear percussion built around a popular tune.

FASCINATING RHYTHM, Gershwin, Gershwin, arr. Feldstein, $2.50 Warners Bros. Seven Arts, Inc.

As an arrangement of the Gershwin tune, this piece will be interesting for young percussionists and a light variety number on a concert program. Two mallet players must be able to perform single line parts.

QUINTET FOR PERCUSSION, Alexander Lepak, $10; Award Music Co.

Actually, only four percussionists are used as the fifth part is for piano. This is a major three movement work using standard notation with many meter changes. The piece is well constructed and should be of interest to both performers and the audience.

SEXTETS

SUITE FOR TAMBOURINE AND PERCUSSION ENSEMBLE (Six to Ten Players), Shelly Elias, $8.50; Opus Music Publishers, Inc.; Chicago, Illinois.

Accompaniment for this three movement tambourine solo requires instruments that are standard to any school section. Accompaniment techniques are not difficult. The solo part requires a variety of playing techniques that are fully explained in the performance instructions. A long cadenza is included in the last movement. A percussion student who masters the solo should be well prepared for any tambourine orchestral literature written.

B FLAT BAROQUE, Bill Moore, $3; Pro Art Publishers, Inc.

Although this sextet calls for vibraphone, marimba, conga and bongos, some mallet substitutions are possible and tom toms may replace the Latin drums. The parts do not require much technique, but each player has enough demands to keep the piece moving. It has good contest potential for an average secondary school section.

ACOUSTIC SUITE, WILLIAM SCHINSTINE, $6.50; Southern Music Co.

Some instruments might pose a problem in performance in this three movement moderate length composition. Foremost of these

would be the Cuica. Also required are roto drums, vibes, marimba, xylophone or two marimbas. While only two timpani are required, there is an optional part for four. The last movement utilizes fast 7/8 with grouping changes.

PLAISANTERIE, Siegfried Fink, (Otto Wrede) Associated Music Publishers.

This 16 minute sextet covers four distinct movements. Four good mallet and one drum set performers are required. All other instruments are common to an average equipped section. The composition should pose a medium challenge to a university section as well as striking more than an average audience response.

MUSIC FOR PERCUSSION ENSEMBLE AND CONDUCTOR, Greg Steinke, $12.50; HaMar Percussion Publications.

This approximately ten minute composition alternates between standard notation with rather simple rhythmic groupings and graphic notation with improvisation sections. The need for two sets of five cow bells and four tam tams could be a problem for some groups. The use of inverted cymbals placed on timpani heads may produce an unusual sound both in performance and by the individual responsible for replacement of heads.

SEPTETS OR LARGER

OSTENTATION FOR PERCUSSION, John Tatgenhorst; Slingerland Drum Company.

This short septet is a musical training piece for young percussion ensembles. All of the instruments are commonly available. None of the parts present major technical difficulties. The timpani part requires only two drums without tuning changes.

ANCIENT CHINESE TUNES, arr. Picken, Pont, $8.10 Oxford University Press.

This is a collection of nine interesting pieces for recorders, tuned and rhythmic percussion, plucked strings, guitar and optional Bb clarinet. It is not clear to this reviewer if the parts are included in the score price or are extra. While the number of players may vary, all players read from a set of four parts. Rhythms and techniques are quite simple.

CONCERT PIECE FOR ORGAN & SEVEN UNTUNED PERCUSSION INSTRUMENTS, Alec Wyton, $5; (J. Fisher & Bro.) Belwin Mills Publishing Corp.

A complete set of this interesting work for organ and percussion includes an organ score and four percussion parts. It is a moderate length composition blending the sounds of castanets, bass drum, snare drum, suspended cymbal, tambourine, temple blocks and triangle with the colors of the organ. The percussion parts are important to the total sound and are not just accompaniment instruments.

LIBERTY BELL For 10 Percussionists & Tape, Otto Henry, $10.50; Media Press.

Although the composition calls for 10 performers, the number of instruments are quite limited. The only instrumental problem might be a celesta. Notation is standard and the piece should be easy to coordinate with the tape.

RHYTHMOODS, Rex Hall, $3; Carl Fischer, Inc.

Piano or harp and celeste parts are included in this octet. Along with four timpani and xylophone or marimba, all percussion instruments are standard. While there are some simple meter changes, they cover a repetitive two measure phrase.

CEREMONIES OF OLD MEN, Arthur Lauer, $8.50 Opus Music Publishers, Inc.

Three good mallet players are required for this septet as well as a drum set player. Unusual instruments are flexitone, four animal bells, wood, bamboo, and metal wind chimes. Each player must speak a statement as part of the performance.

NO TWO CRYSTALS ALIKE, Arthur Lauer, $10.50; Opus Music Publishers, Inc.

This melodically oriented composition requires electric guitar, piano and string bass in addition to eight percussionists. Orchestra bells, xylophone, vibraphone, and marimba are all necessary for performance. With the potential of the total instrumentation, one might like to have a longer composition to perform.

SPECTRUM NO. 1 GREEN, Arthur Lauer, $10.50 Opus Music Publishers, Inc.

Eight mature percussionists are needed to perform this composition. Each part is technically a challenge and ample rehearsal time will be necessary for problems of ensemble. The required instruments should be available for a university ensemble.

PERCUSSION MOVEMENT (From Symphony No. 1), Alexander Tcherepnin, $5; Theodore Presser Co.

Eight to ten players with standard public school instruments are required for this movement. The composition should be moderately easy for a good high school ensemble as the ostinato type parts present few technical problems. c. 3 minutes.

CONCERTO For Percussion and Wind Ensemble, Karel Husa, $50; Associated Music Publishers.

Five excellent percussionists as soloists with a large battery of common percussion instruments are required for this composition. Also necessary is a good university wind ensemble. Each percussion part calls for extensive performance on melodic percussion instruments. Its interesting to note that with one exception, there are no meter changes within each movement of this 18 minute composition.

WEDGE For Chamber Orchestra, Roger Reynolds, Score $3.50; C.F. Peters Corp.

Two or three percussionists are necessary for this chamber type work. Flutes, trumpets and trombones in pairs along with tuba and double bass complete the orchestration. The notation of this seven

and one half minute composition is basically traditional and the instruments are standard for a university percussion department.

QUICK ARE THE MOUTHS OF EARTH, Roger Reynolds, C. F. Peters Corp.

The orchestration includes oboe, three flutes, three cellos, trumpet, trombone, bass trombone, piano, and two percussionists. Considerable technical ability is required of all performers. Specific notation and performance instructions are included throughout as an aid to interpretation of the standard and graphic notational devices. Percussion techniques include playing on the strings inside the piano. The euration of the piece is c. 18 minutes.

CONCERTINO FOR PERCUSSION, Byong-kon Kim, $12; Mitchell Peters.

This composition is a major work for university level ensembles. In addition to seven percussionists, a pianist is needed. However, the piano is rarely used throughout the piece. Fortunately each player uses only a limited number of standard percussion instruments. Some substitution of instruments is suggested if the originals should be unavailable. Although it is of major proportions, it will not be difficult for an experienced group.

CADENCES

JAZZ ROCK CADENCES, Feldstein-Boberg, $3; Alfred Music Company.

Six cadences comprise this collection for snare, tenor, cymbals and bass drum. The publication includes a score and separate parts. Young rock oriented students should not find these rhythms difficult.

MULTIPLE OPTION CADENCES, Feldstein-Boberg, $3; Alfred Music Company.

These four cadences are written for slow, medium and very fast styles. Instrumentation is standard snare, tenor, cymbals and bass drum.

FANFARES AND CADENCES, Feldstein-Foster, $3; Alfred Music Company.

The collection of four cadences include two standard and two in rock style. The title of Fanfare raises a question not apparently answered in the material. The instrumentation is the same four basic instruments.

AUDIO-VISUAL

BIG PAD & BEAUTIFUL DRUM SET METHOD BOOK & PLAYALONG & PRACTICE KIT, Roy Burns with Jim Petercsak $9.95; First Place Music Publications, Inc. 12754 Ventura Blvd., Studio City, Ca. 91604.

This book explains the performance techniques used in comparison to the notated charts for eight tunes recorded with the Dick Grove Big Band. When used as a complete set, it forms an outstanding learning and practice unit for the advanced student. The total package may be used in a variety of combinations. The arrangements are available for performance, other instrumental kits are available as well as the record or cassette on an individual basis for pure listening enjoyment.

We would like to express our appreciation to these outstanding organizations in the music industry for their support of Percussive Arts Society, Inc. and hope they will continue to consider PAS as a worthwhile and stimulating force in the percussion world.

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PURPOSES OF THE PERCUSSIVE ARTS SOCIETY — To raise the level of musical percussion performance and teaching; to expand understanding of the needs and responsibilities of the percussion student, teacher, and performer; and to promote a greater communication between all areas of the percussion arts.

BOARD OF DIRECTORS REPRESENTATION CATEGORIES — Professional, College, Public School, Student, Private Teacher, Composer, Drum Corps, Dealer, Publisher, Manufacturer, Distributor, and Members at Large.

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SPECIAL NOTE TO STUDENTS — All students with an interest in percussion should take advantage of this excellent opportunity to join PAS. Student membership in this organization along with private lessons from a fine teacher should be the goal of every aspiring percussionist.

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