AN EXAMINATION OF TWO SEXTETS OF CARLOS CHÁVEZ:

TOCCATA FOR PERCUSSION INSTRUMENTS AND

TAMBUCO FOR SIX PERCUSSION PLAYERS

DISSERTATION

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

For the Degree of

DOCTOR OF MUSICAL ARTS

By

Timothy J. Peterman, M. M.

Denton, Texas

August, 1986

This lecture-recital deals with the two percussion sextets of Carlos Chávez. Each of the compositions is analyzed by examining compositional characteristics and performance problems. The selection, substitution, and construction of the necessary instruments for performance are explored. Suggestions for stage set-up are also included.

The percussion ensemble has become an integral part of most high school and university percussion programs. Much of the literature composed for this medium has not become part of the standard literature. Chávez's Toccata has obtained its place in the literature—it is one of the most often performed percussion works in the world. Although Tambuco has not yet attained the same status as Toccata, it is, nevertheless, an important contribution to the literature. An attempt is also made to identify the significance of these works by examining some of the early influences on Chávez's compositional style both from his native Mexico, and from other composers writing for percussion ensembles.
Tape recordings of all performances submitted as dissertation requirements are on deposit in the North Texas State University Library.
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Voices of Change presents
GINASTERA GALA
Monday, May 11, 1981
Caruth Auditorium 8:15

Voices of Change
Personna Musica

7:15 p.m. Discussion
The Music of Alberto Ginastera:
Cultural Roots and Compositional Style
Dr. Malena Kuss,
Assistant Professor of Music, NTSU

8:15 p.m. Concert
STRING QUARTET NO. 3, opus 40
Contemplativo
Fantastico
Amoroso
Di nuovo Contemplativo

This evening's conductor:
Hillian Kraft, Director of Los Angeles Percussion Ensemble

This series of concerts is made possible in part by grants
from the Paul Foundation Chamber Music Residency Program,
administered by Chamber Music America, and the City Arts
Program, Park and Recreation Department, City of Dallas,
and the National Endowment for the Arts in Washington,
D.C., a Federal agency. Co-sponsors for the residency
are the Division of Music, Meadows School of the Arts,
Southern Methodist University, and Radio Station KERA-FM,
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NORTH TEXAS STATE UNIVERSITY
SCHOOL OF MUSIC

DMA Recital

Timothy J. Peterman, Percussion

Assisted by:
Ron Brough—Marimba
Mike Casey—Trumpet
Peggy Heinkel—Euphonium
Thomas Whitaker—Harpsichord

Monday, October 5, 1981 6:30 p.m. Concert Hall

Variations on Lost Love ........................................ David Maslanka
Conversations ................................................. Murray Houllif
Duo for Euphonium and Percussion ..................... Clarence Barber
Movement for Marimba and Harpsichord ............... Raymond Helble
Encounters III ................................................ William Kraft

Presented in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Musical Arts
North Texas State University  
School of Music  
presents  

Tim Peterman, Percussion  

in a  
Graduate Recital  

Assisted by:  
David Fivecoate, Alto Sax  
Nancy King, Clarinet  
Bob Conger, Trombone  
Donna Meinecke, Piano  

Wednesday, August 4, 1982  3:00 p.m.  Recital Hall  

Two Movements for Marimba ....................... Toshimitsu Tanaka  
   Allegro  
   Lento  

Four Pieces for Solo Vibraphone ..................... Larry Spivak  
   Fanfare  
   March  
   Waltz  
   Ragtime  

Divertimento for Marimba & Alto Saxophone ........... Akira Yuyama  
Toccata for Clarinet, Trombone & Percussion .......... Karl Kroeger  
Concerto for Marimba .............................. Robert Kurka  
   Allegro Molto  
   Adagio  
   Allegro con Spirito  

Presented in partial fulfillment of the  
requirements for the degree of Doctor of Musical Arts
North Texas State University
School of Music

Graduate Recital

TIMOTHY J. PETERMAN, Percussion

Assisted by:

Cindy Hinds, Clarinet
Andy Barrus, Marimba

Friday, August 10, 1984  5:00 p.m.  Recital Hall

Duo for Two Marimbas. ................. David Wheatley
   I
   II
   III

Illegible Canons. ....................... William Bergsma
   for Clarinet and Percussion
   Allegro
   Lento
   Allegro vivo

Grand Fantasy. ......................... Raymond Helble

Presented in partial fulfillment of the requirements for the degree of
Doctor of Musical Arts
North Texas State University  
School of Music  

Graduate Lecture Recital  

TIMOTHY J. PETERMAN, Percussion  

Assisted by the NTSU Percussion Sextet  
Barry Bridwell  
Al Gardner  
Gordon Rencher  

J. B. Smith  
Scott Weckerly  
John Wooten  

Monday, June 30, 1986  5:00 p.m.  Concert Hall  

AN EXAMINATION OF THE TWO SEXTETS OF CARLOS CHAVEZ:  

TOCCATA FOR PERCUSSION INSTRUMENTS AND  

TAMBUCO FOR SIX PERCUSSION PLAYERS  

Presented in partial fulfillment of the  
requirements for the degree of  
Doctor of Musical Arts  

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CHAPTER I
INTRODUCTION

Orchestras of solely percussion instruments have existed in geographical areas such as China, Indonesia, and Africa for thousands of years. However, it has been only within approximately the last sixty years that Western composers have written for this type of ensemble.

Because of this relatively recent development, very few percussion ensembles have become part of the standard repertoire. Carlos Chávez’s *Toccata for Percussion Instruments* is one of those few. Written in 1942 at the request of John Cage, the *Toccata* has proven to be "a pioneering achievement in legitimizing percussion ensemble performance."¹ Although Chávez’s other percussion ensemble, *Tambuco for Six Percussion Players* (1964), has not attained the same status as *Toccata*, it is an important contribution to the literature.

This paper will focus on these two percussion sextets, examining compositional characteristics, performance problems, and stage set-up. In addition, the selection, substitution, and construction of the necessary instruments will be explored.

Before examining the Toccata and Tambuco, it is helpful to consider the early influences on Chávez's use of percussion, both from his native Mexico and from other composers writing percussion ensembles.
CHAPTER II
EARLY LIFE AND INFLUENCES

Carlos Chávez occupied a unique position in percussion and music history. He was Mexico’s foremost composer, using a combination of European tradition, Mexican and Indian characteristics, and his own unique style. He was one of the few composers to be associated with the short-lived era of "machine music" of the 1920's, where noise and sensationalism became musical traits. In his book, Toward A New Music, he wrote of the electronic age. Chávez was allied with the International Composers Guild and the Pan American Association of Composers and thus was associated with other early composers who wrote for percussion ensemble, such as Amadeo Roldán, Edgard Varèse, and Henry Cowell. During a time of experimentation in percussion, Chávez opted to use standard orchestral percussion instruments and those indigenous to his native Mexico.

Carlos Chávez was born in Popotla, a suburb of Mexico City, on June 13, 1899. Most of his ancestors were descendents from the early Spanish settlers in Mexico but there may have been some Indian blood on the maternal side of
the family.¹ His mother directed the Normal School for Young Women but was ordered to leave Mexico City when the Revolution of 1910 intensified. The family relocated in Veracruz, but returned to the capital city when the Revolution subsided.²

In his travels between Veracruz and Mexico City to collect the family's government paychecks, and in frequent family trips to Tlaxcala and other surrounding cities, Chávez was exposed to indigenous Indian music and culture. This exposure was to have a lasting effect on his musical ideals and later compositions. Chávez would write later "... it [the Indian influence]... expressed what is profoundest and deepest in the Mexican soul. The musical life of the aborigines constitutes the most important stage in the history of Mexican music."³

Chávez's early training was as a pianist, studying first with his brother Manuel, and then with the noted Mexican composer Manuel M. Ponce. Ponce was considered the pioneer of nationalism in Mexico and used various types of Indian folk music in his works.⁴ This early training helped to instill a

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feeling of nationalism within Chávez, but it was the pianist and teacher Pedro Luis Ogazón whom Chávez would later credit with his introduction to other musical styles. Most of Chávez's early compositions were a combination of classical and romantic models. However, some compositions such as Adelita y La Cucaracha (1915), Adiós, Adiós (1919), and Las Margaritas (1919) showed the nationalistic tendencies which were undoubtedly the influence of Ponce.

The early 1920's were a turning point in Chavez's musical career. When Álvaro Obregón became President of Mexico in 1921, he allocated a large budget for public education. Obregón reinstated José Vasconelos, one of the leading intellectuals in Mexico, as Secretary of Public Education. Vasconelos subsidized many of the arts, and in 1921 asked Chávez to compose a ballet based on the ancient Aztec culture.

In that same year, Chávez responded with El Fuego Nuevo (The New Fire). Although Chávez did not quote a single Indian theme, he relied on childhood recollections of native Indian music. The composition was important not only because it marked the beginning of Chávez's Indian nationalism, but it

5. Parker, *loc. cit.*


7. Stevenson, *op. cit.*, 239.
also was an early example of his use of percussion. The final orchestration called for twenty-two woodwinds, eighteen brass, strings, women's chorus and thirteen percussionists performing on a variety of indigenous instruments. The lengthy percussion soli in the movement entitled Dance of Terror is dramatically powerful.  

After marrying in September of 1922, Chávez and his wife, Otilia, went to Europe for six months. Chávez used this time both to further his own career as a composer and to explore the music of Europe. 

It is probable that Chávez was exposed to the music of Igor Stravinsky, the futurist ideas of Luigi Russolo, and some of the new uses of percussion which were developing simultaneously.

In addition to the standard orchestral approach to percussion, Stravinsky had incorporated various percussion effects in his compositions. In Petrushka (1911), he employed reoccurring timpani solos with hard sticks joined by a snare drum without snares. In Le Sacre du Printemps (1912), a gong was scraped with a metal beater. In L'Histoire du Soldat (1918), Stravinsky used the new concept of one performer playing several instruments in rapid succession—much like that of a drum set player. Different timbres were obtained by

performing on various areas of the heads, and using sticks and mallets with soft, hard, and fiber ends.

In Italy, the futurist movement guided by Russolo had related music to daily experiences rather than to notes. It stressed the importance of rhythm, suppressed melodic instruments, and revealed some of the possibilities of timbre in percussion through noise. Both Russolo and Stravinsky brought the use of percussion to the attention of composers and the general public.

Chávez left Europe in 1923, bringing this newly acquired knowledge back to Mexico. But because of the conservative musical attitudes he would soon leave the country again.

In December of 1923, while his wife and new-born daughter remained behind in Mexico, Chávez traveled to New York. During the four months that he stayed, Chávez explored the musical advantages that New York offered. He attended concerts of the International Composers Guild and the League of Composers, and made contacts and acquaintance with some of the more progressive composers. Among those who later became lasting friends were Aaron Copland and Edgard Varèse. Upon his return to Mexico, Chavez organized concerts of new music much like those of the International Composers Guild and the League of Composers. Composers whose works were performed included Bartók, Milhaud, Satie, Stravinsky, Varèse, and Chávez himself. \(^{10}\) He kept his ties with New York, and in

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December of 1924 was elected to the advisory board of the International Composers Guild.\(^{11}\)

Upon his return to Mexico, Chávez composed his second ballet, *Los Cuatro Soles* (The Four Epochs). Although composed in 1925, it would not be performed as a concert piece until 1930 and not as a ballet until 1951.\(^{12}\) Although Chávez used percussion in a more subdued manner than in his first ballet, he still employed such indigenous instruments as teponaztles (slit drums), huehuetls (single-head skin drums), Indian drum, (a small drum somewhat like a modern bongo), guiro, water gourd, and others. Chávez chose to use those percussion instruments with which he was familiar.

While Chávez was still in Mexico, the International Composers Guild introduced New York audiences to Chávez's music. His chamber ensemble *Tres Exágonas* (Three Hexagons) was premiered in Aeolian Hall on February 8, 1925.\(^{13}\) Although not employing percussion, the piece was important because it was the first exposure of his music to American audiences. The success of the New York performance coupled with the musical conditions in Mexico would again send Chávez to New York.

In September of 1926, Chávez left his wife, daughter, and new-born son, Augustín, in Mexico and traveled to New


\(^{12}\) Parker, *op. cit.*, 107.

\(^{13}\) Root, *op. cit.*, 71.
York. Chávez stayed almost two years, until July of 1928. During that time, many avenues opened to him.

On November 28, 1926, Chávez's contribution to "machine music" was performed on a concert sponsored by the International Composers Guild. The fourth movement of Caballos de Vapor ("Horsepower" or "H.P.") was performed in Aeolian Hall with Eugene Goosens conducting.\textsuperscript{14} As with nearly all composers of "machine music," Chávez combined percussion and percussion effects with orchestra. The use of noise and sensationalism brought notoriety to this type of music.

The International Composers Guild had launched many of the careers of young European and American composers in the 1920's. Begun by Varèse, the Guild's charter policy was to give first performances only, in order to present the greatest number of new compositions in the shortest time possible. By the late 1920's, Varèse believed that the Guild had accomplished its original goals. Thus, on November 7, 1927, he informed the publication Eolus that the Guild was officially terminated.\textsuperscript{15}

Chávez approached Varèse in early 1928 with a proposal for an organization similar to the Guild, but to include only composers of the Americas. The group that was formed was named the Pan American Association of Composers. Some of the goals from the original charter included

\textsuperscript{14} Root, \textit{op. cit.}, 72.
\textsuperscript{15} \textit{Ibid.}, 23.
1) The Pan American Association would be made up of composers who are citizens of North, Central, and South America.

2) The Association would sponsor the production of its members' works in different cities throughout the Americas.

3) Emphasis would be laid on giving outstanding works as many performances as possible.

4) It was the hope of the Association that there would be an exchange of performances between North, Central, and South America.

5) It would provide wider mutual appreciation of the different republics of America, and would stimulate composers to make a greater effort toward creating a distinctive music of the Western hemisphere.\(^{16}\)

The executive board was composed of Edgard Varèse, President; Emerson Whithorne, Henry Cowell, Carl Ruggles, and Carlos Chávez, Vice-Presidents.\(^ {17}\)

This movement towards ethnomusicology in works of the Americas was not only important to the furthering of new music in general, but it was very important to the emergence of the use of percussion as a separate chamber ensemble. The rhythmic formations and instruments of Latin American music were becoming popular. Such concepts as jazz and scales from Eastern cultures were on the minds of many composers.

The goals of the Pan American Association were still in Chávez's thoughts when he returned to Mexico in July, 1928. He was offered the conductorship of the Orquesta Sinfónica Mexicana (Symphony Orchestra of Mexico). He not only was able

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16. Ibid., 33.
17. Ibid.
to rebuild the orchestra but also received government and private support as well. More importantly, Chávez performed the orchestral works of as many young Mexican composers as possible. 18 In December of 1928, he was appointed Director of the National Conservatory of Music. He also served as Chief of the Department of Fine Arts in the Secretariat of Public Education. 19 During this time, indigenous melodies and ancient instruments were uncovered by Chávez and his students. 20 In his various administrative positions, Chávez furthered a nationalistic pride in Mexican music by both composition and academic investigation.

Meanwhile, the Pan American Association's membership was growing. Interestingly, composers who would be instrumental in the growth of the percussion ensemble movement were in important positions. Henry Cowell took over the presidency and was the Director of the North American section. José Andre held the Directorship for South America. Two composers who would later be forerunners in the percussion ensemble movement were directors for the West Indies and Central American sections—Amadeo Roldán and Carlos Chávez, respectively. 21

In Cuba, Roldán was among the first to use percussion instruments extensively in orchestral works. Like Chávez, he was interested in the use of indigenous instruments, both melodic and rhythmic. His first attempt of a quasi-percussion ensemble was in one of the suites of his ballet Rembambaramba, which required six separate groups of percussion instruments. In 1930, Roldán composed six "ritmicas", each based on Cuban folk music and rhythms. Ritmica V and Ritmica VI were written exclusively for percussion. These were the first known examples of percussion ensembles.

Both of Roldán Ritmicas used almost exclusively percussion instruments common to Latin America. The only percussion instruments common to the Western orchestra were the bass drum and timpani in Ritmica #5 and the bass drum in Ritmica #6. Both compositions were based on fixed dance patterns. Both the pitched and non-pitched instruments produce relatively short sounds. The explicitly pitched instruments--the timpani and marimbula--are used not for melodic content, but for rhythm and timbre. There was no real concern for either harmony or dissonance. Drums, claves, and cowbells have different relative pitches, but are also used more for timbre. The only other timbre changes occur when the membrane instruments are to be played on different areas of the heads.

Roldán instructed the performer to play on either the edge, center, or normal playing area of the instrument.

Each of the performers plays either a single percussion instrument--as in the cases of the claves, bass drum, maracas, jawbone, or guiro--or a set of instruments such as two cowbells, a pair of bongos, a pair of timbales, or a set of three orchestral timpani. In only one case in the two compositions does a performer play more than either one instrument or a standard set of instruments. In Ritmica #5, one of the performers plays two cowbells and a pair of claves.

In both the Ritmicas there are changing meters, but in both cases the composition stays firmly fixed to dance rhythms. These dance rhythms are passed around among the different instruments. The rhythms are not difficult and in neither composition are there any great contrasts in mood. The premier performance in the United States occurred on March 10, 1931, in a concert sponsored by the Pan American Association of Composers. It was held at the New School for Social Research in New York, with Adolph Weiss conducting.23

In Ionization (1933), Edgard Varèse used percussion instruments in a more adventuresome way. In contrast to Roldán, each of the thirteen performers uses more than one instrument. Varèse avoided the use of the orchestral timpani, but instead used combinations of different sizes of drums, cymbals, tam-tams, and bass drums. The piano is used, but

23. Root, op. cit., 77.
only in the last thirteen measures, and mostly for sustained sounds. Generally, the short sounds are produced by membrane, wooden, and a few of the metallic instruments. The ringing sounds are generally produced by the metallic and pitched percussion instruments. Much of Ionization uses homogeneous aggregates of wood, metal, membrane and wind (sirens) instruments. Contrasts are achieved by pitting the short, dry timbres against those of longer durations. The form was far more abstract than the fixed dance patterns of Roldán's Ritmicas. The American debut was March 6, 1933, in Steinway Hall in New York, conducted by Nicolas Slonimsky in a concert sponsored by the Pan American Association of Composers. 24

Concurrently in Mexico, Chávez composed his first symphony, Sinfonía de Antígona. It was an eleven-minute work which used mostly standard orchestral percussion such as glockenspiel, snare drum, tenor drum, small cymbal, and large cymbals. The only instrument indigenous to Mexico was a small Indian drum. The percussion is used for timbral effects or in a few cases, a rhythmic ostinato. Sinfonía de Antígona was premiered December 15, 1933 by the Symphony Orchestra of Mexico. 25

The second symphony by Chávez, Sinfonía Índia, was another one-movement work of about the same length. It was written at the request of William Paley, then president of CBS

25. Parker, op. cit., 68.
Radio. Paley had requested Chávez to conduct a concert for a January 23, 1936, radio broadcast. The percussion used in this work included mostly indigenous Indian instruments. Some of the instruments called for were a water gourd, string of butterfly cocoons, a string of deer hoofs, rasping sticks, and such authentic instruments as two teponaztles (wooden slit drums) and a tlapanhuetl (a large, single-headed membrane drum). The only Western instrument used was a snare drum without snares. The percussion plays a major role in this composition, giving it its rhythmic vitality.

Between *Sinfonía India* and the composing of *Xochipilli*, (Chávez's next work using percussion), there was a different concept in the use of percussion in the percussion ensemble compositions of Lou Harrison and John Cage. Many of the works of the "West Coast" composers included many instruments not commonly associated with the Western orchestra, or for that matter, percussion in the usual sense. Tin pans, brake drums, dinner bells, rice bowls, bottles, sheets of metal, and instruments of the like were used.

Modern dance in the late 1930's held widespread interest in many musical circles. Percussion was essential in defining rhythmic change and offered a new musical idiom to composers such as Harrison and Cage. After they mastered the smaller musical forms in the dance studios, these composers graduated to the larger forms with enough instruments, and different
timbres and rhythms to achieve independent musical compositions exclusively with percussion.\textsuperscript{26}

Of all the "West Coast" composers, Lou Harrison was probably the most prolific in the late 1930's and early 1940's. For membrane instruments, Harrison used mostly assorted sizes of tom toms and bass drums. Snare drums and timpani were seldom used. Many eastern gongs, tam-tams, and bells were employed. Timbres of wood were performed on various sets and sizes of wood blocks and temple blocks. Harrison also used many unconventional instruments such as flexatones, musical saws, flower pots, bell coils and the like. Many times he used sets of instruments such as different sizes of blocks or bells to produce a number of different graduated pitches that had the same relative timbre. A few of the compositions written during the late 1930's and early 1940's include Fifth Symphony (1939), Bomba (1939), Canticle \textit{#3} (1940), Labyrinth \textit{#3} (1941), Song of Queztecoatl (1941), Fugue (1942), and Double Music (1941).

Harrison's friend and colleague, John Cage, had similar views of the percussion ensemble. Cage described percussion music as the "contemporary transition from the keyboard-influenced music to the all-sound music of the future. Any sound is acceptable to the composer of percussion music." \textsuperscript{27} Cage

\textsuperscript{26} Vanlandingham, \textit{op. cit.}, 43.

believed that rhythm was one musical factor that measured and defined other musical parameters, and that pitch and harmony should not be the primary concerns of a composer.

There were three main influences on Cage's ideas of percussion and composition in general. First, Cage met Henry Cowell in 1932 and studied Oriental music with him at the New School of Social Research in New York. Cage studied rhythmic structures of the East, like Indian tala. 28

Second, in 1937, Cage began his long association with dance. He joined a modern dance company at the University of California at Los Angeles as an accompanist and composer. In that same year he moved to Seattle as the composer and accompanist for Bonnie Bird at the Cornish School. 29

Third, between the years 1934-1937 Cage studied musical analysis and counterpoint with Arnold Schoenberg at U.C.L.A. Schoenberg had impressed upon Cage the structural function of tonality and Cage sought some structural means of adequately composing for percussion. 30

Influenced by Carlos Chávez's book Toward a New Music, Cage proposed eliminating the performer and his possible

29. Ibid., 20.
30. Ibid.
variable interpretation by composing directly on record.\textsuperscript{31} He did this in his \textit{Imaginary Landscape} series of compositions. Cage used all types of sounds, including percussion instruments, electronic instruments, and tape-recorded sounds. In \textit{Imaginary Landscape No. 1} (1939), Cage used a variable frequency recording, constant frequency recording, and frequency recording along with a string piano and suspended cymbal. In \textit{Imaginary Landscape No. 3} (1942), he used Eastern percussion such as two Balinese button gongs, a marimbula connected to contact microphones and played with the fingers, as well as various electric and electronic instruments such as an audio frequency oscillator, a variable speed turntable, a radio aerial coil played by plucking, and a variety of other such instruments. Cage, like Harrison, obtained sounds which were similar to electronic sounds by using flexatones, musical saws, water gongs, and sirens. Some of the percussion works of Cage during the late 1930's and early 1940's were \textit{First Construction (in Metal)} (1939), \textit{Imaginary Landscape No. 1} (1939), \textit{Second Construction} (1940), \textit{Amores} (1942), \textit{Imaginary Landscape No. 2} (1942), and \textit{Imaginary Landscape No. 3} (1942).

Throughout all the experimentation in percussion Chávez remained a conservative by using conventional musical forms and standard or indigenous percussion instruments. His next

composition using percussion was *Xochipilli: An Imagined Aztec Music*. It was one of Chávez's musical offerings for the concerts of Mexican music presented at the Museum of Modern Art in New York in May, 1940. These concerts were given in conjunction with a special exposition called "Twenty Centuries of Mexican Art." Chávez tried to approximate ancient Aztec music by using ancient percussion instruments or modern replicas of them. The piece was composed for piccolo, flute, Eb clarinet, trombone, and, interestingly enough, for six percussionists—the same number that would be used in his two famous percussion ensembles, *Toccata* and *Tambuco*. The percussion performed not only as an integral part of the composition but also played soli. The indigenous instruments that Chávez employed included small and large teponaztles, small and large omichicahuaztli (rasping sticks), small and medium copper hawksbells, soft rattles, small and large clay rattles, two small Indian drums, and a large and extra large huethuetls. Chávez remained a traditionalist in his use of Western percussion instruments in *Toccata* (1942), and a nationalist in his use of indigenous percussion in *Tambuco* (1964), almost twenty-five years later.

CHAPTER III
TOCCATA FOR PERCUSSION INSTRUMENTS

During an engagement as guest conductor with the Chicago Symphony Orchestra in the late 1930s, Chávez received correspondence from John Cage requesting a percussion composition for the ensemble that Cage was forming. In 1942, Chávez completed the Toccata for Percussion Instruments, but Cage never performed it. There are conflicting reports as to the reason. Historian Gerard Béhague stated that Cage's percussion ensemble dispersed before the work could be performed.¹ Chávez reported in an interview, "John wasn't thinking of the traditional percussion but in the out of the way such as chains, rattles, anvils, and everything in the kitchen."² However, in a letter dated April 24, 1980, Cage wrote, "He [Chávez] used conventional percussion techniques (particularly rolls) which my players could not perform. I am glad that the piece was written, grateful that he did it, and have always been sad that

². Herb Hardt and J. D. Sumner, "An Interview with Carlos Chávez," Percussionist, XIII/1, (Fall, 1975), 31.
we were unable to present it."³ For a long time, the piece remained unperformed and unpublished.

Although there seems to be a consensus that the Toccata was performed on a concert of the Orquesta Sinfonia Nacional under the direction of guest conductor Eduardo Hernandez Moncada, there are discrepancies as to the exact date of the premiere performance. David Ewen cites October 31, 1942, as the date.⁴ Larry Vanlandingham maintains that the premiere performance was given sometime in August, 1948.⁵ Chávez's biographer, Roberto García Morillo, contends that the date was October 31, 1947.⁶ Chávez had a different recollection of the date. He felt that it was August 13, 1948.⁷

To add to the confusion, the date of the premiere performance in the United States is uncertain. Percussionist Michael Rosen believed that the first performance was with the Cincinnati Symphony Orchestra under Thor Johnson.⁸ But Chávez

³. John Cage, in a letter written to Robert L. Parker, of the University of Miami.


maintained that he was the first to conduct the piece, on December 1, 1953, at Royce Hall Auditorium with members of the Los Angeles Philharmonic Orchestra.⁹

Although Chávez never intended that the Toccata be used as anything other than a concert piece, the music was included as incidental music for a ballet entitled Tóxcatl (Perpetual Party), performed in 1952. This performance was organized by the Academy of Mexican Dance, choreographed by Xavier Francis, with staging and wardrobe by Miguel Covarrubias.¹⁰ The work was published as a percussion ensemble in 1954 by Mills Music Company.

The Toccata requires six performers on the following instruments:

| Player I:          | Indian Drum          |
|                   | Glockenspiel         |
|                   | Small Indian Drum    |

| Player II:         | Side Drum I (Snare Drum) |
|                   | Xylophone              |
|                   | Indian Drum            |
|                   | Tenor Drum             |

| Player III:        | Side Drum II (Snare Drum) |
|                   | Suspended cymbal        |

| Player IV:         | Tenor Drum             |
|                   | Tubular Chimes         |
|                   | Maracas                |
|                   | Suspended cymbal       |

| Player V:          | Three Timpani          |
|                   | Small gong             |

⁹. Chavez, op. cit.

Chávez gives very precise instructions for the tuning of the drums. The small Indian drum is to be highest in pitch followed by the Indian drum, snare drum, tenor drum, and the three timpani in descending pitch order. The bass drum should be the lowest voice of the ensemble. The snare drums of Player II and Player III must be of identical pitch, as should the tenor drums of Player II and Player IV. In Figure 1, the pitch scheme of the membrane instruments is diagrammed:

Figure 1. Relative pitch scheme of the membrane instruments in Toccata.

Chávez also defines other terms used in the composition, such as Coperto = cover the skin with suede; Scoperto = uncover it; L.V. = let vibrate; S. On = snares on; S. Off = snares off. Some choices of sticks are suggested as well as the positioning of drums.

Toccata is organized into standard symphonic forms. The first and third movement are in sonata form, and the second movement has a ternary structure. When sonata form is used, the conventional relationship between tonic and dominant does not exist. However, the first and second themes are comprised
of implied "melodies" between the different relative pitches of the percussion instruments. The development of those themes as well as the recapitulation are traditional in form.

Chávez uses other compositional techniques in Toccata which add to its musical vitality. Both the explicitly pitched melodic percussion, such as the timpani, glockenspiel, and xylophone, and the implied "melodies" of the non-pitched percussion, such as the tom toms, snare drum, and Indian drum, are used to their full advantage. The tessitura of these membrane instruments is heard throughout the Toccata. This is particularly evident in the first and the third movements.

Toccata has three movements performed without interruption, each employing different timbres. The first movement, Allegro sempre guisto, uses only the membrane instruments. The snare drums and the Indian drum produce the shorter, more crisp sounds, except when producing a roll. The tenor drum, timpani, and bass drum ring and produce longer, more mellow sounds. The third type of sound is introduced at rehearsal number 35, when the drums are muffled with a cloth placed on the head, termed "coperto."

The first movement consists of an exposition, development, and a recapitulation. The first theme is composed of two motives. The first motive occurs at measures 2 and 3. The rhythm that results is alternating quarter notes and quarter rests (Example 1).
Example 1. **Toccata**, First motive of first theme, page 3, mm 2, 3.

Variations occur throughout this section when the rhythmic motive is accompanied by the addition of eighth notes from another instrument (Example 1a).

Example 1a. **Toccata**, same rhythmic motive in bass drum part with sostenuto timpani accompaniment, page 4, mm 14, 15.

The second motive occurs at measure nine (Example 2). As with much of the writing in this composition, Chávez uses several performers on different instruments to construct the melody, using pointillism. The second motive will go through different transformations as the movement progresses.

Two of the transformations occur in the timpani (Examples 3a and 3b).

**Example 3a. Toccata, second motive, transformation 1, page 4, m 12.**

**Example 3b. Toccata, second motive transformation 2, page 4, m 22.**
The second theme presents itself at rehearsal number 6 in the timpani (Example 4). An important transformation of the second theme occurs at measures 92 and 93. This will later be used as a basis for the third movement of Toccata (Example 4a).


Example 4a. **Toccata**, transformation of second theme, page 8, mm 92, 93.

Another common technique used throughout the piece is the displacement of metric accents by beginning a rhythmic motive at different beats in succeeding measures (Example 5).

Both themes and the subsequent transformations are developed and passed around the different membrane instruments through the use of hocket until the recapitulation at measure 130.

A short coda begins at rehearsal 28 as a roll on the snare drum. Each of the other instruments enters one by one at different rhythmic intervals. At rehearsal 31 the first instance of coperto in the movement occurs, introducing a change of timbre to the coda. This is used to accompany a
statement of the first rhythmic theme passed between the different instruments (Example 6).

Example 5. Toccata, displacement of metric accents, page 10, mm 141 - 144.

Example 6. Toccata, introduction of copersto, page 12, mm 193 - 197.
The movement ends with the direction "Attacca," and leads into the second movement through the use of rolls in the snare drum, tenor drum, and the bass drum.

The second movement consists of only twenty-eight measures and is marked Largo, with the eighth note at a metronome marking of 52. Because of the tempo, the mood of the movement is one of a slow procession. It employs almost entirely those instruments of metal. The only non-metal instrument is the xylophone, which when used in the lower register gives a reference to the teponaztle (wooden slit drum). Both the bells and the xylophone are used melodically, with the glockenspiel producing the predominant melodic part. The chimes perform on only two notes throughout the movement and are used mostly as a rhythmic punctuation to the glockenspiel. With the exception of four sixteenth notes on the suspended cymbal marked "secco" (dry), all instruments are allowed to ring their full value.

The second movement is a continuous development of the interval of the fourth that was introduced in the timpani part in the first movement. The predominant rhythm is the eighth note, with eighth note triplets and sixteenth notes used sparingly, producing the effect of tension.

The second movement is in the form of A - B - A' and begins with a four-measure introduction. The first statement of the A theme is at 36 in the glockenspiel (Example 7).

The contrasting theme is stated first in the xylophone and then is rhythmically imitated by the other instruments (Example 8).

Canonic imitation is performed between the bells and xylophone and is used as a transition to the restatement of Theme A (Example 9).


The third movement uses mostly the membrane sounds, but occasionally the wooden sounds of the maracas and claves, the pitched notes of the glockenspiel, and the metallic sounds of the cymbal.

In addition to using pointillism, Chávez pits different counter-rhythms against each other to give rhythmic viability. Hemiola is used constantly and recurring rhythmic patterns function on different strata throughout the movement.

The movement begins with a variation of a theme from the first movement (Example 10).

Example 10. Toccata, third movement, first theme, page 17, mm 1 – 5.
The second theme is stated at (43). Although written in 2/2 meter, the actual metric pulsation is in a feeling of three, reflective of the first movement. Notice how the rhythm produced between the small Indian drum, and the three drums (Indian drum, snare drum, and tenor drum), encompass a total duration of a dotted whole note. In contrast, the claves and timpani produce rhythms that have a total duration of a dotted half note offset to each other. (A more complete definition of the stratification of musical rhythms is found in Yeston, 1976. 11) Once again, Chavez employs more than one performer and many instruments to produce the theme. (Example 11 and 11a).


After a slight ritardando, the development section begins between the maracas and timpani in measure 55 (Example 12). This march-like rhythm Chávez uses in other works using percussion, such as *Xochipilli*.


Ostinato rhythms in contrary motion, such as those in Example 13, provide exciting contrapuntal interest which leads
to the driving rhythm of repeated sixteenth notes performed on the small Indian drum. In the development, the suspended cymbal is used for the first time and complements the impetus to the recapitulation.

Example 13. Toccata, third movement, ostinato example, page 27, mm 90, 91.

At rehearsal the recapitulation occurs, again in the timpani. The movement ends with solo timpani stating Theme I in augmentation.

Toccata uses membrane and pitched instruments in all ranges, which are usually represented by a single timbre. Metallic instruments are used not at all in the first movement, almost exclusively in the second, and very sparsely in the third. The wooden timbre of the xylophone is used only in the second movement, and only two non-pitched wooden instruments are used—the maracas and the claves. The membrane instruments are used throughout the first and third movements.
CHAPTER IV
TAMBUCO FOR SIX PERCUSSION PLAYERS

Tambuco for Six Percussion Players originated as an exchange between Clare Booth Luce and Carlos Chávez. Mrs. Luce had previously commissioned Chávez to write the Sinfonía No. 3, to be dedicated to the memory of Anne Clare Brokaw, Mrs. Luce's only child, who died in a freak car accident at the age of nineteen. In 1963, Luce began to work with mosaics. For her part of the exchange she fashioned a mosaic measuring four feet by five feet for Chávez entitled "Golden Tiger." For his portion of the exchange, Chávez composed Tambuco for Six Percussion Players. The composition was premiered on October 11, 1965, at the Los Angeles County Museum of Art, by the Los Angeles Percussion Ensemble with William Kraft conducting. (Appendix 1). Another important performance of Tambuco took place June 14, 1968, in Mexico City. This concert crowned the International Festival of the Arts that coincided with the Olympic games, and closed the final concert in the Sala Manuel

2. Ibid., 63.
M. Ponce given by the Strasbourg Percussion Ensemble.  

Although the Tambuco was written nearly twenty-five years after the Toccata, there are still some similarities to the earlier composition. Both have three movements, or (in the case of Tambuco) three broad sections that continue without interruption. They are about the same length, require six percussionists, and use instruments that are either standard orchestral percussion or indigenous to Mexico. The instrumentation for the work is as follows:

Percussion I:  
Small Rasping Stick  
Small Water Gourd  
Glockenspiel  
Small Claves  
Bongo Set, very small size  
Bongo Set, medium size

Percussion II:  
Large Rasping Stick  
Large Water Gourd  
Large Suspended Cymbal  
Swiss Brass Bells  
Wood Block  
Group of Drums  
4 1/2" by 14" snare drum  
8" x 15" snare drum  
12" x 16" tenor drum

Percussion III:  
Metal Rattle  
Maraca  
Triangle  
Tubular Chimes  
Claves (Large)  
Four Timpani

Percussion IV:  
Clay Rattle  
Soft Rattle  
Maraca  
Large Crash Cymbals  
Four-Octave Marimba

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<tr>
<th>Percussion V:</th>
<th>Percussion VI:</th>
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<tr>
<td>Claves (Extra Large)</td>
<td>Sand Blocks</td>
</tr>
<tr>
<td>Group of Drums</td>
<td>Large Guiro</td>
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<tr>
<td>8&quot; x 12&quot; Tom Tom</td>
<td>Extra large Ratchet</td>
</tr>
<tr>
<td>18&quot; x 20&quot; Tom Tom</td>
<td>Tap-a-Tap</td>
</tr>
<tr>
<td>11&quot; x 30&quot; Conga</td>
<td>Celesta</td>
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<tr>
<td></td>
<td>Extra Large Gong</td>
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<td></td>
<td>Group of Drums</td>
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<td></td>
<td>same as Perc. II</td>
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<tr>
<td></td>
<td>Xylophone</td>
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<td>Group of Drums</td>
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<td>12&quot; x 22&quot; Bass Drum</td>
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<tr>
<td></td>
<td>16&quot; x 36&quot; Bass Drum</td>
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The first noticeable difference between the two works is that Chávez uses many more percussion instruments than he did in *Toccata*. Each percussionist has a battery of at least six percussion instruments including some type of melodic percussion. Although the Swiss Brass Bells are not native to Mexico, William Kraft believes that they are a representation of the altar bells in the Catholic churches in Mexico.4 All the players are required to play instruments made of wood, metal, and membrane.

Chávez also diagrams the construction of the more

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4. William Kraft, in a telephone interview on April 25, 1985. Mr. Kraft is the former timpanist with the Los Angeles Philharmonic Orchestra, and a percussionist, composer, and conductor.
indigenous instruments, as well as substitutions for them. He also gives insights into the compositional style of Tambuco in the introductory notes to the conductor's score:

The music of this work develops in a constant process of consequent evolution. That is to say, an initial idea serves as "antecedent" to a "consequent," which in turn immediately becomes an antecedent to a new consequent, and so on until the end of the piece. Also a minimum of repetitive and symmetric elements are present.  

This non-repetition style of composing was initiated in 1933 with Soli I, and became a regular feature from 1958.  

Tambuco is based on a totally different concept from Toccata. Since there are no themes that are developed in standard musical forms, Chávez has turned to aspects other than pitch and form to state his musical ideas. Relative pitch between the various timbre groups (wood, metal, rattles, scrapers, and membranes), as well as the ranges of the pitched melodic percussion are important aspects (Figure 2).

Melody and harmony are subordinate especially in the first and third movements. Where melody is a factor, as in the second movement, it is treated contrapuntally between the various melodic instruments, and is disjunct and angular. Standard bass and treble clefs are used for the pitched percussion. The non-pitched percussion are written on one, two, or three-line staves. Rhythm is used to create


6. Parker, Carlos Chávez, op. cit., 123.
Figure 2. Melodic range and relative pitch scheme of non-pitched percussion in Tambuco.
differences in texture, as well as tension and repose. Dynamics are an important feature, although they are secondary to timbre and texture. All the movements (broad sections) are generally loud. Soft passages are used either for contrast or as basis for transition between antecedent and consequent. Chávez instructs the performers, "FF (fortissimo) means play absolutely as loud as possible; pp (pianissimo) means to play as soft as possible; the intermediate degrees should be established accordingly." Often, the softer dynamics are completely covered by instruments that are instructed to perform loud. At these instances, the softer instrument can only hope to provide a slight timbre change. Instrumentation and texture range from very sparse to walls of sound with varying rhythms and textures.

Because the concept of composition is so much different from that of Toccata, the analysis of Tambuco will also be different. There are usually sections of sound that differ from the following section, and that process continues throughout each movement. There is very little repetition in any of the movements. To diagram the different events in each of the movements, boxes and diamonds will be used to illustrate these changes. The comments placed in boxes represent the events. Those placed in diamonds represent transitions. A variety of different aspects will be coded, such as measure number, melodic traits, harmonic traits,

7. Tambuco, conductor's score.
timbre, predominant rhythm, and the like (Figure 3). Each trait will be given a short explanation as to how it is used in a particular section.

The first movement begins with rasping sticks and rattles in disjunct rhythms that give the effect of white noise from electronic mediums. The movement is predominantly loud, with only sparse interjections of soft passages. Contrasting ostinato patterns occur in the middle of the movement, and rhythmic imitation continues later. The movement is predominantly made up of wooden sounds, with either the scraping sounds of the rasps and guiros, or the "thunk" sounds of the water gourds. The jingle sounds of the metal rattle are used throughout the movement to elongate the short sounds of the wood. Near the end of the movement the struck metal sounds of the triangle are introduced.

Rhythms are generally in groups of eighths, triplets, or sixteenths. Rolls and tutti rhythms are sparse throughout the movement. In most instances, no more than two instruments will have the exact same rhythm.

The second movement begins entirely with sounds of metal. The only sound that is carried over from the first movement is that of the tap-a-tap (Figure 4). The movement is much more sostenuto with the melodic percussion carrying the melody using many tritones, sevenths, and ninths. The unpitched metal sounds of the cymbals and triangle provide accompaniment.
Figure 3. *Tambuco*, Traits of First Movement.
Figure 4. **Tambuco**, Traits of Second Movement.
Each of the melodic percussion subsequently enters. When harmonies do occur, they are usually a result of counterpoint between two or more of the melodic percussion.

Rhythms are much more contrasting, disjunct, and difficult than in the first movement. Groupings of threes, fours, fives, sixes, up to tens, are used commonly in each of the instruments. Unison rhythms are very sparse throughout this movement, helping to create an ethereal effect.

Texture is generally thinner than in either of the other movements. As the movement progresses, wooden instruments, such as claves, are added to make a transition. When this occurs, the texture becomes slightly less thin and ethereal. Ostinato figures of predominantly two and three-note progress to the third movement.

The third movement uses predominantly membrane percussion as in the first movement. Like Chavez's earlier Toccata, this movement also begins with a timpani solo (Figure 5). During the first forty-five measures, each of the membrane instruments is added, not in an imitative style but contrapuntally. In the transition between this section and the following section involving rolls on the snare drums at a reduced dynamic level, Chavez uses ostinato figures of two and three-notes reminiscent of the Toccata.

The next event is comprised of a soft section of snare drum rolls between players II and V. The addition of other membrane instruments occurs as in the beginning of this
Figure 5. Tambuco, traits of the third movement.
movement but in varied order, using a different percussion technique. All of the drums perform double stops within their own percussion battery. This not only adds texture, but also increases dynamics. The rhythms are variations of sixteenth note patterns, and although each percussionist has a slightly different rhythm, the final outcome is the perception of straight sixteenth-notes. The drive to the end begins with the addition of the vibraphone and marimba. The movement ends with an increase in the dynamics and texture. The termination of the movement is very abrupt and leaves the listener with the feeling that there will be more to follow.
CHAPTER V

PROBLEMS INHERENT IN PERCUSSION ENSEMBLE PERFORMANCE

In many respects, percussion ensemble performances, and
the preparation of those performances, encounter the same
problems as any other musical ensemble. But because of the
myriad of instruments and the comparatively recent development
of percussion as an ensemble medium, other problems occur.
One important problem is the need for a conductor. Another
problem is the physical set-up and placement of both instru-
ments and performers. Other problems that relate to set-up
include the sound projection of the instruments, proper mallet
choices, tunings of non-pitched percussion, and sympathetic
vibrations between the instruments. In some instances, the
composer or the publisher may contribute unknowingly to some
of the problems encountered in performance and rehearsal.

Most other small chamber ensembles such as a string
quartet, wind quintet, and other groups such as these usually
use one instrument and one music stand for each performer.
Visual contact is maintained because the performers remain
stationary. However, in most percussion ensembles, the number
of percussion instruments needed in performance usually far
exceeds the number of players. In many instances, each
percussionist may use several music stands, and will move from
different areas of his set-up to alternately replace sticks and mallets as well as perform on different instruments. For a correct and satisfying performance, a conductor is needed to assist in giving proper entrances and other musical nuances.

The logistics of preparing a percussion ensemble performance are more complex than for any other musical ensemble. If more than a single percussion ensemble composition is performed, then some advanced planning is required so that the audience is not subjected to long pauses between the compositions. Resetting the stage destroys the continuity of the music program.

To assist in this task, each composition should be incorporated into a floor plan so that there is a minimum of movement between compositions. Sometimes placement of instruments may at first be slightly awkward, with performers being forced to hear sounds from different positions than in rehearsals. But the advantages far outweigh any disadvantages.

It is imperative that performers are able to see not only the conductor, but also each other. In many instances, unison or other key passages can only be performed correctly by the use of eye contact and visual cues between performers. Because percussion is almost exclusively an instantaneous sound medium, precise musical actions depend on visual reflexes.

Percussion ensembles should be set so that there is visual contact with the audience. Audiences "hear" with their eyes and since percussion ensemble concerts are so visually oriented, musical lines, nuances, and other shadings can be brought to the audiences attention through visual means.

Projection of instruments is another critical detail often overlooked in performances. It is obvious that such instruments as celeste, vibraphone, marimba, and the lower pitched membrane instruments do not project as satisfactorily as do the xylophone, claves, triangle, snare drum, and other like instruments. Most percussion ensemble composers write with ensemble dynamics in mind: "... that is, they will write, for example, the ensemble being forte, and not take into consideration that a xylophone playing forte will easily cover a vibraphone playing forte." ² It is best to position those instruments that do not project on a part of the stage where they will be heard, and not played in an incorrect manner, such as using a harder mallet than is safe for the instrument. This type of balance is up to both the performer and conductor, with the conductor making the final judgment.

The manner in which a passage is sticked will have a noticeable effect on phrasing. Performing a passage with only a single mallet or stick elicits a much different effect than

performance with alternate sticking. On such passages as
unisons, percussionists must be aware not only of a logical
sticking for their own music, but also of one that will fit
integ rall y with those of the ensemble.

Sympathetic vibrations can influence the outcome of a
percussion ensemble performance. Proper set-up can assist in
alleviating this problem. Almost any pitched instrument such
as timpani, marimba, vibraphone, etc., will set snare drums
(with the snares in contact with the snare head) to vibrate
sympathetically, and the result will be unwanted extraneous
noise. Tam-tams, and in some instances, cymbals can be set
into vibration by notes on the timpani and bass drums. Those
instruments that cause extraneous unwanted noises must be
either dampened or moved further from the sources that set
others into motion.

The following is a proposed floor plan for Toccata and
Tambuco. It is designed to take into account projection of
the instruments, sympathetic vibrations, and a minimum of
movement between numbers. (Figure 6).

Instruments that are explicitly pitched, such as
vibraphones, marimbas, bells, timpani, and the like, usually
are given the melodic patterns in pitched music. But some-
times non-pitched instruments or sets of instruments can give
Figure 6. Floor Plan of Tambuco and Toccata.
the illusion of pitch. Percussion instruments will often set up a tonal center by the way they are pitched in relation to one another. Many times, scalar or intervallic patterns that are actuated may not be the intended outcomes. The relationship between instruments of indefinite pitch, especially those of the same timbre group, is of great importance. Without attention paid to this, unwanted dissonances may result.

As with all percussion instruments, but especially in ensemble performance, the proper choices of sticks and mallets are essential. Timbre and sometimes even the apparent pitch of percussion instruments can vary according to the type of beater used and the portion of the surface of the instrument that is struck. Beaters have two properties that affect timbre: the relative hardness of the beater and the amount of contact area. Soft, broad beaters dampen the higher overtones and small, hard beaters produce bright sounds because they do not muffle upper partials.

Timbre of most of the percussion family is strongly influenced by where the instrument is struck. In general, striking near the edge will produce a brighter sound with


more overtones. Striking near the center will usually produce a deeper tone. But there are exceptions. For instance, a large suspended cymbal struck near the edge will sound somewhat like a tam-tam. If struck near the center, it produces a much thinner sound with a more definite pitch.

Many composers or publishers who are still unfamiliar with percussion instruments will unknowingly request instruments that are misnamed. For example, many composers will request a gong (which is a pitched metal plate), when intending a tam-tam (an unpitched metal plate). Some composers will demand a tenor drum with snares when intending a field drum. There are numerous examples of mistaken instruments in the literature.

Even though composers such as Reginald Smith Brindle and others are trying to standardize percussion notation, there is as yet no manner of doing this. Owing to the numerous old and new instruments in percussion, no one has proposed a viable solution to this problem. Composers still write percussion parts at will on the score and parts, and publishers may even take a correctly written part and change it because of publishing problems. A multitude of problems exists in the performance of a percussion ensemble program. Many aspects must be taken into account for a realistic and aesthetic solution.
CHAPTER VI

THE CONSTRUCTION OR SUBSTITUTION OF INSTRUMENTS

The family of percussion instruments is the most diverse of all the instrumental groups. In many instances, instruments required by the composer may not be available to the typical high school, university, or professional percussion ensemble. The options are either to substitute another instrument for the one required and hope that the sound will satisfy the musical needs of the composition, or to construct the instrument from wood, metal, or other substance to achieve the same musical end. Reasons for construction of instruments include 1) the required instruments are no longer commercially manufactured, 2) instruments available on a rental basis may not be economically feasible, or 3) unusual instruments owned by a particular percussionist may be those required by the composer, which are not in the majority of percussionists' possession.

The aforementioned reasons also hold true for the substitution of an alternate instrument. Additional reasons for substitution include 1) the expense of constructing the needed instruments may be prohibitive, 2) the needed facilities or personnel are not available for the construction of a substitute, or 3) the original instrument required may not be
adequate to aesthetics, acoustics or musical taste, and the substitute will be an improvement.

The majority of percussion instruments required in the Toccata are available to most high school, university, and professional percussion ensembles. Only the Indian drum and the small Indian drum are not commonly available. Percussionist Michael Rosen suggests that the two drums are small Yaqui drums.\(^1\) Substitutions may include any small single-headed drum. In many instances bongos are substituted for these drums. In the accompanying recital, two small, single-headed drums with plastic heads are used for the following reasons: 1) heads of skin differ greatly in timbre and definition of the pitch fundamental from plastic heads, 2) heads of plastic are used on all the other drums, and 3) heads made from plastic are easier to maintain in changing humidity and other conditions in concert halls.

In Tambuco, however, an array of percussion instruments must either be constructed or a substitution must be made. Suggested substitutions are included in the conductor's score, but many of these suggestions do not obtain the optimum musical sound in either timbre or projection. In each of the six percussionists' instrumental batteries, some substitution must be made by either the use of another instrument or by constructing a reasonable facsimile.

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Percussion I performs on the following instruments:

a) small, high-pitched rasping stick, b) small, high-pitched water gourd, c) glockenspiel, d) high-pitched claves, e) high-pitched set of bongos and f) medium-pitched set of bongos. Of the above instruments, only the glockenspiel is used as manufactured. The rasping stick was cut from an oak board measuring one inch wide across the face by three-quarters of an inch thick. Grooves were cut across the face of the board every eighth inch, using a standard table saw. The resonating box was made to assist in the amplification of the scraping effects on the rasping stick. It was constructed from white pine for all except the top plate, which was constructed from oak. The resonating box is a six-inch cube. A slit two inches wide was cut in one of the vertical panels to aid in amplification. The implement used for scraping was a standard timbale stick. (See Figure 7). 

Figure 7. Rasping stick and resonating box.

2. All instrument illustrations were photocopied from the conductor's score of Tambuco, published by Belwin Mills Publishing Corp., Melville, New York, copyright 1967.
The small, high-pitched water gourd was cut from a gourd measuring six inches in diameter.\(^3\) Owing to the durability of the shell of the gourd, a saber saw was used to cut it. Cleaning the gourd was accomplished by the use of steel wool and soap. After cutting, a spray shellac was used to prevent the absorption of water by the gourd. The gourd was floated in a glass casserole dish large enough to encompass the diameter. Made of glass, the casserole dish enhanced the visibility of the water gourd. A xylophone mallet made of hard rubber was used to strike the water gourd. (See Figure 8).

![Figure 8. Water gourd.](image)

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3. The gourds were obtained from the Pumpkin Farm and Gourd Place, 101 Creston Road, Paso Robles, California, 93446.
The high-pitched claves were fashioned from a standard set of eight-inch-long claves. By cutting the ends with a saw and by reducing the circumference with a lathe, a higher pitch was achieved.

Rather than use small and medium sets of bongos with heads of animal skin, four small concert tom toms were substituted. Plastic headed drums were used so the timbre of the drums would remain constant with the rest of the ensemble and problems due to weather changes would be minimized.

Percussion II uses the following instruments: a) large low-pitched rasping stick, b) low-pitched water gourd, c) large suspended cymbal, d) Swiss brass bells sounding c3 for f4, e) a wood block, f) a battery of three drums (suggested sizes and types given by Chavez—4 & 1/2" x 14" snare drum, 8" x 15" snare drum, and a 12" x 16" tenor drum). The composer also requires a marked differentiation of pitches from high to low between the three drums. The suspended cymbal, wood block, and the three drums are the only instruments easily obtained by most ensembles. The others must be constructed or other substitutions found.

The low-pitched rasp was made in the same manner as the rasp in Percussion I (See Figure 7). A piece of oak cut seventeen inches long, one and one-half inches wide, and three-quarters of an inch thick was grooved every eighth inch across the width of the face. The resonating box was constructed to form a twelve-inch cube. The sides and bottom were made from
one-inch thick white pine. The top was made from oak. A slit two and one-half inches wide was cut in one of the vertical panels to assist with resonation. Again, the implement used to play the rasp was a standard timbale stick.

The large, low-pitched water gourd was made in the same way as the water gourd of Percussion I (See Figure 8). It was cut from a larger twelve-inch-diameter gourd. For similar reasons, the gourd was placed in a glass bowl so that the audience could more easily see it. Because of the increased diameter, the gourd was struck with a mallet wrapped with yarn to decrease the contact sound.

The Swiss brass bells are no longer commercially made and were impossible to rent from standard percussion outlets. To construct the bells from scratch would be both economically and technically impossible for the author. Instead, a substitution of almglocken (Alpine herd bells) was made. Although almglocken are sold without clappers in the inside, clappers were inserted. The almglocken were then mounted to a wooden stand so that the open end of the bell was facing the floor. This set of almglocken sounded one octave below those specified by the composer, but the proper range was not available. They were then played with yarn-wrapped mallets.

Percussion III plays the following percussion instruments: a) metal rattle, b) maraca, c) triangle, d) tubular chimes, e) large, low-pitched claves, and f) a set of standard four timpani. Only the metal rattle had to be
constructed. The rattle was cut from a piece of oak one and one quarter inches wide by seven-eighths of an inch thick by thirteen inches long. Approximately five inches of the wood was sanded to provide a handle. The remaining area was hollowed to make room for four rows of jingles, each with two tambourine jingles. These were attached by running a metal rod through the center of each jingle. (See Figure 9).

![Figure 9. Metal rattle.](image)

Percussion IV uses the following instruments: a) clay rattle—the composer suggests a substitute of any rattle made of hard cardboard, b) soft rattle—the suggested substitute is one made of soft cardboard or straw, c) maraca, d) very large crash cymbals, e) four-octave marimba with a range from C to c3, f) extra large claves, and g) a battery of three drums—suggested sizes and types: 8" x 12" tom tom, 18" x 20"
tom tom, and a 11" x 30" conga drum. These drums were be pitched lower than those of Percussion II.

Nothing was constructed for Percussion IV, and only two instruments were substituted. For the clay rattle, a fifteen-inch-long bean pod was used because it gave more dynamic variety and produced more precise rhythms. The soft rattle substitute was a rattle indigenous to Africa.

Percussion V performs on the following: a) high pitched guiro, b) low-pitched guiro, c) extra large ratchet, d) tap-a-tap, e) celeste with a four octave range, f) extra large gong, g) a battery of three drums—the composer suggests the identical sizes as Percussion II, h) xylophone without resonators.

The ratchet and the tap-a-tap are the only two instruments not standard equipment. Since the ratchet required is extra large, it had to be rented from a nationally known percussion outlet. Construction of such an instrument was beyond the capabilities of the author. The tap-a-tap was made from one-inch-thick pine. Each of the plates was cut to the dimensions of twelve inches long by nine inches wide. A handle was attached to each plate to facilitate handling. Holes were randomly drilled in each plate so that the probability of air being trapped between the boards would be minimized. (See Figure 10).

4. Lone Star Percussion, 10611 Control Place, Dallas, Texas, 75238.
Percussion VI performs on the following instruments:

a) sandpaper blocks—the composer suggests two different sets each with varying degrees of grit of sandpaper attached,
b) low pitched guiro--same instrument as Percussion V, c) a very small suspended cymbal, d) vibraphone with a three-octave range--played with the motor on, e) xylophone without resonators--same instrument as Percussion V, and f) two bass drums--the composer suggests the following dimensions, 12" x 22" and 16" x 36".

The only instruments to be constructed were the sandpaper blocks. The set used to perform softer passages was constructed from 2 x 4 pine cut four inches long.
Sandpaper with a grit of #100 was attached by cementing the paper to the face of the block. Metal drawer pulls were attached to each block to facilitate handling. The set of sandpaper blocks used to perform the louder dynamics was made in the same manner using 2 x 6 pine cut to the length of seven inches. Sandpaper with a grit of #60 was used on these blocks.

Each of the instruments that had to be either substituted or constructed in *Toccata* and *Tambuco* was used in the hope that the optimum musical effect would be achieved. Materials were chosen with both cost and manageability taken into consideration. Most of the instruments were made at a minimum cost. Some rental fees may be beyond some ensembles. Some of the equipment available through North Texas State University's percussion department may not be available at other universities. Whatever the outcome, musical considerations must be balanced with economic feasibility. In those situations, viable alternatives must be chosen by either performers or the conductor.
CHAPTER VII

CONCLUSIONS

The percussion ensemble has become an integral part of most high school and university percussion programs. Much of what is composed for this medium has not stood the test of time or become part of the standard literature. Chavez's Toccata has obtained its place in the literature -- it is one of the most often performed percussion ensemble works throughout the world. It is easily accessible for most high school, university, or professional percussion ensembles, both in technical aspects and in equipment requirements. It uses standard musical forms and is enjoyable to audiences and performers alike.

At the time of this writing, Tambuco has not attained this type of acceptance. Possibly owing to the difficulty of the various techniques and rhythms, the problems in constructing or substituting the myriad of instruments, or the compositional techniques that make the first or second listening to the composition an enigma, the Tambuco is a difficult work to grasp for both performers and audiences.

Chavez's compositional process was not especially diverse from that of the other composers for the same medium. Composers of this current generation use many of the same techniques as Chavez did. What makes his compositions for percussion
ensemble original and different from those of his contemporaries is his use of orchestral and indigenous percussion instruments, and his unique and truly musical compositional style, coupled with the salient traits of his Mexican heritage. Chavez has contributed much to the acceptance of the percussion ensemble as a legitimate medium, through Toccata and Tambuco.
APPENDIX I

Program of the premiere performance of Tambuco for Six Percussion Players

Los Angeles County Museum of Art,
Leo. S. Bing Center
October 11, 1965
PROGRAM

SVEN-ERIK BÄCK (b. 1919)
"Favola" (1962)
Per Clarinotto e Batteria grande
Adagio
Grave
Allegro vivace
First American performance

HENRI SAUGUET (b. 1901)
Trois chants sur des poèmes d'Henri Michaux (1964)
A voix de basse solo
1. "Repos dans le malheur"
2. "La jeune fille de Budapest"
3. "Dans la nuit"
First American performance

AURELIO DE LA VEGA (b. 1925)
"Enametron" (1985)
For flute, cello, and four percussion players
First performance

INTERMISSION

MAURICE RAVEL (1875-1937)
"Chansons Madécasses" (1925-26)
Pour chant, flûte, violoncelle, et piano
1. "Nashando"
2. "Aumône"
3. "Il est doux"
Previous performance at these concerts: 8 January 1951

CÁRLOS CHAVEZ (b. 1899)
"Tamborin" (1905)
For six percussion players
First performance

ARTISTS

THE LOS ANGELES PERCUSSION ENSEMBLE
WILLIAM KRAFT, conductor
POIYEST CLARK
CHARLES DE LANCEY
WALTER GOODWIN
KAREN JACKSON
ERIC REMSEN
BARRY SILVERMAN
KENNETH WATSON
ROBERT WINSLOW

MAURICE ALLARD, baritone
JOHN NEUFELD, clarinet
LOUISE DI TULLIO, flute
RAYMOND KELLEY, cello
LINCOLN MAYORGA, piano

The musical presentations on this program are made possible, in part, through the sponsorship of the Los Angeles County Board of Supervisors and the Los Angeles County Music Commission.

Members of the audience who wish to have their names added to our mailing list are invited to sign the guest book in the lobby.

Purchasers of single tickets for tonight's performance may apply the admission price toward season subscriptions by turning in their ticket stubs at the box office during the intermission or immediately after the concert.

TWO CONCERTS FOR CHILDREN will be given at the Los Angeles County Museum of Art, in the Bing Theater, under the auspices of Monday Evening Concerts on Saturday mornings, 20 November and 23 January at 10:30.

The concerts will be oriented toward the association of art with music. Illustrative material will include slides of paintings and the live performance of music from the Middle Ages and Renaissance to modern times. Dr. Rudolph Habenicht of the UCLA English Department will be the narrator, and the musicians include Gloria Ramsey, Shirley Marcus, Andrew Charlton, Norris Freed, and others.

The programs are designed for children 10 years of age and older. Children under 8 will not be admitted, and adults will be admitted only if accompanied by children. Seats are not reserved.

Tickets at $2 for the series are on sale at the box office.
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"Toccata," **Americana.** Les Percussions de Strasbourg. (Philips-6526017)

"Toccata," **Los Angeles Percussion Ensemble.** Henri Temianka conducting. (Columbia 5847)

"Toccata," **Manhattan Percussion Ensemble.** Paul Price conducting. (Urania UX134-1034)

"Toccata," **University of Illinois Percussion Ensemble.** Paul Price conducting. (CRS 3)