Japanese Music: An East-West Synthesis

by Shuko Watanabe

Japanese musical culture supports the following genres: Japanese traditional art and folk music; Western art music; and Japanese or Western-style popular music. Japan's geographical location in the Pacific Ocean has made access from the Asian continent possible yet difficult; at times Japan's location has protected and insulated it from the negative influences of destructive foreign invasions and has effectively isolated it from outside contacts. Although Japan's location is not so remote as to have resulted in a total cultural separation, it has produced two contrasting responses. One is a process of self-development and protectionism instigated at several points in Japanese history. A second response is controlled assimilation of other cultures through peaceful relations and trade. These two responses appear to have determined a particular Japanese characteristic — extreme curiosity and eagerness to accept "non-invasive" foreign influences. Conservative maintenance of tradition and extreme curiosity about foreign culture have gone hand-in-hand. Beyond Japan lies the vast Pacific Ocean; therefore when a form of culture reaches and establishes itself in Japan, it travels no further and becomes a part of this nation of drifted culture. Thus, when looking at Japanese history, large alternating cycles of openness and inwardness can be observed. The above characteristics may help to explain the following development of music in Japan.

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Influences From China: Music Of The Imperial Court — *Gagaku*

The first period of major acculturation, from the fifth to eighth centuries, started with the massive importation of Chinese culture. Along with the Chinese writing system, Buddhism and Confucianism, and Chinese arts and crafts, the music of *gagaku* or "T'ang music" (a wide variety of music from India, Indo-China, Manchuria, Korea and China performed in the courts of the T'ang Dynasty) and *shomyo* (the chants sung and composed on sacred texts of Buddhism) were introduced. The ancient music of *mi-kagura,* music for Imperial *Shinto* ceremonies, was preserved by court musicians and, upon the importation of Chinese "T'ang music," was incorporated into *gagaku,* which became the orchestral music of the Japanese Imperial Court.

Later, starting in the ninth century, cultural exchanges were minimized due to the uncertain political situation in China. During this period of relative seclusion *gagaku* and *shomyo* underwent modifications to suit Japanese tastes, and their general influence over later national musical forms as well as folk music were considerable. Above all, the theoretical concept of *jo* (introduction/slow), *ha* (development/faster) and *kyu* (conclusion/returning to slow) infiltrated the various traditional music that followed. The classic vocal style of *shomyo,* with its syllables each separated by a long melisma, spread widely and became the basis of native vocal style.

Music Of The Samurai — *Heikyoku* And *Nohgaku*

During the Middle Ages, two new genres of nationalistic music were established. Using the *biwa* (lute), an instrument of *gagaku,* the storytelling tradition of *heike-biwa* — comparable to the activities of minnesinger or troubadour and trouvère of the European Middle Ages — flourished. During the later Middle Ages, out of multifarious elements — folk theatricals, literature, music and dances — the *noh* drama was created. The dances and songs are accompanied by an orchestra consisting of three drums and a flute related to their counterparts in *gagaku.* The concept of *jo-ha-kyu* governs every aspect of *noh* composition. The philosophy and aesthetics of Zen Buddhism have a strong tie to *noh* drama.

From the middle of the sixteenth to early-seventeenth centuries, the first wave of westernization swept over Japan. Just as the acculturation of Chinese civilization engulfed the Japanese, this short period of westernization was quite extensive. Western music arrived in two ways. First, secular music was brought by sailors and tradesmen. Sacred music was introduced later by Christian missionaries. Western music spread widely, reaching all social classes, free from such restricted associations as *gagaku* for the Imperial Court, *shomyo* for Buddhists and *nohgaku* for the samurai class. At least one-fifth of the Japanese population is believed to have been exposed to Western music at that time.

The Period Of Isolation: *Edo* Or *Tokugawa* Period (1615–1868)

By the 1630s Japan was believed to be no longer secure from foreign intervention, and Japanese leaders adopted strict seclusion policies, effectively isolating Japan from the rest of the world for over two hundred years (except for extremely limited and tightly controlled trade relations with the Chinese and the Dutch). Everything relating to Western culture and Christianity was destroyed including Western books, paintings and all musical instruments. However, just as the influence of *gagaku* and *shomyo* lasted for centuries, some influences from Western music also prevailed. What is considered typical Japanese traditional music, along with folk music, flourished during the isolation period. New

genres such as *kabuki* theater and instrumental ensembles using folk instruments were established.

A Final Assimilation?

By the middle of the nineteenth century, samurai control faltered and governmental power was restored to the Emperor, signaling the arrival of the modern period of Japanese history. With the establishment of the Meiji restoration, Japan entered another period of major acculturation — modernization and westernization — interrupted only briefly during war time. The Meiji government eagerly introduced Western culture, including music, to the Japanese. The first Western music to re-enter Japan was military music followed by Christian music. Western classical music was first taught to the *gagaku* musicians. The Meiji government placed the utmost importance on universal education for the modernization of Japan and, with the help of Luther Whiting Mason, the Tokyo School of Music (presently known as the Tokyo National University of Fine Arts and Music) was established to train Japan's future music teachers.

With the intention of the Meiji government to bring over the very best, such musicians as Franz Eckert and Rudolf Dietrich, both from Prussia, were invited. The German pianist Anna Lohr taught in Japan from 1880 to 1890, then again from 1900 to 1905. Thus German influence became prevalent during this early period of development and continued to be influential for generations.

It took several decades from the initial introduction of Western music for its development to be realized in the art music field. The higher education curriculum placed an emphasis on pedagogy and offered hardly any theoretical or compositional studies that might prepare the Japanese to become composers. The first major in composition was not offered at the Tokyo School of Music until 1932. Additionally, the general inaccessibility of information on Western music and musical instruments remained a hindrance until around 1900 when the first phonograph recordings were imported, the first Western-style instruments were manufactured and musical journals began to circulate.

The Rise Of Japanese Composers

The development of Japanese composers may be divided into four periods. The first period started around the turn of the twentieth century and lasted until about 1917. These composers began to write lieder and instrumental works; their major goal was to assimilate the Western style through imitation.

The second period lasted from about 1918 to 1927. Most of the compositions written remained vocal. At this time, Japanese composers began a conscientious search for their own nationality. Meanwhile, some composers established a school of academicism, especially of German classicism, by intentionally avoiding a one-sided devotion to nationalism.

The third period ran from about 1928 to 1950 and three major schools of Western music — German, French and Japanese Nationalist — were firmly established. Within a relatively short period Japanese composers acquired sufficient knowledge and skill in the use of Western compositional techniques to permit themselves expression through Western-style music. The fourth, or present, period started around 1950 and with the postwar re-establishment of contact with the West, most modern musical movements are now represented in Japan.

Japanese Contemporary Piano Music For Children

This brief introduction to Japanese music history may help in understanding the wide range of styles presented in the compositions by Japanese contemporary composers.

Example 1

Example 2

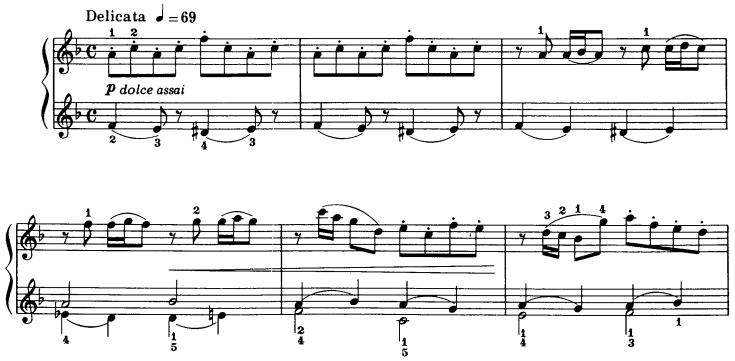
Example 3: *Old Song*

Example 4: *Canon by Koto*

Example 5: *Prelude*

Example 6: *Invention No. 4*

Example 7: *Starlit Sky*



Some composers are still writing in the Baroque, Classical, Romantic or Impressionistic styles with great pride and determination to keep these traditions alive. The most obvious and immediately recognizable influence on these composers comes from the German and French schools. Some composers conscientiously incorporate Japanese traditional or folk music elements into their works, creating new musical hybrids through synthesis of Japanese and Western materials. Other composers are truly dedicated to the most current international trends. They may employ aleatory elements, serial technique or write in freely atonal idioms. However, even these composers are often searching for aesthetic and spiritual expression of a distinct Japanese sensitivity.

After analyzing numerous Japanese folk songs, a Japanese musicologist, Fumio Koizumi, arrived at the conclusion that the Japanese prefer the interval of the perfect fourth over the perfect fifth. Japanese folk melodies often contain two to three key notes (nuclear tones) within their one-octave range, suggesting that the Japanese scale has a melodic construction based on two fourth-frame chords. Each fourth-frame chord (tetrachord) contains two nuclear tones — the bottom and top notes of the fourth-frame in the interval of a perfect fourth. This fourth-frame chord employs only three notes which are two nuclear tones with only one middle note. Koizumi devised four categories of fourth-frame chords according to the location of middle notes and named them after the frequency of their employment in various forms of Japanese music. They can be extended by juxtaposing two of them, forming a mode as shown in Example 1 on page 25.

Rhythmically most Japanese folk music may be placed into two categories: *yagi-bushi* style in a regular beat and *oiwake* style with its uncountable temporal structure. The *yagi-bushi* style has a regular pulse in two-four and rarely employs triple meter. Contrary to *yagi-bushi* style, the *oiwake* style incorporates extensive melismatic lines and is uncountable in the metronomic sense.

During the Meiji era, Japanese composers started to employ major and minor *yonanuki* (a scale without the fourth and seventh notes) scales. The major *yonanuki* is the same as the tonal pentatonic scale (C, D, E, G, A) and the minor *yonanuki* is comparable to that of the semitonal pentatonic scale (A, B, C, E, F). (See Example 2 on page 25.)

Japanese nationalistic composers may use Japanese fourth-frame chords and modes or major and minor *yonanuki* scales to enrich the Western-scale system in the following ways: free use of Japanese modes or *yonanuki* scales by allowing some exchange notes; use of fourth-frame chords in free combination; or fourth-frame chords with the addition of one or two notes.

Japanese Teaching Materials

The following is an introduction to elementary through intermediate level collections and albums from the author's personal library.[1] All teaching materials discussed here are available through American agents. The collections with multiple composers are discussed first; the albums by single composers are arranged in alphabetical order by composer name.

These compositions may be of interest to the reader from three different viewpoints. One is the music written in traditional Western style, but often laced with a sense of modernity. The second category is the mildly dissonant compositions derived from the synthesis of Japanese scales. The above two characteristics should gradually accustom the student to the more dissonant qualities of contemporary music. A third consideration is the special attention often paid by Japanese composers to those students with small hands (because frequently Japanese children face this situation).

Collections With Multiple Composers

Piano No Yuenchi (Piano Playground), a collection of ten volumes, published by Ongaku No Tomo Sha,[2] represents the works of 329 Japanese composers. The majority are solo works, though each volume contains several duets. The volumes are graded by the publisher as one to five elementary (E1–5) levels and one to three intermediate (M1–3) levels. Unfortunately no Western language translations are provided for the titles of compositions or comments by composers. The following examples are chosen randomly from the elementary and intermediate levels. (See Examples 3, 4, 5 and 6 on pages 25 and 26).

Sonatinas, Collection 1, Nihon no Sonatina, is published by Ongaku No Tomo Sha. This is a collection of sonatinas for the intermediate to advanced level student by Takagui, Ikenouchi, Otaka, Yamada, Tsukatani, Okumura, Miyoshi and Hara. Their works represent many different styles. For example, the first movement of *Sonatine pour piano* by Ikenouchi shows a balanced integration of Japanese elements and French Impressionism through an application of quasi-pentatonic sound or dominant character chords in dualism. English translations of names of composers, contents and titles are supplied.

Example 8: *Sonatine for Piano No. 3 in C*

Example 9: *Song About The Wind Going Over The Blue Sea*

Albums With Single Composers

Dreamland, easy piano pieces for children, by Komei Abe, published by Zen-On Music Company Ltd.[2] The collection consists of twenty-two late elementary pieces. Abe comments that no progressional consideration is given; thus each piece can be used independently. He also states that he intentionally avoided unusual chordal progressions. The work is mildly contemporary. Only contents and titles are translated into English. (See Example 7 on page 26.)

Hideo Arashino Piano Works 1–3, are in three volumes, published by Ongaku No Tomo Sha. Each volume has three works with titles such as Sonatine, Sonatinetta and Divertimento for the intermediate level. Arishino comments in the foreword that "these works are all written in easy 'words' and 'sentences' that everybody can understand. Anyone who is studying middle-

Example 10: *With My Pony In The Field*

Examples 10, 11 and 14 used by permission of Kawai Japan.

Example 11: *The Snowy Pathway*

Example 12: *Sonatine No. 1*

grade études can play them." Arashino states that he employs "a neo-classical style mixed with Japanese modes"[3] creating a pleasantly modern hybrid sound. Complete English translations are supplied. (See Example 8 on page 27.)

21 Etudes, subtitled "Study of Dreams and Fairy tales," by Hiroshi Hara, published by Ongaku No Tomo Sha. This is a collection of twenty-one studies with titles, written for the intermediate level in a conservative language à la Burgmüller. It may be useful in succession to Burgmüller's *25 Easy And Progressive Studies, Op. 100.* French translation is supplied for titles.

48 Songs For Piano, little piano pieces for children, by Hikaru Hayashi, published by Ongaku No Tomo Sha. This collection of late elementary to early intermediate pieces introduces a considerable number of mildly contemporary idioms. English translation is supplied. (See Example 9 on page 27.)

Yoshiro Irino Piano Works, published by Zen-On. This collection includes the complete repertory for piano by Irino: Piano Pieces for Children (elementary level); Four Small Pieces for Piano, Pepe on a Spring Day and Three Little Pieces for Piano (late elementary to intermediate levels); Variation and Three Pieces for Pianoforte (upper intermediate to early advanced levels). Irino introduced twelve-tone technique to Japan; thus his works represent a more modern style. All pieces contain a high degree of dissonance and employ atonality, polytonality or twelve-tone techniques. English translation is given for contents and titles only.

Talking With The Piano, piano pieces for children with small hands, no octaves, by Kan Ishii, published by edition Kawai.[2] This is a collection of forty-two pieces for early elementary level. Ishii comments in the preface, "I feel it is necessary for these to have the characteristics of an étude for rudimentary piano playing, and to be filled with a warm, deep, musical sense in each and every piece as well." The contents are divided into five sections: finger positions of both hands; crossing over and under of fingers; chords; finger positions of one hand; and from practice to *Fables by Music.* The majority of selections are tonal, sometimes with a twist of dissonance: the last section of ten pieces introduces more dissonance to prepare the student for the more contemporary sound employed in *Fables.* English translations are provided. (See Example 10 on this page.)

Fables By Music, piano pieces for children with small hands, no octaves, by Kan Ishii, published by edition Kawai. A continuation

to *Talking With The Piano, Fables* offers twenty-two pieces in late elementary level with "a fresh sense of modern music." Again, the music is mildly contemporary with étude-like characteristics. English translations are provided. (See Example 11 on page 28.)

Album Blätter, 17 Klavierstücke, by Hitoshi Kobayashi, published by Zen-On. This is a collection of seventeen pieces from late elementary to intermediate levels marked by mild to strong dissonances. In his preface Kobayashi comments that these pieces are a kind of essay in music; the given titles are merely suggestive. Titles and contents are translated into German.

Etudes Pour Piano D'Après Modes Japonais, by Yoritsune Matsudaira, published by Zen-On. This is a collection of thirty-three studies for late intermediate to advanced students with moderate to highly dissonant levels based on the composer's analytical study of folk songs in the Tohoku (north east) region of Japan. Matsudaira comments in the introduction that "when I analyzed the melodic structure of folk songs, I became aware of the preference towards the interval of a perfect fourth. Based on a pilation of the perfect fourth, one can derive the twelve pitches — B, E, A, D, G, C, F, B-flat, E-flat, A-flat, D-flat and G-flat (F-sharp). Out of these twelve pitches, the first five pitches are equivalent to a Japanese folk mode (pentatonic scale). Pitches not used in the first five notes are used in an opposing series. The opposing series (C, F, B-flat, E-flat, A-flat, D-flat and G-flat) is a half step off, resulting in bitonality when used simultaneously." Each étude is devoted to the study of a specific pianistic technique such as arpeggios, articulations, chords, contrary motion, double seconds, independence of fingers, glissando and so forth. No translation to English is provided.

Bouquets De Sonatine, fifteen sonatinas by Makoto Moroi, published by Zen-On. These sonatinas, in single movements, range from intermediate to advanced levels. The preface written by Moroi explains that various elements from such composers as Scarlatti, Bach, C. P. E. Bach, Haydn, Clementi, Chopin, Ravel, Prokofiev, Hindemith, Bartók and Milhaud have exerted an influence on these pieces. He dedicates these fifteen single-movement sonatinas as a bouquet to these great composers. Yet despite their traditional references, they are highly dissonant. No translation is provided except titles and dedications. (See Example 12 on page 28.)

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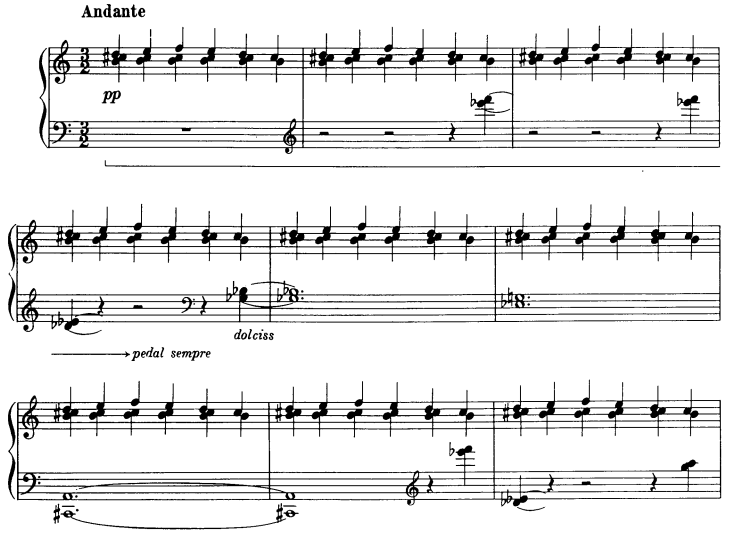
Example 13: *Run, In E*

Example 14: *Night Of The Centaurs' Festival*



Example 15: *La Consolation*

heard a moment ago as we are hearing the next passage; when singing a familiar piece of music from memory, we hear what we are going to perform before we perform it; and when creating and improvising unfamiliar music, we hear and decide what we are going to create and improvise before we actually perform it. Notational audiation is the ability to look at music notation and to hear and comprehend it before we actually produce the sound that the signs (preferably symbols) represent. For more information on audiation, please see the following articles previously published by *American Music Teacher:* "Musical Child Abuse." April/May 1988, p. 14; "Audiation, Imitation And Notation: Musical Thought And Thought About Music." April/May 1989, p. 15. See also Edwin E. Gordon, *Learning Sequences In Music: Skill, Content And Patterns.* (Chicago: GIA, 1988), 7–18.

3. Emile Jaques-Dalcroze, *Rhythm, Music And Education.* Translated by Harold F. Rubenstein. (London: The Riverside Press, 1967).

4. For more information about the relationship between the two men, the influence they had upon each other and the mutual respect they had for Pestalozzi, read Bernarr Rainbow, *The Land Without Music.* (London: Novello and Company, 1967).

5. Perhaps the most authoritative books on Zoltán Kodály and his ideas are those of Lászlo Eosze, *Zoltán Kodály: His Life And His Work.* Translated by Istvan Farkas and Gyula Gulyás. (Boston: Crescendo Publishing Company, 1962) and Erzsébet Szönyi, *Kodály's Principles In Practice.* Translated by John Weissman. (London: Boosey and Hawkes, 1973).

6. Inner hearing is often confused with audiation. A student may inner hear ("hear silently in his head") music that he has memorized without comprehending its syntax. For example, some students perform a piece of music from memory in concert but nevertheless are unaware of the tonality of the music, the keyablity of the music, the meter of the music, the style of the music, the type of modulations that may have taken place in the music, the harmonic progressions in the music, the form of the music and so on. Many instrumentalists inner hear in association with the memorization of fingerings, for example. Though one cannot audiate unless he or she inner hears, one can inner hear without audiating.

7. Orff, like Kodály, did not author a book on sequencing music instruction. A close associate did. Read Gunild Keetman, *Elementari.* (London: Schott, 1970).

8. Imitation has more in common with inner hearing than with audiation.

9. Confusion exists in most circles about the difference between creativity and improvisation. Though the two are on a continuum, they are not the same. A student creates when there are no restrictions put upon what he creates. However, to create without audiation is simply to explore. A student improvises when there are restrictions put upon what he improvises. For example, to perform a variation of a given melody or to perform a melody based upon a given chord progression is a matter of improvisation.

10. Ronald B. Thomas, MMCP Final Report. Part 1, Abstract (United States Office of Education, ED 045 865, August 1970).

11. For example, read Michael L. Mark, *Contemporary Music Education.* (New York: Schirmer Books, 1986).

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Piano Pieces For Little Hands, Études for Beautiful Sound, Pieces for Concert, by Yoshinao Nakada, published by Ongaku No Tomo Sha. Nakada comments that he gave a special consideration to those students with small hands, restricting the use of intervals to the seventh. This album of seven pieces, written at the intermediate level, is mostly tonal with a light touch of dissonance and may be of interest to those teachers who are seeking intermediate-level pieces for students with small hands. English translations are given for contents and titles only. (See Example 13 on page 29.)

Children's Album, piano pieces for children with small hands, by Teruyuki Noda, published by edition Kawai. This collection of twenty-one pieces from late elementary to intermediate levels presents a wide variety of styles from light salon-like romantic sounds to more dissonant modern styles. Noda seems to concentrate dissonance levels in the more advanced pieces. English translations are provided. (See Example 14 on page 29.)

Sonatine avec Titre, by Toroque Takagui, published by Ongaku No Tomo Sha. A collection of five sonatinas at the intermediate level. Each sonatina consists of three movements, with titles. Through the entire output of these sonatinas, Takagui's musical language remains conservative: classicism, romanticism and impressionism. Additionally the incorporation of simple pentatonic scales can be found in *Sonatine avec Titre IV (La Fète, La Flute, L'Harpe).* Takagui comments in the preface that these sonatinas were written in a very free style consisting mostly of ternary forms and attempt to retain a simple and modest classicism. He mentions that any or all movements may be played in a recital situation. English translations are provided. (See Example 15 on page 29.)

Pièces pour Piano (Supplement: Cadences pour Concertos), by Akio Yashiro, published by Ongaku No Tomo Sha. The first five pieces of this collection — An Old Story, A Game of "Hop Scotch," Prim, Mischief and The Dream Boat (duet) — are written in a tonal manner for the elementary level. The last two pieces, Nocturne and Danse des Guerriers, are written for the intermediate

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level. Supplementary cadenzas by Yashiro for Beethoven's Piano Concerto No. 3 and Mozart's Piano Concerto in D Major, K. 537 are supplied in facsimile. The Nocturne is written in a mild atonal manner, while Danse de Guerriers seems to employ Japanese fourth-frame chords by emphasizing the intervals of fourths and seconds. English translations are given for contents and titles only.

Confections, A Piano Sweet, by Akira Yuyama, published by Zen-On. A collection of twenty-six pieces at the intermediate level. It employs a very mild to fairly dissonant language. Yuyama comments in the preface that "various devices are interwoven in this music, such as the Japanese sound of Kaki-no-Tane (persimmon seed) and a jazzy feeling in 'Chocolate Bar' and 'Chewing Gum.'" Many light pieces that may serve as a relief to the more dissonant pieces are included. English translations are provided.

Sunday Sonatina For Piano, by Akira Yuyama, published by Ongaku No Tomo Sha. This collection of seven sonatinas, Monday through Sunday, is at the intermediate level and contains an overture and a moderate amount of dissonance. Each sonatina has two to three movements. Yuyama comments that there is no relationship between the days of the week and the music; however, the Saturday Sonatina perhaps is the most difficult technically. English translations are provided. ***AMT***

Notes

1. A person who has a further interest in teaching materials by Japanese composers may request a compiled list of publications translated by the author.

2. The American agent for Ongaku No Tomo Sha is Theodore Presser Co., Presser Place, Bryn Mawr, PA 19010. The American agent for the Zen-On Music Company Ltd. is European American Music, P.O. Box 850, Valley Forge, PA 19482. Permission from Kawai Japan secured through Kawai America Corporation, 2055 E. University Dr., Compton, CA 90224.

3. From a letter to the author by Arashino.

Sources of Japanese music history in English: Willi Apel, "Japan," *Harvard Dictionary Of Music,* 2nd ed. (Cambridge, MA: Harvard University Press, 1969), 431-435; Mikiso Hane, *Japan, A Historical Survey* (New York: Charles Scribner's Sons, 1972); Eta Harich-Schneider, *A History Of Japnaese Music* (London: Oxford University, 1973); Shigeo Kishibe, *The Traditional Music Of Japan* (Tokyo: Kokusai Bunka Shinkokai, 1969); William Malm, *Japanese Music And Musical Instruments* (Vermont and Tokyo: Charles E. Tuttle, 1959); Stanley Sadie and others, eds., "Japan," *The New Grove Dictionary Of Music,* 20 vols., (London: Macmillan, 1980), IX, 504-552.

Training Musicians To Teach
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supporting a tone, reading a score, interpreting expressive markings, intensifying contrasts, playing with ease and velocity and establishing moments of intensity and relaxation. This probably will be done by providing models to imitate and by leading students to discover how to reach such goals on their own. At times, because of the diversity of skills that students will need to develop, tomorrow's teachers will need to serve as brokers of information, seeking the help of others who have developed special expertise in different areas, rather than being merely the deliverers of information.

Although some skills can be taught to students in group settings or through the use of videotapes and other teaching tools, teachers still will need to attend to the individual differences of their students. Perhaps the most important role of teachers will be to nurture the qualities that Nadia Boulanger considered essential to the making of a great musician: confidence, eagerness and enthusiasm. Boulanger considered teaching to be an expression of respect and love and she suggested that the essence of teaching was "the discovery of the personality of the student." She said, "you cannot be a teacher if you have not a need of comprehension, the need of understanding, the love for the personality of the other."[6]

In the twenty-first century, what tools will we develop and how will we use them? How will these tools affect the way we teach performers and the way we teach performance teachers?

We can start with the tools and explore ways of using them. We also can start with the tasks and try to obtain tools that will help us accomplish those tasks. Both approaches will be important as we head into the next century. The real challenge will be to utilize technological advances as tools that will improve the quality of life by enhancing human sensitivity and creativity. In spite of whatever technology is developed in the next century, musicians in the future, as in the past, will be those people who are sensitive and responsive to sounds; those people who listen; those who hear, feel and express emotions in sound.

Three categories of new technology are especially related to the work of musicians: computers and software; musical instruments that allow one to create, manipulate and retrieve sounds; and videotape that provides a medium for storing and retrieving patterns of motion and sound. Appropriate use of such technology can enhance our understanding and our effectiveness in