San Francisco Contemporary Music Players David Milnes, Music Director Chanticleer Joseph Jennings, Music Director Monday, March 29, 2004 \* 8 p.m. Calvary Presbyterian Church, San Francisco Friday, April 2, 2004 \* 8 p.m. First Congregational Church, Berkeley The premiere performances of Betty Olivero's Bashrav are supported in part by a grant from the National Endowment for the Arts. Performances of Iannis Xenakis's *Medea Senecae* are made possible in part by a sponsorship from Russell G. Irwin. The premiere performances of Pablo Ortiz's Oscuro and Betty Olivero's Bashrav are support in part through the Cultural Equity Grants Program of the San Francisco Arts Commission. IANNIS XENAKIS Medea Senecae (1967) BETTY OLIVERO Bashrav (2003, world premiere, Koussevitzky commission) - intermission -GIACINTO SCELSI Three Sacred Songs (1958) PABLO ORTIZ Oscuro (2003, world premiere, Gerbode Commission)

### IANNIS XENAKIS (1922-2001)

Not long after the death of Iannis Xenakis in 2000, Paul Griffiths paid tribute to the composer in *The New York Times*, commenting that his music retained a "primitive power" despite its origin in "highly sophisticated scientific and mathematical theories." This unusual juxtaposition—of the very old and very new, of the very basic and the highly refined—is crucial to understanding Xenakis's music and his influential theories about mathematics and composition.

Growing up in Romania and Greece, Xenakis was fascinated by ancient literature and philosophy, and his formal education was devoted to mathematics and engineering rather than music (although he received rudimentary vocal and keyboard lessons). Perhaps because of this threefold distance—in space, time, and training—from the compositional trends of Western Europe, he developed strikingly original methods of musical creation. While fighting with the Greek resistance during World War II, Xenakis was wounded, captured, and sentenced to death. With the end of the conflict, he escaped to France, where his death sentence was revoked and he became a citizen. Throughout his life, however, he retained strong ties to his homeland and the political ideals that had forced him into exile.

Shortly after arriving in Paris, Xenakis found a job in the architecture studio of Le Corbusier. He was deeply involved in designing the Philips Pavilion, which would become the spatial home for Edgard Varèse's pioneering tape piece, *Poème électronique*. During this time, he also worked to refine his compositional skills. Though Nadia Boulanger turned him down as a pupil, he received guidance from Arthur Honegger and Annette Diudonné, who quickly sensed that he had little interest in traditional harmony. She sent him to study with Olivier Messiaen and Darius Milhaud, whose open-minded approaches to pitch organization inspired him to explore parallels between music and architecture.

This experimentation bore fruit in his first major orchestral work, *Metastasis* (1953-54) which took even the avant-garde by surprise when it was premiered at the 1955 Donaueschingen festival of contemporary music. Xenakis compared this watershed work to the Philips Pavilion, noting that each represents an exploration of continuity: "parabola shapes" in the building, and glissandi (slides) in *Metastasis*. His replacement of specific pitches with sonic shapes reached an even greater extreme in *Pithoprakta* (1955-56) which took theories about the movement of gases and applied them to music, resulting in "clouds of sound": continuously changing conglomerations of tiny sound-events, such as the plucking of a stringed instrument.

Implicit in *Pithoprakta* was a conjunction between music and mathematics that grew ever more technical through Xenakis's career. He codified his ideas under the rubric "stochastic music," a term that invokes probability theory and the laws of "large numbers" or "rare events." His fascinating but formidable writings, many of which are collected in *Formalized Music* (1963, rev. 1992), reveal the depth of his engagement with the sciences. Intuitively drawn toward natural sounds that are both complex and unpredictable (thunder, wind, insect noises), Xenakis began to create similar sounds synthetically. Underlying this fascination was a desire to escape the determinism of serial or twelve-tone music without abandoning its scientific rigor. "I have tried to inject determinism into chance," he once observed.

As electronic technology improved, computers became a natural and perhaps an indispensable tool for Xenakis. Beginning with *Achorripsis* of 1956-57, he used computer programs to link certain musical parameters (timbre, duration, intensity, etc.) with mathematical operations derived from calculus and game theory. By separating non-temporal parameters (like pitch) from temporal ones (like rhythm) in his calculations, Xenakis achieved extremely intricate constructions in pieces like his sextet *Eonta* for piano and brass (1963-64), *Nomos Alpha* (1965-66) for cello, or *Tetras* (1983), dedicated to the Arditti String Quartet.

Xenakis viewed composition as an endeavor based on rules and variables, suggesting a moral and aesthetic stance that he summed up: "This is my definition of an artist, or of a man: to control." Such a statement reveals the distance Xenakis placed between expression and composition: "sentimental effusion of sadness, gaiety or joy," he wrote, "I don't think that this is really admissible in my music." Yet this ostensibly anti-expressive philosophy has roots in Xenakis's personal history, and in connecting his musical style to his wartime experiences he acknowledged a desire for the transcendent: "For years I was tormented by guilt at having left the country for which I'd fought.... I felt I had a mission. I had to do something to regain the right to live.... I became convinced-and I remain so even today-that one can achieve universality, not through religion, not through emotions or tradition, but through...a scientific way of thinking. But even with that, one can get nowhere without general ideas, points of departure.... These ideas are born of intuition, some kind of vision."

#### Medea Senecae (1967)

for clarinet, contrabassoon, trombone, percussion, cello, and men's voices

Like many of Xenakis's vocal and theatrical works, *Medea Senecae* revisits the rugged ancient Greece that captured his attention as a young man. In this case, however, he approached the Hellenic past by way of Rome and Seneca's Latin retelling of the story of Medea. Xenakis selected eighty lines (from more than 1,000) chronicling Medea's efforts to aid Jason and the Argonauts and her terrible revenge after Jason's infidelity. In the process, he left behind the more violent events of the tale and focused on the sounds that it called to mind. According to the composer, "In 1967, I received a commission to write incidental music for Seneca's *Medea* for a production at the *Théâtre de l'Odéon* in Paris.... [The text] deals with the story of the sea-voyage of the Argonauts, [and] the use of stones as percussion instruments is to be understood as an evocation of those stones that stood watch over the entrance to the Black Sea. They crashed together as soon as anyone went between them."

Striking stones are not the only unfamiliar noises in Xenakis's *Medea*. Rather than presenting the words of the heroine (or anti-heroine), the male chorus comments upon the action in the manner of a Greek drama. Numerous critics have observed that the composer treats the voices impassively, as if they were instruments, interpolating whispers, hisses, fragmentary repetitions, and free-floating consonants. The instruments, however, "sing" with unusual force, relying on sliding pitches, microtones, and changes in tone color to suggest an antique world that is both immediately arresting and unrecoverably strange.

#### Translated excerpt from Medea by Seneca:

Happy man, take the Aeolian maid.

Handsome and noble son of thyrsus-bearing Lyaeus, it is now time to ignite your frayed pinewood torch.

Too bold the first man who carved through the treacherous waves in a frail vessel, and who, seeing his own lands at his back, entrusted his soul to the fickle winds; and, cutting the waters with a wavering course, he was able to trust in a slender plank being led on a path surely too narrow between the ways of life and death.

Not yet did anyone know the constellations, nor did anyone make use of the starts with which the firmament is embroidered; not yet could a boat avoid the rainy Hyades; neither the lights of the Olenian goat, nor that which slow old man Boötes follows and controls – the Attic wain – nor yet Boreas, nor yet Zephyrus had names.

Tiphys dared to unfurl sails over the vast sea and to write new laws for the winds: now to stretch out the canvas in a full curve, now, with the rope brought in, to catch the cross-winds, now to place the sail-yards safely at the mast's centre, now to tie them to its top, when already the too eager sailor longs for strong winds and russet top-sails tremble at the top.

Pure were the ages which our fathers saw, with deceit kept far away.

Each man lazily kept to his own shores and grew to be an old man on his ancestral plot, rich with little and, but for what his birth ground produced, knowing nothing of wealth.

The conventions of the properly separated world The Thessalian ship dragged into one.

That bold ship paid the price dearly, dragged through such lengthy terrors, when two mountains, gates of the depth, from this side and form that by some sudden impulse groaned as if with the sound of thunder; the trapped sea soaked their peaks and even the clouds.

Brave Tiphys paled and all

# BETTY OLIVERO (B. 1954)

As one of Israel's best-known composers, Betty Olivero has explored the meanings of contemporary composition in a region whose musical diversity matches the ethnic diversity that has both troubled and enriched its inhabitants.

Olivero was born in Tel Aviv and studied at that city's Rubin Academy of Music before earning a Master's Degree at Yale University under Jacob Druckman in 1981. The following year, she won a Leonard Bernstein Scholarship, allowing her to attend the Tanglewood Music Festival where she worked with Luciano Berio, whose music and teaching quickly made a lasting impression. Olivero moved to Italy, and for the next four years she studied with Berio, with whom she shares a fondness for folk song settings, dramatic performance techniques, and allusions to past styles.

In her songs and chamber music, as well as her choral and orchestral pieces, Olivero is especially renowned for her creative engagement with Jewish musical traditions, ranging from Sephardic and Middle Eastern folk music to liturgical music and, more recently, klezmer. In such works as *Cantigas Sephardies* (1982), *Makamat* (1988), *Cantes Amargos* (1984), and *Juego de Siempre* (1991/1994) she sets texts drawn from the Judeo-Spanish (Ladino) and other folk traditions. Two of her large-scale works, *Mizrach* (1987) and *Bakashot* (Supplications)(1996), feature the soulful sounds of klezmer-inspired clarinet against an orchestral backdrop. No matter what the source of inspiration, Oliver makes these varied materials her own through a thoroughly contemporary attention to timbre (tone color) and an avant-garde manipulation of melodic motifs.

From early in her career, some of Olivero's most intriguing compositions unite music with drama and other art forms. In her two "musical acts" *Behind the Wall* (1989, based on a short story by H. N. Bialek) and *Behind the Fence* (1990), she employs a small puppet theater troupe to provide a visual complement to the activities of female vocalist and chamber ensemble. More recently, Olivero provided a much praised live accompaniment for the newly restored print of Paul Wegener's silent film *The Golem* (1920). A landmark of German expressionist filmmaking, *The Golem* retells the tale of the clay giant created by Rabbi Loew to protect the Jews from persecution in 16<sup>th</sup>-century Prague. Olivero recalls: "The legend, in all its different

versions was well known to me, and I had always wanted to write an opera or ballet music for it. When I saw Wegener's film, I was amazed by its beauty and decided that that would be the right realization of my dream.... The body movement of the actors, the exaggerated expression, the overacting, which was so characteristic of the acting style of those days, especially needed in a silent movie, seemed to me like a ballet that music should be set to. It was like writing music to an existing choreography." Her accompanying music, for string quartet and klezmer clarinet, gained fame on both sides of the Atlantic in performances by Giora Feldman and the Arditti Quartet in Vienna (1997) and at Lincoln Center in New York (2001), and she has extracted two suites from the film score for concert performance.

The Golem illustrates Olivero's interest in klezmer music, a genre known for its border-crossing, history defying power. Thought to have been extinguished by the Holocaust, klezmer has arisen to become a lively genre of popular music in many nations. It is appropriate that such a resilient and hybrid music should resonate with Olivero, a composer who makes her home in many worlds, and who encourages us to do the same.

Olivero's works have been featured at festivals all over Europe, including the Aspen Music Festival, Florence's Il Maggio Musicale, Amsterdam's Gaudeamus Music Week, and the 1994 World Music Days in Stockholm. In concert, her pieces have been performed by such groups as the Chicago Symphony Orchestra, the New York Philharmonic Orchestra, the BBC Symphony Orchestra, the London Sinfonietta, the Munich Philharmonic, the Berlin Radio Symphony Orchestra, Cologne Radio, and the Israel Philharmonic Orchestra. She has won the Israel Prime Minister's Prize in Composition, the Rozenblum Prize of Tel Aviv, the John Day Jackson Prize, and numerous commissions, including the Serge Koussevitzky Music Foundation Award that led to tonight's world premiere performance of *Bashrav* by the San Francisco Contemporary Music Players. Since the mid-eighties, Olivero has divided her time between Florence and Tel Aviv, where she serves as lecturer in the composition department at Bar Ilan University.

### Bashrav (2003)

for flute, clarinet, trumpet, string quartet, piano, and percussion

The composer writes: "Bashrav is a suite form in Turkish and Arabic classical music. The piece takes its inspiration from various traditional tunes originating in the Arab-Jewish musical heritage. I tried to draw an imaginative-poetic 'sound-world' of antique Arab string and percussion instruments. Some of these instruments are rather limited and therefore, to the western ear, their musical material seems melodically and harmonically 'primitive.' However, I personally find it incredibly rich in color and expression.

"I did not seek these materials out of any scientific-musicological point of view. They served purely as a dramatic stimulus and as a point of reference. These traditional melodies and texts undergo in the piece thorough transformation, so profound as to make their original form, at times, unrecognizable, yet their spirit and highly-charged dramatic potential remain untouched."

#### PABLO ORTIZ (B. 1956)

Notes by Maxima Putnam, with revisions and additions by Beth Levy

"It was more than ten years ago," Pablo Ortiz recalls, "when I first started writing a series of works related to the idea of tango and memory." Although this represents only one of many strands within his varied oeuvre, the association with tango is apt, for Ortiz shares its Argentinian roots, its thoroughly cosmopolitan history, and its ability to mirror social interactions with controlled, dramatic flair.

Growing up in Buenos Aires, Ortiz took piano lessons from his mother and learned Gregorian chant at the Universidad Catolica Argentina, where he also studied composition with Gerardo Gandini. At the age of twenty-seven, he made his way to the United States, earning his doctorate from Columbia University under Mario Davidovsky. Other notable teachers have included Jack Beeson, Chou Wen-Chung, Jacques Louis Monod, Fred Lerdahl, and Roberto Caamano. From Davidovsky, Ortiz gained not only a meticulous concern for detail, but also a powerful sense that "music is like religion" in its ability to capture the urgency and humility of human experience. Subtle nuances figure prominently in a trio dedicated to Davidovsky, *Trazos en el Polvo* (Traces in the dust) (1994). Ortiz has also composed many works of a specifically religious nature, including a mass, several motets, and a large piece for Paul Hillier's Theatre of Voices.

After moving to the Bay Area in 1994, Ortiz developed a particular fascination with Mexican culture. This led to the concerto *What about Maximiliano?* (based on episodes from the life of the Emperor Maximilian) for the Mexican harpist Mercedes Gómez and the U. C. Davis Symphony Orchestra. More recently, he has completed a commission from Fideicomiso para la cultura Mexico-US to write children's songs on texts by the famous Chicano poet and Mission artist, Francisco Alarcón, whose work he describes as "a celebration of life in all its diverse incarnations." "Canciones del Ombligo de la Luna" (Songs from the Bellybutton of the Moon) describes the Chicano child's experience as a bridge between two cultures.

In 2001, Ortiz brought these Mexican references into his series of tango-related pieces with the chamber work *Papel Picado* (Cut paper), whose title refers to the decorations (usually depicting dancers and music) used as decoration during parties and fiestas. Described as an "abstract Mexican tango," full of rapid motion and exaggerated rubato, this piece exhibits tango elements that "appear and disappear, as if the tango itself had absentminded moments or was built with windows onto other sounds and horizons." A similar process is at work in one of Ortiz's most important recent scores, *Transcripcion*, written for Finnish cellist Anissi Karttunen and premiered at Buenos Aires's Teatro Colon in 2003. In this suite of seven pieces—including flamboyant *milonguitas*, "Le dernier tango argentin," three studies in rubato, and two Finnish tangos—the composer imagined a "ipurée' in which improbable chunks or fragments of tangos and *milongas* would be easily recognizable" and "everything is transcribed or transformed from one world to another."

In addition to solos and chamber music, vocal, orchestral, and electronic compositions, Ortiz has composed much incidental music for plays (including Stephen Jeffries's *Interruptions* in 2001) and numerous scores for film, including three feature films directed by Sergio Renan and a documentary with Sarah P. Anderson. Regardless of the genre, Ortiz believes that music "has to have some kind of drama in it" and that each piece is a kind of musical storytelling. Wagner has been an influence, though Ortiz's music tends to be more introverted, with nuanced contrasts rather than emotional outbursts. Audience members at the San Francisco Contemporary Music Players concert in March 2001 heard this gentle drama at work in *Raya en el mar* (Trace in the sea).

Ortiz's works have received international recognition and performances by the Arditti String Quartet, Speculum Musicae, Continuum, the Buenos Aires Philharmonic, the Ensemble Contrechamps of Geneva, Music Mobile, the Pittsburgh New Music Ensemble, EARPLAY, Ars Nova, Les Percussions de Strasbourg, and the CORE Ensemble. He has been honored with commissions from the Fromm and Koussevitzky Foundations, a Guggenheim Fellowship, and a Charles Ives Fellowship from the American Academy of Arts and Letters. After being a fellow at the Composers' Conference at Wellesley College in 1986 and 1988, Ortiz taught at the University of Pittsburgh and directed its Electronic Music Studio from 1990-94. He is currently Professor of Composition and Chair of the Music Department at U. C. Davis. In addition to playing *Raya en el mar* (2000), the San Francisco Contemporary Music Players have featured his works *El Agua Incierta* in 1993 and *Story Time* in 1998; tonight, together with Chanticleer, they give the world premiere of *Oscuro*.

### Oscuro (2003)

for mixed choir, flute (piccolo), clarinet (bass clarinet), violin, cello, piano, and percussion

The composer writes: "Years ago I read the line in Francisco Alarcon's poem, 'como loca flor, en lo oscuro brota' (like a crazed flower it buds in the dark), and I immediately thought of setting it to music. More recently, thanks to my wife and her research interests, I rediscovered some of the darkest sentimental poetry from the beginning of the twentieth century: books that my parents and grandparents read with pleasure, scorned by the avant-garde and almost banned from history. The music that I imagined was dark as well, at least as dark as that of the darkest madrigals. I decided to pair Francisco's poem with Amado Nervo's La trenza, a dark love poem of a different kind, and to set them both in Spanish and English. I was fortunate enough to have Marijane Osborn, who has worked extensively on this corpus, translate the Nervo for me. The piece owes to Gesualdo, and to some extent to Stravinsky (dressed as or posing as Gesualdo). I would like to thank the Wallace Alexander Gerbode Foundation, the San Francisco Contemporary Music Players, and Chanticleer for making this possible.

Texts:

First poem

Francisco X. Alarcón, De amor oscuro

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#### Second poem revisited

#### HER BRAID

Oh, Death, your hand of snow Is welcome whenever you come To wound me. I bless the blow, For I as willingly go As a knight of Christendom—

Humbly, without a sigh.
Oh, Death! When you strike me, I
Must bow – but undismayed
If you let me, as I die,
Kiss her beautiful braid–

The braid that my own hands cut To guard so piously (Impregnated with the musk Of her final agony) That evening she went from me,

Her glorious golden braid, Amulet where I've prayed, Idol of madman's prayer, And often, often made Damp with many a tear.

Allow me, when dying, to be Stroking this silk, for she Still lives in the scent of it. It's all that is left to me Of a love that's infinite.

Christ must forgive my discreet Madness, recalling that sweet Other tress with its scent so keen Of spikenard, when his feet Were dried by the Magdalene...

Translated by Marijane Osborn

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### GIACINTO SCELSI (1905-1988)

American composer Morton Feldman called Giacinto Scelsi "the Charles Ives of Italy." The fact that he has also been compared to John Cage, Edgard Varèse, and Claude Debussy begins to suggest what an important, yet perplexing, figure Scelsi remains: a composer who claimed not to "compose," an Italian who saw himself poised between East and West, a man whose music would wait decades before finding sympathetic ears around the globe.

Scelsi was a contemporary of Italian composers Luigi Dallapiccola and Goffredo Petrassi, yet his life diverged remarkably from theirs. Born into the Italian aristocracy (and later part of the British royal family by marriage), he traveled through Europe's musical centers as a young man, fostering friendships with such literary and artistic figures as Salvador Dalí and Henri Michaux. He studied composition privately with Ottorino Respighi in Rome, with a pupil of Arnold Schoenberg in Vienna, and with a student of Alexander Skryabin in Geneva, experimenting with many of the techniques available in the 1930s-40s. His earliest works, including *Rotative* (1930), displayed a noisy, machine-inspired futurism, and in the mid-thirties, he became perhaps the first Italian to adopt (and reject) the twelve-tone method. But more than any particular technique, it was the conception of music as a spiritual force that would shape Scelsi's future.

During the late 1940s, Scelsi suffered a tremendous mental breakdown. He produced no works between 1948-52, and when he began composing again his music bore the imprint of his recent crisis. During his months of rehabilitation, he devised a form of "therapy" which involved playing a single note over and over again on the piano. This meditative practice carried within it two important aspects of Scelsi's later aesthetic: first, a belief that even single tones can sustain infinite exploration; and second, a commitment to spiritual insights from theosophy, Zen Buddhism, and other Eastern religions.

"Sound is spherical," Scelsi wrote in his essay, "Sound and Music" (1953-54); it possesses a dimension beyond pitch and duration, a "depth" which eludes us. In his landmark orchestral work *Four Pieces* (on a single note) (1959), each movement demonstrates the "dissection" of one pitch, coloring it with different instrumental timbres and articulations, and breaking it up into microtonal components. In the powerful Fourth String Quartet, widely considered one of his finest pieces, single pitches become ascending bands of sound that interact to create harmony. Scelsi alters the tuning of the

quartet's sixteen strings and assigns each string its own musical staff to allow for more than four changes in dynamic level or articulation at once.

Scelsi's quasi-ecstatic vision of music's cosmic power led him to embrace a creative method that is unusual, if not unique, in the Western classical tradition. Rather than actively seeking sources of inspiration or structure, Scelsi would improvise while in a meditative state. Eschewing the label "composer," he selected and transcribed his recorded improvisations, usually with the help of an assistant (typically Vieri Tosatti). At times, Scelsi made conscious changes to these transcriptions, but often they stand unaltered—a testament to his belief that the artist must render himself a conduit for materials whose true origin lies beyond human consciousness. Initially Scelsi preferred to improvise at the keyboard; however, his growing interest in glissandi (slides) and microtonal pitches caused him to abandon the piano almost entirely after 1956. As a result, he relied on the intimate cooperation of like-minded performers, including cellist Frances-Marie Utti and soprano Michiko Hirayama, whose improvisations formed the bases for such works as *Trilogia* (1956-65), *Khoom* (1962), and *Canti del capricorno* (1962-72).

Four Pieces (on a single note) was one of Scelsi's only works to win immediate success. During the 1960s-70s, his music was drowned out by the other voices of the Italian avantgarde: Dallapiccola and Petrassi, as well as Luigi Nono and members of the younger generation. The dissemination of Scelsi's music was also hindered by his reticent, even reclusive, tendencies. He preferred not to speak about his biography, avoided concerts where his works were to be performed, and refused to be photographed. Nonetheless, during the decade before Scelsi's death, composers of diverse orientations discovered his music and many previously unheard works received belated premieres at Europe's finest contemporary music festivals.

Scelsi's intensely collaborative approach has been a target of controversy for critics who see it as evidence of dilettantism, yet it faithfully mirrors his artistic philosophy. Quieting the mind, and erasing the ego open up a space for revelation. What happens within this space? In one of the composer's few confessional poems [translated by critic Julian Anderson] we can glimpse Scelsi's own answer: "I go to a land / nameless numberless / and wordless / without beacons or traps / where mad laughter reigns / dreaming the death of dreams."

### Tre canti sacri (Three sacred songs) (1958)

for eight mixed voices

So much of Scelsi's music is intensely spiritual that the title *Tre canti sacri* (Three sacred songs) may seem anti-climactic. It makes no reference to language or liturgy (as in the *Three Latin Prayers*, 1970). It offers no hint of Eastern or Western mythology (as in Aiôn: Four Episodes in a Day of Brahma, 1961 or Anahit: A Lyric Poem dedicated to Venus, 1965). And it possesses none of the global grandeur of Konx–Om–Pax (1969), whose title denotes "peace" in Assyrian, Sanskrit, and Latin. Yet in its sheer

impersonality, Scelsi's choice reflects the aspirations of a piece that, according to musicologist Michel Rigoni, "uses elements from known traditions in order to go beyond the...conflicts between these religious, striving for a religion without god or worship but in search of a profound reality of the universe and a spirit of peace."

The most obvious among the traditions that Scelsi meant to transcend in *Tre canti sacri* can be heard in its Roman Catholic texts: the first deals with the Annunciation; the second sets a passage from the Requiem mass, and the last proclaims "Gloria in excelsis Deo." These familiar texts are broken apart, however, and rendered strange by a variety of expressive and avant-garde techniques drawn from Eastern musical traditions and Scelsi's own otherworldly improvisations. In addition to microtonal inflections, glottal stops, and a wide variety of trills and vocal vibrato, listeners may hear a phenomenon in which the simultaneous sounding of near-unisons or near-octaves causes the different sound waves to "beat" against one another audibly, generating a distinctly rhythmic component purely from the interaction of pitches.

# THE PLAYERS (dates indicate year of joining)

Roy Malan (1976), violin I

Susan Freier (1993), violin II

Nancy Ellis (1975), viola

Stephen Harrison (1982), cello

Steven D'Amico (1979), contrabass

Tod Brody (2001), flute

William Wohlmacher (1995), clarinet

Rufus Olivier (1991), bassoon

Lawrence Ragent (1981), French horn

Charles Metzger (1976), trumpet

Hall Goff (1979), trombone

Peter Wahrhaftig (1989), tuba

Karen Gottlieb (1990), harp

Paul Binkley (1981), guitar

Julie Steinberg (1989), piano

Karen Rosenak (2002), piano William Winant (1988), percussion

Daniel Kennedy (1993), percussion

Christopher Froh (2003), percussion

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