Mari Kimura's career is a measure of how violin virtuosity has changed over the last few centuries, and particularly in the past fifty years. From the 16th century, when the instrument took its current form, until well into the 20th century, virtuosity was largely about negotiating passages that involved fast, difficult passagework, sometimes with multiple string-stopping or coloristic effects like pizzicato, all the while maintaining focused intonation, an attractive tone and not least, a sense of interpretive direction. Accomplishing all this in an ensemble setting further upped the ante, requiring the player to add communicative interaction and dynamic balancing to the already demanding mix.

By the middle of the 20th century, violinists and composers began to feel that the violin's traditional technical arsenal required updating, lest the instrument continue to sound like the 16th-century technology it is, trapped in a quickly changing, increasingly high-tech modern world. One approach, mirrored closely in the world of woodwind instruments, has been to find the violin's "extreme" technique, which would yield ways to twist the violin's familiar timbre into something new.

One such technique was to exploit the violin's harmonics—the glassy, high-pitched tones produced by bowing a string on which a finger was placed lightly on the string, rather than pressed fully to the fingerboard. Before the 19th century, harmonics were scarce in violin music; in the 19th century, they were used mostly as fleeting adornments. But 20th-century composers were increasingly drawn to them for their eerie otherworldliness, and perhaps their likeness to electronic sound.

Kimura herself discovered a counterpart to traditional harmonics in the early 1990s. Expanding on a technique intended to bring an extra measure of presence to high notes that are not naturally resonant, Kimura began experimenting with notes on the G string, and found that she was able to wrest sounds as much as an octave lower than the violin's lowest natural note, the G string's open G.

She spent several years perfecting the technique, and used it in a 1994 recital in New York. The concert was reviewed in the *New York Times* by Edward Rothstein, who noted these new low-frequency tones—which Kimura calls subharmonics—and when the review appeared, Kimura says, "there were about 20 messages on my phone, most of them not from violinists, and not from composers, but from physicists! They went nuts because this wasn't supposed to happen on a vibrating string."

As a violinist playing the standard repertory, Kimura would not have had much use for subharmonics. But she was also studying composition with Mario Davidovsky, and was on the lookout for new sounds. As a Davidovsky student, she was naturally also looking beyond traditional instruments in her search for fresh timbres. Electronic composition, a field in which Davidovsky is a figure of considerable renown, has expanded the palette almost infinitely. And works that combine traditional instruments with electronic sounds give the old instruments sparring partners that can do things their traditional accompanists cannot.

Kimura has taken an active role in the development of this part of the repertoire, working with electronic scores of all kinds, including recorded tracks within which the violin line is tightly nestled, as well as interactive works, in which the live performance triggers events in the electronic score. She has also worked with updates of the instrument itself, including violin MIDI

controllers to an interactive sensor glove, developed at the Institut de Recherche et Coordination Acoustique/Musique (IRCAM), in Paris.

Her involvement extends to teaching the still evolving twin arts of computer composition and performance, as well. Summers, she directs the Future Music Lab at the Atlantic Music Festival, in Waterville, Maine, a program offered in collaboration with IRCAM. And she has taught a course in computer music performance at The Juilliard School since 1998.

For *Harmonic Constellations*, Kimura has collected half a dozen works for violin and electronics, by a group of American composers each of whom has a distinctive compositional style, and who take different approaches to the challenge of composing for the violin and electronics.

The opening work, Kimura's own *Sarahal*, was composed in 2013 for the violinist Sarah Plum, who commissioned it. Plum had known Kimura since their student years at The Juilliard School, and when she received a faculty development grant from Drake University, where she teaches violin and viola, she asked Kimura to compose a work for two violins and interactive that she could perform with her duo partner, the violinist Hal Grossman. They gave the premiere of *Sarahal*—the title combines their given names—at Spectrum, in New York City, on October 3, 2013.

In the present recording, Kimura plays both violin parts, each of which has a different character. The top line begins with a straightforward, rather Romantic soaring line that acknowledges and capitalizes on a quality that has long been the calling card of traditional violinists—the ability to produce a rich, singing line, something Kimura expands upon with trills, octaves, double stops, harmonics, and other techniques that amplify the work's essential narrative thrust.

The second violin holds the spotlight less, but is in some ways more athletic: It is packed with brisk, sharply articulated arpeggios, as well as trilled accompanying figures, pizzicato chordal passages that provide a rhythmic counterpoint to the first violin, and sections that provide a low-lying mirror to the top line. Kimura visits several harmonic worlds along the way: Though the work opens with a hint of the bold, 19th-century concerto style, the two lines later combine to create a bluesy sound—or, more specifically, the blues as filtered through a Ravelian sensibility.

The work's electronic element has a hauntingly gentle, otherworldly quality that gives the piece a magical, dreamlike atmosphere. Kimura created the computer part using Max, a programming language that was developed at IRCAM, and that Kimura teaches at Juilliard. It is entirely interactive: There are no recorded elements, only Max's Real Time Pitch Tracking, which detects each violin's pitch and dynamics, and creates a modified version of the instrument's sound, which in turn is added to the performance. Kimura uses two kinds of processing here: pitch shifting, or transposition, plus delay, or flanging, which is a kind of frequency modulation, combined with delay and feedback.

"My interactive computer works typically use no computer operator, foot pedals, or click tracks during the performance," Kimura says. "The computer is tracking the violin sound and pitches, creating an integral transformation of the violins as the 'third member' of the ensemble.

"In the very beginning," she adds, by way of example, "on the first violin, it sounds like a D major triad, but with some modifications, and you might also hear a trill. The trill is activated only when the first violin plays in a certain register, and with a certain loudness. I aim to create a

sound world that is normally not possible with the violin. For example, it would be difficult to trill a pizzicato, something I am able to do using the interactive computer."

Eric Chasalow, a prolific composer of electronic music as well as music for conventional instruments and ensembles—but best known for works that combine acoustic and electronic sound—is currently Dean of the Graduate School of Arts and Sciences, and Irving Fine Professor of Music, at Brandeis University. Like Kimura, he studied composition with Mario Davidovsky.

Many of Chasalow's works use a technique that has been described as "super-musique concrète," in which conventional instruments are set against an electronic fabric built of recorded and manipulated sounds from virtually any kind of source—not only, in other words, computers, synthesizers, or other electronic instruments. In works like *Scuffle and Snap* for violin and tape (2010), moreover, the electronic score is as carefully crafted as the violin line: The printed score includes a notated version of the electronic component that is, if not absolutely faithful (some of the sounds are impossible to notate), a very close approximation, and reveals the same spirit of interplay between the violin and electronics that you would find in a conventional instrumental duet.

Chasalow describes *Scuffle and Snap* as "one in my long series [of works] that build heightened dramatic structures around traditional instruments. They are all virtuosic and challenging, but fun to perform. In this piece, I started with an aural image of mostly 'popping sounds' which led to my extensive use of pizzicato. When longer, bowed music does finally appear uninterrupted, the change is dramatic and provides a strong sense of exhalation."

Pizzicato is indeed at the heart of the work, and the plucking of the violin strings has its counterpart in the sometimes metallic snap of the electronic element. But there is much more to the work than that. The violin line scampers and dances through ample meter changes, dense chromaticism, and bent tones. Daniel Stepner played the work's premiere at Brandeis on January 30, 2012, and besides Kimura, several other violinists have performed it in concert, among them, Miranda Cuckson, Hans Lindstrom, and Krista Reisner.

Michael Gatonska spent his student years shuttling between Krakow, where he was a student of Krzysztof Penderecki, Marek Stachowski, and Zbigniew Bujarski, and New York, where he studied with Elias Tanenbaum. His style is not quite like that of any of his teachers, although he shares with Penderecki a transparency that makes his works instantly accessible, and in recent years, he has built his reputation on a growing catalogue of colorfully named, kaleidoscopically scored works, including some stunningly naturalistic tone portraits that show not only his mastery of ensemble texture, but also his acuity as an observer of the world's sounds, silences, and layers of dynamics. He has also created a series of natural soundscapes, using recordings he captured in state parks, forests, and trails around the country.

Shinrin-yoku, the work he composed for Kimura in 2013 (heard here in a revision completed in 2015), is an interactive score, created using Max, with his soundscape recordings as source material. His goal, he says, was "to musically explore the concept of *Shinrin-yoku,* a Japanese word that literally means 'forest-bathing.' The forest-bathing trip involves visiting a forest for relaxation, recreation, and natural aromatherapy. Following this concept, I wanted this work for violin and interactive computer to present a sound world that creates an impression and/or connection to a natural forest setting."

Material from Gatonska's nature soundscapes provides both an overall structural model for the score, as well as distinct samples, patches, and filters in an interactive sound environment, with distinct sound events triggered by the violin. His printed score includes boxed notes that describe both the sampled sounds and the imagery that the violin that triggers them should evoke. The very first note reads: "Rise and fall in dynamics of red oak leaves rustling in the wind—heard in echo-like statements and in imitation of the dynamic envelopes produced by the violin." Others include "the electronic effect should be like delicate winds, a soft and silver character of rising and falling 'sh' sounds," or "similar to the complex sound of a triangle after being struck," and "should sound like pitched electric sparks or electrisizzling sounds."

There are less ethereal, more technical indications as well—points where the violinist is asked to play with the wood of the bow, with fingertips only, or with a plectrum, for example. And there are passages in which Gatonska asks for Kimura's subharmonics—improvised at times, or intended to create specific effects ("the sub-harmonics are meant to imitate the creaking noises of the white pine"). Unquestionably, the piece creates a sense of woodland mystery, with rich-hued, reverberant violin lines, chordal passages, plucked tones and melancholy ruminations, heard within a recorded forest ambience.

Hannah Lash is known for imaginative, texturally diverse, virtuosic music for instrumental combinations of all kinds—sometimes including her own instrument, the harp. Her principal teachers include Martin Bresnick, Bernard Rands, Steven Stucky, Augusta Read Thomas, Robert Morris, and Julian Anderson, and since 2013 she has been on the composition faculty at Yale University.

At a glance, you might expect *Mièle*, the short work she composed for Kimura in 2014, to be a sweet confection, given that the title means "honey" in Italian and Spanish (and, without the final e, in French). And indeed, the score's breezy, attractive character supports that supposition. Actually, though, the key to the title is in the dedication: "For Mari Kimura, with great gratitude for my vacuum cleaner." And thereby hangs a tale.

"About a month ago," Lash wrote, shortly after she finished the work, "I was in bad need of a new vacuum cleaner, which I could not immediately afford. So I posted on Facebook, offering to write anyone a 3-minute encore in exchange for a new vacuum cleaner. A crazy idea, I realize. But I'm a clean-freak and will go to great lengths in pursuit of a clean house." Among the respondents, Lash wrote, was Kimura, who "recommended a Miele, which is a fantastic line of German-made appliances. But the best part was that Mari, this extraordinary violinist and composer, was so willing to go along with the crazy premise I'd suggested for the commission of a short piece."

Mièle has the character of a deconstructed Baroque dance, and as encore pieces go, it is remarkably eventful, with dialogues between phrases in full tones and harmonics, pizzicato punctuation, soaring scales, frequent meter shifts, and dynamic extremes. It is also the least overtly electronic of the scores here. Lash composed it to be played with or without electronics, and instead of creating an electronic element, she suggested that Kimura might create a resonator patch to add overtones and resonance to specific tonal areas, most notably G, C, and A-flat.

Eric Moe, like Kimura, is not only a composer, but a virtuoso instrumentalist as well—in his case, a pianist—with several recordings devoted to contemporary works to his credit. Moe's work

has won critical praise not only for the breadth of his musical language, which has roots in traditional Western methods and techniques, as well as in jazz and pop, but also for its diverse spirit: Moe's works are as likely to be driven by a parodistic sense of humor as by more darkly sober ruminations.

Obey Your Thirst lies somewhere between those poles. "The eco-poeticist Timothy Morton points out that the soft-drink slogan 'Obey Your Thirst' has the effect of turning a bottle of soda into a bottle of thirst," Moe wrote. "No coincidence—what's in the bottle is carefully formulated to stoke the craving for more. This piece has the violin in furious pursuit of satisfaction, a moment of perfect bliss. It delves deeply (well below the conventional range of the instrument, using subharmonics) and climbs high in its search, catches its breath (once), clambers up walls or runs into them and bounces off. Throughout, it chases or is chased by an electroacoustic partner in canon—like a typical cartoon cat-and-mouse scenario where the animals take turns chasing one another. Is thirst quenched at the end? You decide."

Kimura commissioned the score, and gave its premiere at Spectrum on April 26, 2014. As Moe noted, it plays to her strengths, not least in its perpetual-motion writing, its almost constantly changing meter, its runs of fast triplets in which the central note of each is a harmonic, its use of growling subharmonics in a passage marked "ferocious," about halfway into the piece, and the intensity of the slow melancholy section that closes the work. Its electronic component begins with a distorted recording of the word "thirst," a craving evoked in a stream of manipulated sounds that suggest pouring liquid, as a backdrop for the violin line's virtually non-stop chase.

The composer and pianist **Michael Harrison** works in a harmonic world outside that of the other composers here. During his years as a composition student at the University of Oregon, and later The Juilliard School, he became fascinated with North Indian raga singing, and became a disciple of Pandit Pran Nath, and an associate of Pran Nath's two best-known American students, the composers La Monte Young and Terry Riley. He was, for several years, Young's assistant, and he is the only pianist Young has authorized to perform his monumental keyboard work, *The Well-Tuned Piano*. Through his work with Pran Nath and Young, Harrison became interested in microtonal tuning systems, based on Just Intonation (as opposed to the compromised Well-Tempered system that prevails in Western music), and in 1986, he created the "Harmonic Piano," an instrument modified to include 24 notes per octave.

The recording's title work, Michael Harrison's *Harmonic Constellations*, was commissioned by Mari Kimura, and completed in 2016. It is an expansive work in every way: built of nine "Constellations" of Just Intonation harmonies, and running more than 20 minutes, the piece is scored for a dense assembly of multi-tracked violin lines and computer-generated sine tones. Since a pure violin tone sounds similar to a sine tone, the violin lines are nestled tightly into the electronic fabric, and they behave much as the sine tones do—with long, sustained pitches and occasional rhythmic flourishes. Because Harrison's intonation system, which is founded on numerical ratios, demands very specific pitches that often fall between the notes of the conventional Western scale, the score is notated in the usual way, but with precise frequency measurements above the first sounding of each note.

At times, you hear a distinct beat, or throbbing, within the texture—an acoustical mirage, of sorts, created by the interference patterns created when two tones within the chord are very close, but not identical. (You can create this effect for yourself while tuning a guitar.) And the work has another strange, magical quality as well. As Harrison describes it:

"All of the tones in *Harmonic Constellations* are perfectly tuned in extended just intonation, with each tone creating a whole number proportion in relation to every other tone. This creates an invisible geometric formation of periodic composite waveforms which can be experienced as a sonic hologram in which the listener can move, or slightly shift the position of their head, to hear different tones in every part of the room. In this way the listener becomes an interactive participant, and unless headphones are used, the work will never be heard the same way twice."

The overall impression is that of a single, massive chord that brightens, thickens, darkens and evolves in virtually every possible way. But the more closely you listen, the more detail you hear within the sonic mass.

—Allan Kozinn

Allan Kozinn was for many years a music critic and culture reporter for The New York Times. *He retired to Portland, Maine, in 2014 and currently writes about music and musicians for* The Wall Street Journal, *the* Times *and* Opera News, *and is the music critic for the* Portland Press Herald.

Mari Kimura (born 1962) is at the forefront of violinists who are extending the technical and expressive capabilities of the instrument. She is widely admired as the inventor of "Subharmonics" and has appeared as a soloist with major orchestras including the Tokyo Symphony, Tokyo Philharmonic, and the Hamburg Symphony. She has given important U.S. premieres, including works by Luciano Berio and Salvatore Sciarrino.

As a composer, Ms. Kimura is well known for her works for interactive computer and collaborations with IRCAM in Paris, and is the recipient of a Guggenheim Fellowship, Fromm Commission, and a residency at IRCAM in 2010. Her works have been supported by grants from New Music USA, NYFA, Arts International, Vilcek Foundation, Japan Foundation, Argosy Foundation, and New York State Council on the Arts (NYSCA). In 2011, in recognition of her groundbreaking work as a foreign-born artist, she was named one of the "Immigrants: Pride of America" by the Carnegie Corporation. Her recording, *The World Below G and Beyond*, features her Subharmonics and interactive compositions using IRCAM's bowing motion sensor.

In 2013, Ms. Kimura inaugurated a new summer program as the Director of "Future Music Lab" at the Atlantic Music Festival in collaboration with IRCAM. In 2014, she won the Composers Now inaugural residency at the Pocantico Center of the Rockefeller Brothers Fund, and also a grant from the Industry+Technology Assistance Program through Harvestworks Media Arts Center in New York City and itac.org. Her latest commission, *Tying the Wind* (2016), is for chamber ensemble and interactive audio/video, using her original new prototype motion sensor she has been developing with her collaborator, media artist Liubo Borissov. Since 1998, Ms. Kimura has been teaching a graduate course in Interactive Computer Music Performance at Juilliard.

Eric Chasalow (born 1955) is widely recognized as a composer equally at home with electro-acoustic music as with music for traditional instrumental ensembles. In 1996, along with his wife, Barbara Cassidy, he established the the Video Archive of Electroacoustic Music, an oral history project chronicling pioneering electronic music composers and engineers from 1950 to the present. He is the Irving G. Fine Professor of Music at Brandeis University, and Director of BEAMS, the Brandeis Electro-Acoustic Music Studio. Among his honors are awards from the Guggenheim Foundation, Koussevitzky Music Foundation, National Endowment for the Arts,

Fromm Foundation, and the American Academy of Arts and Letters. In 2011 the Library of Congress established an Eric Chasalow collection. www.ericchasalow.com

The music of **Michael Gatonska** (born 1967) has been performed by the Minnesota Orchestra, the Cabrillo Festival Orchestra, the American Composers Orchestra, the Pacific Symphony, the Hartford Symphony, String Orchestra of New York City (SONYC), the Chicago Chamber Musicians, the Talea Ensemble, and Locrian Chamber Players, among others. He has received numerous awards for his compositions—the most recent being the 2012 American Prize—and commissions, fellowships, and grants from the American Music Center, New Music USA, the American Composers Forum, the Roberts Foundation, the American Composers Orchestra, the MATA Festival, the Mary Cary Flagler Charitable Trust, the Puffin Foundation, the Field, the Kosciusko Foundation, Civitella Ranieri, ASCAP, the Connecticut Council on Arts and the Greater Hartford Arts Council. His music has been recorded on the Albany Records, Major Who Media, the American Composers Orchestra Digital Downloads Series, and Einstein Records labels.

Michael Harrison (born 1958) has been called "an American Maverick" by Philip Glass. Through his expertise in Just Intonation tunings and Indian ragas, Harrison has created "a new harmonic world . . . of vibrant sound" (*The New York Times*). He has collaborated or performed with Roomful of Teeth, cellist Maya Beiser, filmmaker Bill Morrison, Kronos Quartet, JACK Quartet, Young People's Chorus of NYC, Contemporaneous, and his mentors La Monte Young and Terry Riley. His compositions have been performed at Carnegie Hall, Lincoln Center, BAM Next Wave Festival, MoMA, Metropolitan Museum of Art, Centre Pompidou, MASS MoCA, Stuttgart Ballet, United Nations, Bang on a Can marathons, Spoleto, Ojai, Klavier Festival Ruhr, Havana Contemporary Music Festival, and Sundance. *Revelation* (2007) and *Time Loops* (2012), his CDs on Bang on a Can's Cantaloupe Music label, were chosen by *The New York Times*, *Boston Globe*, *Time Out New York*, and NPR among the Best Classical Recordings of the Year.

Hannah Lash's (born 1981) music has been performed worldwide with commissions from the Fromm Foundation, the Naumburg Foundation, the Boston Symphony Chamber Players, Alabama Symphony Orchestra, Los Angeles Chamber Orchestra, Carnegie Hall, Orchestra of the Swan, and Talujon Percussion, among others. Lash has received numerous honors and prizes, including a Charles Ives Scholarship from the American Academy of Arts and Letters, a fellowship from Yaddo Artist Colony, the Naumburg Prize, the Barnard Rogers Prize, and the Bernard and Rose Sernoffsky Prize in Composition. Lash obtained her Ph.D. in Composition from Harvard University in 2010. She has held teaching positions at Harvard University, Alfred University, and currently serves on the composition faculty at Yale University School of Music. www.hannahlash.com

Composer **Eric Moe** (born 1954) has received widespread recognition for his work, including the Lakond Award from the American Academy of Arts and Letters and a Guggenheim Fellowship, and his music is performed by a wide range of superb ensembles and soloists, both within the United States and abroad. Moe studied composition at Princeton University (B.A.) and at the University of California at Berkeley (Ph.D.). He is currently the Andrew W. Mellon Professor of Music Composition and Theory at the University of Pittsburgh.

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Mari Kimura: *Sarahal*, Mari Kimura (BMI)
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Mièle, *Shinrin-yoku (Forest Bathing)* and *Sarahal*
Producer: Mari Kimura
Engineers: Paul Geluso, Nathan Prillaman
Recorded June 2015 at Harvestworks Media Arts Center, NYC

Obey Your Thirst
Producer: Eric Chasalow
Engineer: Antonio Oliart
Recorded March 2014 at Fraser Performance Studio, WGBH Boston

Scuffle and Snap
Producer: Ted Mook
Engineer: Ryan Streber
Recorded May 2014 at Oktaven Audio, Yonkers, NY

Harmonic Constellations
Producers: Adam Abeshouse, Michael Harrison, Mari Kimura
Engineers: Adam Abeshouse, Paul Geluso, Nathan Prillaman
Technical Assistants: Jeremy Kinney, Sam Torres
Recorded April 2016 at Harvestworks Media Arts Center, NYC

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Francis Goelet (1926–1998), *In Memoriam*

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HARMONIC CONSTELLATIONS
WORKS FOR VIOLIN & ELECTRONICS BY ERIC CHASALOW, MICHAEL GATONSKA, MICHAEL HARRISON, MARI KIMURA, HANNAH LASH, & ERIC MOE

MARI KIMURA, VIOLIN

80776-2

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3. Michael Gatonska (b. 1967)
Shinrin-yoku (Forest Bathing) (2013, rev. 2015) 16:36

4. Hannah Lash (b. 1981)
Mièle (2014) 4:28

5. Eric Moe (b. 1954)
Obey Your Thirst (2014) 9:33

Michael Harrison (b. 1958)
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