



**ARTISTS WORKING  
WITH PHENOMENA AND TECHNOLOGY.**

PHONEMES, LETTERS, WORDS, VOCAL CHORDS, AND UTTERANCES become art objects in the collection of works on display for *ÆZ Artists Working with Phenomena and Technology*. The exhibition features six installations, two by Ingrid Bachmann (Montréal), one by Paul DeMarinis (San Francisco), two by Nina Katchadourian (New York), and one by the artist team Émile Morin and Jocelyn Robert (Québec City), artists that reflect an age in which technologies have increasingly become part of our everyday experience. They explore the long trajectory of communication technologies, how they are framed within a material form, and how social practices are framed around them. The readymade objects presented here no longer present fixed meanings or intended purposes in the practical sense of technological progress. But these works accumulate adjectives and actions where each viewer is allowed to participate in an almost limitless narrative.

These artists build digital behaviors, without the use of screens, in order to bring the virtual and material realms into one gesture. By blurring the mysteries of nature with the synthetic environment, this exhibition explores the sublime. This is not the conventional sense of the sublime as a vast nature that astonishes us with intense pleasure, but one presented by a generation of artists who seek

awe-inspiring encounters with observable and audible occurrences that are more diminished in scale and ordinary in material. The result is an enchanting interaction between the viewer and the ordinary objects, mostly made from pre-industrialized materials such as a grand piano, a Bunsen burner, a birdcage, leather shoes and suitcases, as well as a theater-style popcorn maker. The artists offer little alteration to the original material; however, the pieces are all in some way informed by a technological code or phenomena. A flame sings, letters fall like rain, popcorn speaks, shoes tap, suitcases open up to waterfalls while we are invited to hear sounds from the moon in pitch-blackness.

From the artists who emerged in the 1980s and 1990s that use technology as both a symbol and an amplification of the body, there is a subset who did so in order to explore and amplify questions about bodily violence or despair. In these instances, the technological processes within the art may appear more mysterious than the rational apparatus that they are, and, as such, they become an opportunity for the audience, or the artist, to project anything from deep-seated traumas to light-hearted speculations, or personal memories, into the work. For instance, a lack of satisfaction may be projected on the missing

bodies implied in *Symphony of 54 Shoes (Distant Echoes)* by Ingrid Bachmann, where a long line of shoes jolt randomly and nervously like a cadaveric spasm. The combination of practicality and fetishism in the crowd of so many old-fashioned shoes suggests a forgotten rush hour, bustling factory work, or a situation in which willing and able bodies are working in unison toward an unknown goal. The idea of a *symphony of work* was coined by the owner of the first 19th-century steel factory in Germany, Alfred Krupp,<sup>1</sup> who once said that the sounds of his factories at work were more pleasant to his ears than all the symphonies of the world.<sup>2</sup> A rush hour discord, or synchronized factory line, the shoes display old-fashioned loafers and lace-ups, and men's and women's shoes with thick practical heels, sometimes adorned with a big bow, but all are heavy, assertive, and tactile. There's even a pair of wrinkled Timberland boots, with van Gogh-like slabs of texture made by their owner's heavy use. The varying creased leather and worn heels formed by the original owners each affect the sounds and motion of the assembly line, which only further implies the presence of a forgotten owner. Steel toes and heels also amplify the shoes' unpredictable, nervous stomping action. For all their efforts, the shoes aren't moving forward, but are stammering, asserting their existence. If there are haunting mysteries, or "*distant echoes*" as the subtitle suggests, they are specifically embedded in the digital/mechanical apparatus that sets up a somewhat irrational channeling of despair, perhaps pain, or anxiety. In the end, the viewer is left to name the identity of the unheard workers, or at least mechanical stand-ins that appear to demand attention. In fact, there are only 52 actual shoes in the

installation and a gap where the 27th pair of shoes presumably belong. Whose shoes are missing? The feet of the girl on the front page of today's *New York Times*, or the sandals, clogs, or ordinary black shoes of someone very nearby?



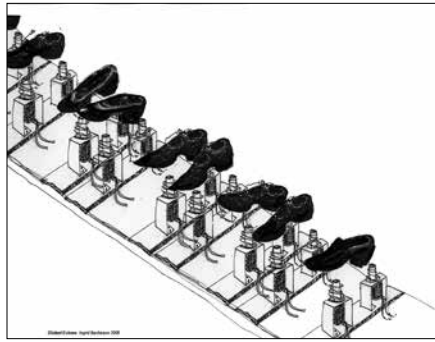
The typical notion of the sublime is of an awe-inspiring encounter with a grandiose nature, simultaneously overwhelmingly pleasurable and yet somehow fearsome. Distinct from this is instead a newer technological sublime, which, according to philosopher David Nye, looks to the future, presenting not a nature that is here and now, but is contained within an awe of what is possible.<sup>3</sup> The problem, of course, is that there is always a new promise, scale is always subjective, and, unlike nature, technology quickly becomes antiquated. The first image presented to the public of one of the most immense ideas of nature was published as a diminished form in the 1960s, when our whole planet from the vantage point of outer space appeared on the cover of the *Whole Earth Catalog*,<sup>4</sup> and this was even more clear in the bewilderment of astronaut Neil Armstrong, who first realized "*that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth. I*

*didn't feel like a giant. I felt very, very small.*"<sup>5</sup> At that moment, an arguable idea emerged that a vast, grandiose sublime experience could be manifested within the small, diminished, and even the portable.

The idea of the portable, traveling, and the sublime form the title of Bachmann's second contribution to the exhibition, *The Portable Sublime*. This installation is a teasing of our never-ending thirst for more intense, more convenient, and safe experiences, where we can imagine ourselves beyond our present location and situation, although it is still probably necessary to encounter a moment of astonishment, or at least to be surprised by the unknown, in order to fully experience something sublime. Hidden within eight closed suitcases presented at varying heights on vintage tables and dressers are old, worn, portable trunks made from tactile leather and fabric with faded, calligraphic lettering, some with the artist's name, perhaps painted by her German ancestors from a century ago, when nature still offered a refreshing moment of the unpredictable, and the technological sublime was still gripping. Upon opening the first trunk, we may encounter a mechanical red boat traveling the expanse above the blue lining of the interior, while in the next trunk we may find painted clouds and the lightness of rising helium balloons along with an altered line from "*Somewhere Over the Rainbow*." Bachmann points out that Salman Rushdie believed this song was an anthem for the immigrant, because immigrants embody both a promise of the future and the longing for a return home. There is even one suitcase that opens up to a full waterfall-type fountain, complete with internal plumbing. The viewer is invited to travel the room, peeking inside each

mini-universe, of which some are miniature versions of her previous large-scale installations. Bachmann invites us to trace these mysterious fragments, as if they were convenient mini-movies randomly uploading on an iPhone.

Ingrid's description of the last century is as a time of unprecedented mobility, whether by choice, as in immigration or travel, or by force, as in exile or refuge-seeking. Similar to a traditional notion of Kant's "*dynamic sublime*," hers presents an astonishingly intense state of fear that compares the lone, small body to the enormity of nature, followed by the human's ability to overcome panic, and even suicidal thoughts (as in vertigo or acrophobia), which are only conquered through rational thought, leading to a feeling of ecstasy.<sup>6</sup> Therefore, when a nomad, exile, or refugee is escaping the unbearable or in fear of the enormity of an unknown future, and if they are additionally traveling towards something more hopeful, mysterious, or ecstatic, then they may be said to be in negotiation with the sublime. This aspect of the nomad focuses on the human need to penetrate new territories. Like a masochistic artist's need to penetrate flesh in order to achieve a "*blissful union with the infinite*,"<sup>7</sup> the nomad may leave behind overwhelming pain, or fear, in the hope that rationality and possibly being at peace with oneself will prevail. In this situation, there are only a limited number of personal items that one can carry; deciding which objects are important becomes an irrational experience. Bachmann documents the moment when a decision has to be made, not about just what is practical for survival or important for us at that moment prior to mobility, but what "*important*" is. "*A union with the infinite*" is the



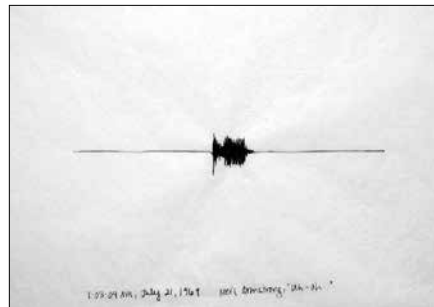
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last thing one thinks about in a panic; however, Bachmann turns this duality around when "thinking about the space of the imagination as this very important site, the site of creative and also political action. So when I say the work is practical, I suppose I may be arguing for the arts, creativity, wonder as necessities in a meaningful life."<sup>8</sup>



In her installation *Indecision on the Moon*, Nina Katchadourian takes on the immensity of the first spoken words from the moon, or rather, she removes the phrase "That's one small step for... man, one giant leap for mankind." In fact, she removes most articulate words from the 32-minute audio recording of the Apollo II's first moon landing. Using a worldwide collective experience of the first human phrase spoken during live transmission from the lunar surface, she decelerates the rocket speed of the Apollo II, alighting in a half hour of slow moving gaps, crackles, and unintelligible utterances of the 1969 spectacle. By focusing on these unintelligible utterances, Katchadourian reverses the notion that the alphabet as a technology teaches us to "move from thing to thing with greater ease and speed and less involvement."<sup>9</sup> She offers a memory that most of us recall by heart with ever-increasing distance, when she leads us

down a corridor and into a pitch-black room. From the sublime's original connotation of both terrifying danger and delightful pleasure, we are offered the raw technological transmission without the orientation of language; we can't help but be involved. It was not so long ago that we were ignorant of the image of our small planet hanging in space, or even when pitch-blackness, with its ability to fill the mind completely, was an everyday, unavoidable, and terrifying human experience on earth. This type of sublime sensation is related not only to the awesomeness of a nature that is so large and dark that it's beyond what our senses can grasp, but to the awareness that we are as insignificant as the planet that Neil Armstrong placed his thumb over and visually obliterated from his vantage point on the moon.



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Edmund Burke reminds us that in utter darkness it is impossible to know how safe we are, as we are utterly ignorant of objects that may imminently surround us. Although the potential threat may be vastly distinct if we are in the Amazon forest at night than in a pitch-black gallery, "strength is no sure protection; wisdom can only act by guess; (and even) the boldest are staggered."<sup>10</sup> About to encounter his own first step into black space and on the moon, astronaut Pete Conrad noted that the moon's surface seems very inhospitable. "Forbidding...a scary

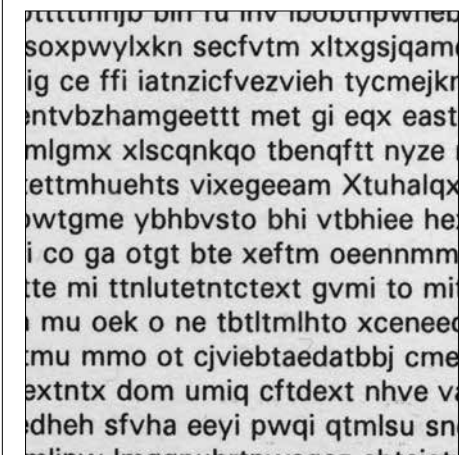
place... ice-cold, black and white and gray."<sup>11</sup> The heightened concentration required to move around in the lightless room prepared for *Indecision on the Moon* requires the viewer to stagger in an unknown degree of safety over simple things like putting a foot down, thus sensing a disorientation and even weightlessness.<sup>12</sup> Furthermore, meaning, too, needs to be solely retrieved from beeps and crackling audio artifacts, such as human vocal ticks such as "uh," "um," and "er." Nineteen sixty-nine becomes the present; the present becomes 1969.

Few first utterances resonate as fixed evidence of the technological sublime as much as astronaut Neil Armstrong's words "That's one small step for... man, one giant leap for mankind." About a month later, another first phrase was sent by the precursor to the internet stating simply: "lo."<sup>13</sup> The first telegraphic message ever sent was "A patient waiter is no loser," and the first email in 1971 seemed so insignificant that the creator of that email believes it was "QWERTYUIOP," but no one remembers for sure. A lesser-known first is the initial English message by *Talking Popcorn*, "we." This humorous, and blunt, translation machine is Nina Katchadourian's second contribution to the exhibition, her invention of a massive, abstract language-producing machine, *Talking Popcorn*, whose utterances of nonsense transmit through its own seemingly random logic.

Since Alan Turing asked the question in 1950, "Can machines think?" there have been many attempts in art to express intuition through code and mechanism. Literature often conjures the ability to invent languages and cultures, such as the fictitious world of Jorge Luis

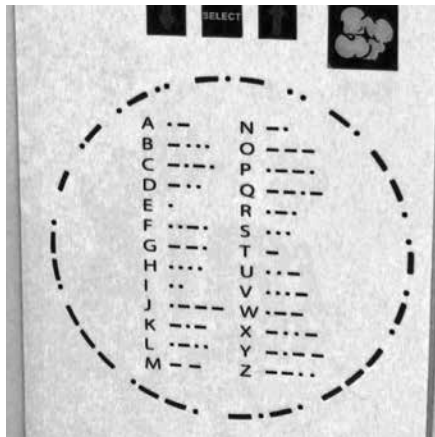
Borges's *Tlön*, where objects don't really exist as more than an ideal. In *Tlön*, the fleeting meaning of an object is solely expressed through context, such as the accumulation of adjectives, or by impersonal verbs qualified by prefixes and suffixes. In this fictitious culture, words can be so massive that there are poems made up of one enormous word.<sup>14</sup>

*Talking Popcorn* is both an installation and performance piece, inspired by Katchadourian's interests in language and translation. In the gallery, a viewer sees a popcorn concession stand popping popcorn and hears a computer-generated voice. Soon the viewer notices a microphone in the concession stand and realizes that the popping sound is a language that is being translated in real time. Hidden in a pedestal below the machine is a computer that is running a custom-written program, translating the popping sounds into Morse Code and providing a simultaneous spoken translation. The 180-year-old code is essentially a binary system that can translate almost anything. Guests at the performance are offered bags of popcorn. Along the wall next to the popcorn machine is *Talking Popcorn Journal*, a series



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of vacuum-formed capsules with popcorn inside, a printed journal of what the popcorn said, and a stamp with the date when popcorn “spoke.” Additionally, the artist bronzed *Popcorn’s* first words in *Talking Popcorn’s First Words*, forever casting its speech, and placed them in a velvet-lined wooden box.



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Nina uses the phenomena of translation as an accidental occurrence of popcorn popping over time. Her translation machine purposefully has no bias towards English or any other particular language (except for the Western alphabet itself, which may phonetically translate into many non-Western languages); therefore it is just as likely that the popcorn will speak in Finnish or French, or a phonetic Korean, as it will speak in English. In fact, Nina prefers to call it “popcornese,” a fortuitous language that accumulates meaning at an unperceivable scale. As Borges, too, understood, and creatively manipulated, translation expresses the idea that fundamental idealisms present in any culture were shaped by the grammatical rules and structures within their language. “*The fact that no one [in Tlön] believes that nouns refer to an actual reality means, paradoxically enough, that there is no limit to the numbers of*

*them.*”<sup>5</sup> Popcornese may similarly be a meta-language, or a moiré pattern, too broad in its etymological possibilities to fully translate into anything—although, occasionally, it does translate. The first English word popcorn spoke was “we,” an ambivalent you and me phrase, a co-dependency of meaning with little context, a binary experience like the Morse Code itself, a mother and baby, on/off, I/O, yin/yang. But in the end, it was the hot water inside the popcorn kernel that made it pop “we.” When the water reaches about 450 degrees, it builds to steam, and the pressure causes the kernel to eventually express its poetic necessity the way a mother expresses milk for a newborn. Of course, popcorn has no intention; its prose is as blank as the longest English word that popcorn spoke, “silent.” Only through our co-dependent hunger for knowledge does our psychological need to make associative links—where meaning needs to be larger than the random physics of steam—appear as an edible material, or both the subject and the object of our desires.



*Leçon de piano* (Piano Lesson) by Jocelyn Robert and Émile Morin also creates a dynamic relationship between the material and the digital. The viewer encounters a grand piano of the iconic glistening black, concert hall type; as the sparkling white keys are visible and the curved lid is diagonally opened, its magic in brass, wood, and felt is revealed. However, standing in for the performer is a single light source, a projection illuminating the keys like 88 tiny screens. The performer stand-in plays colors and letters that appear to fall like rain on the keys, pressing each note with



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a purposeful delay, as if their drops had a weight, and letters were resonating into rings. The letters play the broad assortment of pitches unpredictably, as when I wonder if I have just felt a drop of rain, and I then hold out my hand wondering when and where another one will fall.

*Leçon de piano* uses the Yamaha Disklavier, an acoustic grand piano with a digital interface. Therefore it combines the programming abilities of a synthesizer with the robust sound of the acoustic grand piano. The approximate 60 phrases originally taken from a child’s piano lesson book play, for instance, the 20 notes corresponding to “in the dark corridor,” or one as minimal as “rain,” where the four raindrops slowly and randomly descend. The rain is not a downpour, but slow, patient droplets, where a cycle may take more than an hour to play all its phrases and colors. Eventually, the letters fade from the keys. In order to bring elements of simplicity into something larger and have a free-flowing collaboration, Morin and Robert come up with rules with which to collaborate. Like John Cage, or any software, the unique code driving *Leçon de piano* is a notation system based on rules that govern the behavior of the piano’s performance, in this case the fixed linkage of sounds,

letters, and colors, but also the random order, and the duration of the phrasing. This synesthetic linkage of sounds, letters, and/or colors is often associated with early 20th-century art and religious movements. But it has a longer history, and synesthesia is also a real psychological disorder (or ability). The painter Wassily Kandinsky discovered his own synesthetic abilities while attending one of Wagner’s operas in Moscow<sup>6</sup> and later explored this ability, along with his Bauhaus colleagues and students. However, *Leçon de piano* is more of a deliberate, concrete poem, simple elements that interact in a complex way, letters emphasizing tones, and tones resonating letters. This intermedia approach of spelling tones slowly performs sublime-like phrases such as “the green valley” or “songs & riddles.” Occasionally, a colored drop will illuminate a note, or a grayscale or chromatic scale.

For the version on display in this exhibit, the artists have built upon this original collection of sublime-like phrases with more complex interactions between phrases, sound, time, and perception. Phrases such as “walk” literally and repetitively walk up the keys, or “now here” slowly becomes “nowhere.” All the textual phrases are simple and performed in the simple key of C major, the colors are simple, but the interaction between color, light, text, and sound is complex, similar to a landscape engaging the viewers in a semicircle around the keyboard. This display may recall the light, sounds, and colors of neighborhood children, not noticing the drizzle because they’re engaged in their play while wearing bright orange jerseys and moving through a green field at dusk, which is reminiscent of a band or orchestra warming up until a song slowly

emerges. So, too, the lesson in *Leçon de piano* appears as a nonsense play warming up to become puzzle-like word games, or the precise geographic coordinates where the piano and viewer are located in the gallery space. *Leçon de piano* doesn't engage with the sublime in the conventional sense of an encounter with nature that astonishes us with intense pleasure. It is closer to David Nye's technological sublime, where modern electronics dissolves "the distinction between natural and artificial...[and in] blurring this line it created a synthetic environment infused with mystery."<sup>17</sup>

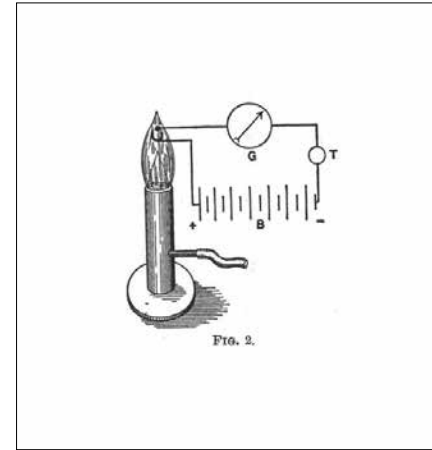
The original software code written for *Leçon de piano* has no agenda in the practical or economic sense, but this installation may have a social use if we believe that the presentation of an almost Buddhist sense of discovery is potentially a significant contribution toward a culture deeply engaged in software and code. As modernism is said to free us from ignorance, Morin and Robert free us from the models of typical technological progress that is economically or socially linked. These artists are aware of the burden of exclusive software entities, with top-down messages regarding the path to technological core values, and how these entities are primary inspirers of human behavior qua technology, and our interactions with software. Like everyone of their generation, Morin and Robert have seen a system of cultural desires presented through high-end inventions, gadgets, and screen resolution, or heard the arguments for practical societal needs based on years of problem-solving research. One of the outcomes is that our behaviors begin to form around these technological ideologies as much as they form around our behavioral needs. This system of technological progress is often synonymous

with the concept of freedom that modernity offers, but for these artists, while the technology is imbued with all its historical compromises, the artists look at the technological form as a fresh template, as blank as the white keys awaiting letters and phrases. The top-down message may not be reaching Morin and Robert—or they don't care about it, perhaps laugh at it—but they somehow skirt around the messages that are supposed to inspire society, including propelling them into a better future. *Leçon de piano* doesn't purposefully seek a better future or communication tool; rather, it offers a "a new sensory experience" with the objective to inspire the here and now, arguably creating a new technological sublime form with what is ordinary, everyday, and diminished in scale.

*Leçon de piano* is not a child's lesson in the conventional sense of learning by heart through attentive repetition and discipline, but it reflects an accidental encounter with color, light, and sound. The installation before us is not nature, but a lesson in the childlike acceptance of an acoustic sculpture, playing the way nature performs, the sky accompanied by the earth.



For the installation *One Bird* by Paul DeMarinis, the viewer encounters a yellow birdcage on a floor stand with a near eye-level flame trapped inside. The flame is from a Bunsen burner with a fire large and soft enough to flicker with a slight draft. A small metal rod intersects the flame and is connected to an audio player. In front of the birdcage is a musical box with a hand crank, and when the viewer turns the crank, a flame in the cage



ignites. At first, a few crackly sparks, and then the fire glows seven or eight inches high, emitting the operatic voice of 19th-century Italian diva Adelina Patti (1843-1919). No speaker exists. DeMarinis patented his audible flame.

But DeMarinis was not the first to explore the idea of an audible flame. During the height of Patti's career, electrical engineers were aware that gas flames could be electrically conductive and were affected by audio-wave transmissions. It was an American engineer and inventor, Lee de Forest, who was captivated by the idea of a flame as an audible detector. When observing the flickering candle flames on his gas chandelier, he erroneously thought the flames were receiving sound signals, and he pursued to document his discovery of what he called a "speaking flame."<sup>18</sup> De Forest was at the top of his field in electrical engineering, the most prestigious science of its day, in part because electrical engineers could create the spectacles that distanced us from nature and for the first time brought us into the era of the technological sublime through their ability to illuminate everything from the Golden Gate Bridge to cities at night. Rather than using his

knowledge toward producing the vast sublime of grandeur, de Forest used his knowledge, partially learned from observing his own gas chandelier, to invent the first audion tube, or vacuum tube. Only a few inches long, the vacuum tube was as simple as a piece of glass enclosing a filament, but it led the path for the invention of radio to be possible, followed by television, radar, and computers. De Forest documented his findings in 1906, the same year in which Adelina Patti recorded her aging voice for the Gramophone Company, and used in *One Bird*.

Prior to recording technologies such as the Gramophone Company, the ecstasy of professional music was only experienced through live encounters. Patti inspired frenzied reactions in large concert halls from adoring crowds. While it was often said that she sang like a bird, she also supposedly owned a parrot that she had taught to curse in French.<sup>19</sup> Kings, Queens, Emperors, and Empresses competed in offering Patti the most rare jewels as gifts of gratitude. In addition to receiving \$5,000 in gold prior to each of her performances in the 1860s, hundreds of dollars in coins and bills, and a laurel wreath from both an Italian Prince and a Spanish Duke, were tossed to her on many stages throughout Europe and North America, along with bouquets and poems that were "seen whirling through the air attached to the necks of birds."<sup>20</sup> Both Oscar Wilde and Émile Zola refer to Adelina Patti's performances in their respective novels as that which is pure and life sustaining, in the context of escaping the horrors of life and death.

But in the end, without Patti's ability to sustain long and steady breaths as she did in her youth, it's only the flame that ma-

terializes her aging voice in a steady flow of propane gas mixed with oxygen for an endless, lyrical exhale. Because Patti was 63 when she was recorded, DeMarinis suggests that hers may be the oldest vocal cords ever recorded. The recording technology of the day even offers the crackling that sounds like a stoking fire along with Patti's warbling, following the voice flicker of the flame.

If Katchadourian created utterances materialized in an edible form, DeMarinis casts Patti's virtuosity into the element most associated with danger, fire. Paul first came across the concept of fire as an audible detector when he and his friends once clearly heard AM radio come out of his gas fireplace. Afterwards, and through the suggestion of an artist friend, Maggi Payne, DeMarinis came across a 1967 essay on military researchers at United Technologies Corporation in Sunnyvale, California, who published a paper in *Nature* about a form of electro-thermal transducer that mixed a welding gas with potassium items in order to generate a vibration, or an expansion/contraction of heat, strong enough to lead to an omni-directional sound source.<sup>21</sup>

DeMarinis blends technological metaphors that have emerged in the past two decades not through the invented language of code, but by exploring the invisibility of orphaned audio technologies, with a visible and ephemeral element of fire. It is more common to think of fire as something that affects reactions in other elements, rather than thinking of fire itself as being the product. However, as a result of the events of 1906, instead of the familiar LCD screens illuminating our homes with songs from iTunes, DeMarinis conjures images that might

have been: a culture where gas chandeliers entertain dining conversations with multi-channel symphonies, or the fireplace as a place where we tune into the daily news, or where every family enjoys a birdcage that sings the music by the divas of our day. Maybe everyone even dances around the technological fire.

## NOTES.

- 1 Kate Woodbridge Michaelis, Otho E. Michaelis, and E. Monthaye, *Alfred Krupp: A Sketch of His Life and Work, After the German of Victor Niemeyer (1888)*, trans. Captain O. E. Michaklis, New York: T. Prosser, 1888, p 55.
- 2 William Manchester, *The Arms of Krupp: 1587-1968*, Toronto: Bantam, 1981, p 89.
- 3 David E. Nye, *American Technological Sublime*, Cambridge: MIT, 1996, p 152.
- 4 Steve Jobs made note of the *Whole Earth Catalog* in 2005 as an influence during a time when he was still forming his ideas around creating grandiose experiences in diminished technological forms. Steve Jobs, "'You've Got to Find What You Love,' Jobs Says," *Stanford University News*, 14 June 2005, Web. 7 Feb. 2012.
- 5 Rachel A. Koestler-Grack, *Neil Armstrong*, Pleasantville, NY: Gareth Stevens, 2010, p 6.
- 6 Nye, *American Technological Sublime*, p 7. While Nye compares Kant's dynamic versus mathematical sublime, comparing the terror of Kant's dynamic sublime to vertigo, or acrophobia, is my insertion. It appears to me that an experience of vertigo, or acrophobia, is more familiar to contemporary society, who have unlimited access to safe, mediated sublime-like experiences than the first-hand, real or imagined fear of witnessing shocking terrors, such as a volcano, a century or more ago.
- 7 Mark Dery, *Escape Velocity: Cyberculture at the End of the Century*, New York: Grove, 1996, p 167. Dery quotes Rachel Rosenthal, "Obsolete Body: Suspensions: Stelarc," *Stelarc, Performance and Masochism*, Davis: JP Publications, 1984, pp 69-70.
- 8 Ingrid Bachmann, in a telephone conversation with the author, Feb. 21, 2012.
- 9 Marshall McLuhan, *Understanding Media*, New York: McGraw-Hill, 1965, pp 79-80.
- 10 Edmund Burke, *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and Beautiful*, Oxford: Oxford UP, 1990, pp 80-81.

- 11 Roger Highfield, "What Was It Like to Walk On the Moon?" *The Telegraph*, 27 May 2008, Web. 7 Feb. 2012.
- 12 Buzz Aldrin describes the concentration required when on the moon and "putting one's foot down and the dust goes out and lands in a different way." Steve Mirsky, "Aldrin Dusts Off Moon Memories," *Scientific American*, n.p., 20 July 2009, Web. 7 Feb. 2012.
- 13 This first message was sent via the ARPANET, the pre-cursor to the Internet, from UCLA to Stanford Research Institute in Berkeley. After UCLA's computer crash was fixed, the second successful message that was sent was "login." Chris Sutton, "Internet Began 35 Years Ago at UCLA with First Message Ever Sent Between Two Computers," *Internet Archive Wayback Machine*, 8 Mar. 2008, Web. 7 Feb. 2012.
- 14 Jorge Luis Borges, *Ficciones*, New York: Grove Press, 1969, p 24.
- 15 Ibid, p 24.
- 16 Crétien Van Campen, "Synesthesia and Artistic Experimentation," Association for Scientific Consciousness, 6 Nov. 1997, Web. 12 Mar. 2012, <<http://www.theassc.org/files/assc/2290.pdf>>.
- 17 Nye, *American Technological Sublime*, p 7; p 152.
- 18 Mike Adams, *Lee de Forest: King of Radio, Television, and Film*, New York: Copernicus Books, p 223.
- 19 James H. Mapleson, "The Mapleson Memoirs, Vol II 1848-1888," *Project Gutenberg*, Clarke & Co., Publishers, 2011, Web. 15 Feb. 2012.
- 20 Frederick Forster Buffen, *Musical Celebrities*, London: Chapman & Hall, Limited, 1889, p 15.
- 21 Paul DeMarinis, "Firebirds | Firebirds-Berlin | Tongues of Fire," *Iowa Review*, Feb. 2006, Web. 16 Mar. 2012.

## BIBLIOGRAPHY.

- Beirer, Ingrid, Sabine Himmelsbach, and Carsten Seiffarth, eds. *Paul DeMarinis: Buried in Noise*. Heidelberg: Kehrler Verlag, 2011.
- Collins, Michael, and Charles A. Lindbergh. *Carrying the Fire: An Astronaut's Journeys*. New York: Farrar, Straus and Giroux, 1974.
- DeMarinis, Paul. "Firebirds | Firebirds-Berlin | Tongues of Fire." *Iowa Review*, Feb. 2006. Web. 7 Feb. 2012.
- Doorley, Scott. "Talking Flames and the Boy Mechanic: A Conversation with Installation Artist Paul Demarinis." In *Falling In*, spec. issue of *Ambidextrous*, Stanford University's *Journal of Design* 5 (2006). Web. 7 Feb. 2012.
- Highfield, Roger. "What Was It Like to Walk On the Moon?" *The Telegraph*. 27 May 2008. Web. 7 Feb. 2012.
- Mirsky, Steve. "Aldrin Dusts Off Moon Memories." *Scientific American*. 20 July 2009. Web. 7 Feb. 2012.
- Nye, David E. *American Technological Sublime*. Cambridge: MIT, 1996.
- Rosenberg, Daniel. "One Small Step (for Nina Katchadourian)." *Art Journal* 61.3 (2002): 32-39.

PLATES.



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8-9. Ingrid Bachman, *The Portable Sublime*, 2003; 10. Ingrid Bachman, *Symphony for 54 Shoes*, 2006; 11-18. Ingrid Bachman, *The Portable Sublime*, 2003; 19-23. Nina Katchadourian, *Talking Popcorn*, 2001; 24. Nina Katchadourian, *Talking Popcorn Journal*, 2001-12; 25-32 Jocelyn Robert and Émile Morin, *Leçon de piano*, 2003-07, 33-38. Paul DeMarinis, *One Bird*, 2007.









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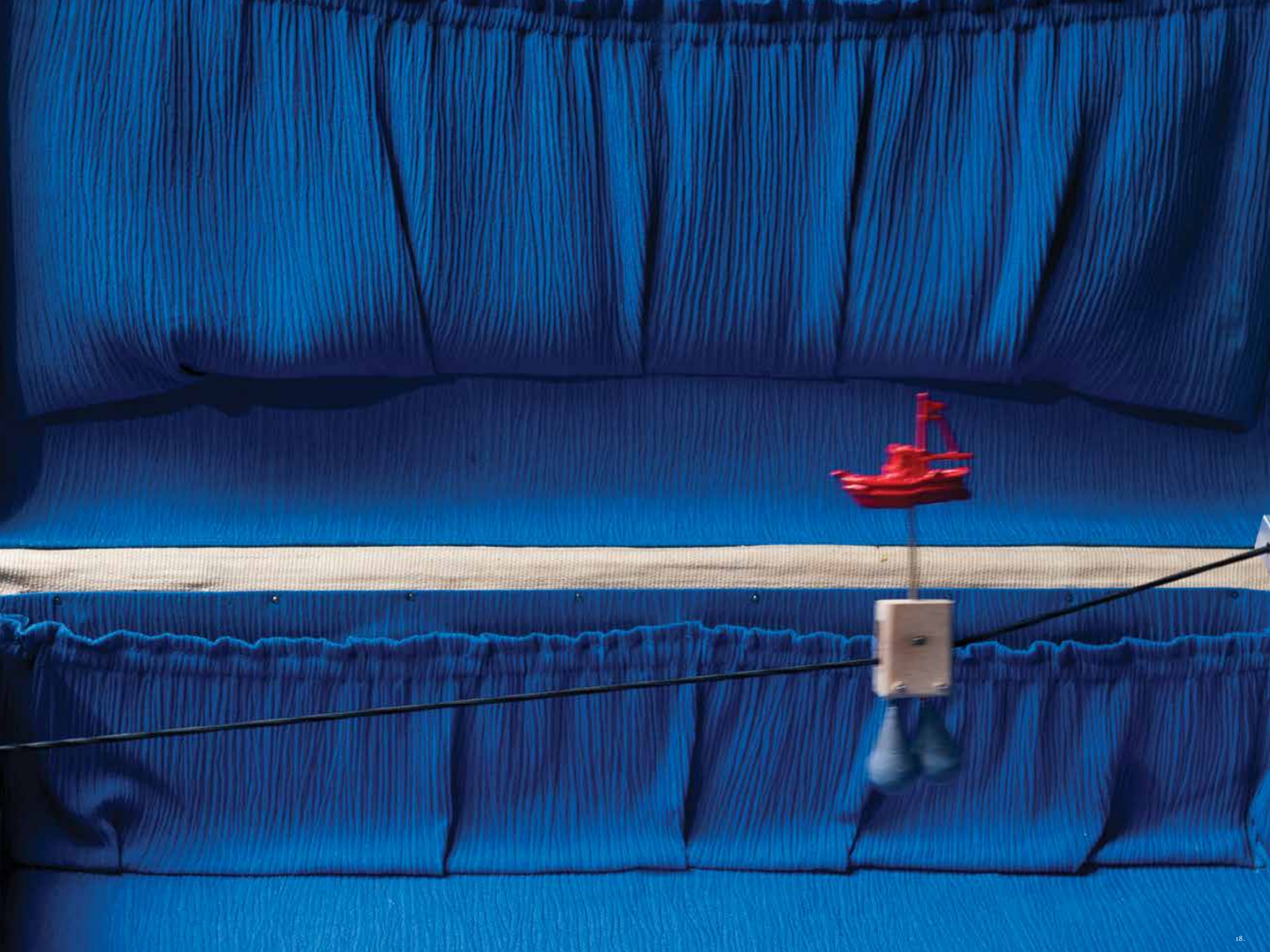


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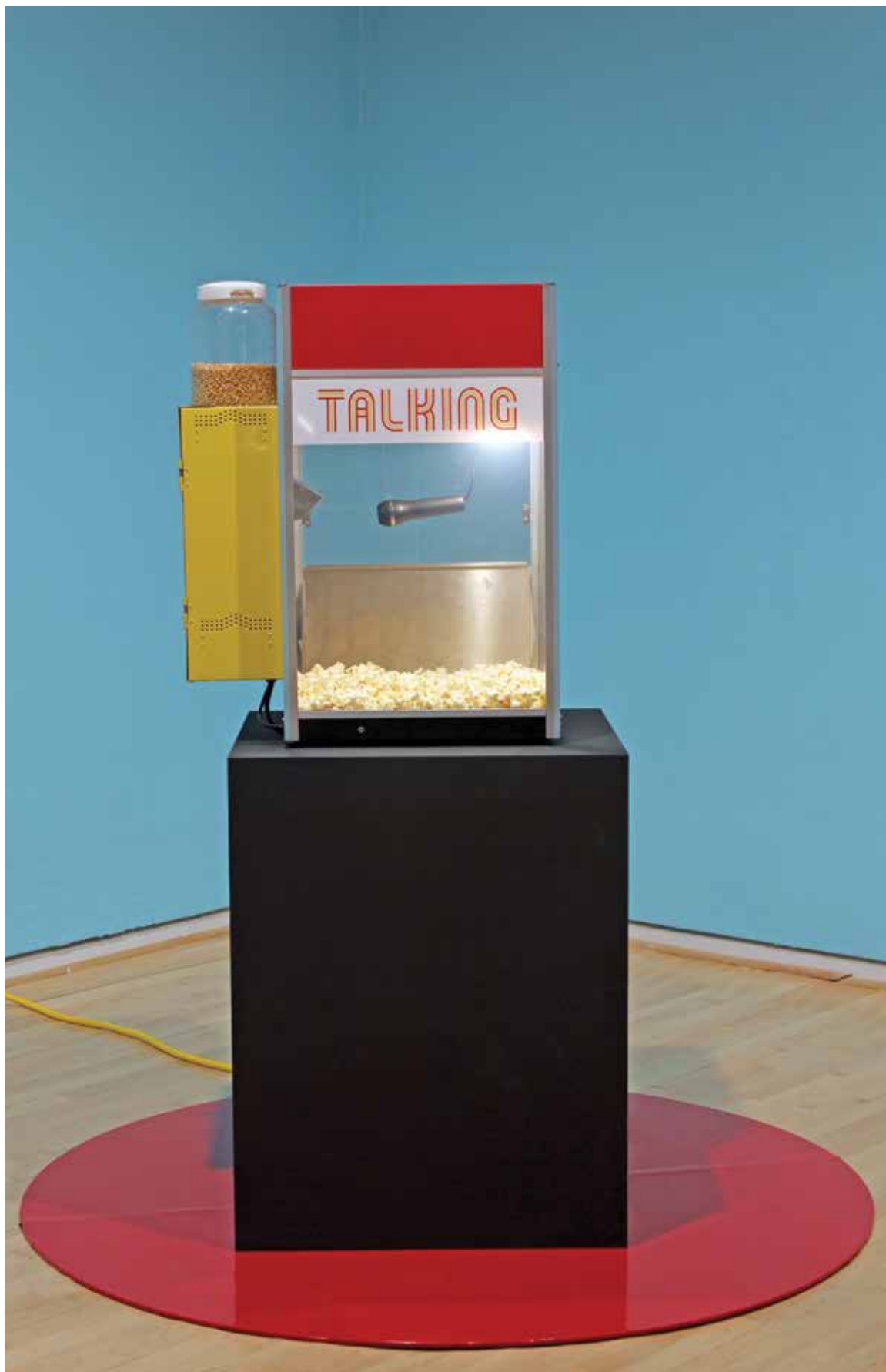


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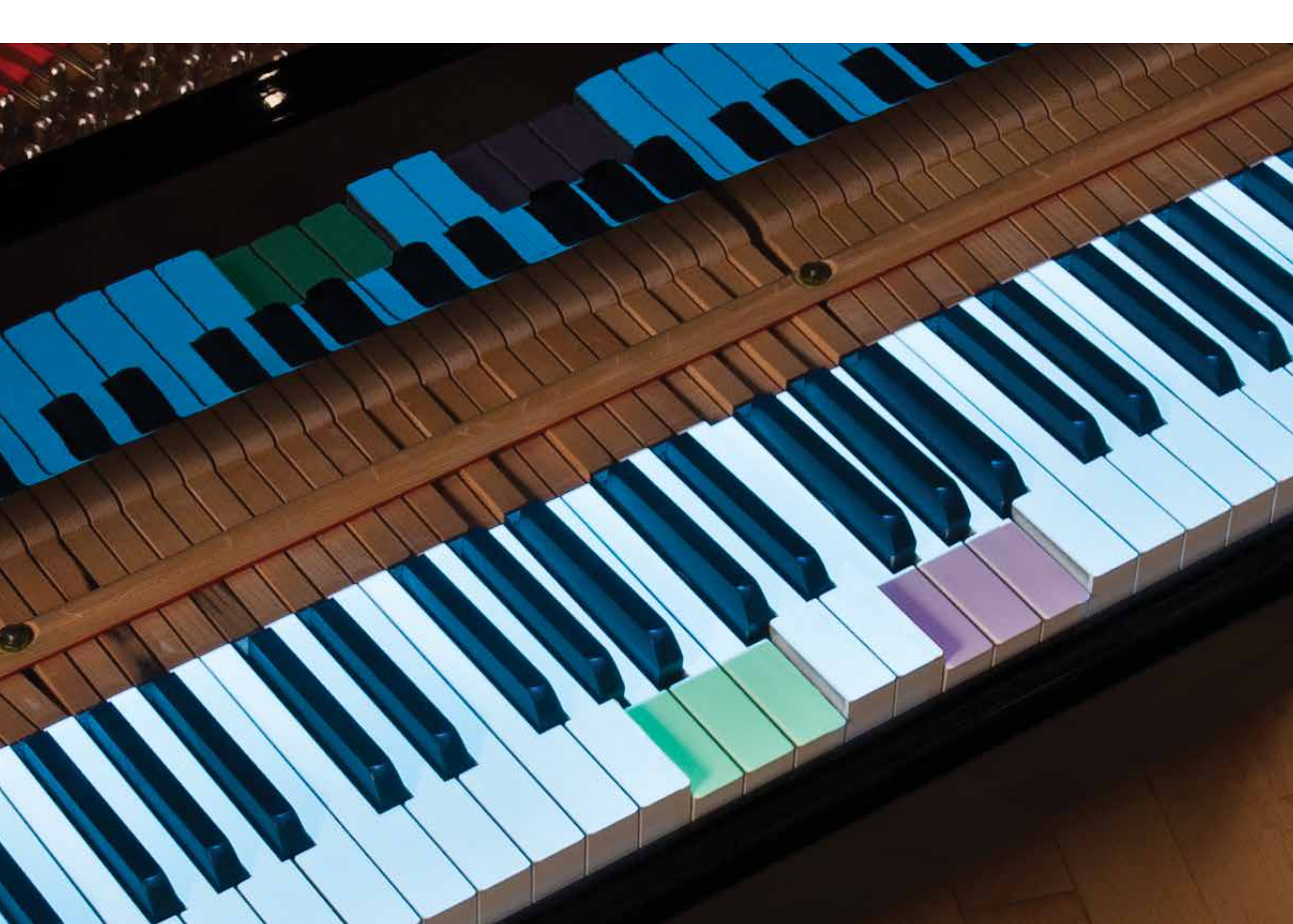
















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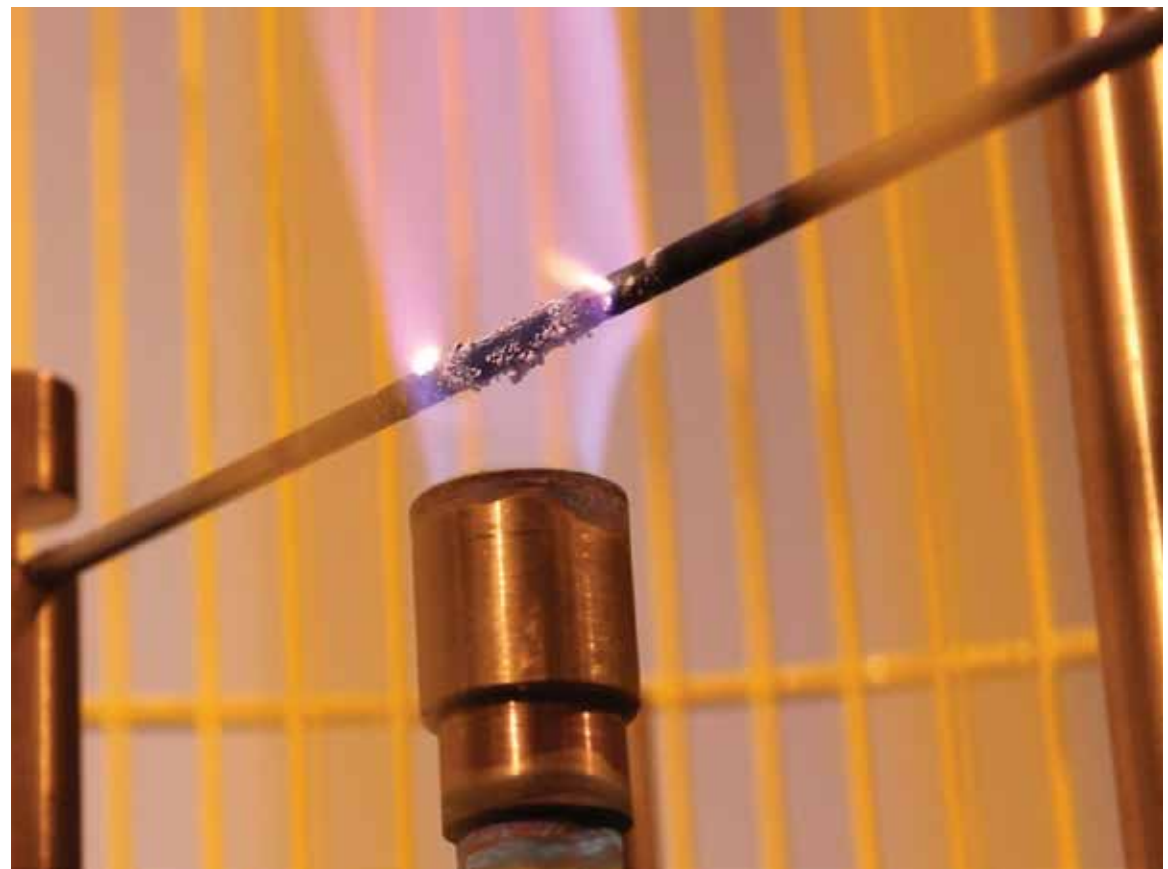
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## PHOTO CREDITS.



39.

1: Courtesy of NASA, 1968; 2: Drawing by Ingrid Bachmann. Courtesy of the artist; 3: Drawing by Nina Katchadourian. Courtesy of the artist and Catharine Clark Gallery, San Francisco; 7: *Scientific American* Supplement, 1907; 4, 8, 9, 10, 13, 16, 22, 23, 25, 26, 34, and cover images: Dan Meyers; 6, 15, 27, 35, 36, 37, 38: Lisa Moren; 17, 20, 21, 39: Katherine Morris; 5, 11, 12, 14, 18, 19, 24, 28, 29, 30, 31, 32, 33: Timothy Nohe.

## EXHIBITION CHECKLIST.

1. **INGRID BACHMANN**  
*The Portable Sublime*, 2003  
Dimensions Variable  
8 suitcases, vintage furniture, mixed media including: water, glass, speakers, mp3 player, sensors, plumbing, helium balloons, paint, kinetics, and light.  
*Courtesy of the artist*
2. **INGRID BACHMANN**  
*Symphony for 54 Shoes*, 2006  
32 ft. x 54 in. x 11 in.  
Vintage shoes, steel heel and toe taps, 108 solenoids (tubular magnetic sensors), 52 switches, micro-controllers, and Arduino system.  
*Courtesy of the artist*  
*Special Thanks to Erik Conrad for circuitry and software design.*
3. **PAUL DEMARINIS**  
*One Bird*, 2007  
57 in. high  
Mixed media including: oxyacetylene gas, potassium ions, Bunson burner, birdcage, mp3 player, and circuitry.  
*Courtesy of the artist*
4. **ÉMILE MORIN AND JOCELYN ROBERT**  
*Leçon de Piano (Piano Lesson)*, 2003 - 12  
7 ft. Yamaha DS6APRO Disklavier, midi system, and Max/MSP software  
*Courtesy of the artists*  
*Special thanks to Alan C. Schrum, Jordan Kitt's Music, and Conseil des arts et des lettres du Québec for their generosity, and also to Avatar (Québec City) for their technical assistance.*
5. **NINA KATCHADOURIAN**  
*Indecision on the Moon*, 2001  
14 ft. x 12 ft.  
Looping audio CD, 32 min.  
*Courtesy of the artist and Catharine Clark Gallery, San Francisco*
6. **NINA KATCHADOURIAN**  
*Talking Popcorn*, 2001  
26 in. x 24 in. x 64 in.  
Popcorn machine, microphone, laptop computer, Max/MSP software, and sound system.  
*Courtesy of the artist and Catharine Clark Gallery, San Francisco*  
*Special Thanks to Josh Goldberg for software design.*
7. **NINA KATCHADOURIAN**  
*Talking Popcorn's First Words*, 2001  
3 1/2 in. x 12 in. x 9 1/8 in. (Closed)  
Bronzed popcorn, engraved brass plaque, velvet, and wood.  
*Courtesy of Sara Meltzer*
8. **NINA KATCHADOURIAN**  
*Talking Popcorn Journal*, 2001 - 12  
11 in. x 8 1/2 in. x 2 in. each  
Popcorn, vacuum-formed plastic capsules, cardstock, and ink.  
*Courtesy of the artist and Catharine Clark Gallery, San Francisco*
9. **NINA KATCHADOURIAN**  
*Talking Popcorn Video*, 2001  
Looping Quicktime movie, 3 min.  
*Courtesy of the artist and Catharine Clark Gallery, San Francisco*